

TABLE OF CONTENTS

PIN DIODE & SOLID STATE SWITCHES

(LATEST DEVELOPMENT)

SECTION	PRODUCT DESCRIPTIONS
1.0 SPST - REFLECTIVE:	SUMMARY TEST DATA ON 2.0 TO 18.0 GHz (USABLE TO 0.5 GHz), BALANCED ON/OFF, <u>ULTRA-HIGH SPEED</u> , VERY LOW VIDEO TRANSIENT, LOW LOSS, <u>REFLECTIVE</u> , SPST PIN DIODE SWITCHES/MODULATORS, <u>August 29, 1995</u>
2.0 SPST - REFLECTIVE/ABSORPTIVE:	SUMMARY TEST DATA ON WIDEBAND (10 MHZ TO 18 GHz), LOW VIDEO TRANSIENT, LOW LOSS, HIGH SPEED, HIGH ISOLATION, <u>REFLECTIVE & ABSORPTIVE</u> , SPST PIN DIODE SWITCHES/MODULATORS, <u>September 10, 1995</u>
3.0 RADIAL MULTI-THROW, SPNT REFLECTIVE/ABSORPTIVE: (N = 3, 4, 5, 6 & 7, <u>SWN</u> SERIES)	SUMMARY TEST DATA ON 0.5 TO 18.0 GHz (10 MHZ TO 18 GHz ALSO AVAILABLE), HIGH SPEED, LOW LOSS, <u>RADIAL</u> REFLECTIVE ABSORPTIVE, MULTI-THROW PIN DIODE SWITCHES (SP3T, SP4T, SP5T, SP6T & SP7T), <u>August 29, 1995</u>

TABLE OF CONTENTS (CONTINUED)

SECTION	PRODUCT DESCRIPTIONS
4.0 RADIAL MULTI-THROW, SPNT REFLECTIVE/ABSORPTIVE: N = 3, 4, 5, 6, 7 & 8, <u>SWN</u> (1 1/4" DIA) AND <u>MSR</u> (1 1/2" DIA) SERIES	DATA SHEETS ON 0.5 TO 18.0 GHz (10 MHz TO 18 GHz, OPTIONAL), LOW LOSS, HIGH SPEED, LOW, MEDIUM & HIGH POWER, <u>RADIAL</u> , REFLECTIVE & ABSORPTIVE, MULTI-THROW SOLID-STATE SWITCHES (SP3T, SP4T, SP5T, SP6T, SP7T & SP8T), <u>SWN</u> (1 1/4" DIA) AND <u>MSR</u> (1 1/2" DIA) SERIES, <u>September 10, 1997</u>
5.0 RECTANGULAR MULTI-THROW, SPNT REFLECTIVE/ABSORPTIVE: (N = 3, 4, 5, 6, 7, 8, 9, 10, 16 & 32, <u>MSN</u> & <u>MSNC</u> (COMPACT) SERIES)	DATA SHEETS ON 0.5 TO 18.0 GHz (10.0 MHz TO 18.0 GHz, OPTIONAL), LOW LOSS, HIGH SPEED, LOW, MEDIUM AND HIGH POWER, <u>RECTANGULAR</u> , REFLECTIVE AND ABSORPTIVE MULTI-THROW SOLID-STATE SWITCHES (SP3T, SP4T, SP5T, SP6T, SP7T, SP8T, SP10T, SP12T, SP16T, & SP32T), <u>MSN</u> AND <u>MSNC</u> (COMPACT) SERIES, <u>August 15, 1997</u>

TABLE OF CONTENTS (CONTINUED)

PIN-DIODE & SOLID STATE SWITCHES (EXISTING & NEW DEVELOPMENTS)

SECTION	PRODUCT DESCRIPTIONS
6.0 SWN & SW SERIES: (10 MHz TO 20 GHz)	<ul style="list-style-type: none">● SPST - REFLECTIVE & ABSORPTIVE● SPST - CURRENT CONTROLLED● SPST - ABSORPTIVE● SP2T - REFLECTIVE & ABSORPTIVE● SP2T - MINIATURE REFLECTIVE & ABSORPTIVE● SP3T - REFLECTIVE & ABSORPTIVE● SP4T - NON-REFLECTIVE/ABSORPTIVE● SP5T - REFLECTIVE & ABSORPTIVE● SP8T - NON-REFLECTIVE/ABSORPTIVE & REFLECTIVE
7.0 PIN DIODE & SOLID STATE SWITCHES: (10 MHz TO 20 GHz) NEW PRODUCT DEVELOPMENTS <u>AUGUST 10, 1993</u>	<ul style="list-style-type: none">● SPST - REFLECTIVE● SPST - NON-REFLECTIVE/ABSORPTIVE● SP2T - REFLECTIVE● SP2T - NON-REFLECTIVE/ABSORPTIVE● SP3T - REFLECTIVE● SP3T - NON-REFLECTIVE/ABSORPTIVE● SP4T - REFLECTIVE● SP4T - NON-REFLECTIVE/ABSORPTIVE● SP5T - REFLECTIVE● SP5T - NON-REFLECTIVE/ABSORPTIVE● SP6T - REFLECTIVE● SP6T - NON-REFLECTIVE/ABSORPTIVE

TABLE OF CONTENTS (CONTINUED)

SECTION	PRODUCT DESCRIPTIONS
7.0 PIN DIODE & SOLID STATE SWITCHES: (10 MHz TO 20 GHz) NEW PRODUCT DEVELOPMENTS <u>AUGUST 10, 1993</u> (CONTINUED)	● SP7T - REFLECTIVE ● SP7T - NON-REFLECTIVE/ABSORPTIVE ● SP8T - NON-REFLECTIVE/ABSORPTIVE (ALSO AVAILABLE REFLECTIVE) ● TRANSFER SWITCHES
8.0 SWITCHED FILTER BANKS:	ALL ABOVE AMC RECTANGULAR SWITCHES CAN BE USED FOR CUSTOM DESIGNED <u>SWITCHED FILTER BANKS</u> (PLEASE CONTACT FACTORY, TEL: 301-662-4700, FAX: 301-662-4938)
9.0 SP8T PIN DIODE SWITCH:	TEST DATA ON <u>10 MHz TO 2 GHz</u> (10MHz TO 18 GHz ALSO AVAILABLE), LOW LOSS, HIGH ISOLATION, ABSORPTIVE & REFLECTIVE SP8T PIN DIODE SWITCHES, <u>May 29, 1998</u>
10.0 SP7T & SP8T PIN DIODE SWITCHES:	TEST DATA ON <u>10 MHz TO 18 GHz</u> LOW LOSS, HIGH SPEED, HIGH ISOLATION, ABSORPTIVE & REFLECTIVE SP7T & SP8T PIN DIODE SWITCHES <u>June 1, 1998</u>



**AMERICAN MICROWAVE
CORPORATION**

SUMMARY

TEST DATA

ON

2.0 TO 18.0 GHz

BALANCED ON/OFF

ULTRA-HIGH SPEED

VERY LOW VIDEO TRANSIENT

LOW LOSS

**REFLECTIVE, SPST PIN DIODE
SWITCH/MODULATORS**

**NEW DESIGNS
BY**

A. K. GORWARA

**REPORTS PREPARED
BY**

P. WOOD

AUGUST 29, 1995



COMPARISON CHARTS OF SEVEN NEW REFLECTIVE SPST PIN DIODE SWITCH/MODULATORS

CONTENTS

•	INSERTION LOSS vs FREQUENCY	PAGE 3
•	ISOLATION vs FREQUENCY	PAGE 4
•	RETURN LOSS vs FREQUENCY	PAGE 5
•	SWITCHING SPEED	PAGE 6
•	VIDEO TRANSIENTS	PAGE 7
•	MECHANICAL OUTLINES	PAGE 8

NEW AMC MODEL NUMBERS:

- SWN-AGRA-IDR-ECL-GAK0-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(L/C)
5ns-ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-TTL-GAK1-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(L/C)
7ns-ULTRA HIGH SPEED, TTL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-PTTL-GAK2-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, SINGLE SUPPLY, LOW LOSS, LOW VIDEO
TRANSIENT(L/C), 10ns-ULTRA HIGH SPEED, TTL LOGIC, SPST PIN DIODE
SWITCH
- SWN-AGRA-IDR-ECL-GAK3-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(L/C)
5ns-ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-ECL-GAK3P-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(L/C)
9ns-ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-TTL-GAX-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, 10ns-ULTRA HIGH SPEED, LOW
VIDEO TRANSIENTS(L/C) SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-PTTL-GAX-LVT
REFLECTIVE, 2.0 TO 18.0 GHz, SINGLE SUPPLY, LOW LOSS, LOW VIDEO
TRANSIENTS(L/C), 10ns-ULTRA HIGH SPEED SPST PIN DIODE SWITCH

NOTE: Contact Factory for Available Options.

NEW DESIGNS BY A. K. GORWARA
AUGUST 29, 1995



INSERTION LOSS vs FREQUENCY

INSERTION LOSS vs FREQUENCY
 A COMPARISON OF SEVEN NEW SPST SWITCHES

FREQUENCY IN GHz	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-AGRA-1DR-ECL-GAK0				0.56	0.51	0.53	0.56	0.88	0.69	0.99	1.03	1.26
SWN-AGRA-1DR-TTL-GAK1				0.62	0.56	0.61	0.91	0.67	0.92	1.09	1.23	1.43
SWN-AGRA-1DR-PTTL-GAK2				0.54	0.45	0.43	0.68	0.83	0.81	0.97	1.15	1.5
SWN-AGRA-1DR-ECL-GAK3				0.5	0.64	0.55	0.66	0.76	1.17	1.33	1.26	1.56
SWN-AGRA-1DR-ECL-GAK3P				0.53	0.54	0.52	0.92	0.93	0.9	1.08	1.38	1.47
SWN-AGRA-1DR-TTL-GAX				0.84	0.6	0.66	1.04	1.09	1.15	1.04	1.26	1.36
SWN-AGRA-1DR-PTTL-GAX				0.57	0.61	0.68	1.07	1.13	1.27	1.31	1.44	1.79

*** NEW DESIGNS BY A. K. GORWARA **

FREQUENCY IS SHOWN-GHz
 INSERTION LOSS MEASURED IN dB



ISOLATION vs FREQUENCY

ISOLATION vs FREQUENCY
 A COMPARISON OF SEVEN NEW SPST SWITCHES

FREQUENCY IN GHZ	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-AGRA-1DR-ECL-GAK0	50	54	63	88	95	94	92	92	90	86	84	82
SWN-AGRA-1DR-TTL-GAK1	40	38	44	72	92	96	82	90	90	86	84	82
SWN-AGRA-1DR-PTTL-GAK2	50	52	60	86	94	94	92	90	90	88	84	82
SWN-AGRA-1DR-ECL-GAK3	50	51	58	86	94	94	92	90	90	86	80	82
SWN-AGRA-1DR-ECL-GAK3P	50	52	62	88	94	94	94	92	88	86	82	80
SWN-AGRA-1DR-TTL-GAX			64	94	90	90	88	78	80	78	72	64
SWN-AGRA-1DR-PTTL-GAX			76	92	88	90	86	76	72	78	72	64

** NEW DESIGNS BY A. K. GORWARA **

FREQUENCY IS SHOWN-GHZ
 ISOLATION AS MEASURED IN dB



RETURN LOSS vs FREQUENCY

RETURN LOSS VS FREQUENCY
 A COMPARISON OF SEVEN NEW SPST SWITCHES

FREQUENCY IN GHz	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-AGRA-1DR-ECL-GAK0				15.71	18.05	18.5	23.18	13.21	29.76	13.97	31.29	30.95
SWN-AGRA-1DR-TTL-GAK1				14.93	19.34	24.02	17.55	22.31	12.7	11.9	16.79	17.6
SWN-AGRA-1DR-PTTL-GAK2				15.84	19.43	28.69	16.86	14.89	17.81	18.98	14.96	23.79
SWN-AGRA-1DR-ECL-GAK3				20.41	15.46	20.47	22.37	23.57	10.77	11.78	18.6	20.73
SWN-AGRA-1DR-ECL-GAK3P				18.75	16.89	24.44	12.32	13.84	17.38	15.56	14.6	29.52
SWN-AGRA-1DR-TTL-GAX				14.53	19.06	19.48	12.59	11.98	11.8	16.65	16.54	36.86
SWN-AGRA-1DR-PTTL-GAX				15.09	17.51	19.83	12.8	12.85	12.24	14.14	18.22	20.24

NEW DESIGNS BY A. K. GORWARA

FREQUENCY IS SHOWN-GHZ
 RETURN LOSS MEASURED IN dB



SWITCHING SPEED

SWITCHING SPEED
 A COMPARISON OF SEVEN NEW SPST SWITCHES

SWITCHING SPEED IN nS	RISE	FALL	ON	OFF
SWN-AGRA-1DR-ECL-GAK0	1	1	5	5
SWN-AGRA-1DR-TTL-GAK1	1	1	7	7
SWN-AGRA-1DR-PTTL-GAK2	1	1	10	5
SWN-AGRA-1DR-ECL-GAK3	1	1	5	5
SWN-AGRA-1DR-ECL-GAK3P	1	1	9	3
SWN-AGRA-1DR-TTL-GAX	2	2	10	10
SWN-AGRA-1DR-PTTL-GAX	2	2	15	8

** NEW DESIGNS BY A. K. GORWARA **

SWITCHING SPEED AS MEASURED IN NANOSECONDS



VIDEO TRANSIENTS

VIDEO TRANSIENTS
 A COMPARISON OF SEVEN NEW SPST SWITCHES

BANDWIDTH IN MHZ	20	100	300
SWN-AGRA-1DR-ECL-GAK0	15		350
SWN-AGRA-1DR-TTL-GAK1	15		235
SWN-AGRA-1DR-PTTL-GAK2	5		175
SWN-AGRA-1DR-ECL-GAK3	10		175
SWN-AGRA-1DR-ECL-GAK3P	5		130
SWN-AGRA-1DR-TTL-GAX	20	275	
SWN-AGRA-1DR-PTTL-GAX	10	135	

VIDEO TRANSIENTS MEASURED IN MILLIVOLTS PEAK-PEAK
 ** NEW DESIGNS BY A. K. GORWARA **



SUMMARY TEST DATA
COMPARISON CHARTS
PAGE : 8

MECHANICAL OUTLINES

DC Power Supply:
 $\pm 5\text{vdc}$ @ $\pm 60\text{mA}$ Max.

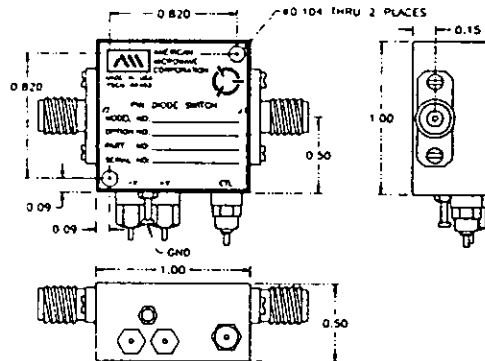


Figure 1. SWN-AGRA-1DR-TTL-GAK1-LVT
SWN-AGRA-1DR-TTL-GAX-LVT

DC Power Supply:
SINGLE SUPPLY
 $+5\text{vdc}$ @ $+60\text{mA}$ Max.

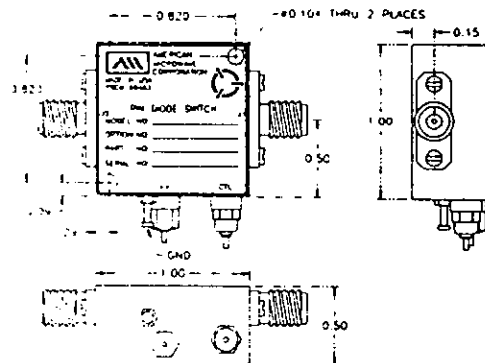


Figure 2. SWN-AGRA-1DR-PTTL-GAK2-LVT
SWN-AGRA-1DR-PTTL-GAX-LVT

DC Power Supply:
 $\pm 5\text{vdc}$ @ $\pm 80\text{mA}$ Max.

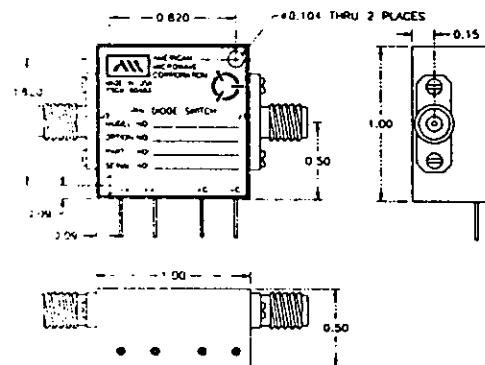


Figure 3. SWN-AGRA-1DR-ECL-GAK0-LVT
SWN-AGRA-1DR-ECL-GAK3-LVT
SWN-AGRA-1DR-ECL-GAK3P-LVT

The logo for American Microwave Corporation is located in the top-left corner. It features a stylized graphic of three slanted parallel lines above the company name, which is written in a bold, sans-serif font and rotated diagonally to fit within a triangular shape.

**AMERICAN MICROWAVE
CORPORATION**

**SUMMARY
TEST DATA
ON
WIDEBAND
LOW VIDEO TRANSIENT
LOW LOSS
HIGH SPEED
HIGH ISOLATION
REFLECTIVE & ABSORPTIVE
SPST PIN DIODE SWITCH/MODULATORS**

**NEW DESIGNS
BY
A. K. GORWARA**

**REPORTS PREPARED
BY
P. WOOD**

SEPTEMBER 10, 1995

7311 G GROVE ROAD, FREDERICK, MARYLAND 21701 • Tel. (301) 662-4700 • Fax (301) 662-4938



COMPARISON CHARTS OF NEW REFLECTIVE & ABSORPTIVE SPST PIN DIODE SWITCH/MODULATORS

CONTENTS

• INSERTION LOSS vs FREQUENCY	PAGE 4
• ISOLATION vs FREQUENCY	PAGE 5
• RETURN LOSS vs FREQUENCY	PAGE 6
• SWITCHING SPEED	PAGE 7
• VIDEO TRANSIENTS	PAGE 8
• MECHANICAL OUTLINES	PAGE 9,10 & 11

NEW AMC MODEL NUMBERS:

- **SWS-0518-1DR-HM**
REFLECTIVE, 0.5 TO 18.0 GHz, SLIM-LINE MINIATURE, LOW LOSS, FAST, SPST PIN DIODE SWITCH
- **SWN-RRA-1DR-ECL-LVT**
REFLECTIVE, 1.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENTS(L/C), 8ns-ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- **SWN-1TDR-ARG-LVT**
REFLECTIVE, 1.0 TO 18.0 GHz, VERY LOW VIDEO TRANSIENTS (L/C), 10ns-ULTRA HIGH SPEED, HIGH ISOLATION SPST PIN DIODE SWITCH
- **SWN-0118-1DT-250**
ABSORPTIVE, 10 MIL TO 18 GHz, LOW LOSS, SPST PIN DIODE SWITCH
- **SWN-WSP-1DR-118-HPM**
REFLECTIVE, 0.5 TO 18.0 GHz, MINIATURE, LOW LOSS SPST PIN DIODE SWITCH
- **SWN-WSP-1DR-118-HPM-LVT**
REFLECTIVE, 1.0 TO 18.0 GHz, LOW VIDEO TRANSIENT SPST PIN DIODE SWITCH
- **SWN-118-1DR-HPX-LVT**
REFLECTIVE, 2.0 TO 18.0 GHz, LOW VIDEO TRANSIENTS(R/C), VERY LOW LOSS, 50ns-HIGH SPEED, BALANCED "ON/OFF" SPST PIN DIODE SWITCH

SEPTEMBER 10, 1995



CONTENTS
(CONTINUED)

- SWN-0518-1DR-12X-LVT
REFLECTIVE, 0.5 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENTS(R/C) SPST PIN DIODE SWITCH
- SWN-0518-1DR-12X
REFLECTIVE, 0.5 TO 18.0 GHz, 8ns HIGH SPEED SPST PIN DIODE SWITCH
- SWN-AKG-1DR
REFLECTIVE, 0.5 TO 18.0 GHz, 100 dB ISOLATION SPST PIN DIODE SWITCH
- SWN-AKG-1DR-12X
REFLECTIVE, 0.5 TO 18.0 GHz, VERY HIGH SPEED, VERY HIGH ISOLATION SPST PIN DIODE SWITCH
- SWN-AKG-1DR-12X-LVT
REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, VERY HIGH ISOLATION, LOW VIDEO TRANSIENTS(R/C) SPST PIN DIODE SWITCH
- SWN-AKG-1DT
ABSORPTIVE, 0.5 TO 18.0 GHz, 100 dB ISOLATION SPST PIN DIODE SWITCH
- SWN-AKG-1DT-12X
ABSORPTIVE, 0.5 TO 18.0 GHz, 10ns-ULTRA HIGH SPEED, HIGH ISOLATION SPST PIN DIODE SWITCH
- SWN-AKG-1DT-12X-LVT
ABSORPTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, LOW VIDEO TRANSIENTS(R/C) SPST PIN DIODE SWITCH

NOTES:

- Contact Factory for Available Options
- AMC Model Numbers are defined as follows:

<u>SW</u>	<u>N</u>	<u>-RRA</u>	<u>-1</u>	<u>D</u>	<u>R</u>	<u>-ECL</u>	<u>-12X</u>	<u>-LVT</u>
1	2	3	4	5	6	7	8	9

 1. Switch
 2. New
 3. Model Number or Frequency of Operation
 4. Number of Arms
 5. Integral Driver
 6. Reflective or Terminated(Absorptive)
 7. Control Logic (TTL is Standard)
 8. AMC internal design code
 9. Low Video Transient option

SEPTEMBER 10, 1995



INSERTION LOSS vs FREQUENCY

A COMPARISON OF SPST SWITCHES
 INSERTION LOSS vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWS-0518-1DR-HM				1			1.2	1.5		2					2.8
SWN-PRA-1DR-ECL-LVT						1.33	0.76	0.89	0.89	1.19	1.43	1.44	1.98	2.11	2.33
SWN-1DR-ARG-LVT										1.4	1.2	1.6	1.77	2.2	1.97
SWN-0118-1DT-250				0.55			0.78	1.23		1.45		2.16			3.17
SWN-WSP-1DR-HPM						0.49	0.41			0.69		0.89			1.18
SWN-WSP-1DR-HPM-LVT						0.49	0.41			0.69		0.89			1.18
SWN-118-1DR-HPX-LVT						0.5	0.39	0.51	0.6	0.89	1.3	1	1.28	1.48	1.65
SWN-0518-1DR-12X				0.68			0.43	0.59	0.74	0.98	1.22	1.63	1.76	2.01	2.01
SWN-0518-1DR-12X				0.44		0.34		0.55		0.92		1.2			2.08
SWN-AKG-1DR				0.7	0.6	0.55	0.7	1.2	1.1	1.2	1.5	2	2.25	2.3	2.73
SWN-AKG-1DR-12X				0.6			0.76	1.03	1.13	1.21	1.5	1.87	1.94	2.21	2.48
SWN-AKG-1DR-12X-LVT				0.66			0.78	1.03	1.06	1.39	1.78	1.9	2.11	2.27	2.66
SWN-AKG-1DT				0.75	0.75	0.75	0.8	1.4	1.25	1.25	1.7	2.25	2.45	2.45	3.12
SWN-AKG-1DT-12X				0.64			0.76	0.91	1.09	1.38	2.17	1.98	2.24	2.98	2.76
SWN-AKG-1DT-12X-LVT				0.74			0.88	1.03	1.24	1.45	1.83	2.37	2.27	3.13	3.19

A REVIEW OF NEW DESIGNS BY A. K. GORWARA

Y AXIS - INSERTION LOSS MEASUREMENT IN DB
 X AXIS - FREQUENCY IN GHz

SEPTEMBER 10, 1995



ISOLATION vs FREQUENCY

A COMPARISON OF SPST SWITCHES
 ISOLATION vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWS-0518-1DR-HM				60			70			85					80
SWN-RRR-1DR-ECL-LVT						60	70	72	74	82	88	84	80	80	80
SWN-1TDR-ARG-LVT						53	64	96		98		89		82	68
SWN-0118-1DT-250	47			66			95	100	100	100		92			90
SWN-WSP-1DR-HPM				66		74				84		81			74
SWN-WSP-1DR-HPM-LVT				66		74				84		81			74
SWN-118-1DR-HPX	72	68	64	62	64	68	84	90	90	82	74	80	80	80	70
SWN-0518-1DR-12X-LVT	48	43	42	44	54	61	78	90	90	90	90	85	84	80	80
SWN-0518-1DR-12X	46			53			84			98		92			84
SWN-118-1DR-12X	65			85			104	104		102			102		90
SWN-118-1DR-12X	90	90	88	100	100	100	95	90	90	90	88	88	84	80	80
SWN-118-1DR-12X-LVT	95	100	100	100	100	100	95	90	90	90	90	86	84	80	80
SWN-118-1DT	48			67			96	104		104	103		104		100
SWN-118-1DT-12X	14	61	64	70	80	83	95	90	90	90	90	88	84	80	80
SWN-118-1DT-12X-LVT	40	38	40	46	54	60	76	90	90	90	88	84	80	80	80

A REVIEW OF NEW DESIGNS BY A. K. GORWARA

Z AXIS: MEASUREMENTS OF ISOLATION IN dB
 Y AXIS: FREQUENCY IN GHz



RETURN LOSS vs FREQUENCY

A COMPARISON OF SPST SWITCHES
 RETURN LOSS vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWS-0518-1DR-HM															9.54
SWN-RRR-1DR-ECL-LVT						8.87	13.86	15.79	30.24	16.9	15.4	22.76	15.86	27.62	16.71
SWN-1TDR-ARG-LVT															19.17
SWN-0118-1DT-250				26.4			16.92	15.65		20.82		20.25			21.06
SWN-WSP-1DR-HPM						22.9	19.7			19.5		17.75			31.95
SWN-WSP-1DR-HPM-LVT						22.9	19.7			19.5		17.75			31.95
SWN-118-1DR-HPX-LVT						41.89	23.23	21.28	24.34	14.37	10.42	16.7	19.86	18.5	23.32
SWN-0518-1DR-12X-LVT				14.53			23.77	25.21	24.75	20.44	24.93	12.77	15.94	17.4	19.16
SWN-0518-1DR-12X				14.1		22.6		27.28		14.93		17.74			12.02
SWN-AGK-1DR															18.82
SWN-AGK-1DR-12X				17.63			16.31	16.24	15.11	27.24	23.01	16.01	24.01	26.18	18.44
SWN-AGK-1DR-12X-LVT				17.66			17.98	20.45	21.2	16.59	17.4	14.54	15.26	23.01	25.66
SWN-AGK-1DT															17.29
SWN-AGK-1DT-12X				16.94			17.72	30.69	24.25	19.53	12.56	17.86	25.14	12.26	21.15
SWN-AGK-1DT-12X-LVT				14.63			17.91	26.07	31.53	28.33	22.44	16.48	23.48	12.5	19.85

A REVIEW OF NEW DESIGNS BY A. K. GORWARA

X AXIS MEASUREMENT OF RETURN LOSS IN dB
 Y AXIS FREQUENCY IN GHz

SEPTEMBER 10, 1995



SWITCHING SPEED

A COMPARISON OF SPST SWITCHES
 SWITCHING SPEED

SWITCHING SPEED	RISE	FALL	ON	OFF
SWS-0518-1DR-HM	10	10	50	50
SWN-PRA-1DR-ECL-LVT	2	2	7	9
SWN-1TDR-ARG-LVT	3	3	6	6
SWN-0118-1DT-250	20	12	60	40
SWN-WSP-1DR-HPM	6	3	40	20
SWN-WSP-1DR-HPM-LVT	8	8	60	55
SWN-118-1DR-HPX-LVT	10	8	40	35
SWN-0518-1DR-12X-LVT	10	12	25	45
SWN-0518-1DR-12X	2	2	10	10
SWN-AKG-1DR	3	3	20	10
SWN-AKG-1DR-12X	2	2	12	10
SWN-AKG-1DR-12X-LVT	3	5	25	35
SWN-AKG-1DT	8	3	20	10
SWN-AKG-1DT-12X	5	3	15	10
SWN-AKG-1DT-12X-LVT	20	5	35	25

SEPTEMBER 10, 1995

X AXIS: MEASUREMENT OF SWITCHING SPEED IN NANoseconds
 A REVIEW OF NEW DESIGNS BY A. K. GORWARA



VIDEO TRANSIENTS

A COMPARISON OF SPST SWITCHES
 VIDEO TRANSIENTS

BANDWIDTH	20	100	300
SWS-0518-1DR-HM	50		
SWN-RRR-1DR-ECL-LVT	100		400
SWN-1TDR-ARG-LVT			3
SWN-0118-1DT-250			1,400
SWN-WSP-1DR-HPM			600
SWN-WSP-1DR-HPM-LVT			50
SWN-118-1DR-HPX-LVT	85	125	175
SWN-0518-1DR-12X-LVT			400
SWN-0518-1DR-12X			620
SWN-AGK-1DR	*	*	*
SWN-AGK-1DR-12X			1,800
SWN-AGK-1DR-12X-LVT	85		315
SWN-AGK-1DT			1,750
SWN-AGK-1DT-12X			2,150
SWN-AGK-1DT-12X-LVT	70		450

A REVIEW OF NEW DESIGNS BY A. K. GORWARA
 X AXIS: MEASUREMENTS IN MILLIVOLTS (mV), PEAK TO PEAK
 Y AXIS: BANDWIDTH IN MHZ *NO DATA AVAILABLE ON AKG-1D OR 1DT*

SEPTEMBER 10, 1995



MECHANICAL OUTLINES

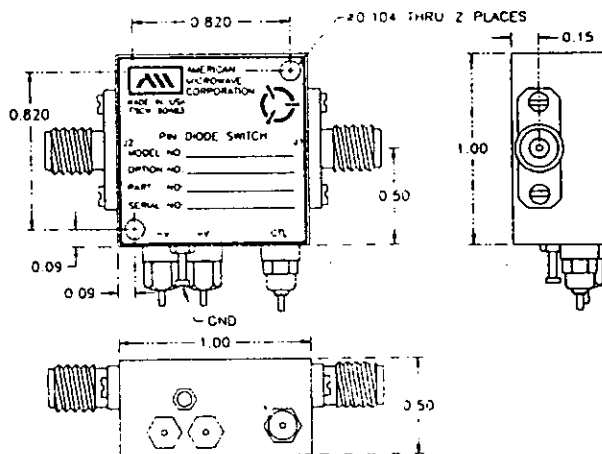


FIGURE 1. DC Power Supply : $\pm 5\text{vdc}$ @ $\pm 60\text{mA}$ Max.

- SWN-118-1DR-IIPX-LVT
- SWN-0518-1DR-12X-LVT
- SWN-0518-1DR-12X
- SWN-AKG-1DR
- SWN-AKG-1DR-12X
- SWN-AKG-1DR-12X-1.VT
- SWN-AKG-1DT
- SWN-AKG-1DT-12X
- SWN-AKG-1DT-12X-LVT
- SWN-0118-1DT-250

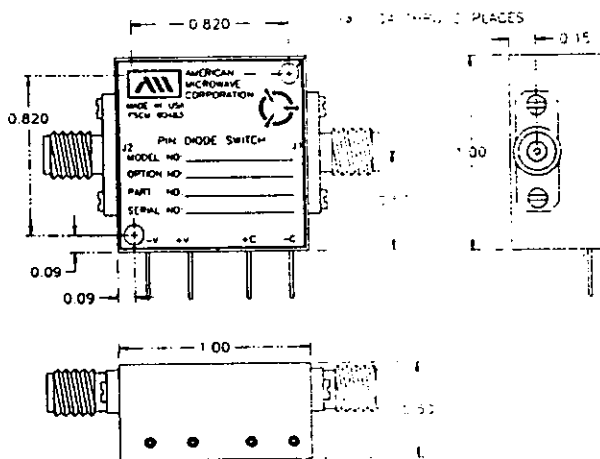


FIGURE 2. DC Power Supply : $\pm 5\text{vdc}$ @ $\pm 80\text{mA}$ Max.

- SWN-RRA-1DR-ECI-1.VT



MECHANICAL OUTLINES

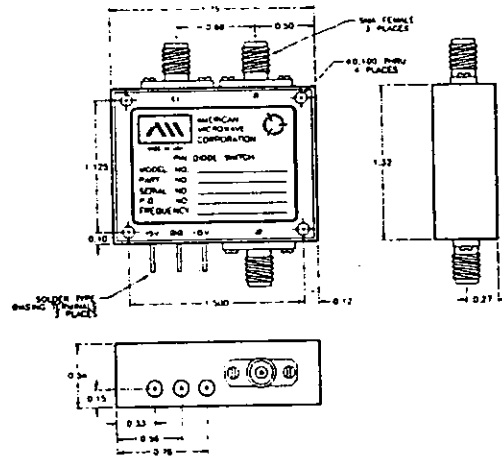


FIGURE 3. DC Power Supply : $\pm 5\text{vdc}$ @ $\pm 60\text{mA}$ Max.
SWN-1TDR-ARG-LVT

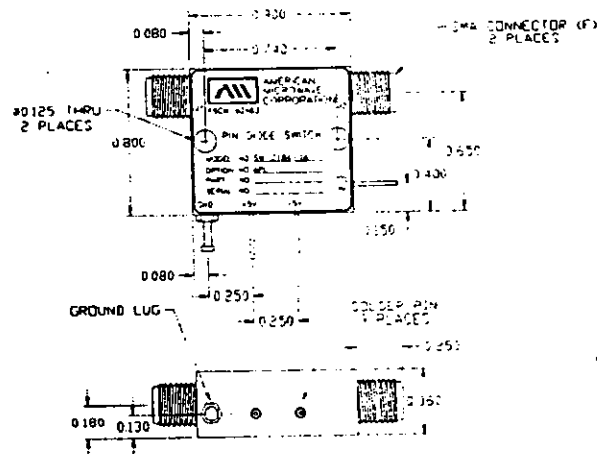


FIGURE 4. DC Power Supply : $\pm 5\text{vdc}$ @ $\pm 60\text{mA}$ Max.
• SWN-WSP-1DR-118-HPM
• SWN-WSP-1DR-118-HPM-LVT



MECHANICAL OUTLINES

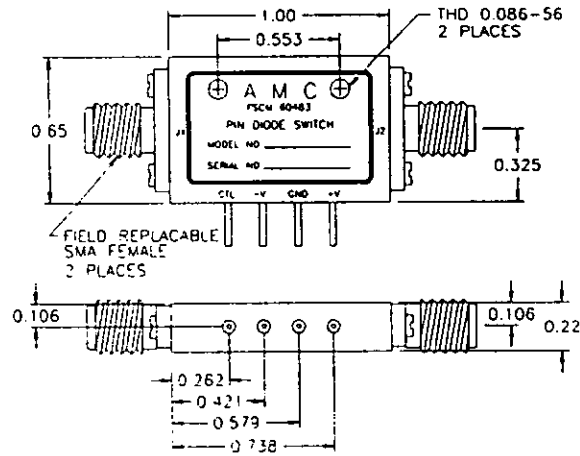


FIGURE 5. DC Power Supply : $\pm 5\text{vdc}$ @ $\pm 60\text{mA}$ Max.
● SWS-0518-1DR-HIM



**AMERICAN MICROWAVE
CORPORATION**

**SUMMARY
TEST DATA
ON
0.5 TO 18.0 GHz
HIGH SPEED
LOW LOSS
RADIAL
REFLECTIVE & ABSORPTIVE
MULTI-THROW PIN DIODE SWITCHES
(SP3T, SP4T, SP5T, SP6T, & SP7T)**

**NEW DESIGNS
BY
A. K. GORWARA**

**REPORTS PREPARED
BY
P. WOOD**

AUGUST 29, 1995

7311 G GROVE ROAD, FREDERICK, MARYLAND 21701 • Tel. (301) 662-4700 • Fax (301) 662-4938



TYPICAL COMPARISON CHARTS OF REFLECTIVE & ABSORPTIVE RADIAL MULTI-THROW PIN DIODE SWITCHES

CONTENTS

•	INSERTION LOSS vs FREQUENCY	PAGE 3
•	ISOLATION vs FREQUENCY	PAGE 4
•	RETURN LOSS vs FREQUENCY	PAGE 5
•	SWITCHING SPEED	PAGE 6
•	MECHANICAL OUTLINES	PAGE 8 - 10

NEW AMC MODEL NUMBERS:

- SWN-1170-3DT-12X
SP3T, ABSORPTIVE, 0.5 TO 18.0 GHz, 10ns-ULTRA HIGH SPEED, HIGH ISOLATION, LOW PROFILE RADIAL, PIN DIODE SWITCH
- SWN-1170-4DR-HPM
SP4T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION LOW PROFILE RADIAL PIN DIODE SWITCH
- SWN-1170-6DR-HPM
SP6T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, LOW PROFILE, RADIAL PIN DIODE SWITCH
- SWN-1170-7DR-HPM
SP7T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, LOW PROFILE, RADIAL PIN DIODE SWITCH
- SWN-1170-7DR-12M-DEC
SP7T, REFLECTIVE, 0.5 TO 18.0 GHz, LOW LOSS, HIGH SPEED, HIGH ISOLATION, 3-BIT BINARY DECODER, RADIAL PIN DIODE SWITCH

AUGUST 29, 1995



SUMMARY TEST DATA
COMPARISON CHARTS
PAGE : 3

NOTES:

- Performance of the SP5T, SWN-1170-5DR-HPM, is similar to that of the SWN-1170-6DR-HPM.
- Performance of the High Speed Absorptive SP4T (SWN-1170-4DT-12X), SP5T (SWN-1170-5DT-12X), SP6T (SWN-1170-6DT-12X), and the SP7T (SWN-1170-7DT-12X) is similar to that of the SP3T (SWN-1170-3DT-12X) except that the Insertion Loss may be 0.5dB higher.
- All of the above noted switches are available in either the SWN-1170 or the SWN-1182 mechanical outline as are shown on pages 7 through 9.
- Standard DC Power Supply Voltage and Current Draw is :
 - ± 5 vdc @ + 150 mA - 75 mA for SWN-1170/1182-3DR/T
 - ± 5 vdc @ + 175 mA -100 mA for SWN-1170/1182-4DR/T
 - ± 5 vdc @ + 250 mA -125 mA for SWN-1170/1182-5/6/7DR/T
- AMC Multi-Throw switch designations/Part Numbers are described as follows:
 - SWN-1170 or SWN-1182 : Model Number
 - 3DT or 3DR etc. : Number of Arms and,
: D=Integral Driver
: R=Reflective, T=Terminated(Absorptive)
 - 12X or HPM : Internal AMC design codes

AUGUST 29, 1995



INSERTION LOSS vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES
 INSERTION LOSS vs FREQUENCY

FREQUENCY	0.5	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X	0.87		0.9	1.16	1.34	1.43	1.76	1.95	2.45	2.76	3.28
SWN-1170-4DR-HPM	0.96		0.73	0.93	1.16	1.15	1.34	1.67	1.74	2.04	2.04
SWN-1170-6DR-HPM	0.72		0.9	1.01	1.14	1.4	1.7	1.91	1.95	2.06	2.45
SWN-1170-7DR-HPM	0.59		0.71	1.11		1.74		2.01		2.79	2.84
SWN-1182-7DR-12M-DEC	0.59		0.68	0.9		1.54		1.98		2.89	2.93

ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS
 X AXIS: FREQUENCY AS MEASURED IN GHz
 Y AXIS: INSERTION LOSS AS MEASURED IN dB



ISOLATION vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES
 ISOLATION vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X	86	90	90	92	91	92	95	90	90	90	90	88	80	76	72
SWN-1170-4DR-HPM	94	94	96	96	96	94	94	88	88	74	78	78	74	68	68
SWN-1170-6DR-HPM	88			92			96		94			78			74
SWN-1170-7DR-HPM	76			96			98	94		82		74		64	62
SWN-1182-7DR-12M-DEC	75			88	98		100	80	84	76	84	76	76	72	68

ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS
 X AXIS: FREQUENCY AS MEASURED IN GHz
 Y AXIS: ISOLATION AS MEASURED IN dB



RETURN LOSS vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES
 RETURN LOSS vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X				15.16			34.69	17.92	14.49	21.19	18.37	22.08	15.86	19.14	22.27
SWN-1170-4DR-HPM				13.1			23.76	16.37	14.05	18.92	17.01	13.99	24.17	27.93	14.42
SWN-1170-6DR-HPM				20.01			21.01	27.16	24.54	13.56	12.01	11.07	18.55	15.63	24.03
SWN-1170-7DR-HPM				22.93			21.8	29.68		14.76		17.1		14.68	15.68
SWN-1182-7DR-12M-DEC				26.24			24.62	26.4		14.14		11.7		14.22	15.6

ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS
 X AXIS: FREQUENCY AS MEASURED IN GHZ
 Y AXIS: RETURN LOSS AS MEASURED IN dB



SWITCHING SPEED

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES
 SWITCHING SPEED

SWITCHING SPEED	RISE	FALL	ON	OFF
SWN-1170-3DT-12X	2	3	10	10
SWN-1170-4DR-HPM	4	4	55	35
SWN-1170-6DR-HPM	3	3	45	20
SWN-1170-7DR-HPM	4	4	60	30
SWN-1182-7DR-12M-DEC	2	4	44	33

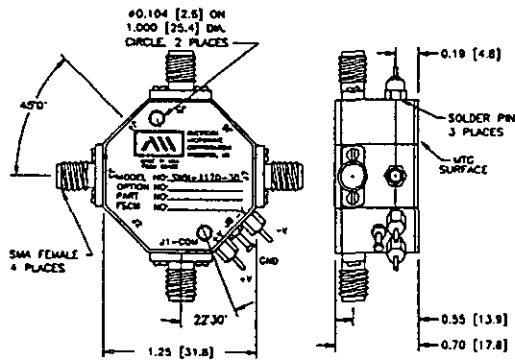
ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS
 SWITCHING SPEED AS MEASURED IN NANoseconds



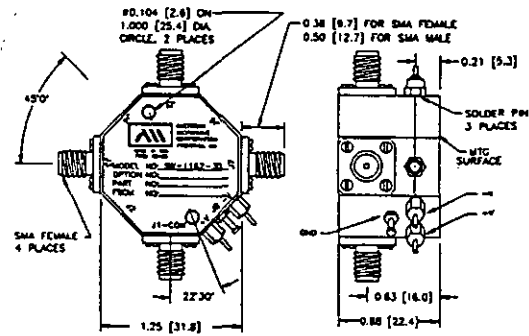
SUMMARY TEST DATA
COMPARISON CHARTS
PAGE : 8

MECHANICAL OUTLINES

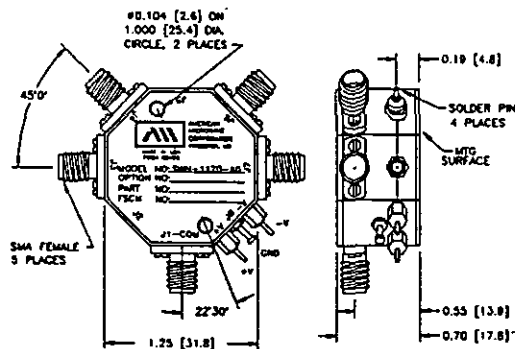
The SWN-1170 and SWN-1182 Series are Radial PIN Diode Switches which are virtually identical in mechanical outline. The Test Data shown in this report is indicative of either design as they may be used interchangeably as requirements demand. The following illustrates the entire SWN-1170 & SWN-1182 series of Radial Multi-Throw PIN Diode Switches.



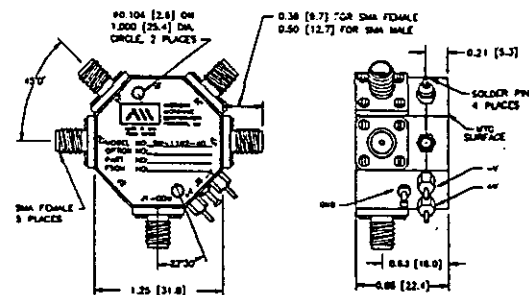
SWN-1170-3DR/DT



SWN-1182-3DR/DT



SWN-1170-4DR/DT

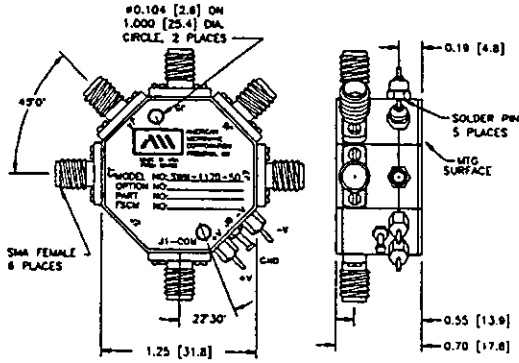


SWN-1182-4DR/DT

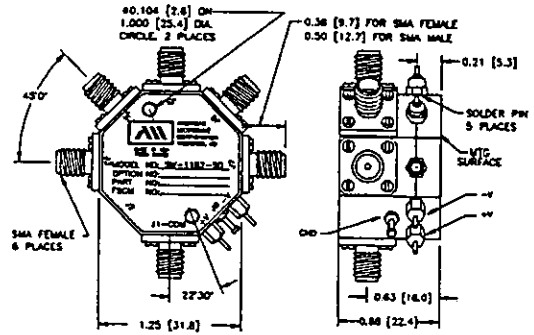


SUMMARY TEST DATA
COMPARISON CHARTS
PAGE : 9

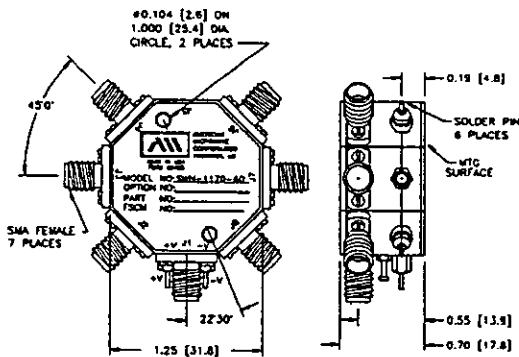
MECHANICAL OUTLINES



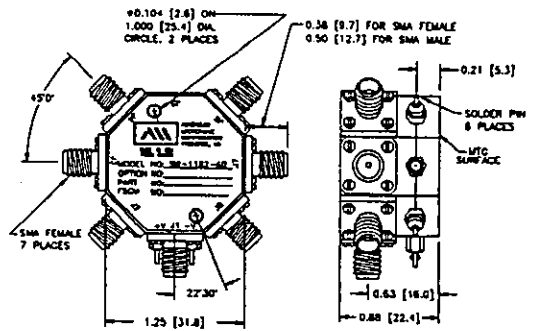
SWN-1170-5DR/DT



SWN-1182-5DR/DT



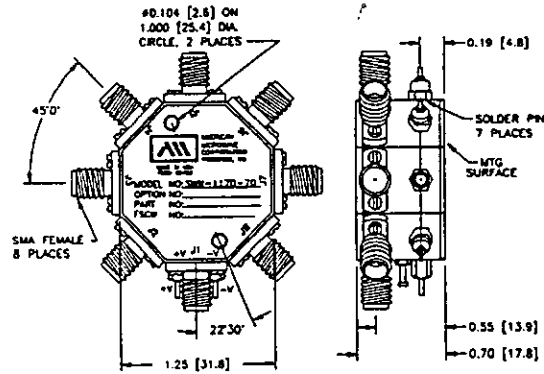
SWN-1170-6DR/DT



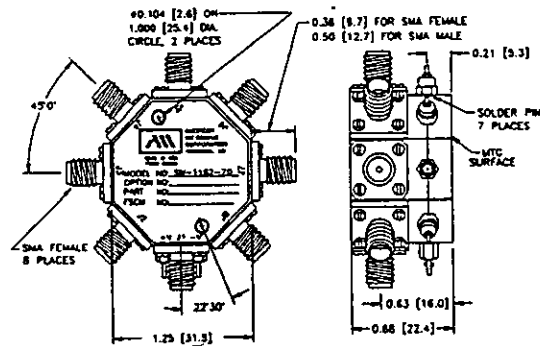
SWN-1182-6DR/DT



MECHANICAL OUTLINES



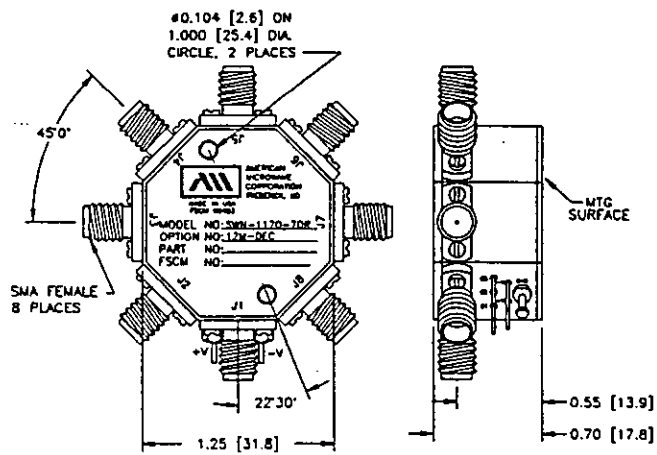
SWN-1170-7DR/DT



SWN-1182-7DR/DT



MECHANICAL OUTLINES



SWN-1170-7DR-12M-DEC



**AMERICAN MICROWAVE
CORPORATION**

DATA SHEETS

ON

**0.5 TO 18 GHZ
(10 MHZ TO 18 GHZ, OPTIONAL)**

LOW LOSS

HIGH SPEED

LOW, MEDIUM, & HIGH POWER

RADIAL

REFLECTIVE & ABSORPTIVE

MULTI-THROW SOLID-STATE SWITCHES

(SP3T, SP4T, SP5T, SP6T, SP7T, & SP8T)

SWN (1 1/4" DIA) AND MSR (1 1/2" DIA) SERIES

DESIGNED

BY

ASH GORWARA, RENE AFABLE, & WAYNE PURDHAM

REPORTS PREPARED

BY

EMILY KING

SEPTEMBER 10, 1997

WEB PAGE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

E-MAIL ADDRESS: AMCPMI@AOL.COM

DRH WP BG

7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



TABLE OF CONTENTS

SECTION PRODUCT DESCRIPTION PAGE

SP3T - SWN (1 1/4" DIA) SERIES

1.0	<u>SP3T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	1-0
1.1	SWN-1140-3DR/DT-STANDARD with Independent Controls	1-1
1.2	SWN-1140-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	1-2
2.0	<u>SP3T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	2-0
2.1	SWN-1170-3DR/DT-STANDARD with Independent Controls	2-1
2.2	SWN-1170-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	2-2
3.0	<u>SP3T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	3-0
3.1	SWN-1182-3DR/DT-STANDARD with Independent Controls	3-1
3.2	SWN-1182-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	3-2

SP3T - MSR (1 1/2" DIA) SERIES

4.0	<u>SP3T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	4-0
4.1	MSR-3DR/DT-04-STANDARD with Independent Controls	4-1
4.2	MSR-3DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins	4-2
5.0	<u>SP3T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	5-0
5.1	MSR-3DR/DT-07-STANDARD with Independent Controls	5-1
5.2	MSR-3DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins	5-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
---------	---------------------	------

SP4T - SWN (1 1/4" DIA) SERIES

6.0	<u>SP4T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	6-0
6.1	SWN-1140-4DR/DT-STANDARD with Independent Controls	6-1
6.2	SWN-1140-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	6-2
7.0	<u>SP4T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	7-0
7.1	SWN-1170-4DR/DT-STANDARD with Independent Controls	7-1
7.2	SWN-1170-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	7-2
8.0	<u>SP4T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	8-0
8.1	SWN-1182-4DR/DT-STANDARD with Independent Controls	8-1
8.2	SWN-1182-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	8-2

SP4T - MSR (1 1/2" DIA) SERIES

9.0	<u>SP4T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	9-0
9.1	MSR-4DR/DT-04-STANDARD with Independent Controls	9-1
9.2	MSR-4DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins	9-2
10.0	<u>SP4T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	10-0
10.1	MSR-4DR/DT-07-STANDARD with Independent Controls	10-1
10.2	MSR-4DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins	10-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
---------	---------------------	------

SP5T - SWN (1 1/4" DIA) SERIES

11.0	<u>SP5T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	11-0
11.1	SWN-1140-5DR/DT-STANDARD with Independent Controls	11-1
11.2	SWN-1140-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	11-2
12.0	<u>SP5T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	12-0
12.1	SWN-1170-5DR/DT-STANDARD with Independent Controls	12-1
12.2	SWN-1170-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	12-2
13.0	<u>SP5T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	13-0
13.1	SWN-1182-5DR/DT-STANDARD with Independent Controls	13-1
13.2	SWN-1182-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	13-2

SP5T - MSR (1 1/2" DIA) SERIES

14.0	<u>SP5T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	14-0
14.1	MSR-5DR/DT-04-STANDARD with Independent Controls	14-1
14.2	MSR-5DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	14-2
15.0	<u>SP5T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	15-0
15.1	MSR-5DR/DT-07-STANDARD with Independent Controls	15-1
15.2	MSR-5DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	15-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
---------	---------------------	------

SP6T - SWN (1 1/4" DIA) SERIES

16.0	<u>SP6T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	16-0
16.1	SWN-1140-6DR/DT-STANDARD with Independent Controls	16-1
16.2	SWN-1140-6DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	16-2
17.0	<u>SP6T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	17-0
17.1	SWN-1170-6DR/DT-STANDARD with Independent Controls	17-1
17.2	SWN-1170-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	17-2
18.0	<u>SP6T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	18-0
18.1	SWN-1182-6DR/DT-STANDARD with Independent Controls	18-1
18.2	SWN-1182-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	18-2

SP6T - MSR (1 1/2" DIA) SERIES

19.0	<u>SP6T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	19-0
19.1	MSR-6DR/DT-04-STANDARD with Independent Controls	19-1
19.2	MSR-6DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	19-2
20.0	<u>SP6T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	20-0
20.1	MSR-6DR/DT-07-STANDARD with Independent Controls	20-1
20.2	MSR-6DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	20-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
---------	---------------------	------

SP7T - SWN (1 1/4" DIA) SERIES

21.0	<u>SP7T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	21-0
21.1	SWN-1140-7DR/DT-STANDARD with Independent Controls	21-1
21.2	SWN-1140-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	21-2
22.0	<u>SP7T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	22-0
22.1	SWN-1170-7DR/DT-STANDARD with Independent Controls	22-1
22.2	SWN-1170-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	22-2
23.0	<u>SP7T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	23-0
23.1	SWN-1182-7DR/DT-STANDARD with Independent Controls	23-1
23.2	SWN-1182-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	23-2

SP7T - MSR (1 1/2" DIA) SERIES

24.0	<u>SP7T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	24-0
24.1	MSR-7DR/DT-04-STANDARD with Independent Controls	24-1
24.2	MSR-7DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	24-2
25.0	<u>SP7T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	25-0
25.1	MSR-7DR/DT-07-STANDARD with Independent Controls	25-1
25.2	MSR-7DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	25-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
<u>SP8T - MSR (1 1/2" DIA) SERIES</u>		
26.0	<u>SP8T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	26-0
26.1	MSR-8DR/DT-04-STANDARD with Independent Controls	26-1
26.2	MSR-8DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	26-2
27.0	<u>SP8T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	27-0
27.1	MSR-8DR/DT-07-STANDARD with Independent Controls	27-1
27.2	MSR-8DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	27-2



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
1.0	<u>SP3T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	1-0
1.1	SWN-1140-3DR/DT-STANDARD with Independent Controls	1-1
1.2	SWN-1140-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	1-2

REVISIONS				
LO#	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

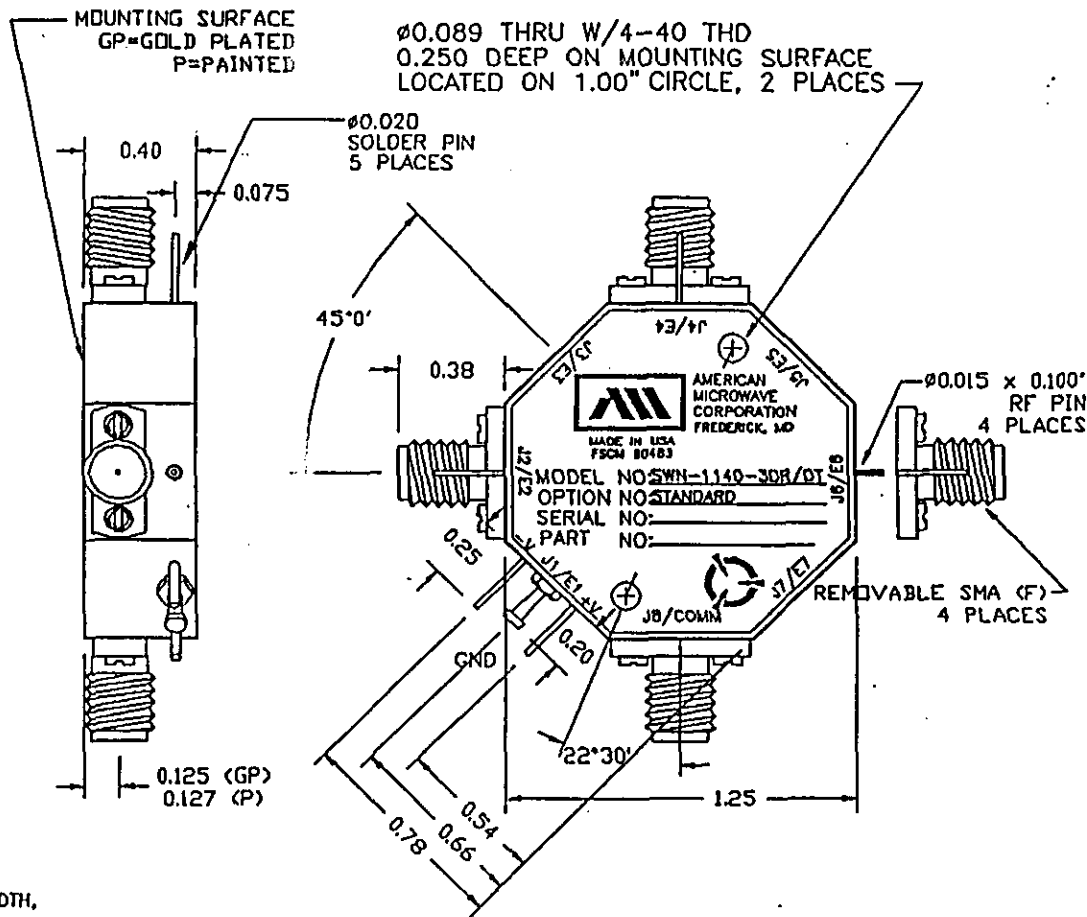
- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION
 - B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE	OUTLINE DRAWING	
DRAWN WSP	8/12/97	SWN-1140-3DR/DT-STANDARD		
CHECKED L. N. Goble	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
REV. A	SIZE A	FSCM NO. 60483	DWG NO. 100-4164-1	REV. A
SCALE N/S		1 of 1		

REVISIONS			DATE	APPROVED
TORE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 2.75db
 ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 50db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 150 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

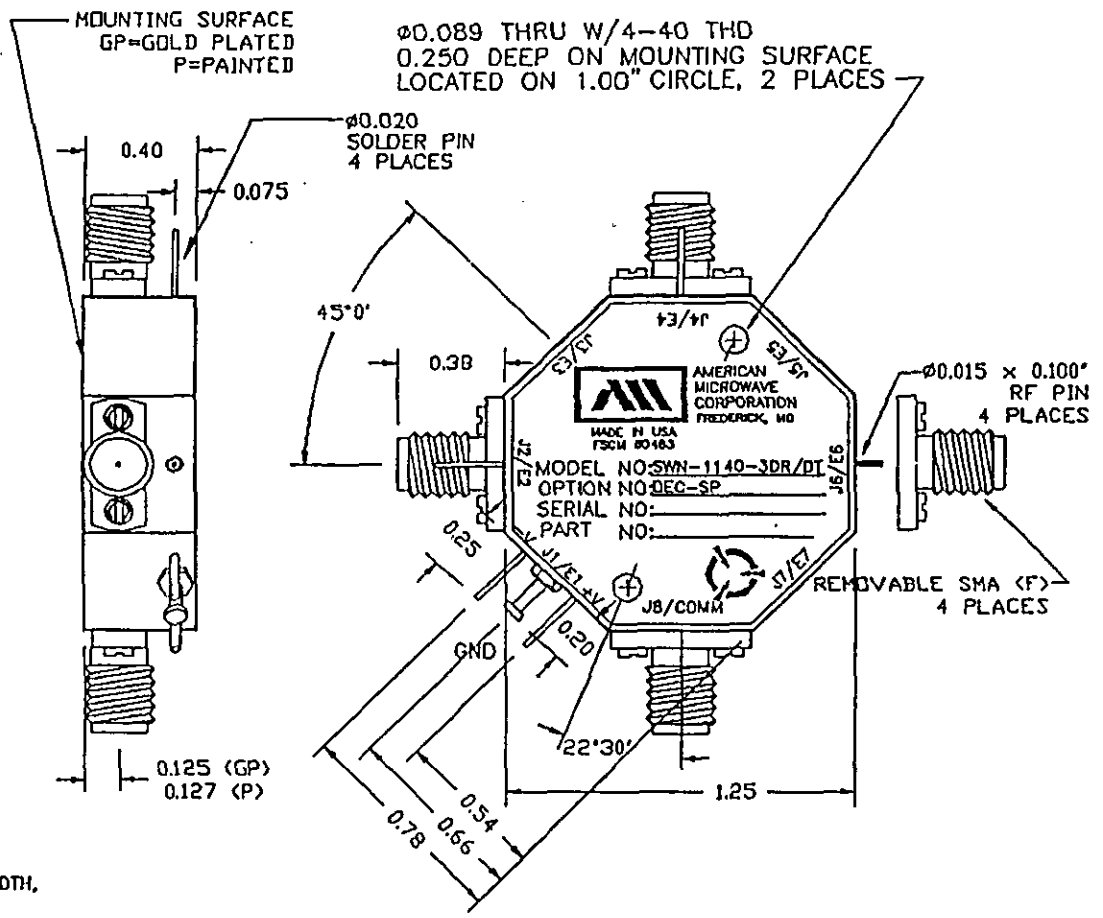
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION
 - B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN	8/12/97	OUTLINE DRAWING		
CHECKED	11/7/97	SWN-1140-3DR/DT-DEC-SP		
REV. 0		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SCALE N/S		SIZE	FIG. NO.	REV.
		A	60483	A
		DWG. NO.		
		100-4164-2		
		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
2.0	<u>SP3T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	2-0
2.1	SWN-1170-3DR/DT-STANDARD with Independent Controls	2-1
2.2	SWN-1170-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	2-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

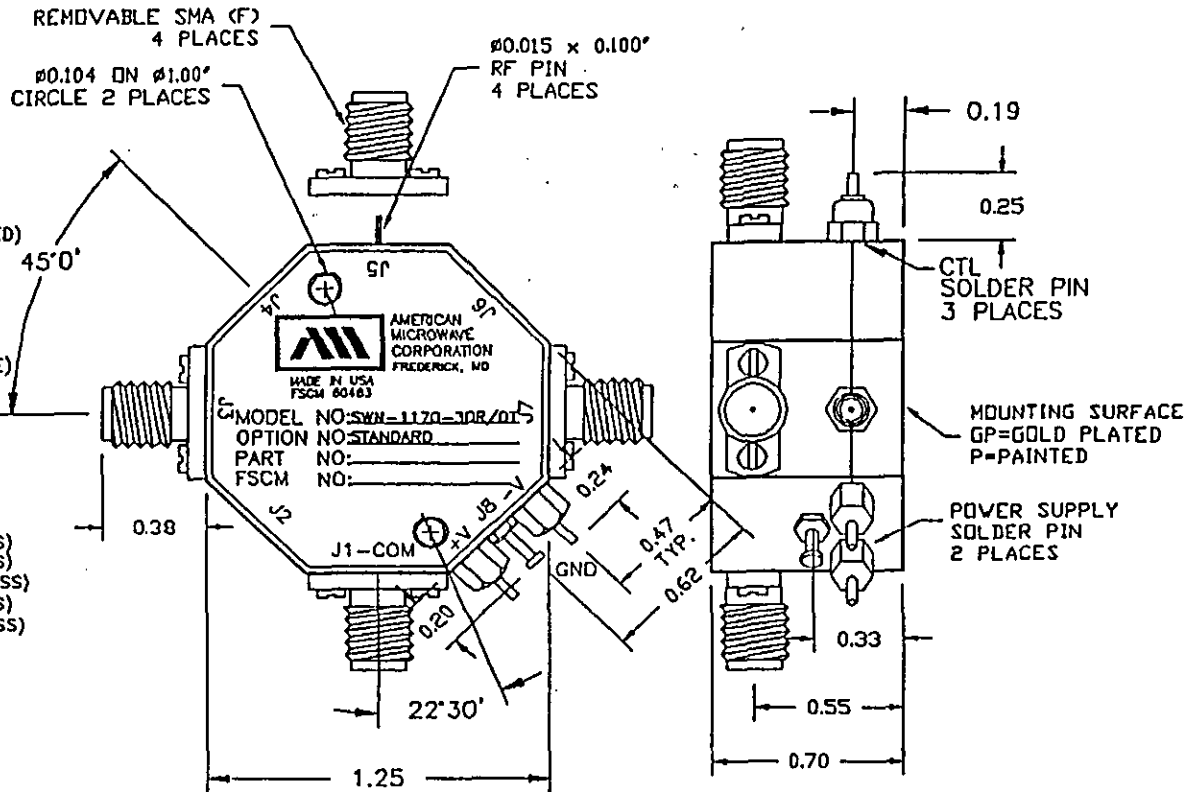
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	8/11/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRWN W/SJP	8/11/97	OUTLINE DRAWING		
CHECKED L. H. J. [Signature]	11/7/97	SWN-1170-3DR/DT-STANDARD		
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE A	FSCM NO. 60483	DWG NO. 100-4171-1	REV. A	
SCALE N/S		SHEET 1 of 1		

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ .75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

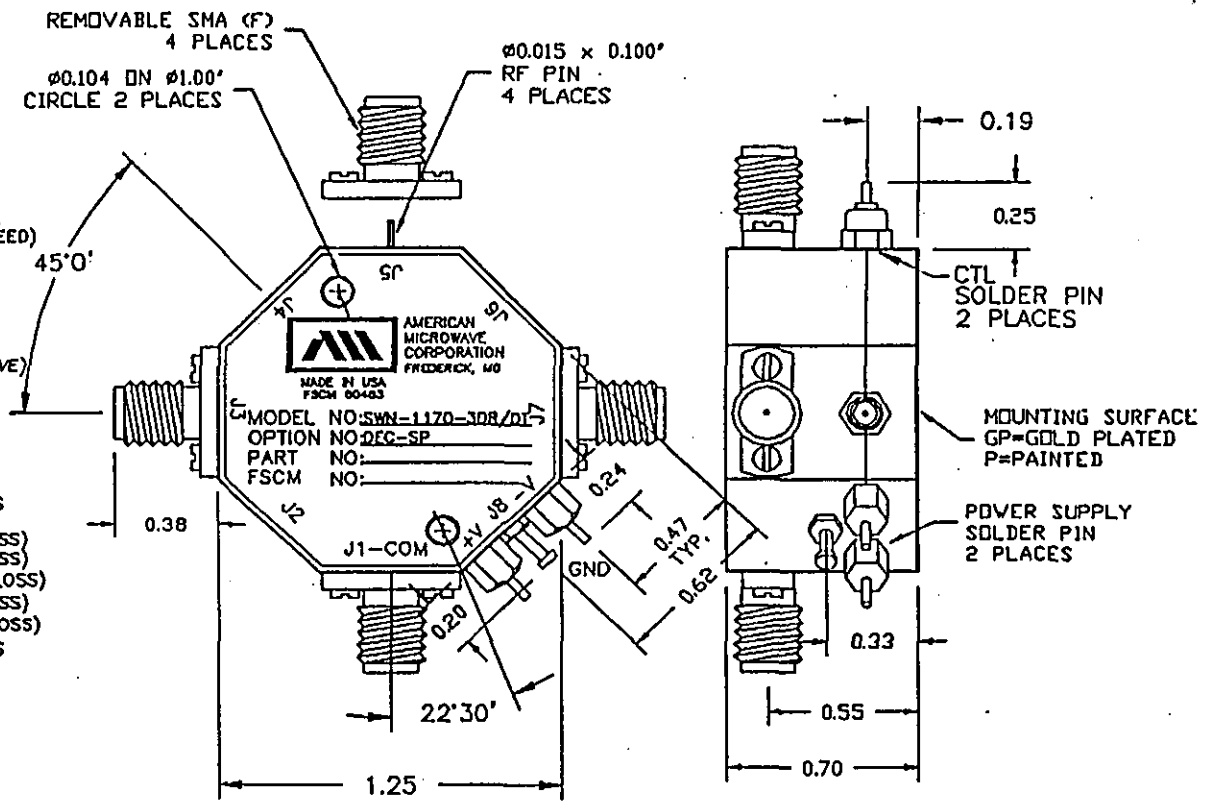
OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 165C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

REV.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	8/11/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WSP	8/11/97	SWN-1170-3DR/DT-DEC-SP	
CHECKED R. J. ...	10/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
ISSUED		SIZE A	FSCM NO. 60483
		DWG NO. 100-4171-2	REV. A
		SCALE N/S	1 of 1

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REV. SION

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
3.0	<u>SP3T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	3-0
3.1	SWN-1182-3DR/DT-STANDARD with Independent Controls	3-1
3.2	SWN-1182-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	3-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 2.75db
 ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 150 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
 DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

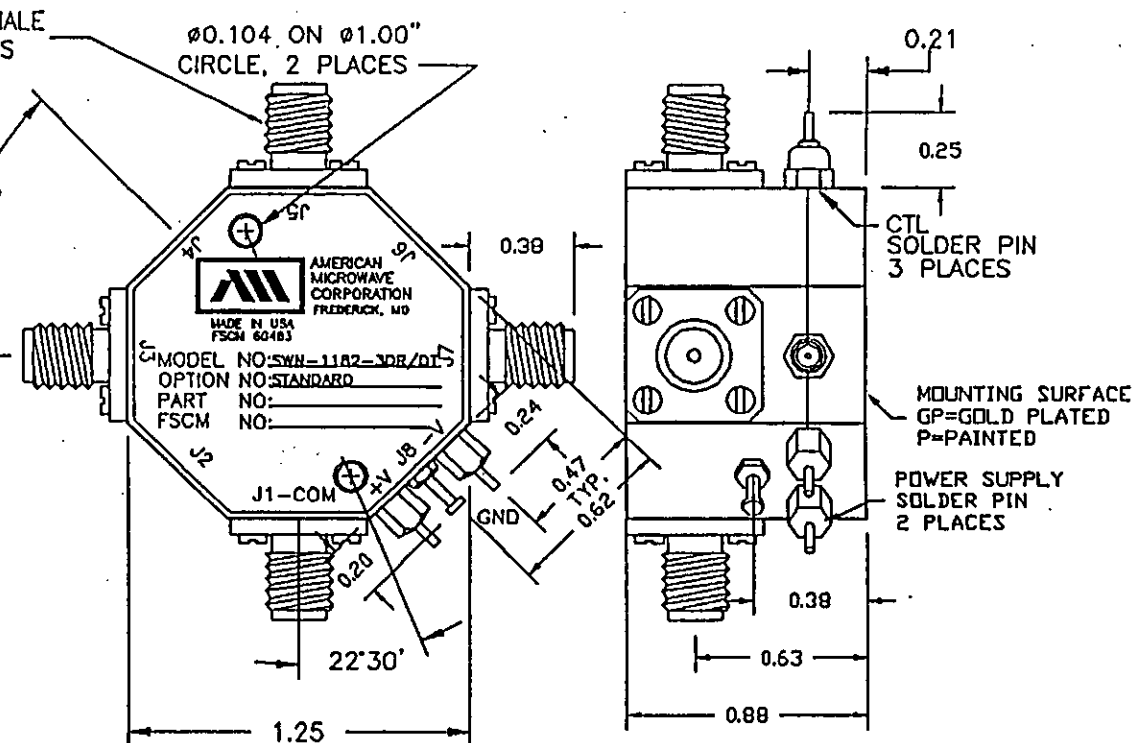
ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE	8/11/97

SMA FEMALE
 4 PLACES

Ø0.104 ON Ø1.00"
 CIRCLE, 2 PLACES

45°0'



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WSP	8/11/97	OUTLINE DRAWING	
CHECKED C. Afalle	11/7/97	SWN-1182-3DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
ISSUED 1		SIZE A	FSCM NO. 60483
		DRG NO. 100-4181-1	REV. A
		SCALE N/S	1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.70" THICK VERSION

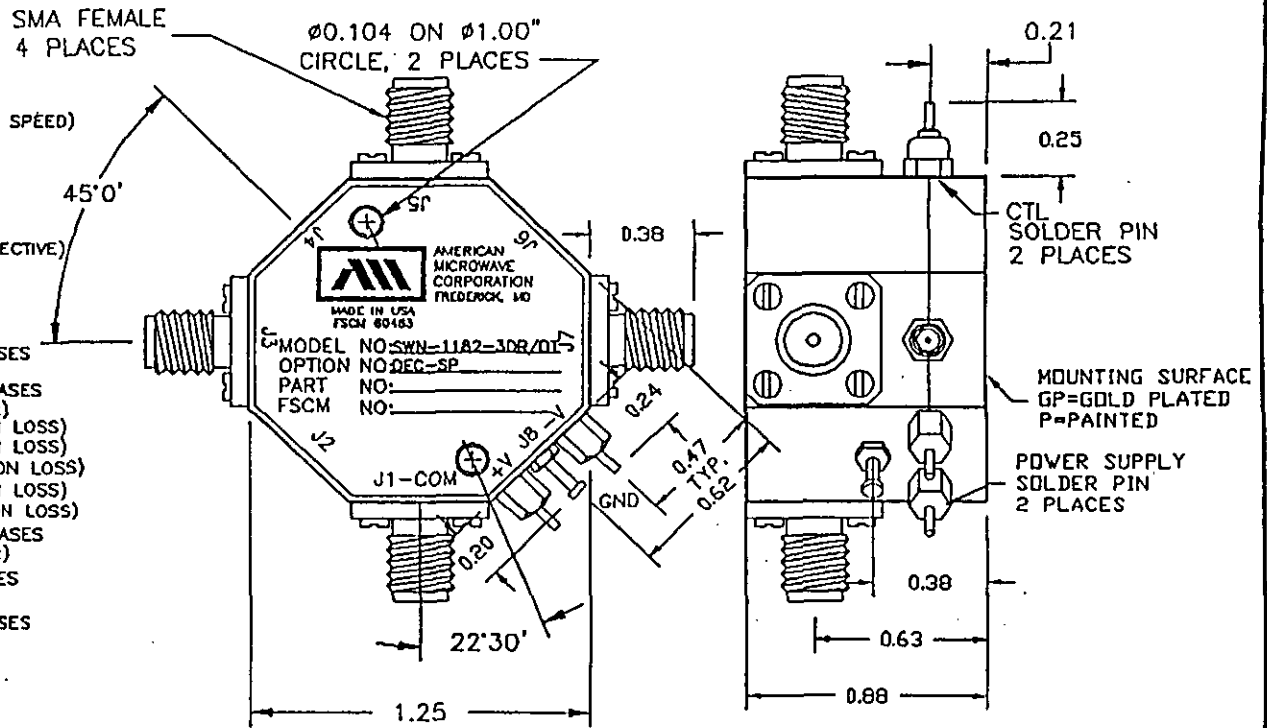
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/11/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN	8/11/97	OUTLINE DRAWING		
CHECKED	11/7/97	SWN-1182-3DR/DT-DEC-SP		
DESIGNED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE		
		RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	DWG NO.	REV.	
A	60483	100-4181-2	A	
SCALE N/S		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
4.0	<u>SP3T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	4-0
4.1	MSR-3DR/DT-04-STANDARD with Independent Controls	4-1
4.2	MSR-3DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins	4-2

REVISIONS			DATE	APPROVED
FORM	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/13/97	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

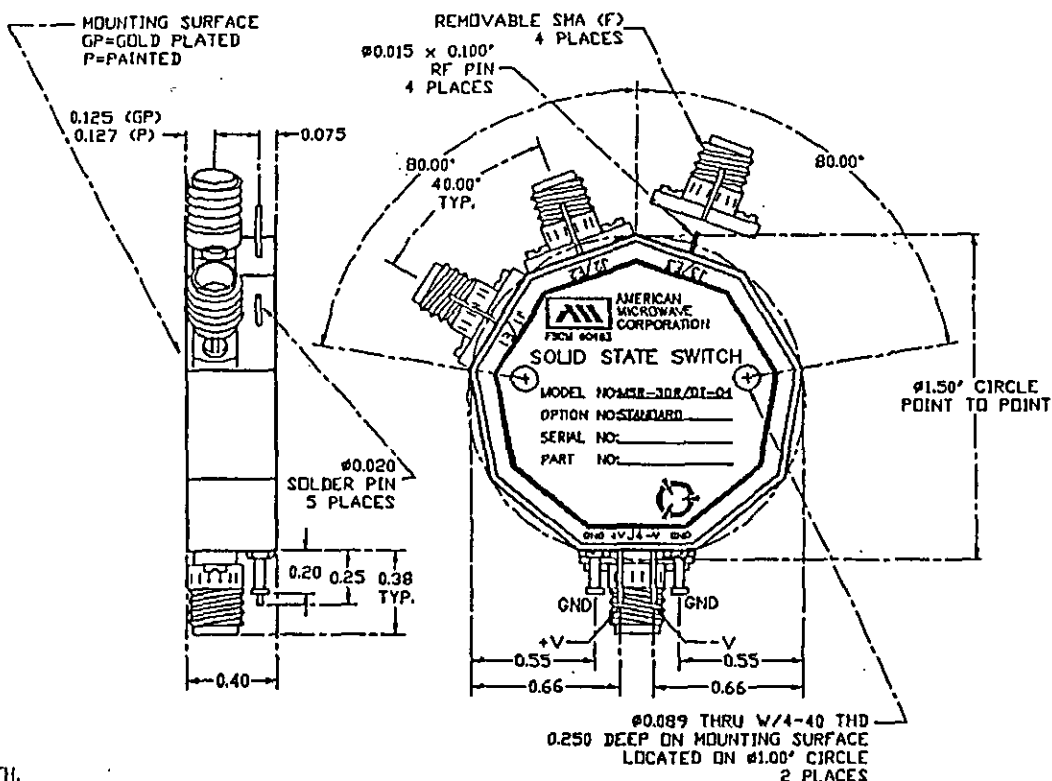
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B
- SHOCK: MIL-STD-202F, METHOD 2138 COND. B
- VIBRATION: MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE: MIL-STD-202F, METHOD 1050 COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WJP	8/13/97	OUTLINE DRAWING	
CHECKED R. Mable	11/7/97	MSR-3DR/DT-04-STANDARD	
RELEASED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FORM NO.	DWG NO.	REV.
A	60483	100-4186-1	A
SCALE	N/S	SHEET 1 of 1	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 150 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

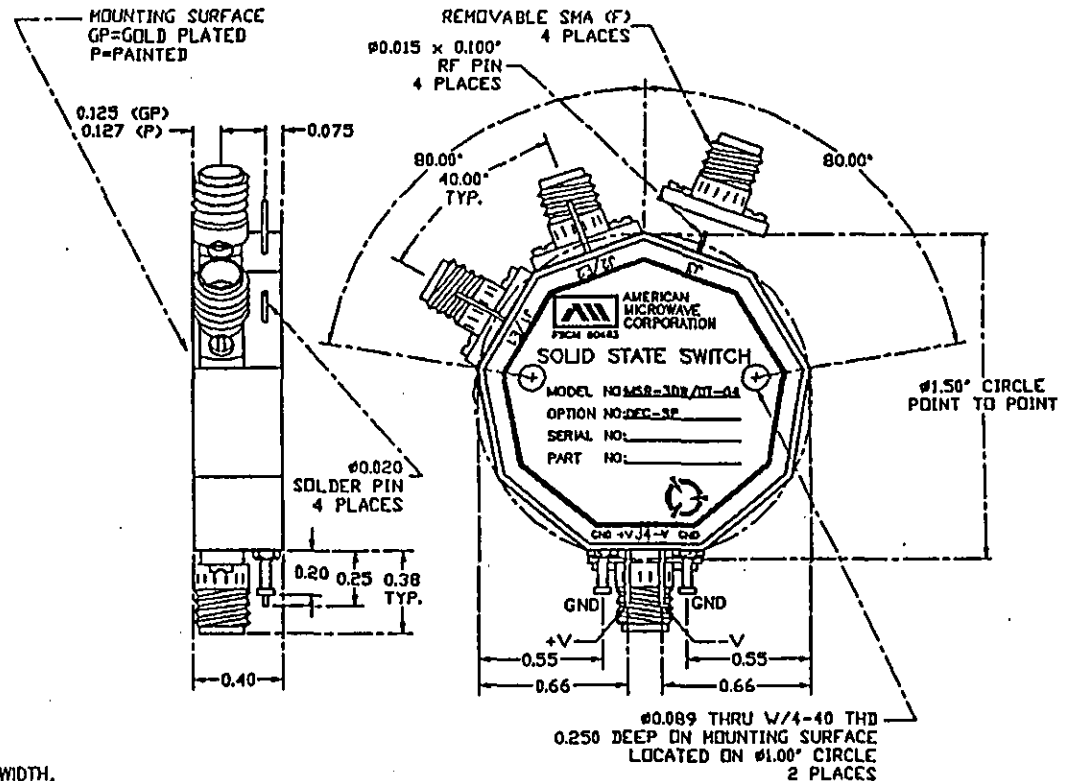
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/15/97	A	ORIGINAL RELEASE	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WSP	8/15/97	OUTLINE DRAWING MSR-3DR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED R. M. J.	11/7/97	SIZE	REV.
ISSUED		A	A
SCALE N/S		FRCH NO. 60483	DWG NO. 100-4186-2
		SHEET 1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
5.0	<u>SP3T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	5-0
5.1	MSR-3DR/DT-07-STANDARD with Independent Controls	5-1
5.2	MSR-3DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins	5-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION

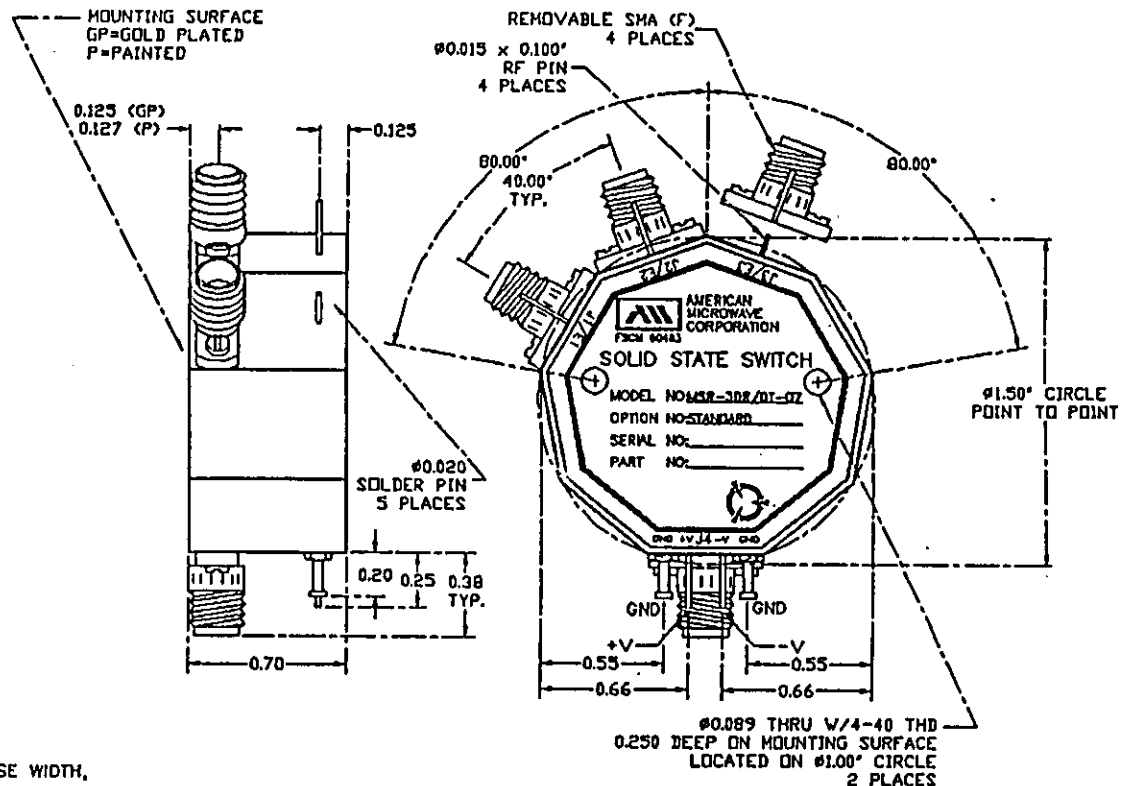
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS		TITLE OUTLINE DRAWING		
DATE		MSR-3DR/DT-07-STANDARD		
DRAWN		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE		
CHECKED		SOLID STATE SWITCH		
DATE		SIZE	FSCM NO.	DWG NO.
		A	60483	100-4192-1
		SCALE N/S		REV. A
				1 of 1

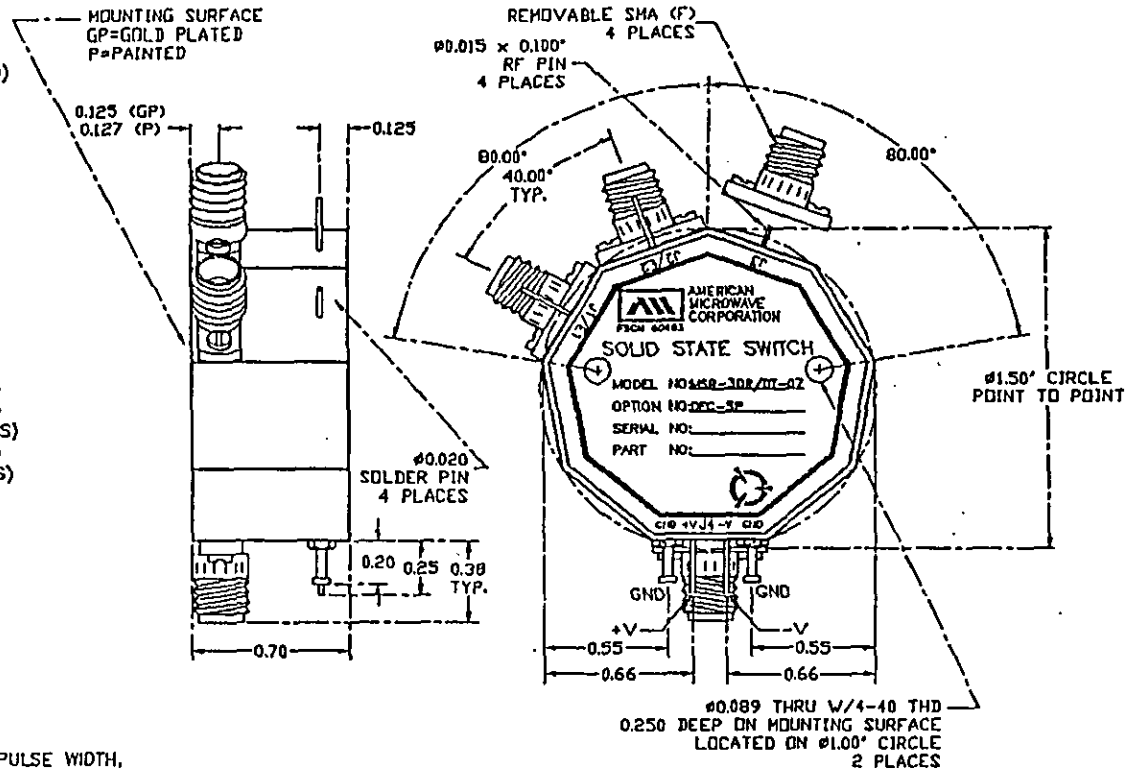
REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/13/97	A	ORIGINAL RELEASE	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsdc MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WSP	8/13/97	OUTLINE DRAWING MSR-3DR/DT-07-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED M. J. [Signature]	4/7/97	SIZE	REV.
ISSUED		A 60483	A
		DWG NO. 100-4192-2	
		SCALE N/S	SHEET 1 of 1

5-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
6.0	<u>SP4T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	6-0
6.1	SWN-1140-4DR/DT-STANDARD with Independent Controls	6-1
6.2	SWN-1140-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	6-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
 ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION
 - B12 0.88" THICK VERSION

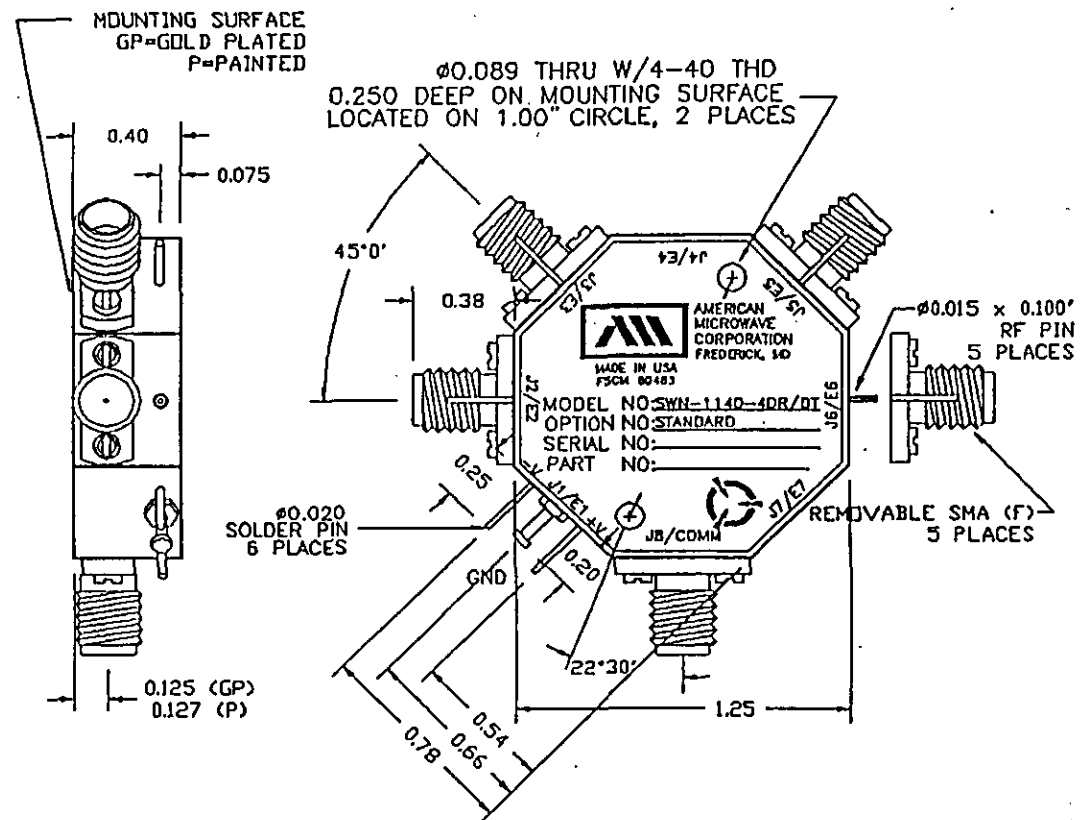
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 XXX ±0.020
 XXXX ±0.010

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/12/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: <i>WSP</i> CHECKED: <i>P. J. J. J.</i> ISSUED: <i>P. J. J. J.</i>	8/12/97 11/7/97	OUTLINE DRAWING SWN-1140-4DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FORM NO.	DWG NO.	REV.	
A	60483	100-4163-1	A	
SCALE N/S		SHEET 1 of 1		

6-1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/18/97	

SPECIFICATIONS:

- FREQUENCY:** 0.5 GHz TO 18 GHz
- INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT:** (CW)+20dbm (STANDARD), +10 dbm (HIGH SPEED)
- SURVIVAL POWER:** -1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

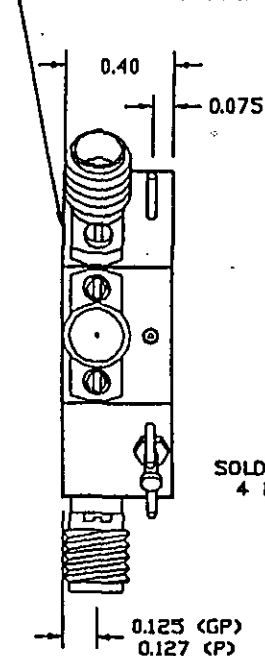
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDED BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

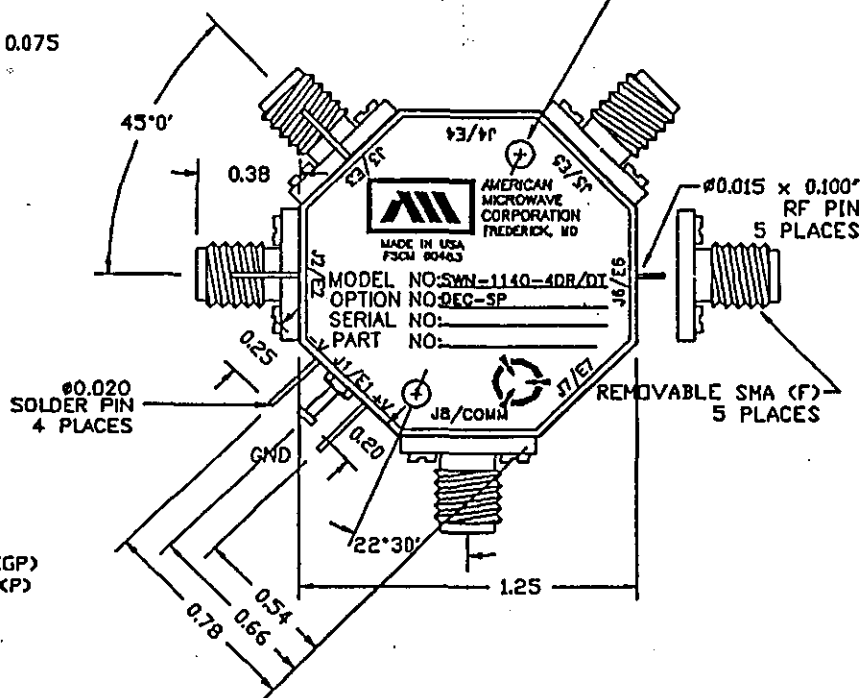
- TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D CONC. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

MOUNTING SURFACE
GP=GOLD PLATED
P=PAINTED



Ø0.089 THRU W/4-40 THD
0.250 DEEP ON MOUNTING SURFACE
LOCATED ON 1.00" CIRCLE, 2 PLACES



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING		
DRAWN WSP	8/12/97	SWN-1140-4DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
CHECKED P. H. J.	11/7/97	SIZE / FSCM NO. A 60483	QWG NO. 100-4163-2	REV. A
ISSUED		SCALE N/S	SHEET 1 of 1	

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

7.0	<u>SP4T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	7-0
7.1	SWN-1170-4DR/DT-STANDARD with Independent Controls	7-1
7.2	SWN-1170-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	7-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: . . . REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: . . . 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

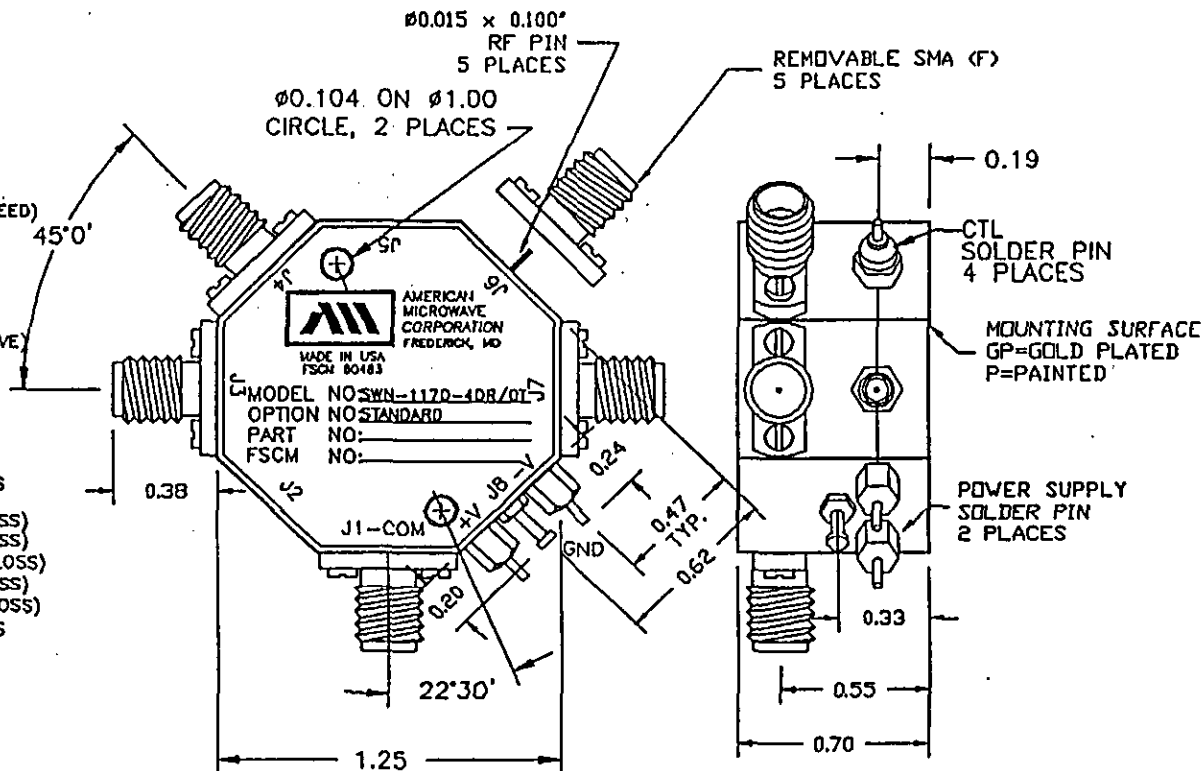
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING		
DRAWN <i>WSP</i>	8/12/97	SWN-1170-4DR/DT-STANDARD		
CHECKED <i>C. M. J.</i>	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
ISSUED		SIZE A	FSCM NO. 60483	DWG NO. 100-4172-1
		SCALE N/S		REV. A
				SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.0db
 ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 200 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.88" THICK VERSION

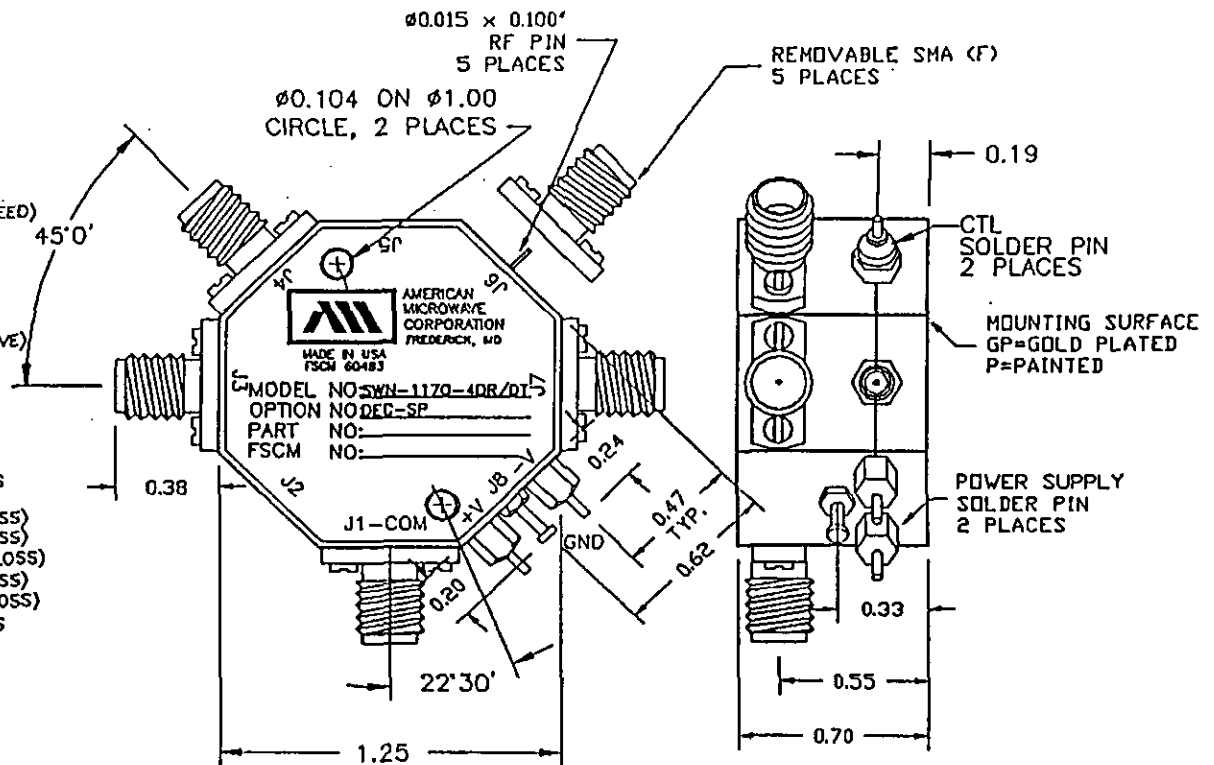
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVAL	DATE	TITLE OUTLINE DRAWING		
DRAWN WYP	8/12/97	SWN-1170-4DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
CHECKED L. H. J. [Signature]	11/9/97	SIZE A	FSCM NO. 60483	DWG NO. 100-4172-2
REVISED		SCALE N/S		REV. A
				SHEET 1 of 1

7-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
8.0	<u>SP4T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	8-0
8.1	SWN-1182-4DR/DT-STANDARD with Independent Controls	8-1
8.2	SWN-1182-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	8-2

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/11/97	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.0db
..... ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 50db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY DN: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 200 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

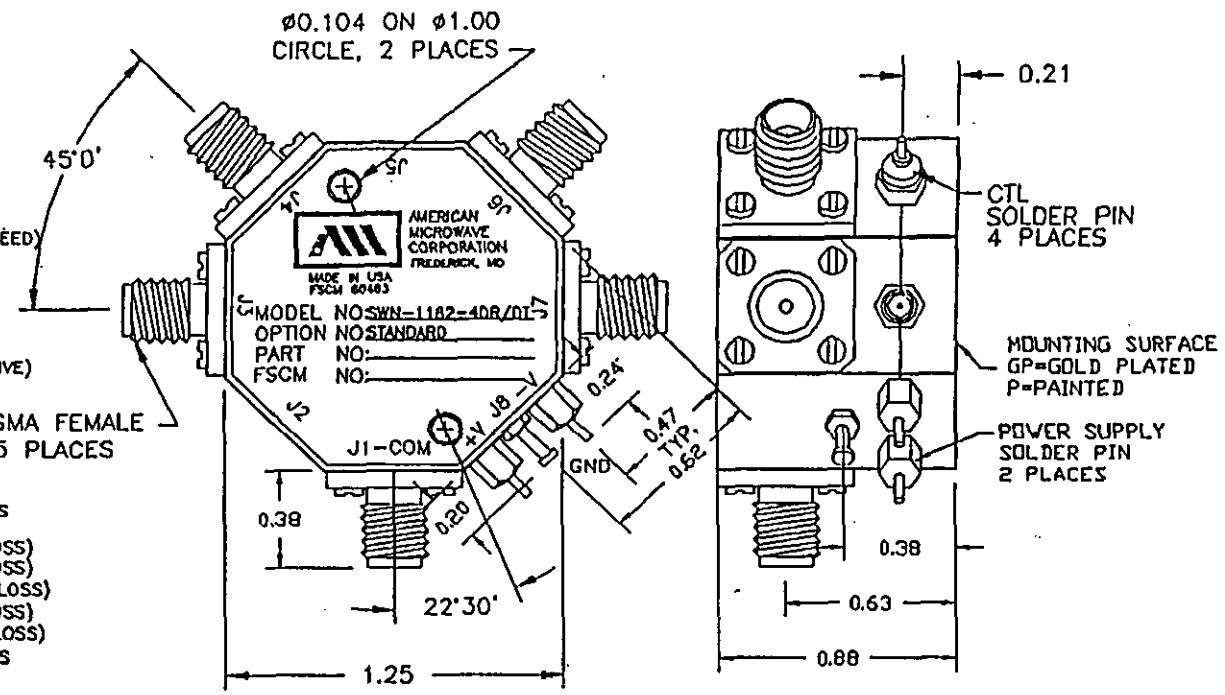
OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING		
DRAWN WSP	8/11/97	SWN-1182-4DR/DT-STANDARD		
CHECKED R. A. [Signature]	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
ISSUED	SIZE A	FSCM NO. 60483	DMC NO. 100-4182-1	REV. A
SCALE N/S		SHEET 1 of 1		

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
 ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 80db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** -1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

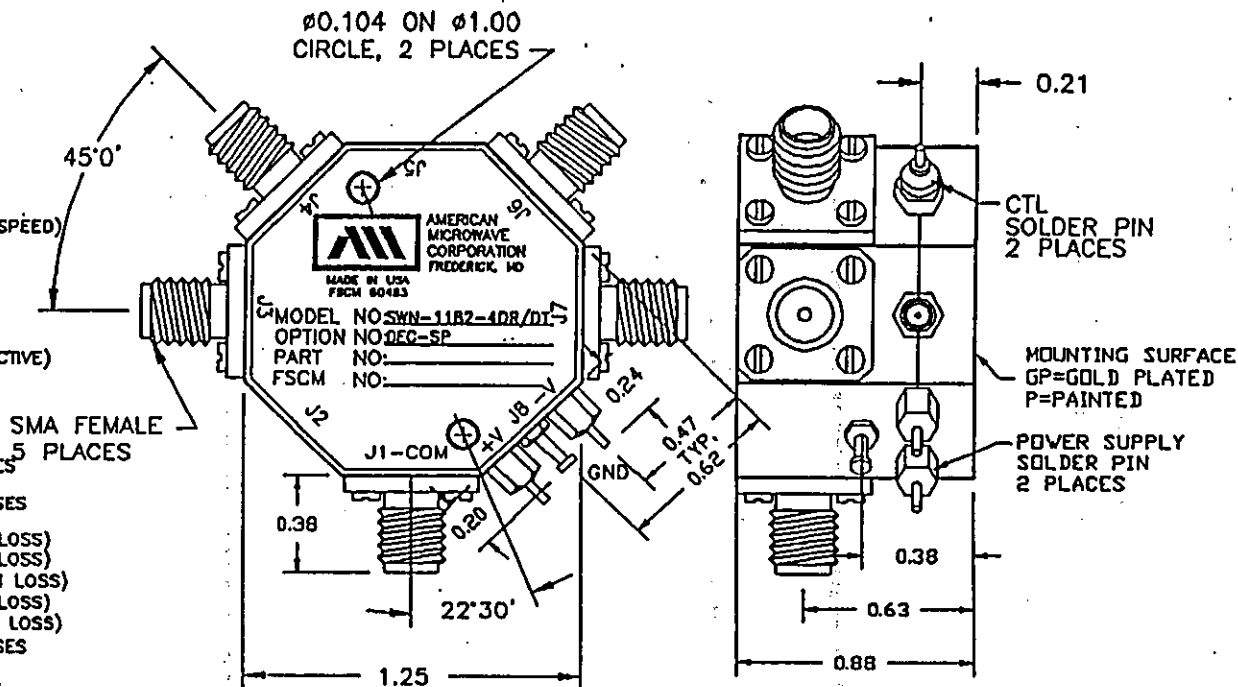
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/11/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: WJS CHECKED: R. Nolle ISSUED:	8/11/97 11/7/97	OUTLINE DRAWING SWN-1182-4DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	QWC NO.	REV.	
A	60483	100-4182-2	A	
SCALE N/S		1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
9.0	<u>SP4T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	9-0
9.1	MSR-4DR/DT-04-STANDARD with Independent Controls	9-1
9.2	MSR-4DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins	9-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1Q20 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

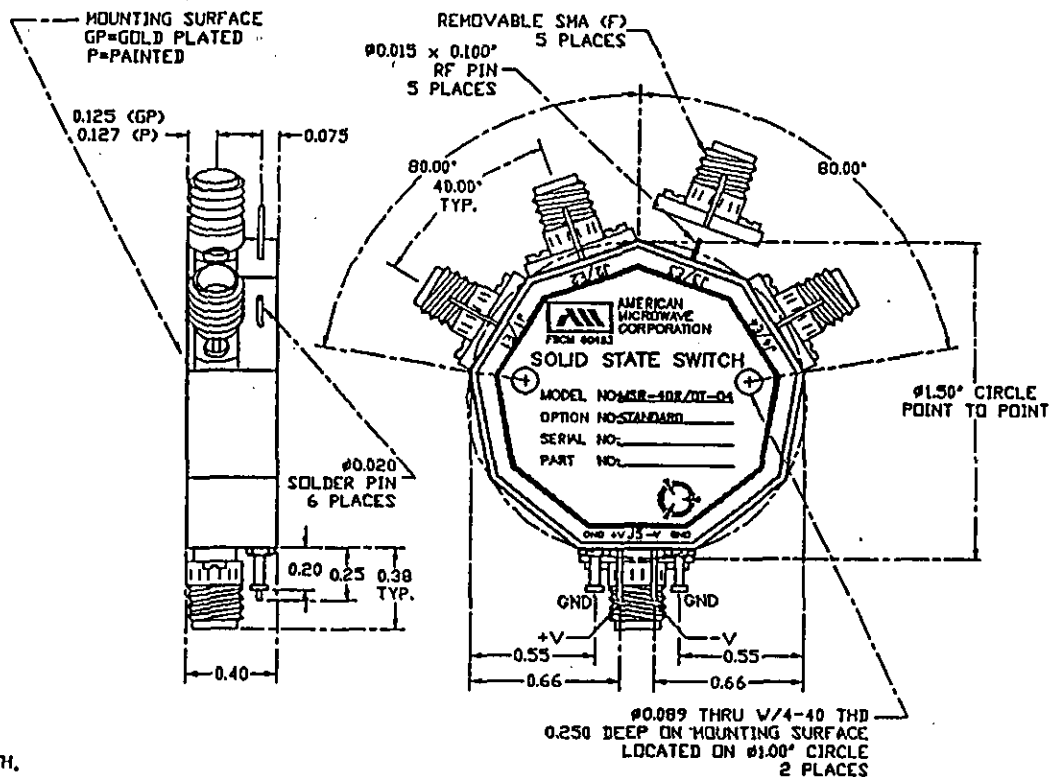
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				DATE	APPROVED
ITER	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE		8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	8/13/97	OUTLINE DRAWING MSR-4DR/DT-04-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED	11/7/97	SIZE	REV.
DESIGNED		A 60483	A
		SCALE N/S	1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

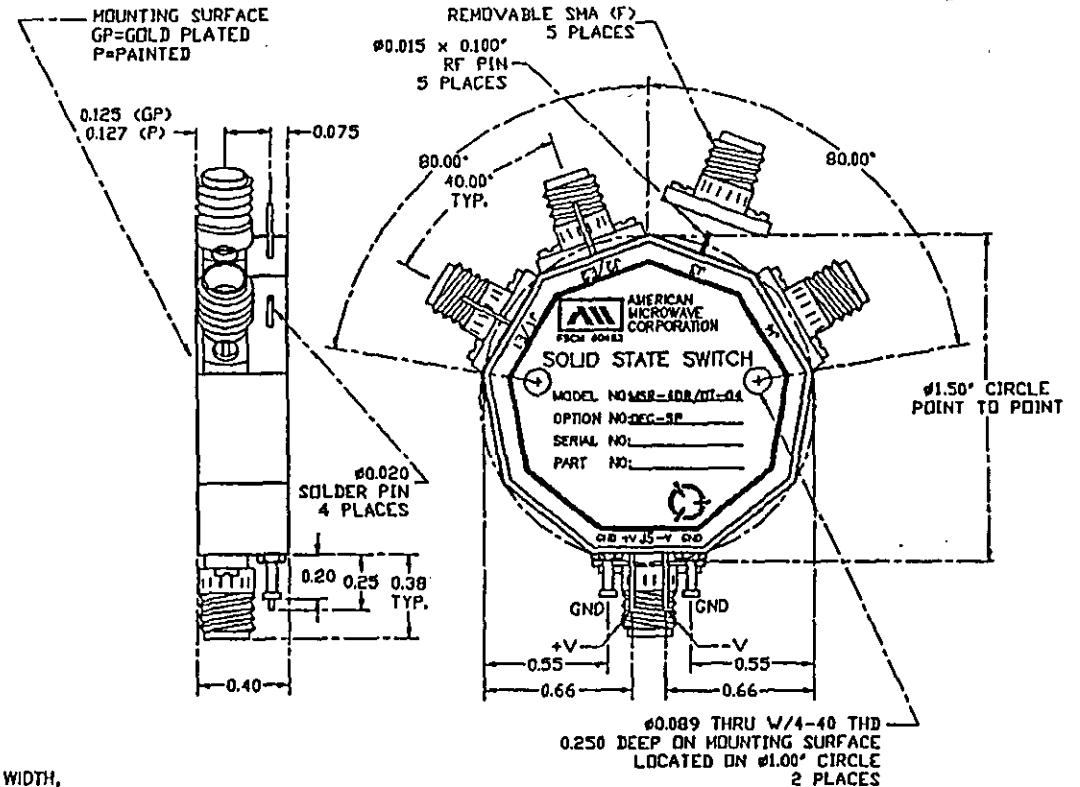
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

9-2

REVISIONS			DATE	APPROVED
DATE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/19/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN WSP	8/19/97	OUTLINE DRAWING MSR-4DR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
CHECKED R. Ayable	11/7/97	SIZE	FIG. NO.	ENG. NO.
ISSUED		A	60483	100-4187-2
		SCALE	N/S	SHEET 1 of 1
				REV. A

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
10.0	<u>SP4T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	10-0
10.1	MSR-4DR/DT-07-STANDARD with Independent Controls	10-1
10.2	MSR-4DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins	10-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
..... ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 uscc
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
..... -5V @ 75mA MAX.(RELECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 801 -12V POWER SUPPLIES
 - 802 -15V POWER SUPPLIES
 - 803 REVERSE LOGIC "1"=DN "0"=OFF
 - 804 DRIVERLESS, CURRENT CONTROLLED
 - 805 HIGH SPEED, TURNON/TURNOFF 25 nsec. MAXIMUM WHEN APPLICABLE
 - 808 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - 807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - 809 LOW INSERTION LOSS VERSION
 - 810 HIGHER ISOLATION VERSION
 - 811 0.40" THICK VERSION

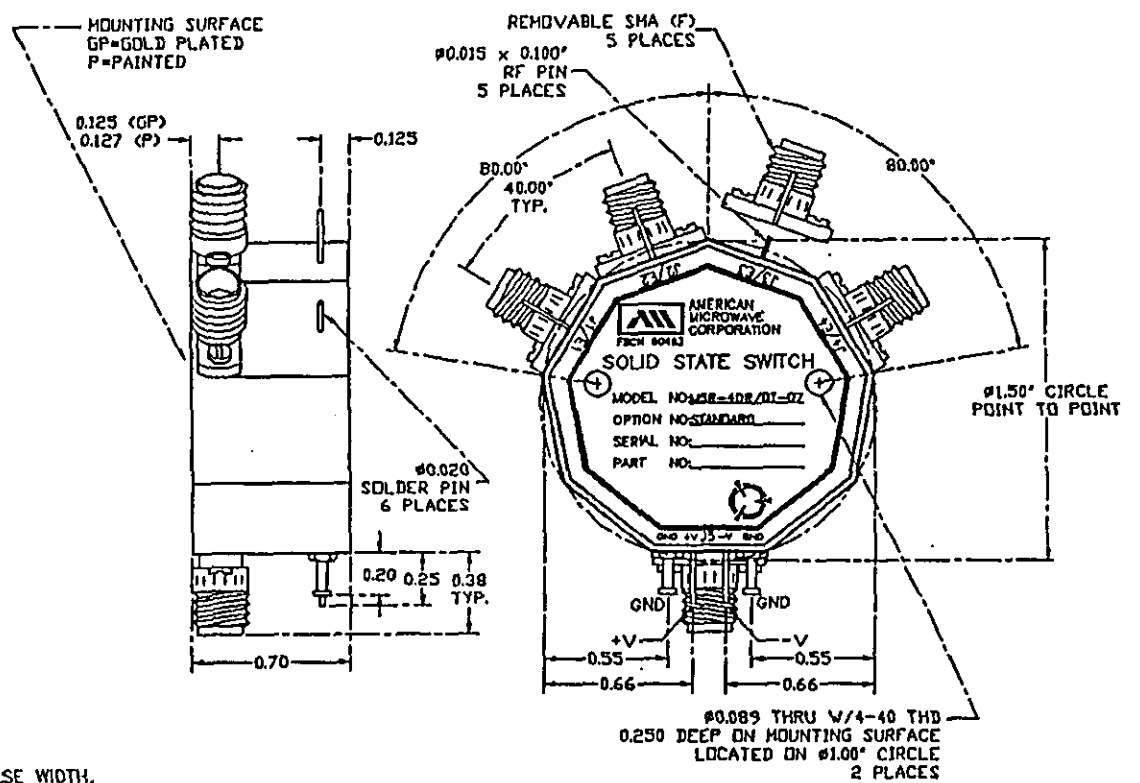
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-4DR/DT-07-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN WJSP	8/13/97	SIZE A	F3CM NO. 60483	DWG NO. 100-4193-1
CHECKED K. H. [Signature]	11/7/97	SCALE N/S	REV. A	
SHEET		SHEET 1 of 1		

10-1

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/15/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NOI.-REFLECTIVE)

OPTIONS:

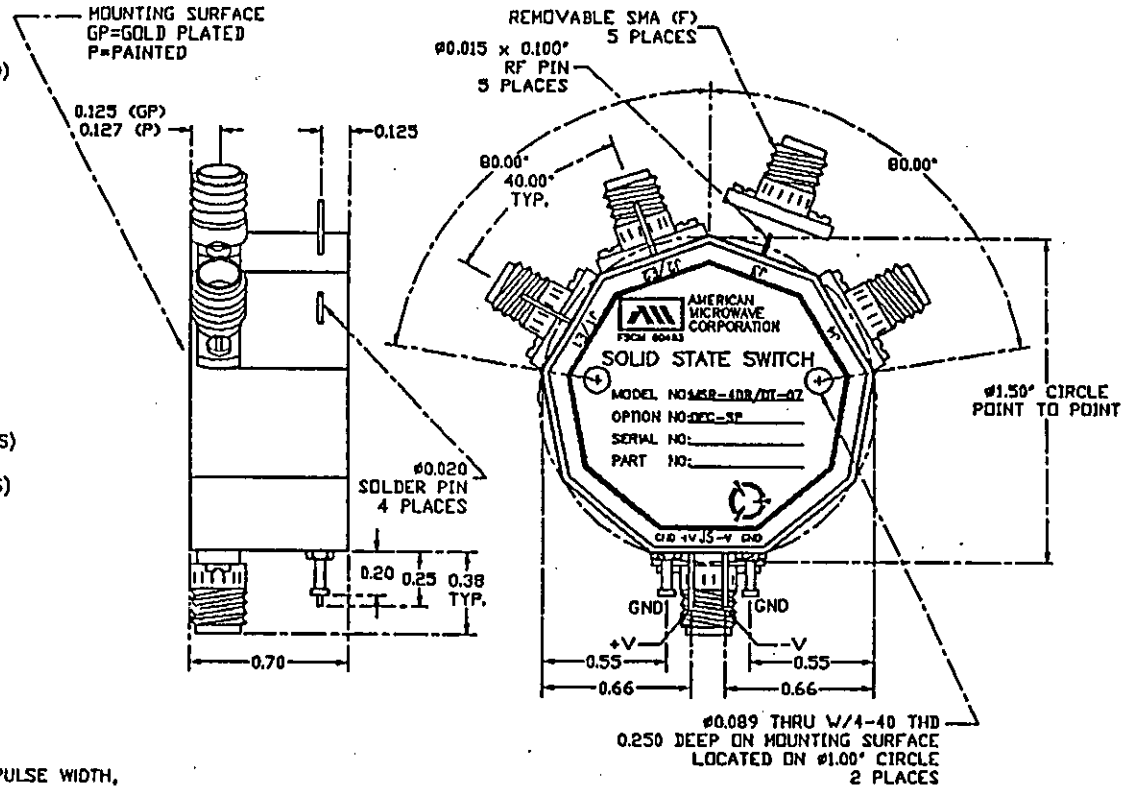
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 1070 COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	8/15/97	OUTLINE DRAWING MSR-4DR/DT-07-DEC-SP	
CHECKED	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
ISSUED		SIZE	REV.
		A	A
		100-4193-2	
		SCALE N/S	SHEET 1 of 1

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.25db
..... ABSORPTIVE: 4.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** -1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 250 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

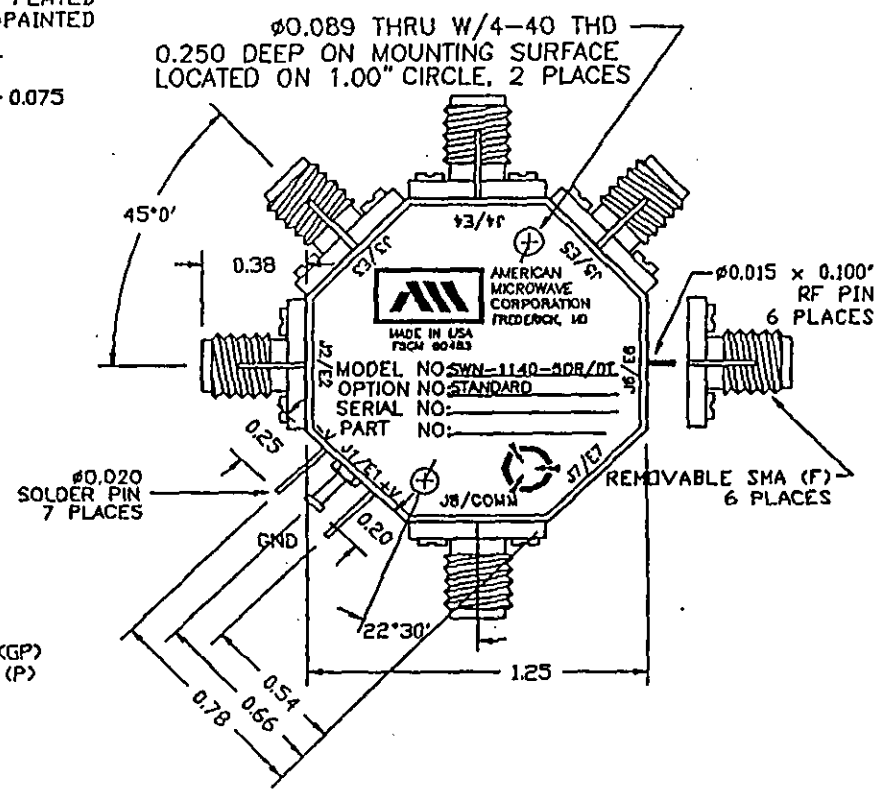
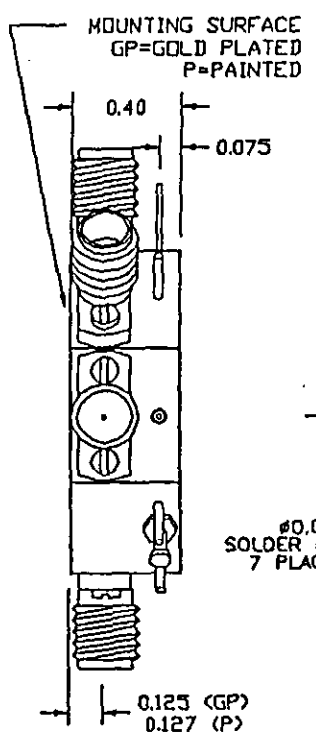
OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING		
DRAWN WSP	8/12/97	SWN-1140-5DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
CHECKED L. Mohr	11/7/97	SIZE A	FORM NO. 60483	QWC NO. 100-4168-1
ISSUED		SCALE N/S	SHEET 1 of 1	REV. A

1-11

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
11.0	<u>SP5T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	11-0
11.1	SWN-1140-5DR/DT-STANDARD with Independent Controls	11-1
11.2	SWN-1140-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	11-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION
- B12 0.88" THICK VERSION

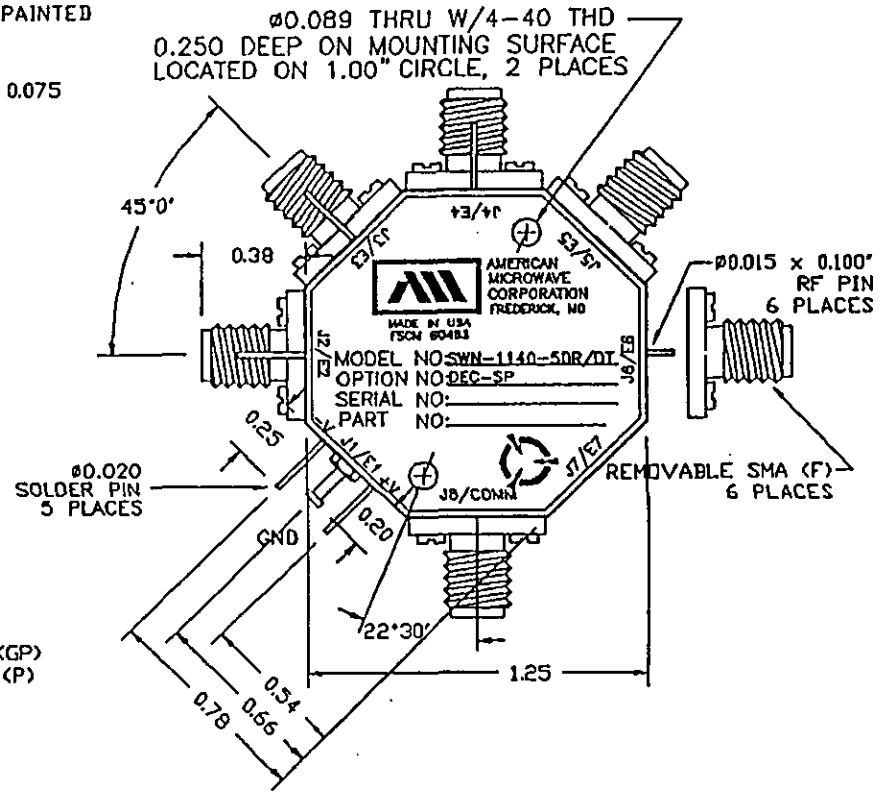
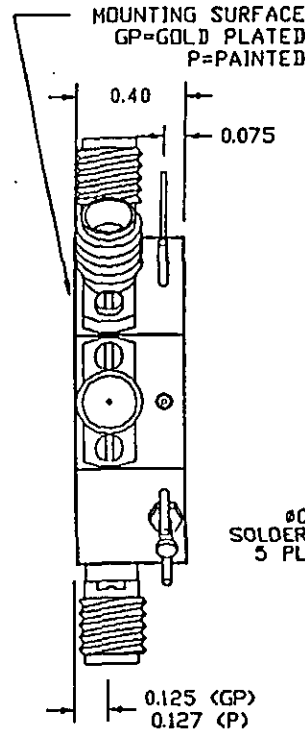
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
WSP	8/12/97	OUTLINE DRAWING		
CHECK	4/7/97	SWN-1140-5DR/DT-DEC-SP		
ISSUE		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FIG. NO.	DWG. NO.	REV.	
A	60483	100-4168-2	A	
SCALE N/S		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
12.0	<u>SP5T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	12-0
12.1	SWN-1170-5DR/DT-STANDARD with Independent Controls	12-1
12.2	SWN-1170-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	12-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 250 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.88" THICK VERSION

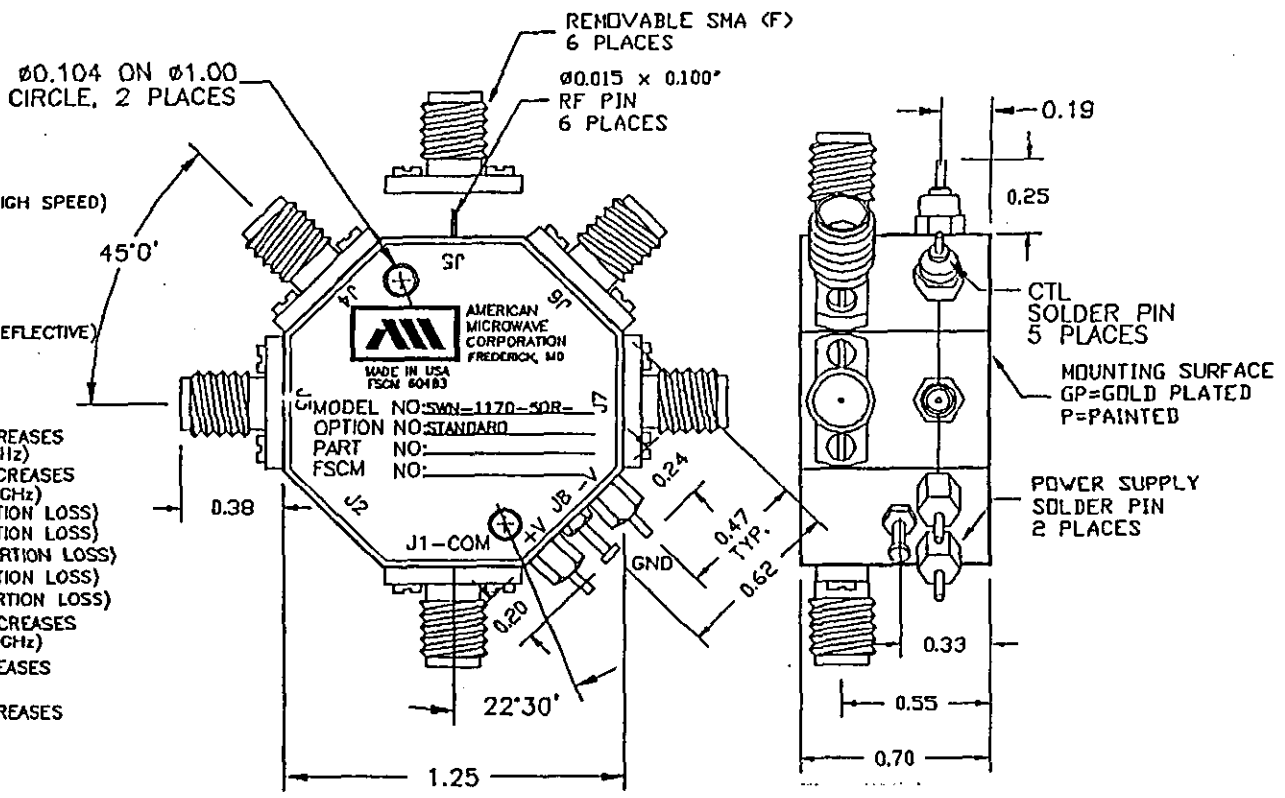
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105L COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	8/12/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING		
DRAWN W.F.P.	8/12/97	SWN-1170-5DR/DT-STANDARD		
CHECKED R. J. J.	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
ISSUED		SIZE A	FSCM NO. 60483	DWG NO. 100-4173-1
		SCALE N/S		REV. A
				SHEET 1 of 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 250 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SF 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.88" THICK VERSION

12-2

ENVIRONMENTAL RATINGS:

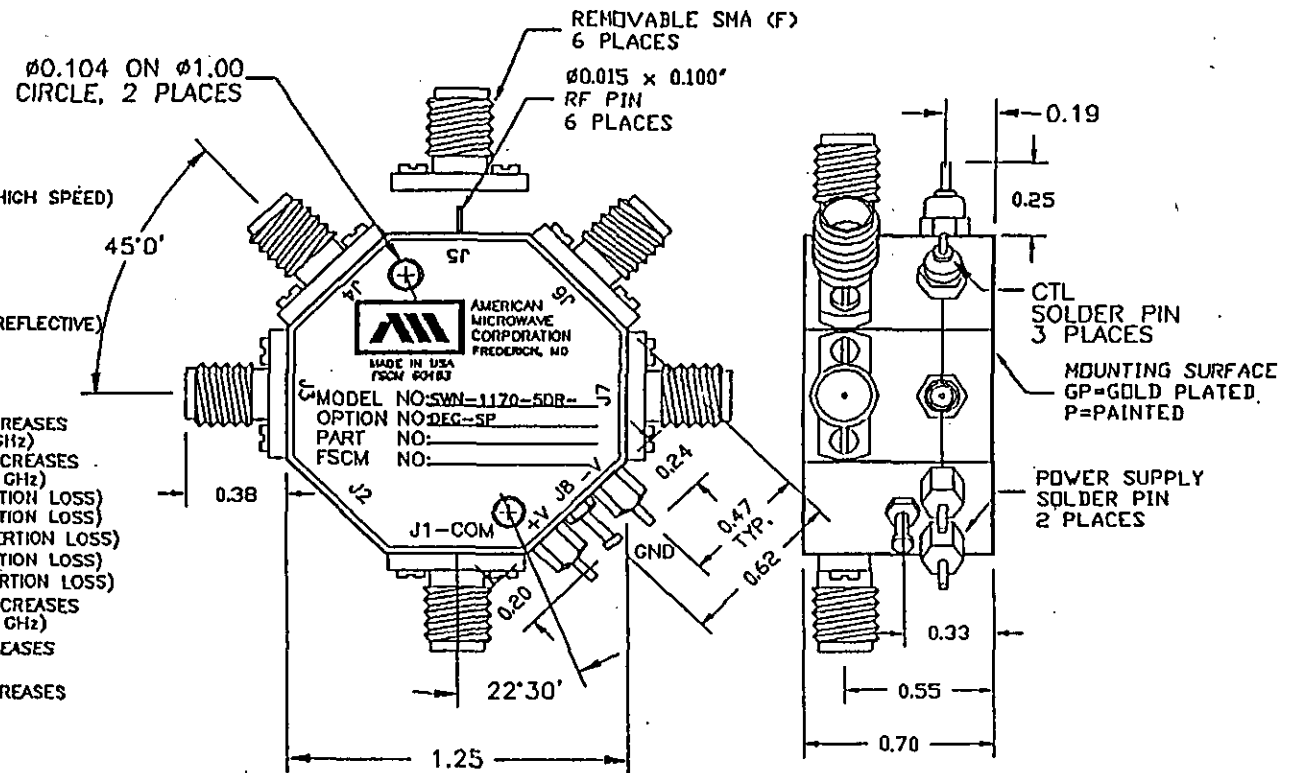
- **TEMPERATURE:** -55°C TO +05°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 165C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 167D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/12/97	A	ORIGINAL RELEASE	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WSP	8/12/97	SWN-1170-5DR/DT-DEC-SF	
CHECKED R. J. [Signature]	11/2/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
ISSUED		SIZE A	FSCM NO. 60483
		DWG NO. 100-4173-2	REV. A
SCALE N/S		SHEET 1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
13.0	<u>SP5T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	13-0
13.1	SWN-1182-5DR/DT-STANDARD with Independent Controls	13-1
13.2	SWN-1182-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	13-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
 ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

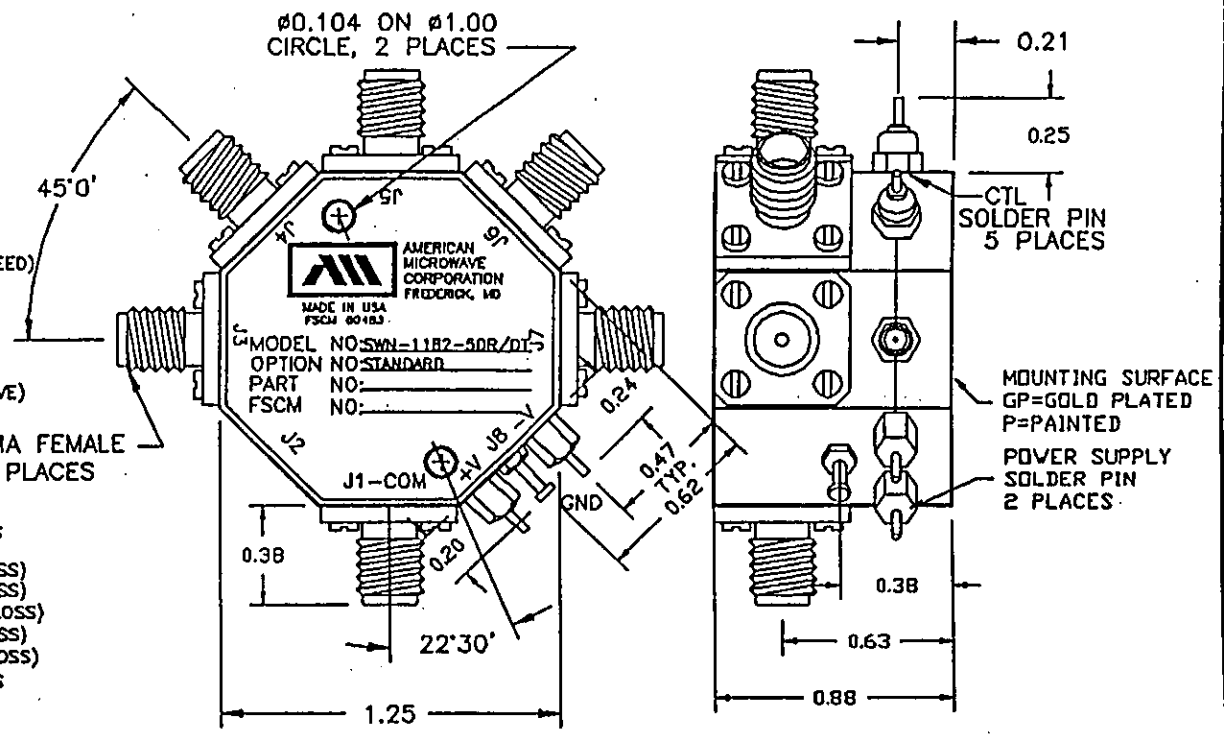
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
ZONE	REV.			
A		ORIGINAL RELEASE	8/11/97	



13-1

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: <i>WSP</i> CHECKED: <i>L. J. J. J.</i> ISSUED:	8/11/97 11/2/97	OUTLINE DRAWING SWN-1182-5DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SITE	FSCM NO.	QWC NO.	REV.	
A	60483	100-4183-1	A	
SCALE N/S		1 of 1		

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
 ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

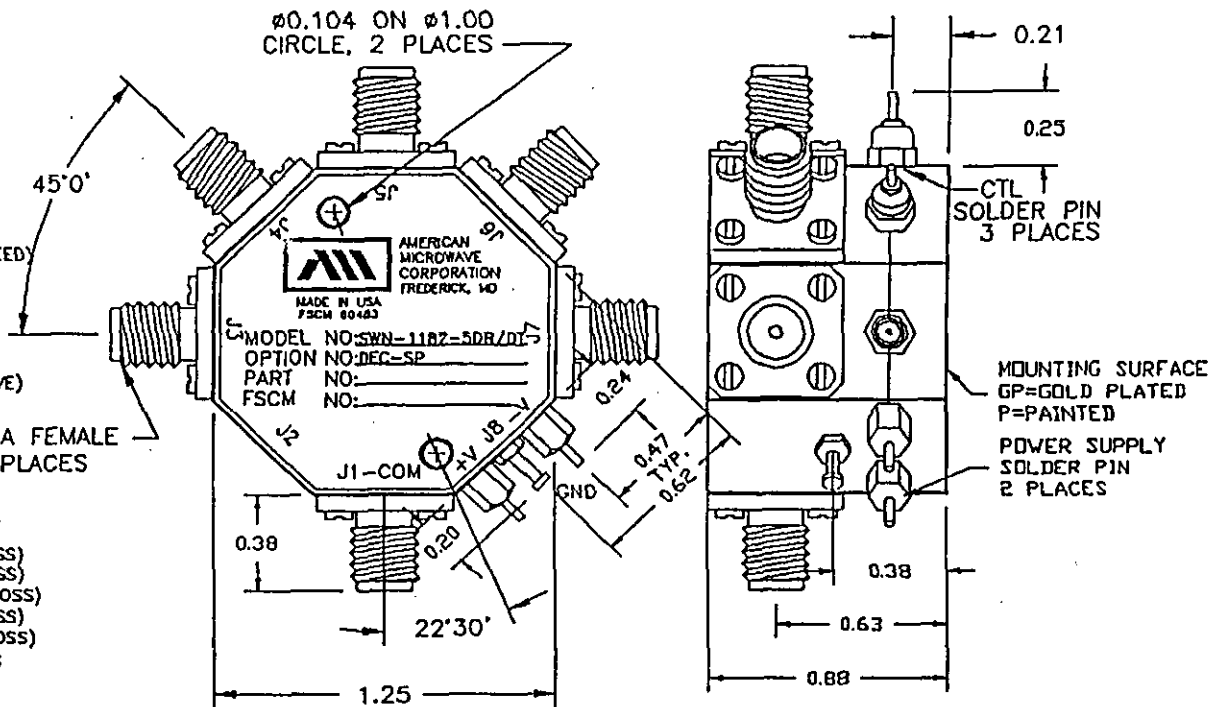
- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/11/91	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN WSP	8/11/91	OUTLINE DRAWING		
CHECKED K. M. J.	11/1/91	SWN-1182-5DR/DT-DEC-SP		
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	QMG NO.	REV.	
A	60483	100-4183-2	A	
SCALE N/S		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
14.0	<u>SP5T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	14-0
14.1	MSR-5DR/DT-04-STANDARD with Independent Controls	14-1
14.2	MSR-5DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	14-2

SPECIFICATIONS:

- ◆ FREQUENCY: 0.5 GHz TO 18 GHz
- ◆ INSERTION LOSS: REFLECTIVE: 3.25db
 ABSORPTIVE: 4.0db
- ◆ ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- ◆ VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- ◆ SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- ◆ POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- ◆ SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- ◆ CONTROL: TTL LOGIC "0"=ON "1"=OFF
- ◆ POWER SUPPLY: +5V @ 250 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

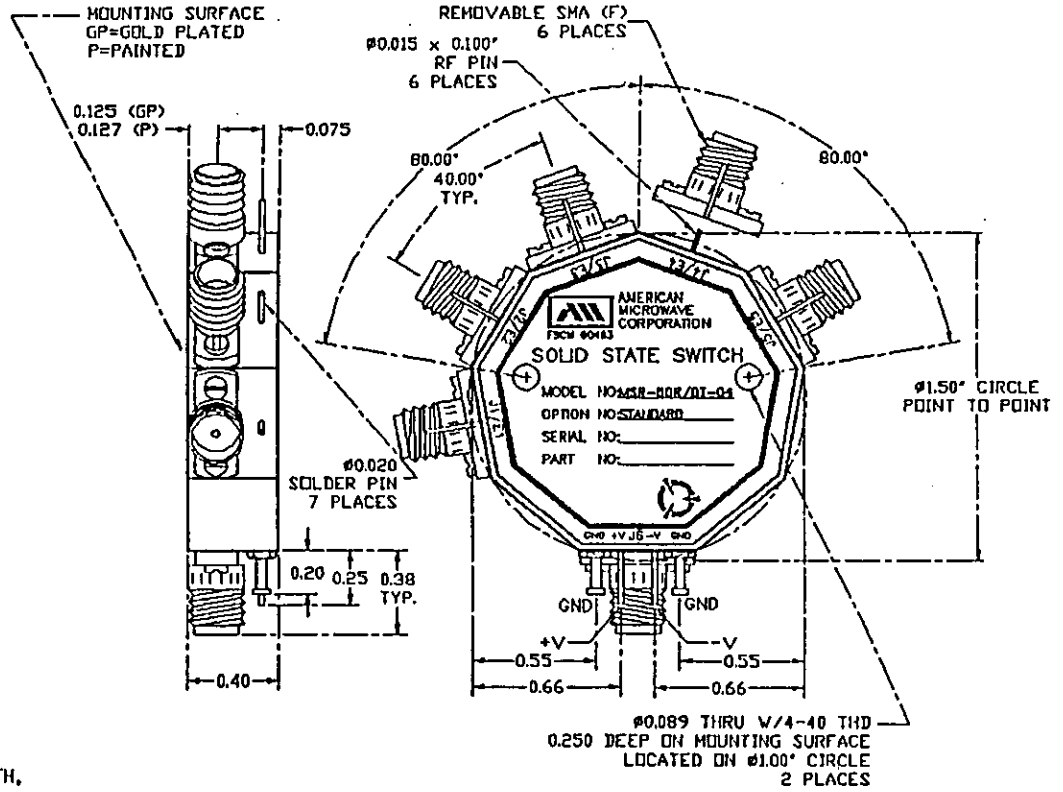
ENVIRONMENTAL RATINGS:

- ◆ TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- ◆ HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- ◆ SHOCK: MIL-STD-202F, METHOD 213B COND. B
- ◆ VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ◆ ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- ◆ TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DR: WSP	8/13/97	OUTLINE DRAWING	
CHECK: R. Miller	11/7/97	MSR-SDR/DT-04--STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
ISSUED		SIZE	REV.
		A 60483	A
		DWG NO.	
		100-4188-1	
		SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 81B 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 801 -12V POWER SUPPLIES
 - 802 -15V POWER SUPPLIES
 - 803 REVERSE LOGIC "1"-ON "0"-OFF
 - 804 DRIVERLESS, CURRENT CONTROLLED
 - 805 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - 808 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - 807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - 809 LOW INSERTION LOSS VERSION
 - 810 HIGHER ISOLATION VERSION
 - 811 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

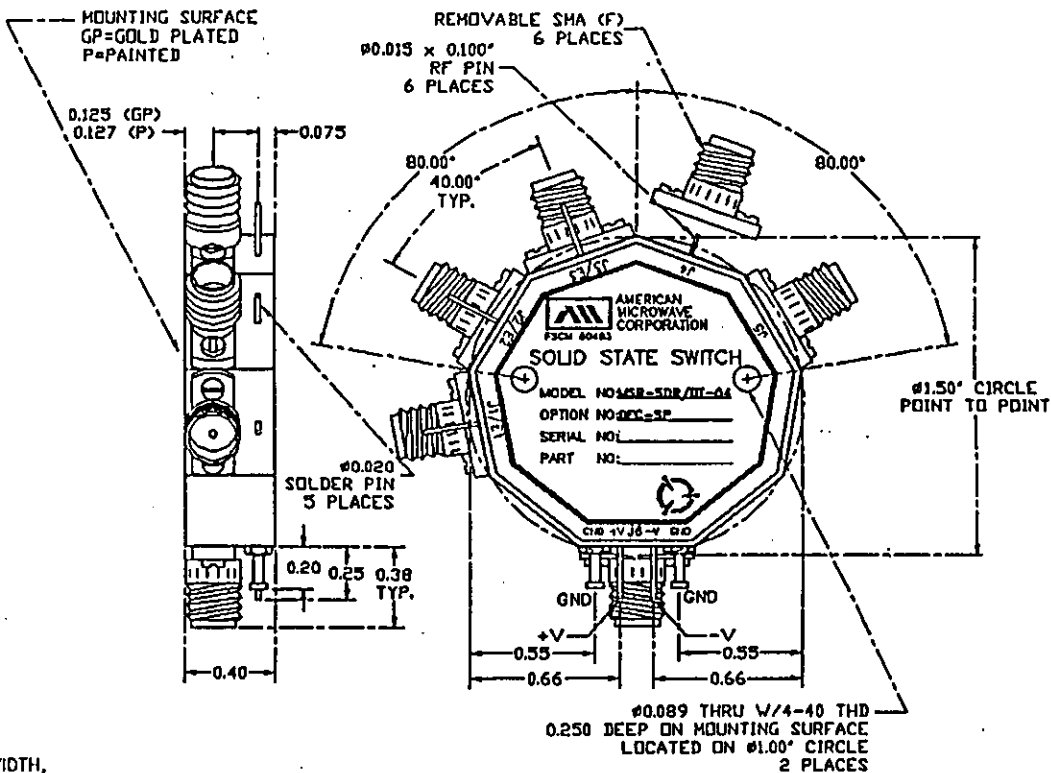
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-5DR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN WSP	8/13/97	SIZE A	FSCM NO. 60483	DWG NO. 100-4188-2
CHECKED P. J. J.	11/7/97	SCALE N/S	REV. A	
ISSUED		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
15.0	<u>SP5T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	15-0
15.1	MSR-5DR/DT-07-STANDARD with Independent Controls	15-1
15.2	MSR-5DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	15-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION

151

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

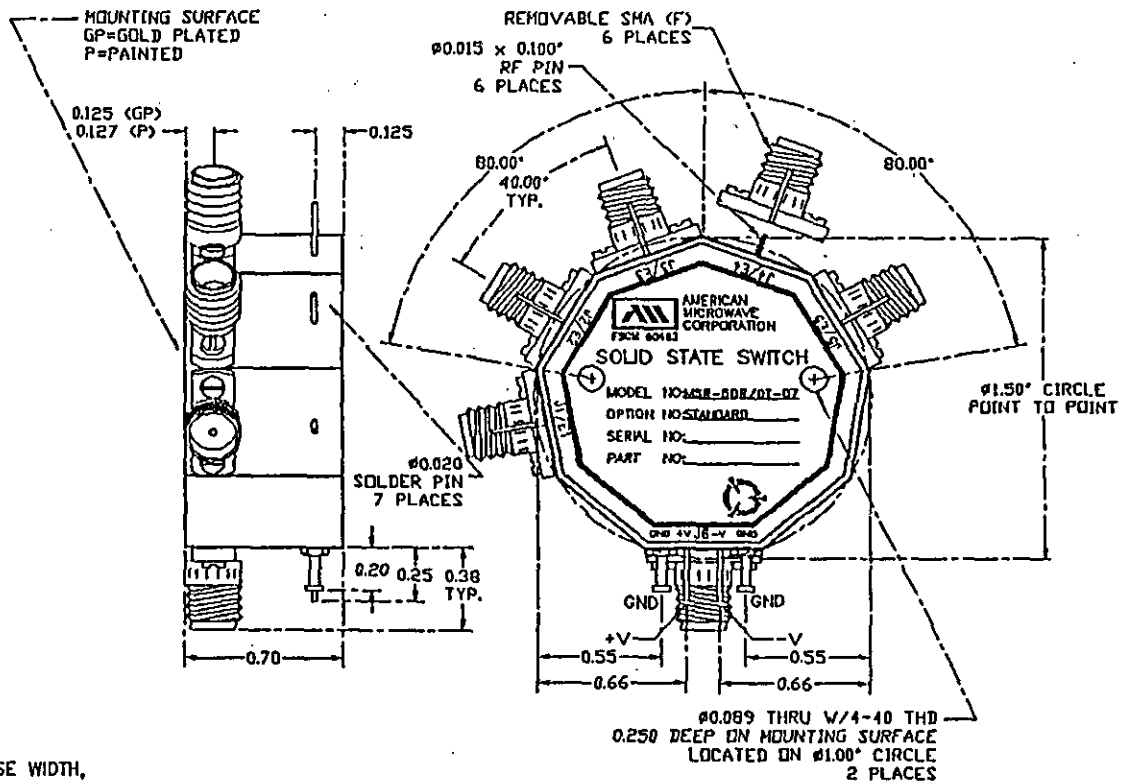
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REV.		DESCRIPTION	DWG	APPROVED
1	A	ORIGINAL RELEASE	8/13/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-5DR/DT-07-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WSP	8/13/97	SIZE A	DWG NO. 100-4194-1
CHECKED K. M. [Signature]	11/7/97	SCALE N/S	REV. A
ISSUED		SHEET 1 of 1	

REVISIONS			DATE	APPROVED
REV.	DESCRIPTION			
A	ORIGINAL RELEASE		8/13/97	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

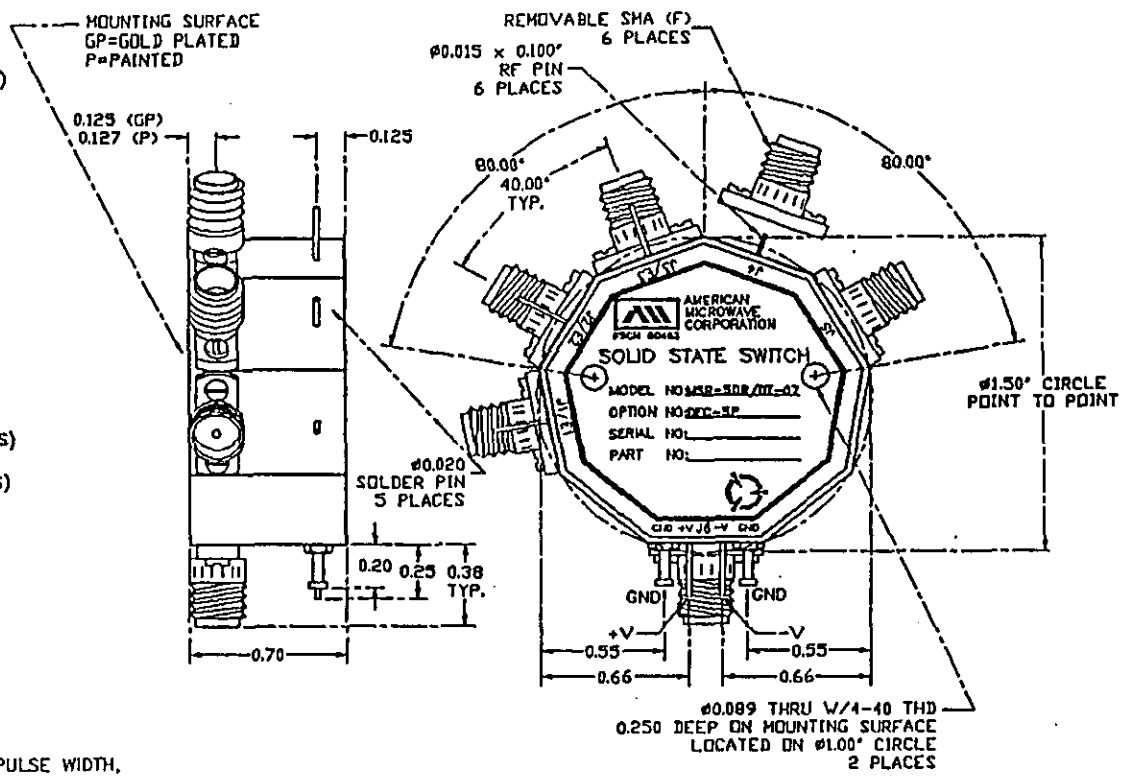
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-SDR/DT-07-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WSP	8/13/97	SIZE A	REV. A
CHECKED L. A. Able	11/7/97	TECH. NO. 60483	DWG. NO. 100-4194-2
ISSUED		SCALE N/S	SHEET 1 of 1

15-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
16.0	<u>SP6T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	16-0
16.1	SWN-1140-6DR/DT-STANDARD with Independent Controls	16-1
16.2	SWN-1140-6DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	16-2

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION
 - B12 0.88" THICK VERSION

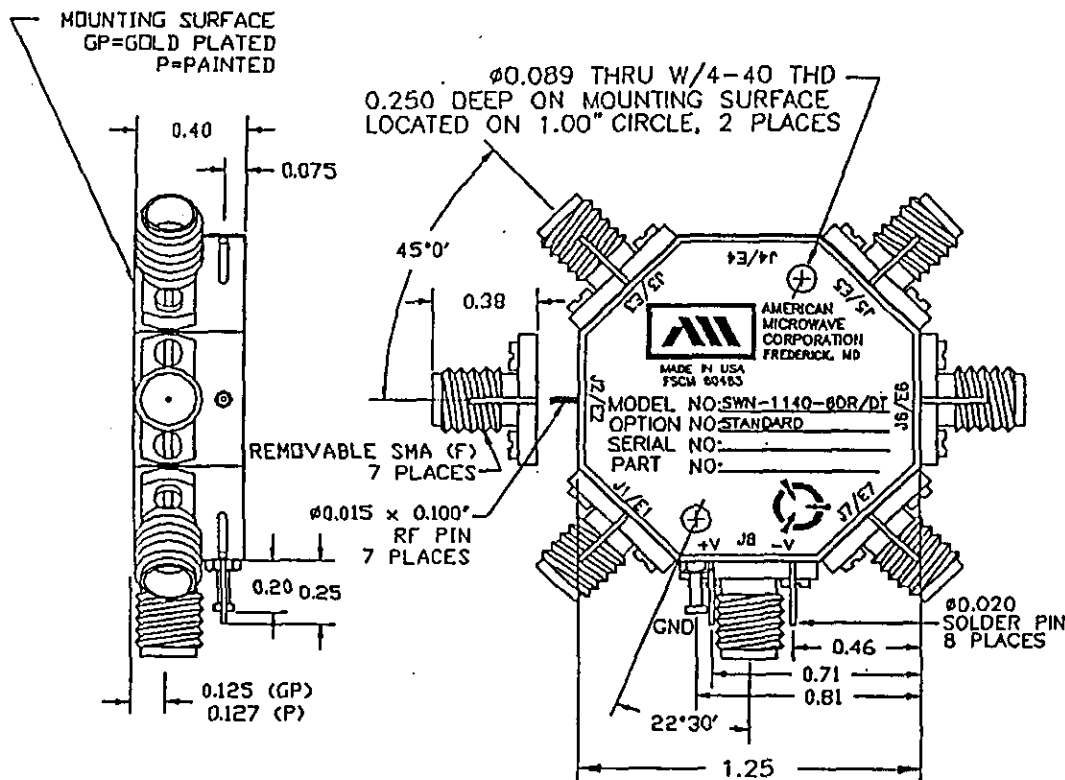
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 1038 COND. B
- **SHOCK:** MIL-STD-202F, METHOD 2138 COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION!

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: WSP CHECKED: R. H. J. [Signature] ISSUED: 11/7/97	8/12/97	OUTLINE DRAWING SWN-1140-6DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	DWG NO.	REV.	
A	60483	100-4169-1	A	
SCALE N/S		SHEET 1 of 1		

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
 ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION
- B12 0.88" THICK VERSION

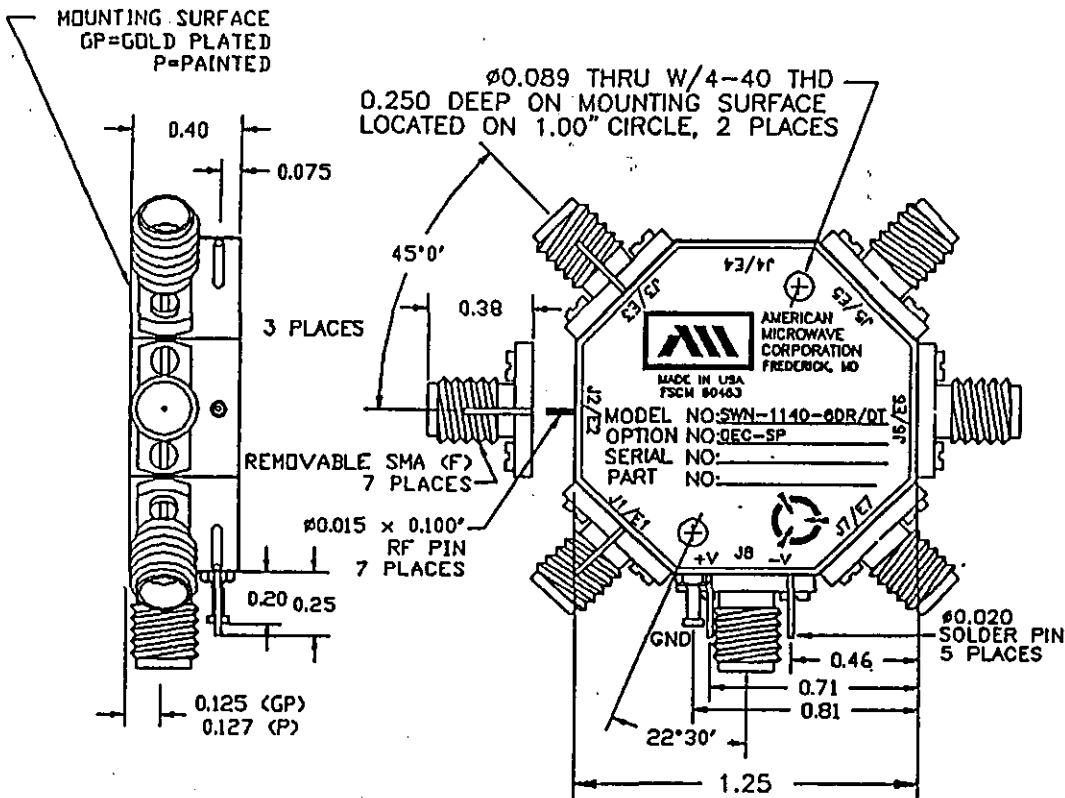
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	6/18/94	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: <i>W/S/P</i> CHECKED: <i>L. J. M. J.</i> DATED: 11/7/94	1/8/97	OUTLINE DRAWING SWN-1140-6DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	DWG NO.	REV.	
A	60483	100-4169-2	A	
SCALE N/S		1 of 1		

16-2

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

17.0	<u>SP6T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	17-0
17.1	SWN-1170-6DR/DT-STANDARD with Independent Controls	17-1
17.2	SWN-1170-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	17-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
 ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

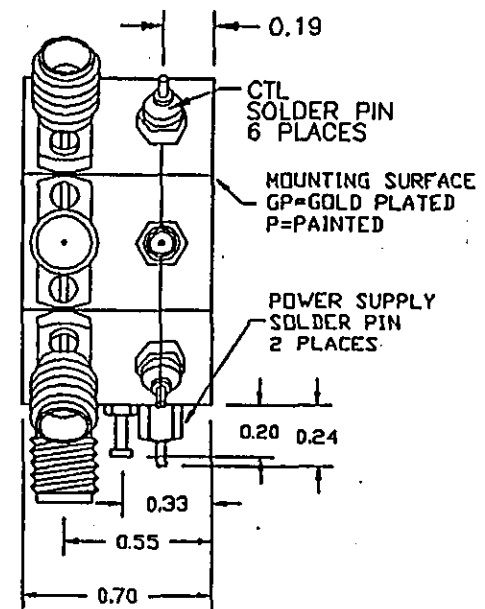
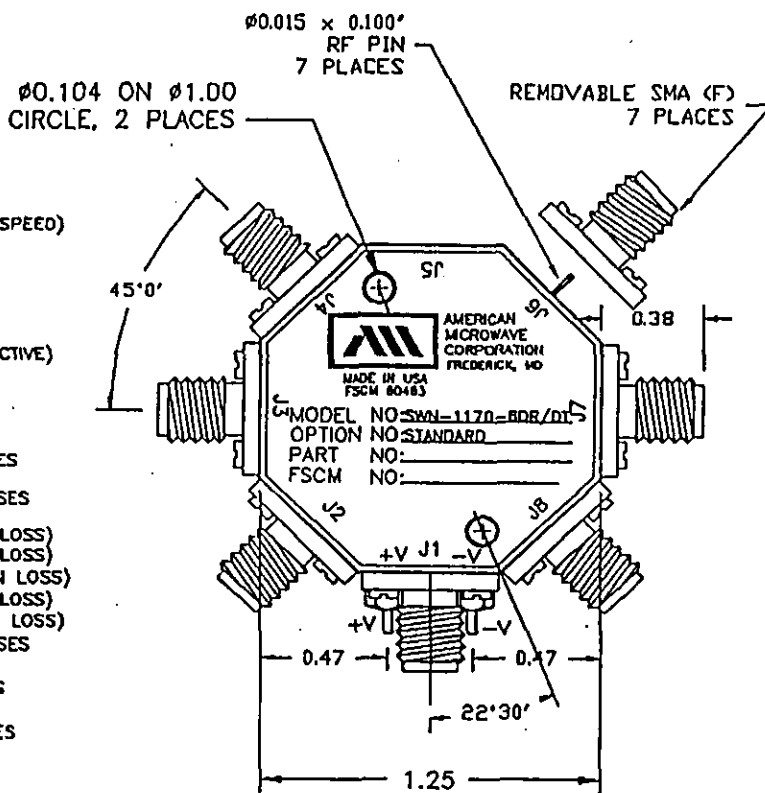
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES
 BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES
 BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES
 BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES
 BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES
 BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM
 WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH,
 DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	8/18/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
WYS	8/18/97	OUTLINE DRAWING		
CHECKED	11/7/97	SWN-1170-6DR/DT-STANDARD		
		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE		
		RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	DWG NO.	REV.	
A	60483	100-4174-1	A	
SCALE	H/S	PAGE		1 of 1

17-1

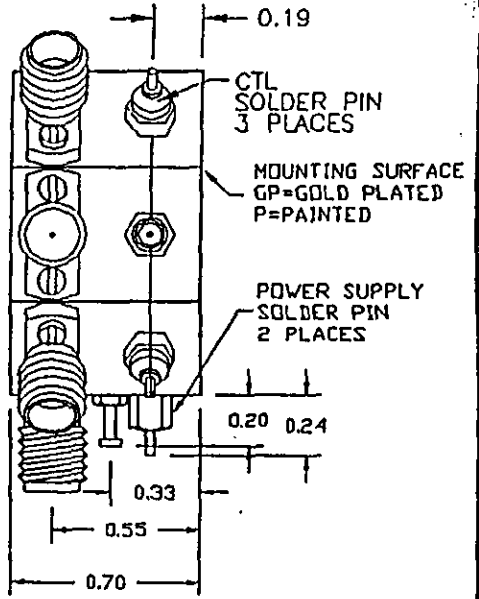
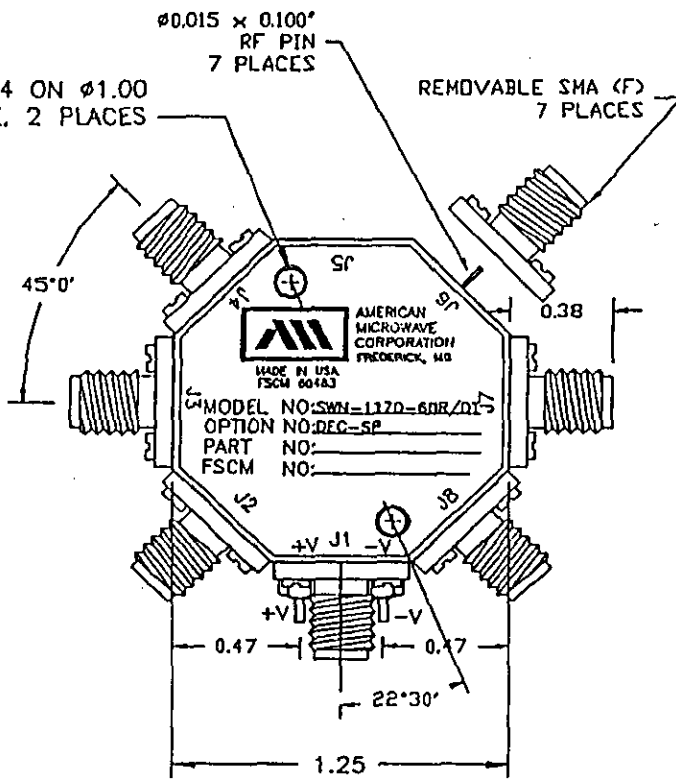
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
..... ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 uscc
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.88" THICK VERSION



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVAL	DATE	TITLE OUTLINE DRAWING	
DRAWN WJP	8/12/97	SWN-1170-6DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
CHECKED P. Ajll	11/7/97	SIZE A	REV. A
ISSUED		FSCM NO. 60483	DWG NO. 100-4174-2
SCALE N/S		SHEET 1 of 1	

17-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
18.0	<u>SP6T - (1 1/4" Diameter x 0.38" Thickness) Reflective and Absorptive Switches</u>	18-0
18.1	SWN-1182-6DR/DT-STANDARD with Independent Controls	18-1
18.2	SWN-1182-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	18-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

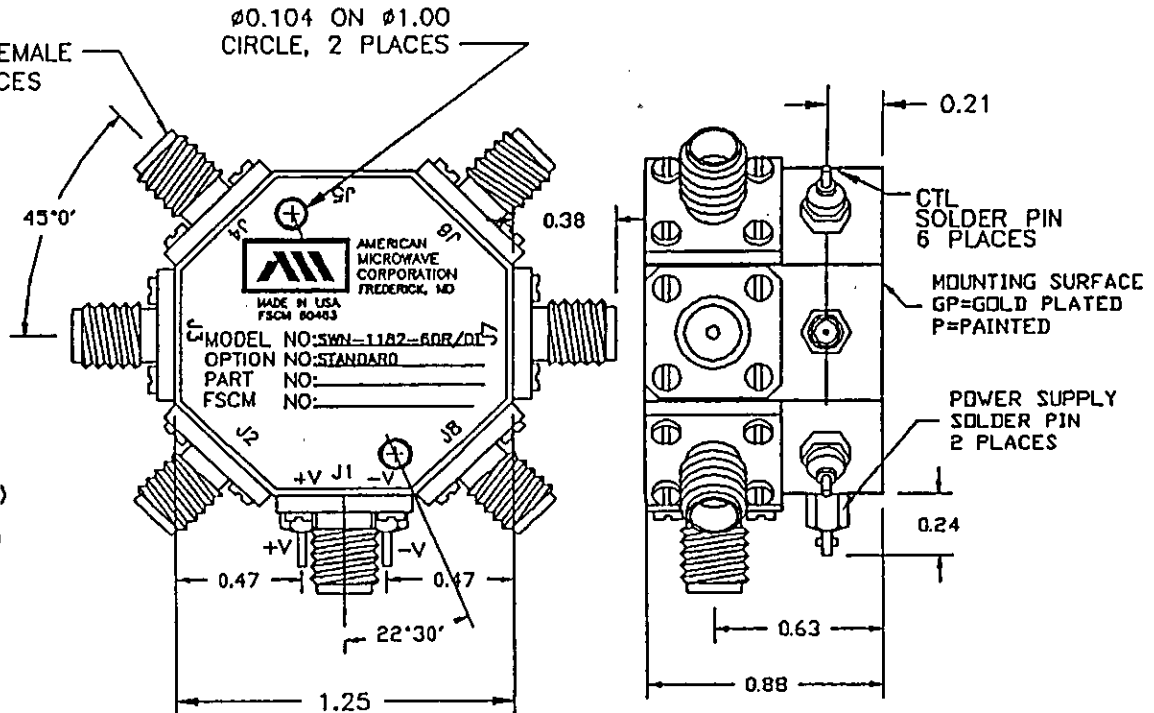
ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/11/97	A	ORIGINAL RELEASE	

18-1



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS		DATE	
DRAWN: <i>W/S/P</i>		8/11/97	
CHECKED: <i>R. J. J. J.</i>		11/7/97	
TITLED: <i>W/S/P</i>			
TITLE: OUTLINE DRAWING			
SWN-1182-6DR/DT-STANDARD			
REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE			
RADIAL SOLID STATE SWITCH			
SIZE	FSCM NO.	DMG NO.	REV.
A	60483	100-4184-1	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

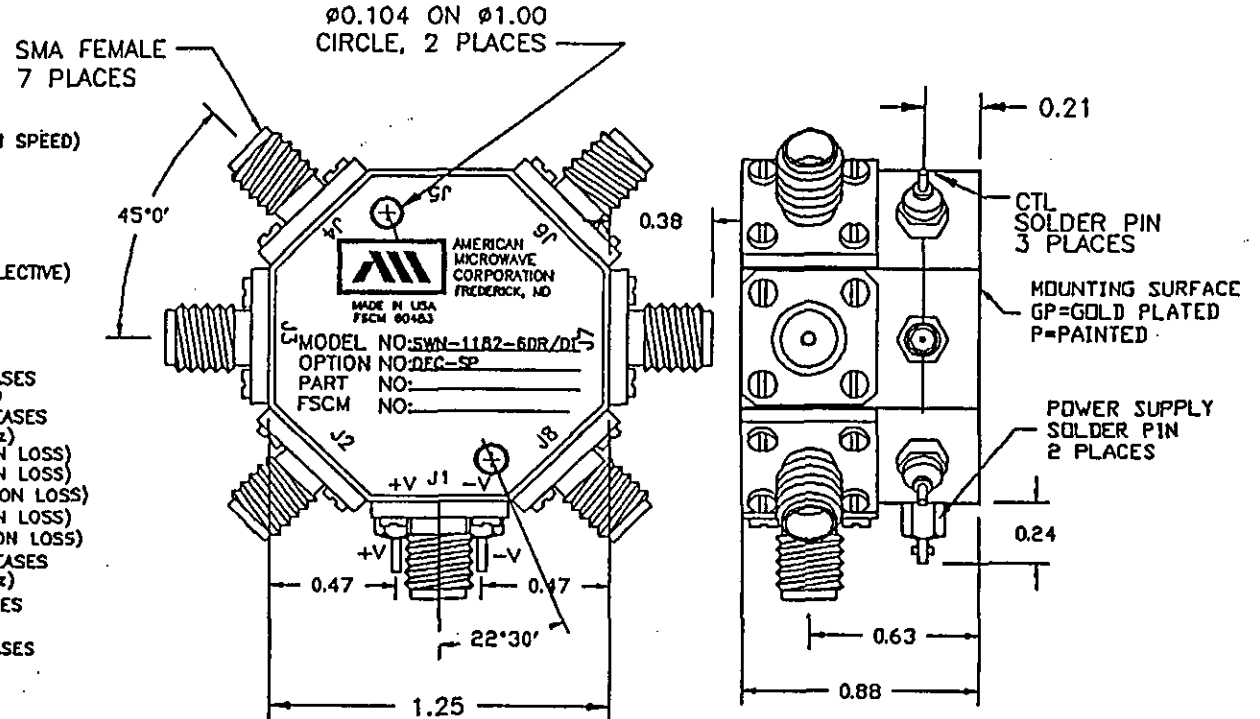
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/11/97	A	ORIGINAL RELEASE	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING SWN-1182-6DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
DRAWN WSP	8/11/97	SIZE A	FSCM NO. 60483	DWG NO. 100-4184-2
CHECKED K. H. ...	8/17/97	SCALE N/S	REV. A	1 of 1

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

19.0	<u>SP6T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	19-0
19.1	MSR-6DR/DT-04-STANDARD with Independent Controls	19-1
19.2	MSR-6DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	19-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
..... ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
..... -5V @ 75mA MAX.(RELECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

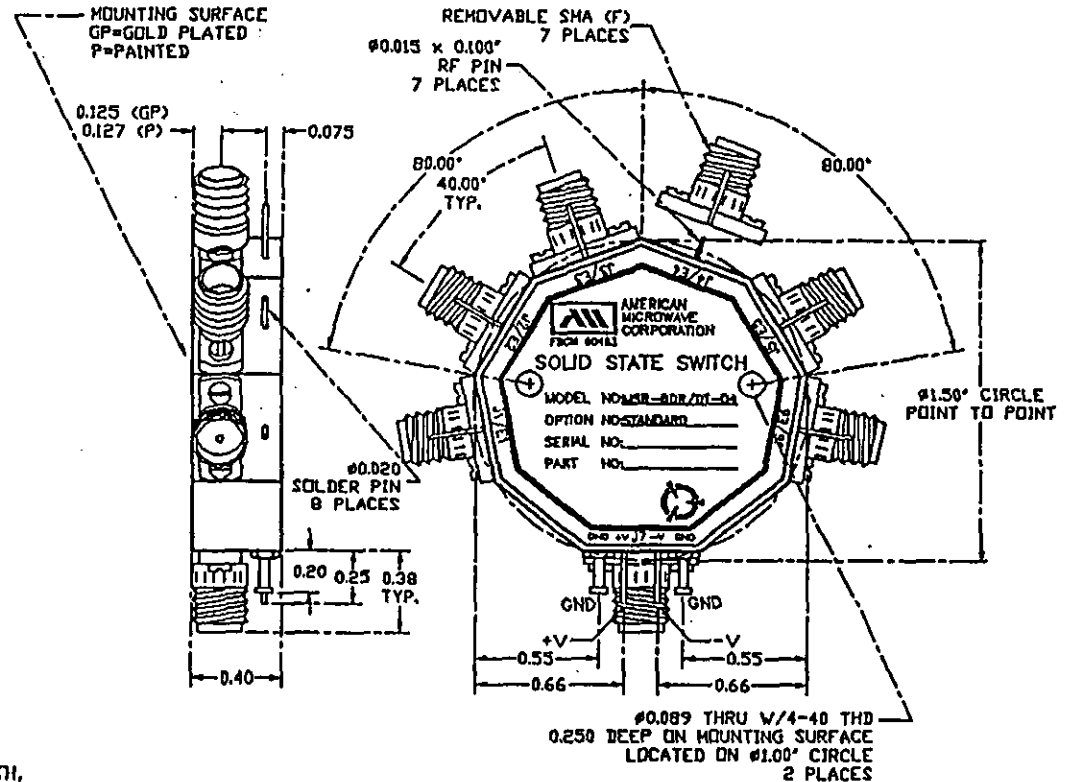
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
<i>WSP</i>	8/13/97	OUTLINE DRAWING		
CHECKED	<i>[Signature]</i>	MSR-6DR/DT-04-STANDARD		
ISSUED	11/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
SIZE	FORM NO.	DWG NO.	REV.	
A	60483	100-4189-1	A	
SCALE	N/S	1 of 1		

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
..... ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
..... -5V @ 75mA MAX.(RELECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

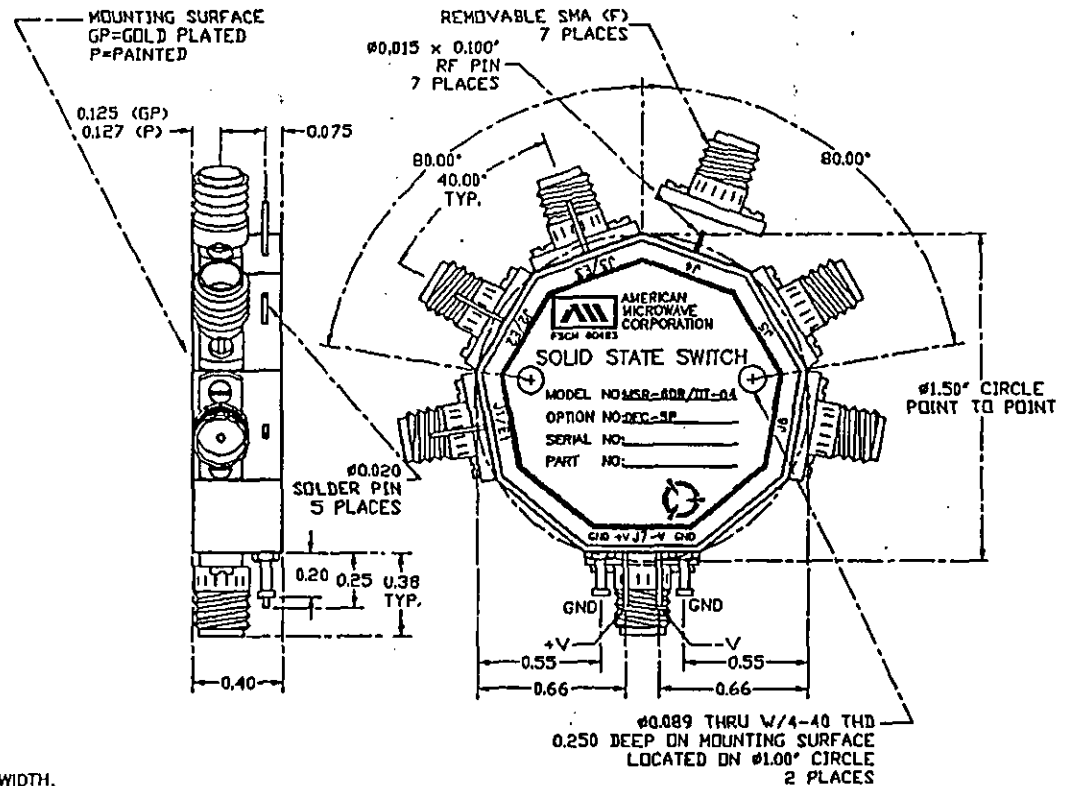
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN WSP	8/13/97	OUTLINE DRAWING MSR-6DR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
CHECKED [Signature]	11/7/97	SIZE	FIG. NO.	DWG. NO.
ISSUED		A	60483	100-4189-2
		SCALE	N/S	SHEET 1 of 1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
20.0	<u>SP6T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	20-0
20.1	MSR-6DR/DT-07-STANDARD with Independent Controls	20-1
20.2	MSR-6DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	20-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
 DEC-SP 3 BIT DECODER WITH SOLDER PIN
 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 B01 -12V POWER SUPPLIES
 B02 -15V POWER SUPPLIES
 B03 REVERSE LOGIC "1"=ON "0"=OFF
 B04 DRIVERLESS, CURRENT CONTROLLED
 B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 B09 LOW INSERTION LOSS VERSION
 B10 HIGHER ISOLATION VERSION
 B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

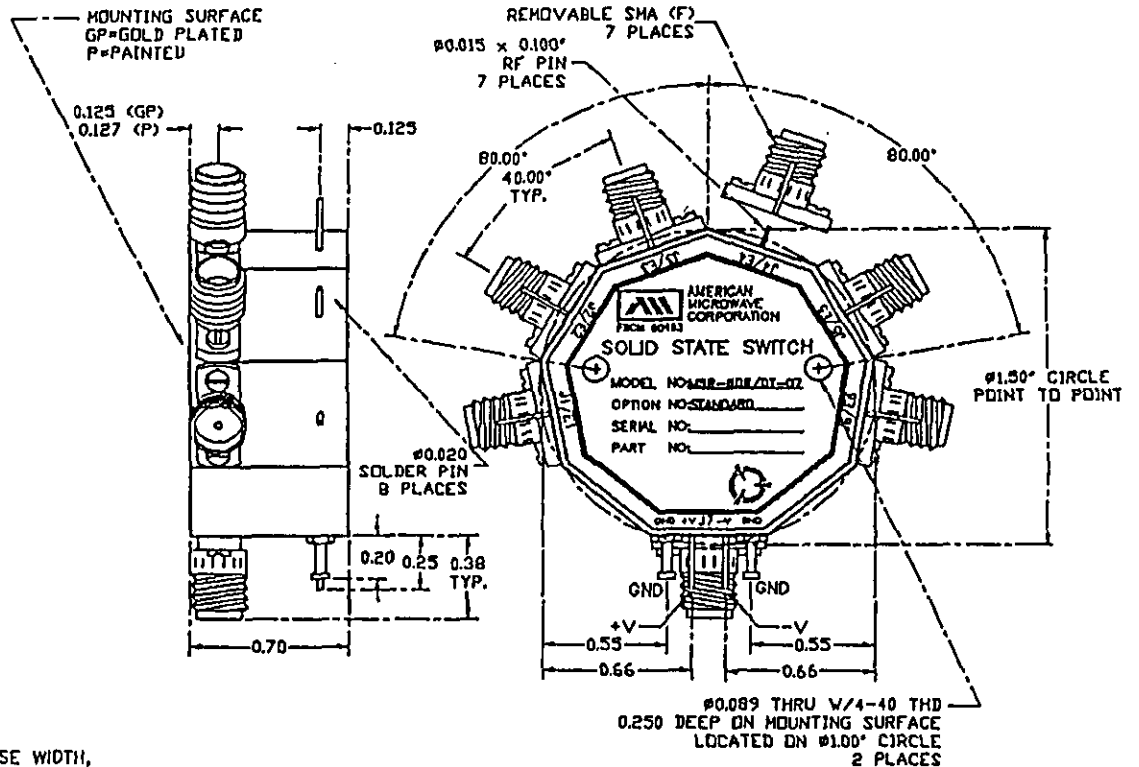
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS				
LOK	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:

- OR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-6DR/DT-07-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN WSP	8/13/97	SIZE A	FIG. NO. 60483	QTY. NO. 100-4195-1
CHECKED K. Miller	11/7/97	SCALE N/S	REV. A	
		SHEET 1 of 1		

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
	A	ORIGINAL RELEASE	8/19/97

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
 ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

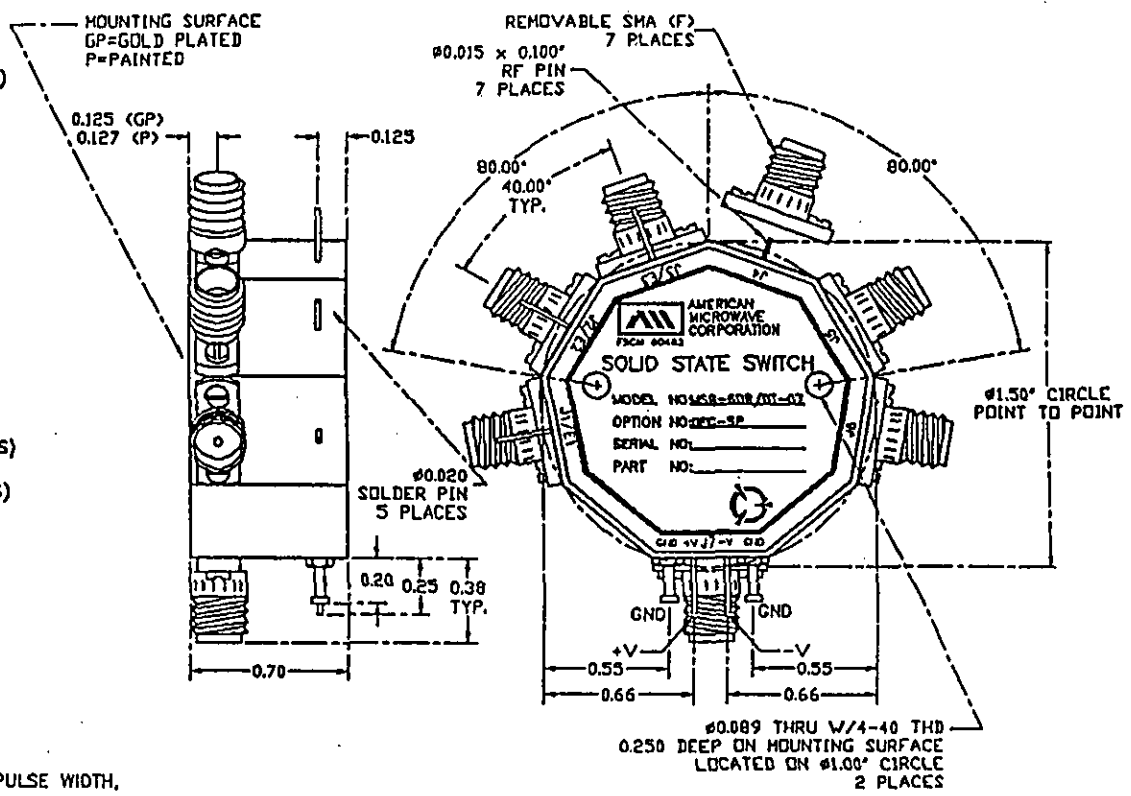
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 ORDERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
<i>WSP</i>	8/19/97	OUTLINE DRAWING MSR-6DR/DT-07-DEC-SP	
CHECKED	DATE	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
<i>K. Meade</i>	11/7/97	SIZE	REV.
REVISED		A 60483	A
		SCALE N/S	1 of 1

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

20-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
21.0	<u>SP7T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches</u>	21-0
21.1	SWN-1140-7DR/DT-STANDARD with Independent Controls	21-1
21.2	SWN-1140-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	21-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.75db
 ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 350 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NDON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

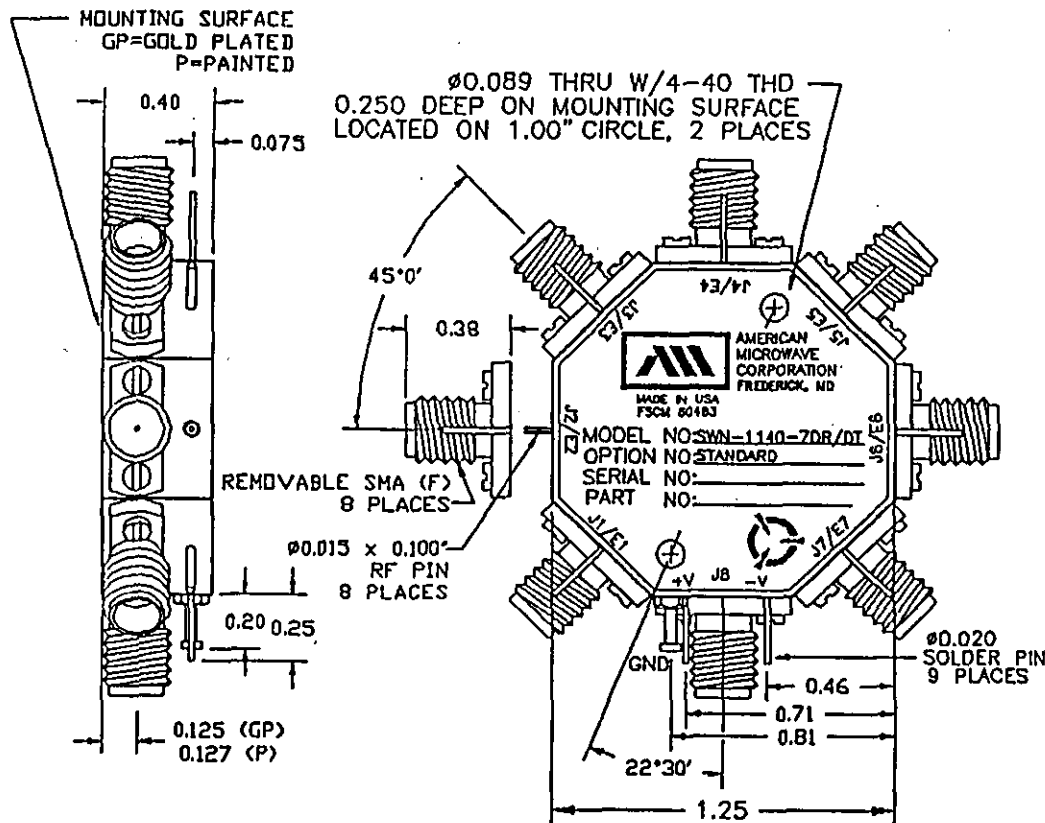
- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
A		ORIGINAL RELEASE	8/12/97



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN: <i>WSP</i> CHECKED: <i>L. M. ...</i> ISSUED:	8/12/97	OUTLINE DRAWING SWN-1140-7DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH		
SIZE	FSCM NO.	DWG NO.	REV.	
A	60483	100-4170-1	A	
SCALE N/S		PAGE 1 of 1		

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 350 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH.
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION
 - B12 0.88" THICK VERSION

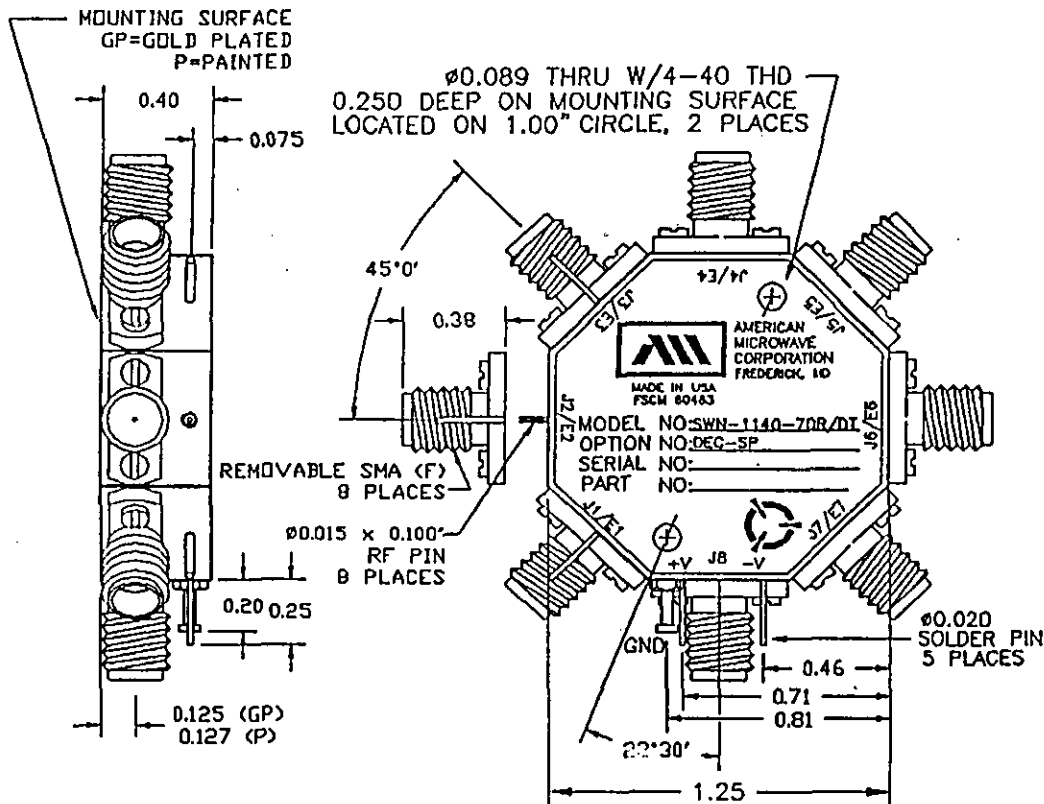
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

ZONE		REV.		DESCRIPTION	DATE	APPROVED
A				ORIGINAL RELEASE	8/12/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVAL	DATE	TITLE OUTLINE DRAWING	
DRAWN WSP	8/12/97	SWN-1140-7DR/DT-DEC-SP	
CHECKED L. Mohr	10/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
REV. NO.	SIC	P3CM NO.	DWG NO.
	A	60483	100-4170-2
SCALE N/S		SHEET 1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
22.0	<u>SP7T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	22-0
22.1	SWN-1170-7DR/DT-STANDARD with Independent Controls	22-1
22.2	SWN-1170-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	22-2

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	8/12/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** -1 WATT CW, 10 WATTS PEAK 1 uscc
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

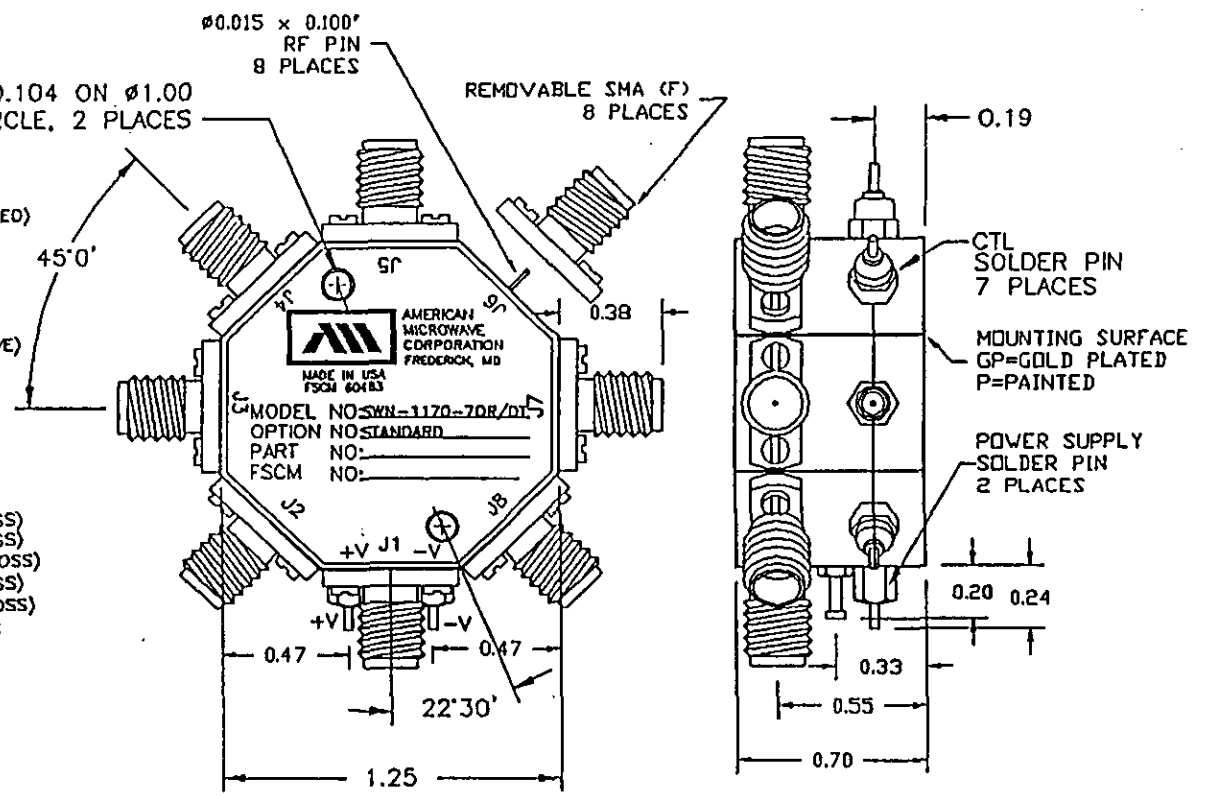
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVAL	DATE	TITLE	
DRAWN	8/12/97	OUTLINE DRAWING	
CHECKED	11/7/97	SWN-1170-7DR/DT-STANDARD	
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4175-1	A
SCALE	SHEET		1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.75db
 ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 350 mA MAX.
 -5V @ 75mA MAX.(RELECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

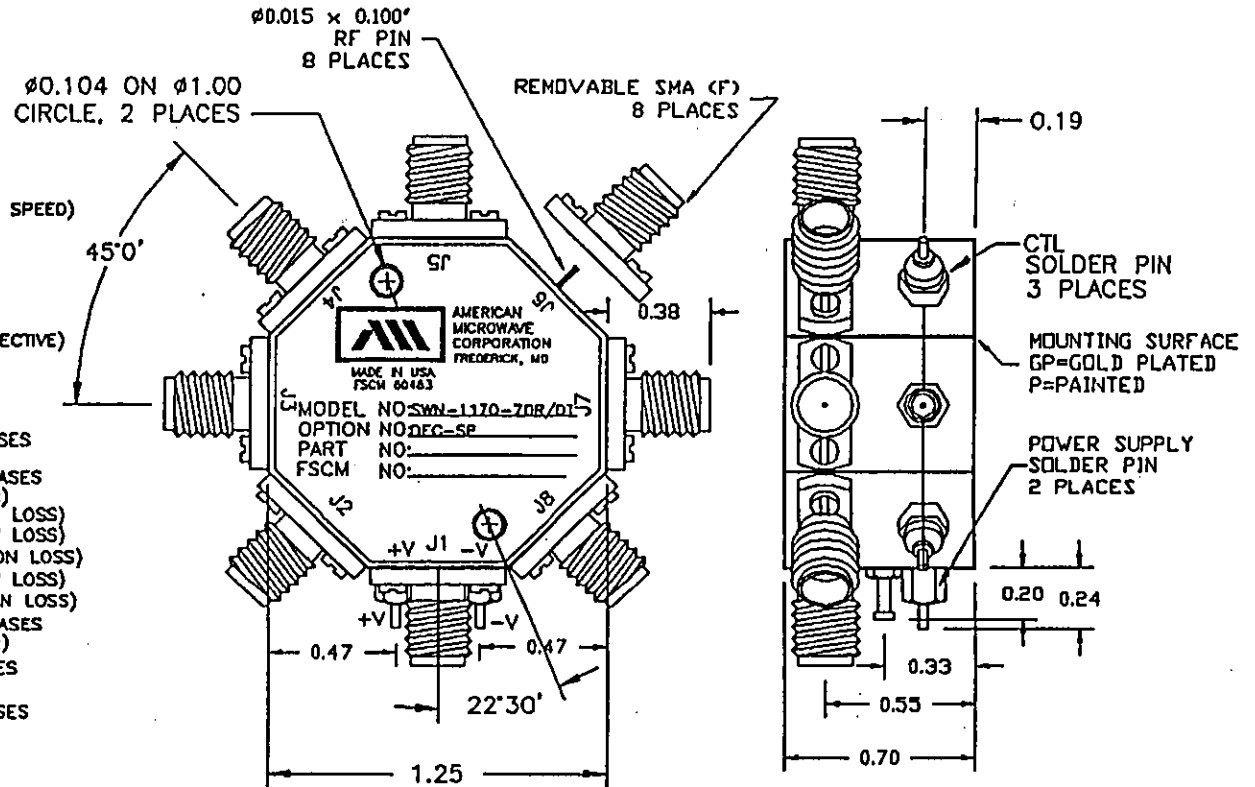
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 801 -12V POWER SUPPLIES
- 802 -15V POWER SUPPLIES
- 803 REVERSE LOGIC "1"=ON "0"=OFF
- 804 DRIVERLESS, CURRENT CONTROLLED
- 805 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- 806 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- 807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- 809 LOW INSERTION LOSS VERSION
- 810 HIGHER ISOLATION VERSION
- 811 0.40" THICK VERSION
- 812 0.88" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/12/97	A	ORIGINAL RELEASE	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WSP	8/12/97	SWN-1170-7DR/DT-DEC-SP	
CHECKED K. H. H.	1/7/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
ISSUED	SIZE	FSCM NO.	DWG NO.
	A	60483	100-4175-2
SCALE N/S		REV. A	
		1 of 1	

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

23.0	<u>SP7T - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>	23-0
23.1	SWN-1182-7DR/DT-STANDARD with Independent Controls	23-1
23.2	SWN-1182-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins	23-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: -1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION
 - B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

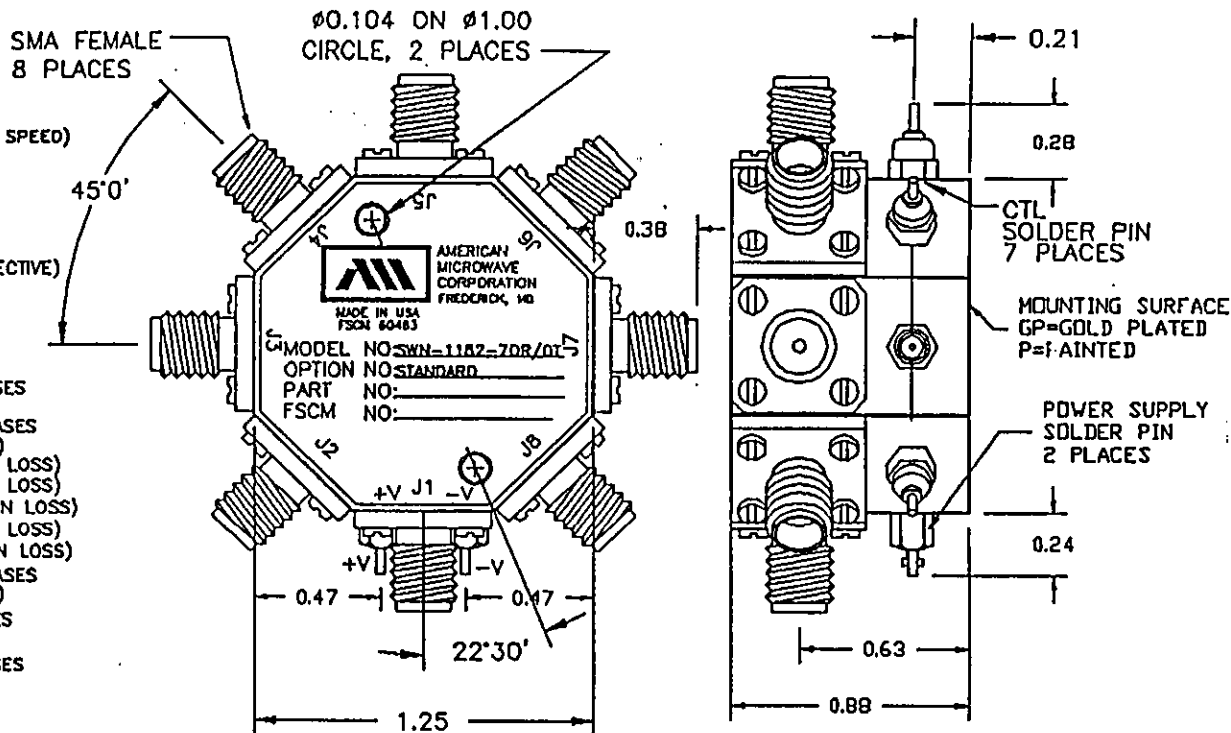
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	8/11/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WSP	8/11/97	SWN-1182-7DR/DT-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
CHECKED P. Mobile	11/7/97	SIZE A	REV. A
ISSUED		FSCM NO. 60483	QWG NO. 100-4185-1
		SCALE N/S	1 of 1

23-1

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

24.0	<u>SP7T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	24-0
24.1	MSR-7DR/DT-04-STANDARD with Independent Controls	24-1
24.2	MSR-7DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	24-2

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION
- B12 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

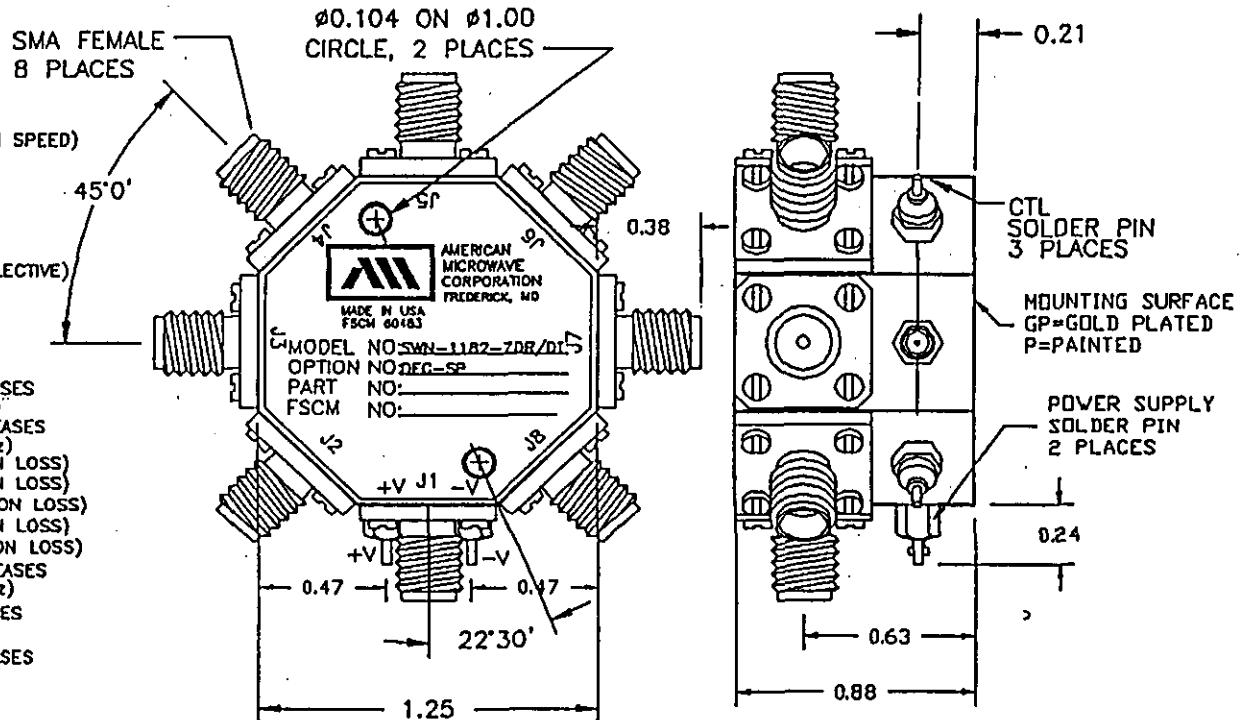
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/11/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

CONTRACT NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WJP	8/11/97	SWN-1182-7DR/DT-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE RADIAL SOLID STATE SWITCH	
CHECKED R. H. J. H. H.	11/7/97	SIZE A	REV. A
FSCM NO. 60483		DNC NO. 100-4185-2	
SCALE N/S		PAGE 1 of 1	

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	8/13/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

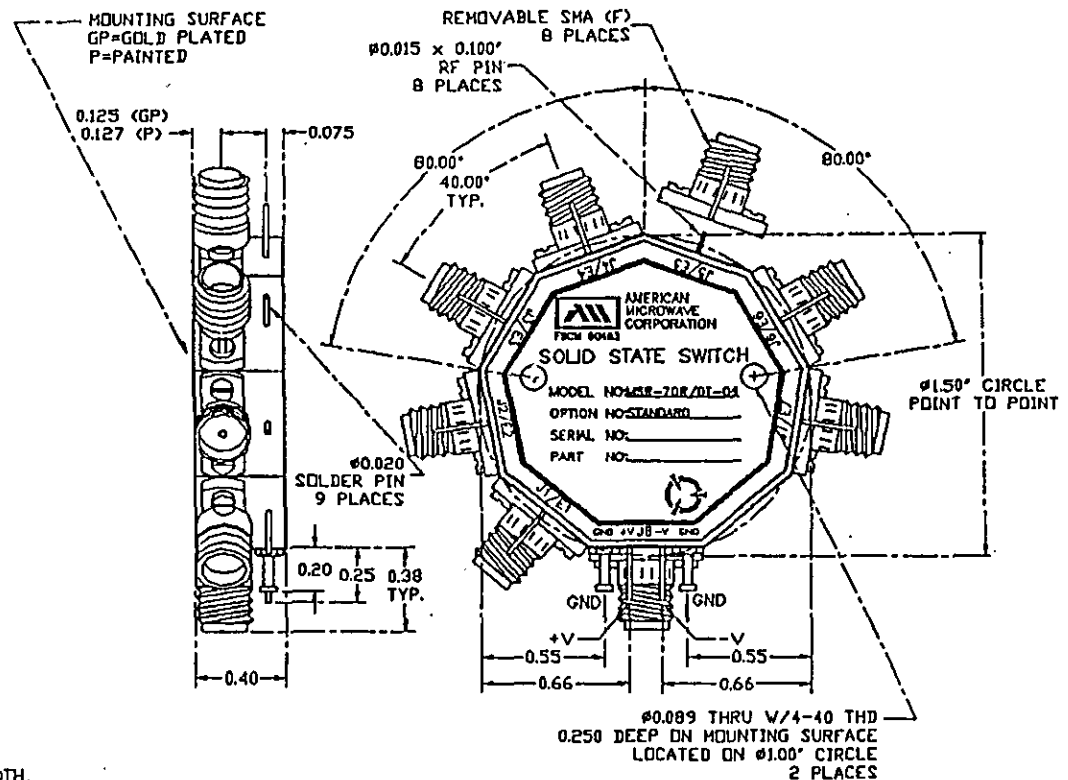
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN W/S/P	8/13/97	OUTLINE DRAWING	
CHECKED P. M. J.	11/7/97	MSR-7DR/DT-04-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
ISSUED		SIZE	REV.
		A 60483	A
		SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- **FREQUENCY:**..... 0.5 GHz TO 18 GHz
- **INSERTION LOSS:**..... REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:**..... 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:**..... REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:**..... RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:**..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:**..... 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:**..... TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:**..... +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP..... 3 BIT DECODER WITH SOLDER PIN
 - 10M18..... 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18..... 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118..... 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218..... 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412..... 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618..... 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218..... 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20..... 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220..... 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020..... 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01..... -12V POWER SUPPLIES
 - B02..... -15V POWER SUPPLIES
 - B03..... REVERSE LOGIC "1"-ON "0"-OFF
 - B04..... DRIVERLESS, CURRENT CONTROLLED
 - B05..... HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06..... HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07..... CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08..... LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09..... LOW INSERTION LOSS VERSION
 - B10..... HIGHER ISOLATION VERSION
 - B11..... 0.70" THICK VERSION

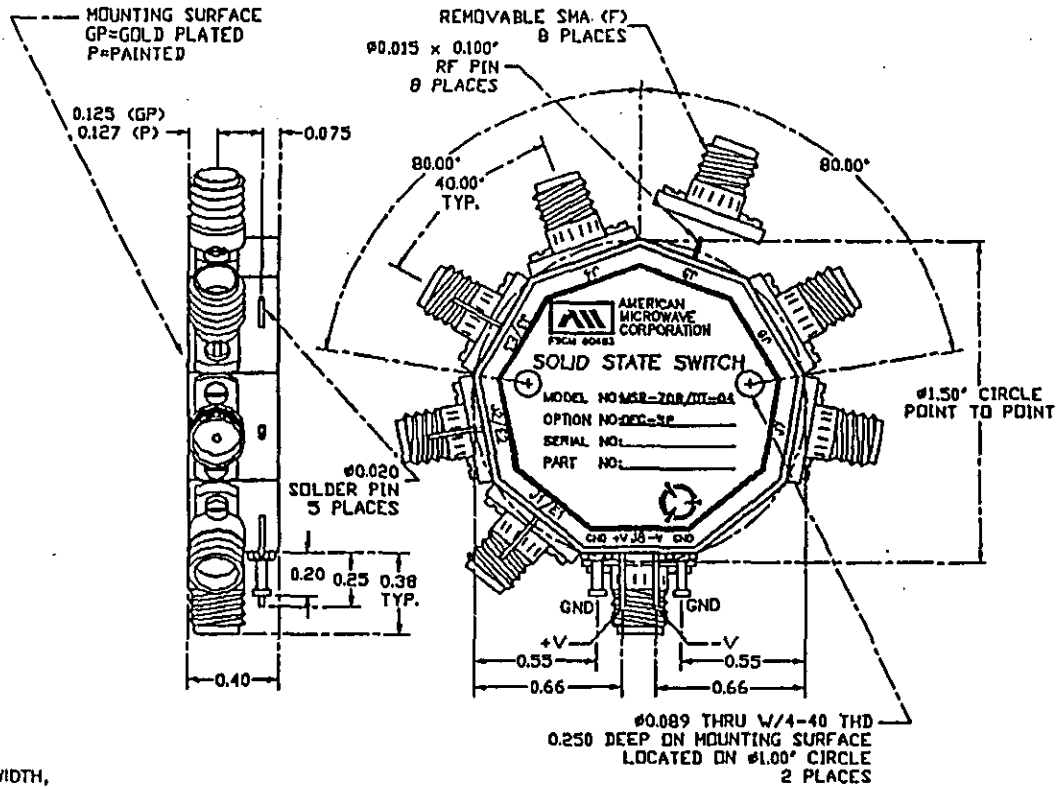
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:**..... -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:**..... MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:**..... MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:**..... MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:**..... MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:**..... MIL-STD-202F, METHOD 107D COND. A

NOTE: ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-7DR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN: WSP	8/13/97	SIZE	FSCH NO.	DWG NO.
CHECKED: [Signature]	8/17/97	A	60483	100-4190-2
ISSUED		SCALE 1:1		REV. A

24-2

TABLE OF CONTENTS



SECTION

PRODUCT DESCRIPTION

PAGE

25.0	<u>SP7T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	25-0
25.1	MSR-7DR-/DT-07-STANDARD with Independent Controls	25-1
25.2	MSR-7DR-/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	25-2

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/13/97	A	ORIGINAL RELEASE	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 80db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

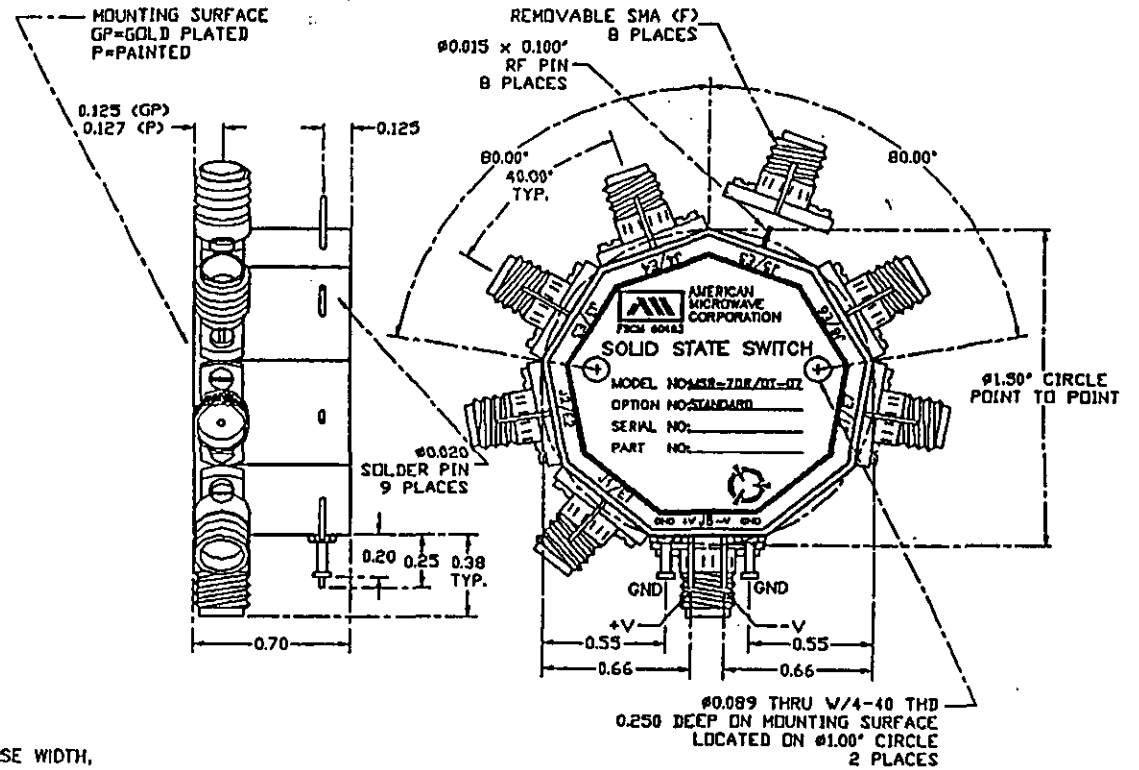
OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202' METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	8/13/97	OUTLINE DRAWING MSR-7DR/DT-07-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED	7/7/97	SIZE	REV.
		A 60483	A
		DWG NO. 100-4196-1	
		SCALE N/S	SHEET 1 of 1

25-1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 61B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

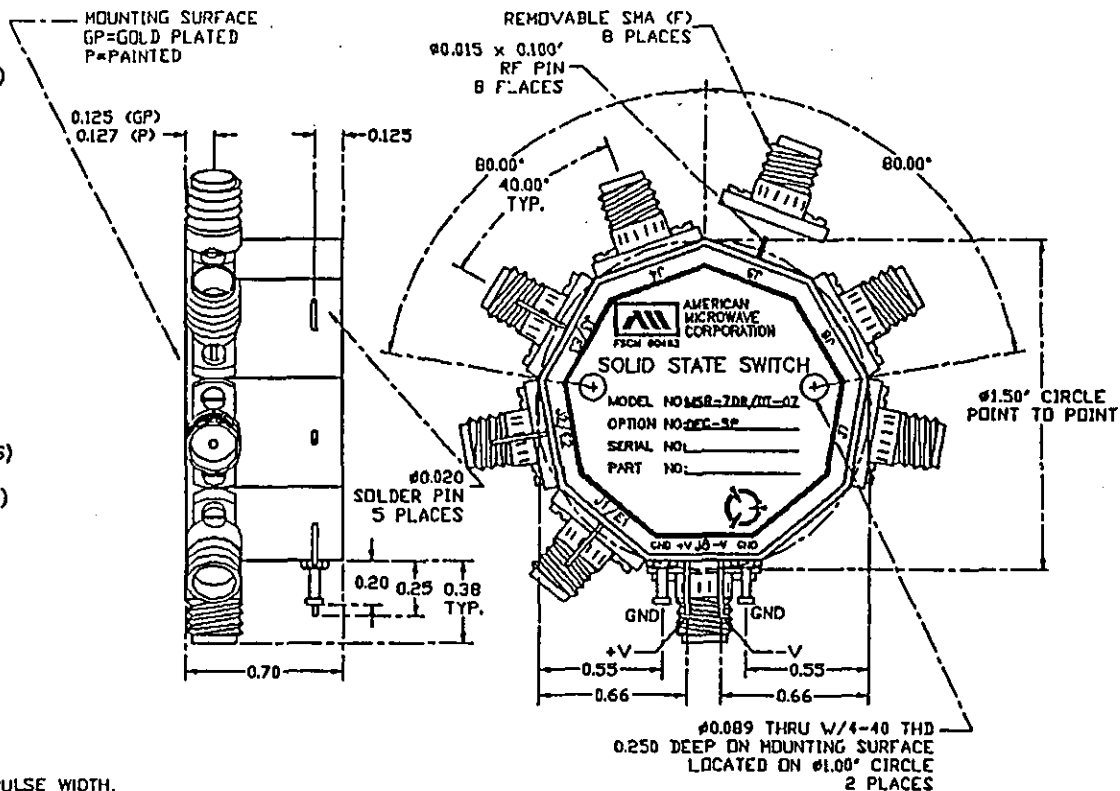
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
EQNE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:

- OR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE		
DRAWN WSP	8/13/97	OUTLINE DRAWING		
CHECKED R. HALL	8/17/97	MSR-7DR/DT-07-DEC-SP		
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
SIZE	FIG. NO.	DWG. NO.	REV.	
A	60483	100-4196-2	A	
SCALE 1:1		SHEET 1 of 1		

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
26.0	<u>SP8T - (1 1/2" Diameter x 0.4" Thickness) Reflective and Absorptive Switches</u>	26-0
26.1	MSR-8DR-/DT-04-STANDARD with Independent Controls	26-1
26.2	MSR-8DR-/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins	26-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 400 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION
 - B11 0.70" THICK VERSION

ENVIRONMENTAL RATINGS:

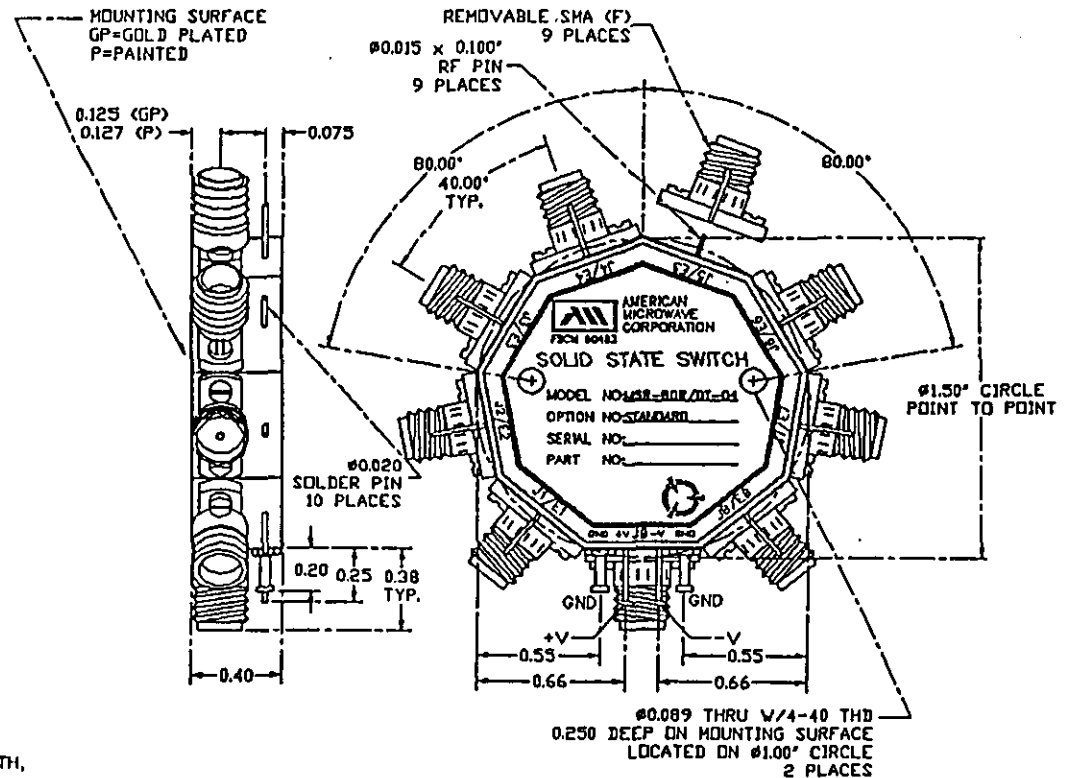
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-8DR/DT-04-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DRAWN WJP	8/13/97	SIZE A	FIG. NO. 60483	DWG. NO. 100-4191-1
CHECKED R. M. J. [Signature]	11/7/97	SCALE N/S	REV. A	
SHEET 1 of 1				

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 400 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.70" THICK VERSION

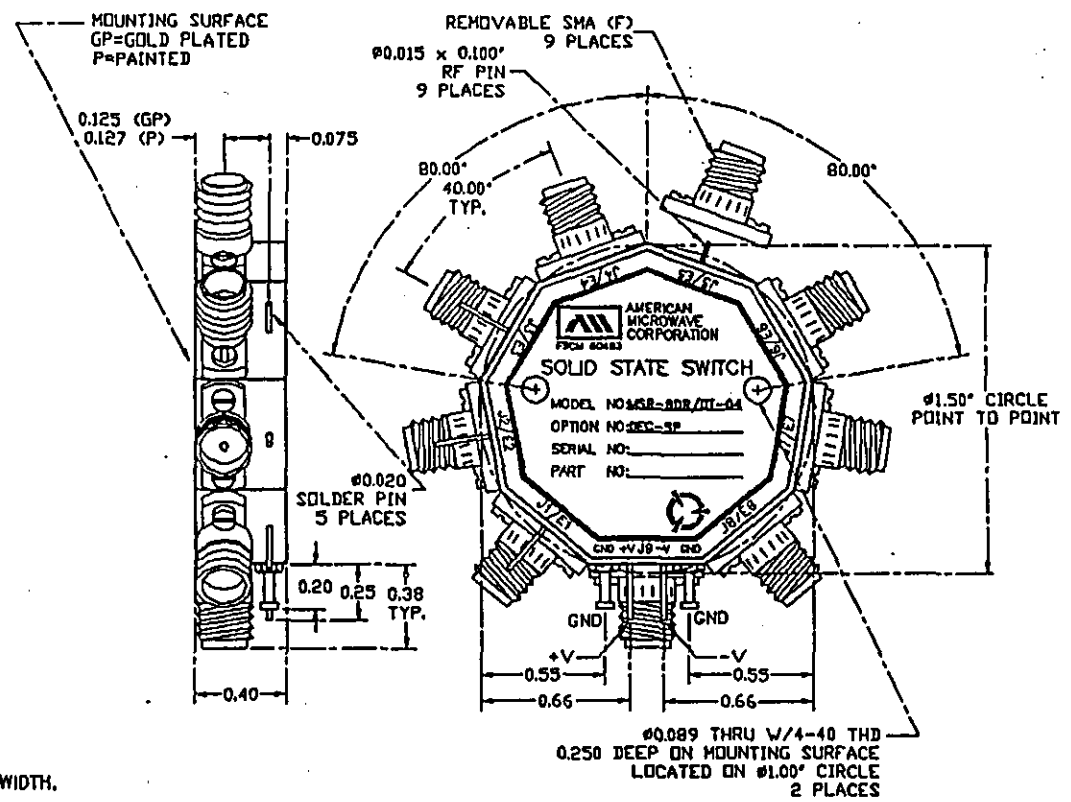
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-SID-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSR-BDR/DT-04-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WJP	8/13/97	SIZE A	REV. A
CHECKED P. H. J.	11/7/97	FIG. NO. 60483	DWG. NO. 100-4191-2
ISSUED		SCALE 1:1	SHEET 1 of 1

26-2

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
27.0	<u>SP8T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	27-0
27.1	MSR-8DR/DT-07-STANDARD with Independent Controls	27-1
27.2	MSR-8DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	27-2

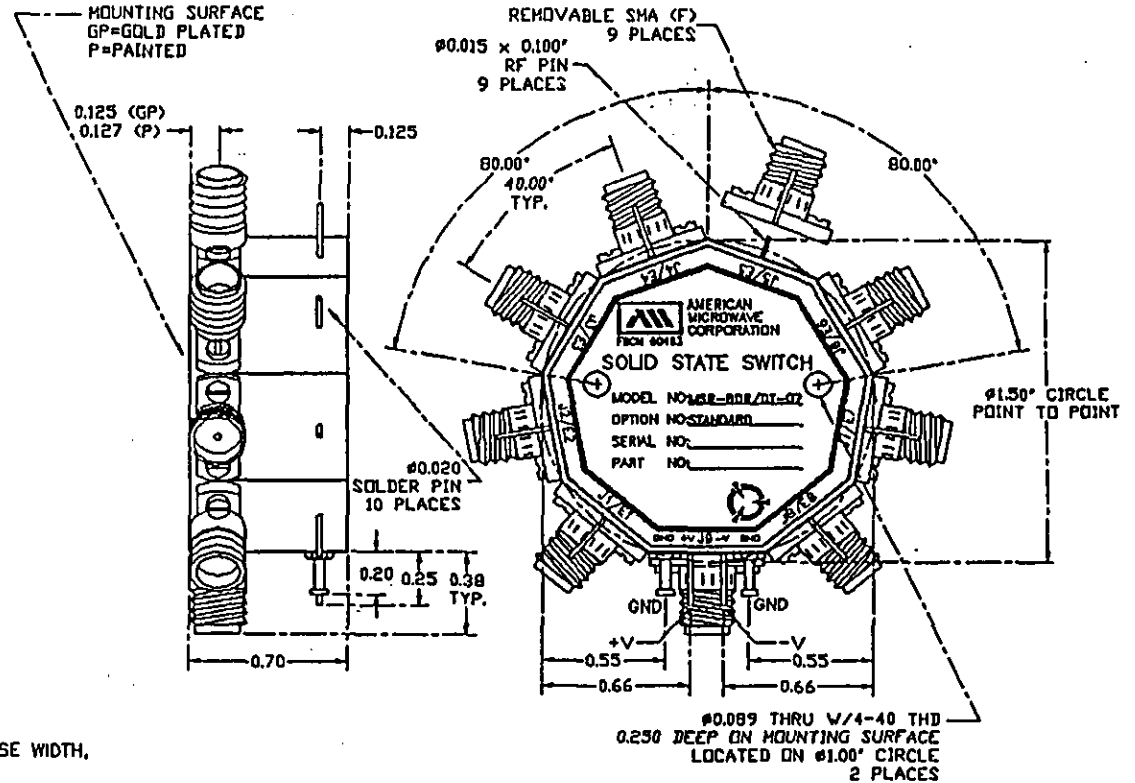
REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/13/97	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 50db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 400 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 1038 COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

NOTE: ALL ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN W/S	8/13/97	OUTLINE DRAWING MSR-8DR/DT-07-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED L. H. H.	8/17/97	SIZE	REV.
CSL/EL		A 60483	A
		DWG NO.	
		100-4197-1	
		SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=DN "1"=OFF
- POWER SUPPLY: +5V @ 400 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

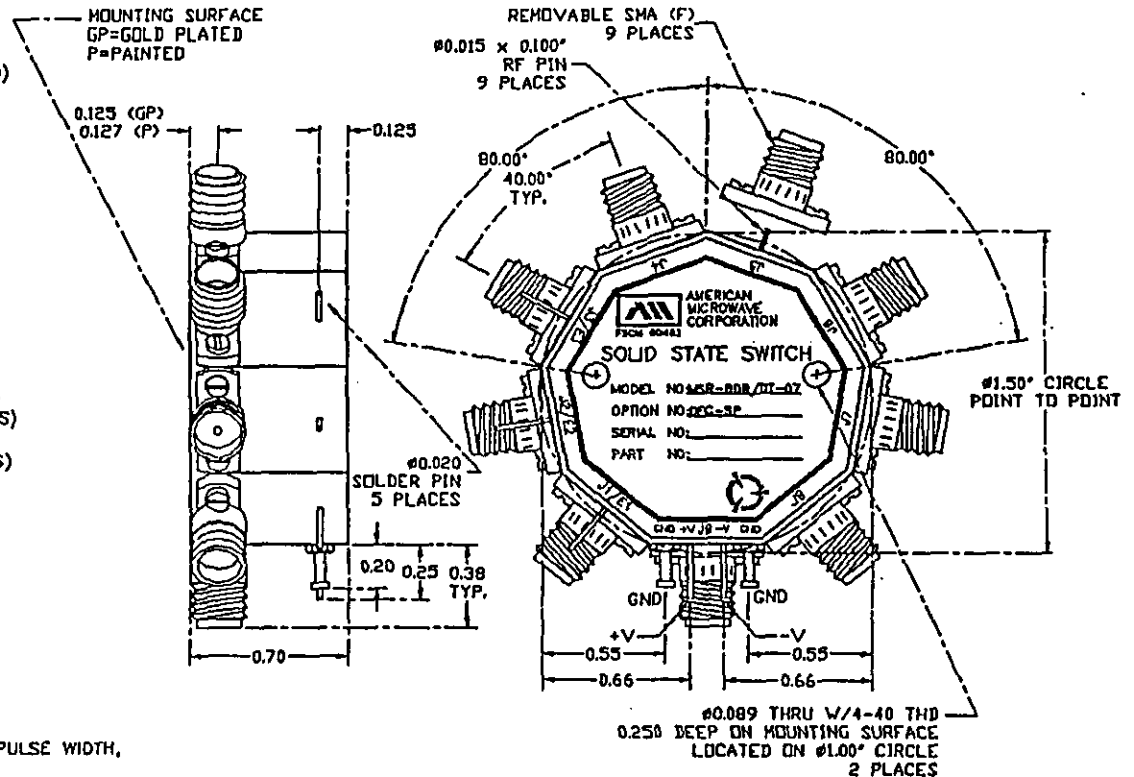
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 81B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=DN "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION
- B11 0.40" THICK VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS			DATE	APPROVED
IONG	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/13/97	



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS		TITLE		
DATE		OUTLINE DRAWING		
DRAWN		MSR-8DR/DT-07-DEC-SP		
CHECKED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE		
ISSUED		SOLID STATE SWITCH		
SIZE	FRGM NO.	DWG NO.	REV.	
A	60483	100-4197-2	A	
SCALE 1:1		SHEET 1 of 1		



**AMERICAN MICROWAVE
CORPORATION**

DATA SHEETS

ON

**0.5 TO 18 GHZ
(10 MHZ TO 18 GHZ, OPTIONAL)**

LOW LOSS

HIGH SPEED

LOW, MEDIUM, & HIGH POWER

**RECTANGULAR
REFLECTIVE & ABSORPTIVE**

**MULTI-THROW SOLID-STATE SWITCHES
(SP3T, SP4T, SP5T, SP6T, SP7T, SP8T, SP10T, SP12T, SP16T, & SP32T)
MSN AND MSNC (COMPACT) SERIES**

**DESIGNED
BY
ASH GORWARA, RENE AFABLE, & WAYNE PURDHAM**

**REPORTS PREPARED
BY
EMILY KING**

AUGUST 15, 1997

**WEB PAGE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)
E-MAIL ADDRESS: AMCPMI@AOL.COM**

DRH WP BG

7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
1.0	<u>SP3T - (Single Pole Three Throw), Reflective and Absorptive Switches</u>	1-0
1.1	MSN-3DR/DT-05-STANDARD with Independent Controls	1-1
1.2	MSN-3DR/DT-05-DEC-SP with 2 Bit Decoder and Solder Pins	1-2
2.0	<u>SP4T - (Single Pole Four Throw), Reflective and Absorptive Switches</u>	2-0
2.1	MSN-4DR/DT-05-STANDARD with Independent Controls	2-1
2.2	MSN-4DR/DT-05-DEC-SP with 2 Bit Decoder and Solder Pins	2-2
2.3	MSN-4DR/DT-05-DEC-MP with 2 Bit Decoder and MULTIPIN Connector	2-3
2.4	MSN-4DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	2-4
2.5	MSNC-4DR/DT-045-STANDARD with Independent Controls and with RF Connector Spacings of 0.45 inches	2-5
2.6	MSNC-4DR/DT-045-DEC-SP with 2 Bit Decoder and Solder Pins with RF Connector Spacings of 0.45 inches	2-6
3.0	<u>SP5T - (Single Pole Five Throw), Reflective and Absorptive Switches</u>	3-0
3.1	MSN-5DR/DT-05-STANDARD with Independent Controls	3-1
3.2	MSN-5DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	3-2
3.3	MSN-5DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	3-3
3.4	MSN-5DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	3-4
4.0	<u>SP6T - (Single Pole Six Throw), Reflective and Absorptive Switches</u>	4-0
4.1	MSN-6DR/DT-05-STANDARD with Independent Controls	4-1
4.2	MSN-6DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	4-2
4.3	MSN-6DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	4-3
4.4	MSN-6DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	4-4



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
5.0	<u>SP7T - (Single Pole Seven Throw), Reflective and Absorptive Switches</u>	5-0
5.1	MSN-7DR/DT-05-STANDARD with Independent Controls	5-1
5.2	MSN-7DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	5-2
5.3	MSN-7DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	5-3
5.4	MSN-7DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	5-4
6.0	<u>SP8T - (Single Pole Eight Throw), Reflective and Absorptive Switches</u>	6-0
6.1	MSN-8DR/DT-05-STANDARD with Independent Controls	6-1
6.2	MSN-8DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	6-2
6.3	MSN-8DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	6-3
6.4	MSN-8DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	6-4
7.0	<u>SP10T - (Single Pole Ten Throw), Reflective and Absorptive Switches</u>	7-0
7.1	MSN-10DR/DT-05-STANDARD with Independent Controls	7-1
7.2	MSN-10DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	7-2
7.3	MSN-10DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	7-3
7.4	MSN-10DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	7-4
8.0	<u>SP12T - (Single Pole Twelve Throw), Reflective and Absorptive Switches</u>	8-0
8.1	MSN-12DR/DT-05-STANDARD with Independent Controls	8-1
8.2	MSN-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	8-2
8.3	MSN-12DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	8-3
8.4	MSN-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	8-4



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
9.0	<u>SP12T - COMPACT DESIGN,(Single Pole Twelve Throw), Reflective and Absorptive Switches</u>	9-0
9.1	MSNC-12DR/DT-05-STANDARD with Independent Controls	9-1
9.2	MSNC-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	9-2
9.3	MSNC-12LR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	9-3
9.4	MSNC-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	9-4
10.0	<u>SP16T - (Single Pole Sixteen Throw), Reflective and Absorptive Switches</u>	10-0
10.1	MSN-16DR/DT-05-STANDARD with Independent Controls	10-1
10.2	MSN-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	10-2
10.3	MSN-16DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	10-3
10.4	MSN-16DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	10-4
11.0	<u>SP16T - COMPACT DESIGN,(Single Pole Sixteen Throw), Reflective and Absorptive Switches</u>	11-0
11.1	MSNC-16DR/DT-05-STANDARD with Independent Controls	11-1
11.2	MSNC-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	11-2
11.3	MSNC-16DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	11-3
11.4	MSNC-16DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	11-4
12.0	<u>SP32T - (Single Pole Thirty-Two Throw),Reflective and Absorptive Switches</u>	12-0
12.1	MSN-32DR/DT-05-STANDARD with Independent Controls	12-1
12.2	MSN-32DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	12-2
12.3	MSN-32DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	12-3
12.4	MSN-32DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	12-4



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGE
1.0	<u>SP3T - (Single Pole Three Throw), Reflective and Absorptive Switches</u>	1-0
1.1	MSN-3DR/DT-05-STANDARD with Independent Controls	1-1
1.2	MSN-3DR/DT-05-DEC-SP with 2 Bit Decoder and Solder Pins	1-2

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M1B 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M1B 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 61B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

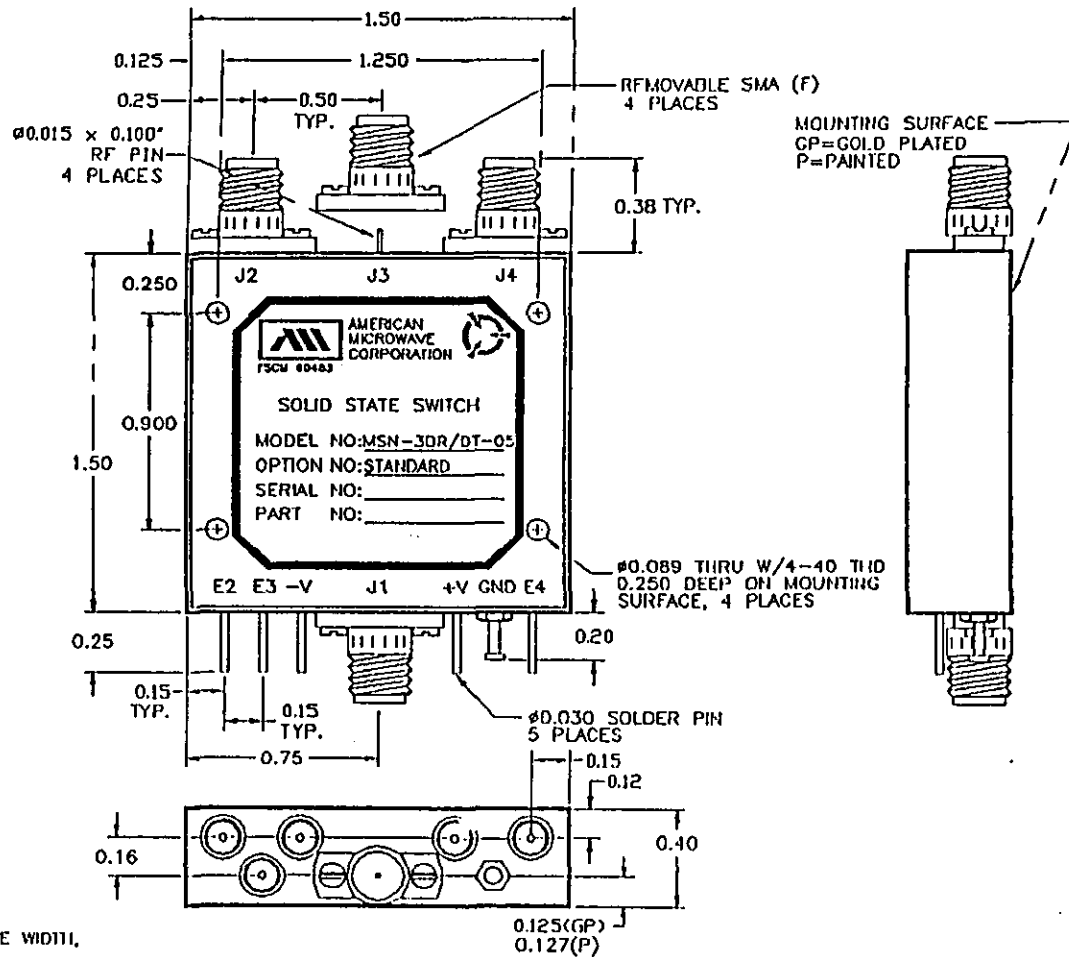
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
ZONE	REV.			
A		ORIGINAL RELEASE	1/1/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-3DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DR: W.P.P.	1/1/97	SHEET	REV.
REV: R. M. J.	2/16/97	A 60483	100-4165-1 A
SCALE		SHEET	1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.75db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 150 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

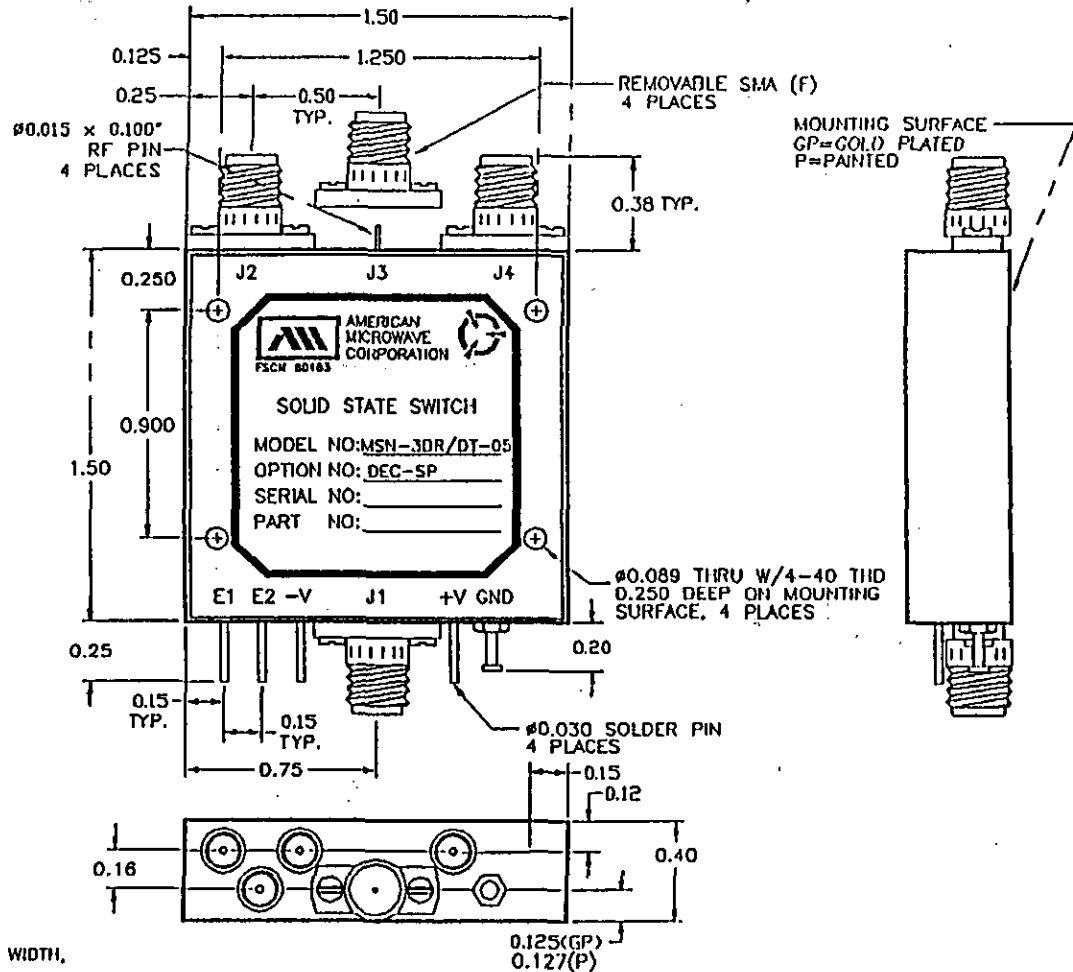
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	7/7/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: <i>WSP</i>	7/7/97	OUTLINE DRAWING	
CHECKED: <i>R. H. Able</i>	8/26/97	MSN-3DR/DT-05-DEC-SP	
DESIGNED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCN NO.	DWG NO.	REV.
A	60483	100-4165	A
SCALE		SHEET	1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
2.0	<u>SP4T - (Single Pole Four Throw), Reflective and Absorptive Switches</u>	2-0
2.1	MSN-4DR/DT-05-STANDARD with Independent Controls	2-1
2.2	MSN-4DR/DT-05-DEC-SP with 2 Bit Decoder and Solder Pins	2-2
2.3	MSN-4DR/DT-05-DEC-MP with 2 Bit Decoder and MULTIPIN Connector	2-3
2.4	MSN-4DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	2-4
2.5	MSNC-4DR/DT-045-STANDARD with Independent Controls and with RF Connector Spacings of 0.45 inches	2-5
2.6	MSNC-4DR/DT-045-DEC-SP with 2 Bit Decoder and Solder Pins with RF Connector Spacings of 0.45 inches	2-6

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
..... ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 2 BIT DECODER WITH MULTIPIN
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 018 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

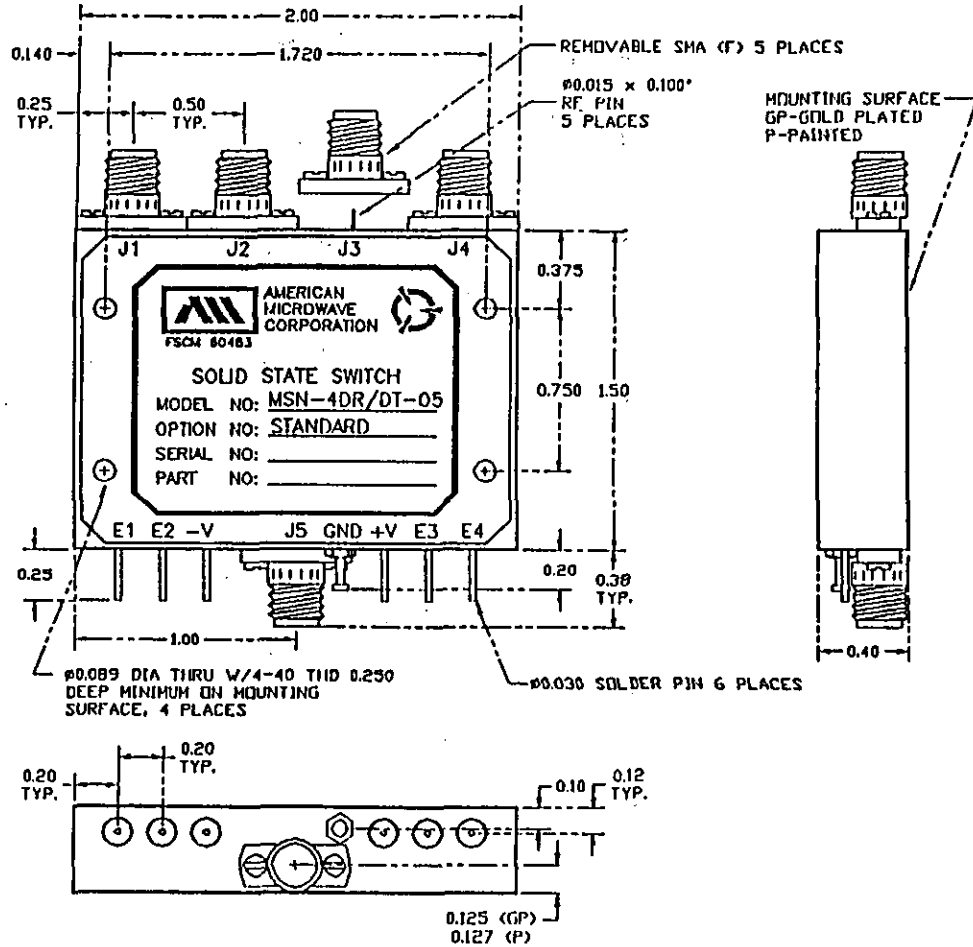
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	8/3/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
W. J. P.	8/3/97	OUTLINE DRAWING	
CH. J. P.	8/21/97	MSN-4DR/DT-05-STANDARD	
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4007-1	A
SCALE	SHEET		1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
..... ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
..... -5V @ 75mA MAX.(RELECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 2 BIT DECODER WITH MULTIPIN
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 001 -12V POWER SUPPLIES
- 002 -15V POWER SUPPLIES
- 003 REVERSE LOGIC "1"-ON "0"-OFF
- 004 DRIVERLESS, CURRENT CONTROLLED
- 005 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- 006 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- 007 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- 008 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- 009 LOW INSERTION LOSS VERSION
- 010 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

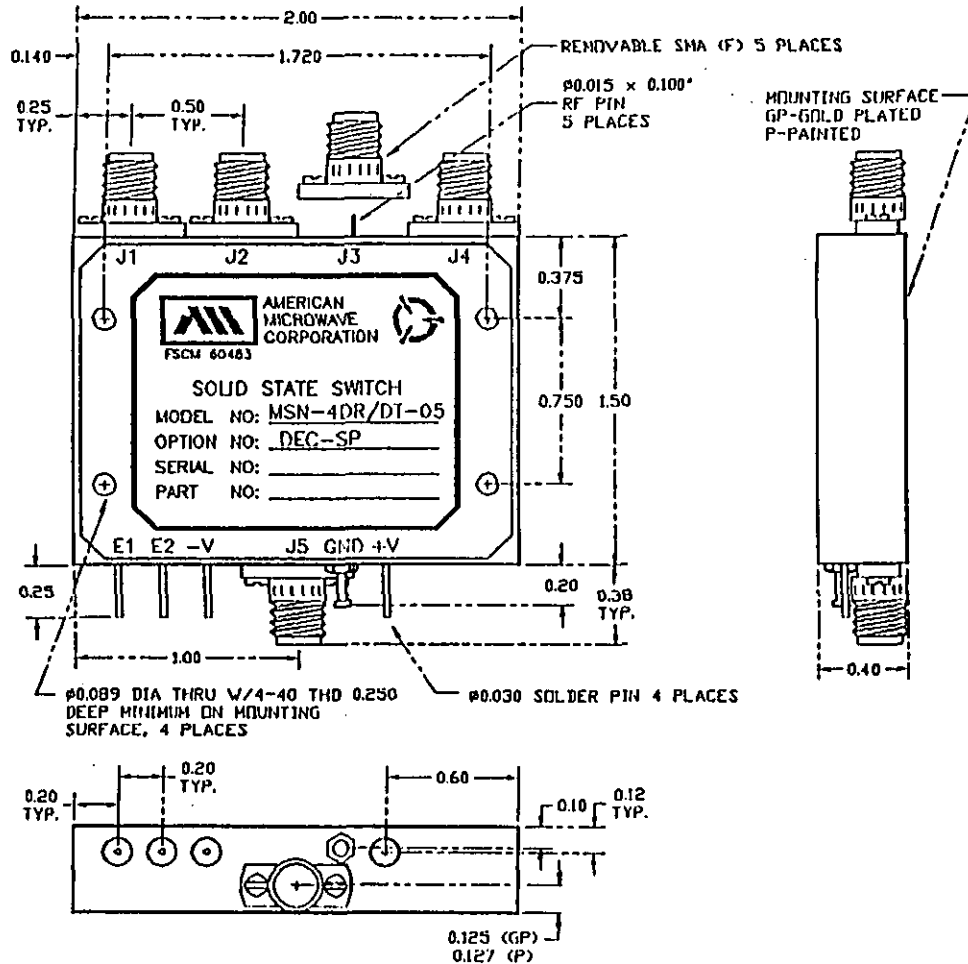
ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

2-2

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REV. NO.		DESCRIPTION	DATE	APPROVED
EDR	A	ORIGINAL RELEASE	3/3/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		APPROVALS		DATE	TITLE	
AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		DRAWN: <i>W/SP</i>		8/3/97	OUTLINE DRAWING	
		CHECKED: <i>P. J. [Signature]</i>		8/20/97	MSN-4DR/DT-05-DEC-SP	
		DESIGNED: <i>[Signature]</i>			REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE	
					SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.			
A	60483	100-4007-3	A			
SCALE			SHEET 1 of 1			

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec.
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 2 BIT DECODER WITH MULTIPIN
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- MP-IID INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

2-3

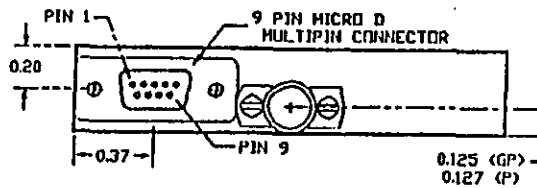
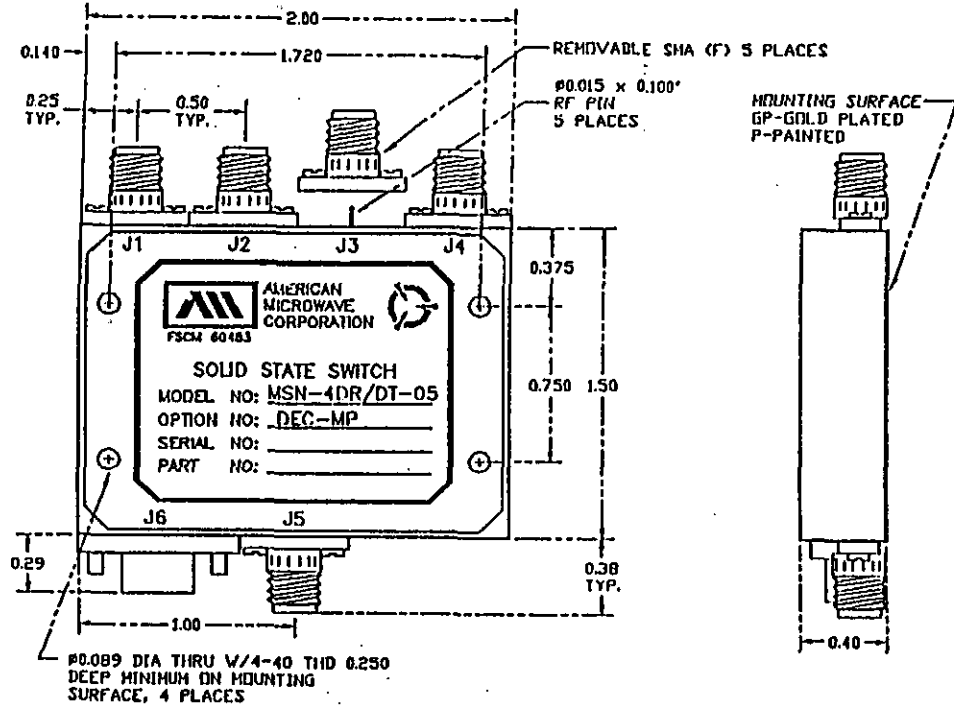
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 1038 COND. B
- **SHOCK:** MIL-STD-202F, METHOD 2138 COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 1070 COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REV.		DESCRIPTION	DATE	APPROVED
FORM	A	ORIGINAL RELEASE	8/5/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PIN OUT TABLE	
2 BIT DECODER	
LINE NO.	FUNCTION
1	GND
2	CC
3	N/C
4	N/C
5	N/C
6	GND
7	+V
8	-V
9	GND

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DESIGNER	8/5/97	OUTLINE DRAWING	
CHECKED	8/24/97	MSN-4DR/DT-05-DEC-MP	
REVISED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4007-2	A
SCALE	SHEET		1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 2 BIT DECODER WITH MULTIPIN
 - DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 61B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - D01 -12V POWER SUPPLIES
 - D02 -15V POWER SUPPLIES
 - D03 REVERSE LOGIC "1"=ON "0"=OFF
 - D04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

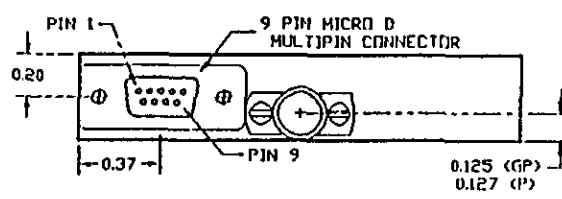
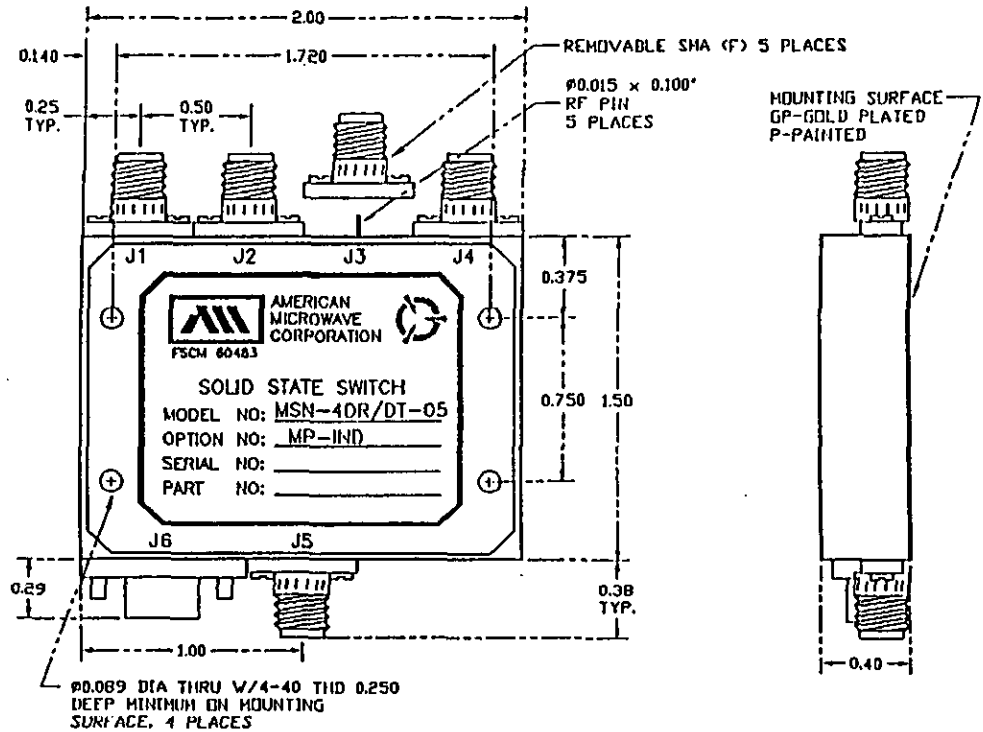
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				DATE	APPROVED
ECHE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE		8/5/97	



PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	H/G
6	G/D
7	+V
8	-V
9	G/D

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-4DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WSP	8/5/97	TITLE	
CHECKED R. J. [Signature]	8/26/97	FSCM NO. A 60483	QWC NO. 100-4007-4
REV.		SCALE	SHEET 1 of 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 200 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 2-5 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

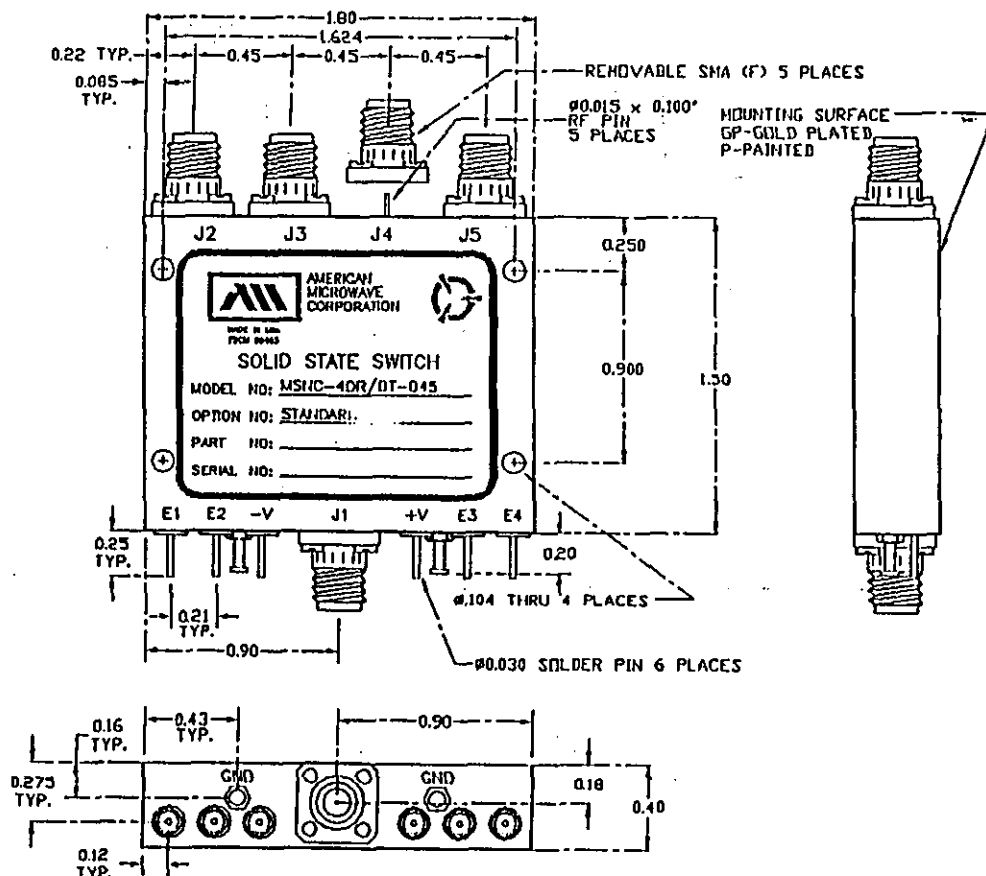
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
2018	A	ORIGINAL RELEASE	7/21/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: R.R.A. & W.S.P. CHECKED: J. Mable DESIGNED:	7/21/97	OUTLINE DRAWING MSNC-4DR/DT-045-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	TSCM NO.	DWG. NO.	REV.
A	60483	100-3989	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.0db
ABSORPTIVE: 3.75db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 200 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-SP 2 BIT DECODER WITH SOLDER PIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

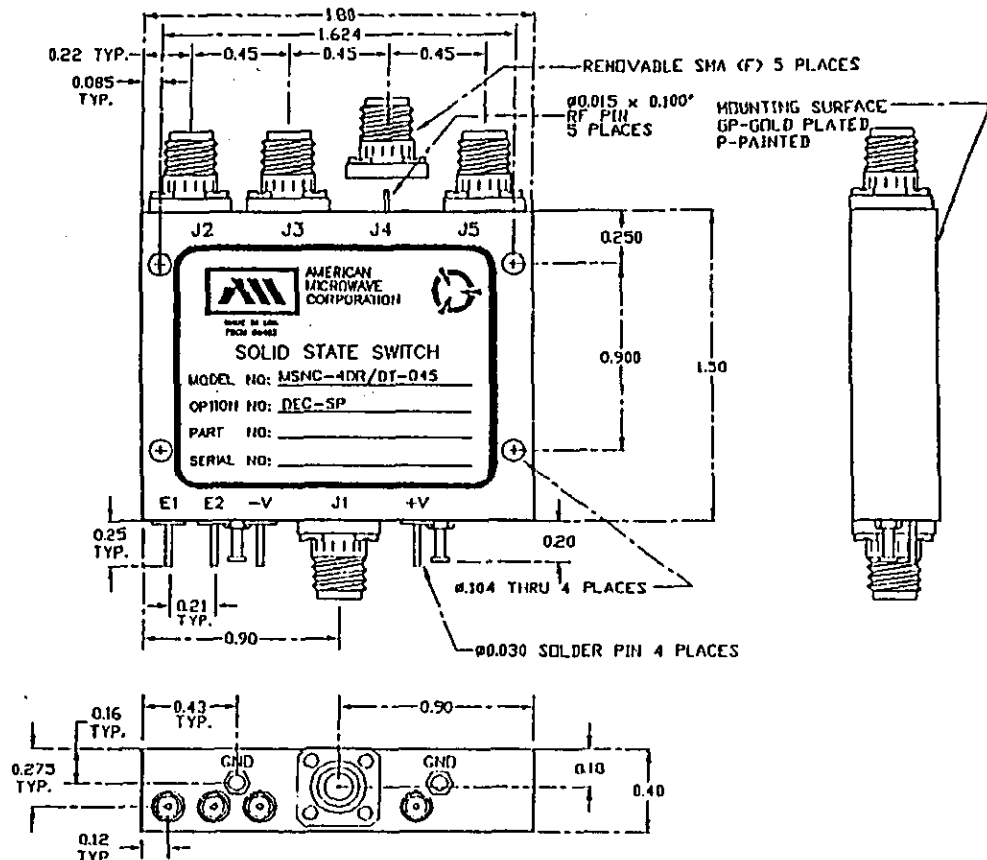
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
2014	A	ORIGINAL RELEASE	7/21/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN R.R. & W.P.	7/21/97	OUTLINE DRAWING MSNC-4DR/DT-045-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SCALE	SIZE	PDSCH. NO.	DWG. NO.
N/S	A	60483	100-3989-2
REV.		REV.	
A		A	
SHEET		1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
3.0	<u>SP5T - (Single Pole Five Throw), Reflective and Absorptive Switches</u>	3-0
3.1	MSN-5DR/DT-05-STANDARD with Independent Controls	3-1
3.2	MSN-5DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	3-2
3.3	MSN-5DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	3-3
3.4	MSN-5DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	3-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 uscc
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

3-1

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

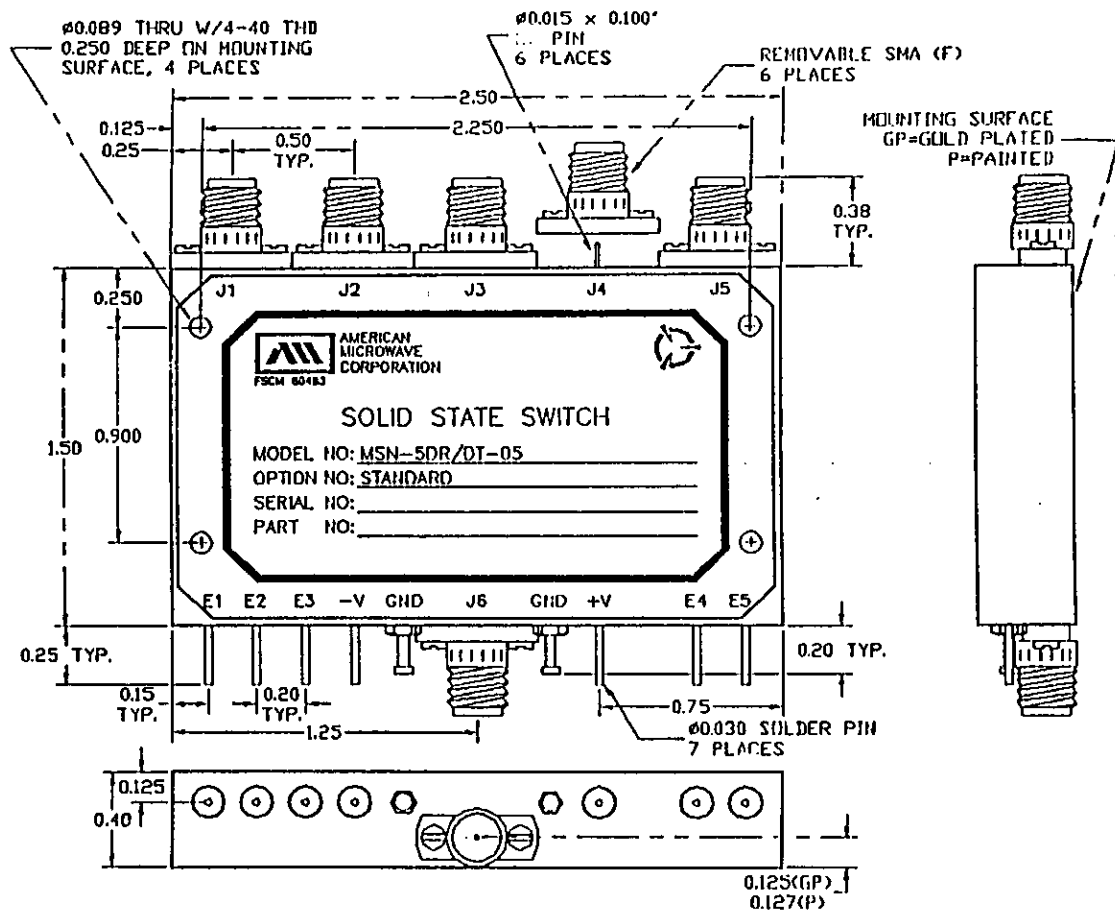
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	1/1/01	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRW: WJP	1/1/01	OUTLINE DRAWING MSN-5DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECK: [Signature]	3/26/01	SIZE	REV.
		A	A
		FSCM NO. 60483	DWG NO. 100-4166-1
		SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
 - DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

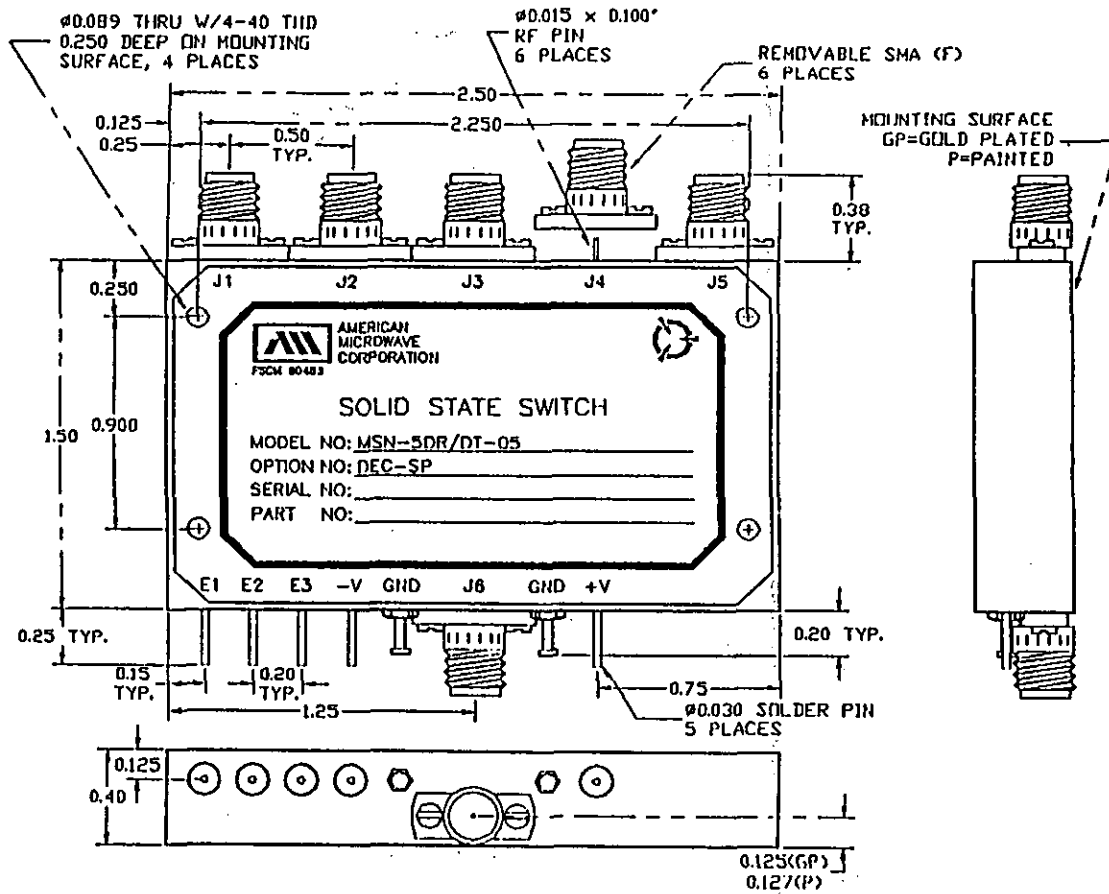
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	1/1/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-5DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WSP	1/1/97	SITE A	REV. A
CHECKED G. Noble	2/24/97	FSCM NO. 60483	DWG NO. 100-4166-7
ISSUED		SCALE N/S	SHEET 1

SPECIFICATIONS:

- **FREQUENCY:**..... 0.5 GHz TO 18 GHz
- **INSERTION LOSS:**..... REFLECTIVE: 3.25db
ABSORPTIVE: 4.0db
- **ISOLATION:**..... 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:**..... REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:**..... RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:**..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:**..... 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:**..... TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:**..... +5V @ 250 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP..... 3 BIT DECODER WITH MULTIPIN
- DEC-SP..... 3 BIT DECODER WITH SOLDER PIN
- MP-IND..... INDEPENDENT CONTROL WITH MULTIPIN
- 10M18..... 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18..... 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118..... 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218..... 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412..... 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618..... 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218..... 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20..... 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220..... 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020..... 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- D01..... -12V POWER SUPPLIES
- D02..... -15V POWER SUPPLIES
- D03..... REVERSE LOGIC "1"=ON "0"=OFF
- D04..... DRIVERLESS, CURRENT CONTROLLED
- D05..... HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- D06..... HIGH POWER -- SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- D07..... CUSTOM DESIGNED PRODUCT-- SPECIFY INITIALS OF CUSTOMER
- D08..... LOW VIDEO TRANSIENTS -- SPECIFY VIDEO BANDWIDTH
- D09..... LOW INSERTION LOSS VERSION
- D10..... HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

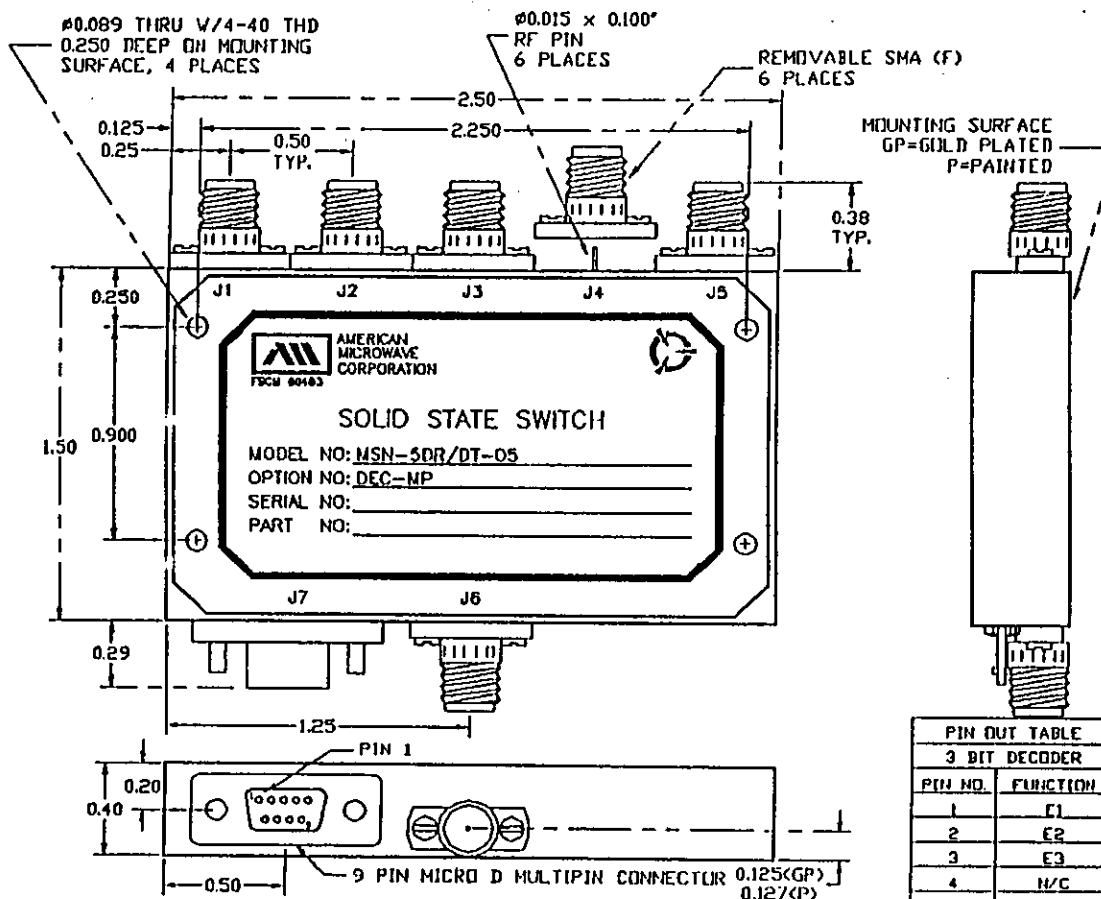
- **TEMPERATURE:**..... -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:**..... MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:**..... MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:**..... MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:**..... MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:**..... MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	1/1/97	



PIN OUT TABLE	
3 BIT DECODER	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	N/C
5	N/C
6	GND
7	+V
8	-V
9	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: <i>WJP</i> CHECKED: <i>W. H. Hable</i> DATE: 1/1/97 3/26/97	1/1/97	OUTLINE DRAWING MSN-5DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	PSCM NO.	DWG NO.	REV.
A	60483	100-4166-2	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.25db
..... ABSORPTIVE: 4.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 250 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

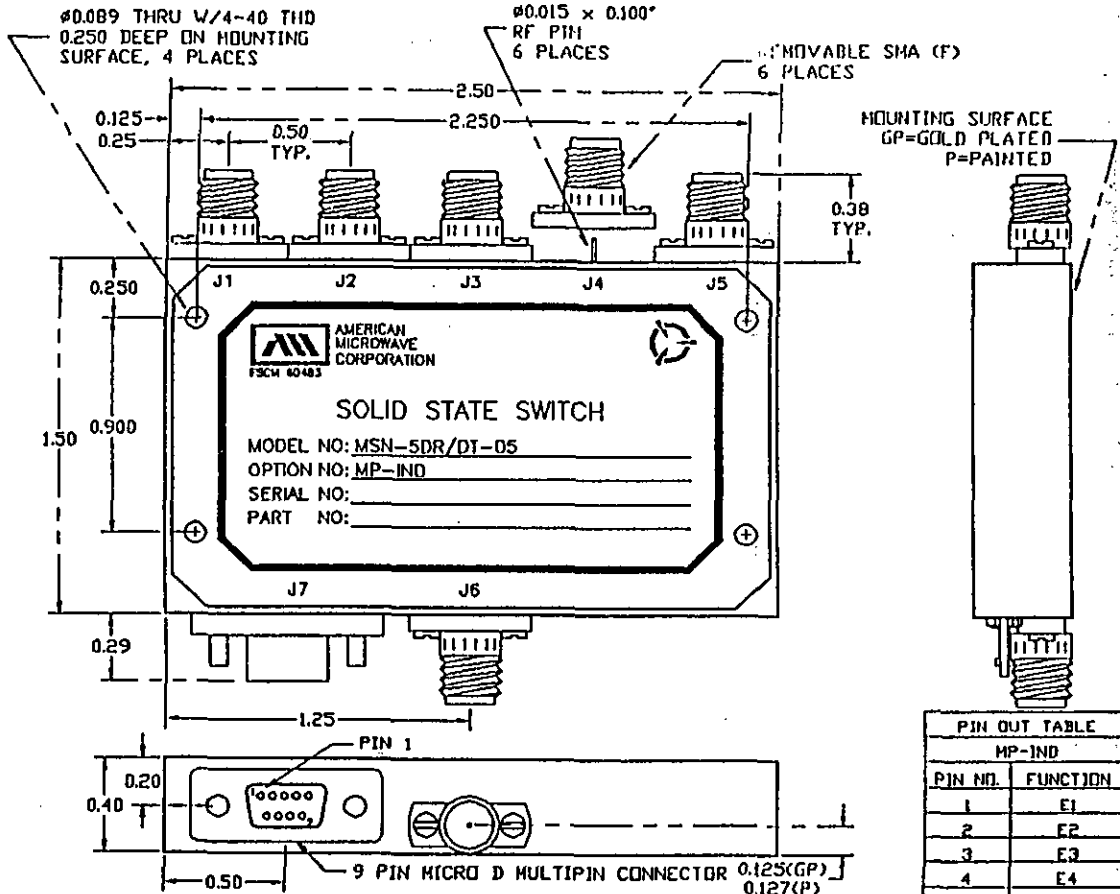
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	1/1/97	



PIN OUT TABLE	
MP-IND	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	GND
7	+V
8	-V
9	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: WYP CHECKED: C. H. H. H. DESIGNED:	1/1/97	OUTLINE DRAWING MSN-5DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	ENC. NO.	REV.
A	60483	100-4166-1	A
SCALE	N/S	SHEET	1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
4.0	<u>SP6T - (Single Pole Six Throw), Reflective and Absorptive Switches</u>	4-0
4.1	MSN-6DR/DT-05-STANDARD with Independent Controls	4-1
4.2	MSN-6DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	4-2
4.3	MSN-6DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	4-3
4.4	MSN-6DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	4-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
 - DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M10 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

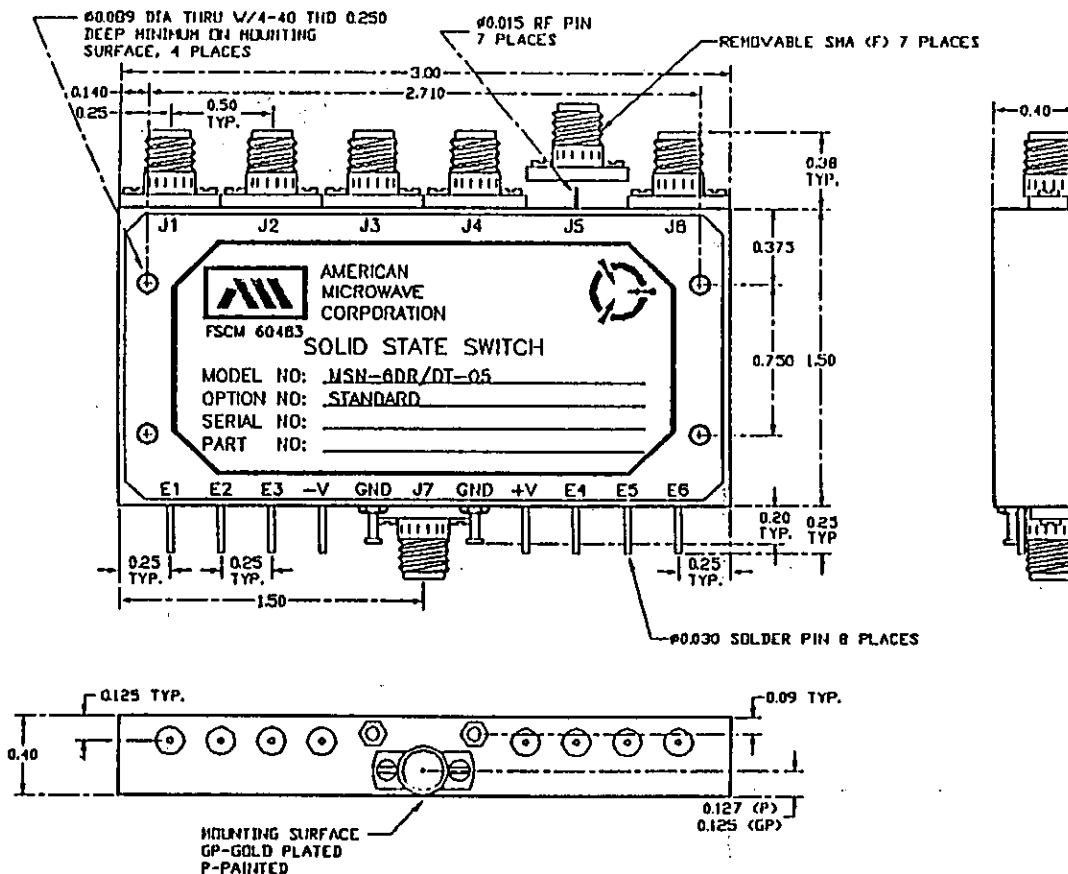
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
6/30/97	A	ORIGINAL RELEASE	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING	
DRAWN WVP	6/30/97	MSN-6DR/DT-05-STANDARD	
CHECK L. A. Noble	8/21/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-415	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP: 3 BIT DECODER WITH MULTIPIN
- DEC-SP: 3 BIT DECODER WITH SOLDER PIN
- MP-IND: INDEPENDENT CONTROL WITH MULTIPIN
- 10M18: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01: -12V POWER SUPPLIES
- B02: -15V POWER SUPPLIES
- B03: REVERSE LOGIC "1"-ON "0"-OFF
- B04: DRIVERLESS, CURRENT CONTROLLED
- B05: HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07: CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09: LOW INSERTION LOSS VERSION
- B10: HIGHER ISOLATION VERSION

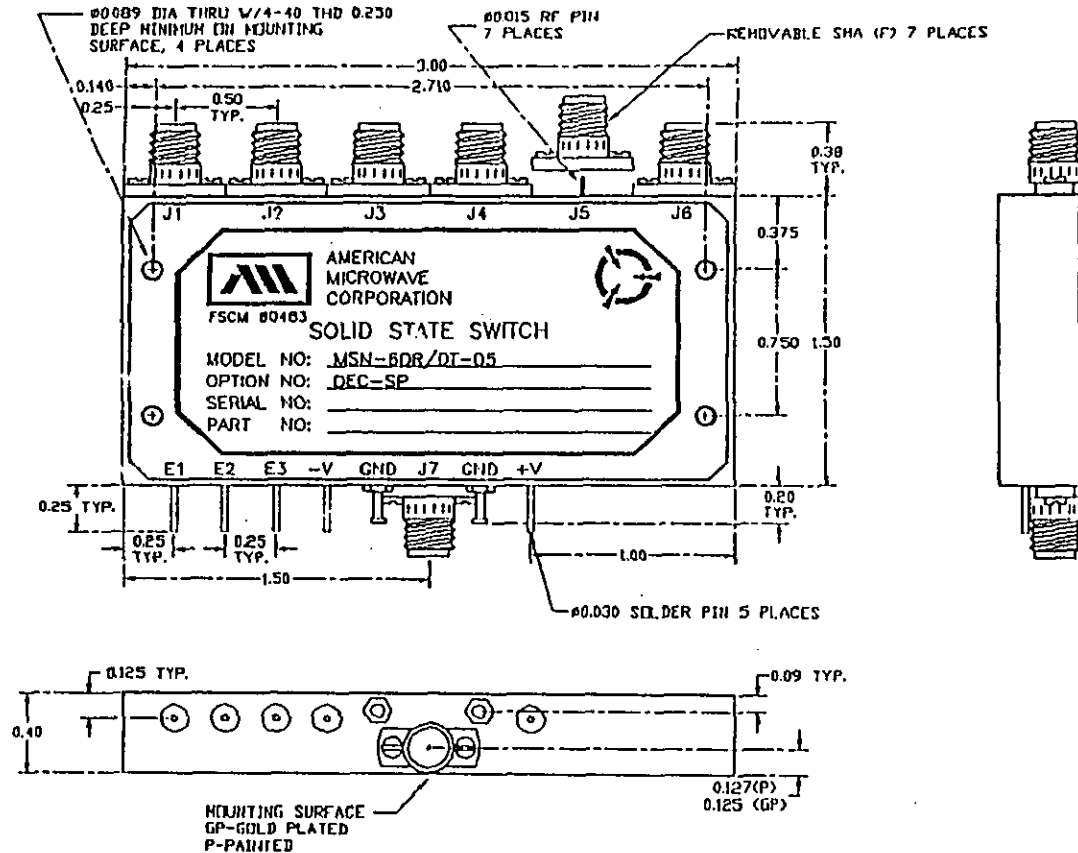
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

ZONE		REV.	DESCRIPTION	DATE	APPROVED
		A	ORIGINAL RELEASE	6/30/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-6DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN: W/S/P	6/30/97	SIZE: A	FSCM NO. 60483
CHECKED: [Signature]	8/26/97	DWG NO. 100-4151-3	REV. A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.5db
..... ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 300 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

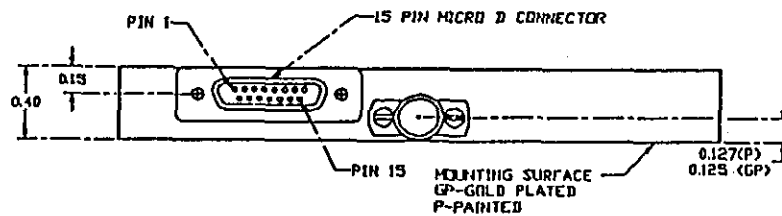
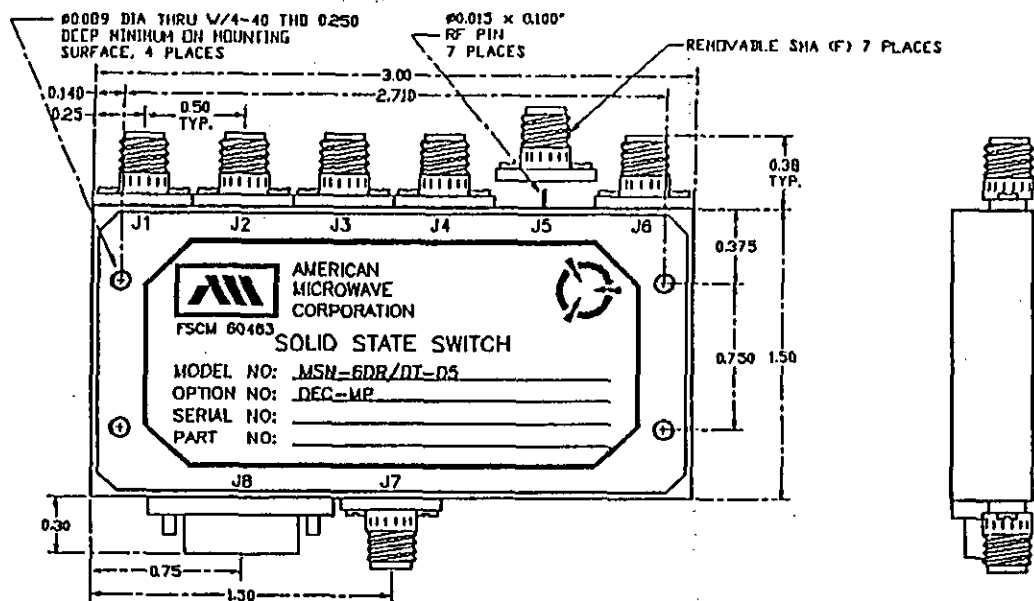
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
 - DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	6/30/97	



PIN NO.	FUNCTION
1	DR
2	DR
3	DR
4	N/C
5	N/C
6	N/C
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	DR
13	-V
14	-V
15	DR

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	6/30/97	OUTLINE DRAWING	
CHKD	8/26/97	MSN-6DR/DT-05-DEC-MP	
DATE		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE	
		SOLID STATE SWITCH	
SIZE	13CW NO.	DWG NO.	REV.
A	60483	100-4151-2	A
SCALE	H/S	SHEET	1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.5db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 300 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- D01 -12V POWER SUPPLIES
- D02 -15V POWER SUPPLIES
- D03 REVERSE LOGIC "1"=ON "0"=OFF
- D04 DRIVERLESS, CURRENT CONTROLLED
- D05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- D06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- D07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- D08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- D09 LOW INSERTION LOSS VERSION
- D10 HIGHER ISOLATION VERSION

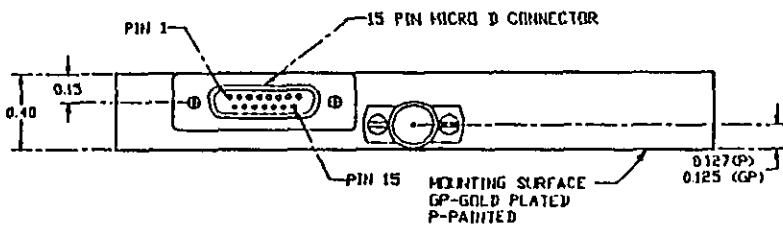
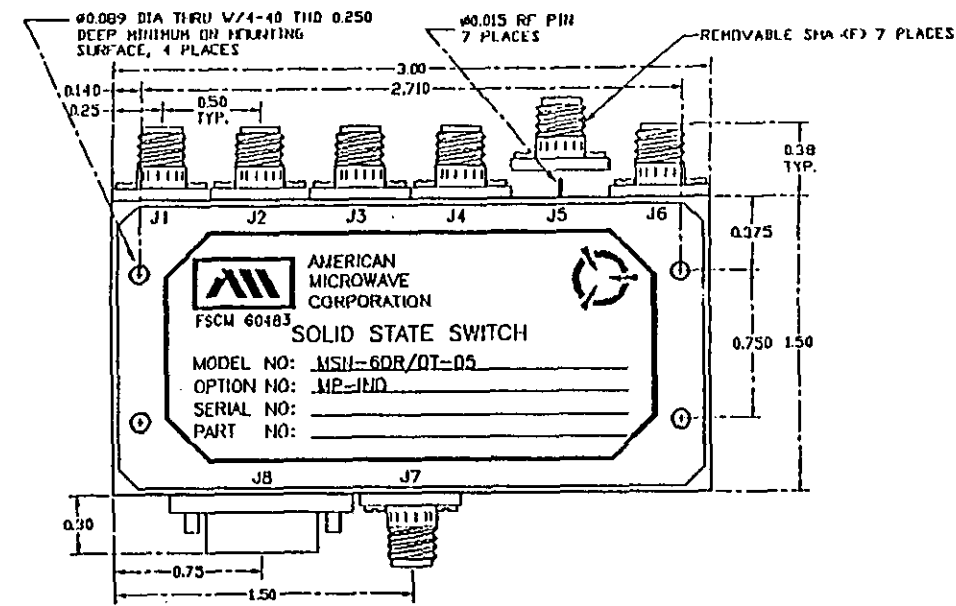
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION	6/18/94	
A		ORIGINAL RELEASE		



PIN OUT TABLE	
MP-IND	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	E6
7	NC
8	NC
9	NC
10	NC
11	NC
12	GND
13	+V
14	-V
15	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TYPE OUTLINE DRAWING	
DRAWN <i>[Signature]</i>	6/30/97	MSN-6DR/DT-05-MP-IND	
CHECKED <i>[Signature]</i>	8/24/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4151-4	A
SCALE N/S		SHEET 1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
5.0	<u>SP7T - (Single Pole Seven Throw), Reflective and Absorptive Switches</u>	5-0
5.1	MSN-7DR/DT-05-STANDARD with Independent Controls	5-1
5.2	MSN-7DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	5-2
5.3	MSN-7DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	5-3
5.4	MSN-7DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	5-4

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
..... ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

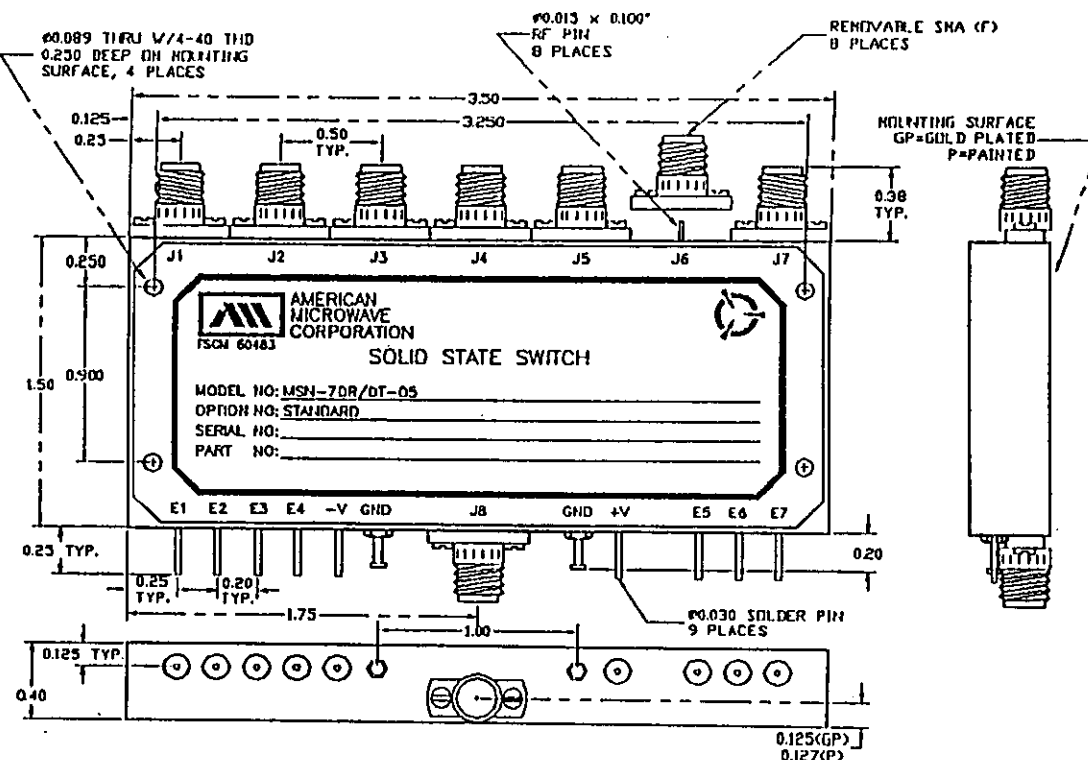
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	7/7/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

APPROVALS		DATE	AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
DRAWN		7/7/97	TITLE OUTLINE DRAWING MSN-7DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED		8/26/97	SIZE	REV.
			A	A
			FSCM NO. 60483	DWG NO. 100-4167-1
			SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
..... ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

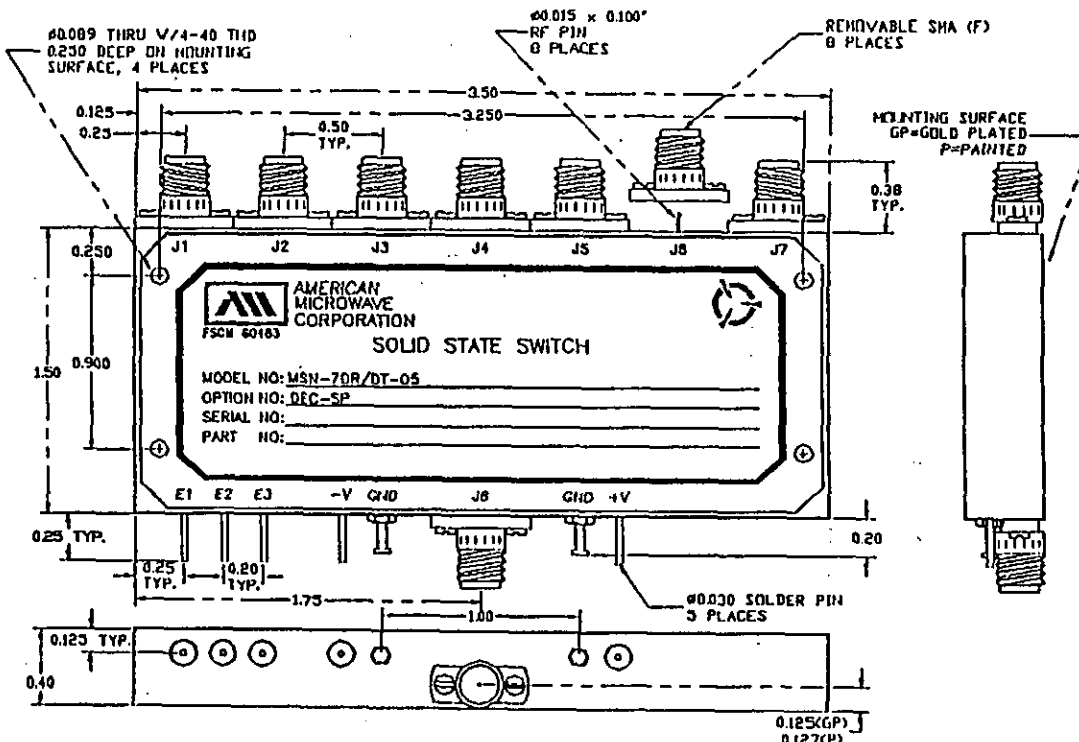
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

REVISIONS			DATE	APPROVED
DATE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	1/1/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-7DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WSP	1/1/97	SIZE A	FSCM NO. 60483
CHECKED P. A. Able	8/26/97	ENG. NO. 100-4167	REV. A
FILED		SCALE N/S	31

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 3.75db
ABSORPTIVE: 4.25db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 350 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NOH-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
 - DEC-SP 3 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

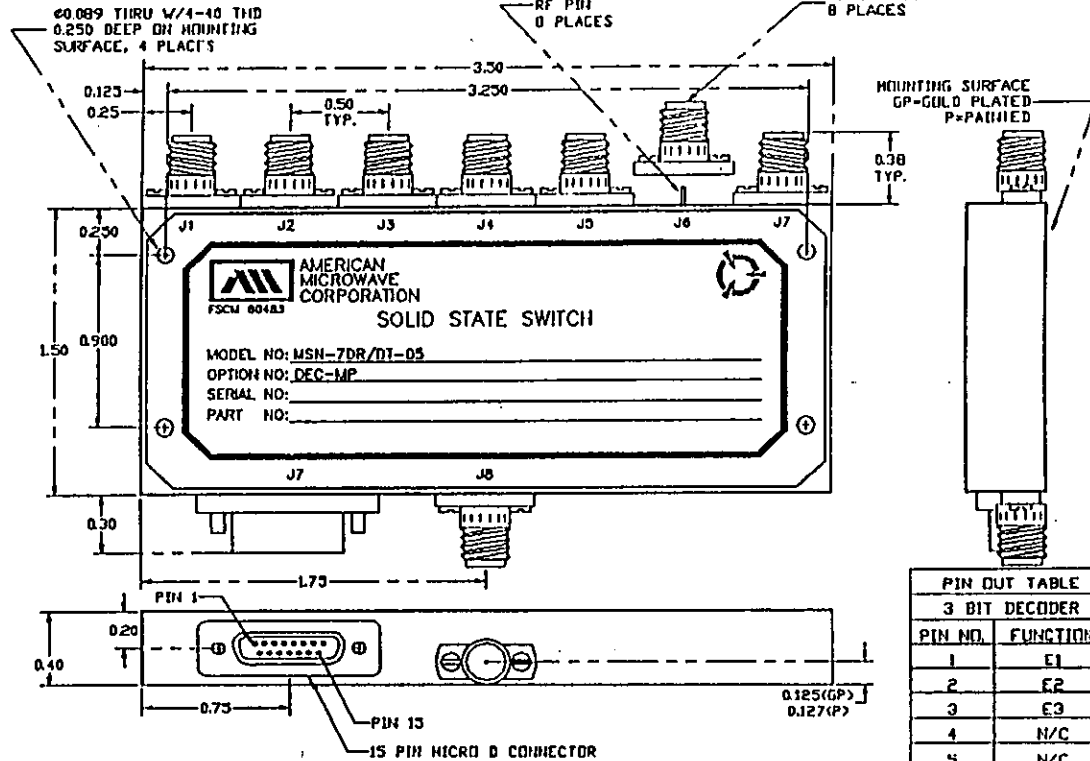
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

ZONE		REV.	DESCRIPTION	DATE	APPROVED
A			ORIGINAL RELEASE	7/7/97	



PIN OUT TABLE	
3 BIT DECODER	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	N/C
5	N/C
6	N/C
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	GND
13	+V
14	-V
15	GND

NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-7DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DESIGN J.P.P.	7/7/97	SIZE	REV.
CHECK R. H. [Signature]	8/26/97	FSCM NO. A 60483	DWG NO. 100-4167-2
ISSUED		SCALE	SHEET 1 of 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 3.75db
 ABSORPTIVE: 4.25db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 100ns MAX.
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 μ sec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 350 mA MAX.
 -5V @ 75mA MAX.(REFLECTIVE)
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

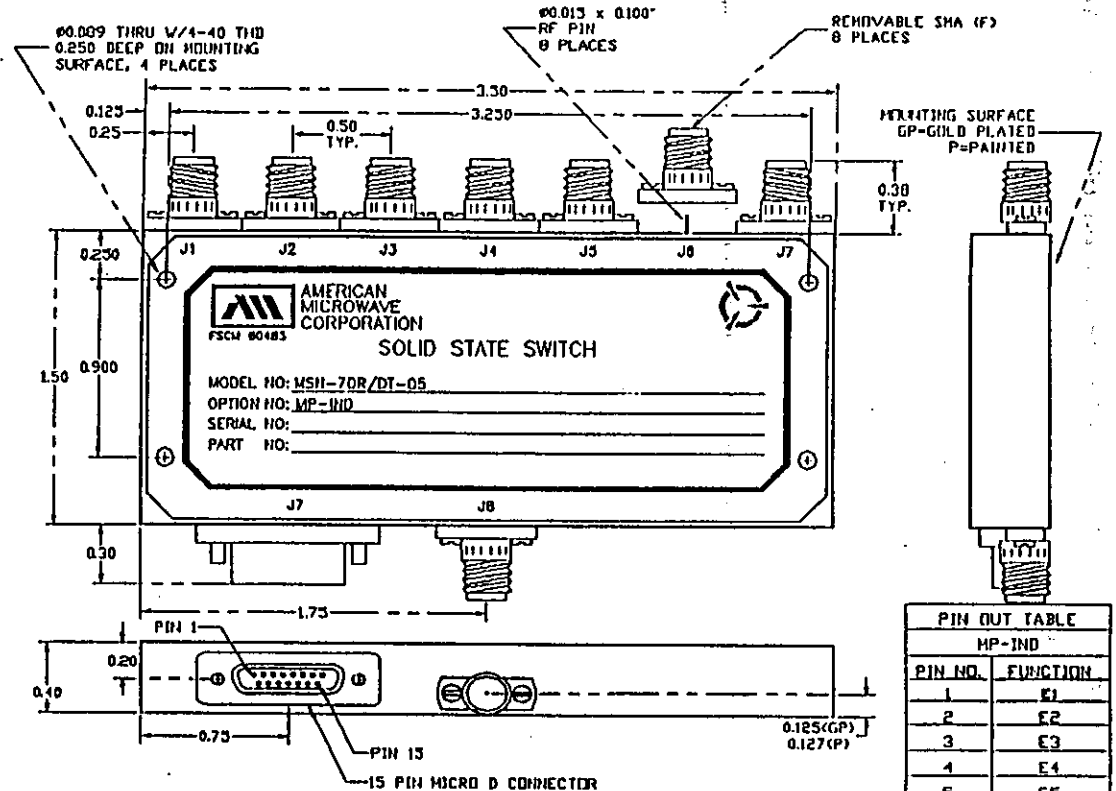
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
101E	A	ORIGINAL RELEASE	7/7/97	



PIN OUT TABLE	
MP-IND	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	E6
7	E7
8	N/C
9	N/C
10	N/C
11	N/C
12	GND
13	+V
14	-V
15	GND

NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-7DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN: WCP	1/7/97	SIZE: A	FSCM NO: 60483
CHKD: K. Apple	8/2/97	QWG NO: 100-4167-	REV: A
TSKED:		SCALE: N/S	SHEET: 1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
6.0	<u>SP8T - (Single Pole Eight Throw), Reflective and Absorptive Switches</u>	6-0
6.1	MSN-8DR/DT-05-STANDARD with Independent Controls	6-1
6.2	MSN-8DR/DT-05-DEC-SP with 3 Bit Decoder and Solder Pins	6-2
6.3	MSN-8DR/DT-05-DEC-MP with 3 Bit Decoder and MULTIPIN Connector	6-3
6.4	MSN-8DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	6-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
..... ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 80db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 400 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

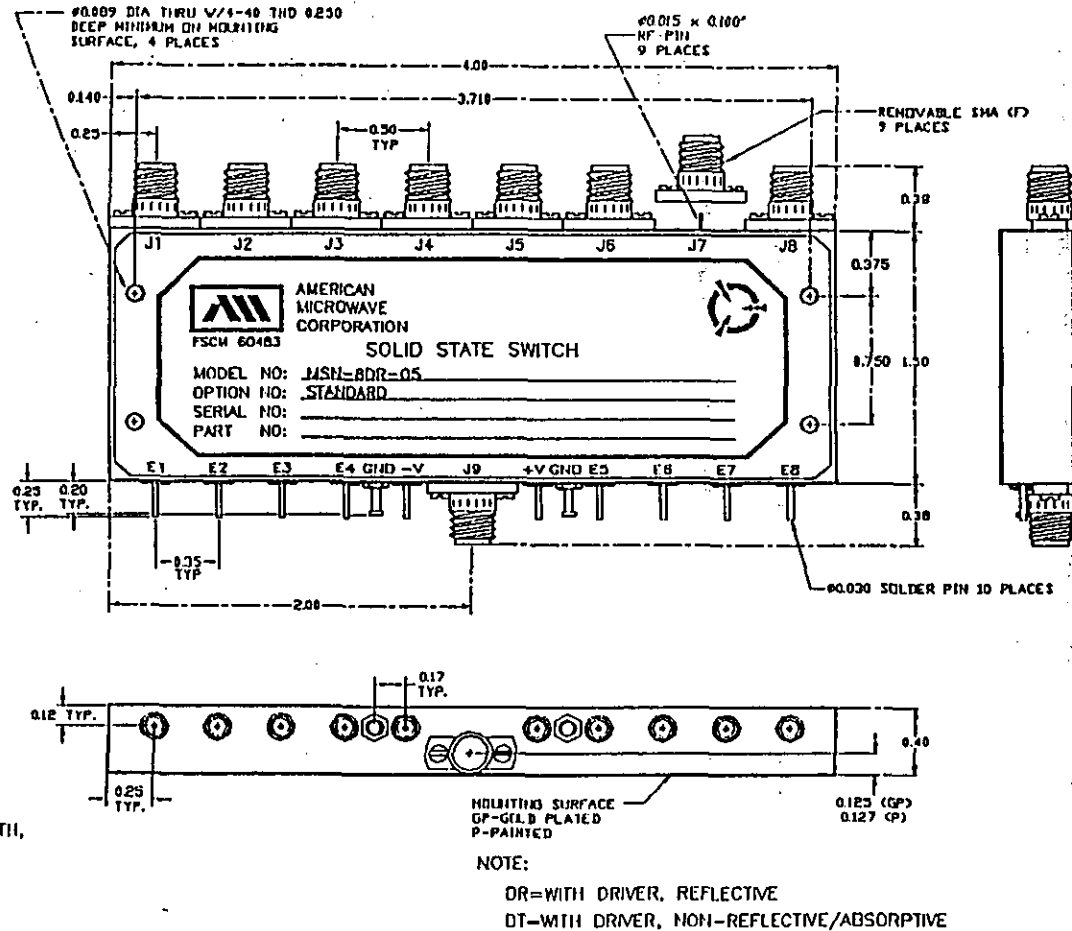
- DEC-MP: 3 BIT DECODER WITH MULTIPIN
- DEC-SP: 3 BIT DECODER WITH SOLDER PIN
- MP-IND: INDEPENDENT CONTROL WITH MULTIPIN
- 10M1B 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M1B 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 801 -12V POWER SUPPLIES
- 802 -15V POWER SUPPLIES
- 803 REVERSE LOGIC "1"=ON "0"=OFF
- 804 DRIVERLESS, CURRENT CONTROLLED
- 805 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- 808 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- 807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- 809 LOW INSERTION LOSS VERSION
- 810 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	5/15/97	



PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS		TITLE		
DATE		OUTLINE DRAWING		
DRAWN R. J. J. & W. J. P.		MSN-8DR/DT-05-STANDARD		
CHECKED P. J. J.		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
DATE 5/15/97		SIZE	DWG NO.	REV.
DATE 8/24/97		A	60483	100-3938-1
SCALE		SHEET		1

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
..... ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 100 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 6-2 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DIMMERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

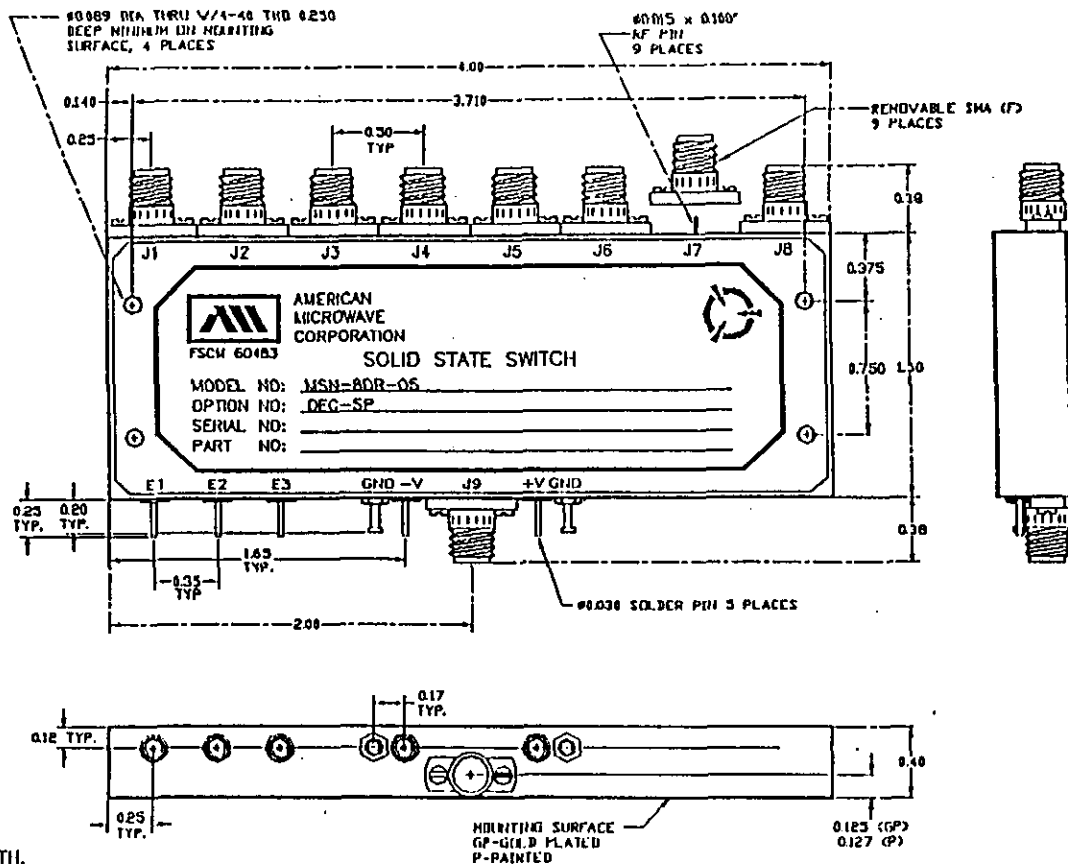
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
3/13/97	A	ORIGINAL RELEASE	



NOTE:
OR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-8DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN: <i>R.R. & W.S.P.</i> CHECKED: <i>L. A. J.</i> ISSUED: <i>2/26/97</i>	3/13/97	SIZE A	DWG NO. 100-3938-3 REV. A
SCALE		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 400 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M10 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

6-3

ENVIRONMENTAL RATINGS:

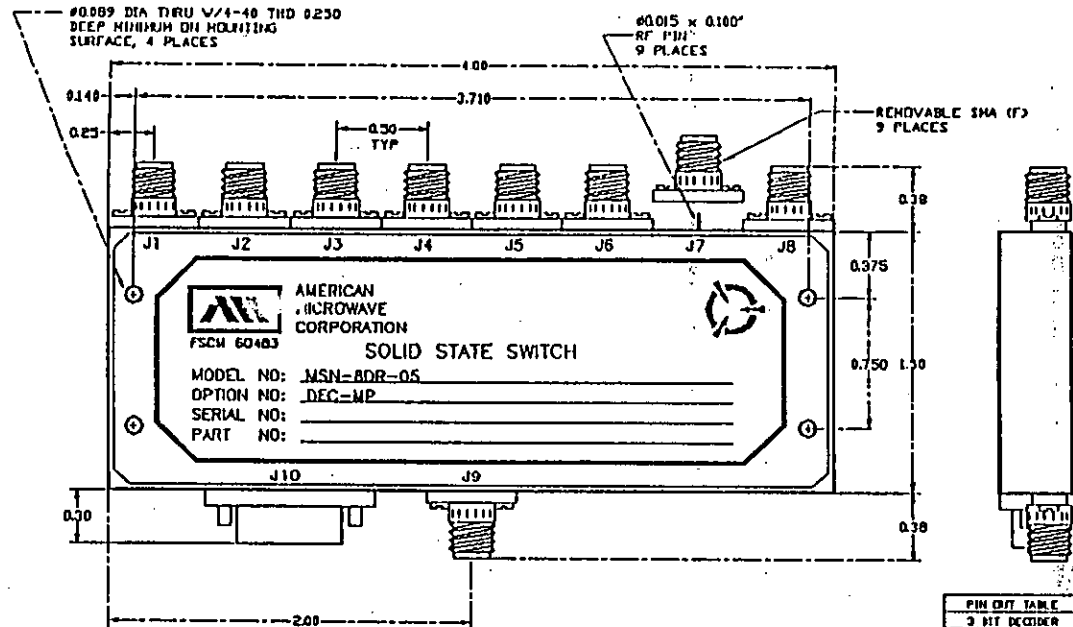
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	9/19/97	



PIN OUT TABLE	
3 BIT DECODER	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	N/C
5	N/C
6	N/C
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	GND
13	+V
14	-V
15	GND

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN R.R. & W.J.P.	9/19/97	OUTLINE DRAWING	
CHECKED L. A. White	8/26/97	MSN-8DR/DT-05-DEC-MP	
SIZE		FSCM NO.	DWG NO.
A		60483	100-3938
SCALE		REV. A	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 4.0db
ABSORPTIVE: 4.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 400 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 3 BIT DECODER WITH MULTIPIN
- DEC-SP 3 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

64

ENVIRONMENTAL RATINGS:

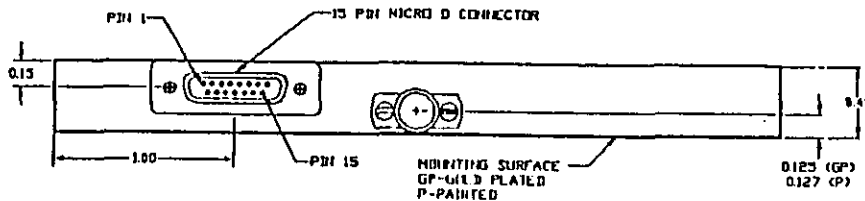
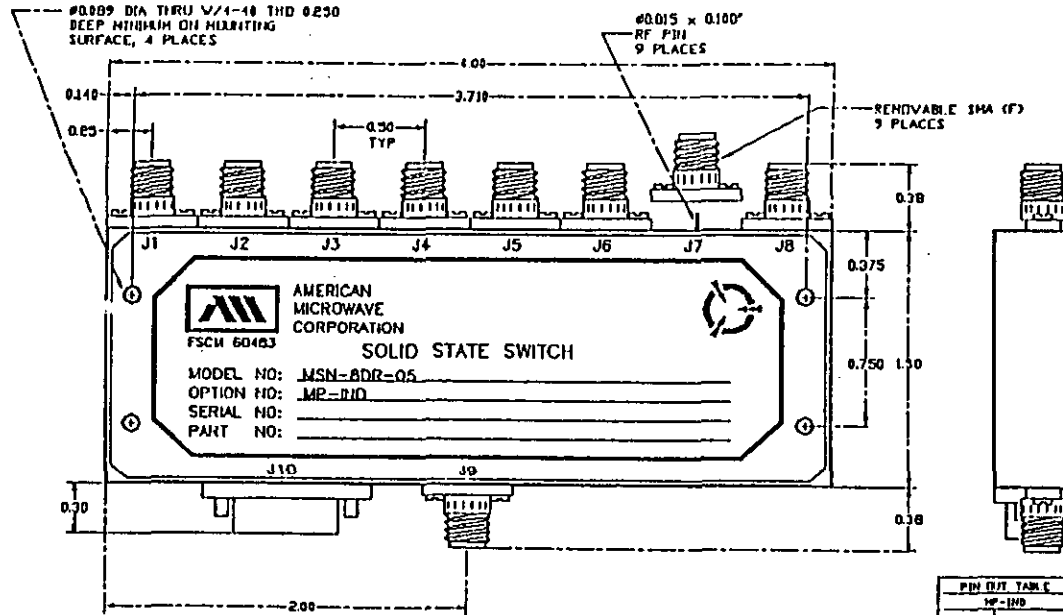
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 2040 COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
3/13/97	A	ORIGINAL RELEASE	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PIN OUT TABLE	
MP-IND	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	E6
7	E7
8	E8
9	N/C
10	N/C
11	N/C
12	GND
13	+V
14	-V
15	GND

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-8DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN R.R. & W.S.P.	3/13/97	SIZE A	REV. A
CHECKED P. J. J. J.	3/26/97	FSCM NO. 60483	DWG NO. 100-3938-4
DESIGNED		SCALE	SHEET 1 of 1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
7.0	<u>SP10T - (Single Pole Ten Throw), Reflective and Absorptive Switches</u>	7-0
7.1	MSN-10DR/DT-05-STANDARD with Independent Controls	7-1
7.2	MSN-10DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	7-2
7.3	MSN-10DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	7-3
7.4	MSN-10DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	7-4

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 4.5db
..... ABSORPTIVE: 5.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 500 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

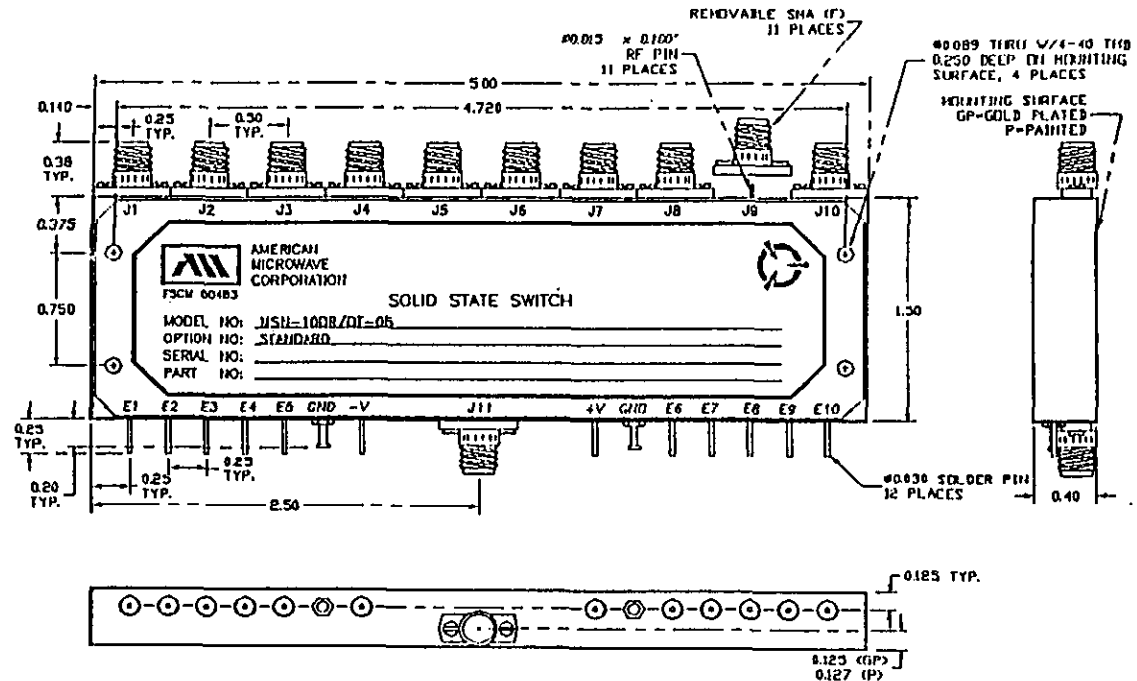
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRWEN 7/1/97	8/8/97	OUTLINE DRAWING	
CHKD P. J. [Signature]	8/26/97	MSN-10DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4107-1	A
SCALE	SHEET		1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.5db
ABSORPTIVE: 5.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 500 mA MAX.
-5V @ 75mA MAX.(RELECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

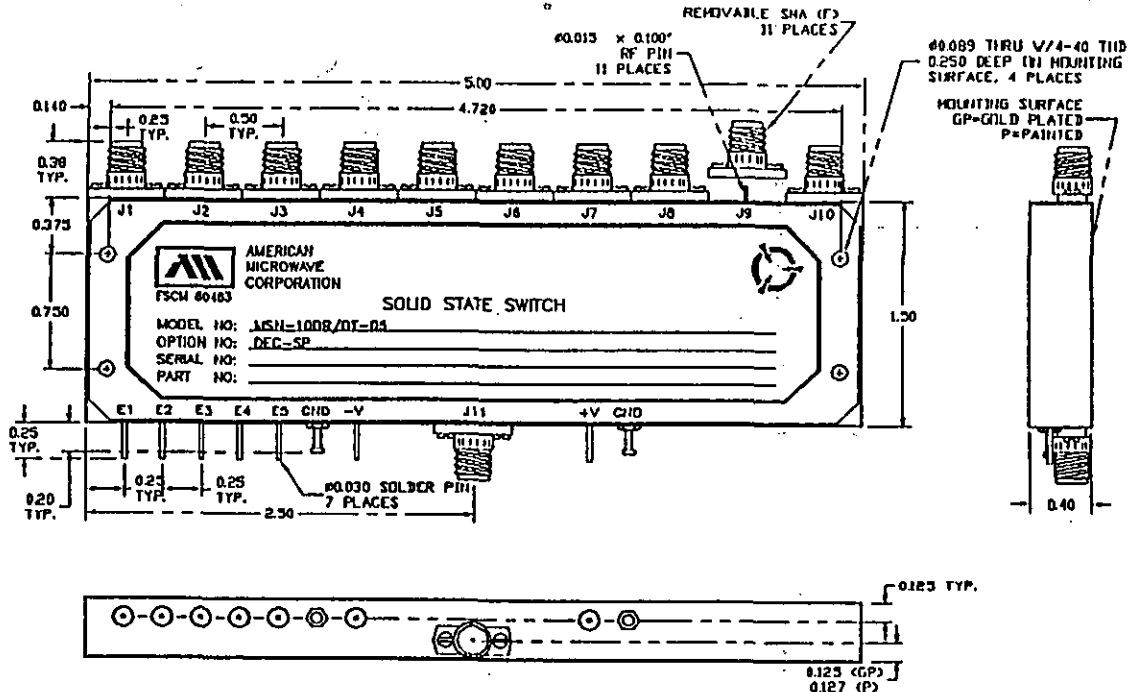
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	8/8/97	



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS		DATE	TITLE	
DRAWN: W/S/P		8/8/97	OUTLINE DRAWING	
CHECKED: V. N. Nobile		8/26/97	MSN-10DR/DT-05-DEC-SP	
DESIGNED:			REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE	
			SOLID STATE SWITCH	
SIZE	FSCM NO.	OWG NO.	REV.	
A	60483	100-4107-7	A	
SCALE			SHEET	1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.5db
ABSORPTIVE: 5.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 100ns MAX.
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 μ sec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 500 mA MAX.
-5V @ 75mA MAX.(REFLECTIVE)
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M1B 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M1B 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

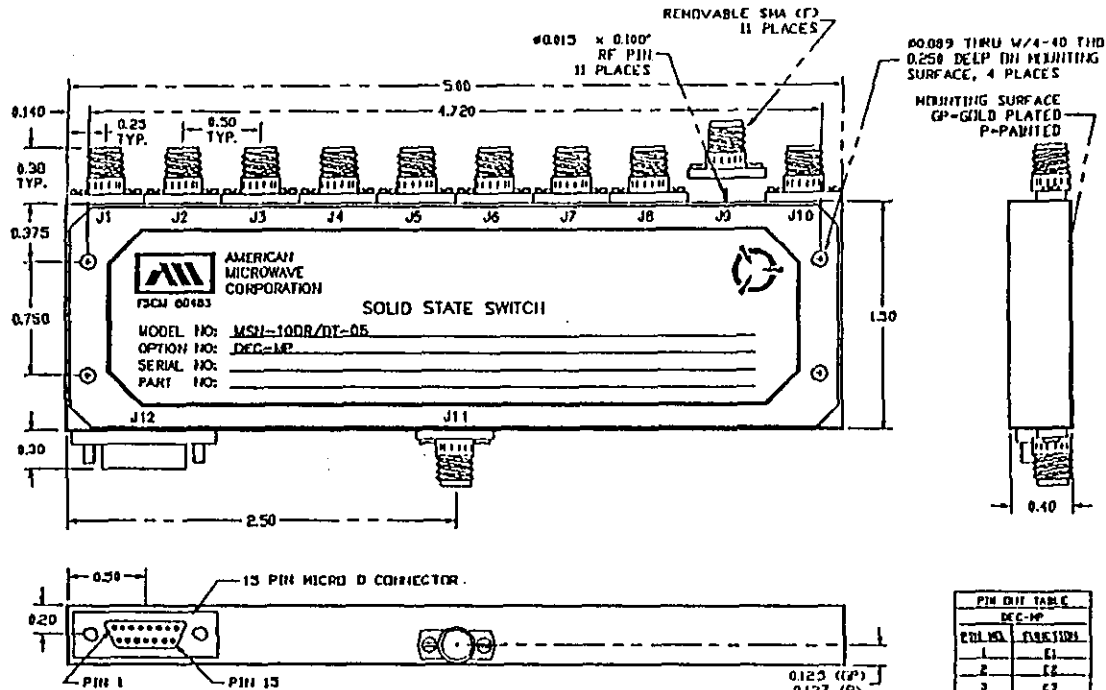
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX \pm 0.020
X.XXX \pm 0.010

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE		8/8/97	



PIN OUT TABLE	
DEC-MP	
PIN NO.	FUNCTION
1	GND
2	GND
3	GND
4	GND
5	GND
6	VCC
7	VCC
8	VCC
9	VCC
10	VCC
11	VCC
12	GND
13	VCC
14	VCC
15	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS		DATE	
DRAWN: <i>WJP</i>		8/8/97	
CHECKED: <i>C. Mable</i>		8/26/97	
REV. A		DWG NO. 60483	
SCALE		DWG NO. 100-4107-2	
		REV. A	
		SHEET 1 of 1	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 4.5db
..... ABSORPTIVE: 5.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 μ sec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 500 mA MAX.
..... -5V @ 75mA MAX.(REFLECTIVE)
..... 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

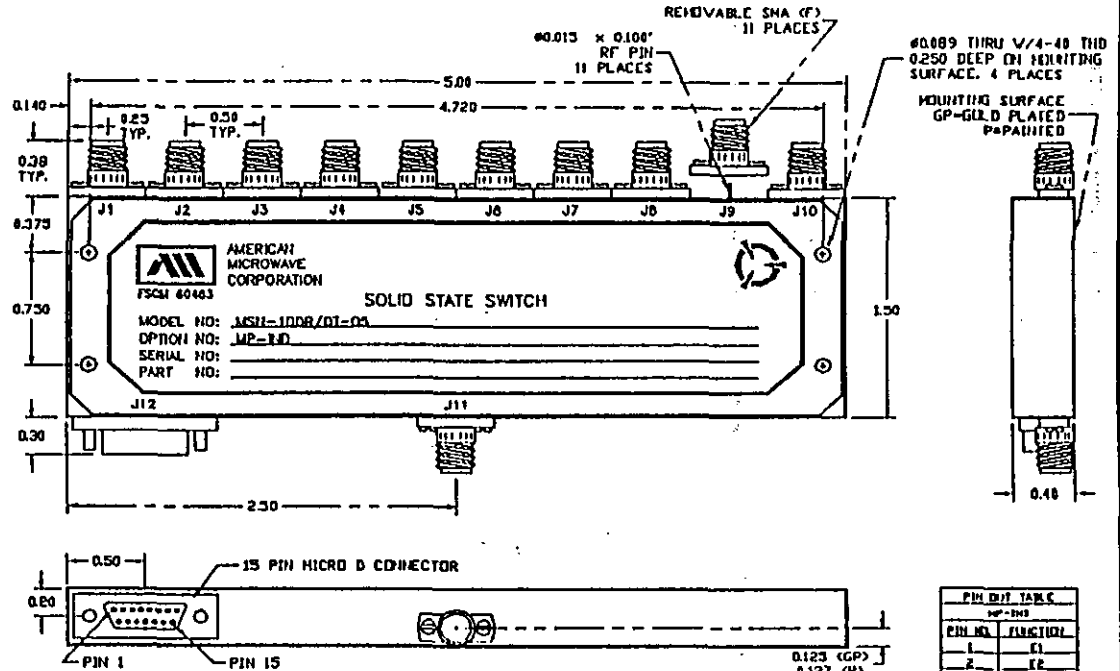
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
8/8/97	A	ORIGINAL RELEASE	



PIN OUT TABLE	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	E6
7	E7
8	E8
9	E9
10	E10
11	N/C
12	GND
13	+V
14	-V
15	DR

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: [Signature]	8/8/97	OUTLINE DRAWING	
DESIGNED: [Signature]	8/26/97	MSN-10DR/DT-05-MP-IND	
		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE	
		SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4107-4	A
SCALE		SHEET	1

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
8.0	<u>SP12T - (Single Pole Twelve Throw), Reflective and Absorptive Switches</u>	8-0
8.1	MSN-12DR/DT-05-STANDARD with Independent Controls	8-1
8.2	MSN-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	8-2
8.3	MSN-12DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	8-3
8.4	MSN-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	8-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP: 5 BIT DECODER WITH MULTIPIN
- DEC-SP: 5 BIT DECODER WITH SOLDER PIN
- MP-IND: INDEPENDENT CONTROL WITH MULTIPIN
- 10M18: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 018: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01: -12V POWER SUPPLIES
- B02: -15V POWER SUPPLIES
- B03: REVERSE LOGIC "1"=ON "0"=OFF
- B04: DRIVERLESS, CURRENT CONTROLLED
- U05: HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07: CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09: LOW INSERTION LOSS VERSION
- B10: HIGHER ISOLATION VERSION

8-1

ENVIRONMENTAL RATINGS:

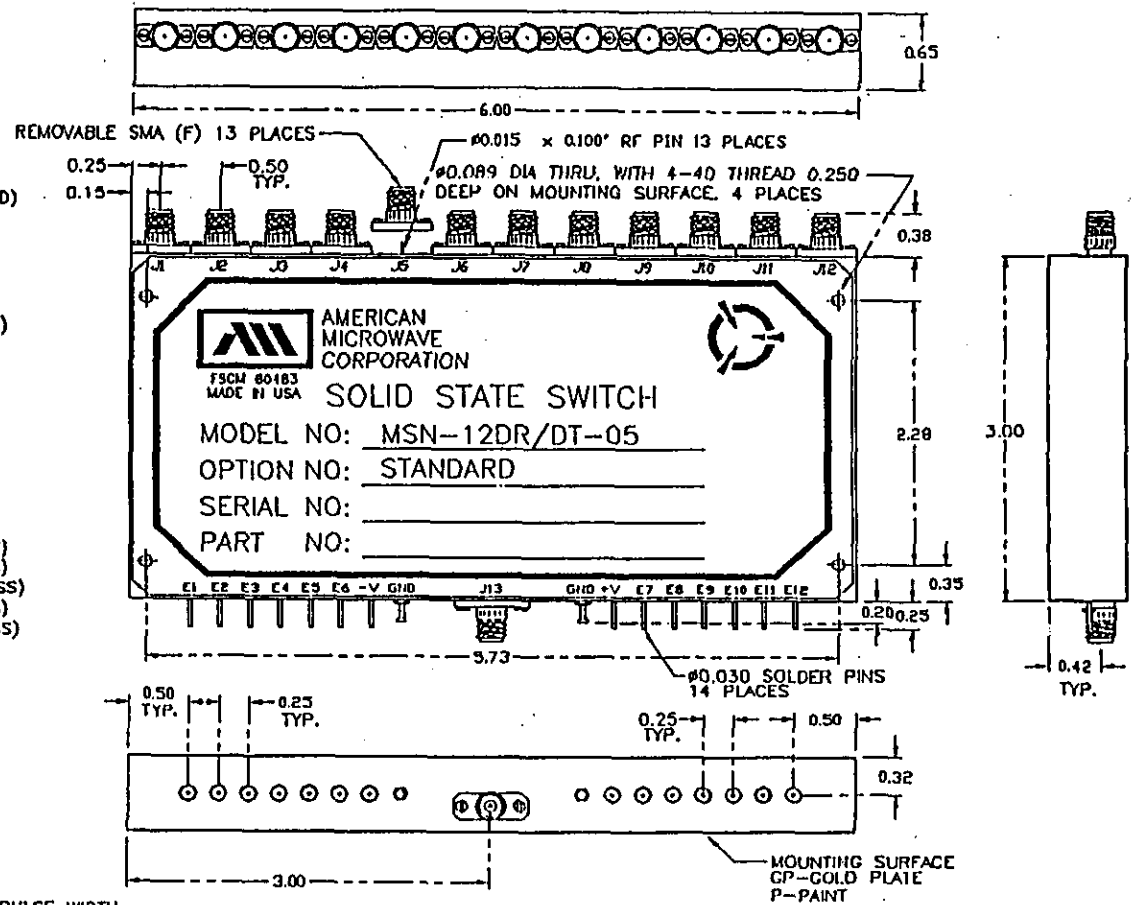
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-55°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
7/2/97	A	ORIGINAL RELEASE	



NOTE:

DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN <i>[Signature]</i>	7/2/97	OUTLINE DRAWING MSN-12DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4161-1	A
SCALE	N/S	SHEET	1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD NON-REFLECTIVE
- DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M2D 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=DN "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

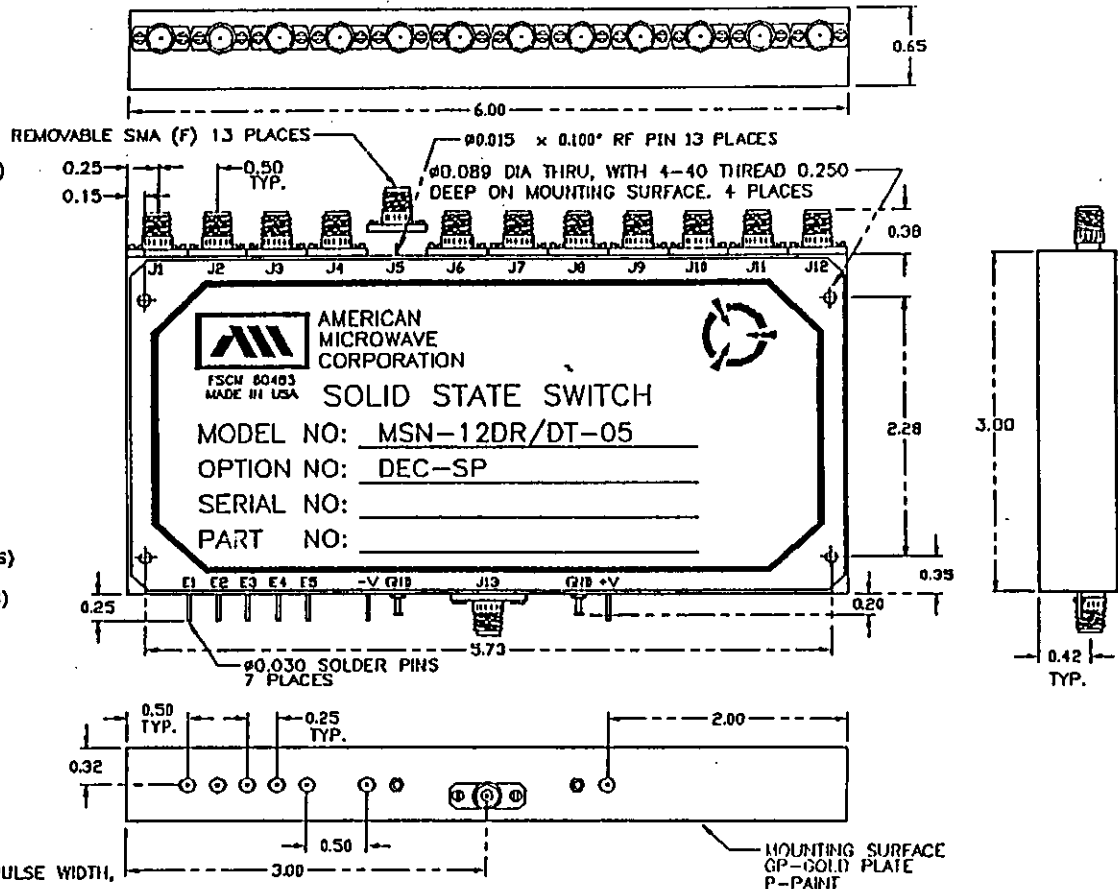
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

8-2

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	7/1/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-12DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRWING W/P L. Wolfe 1/2/97	DATE 7/1/97	SIZE A	REV. A
FSCM NO. 60483		DWG NO. 100-4161-4	
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP: 5 BIT DECODER WITH MULTIPIN
 - DEC-SP: 5 BIT DECODER WITH SOLDER PIN
 - MP-IND: INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01: -12V POWER SUPPLIES
 - B02: -15V POWER SUPPLIES
 - B03: REVERSE LOGIC "1"=ON "0"=OFF
 - B04: DRIVERLESS, CURRENT CONTROLLED
 - B05: HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07: CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09: LOW INSERTION LOSS VERSION
 - B10: HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

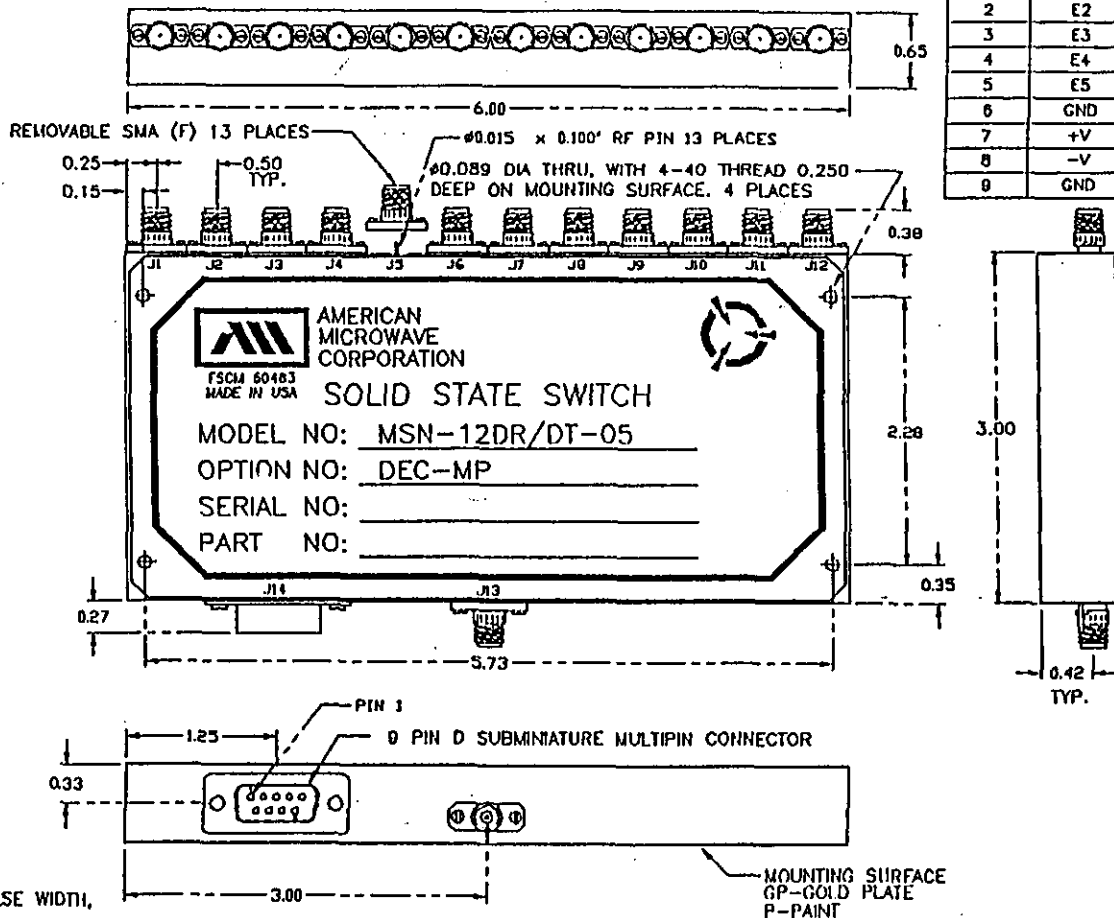
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE RATE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	7/2/97	

PIN OUT TABLE	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	GND
7	+V
8	-V
9	GND



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-12DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN <i>W. J. P.</i>	7/2/97	SIZE A	FSCM NO. 60483
CHECKED <i>W. J. P.</i>	7/26/97	DWG NO. 100-4161	REV. A
SCALE N/S			SHEET 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

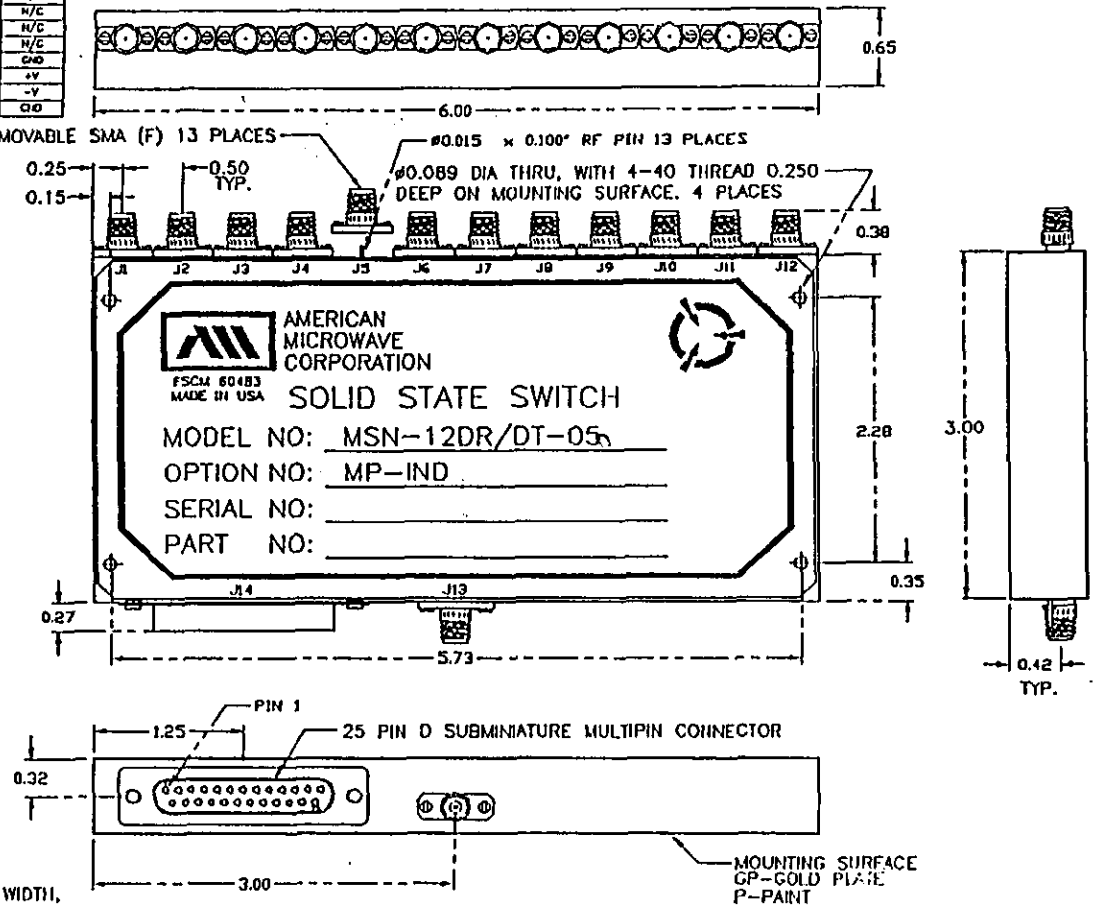
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PIN OUT SIZE			
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	E1	13	N/C
2	E2	14	N/O
3	E3	15	N/C
4	E4	16	N/C
5	E5	17	N/C
6	E6	18	N/C
7	E7	19	N/C
8	E8	20	N/C
9	E9	21	N/C
10	E10	22	GND
11	E11	23	+V
12	E12	24	-V
		25	GND

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	1/10/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN <i>[Signature]</i>	1/10/97	OUTLINE DRAWING MSN-12DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED <i>[Signature]</i>	8/26/97	SIZE	REV.
ISSUED		A 60483	A
		TSCM NO.	DWG NO.
		A	100-4161-2
		SCALE	SHEET
		N/S	1 of 1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
9.0	<u>SP12T - COMPACT DESIGN, (Single Pole Twelve Throw), Reflective and Absorptive Switches</u>	9-0
9.1	MSNC-12DR/DT-05-STANDARD with Independent Controls	9-1
9.2	MSNC-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	9-2
9.3	MSNC-12DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	9-3
9.4	MSNC-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	9-4

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 5.0db
..... ABSORPTIVE: 5.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 150ns MAX.
..... DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 600 mA MAX.
..... -5V @ 150mA MAX.(RELECTIVE)
..... 200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M10 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=DN "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

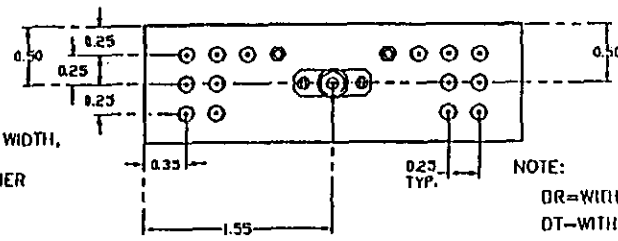
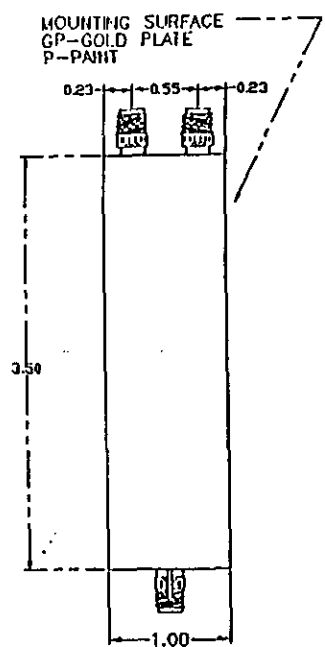
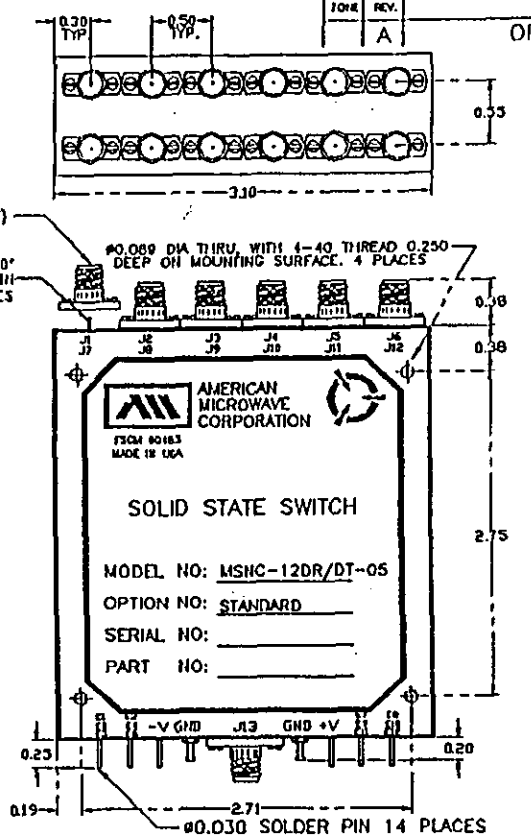
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	1/1/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSNC-12DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN W/S	1/1/97	SCALE A 60483	REV. A
CHECKED J. J. [Signature]	8/26/97	SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 600 mA MAX.
-5V @ 150mA MAX.(REFLECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

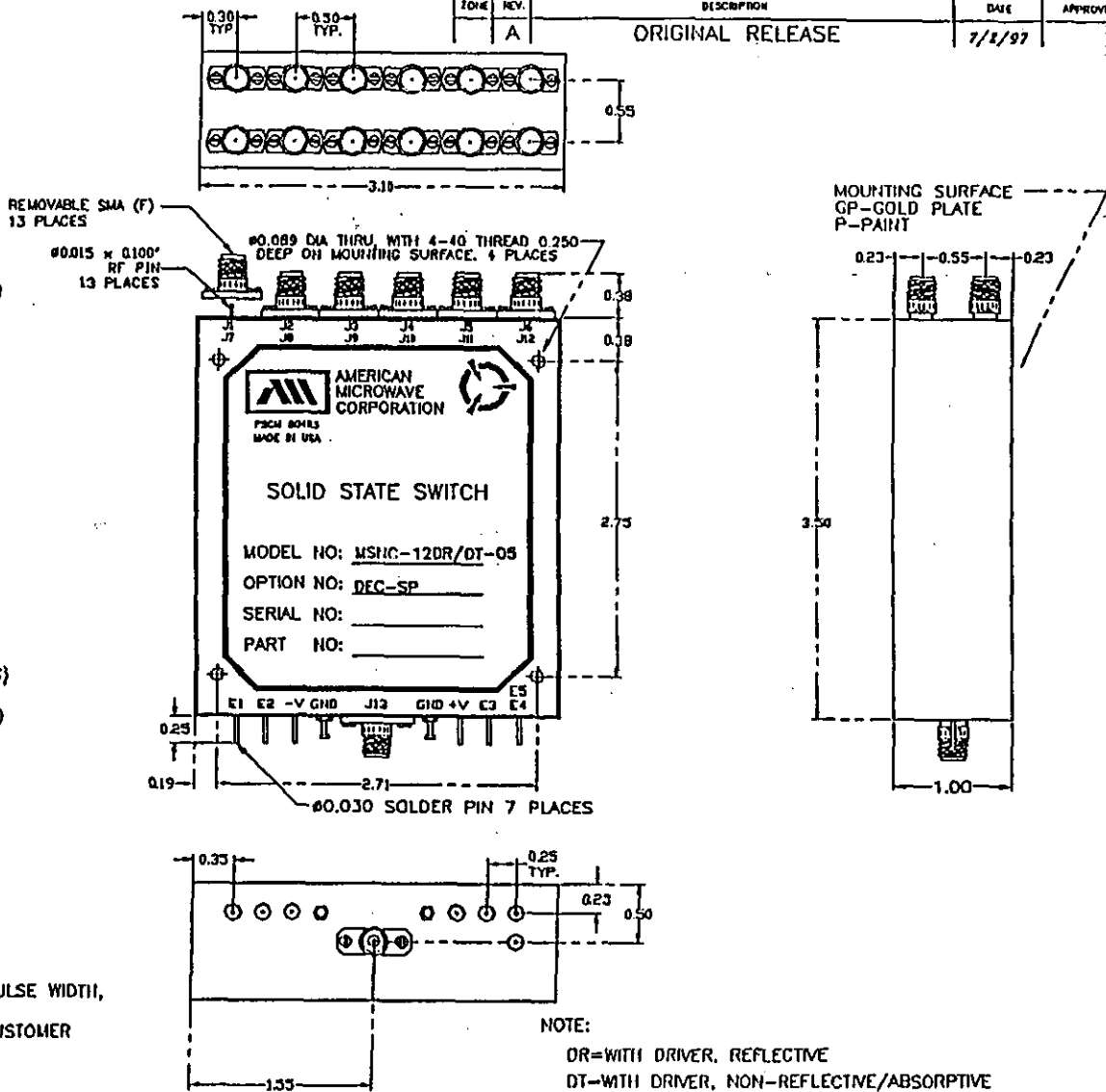
- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:

- X.XX ±0.020
- X.XXX ±0.010

REV.		REVISIONS		DATE	APPROVED
FORM	A	DESCRIPTION	ORIGINAL RELEASE	7/1/97	



PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	7/1/97	OUTLINE DRAWING	
CHECKED	7/21/97	MSNC-12DR/DT-05-DEC-SP	
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FORM NO.	DWG NO.	REV.
A	60483	100-4162-	A
SCALE N/S		SHEET	1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 20M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 001 -12V POWER SUPPLIES
- 002 -15V POWER SUPPLIES
- 003 REVERSE LOGIC "1"=ON "0"=OFF
- 004 DRIVERLESS, CURRENT CONTROLLED
- 005 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- 008 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- 007 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- 008 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- 009 LOW INSERTION LOSS VERSION
- 010 HIGHER ISOLATION VERSION

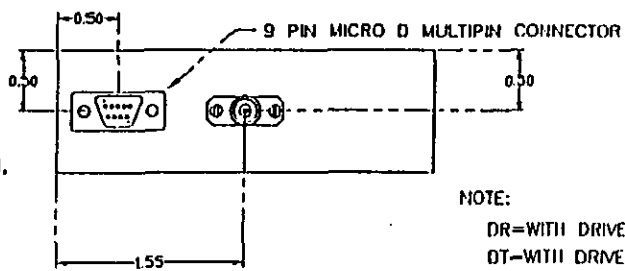
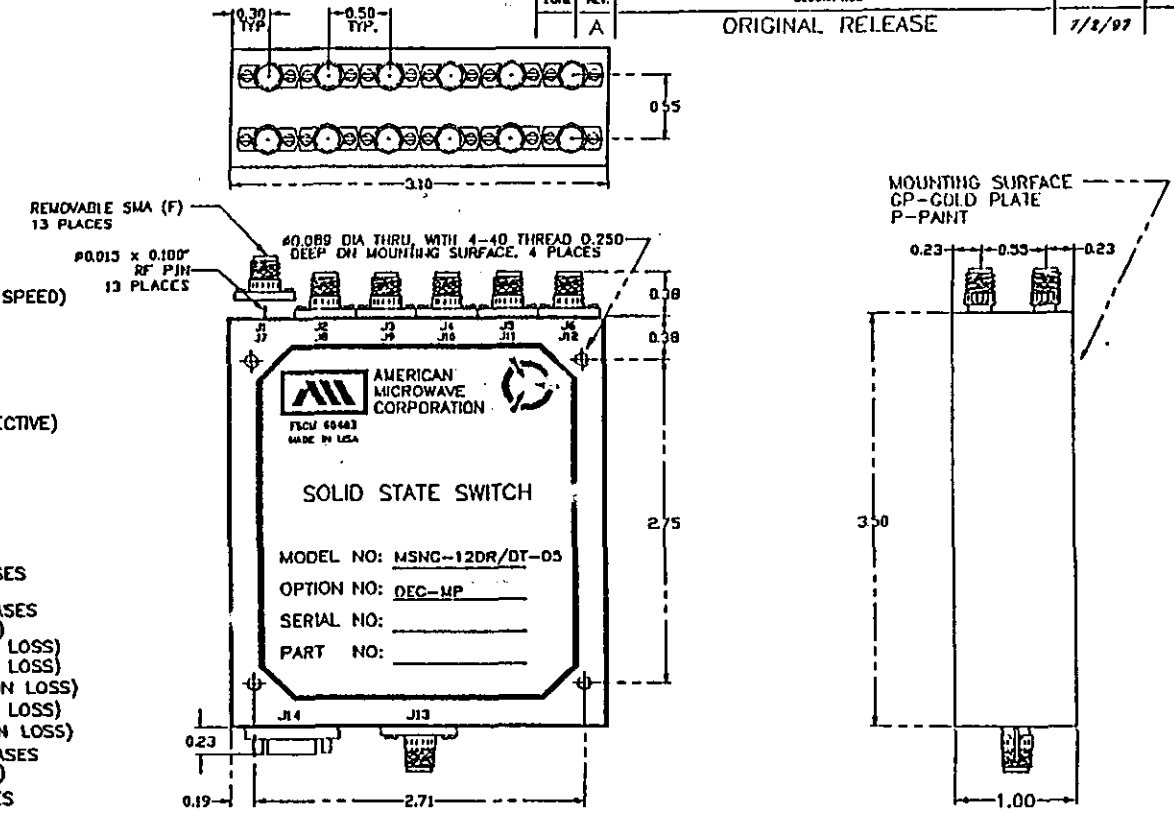
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B
- SHOCK: MIL-STD-202F, METHOD 2138 COND. B
- VIBRATION: MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE: MIL-STD-202F, METHOD 1050 COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		REV.		DESCRIPTION	DATE	APPROVED
104		A		ORIGINAL RELEASE	7/2/97	



PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	GND
7	+V
8	-V
9	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSNC-12DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN <i>W/S/P</i>	DATE 7/2/97	SIZE A	REV. A
CHECKED <i>L.A. Mable</i>	DATE 8/26/97	FIG. NO. 60483	DWG. NO. 100-4162-3
		SCALE N/S	SHEET 1 of 1

9-3

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 5.0db
ABSORPTIVE: 5.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm. (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 600 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=DN "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

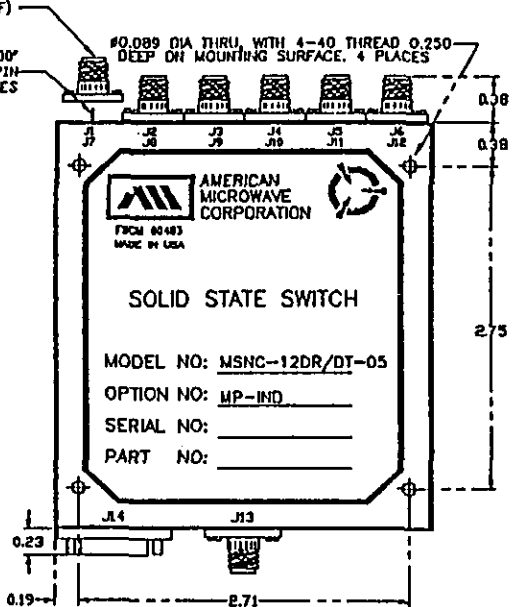
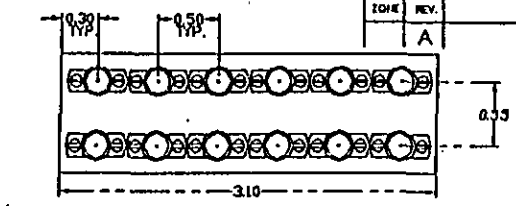
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

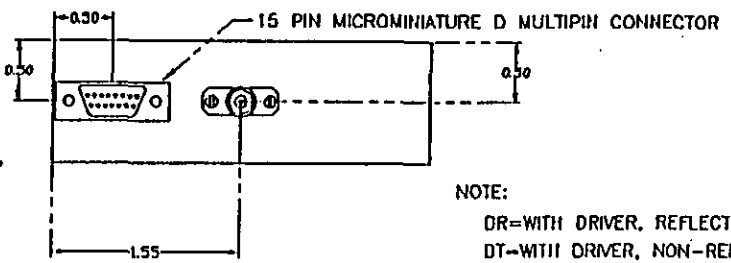
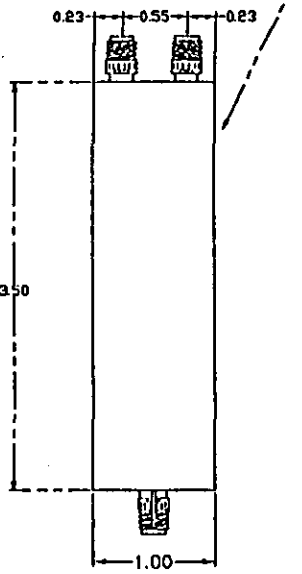
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV.		DESCRIPTION	DATE	APPROVED
1	A	ORIGINAL RELEASE	7/2/97	



MOUNTING SURFACE
GP-GOLD PLATE
P-PAINT



PIN OUT TABLE			
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	E1	8	EB
2	E2	10	E10
3	E3	11	E11
4	E4	12	E12
5	E5	13	-4V
6	E6	14	-V
7	E7	15	CHD
8	E8		

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSNC-12DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN WVP	7/2/97	SIZE A	REV. A
CHECKED P. Noble	8/26/97	FIG. NO. 60483	DWG. NO. 100-4162
ISSUED		SCALE N/S	SHEET 1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
10.0	<u>SP16T - (Single Pole Sixteen Throw), Reflective and Absorptive Switches</u>	10-0
10.1	MSN-16DR/DT-05-STANDARD with Independent Controls	10-1
10.2	MSN-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	10-2
10.3	MSN-16DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	10-3
10.4	MSN-16DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	10-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 6.5db
..... ABSORPTIVE: 7.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 150ns MAX.
..... DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 750 mA MAX.
..... -5V @ 150mA MAX.(RELECTIVE)
..... 200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- I-O**
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
 - DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"-ON "0"-OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

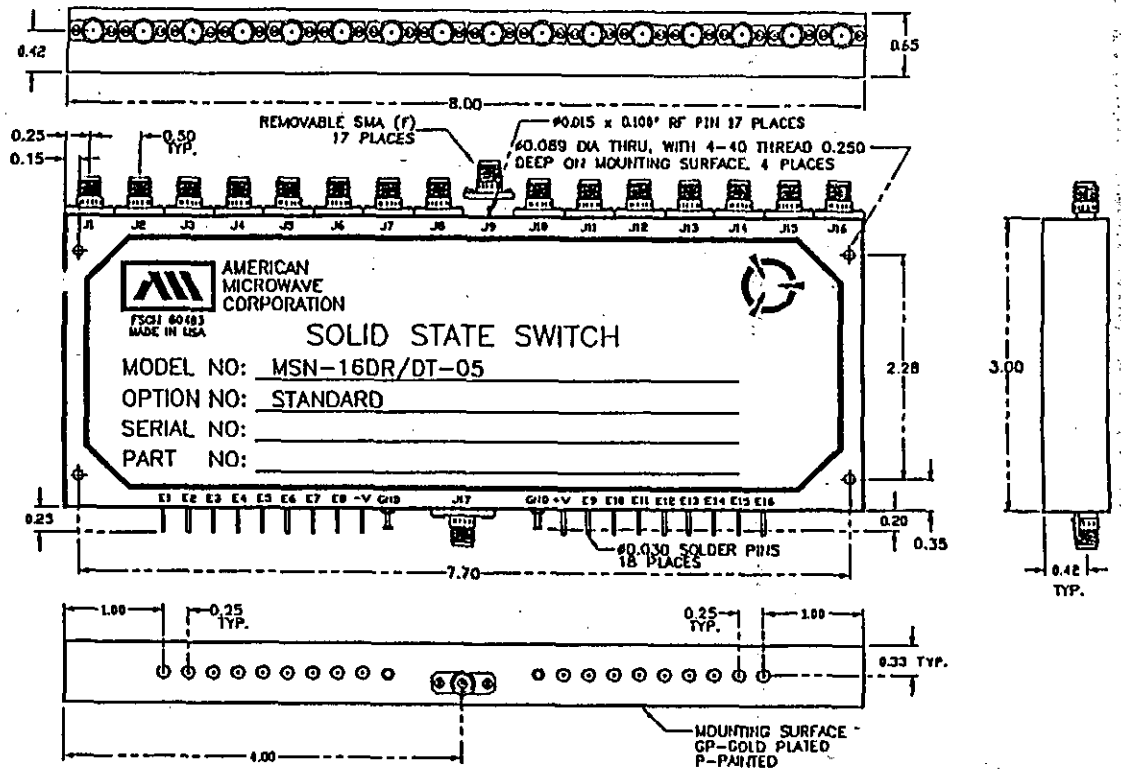
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	2/10/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WAP	2/10/97	OUTLINE DRAWING MSN-16DR/DT-05-STANDARD	
CHECKED P. N. J. K.	2/21/97	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FORM NO.	DWG NO.	REV.
A	60483	100-4002	A
SCALE	N/S	SHEET	1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 6.5db
ABSORPTIVE: 7.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** -1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 750 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M10 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

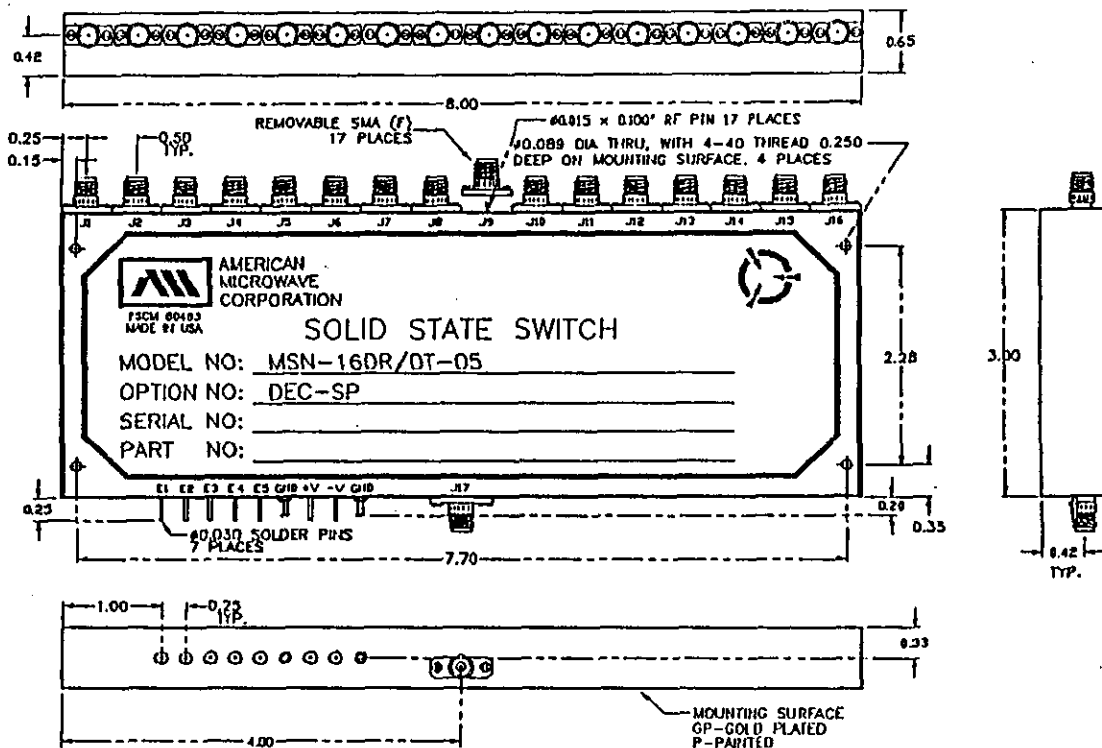
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 2040 COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
DATE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	2/26/97	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-16DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN 3/1/97	2/26/97	SIZE A	REV. A
CHECKED K. Afshar	2/24/97	FSCM NO. 60483	DWC NO. 100-4002-4
SCALE N/S	SHEET 1 of 1		

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 6.5db
ABSORPTIVE: 7.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 750 mA MAX.
-5V @ 150mA MAX.(REFLECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

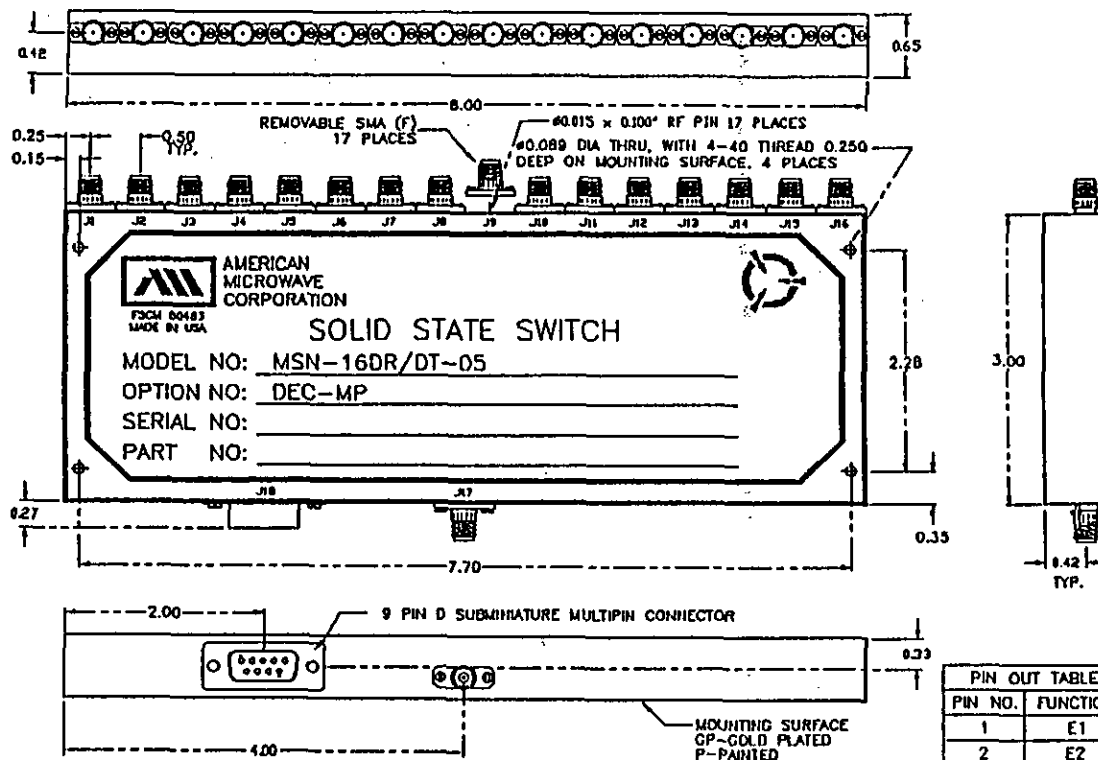
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE	2/23/97



PIN OUT TABLE	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	GND
7	+V
8	-V
9	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-16DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN W/S/P	2/23/97	SIZE A	REV. A
CHECKED E. J. [Signature]	3/24/97	FSCM NO. 60483	DWG NO. 100-4002
SCALE N/S		SHEET 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 6.5db
ABSORPTIVE: 7.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 μ sec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 750 mA MAX.
-5V @ 150mA MAX.(REFLECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
DEC-SP 5 BIT DECODER WITH SOLDER PIN
MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
B02 -15V POWER SUPPLIES
B03 REVERSE LOGIC "1"=ON "0"=OFF
B04 DRIVERLESS, CURRENT CONTROLLED
B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
B09 LOW INSERTION LOSS VERSION
B10 HIGHER ISOLATION VERSION

10-4

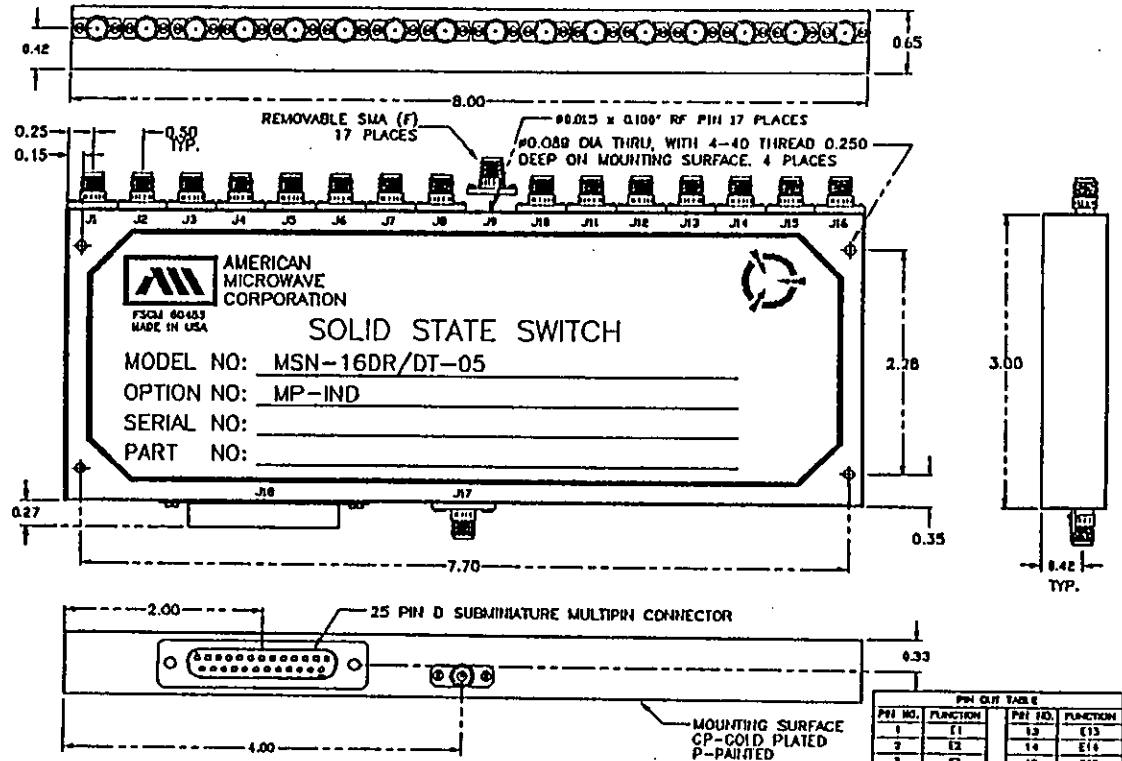
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX \pm 0.020
X.XXX \pm 0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	2/20/97	



PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	E1	13	E13
2	E2	14	E14
3	C	15	E15
4	Z	16	E16
5	E3	17	N/C
6	E4	18	N/C
7	E5	19	N/C
8	E6	20	N/C
9	E7	21	N/C
10	E8	22	GND
11	E9	23	+V
12	E10	24	-V
		25	GND

NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN: WSP	2/20/97	OUTLINE DRAWING	
CHECKED: [Signature]	2/21/97	MSN-16DR/DT-05-MP-IND	
DESIGNED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	F3CJ NO.	QWC NO.	REV.
A	60483	100-4002-2	A
SCALE N/S		SHEET 1 of 1	

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
11.0	<u>SPI6T - COMPACT DESIGN, (Single Pole Sixteen Throw), Reflective and Absorptive Switches</u>	11-0
11.1	MSNC-16DR/DT-05-STANDARD with Independent Controls	11-1
11.2	MSNC-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	11-2
11.3	MSNC-16DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	11-3
11.4	MSNC-16DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	11-4

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 6.5db
 ABSORPTIVE: 7.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 150ns MAX.
 DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"-ON "1"-OFF
- POWER SUPPLY: +5V @ 750 mA MAX.
 -5V @ 150mA MAX.(REFLECTIVE)
 200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

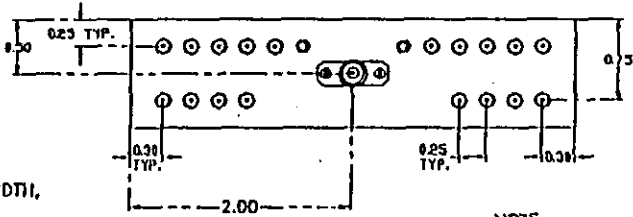
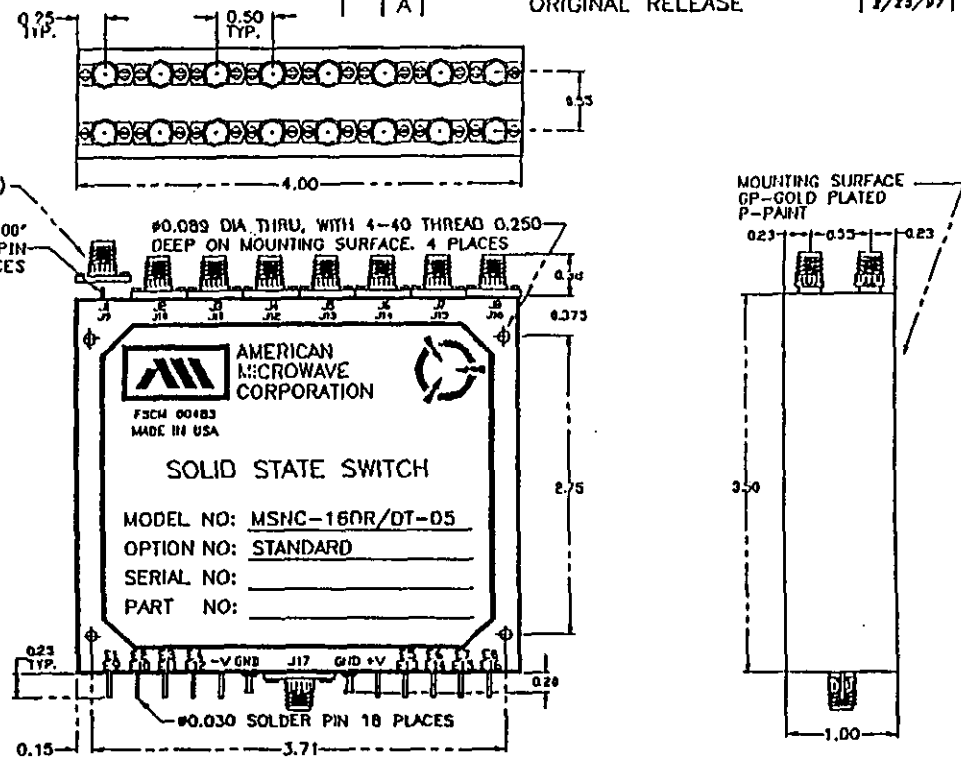
- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:

X.XX ±0.020
 X.XXX ±0.010

ZONE		REV.	DESCRIPTION	DATE	APPROVED
A			ORIGINAL RELEASE	2/25/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN	2/25/97	OUTLINE DRAWING	
CHECKED	2/24/97	MSNC-16DR/DT-05-STANDARD	
ISSUED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4018-1	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 6.5db
..... ABSORPTIVE: 7.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 150ns MAX.
..... DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** {CW}+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 750 mA MAX.
..... -5V @ 150mA MAX.(REFLECTIVE)
..... 200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD**
- DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 818 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=DN "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

11-2

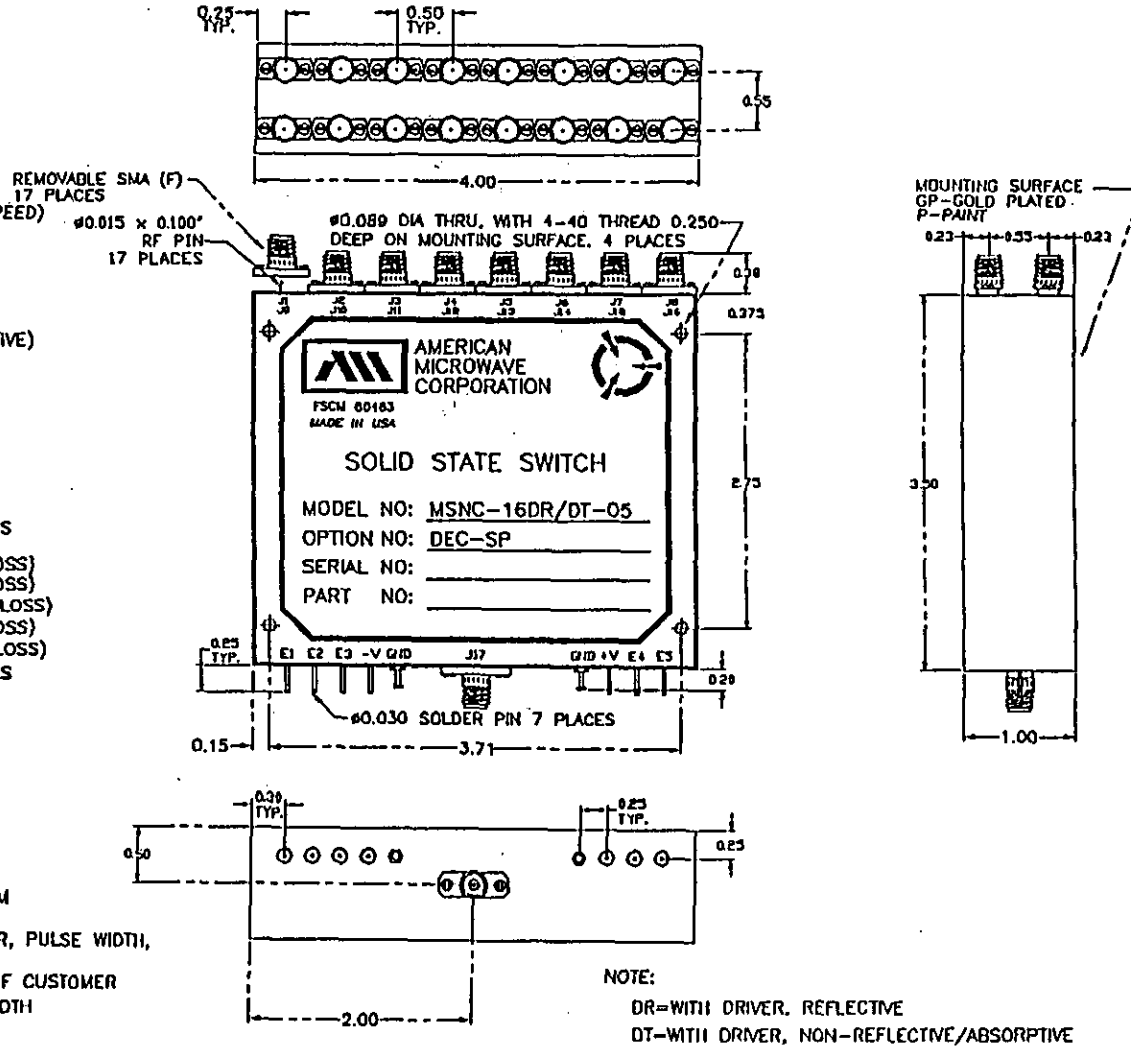
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	2/25/97	



PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
APPROVALS		TITLE		
DATE		OUTLINE DRAWING		
DRAWN		MSNC-16DR/DT-05-DEC-SP		
CHECKED		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH		
SCALE N/S	FSCM NO. A 60483	DWG NO. 100-4018	REV. A	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 6.5db
ABSORPTIVE: 7.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 750 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 018 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

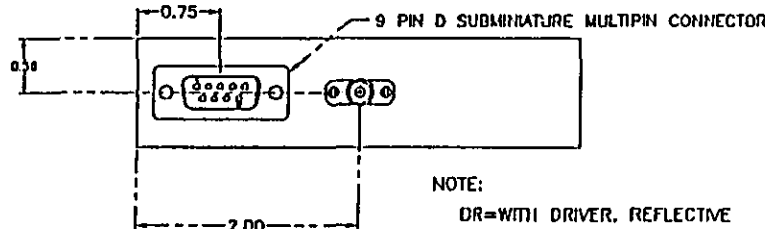
PIN OUT TABLE	
PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	GRID
7	+V
8	-V
9	GRID

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE	2/23/97	

REMOVABLE SMA (F)
17 PLACES

Ø0.015 x 0.100"
RF PIN
17 PLACES

Ø0.089 DIA THRU, WITH 4-40 THREAD 0.250
DEEP ON MOUNTING SURFACE, 4 PLACES



NOTE:

- DR=WITH DRIVER, REFLECTIVE
- DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRWN	2/23/97	OUTLINE DRAWING	
CHKD	2/26/97	MSNC-16DR/DT-05-DEC-MP	
ESD		REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
SIZE	FIG. NO.	DWG. NO.	REV.
A	60483	100-4018-3	A
SCALE N/S		SHEET 1 of 1	

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 6.5db
ABSORPTIVE: 7.0db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"-ON "1"-OFF
- **POWER SUPPLY:** +5V @ 750 mA MAX.
-5V @ 150mA MAX.(RELECTIVE)
200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

PIN OUT TABLE			
PIN NO	FUNCTION	PIN NO.	FUNCTION
1	E1	13	E13
2	E2	14	E14
3	E3	15	E15
4	E4	16	E16
5	E5	17	N/C
6	E6	18	N/C
7	E7	19	N/C
8	E8	20	N/C
9	E9	21	N/C
10	E10	22	GND
11	E11	23	V
12	E12	24	-V
		25	GND

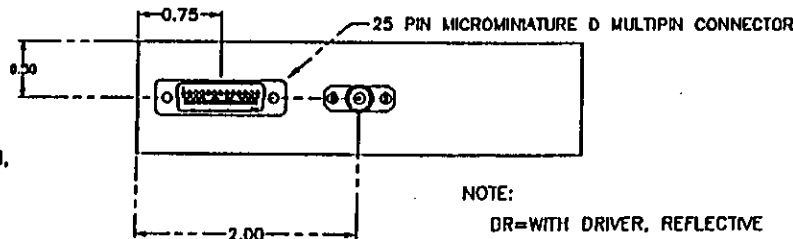
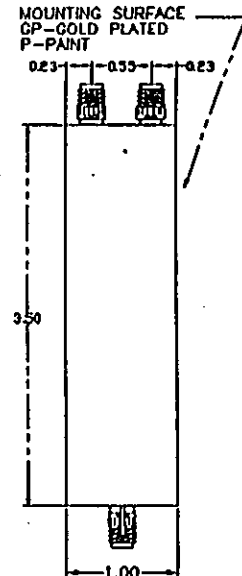
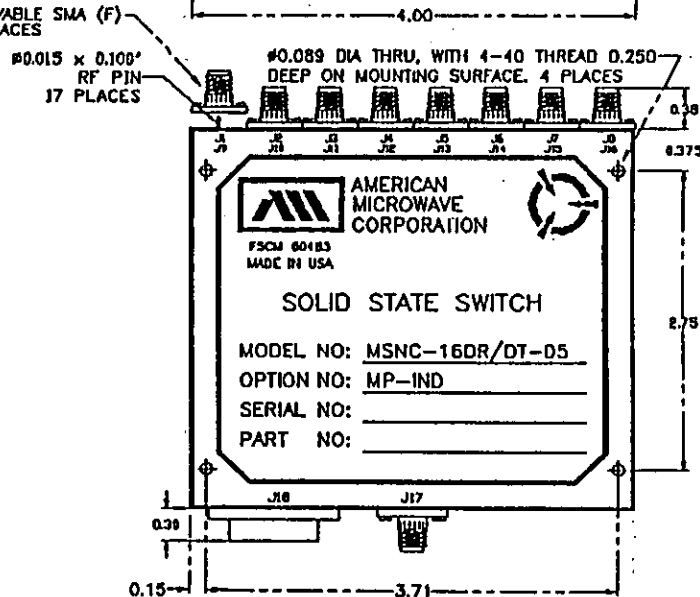
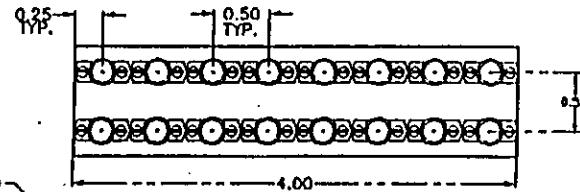
REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE	2/23/97

OPTIONS:

INDEPENDENT CONTROL WITH SOLDER PIN STANDARD

- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"-ON "0"-OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

P-11



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSNC-16DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRW: WJP	2/23/97	SIZE	REV.
CHK: P. J. Able	2/26/97	A 60483	A
ISSUED		DWG NO.	
		100-4018	
		SCALE N/S	SHEET 1/1

TABLE OF CONTENTS



SECTION	PRODUCT DESCRIPTION	PAGE
12.0	<u>SP32T -(Single Pole Thirty-Two Throw), Reflective and Absorptive Switches</u>	12-0
12.1	MSN-32DR/DT-05-STANDARD with Independent Controls	12-1
12.2	MSN-32DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins	12-2
12.3	MSN-32DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector	12-3
12.4	MSN-32DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	12-4

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 7.0db
..... ABSORPTIVE: 7.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
..... 2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
..... ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
..... FALL: 10ns TYPICAL, 15ns MAX.
..... DELAY ON: 75ns TYPICAL, 150ns MAX.
..... DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 1.75 A MAX.
..... -5V @ 200mA MAX.(RELECTIVE)
..... 250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

12-1

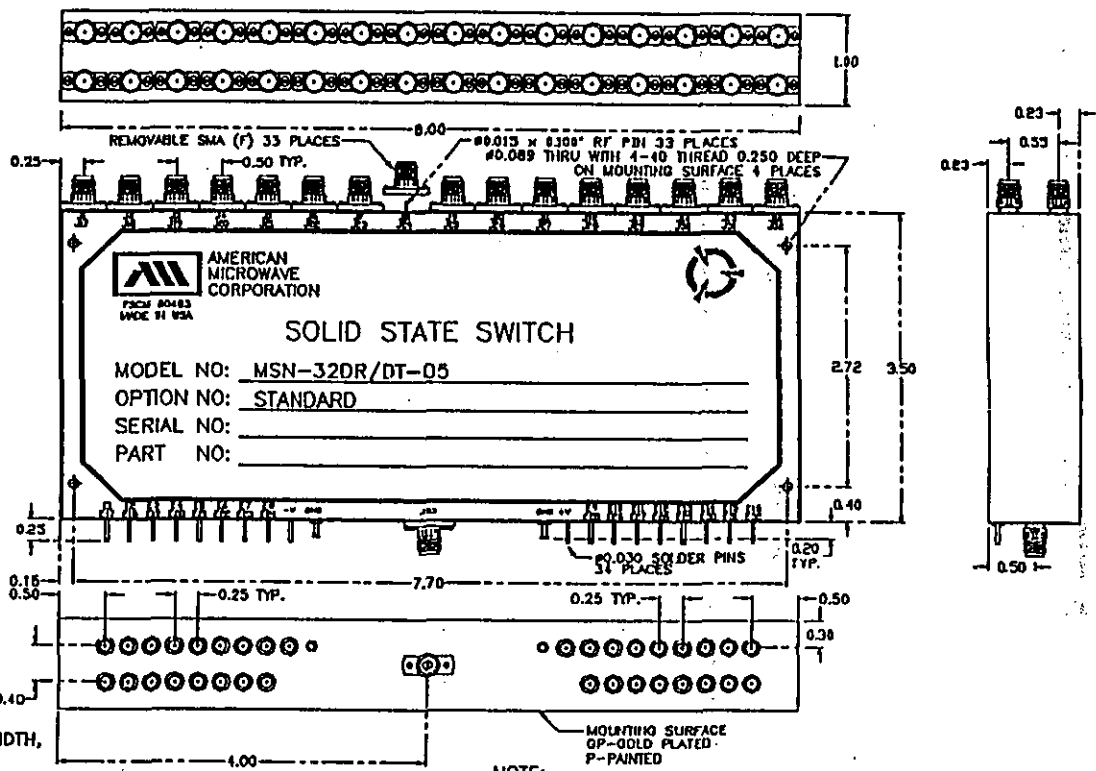
ENVIRONMENTAL RATINGS:

- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
..... -65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

REVISIONS			
DATE	REV.	DESCRIPTION	APPROVED
5/20/97	A	ORIGINAL RELEASE	



NOTE:
DR=WITH DRIVER, REFLECTIVE
DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN <i>WSP</i>	5/20/97	OUTLINE DRAWING MSN-32DR/DT-05-STANDARD REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DESIGNED <i>P. Ajala</i>	4/24/97	SIZE A	REV. A
SCALE N/S		FSCM NO. 60483	DWG NO. 100-4059
		SHEET 1	

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 7.0db
 ABSORPTIVE: 7.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 150ns MAX.
 DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 1.75 A MAX.
 -5V @ 200mA MAX.(REFLECTIVE)
 250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
 - DEC-SP 5 BIT DECODER WITH SOLDER PIN
 - MP-IND INDEPENDENT CONTROL WITH MULTIPIN
 - 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES
 - B02 -15V POWER SUPPLIES
 - B03 REVERSE LOGIC "1"=ON "0"=OFF
 - B04 DRIVERLESS, CURRENT CONTROLLED
 - B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
 - B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
 - B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
 - B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
 - B09 LOW INSERTION LOSS VERSION
 - B10 HIGHER ISOLATION VERSION

12-2

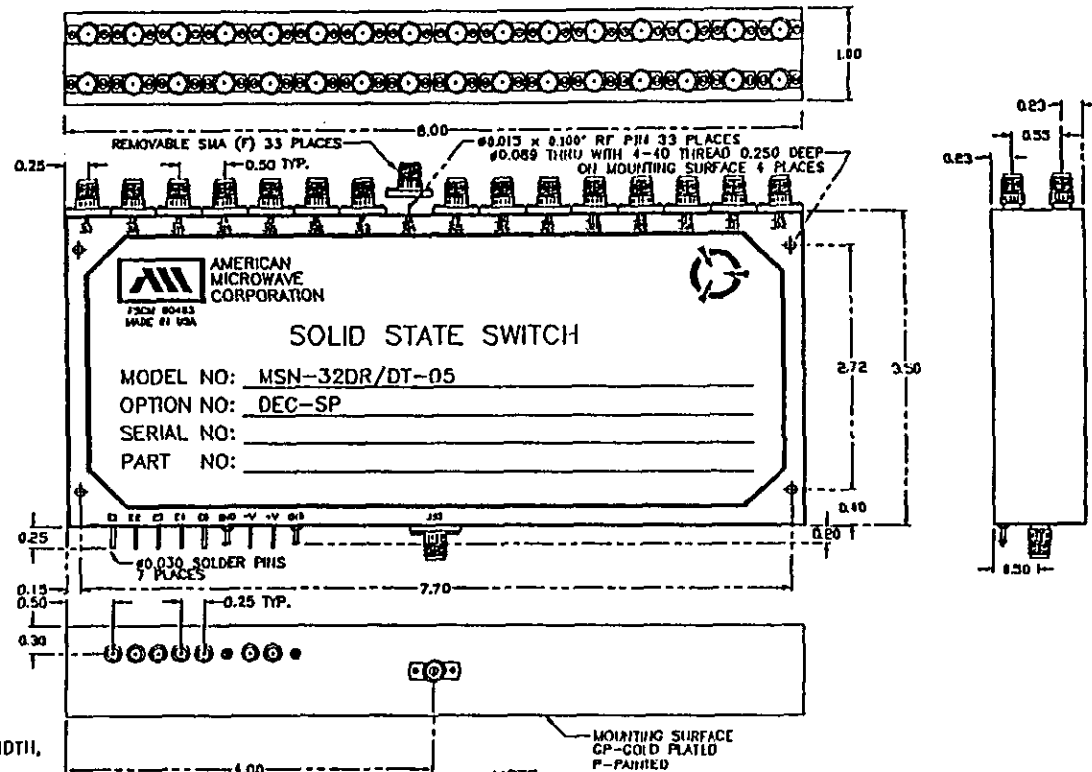
ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

REV. NO.		DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	4/20/97	



NOTE:
 DR=WITH DRIVER, REFLECTIVE
 DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE OUTLINE DRAWING MSN-32DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DRAWN J.P.P.	5/20/97	SIZE A	REV. A
CHECKED J.P.P.	5/21/97	FIG. NO. 60483	QTY. NO. 100-4059-4
ISSUED		SCALE N/S	SHEET 1 of 1

SPECIFICATIONS:

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 7.0db
 ABSORPTIVE: 7.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db
 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
 ABSORPTIVE IN/OUT: 2.0:1
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
 FALL: 10ns TYPICAL, 15ns MAX.
 DELAY ON: 75ns TYPICAL, 150ns MAX.
 DELAY OFF: 75ns TYPICAL, 150ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ 1.75 A MAX.
 -5V @ 200mA MAX.(RELECTIVE)
 250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

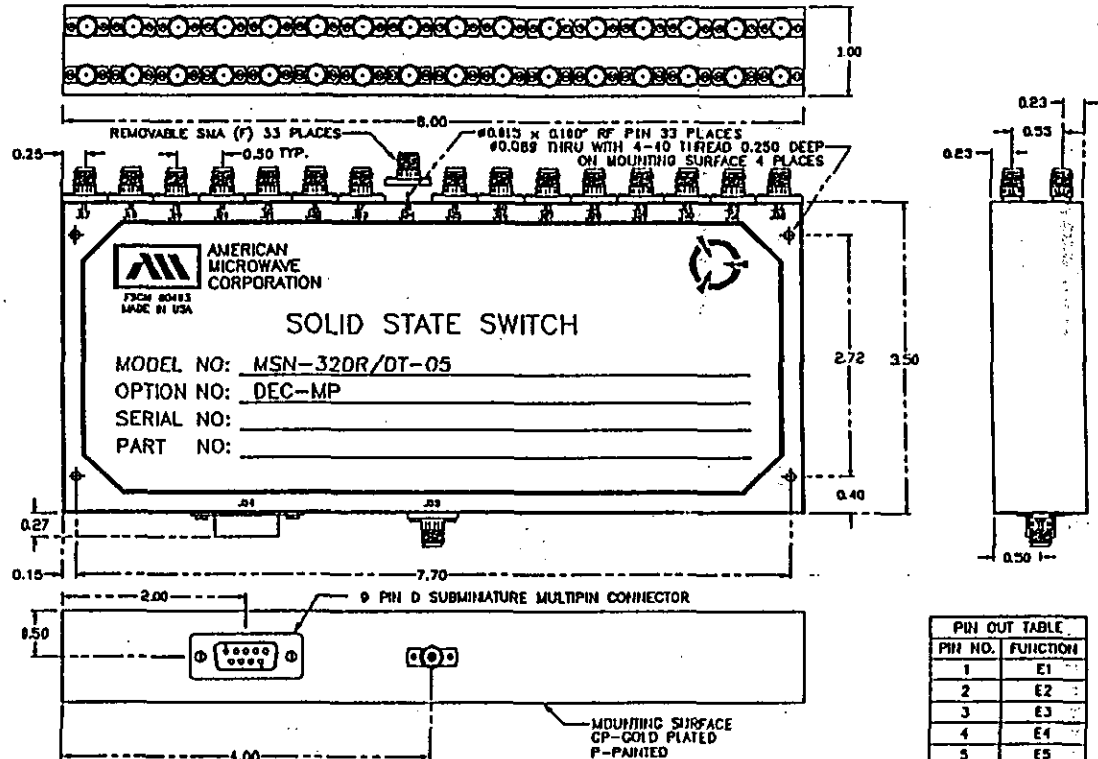
- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103E COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

REVISIONS				
FORM	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	5/20/97	



NOTE:

DR=WITH DRIVER, REFLECTIVE

DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE

ALL DIMENSIONS ARE IN INCHES

TOLERANCES:

X.XX ±0.020

X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN <i>[Signature]</i>	5/20/97	OUTLINE DRAWING MSN-32DR/DT-05-DEC-MP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
CHECKED <i>[Signature]</i>	5/26/97	SIZE	REV.
ISSUED		A 60483	A
		FICOM NO. 100-4050	
		DWG NO.	
		SCALE N/S	of 1

SPECIFICATIONS:

- **FREQUENCY:** 0.5 GHz TO 18 GHz
- **INSERTION LOSS:** REFLECTIVE: 7.0db
ABSORPTIVE: 7.5db
- **ISOLATION:** 0.5 GHz TO 2 GHz: 60db
2 GHz TO 18 GHz: 70db
- **VSWR:** REFLECTIVE IN/OUT: 2.0:1
ABSORPTIVE IN/OUT: 2.0:1
ABSORPTIVE OUT/OFF: 2.0:1
- **SPEED:** RISE: 10ns TYPICAL, 15ns MAX.
FALL: 10ns TYPICAL, 15ns MAX.
DELAY ON: 75ns TYPICAL, 150ns MAX.
DELAY OFF: 75ns TYPICAL, 150ns MAX.
- **POWER INPUT:** (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- **SURVIVAL POWER:** 1 WATT CW, 10 WATTS PEAK 1 usec
- **CONTROL:** TTL LOGIC "0"=ON "1"=OFF
- **POWER SUPPLY:** +5V @ 1.75 A MAX.
-5V @ 200mA MAX.(REFLECTIVE)
250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)

OPTIONS:

- INDEPENDENT CONTROL WITH SOLDER PIN STANDARD
- DEC-MP 5 BIT DECODER WITH MULTIPIN
- DEC-SP 5 BIT DECODER WITH SOLDER PIN
- MP-IND INDEPENDENT CONTROL WITH MULTIPIN
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LDW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LDW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

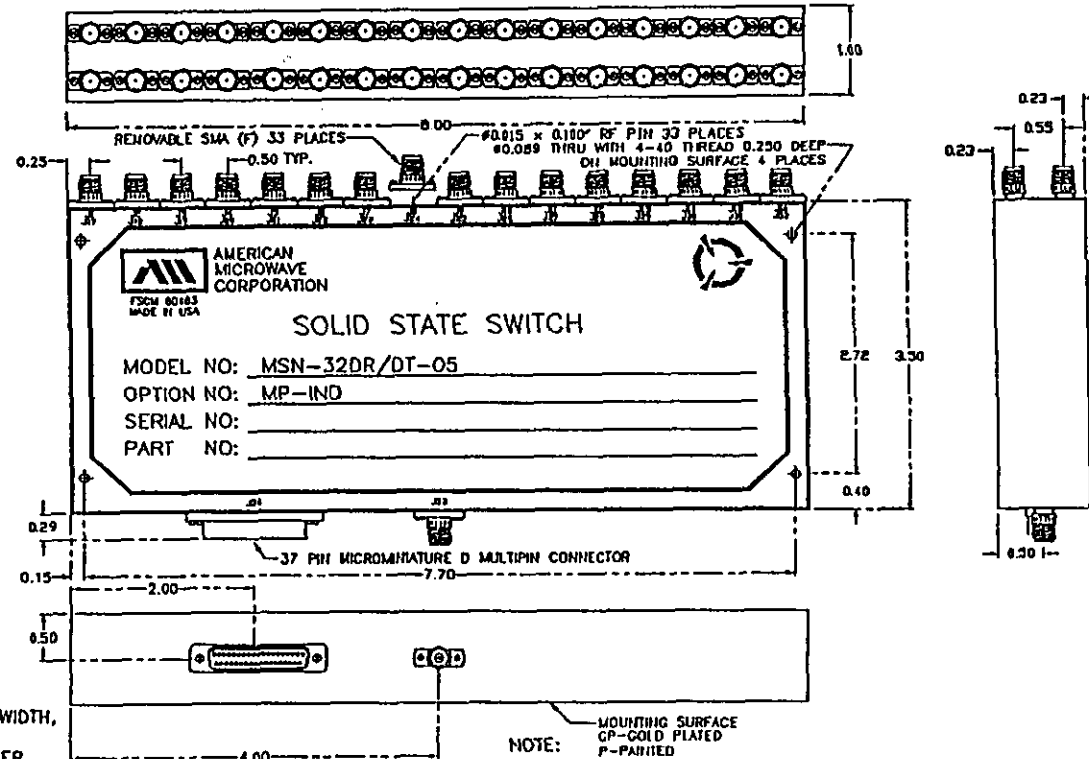
- **TEMPERATURE:** -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY:** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK:** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION:** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE:** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE:** MIL-STD-202F, METHOD 1070 COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PIN OUT TABLE					
PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	E1	13	E13	25	E25
2	E2	14	E14	26	E26
3	E3	15	E15	27	E27
4	E4	16	E16	28	E28
5	E5	17	E17	29	E29
6	E6	18	E18	30	E30
7	E7	19	E19	31	E31
8	E8	20	E20	32	E32
9	E9	21	E21	33	GND
10	E10	22	E22	34	4V
11	E11	23	E23	35	-V
12	E12	24	E24	36	GND
				37	H/C

REVISIONS			DATE	APPROVED
DATE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE	8/10/97	

12-4

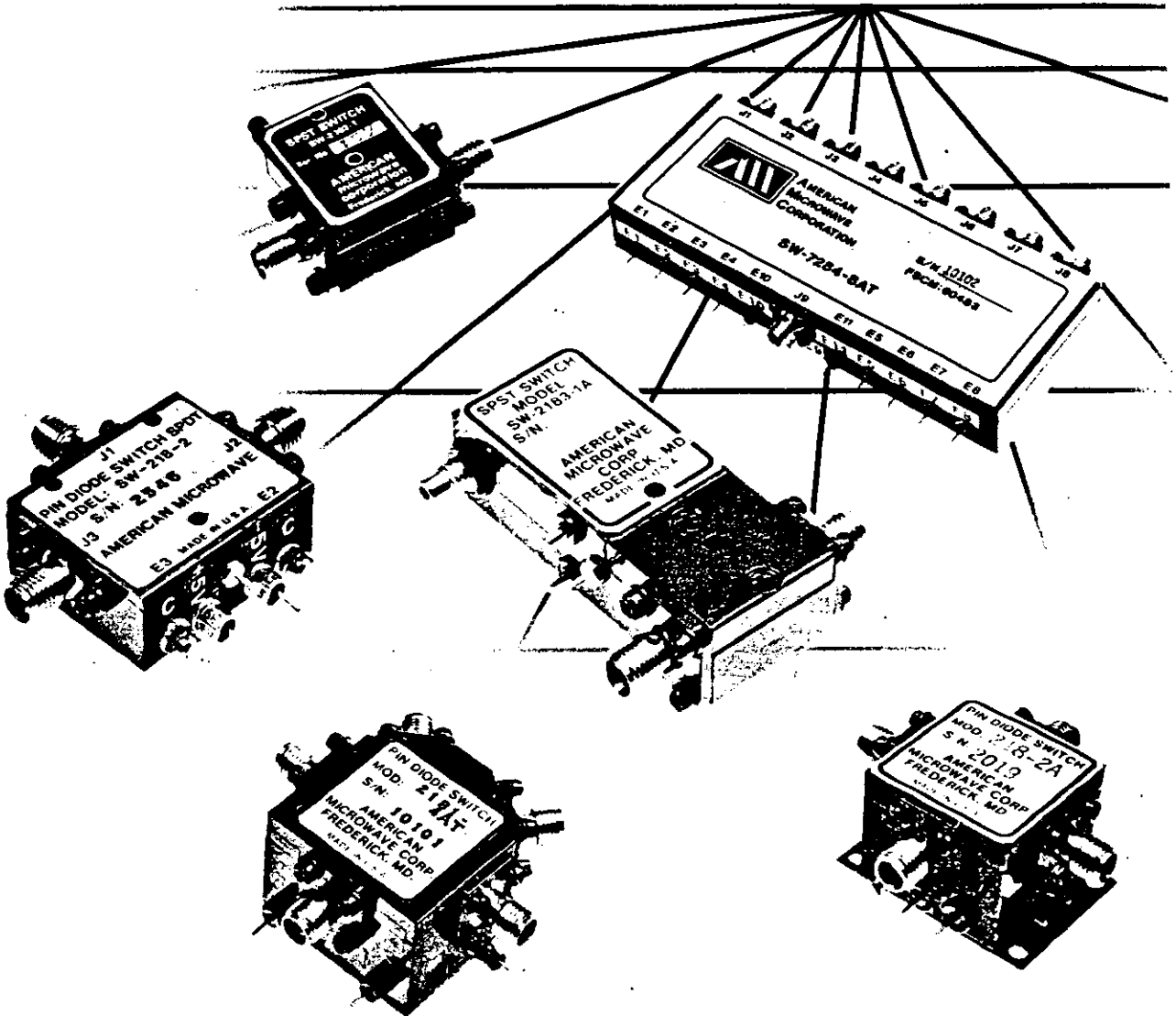


ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN WSP	8/10/97	OUTLINE DRAWING MSN-32DR/DT-05-MP-IND REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH	
DWG NO.	REV.	SHEET	TOTAL SHEETS
60483	A	100-4059-2	1 of 1
SCALE	N/S		

AMERICAN MICROWAVE CORPORATION

PIN Diode Switches



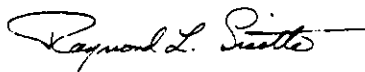
7311G GROVE ROAD, FREDERICK, MARYLAND 21701 • Tel. (301) 662-4700 • Fax (301) 662-4938

Introduction to American Microwave Corporation

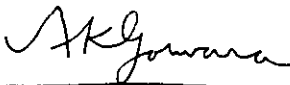
Since its founding in 1978, American Microwave Corporation has become a leader in the design and manufacture of solid state control components. At American Microwave, we are dedicated to providing state-of-the-art technology and uniformly high quality microwave components and subsystems that meet or exceed your specifications and are delivered on schedule at fair prices. AMC's vertically integrated manufacturing plant makes it possible to design, machine and manufacture microwave hardware which means total technology, quality and schedule control on all prototype or production orders.

American Microwave's product line has grown steadily since the company's inception. From the line of ferrite products and SW-2000 switches introduced in 1978, to the introduction of microwave switches in 1981, linearized reflectionless attenuators in 1986 to present day work on microwave integrated circuits, the company has produced hundreds of custom and catalog product types. AMC is dedicated to solving customer problems and meeting promised delivery dates with the lowest return rate in the industry.

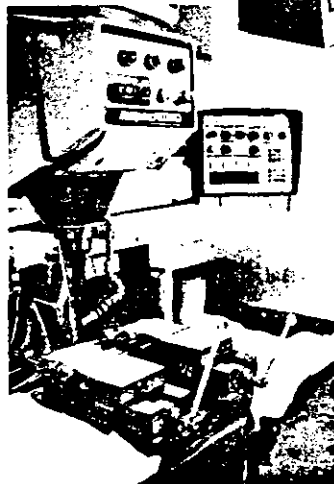
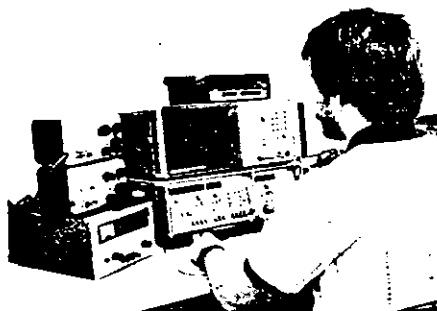
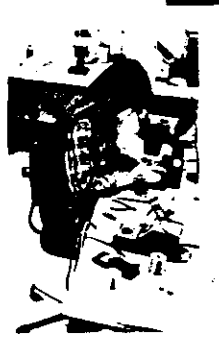
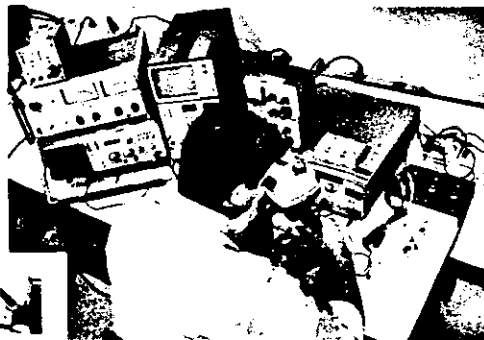
This catalog contains a sampling of the most popular products in general use today. If you have a requirement that is not listed in the catalog, call us. We may have already made it or something close to it for someone else.



RAYMOND L. SICOTTE
Chairman



ASH K. GORWARA
President and CEO



AMERICAN
MICROWAVE
CORPORATION

General Information

ORDERING INFORMATION

Please order by model or part number and product name with any options clearly specified. Please specify any modifications or special testing requirements on the order.

Telephone orders are acceptable and processed immediately. Shipments can only be made upon receipt of a confirming written order either by mail or facsimile.

Your order may be placed directly to the factory or through your local representative.

AMERICAN MICROWAVE CORPORATION
7311 G Grove Road
Frederick, Maryland 21701
Phone: 301-662-4700 Fax: 301-662-4938

All prices are FOB factory, Frederick, Maryland 21701.

DOMESTIC TERMS

Net 30 days if credit has been established. Otherwise, unless payment is received before shipment, shipment will be made C.O.D.

INTERNATIONAL TERMS

Add 30% for international pricing. Irrevocable sight letter credit engaged and accepted by Maryland National Bank, payable to the account of American Microwave Corporation, Frederick, Maryland.

SPECIFICATION AND PRICE CHANGES

The right to discontinue any item or change specifications and/or prices on any item without notice is reserved.

WARRANTY/SERVICE

American Microwave Corporation warrants all parts of equipment of its manufacture to be free from defects in material and workmanship for one year after the delivery of the equipment to the original purchaser.

Liability under the warranty is limited to repair or replacement of the equipment or parts at the discretion of American Microwave Corporation without charge for any part found to be defective under normal use and service within the warranty time period.

All equipment returned under warranty must have a Return Material Authorization number obtainable from the factory. Original parts or equipment must be returned to American Microwave Corporation, transportation charges prepaid FOB factory. If warranty repair is applicable, the unit will be returned freight prepaid, FOB destination. If warranty is not applicable, the customer will be advised of the repair charges and his authorization to proceed awaited before any costs are incurred. Non-warranty repairs will be returned FOB factory, Frederick, Maryland 21701.



SERIES SWN-218 WIDEBAND SPST PIN DIODE SWITCHES WITH INTEGRAL DRIVERS

FEATURES

- 0.5 to 18 GHz Frequency Range
- Low Insertion Loss
- Up to 85 dB Isolation
- High Speed - 10 nsec
- Small Size
- Light Weight
- Rugged Chip and Microstrip Construction

DESCRIPTION

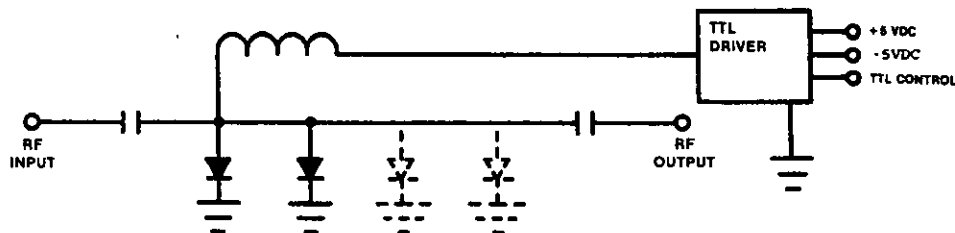
The series SWN-218 switches are broadband, high speed, low loss SPST switches with integral drivers. They are powered by +5 and -5 volt supplies and are available powered by ± 15 volts. They are available in three models that operate over the entire 0.5 to 18 GHz band. Each features rugged integrated circuit assemblies of chip PIN on a microstrip transmission line and proprietary wideband bias decoupling circuitry.

Switching is accomplished by a TTL compatible driver which is controlled by the user.

SPECIFICATIONS

- Control Impedance - TTL Compatible, Two Load. (A Load is 1.6 mA Sink Current and 40 μ A Source Current.)
- Control Logic - Logic "0" (-0.3 to +0.7 Volt) for Switch OFF. Logic "1" (+2.5 to +5.0 Volts) for Switch ON.
- Temperature - Operating: -65°C to +85°C Non-operating: -65°C to +125°C
- Humidity, Shock, Etc. - Per MIL-STD 202C

FUNCTIONAL SCHEMATIC



07/94

SPECIFICATIONS, Cont'd.

MODEL NO.	CHARACTERISTICS	FREQUENCY (GHz)						RISE/FALL * TIME	POWER HANDLING CAPABILITY		POWER SUPPLY	
		0.5 to 1.0	1.0 to 2.0	2.0 to 4.0	4.0 to 8.0	8.0 to 12.4	12.4 to 18.0		AVG (WATTS)	Peak 1 μ sec, max, pw (WATTS)	+5 VDC	-5 VDC
SWN-2182-1A	Min Isolation (dB)	30	40	45	45	45	45	10 ns	2	10	100 mA	45 mA
	Max Ins Loss (dB)	1.0	1.0	1.1	1.6	2.0	2.0					
	Max VSWR (ON Pos)	1.3	1.3	1.4	1.6	1.9	1.9					
SWN-2183-1A	Min Isolation (dB)	40	60	70	70	70	70	10	2	10	100 mA	45 mA
	Max Ins Loss (dB)	1.0	1.0	1.1	1.4	1.8	2.3					
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9					
SWN-2184-1A	Min Isolation (dB)	45	70	85	85	85	80	10	2	10	100 mA	45 mA
	Max Ins Loss (dB)	1.0	1.0	1.2	1.5	2.0	2.5					
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9					

* Rise/Fall times are 10% to 90% RF and 90% to 10% RF.

* TTL Delay is 60 nsec, Max from 50% TTL to 90% RF for turn-off or 50% TTL to 10% RF for turn-on.

ENVIRONMENTAL RATINGS

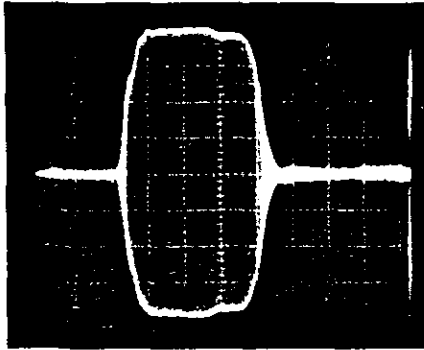
Operating Temperature - 65° C to 110° C
 Non-Operating Temperature - 65° C to 125° C
 Humidity MIL-STD-202F, METHOD 103B
 Shock MIL-STD-202F, METHOD 213B
 Vibration MIL-STD-202F, METHOD 204D
 Altitude MIL-STD-202F, METHOD 105C
 Temp Cycling MIL-STD-202F, METHOD 107D

AVAILABLE OPTIONS

Option No.	Description
001	Two SMA Male RF Connectors
002	One SMA Male and One SMA Female RF Connector
003	SMC Control Connector (Solder Type is Standard)
004	± 15 Volt Power Supply Requirement (± 5 Volt is Standard)
005	50 Ohm Control Impedance
006	Canon Multipin MDM9SSP
007	Inverted Logic
008	Extended Frequency to 100 MHz
010	50 ns, Maximum Switching Speed (5 watts cw, maximum)
012	2 ns, Maximum Switching Speed (100 mw, cw maximum)
013	-12 VDC Power Supply Requirement (+5V, -5V is Standard)
103	Integral Video Filters (2-18 GHz Frequency Band) Insertion loss Increase of 0.75 Db maximum
HS	High Speed Version - 20 nsec. Delay
AT	Off Arm Termination

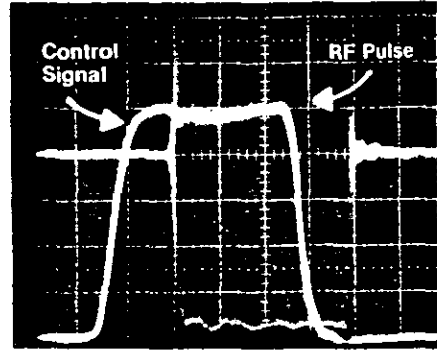
TYPICAL PERFORMANCE (SWN-2184-1A)

PULSE CHARACTERISTICS



TYPICAL
15 ns Pulse Modulated
Signal at 2.3 GHz
(5 ns/Division)

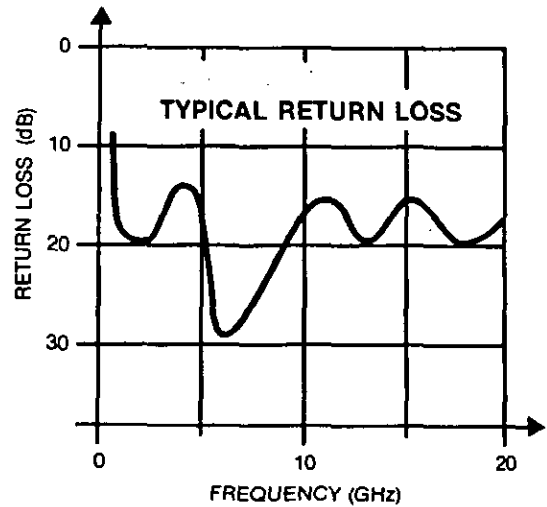
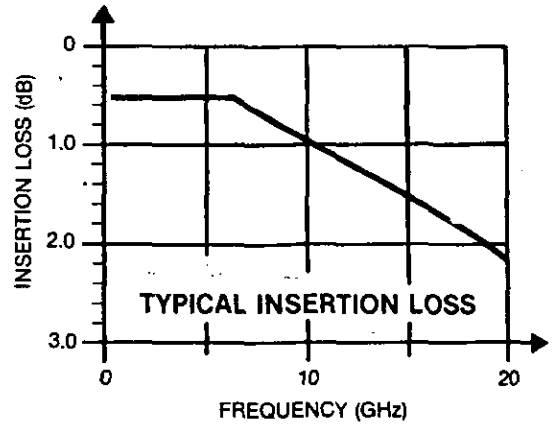
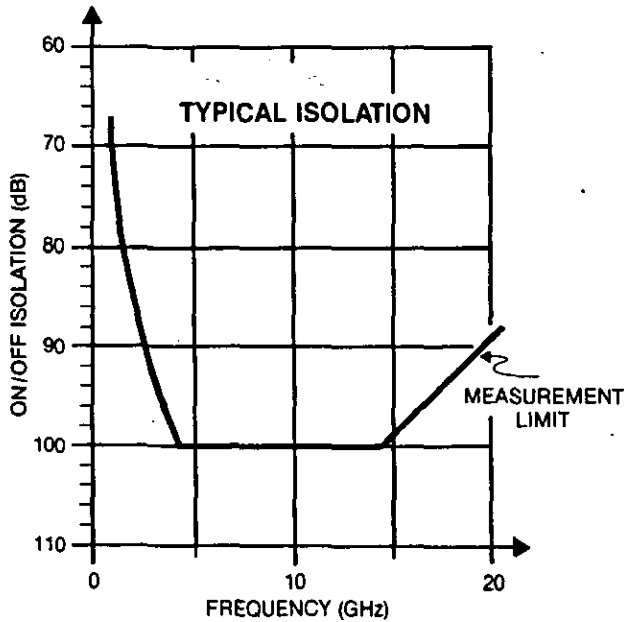
SWN-2184-1A, Option 012, 103, HS



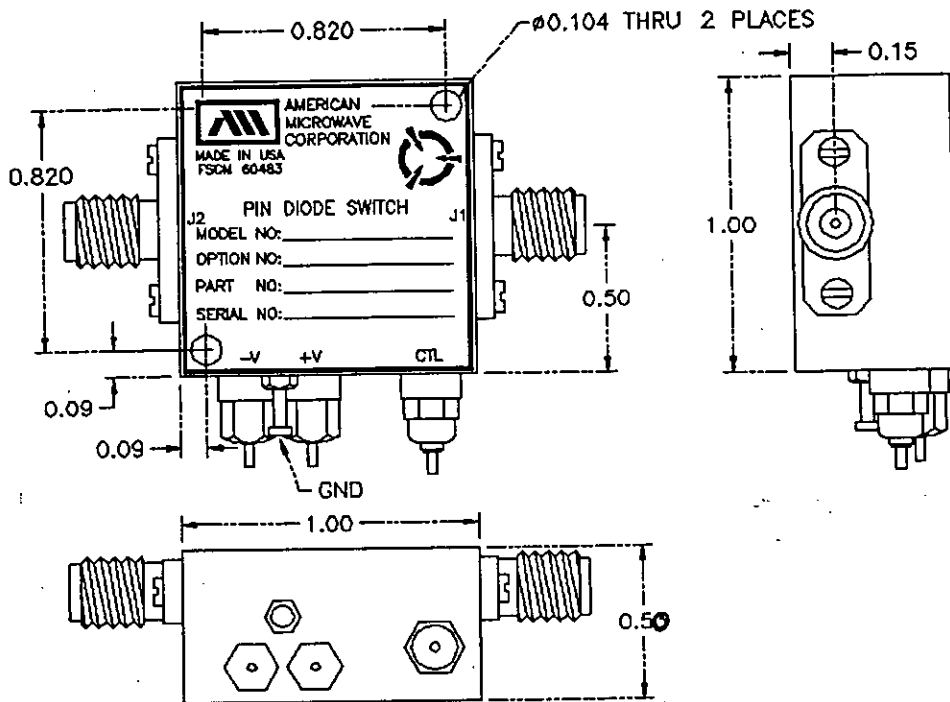
TYPICAL
40 ns Pulse Modulated Signal
at 7 GHz with Control
Pulse Super-imposed
(10 ns/Division)

SWN-2184-1A, Option 012, 103, HS

STATIC RESPONSE



MECHANICAL DATA

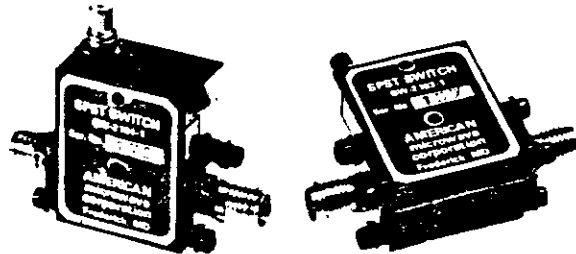


LOGIC TABLE

<u>LOGIC</u>	<u>RF</u>
0	OFF
1	ON

AMERICAN Microwave Corporation

SERIES SW-218 WIDEBAND SPST PIN DIODE SWITCHES



FEATURES

- 0.3 to 18 GHz Frequency Range
- Low Insertion Loss
- Up to 85 dB Isolation
- High Speed - 10 nsec
- Small Size
- Light Weight
- Rugged Chip and Microstrip Construction

SPECIFICATIONS

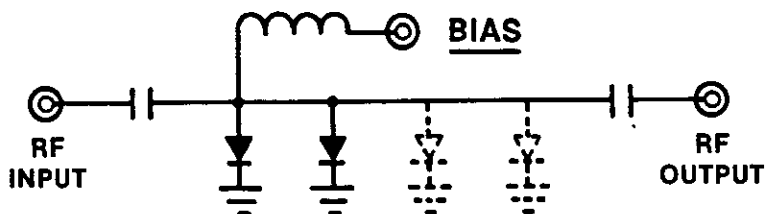
- Temperature -
Operating: -65°C to $+85^{\circ}\text{C}$
Non-operating: -65°C to $+125^{\circ}\text{C}$
- Humidity, Shock, Etc. -
Per MIL-STD 202F

DESCRIPTION

The series SW-218 switches are broadband, high speed, low loss SPST switches. They are available in three models that operate over the 0.3 to 18 GHz band and are usable to 22 GHz. Each features rugged integrated circuit assemblies of chip PIN diodes on a microstrip transmission line and proprietary wideband bias decoupling circuitry.

Switching is accomplished by applying positive current to the bias terminal which biases the diodes to low resistance and the switch OFF. A negative voltage applied to the bias terminal biases the diodes to a high resistance and the switch ON.

FUNCTIONAL SCHEMATIC



10/89

7311G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

SPECIFICATIONS

MODEL NO.	CHARACTERISTICS	FREQUENCY (GHz)						SWITCHING SPEED ON-to-OFF and OFF-to-ON	POWER HANDLING CAPABILITY		BIAS REQUIREMENTS	
		0.3 to 1.0	1.0 to 2.0	2.0 to 4.0	4.0 to 8.0	8.0 to 12.4	12.4 to 18.0		AVG (WATTS)	Peak 1 μ sec, max, pw (WATTS)	Rated Insertion Loss	Rated Isolation
SW-2182-1	Min Isolation (dB)	30	40	45	45	45	45	10 ns	2	10	-10v	+35ma
	Max Ins Loss (dB)	1.0	1.0	1.0	1.1	1.1	1.6					
	Max VSWR (ON Pos)	1.3	1.3	1.4	1.6	1.9	1.9					
SW-2183-1	Min Isolation (dB)	40	60	70	70	70	70	10	2	10	-10v	+35ma
	Max Ins Loss (dB)	1.0	1.0	1.1	1.4	1.8	2.3					
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9					
SW-2184-1	Min Isolation (dB)	45	70	85	85	85	80	10	2	10	-10v	+35ma
	Max Ins Loss (dB)	1.0	1.0	1.2	1.5	2.0	2.5					
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9					

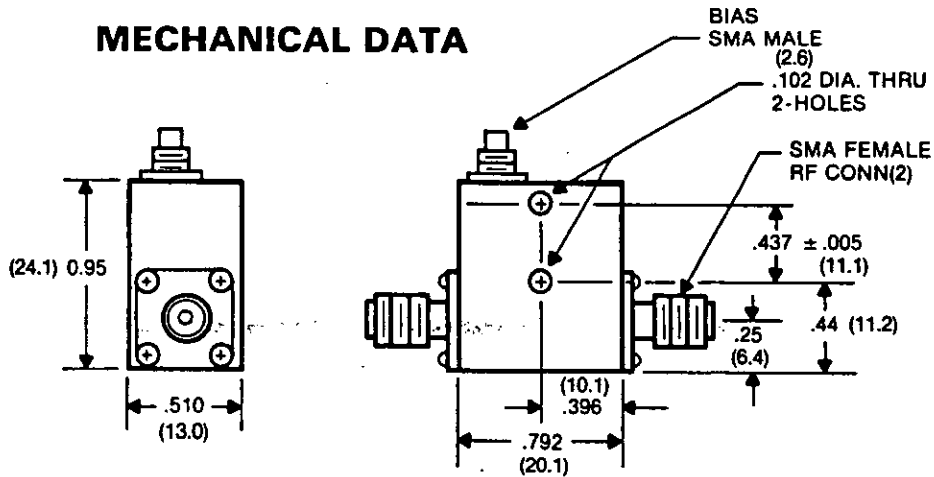
AVAILABLE OPTIONS

Option No.	Description
001	Two SMA Male RF Connectors
002	One SMA Male and One SMA Female RF Connector
003	Solder Type Control Terminals
008	Extend Frequency to 100 MHz
010	100 ns, Max Switching Speed (5w, cw, max)
012	2 ns, Max Switching Speed (100mw, cw, max)
103	Integral Video Filters (2-18 GHz Frequency Band)

ENVIRONMENTAL RATINGS

Operating Temperature - 65° C to 110° C
 Non-Operating Temperature - 65° C to 125° C
 Humidity MIL-STD-202F, METHOD 103B
 Shock MIL-STD-202F, METHOD 213B
 Vibration MIL-STD-202F, METHOD 204D
 Altitude MIL-STD-202F, METHOD 105C
 Temp Cycling MIL-STD-202F, METHOD 107D

MECHANICAL DATA



DIMENSIONS: INCHES (MILLIMETERS)



**AMERICAN Microwave
Corporation**

**SPST SWITCH
0.3 - 18 GHz
NON - REFLECTIVE
WITH INTEGRAL DRIVER
SWN-2183-1AT**

FEATURES

- 0.3 to 18 GHz Frequency Band
- 70 dB, Minimum On/Off Isolation
- 10 ns, Maximum Rise/Fall Time
- Small Size
- Light Weight
- Integral TTL Driver

DESCRIPTION

The SWN-2183-1AT is a broadband, high speed, low loss SPST unit with off arm terminations and integral TTL compatible driver. It is powered by +5V and -5 volt supplies. It features rugged integrated circuit assemblies of chip pin diodes on a microstrip transmission line and TTL driver that is electrically as well as mechanically integral for smooth pulse modulation with no overshoot or ringing.

APPLICATIONS

- Radar Simulators
- Radar Cross Section Transmitters
- Pulse Modulators

07/94

7311G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

SPECIFICATIONS

CHARACTERISTIC					
	0.2 to 0.5	0.5 to 2.0	2.0 to 8.0	8.0 to 12.4	12.4 to 18.0
MIN. ISOLATION (dB)	45	80	80	80	70
MAX. INSERTION LOSS (dB)	2.0	2.0	2.5	3.0	3.5
VSWR (On and Off)	1.5	1.5	1.75	2.0	2.0

SWITCHING SPEED

RISE TIME (10 - 90% RF)	10 ns Max.
FALL TIME (90 - 10% RF)	10 ns Max.
ON TIME (50% COMMAND TO 90% RF)	70 ns Max.
OFF TIME (50% COMMAND TO 10% RF)	70 ns Max.

POWER HANDLING CAPABILITY

NO DEGRADATION
 100 MW CW or PEAK
 SURVIVAL POWER
 1 W AVERAGE, 10 W PEAK
 (1 μ SEC MAX PULSE WIDTH)

ENVIRONMENTAL RATINGS

OPERATING TEMPERATURE - 65° C to 110° C
 NON-OPERATING TEMPERATURE - 65° C to 125° C
 HUMIDITY MIL-STD-202F, METHOD 103B
 SHOCK MIL-STD-202F, METHOD 213B
 VIBRATION MIL-STD-202F, METHOD 204D
 ALTITUDE MIL-STD-202F, METHOD 105C
 TEMP CYCLING MIL-STD-202F, METHOD 107D

POWER REQUIREMENTS

+5V \pm 2%, 90 mA
 -5V \pm 5%, 75 mA

CONTROL CHARACTERISTICS

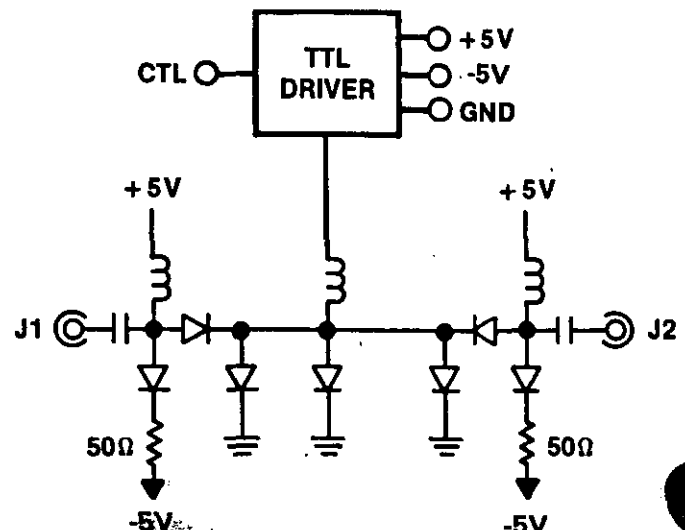
CTL INPUT - 1 UNIT LOAD
 LOGIC SENSE
 0 SWITCH "ON"
 1 SWITCH "OFF"

AVAILABLE OPTIONS

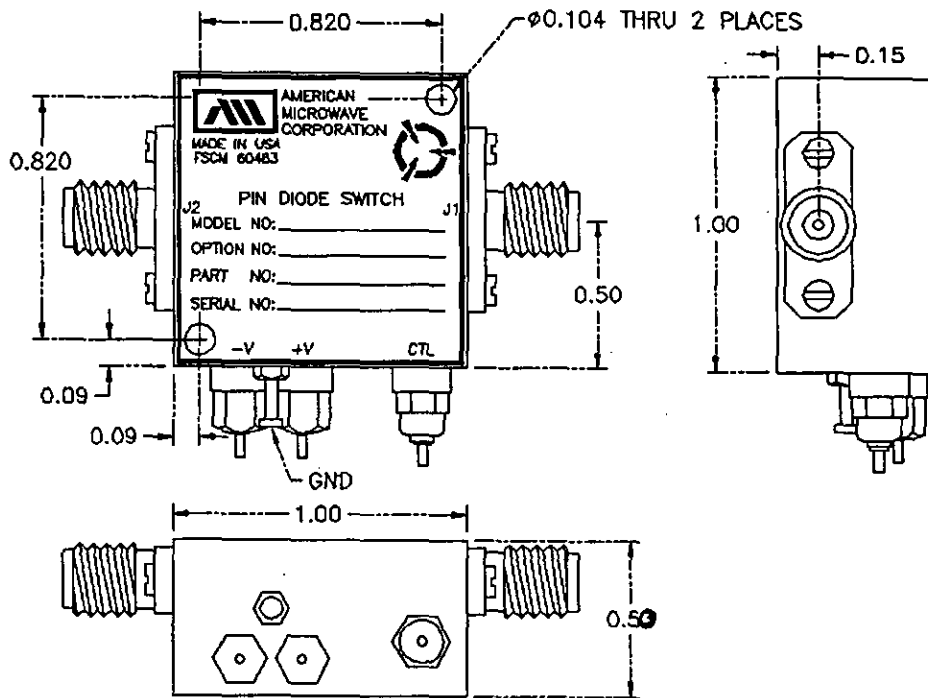
Option No. Description

001	Two SMA Male RF Connectors
002	One SMA Male and One SMA Female RF Connector
003	SMC Control Connector (Solder Type is Standard)
005	50 Ohm Control Impedance
103	Integral Video Filters (2-18 GHz Frequency Band) Insertion loss Increase of 0.75 Db maximum
HS	High Speed Version (20 nsec. Delay)
R	Reflective
006	+5V, -15V

FUNCTIONAL SCHEMATIC



MECHANICAL DATA



LOGIC TABLE

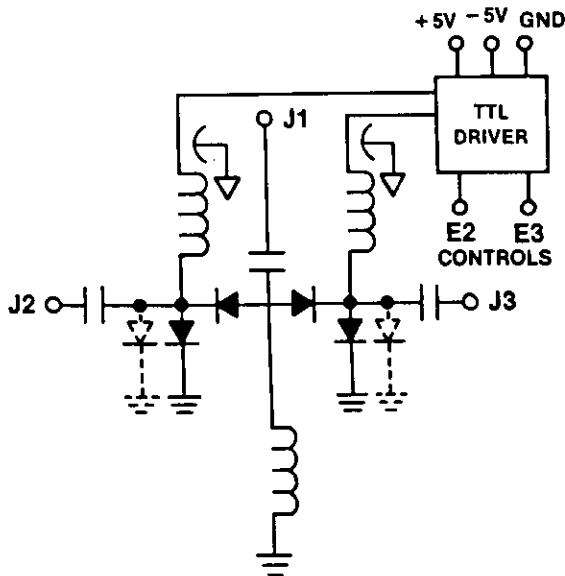
<u>LOGIC</u>	<u>RF</u>
0	ON
1	OFF

BROADBAND PIN SWITCH SPDT WITH INTEGRAL DRIVER SWN-218-2A 0.3 To 18 GHz

FEATURES

- 0.3 to 18 GHz Frequency Range
- Low Insertion Loss
- Small Size
- Light Weight
- Rugged Chip and Microstrip Construction
- Integral TTL Compatible Driver

FUNCTIONAL SCHEMATIC



07/94

SPECIFICATIONS

- Frequency Range: 0.3 to 18 GHz
- Insertion Loss: 2.5 dB, Max.
- Isolation: 55 dB, Min.
- VSWR: 2.0 to 1
- Rise/Fall Time: 50 ns Max.
- Power Handling: +20 dBm, CW, Max.
- Operating Temp.: -65° C to +85° C
- DC Power: +5V DC @ 65 mA, Max.
-5V DC @ 50 mA, Max.

DESCRIPTION

The SWN-218-2A is a SPDT Pin Switch intended for wide band switching applications in commercial and military environments. It has an instantaneous frequency coverage from 0.3 to 18 GHz and features all solid state chip diode and microstrip construction for rugged, reliable operation. Hybrid driver circuitry features reverse voltage and over-voltage protection.

STANDARD UNIT

FREQUENCY (GHz)	<u>0.3</u>	<u>2.0</u>	<u>4.0</u>	<u>8.0</u>	<u>12.4</u>	<u>18.0</u>
MAX. INSERTION LOSS (dB)	1.2	1.2	1.3	1.3	2.0	2.5
MIN. ISOLATION (dB)	85	80	75	70	65	55
MAX. VSWR	1.7	1.5	1.5	2.0	2.0	2.0

HUMIDITY, SHOCK, ETC., PER MIL-STD 202C

OPTIONS:

- 001 35 dB MIN ISOLATION
- 002 INDEPENDENT CONTROLS
- 003 SMA MALE CONNECTORS
- 004 + 15 VOLT SUPPLY
- 005 REVERSE LOGIC
- 006 - 15 VOLT SUPPLY
- 007 10 NS, MAX SWITCHING SPEED
- 008 EXTEND FREQUENCY TO 100 MHz
- 009 30 NS, MAX DELAY
- 010 - 12 VOLT SUPPLY
- 011 Off ARM TERMINATION
INSERTION LOSS OF 3.5 dB MAXIMUM
- 103 INTEGRAL VIDEO FILTERS (FREQUENCY 2-18 GHz)
INSERTION LOSS INCREASE OF 0.75 dB MAXIMUM

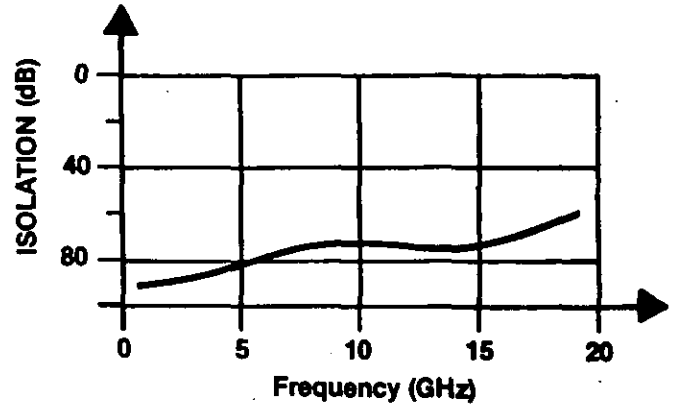
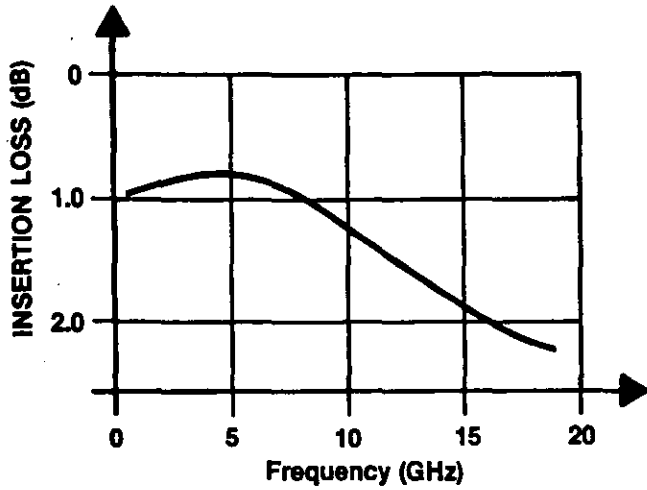
NOTES:

- 1. Switching Speeds are:
10%-90% RF and 90%-10% RF

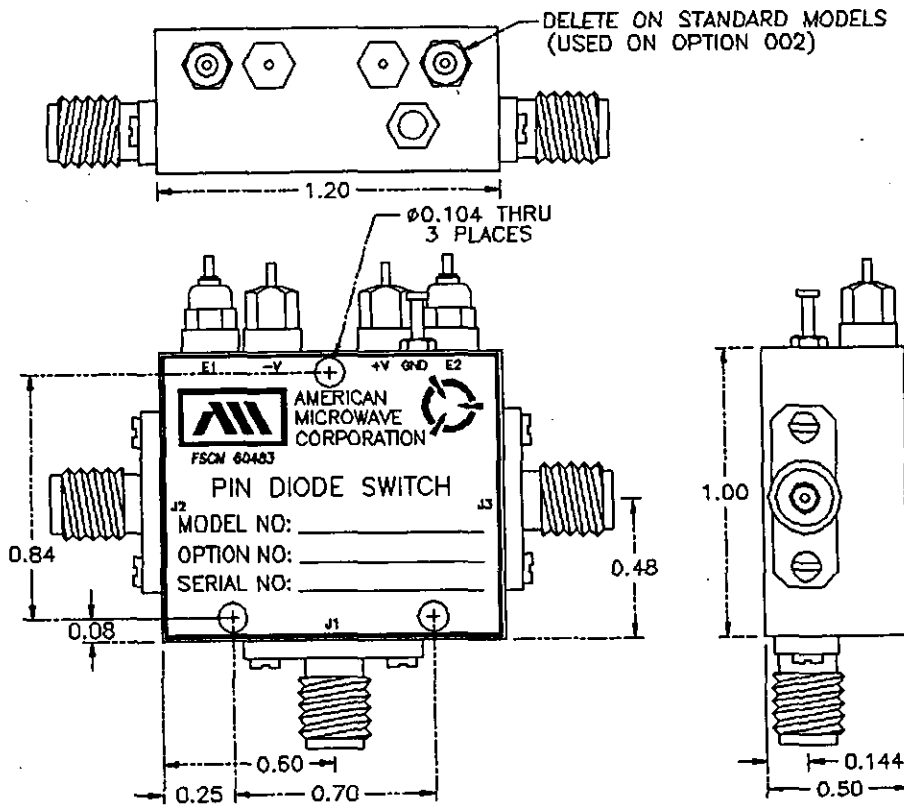
ENVIRONMENTAL RATINGS

Operating Temperature - 65° C to 110° C
Non-Operating Temperature - 65° C to 125° C
Humidity MIL-STD-202F, METHOD 103B
Shock MIL-STD-202F, METHOD 213B
Vibration MIL-STD-202F, METHOD 204D
Altitude MIL-STD-202F, METHOD 105C
Temp Cycling MIL-STD-202F, METHOD 107D

TYPICAL PERFORMANCE



MECHANICAL DATA



LOGIC TABLE

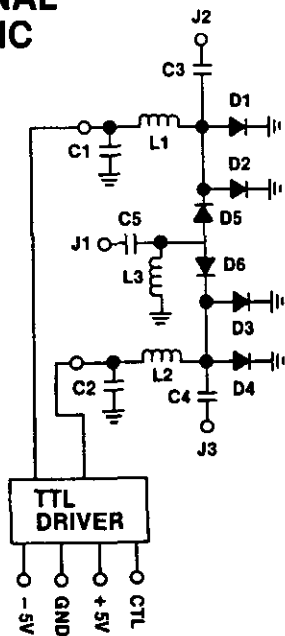
LOGIC	RF ON	RF OFF
0	J1-J2	J1-J3
1	J1-J3	J1-J2

MINIATURE SP2T SWITCH 0.3 - 18 GHz WITH INTEGRAL DRIVER SWN-2181-2A

FEATURES

- 0.3 to 18 GHz Frequency Band
- 55 dB, Minimum Isolation
- High Speed - 10 ns Optional
- Integral TTL Driver

FUNCTIONAL SCHEMATIC



SPECIFICATIONS

- Frequency Range: 0.3 to 18 GHz
- Insertion Loss: 3.0 dB, Max.
- Isolation: 55 dB, Min.
- VSWR: 2.0:1, Max.
- Switching Speed: 50 ns, Max.
- Rise/Fall Time
- Power Handling: +23 dBm, CW, Max.
- Operating Temp.: -65° C to +85° C
- DC Power: +5V @ 65 mA, Max.
-5V @ 50 mA, Max.

DESCRIPTION

The SWN-2181-2A is a SP2T Pin Switch intended for use in commercial and military environments. It features all solid state chip diode and microstrip construction for rugged, reliable operation. Hybrid driver circuitry features reverse voltage and over voltage protection.

07/94

SPECIFICATIONS

STANDARD UNIT

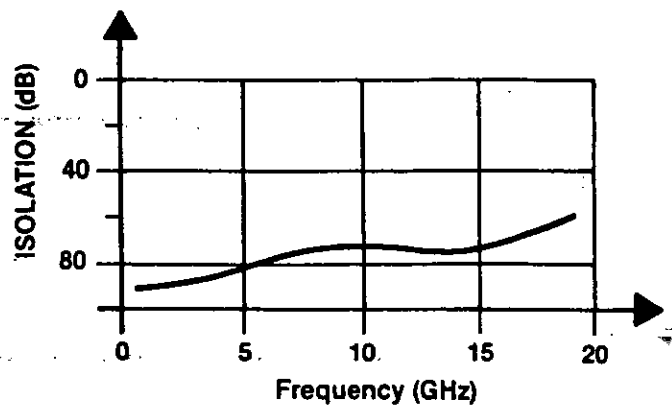
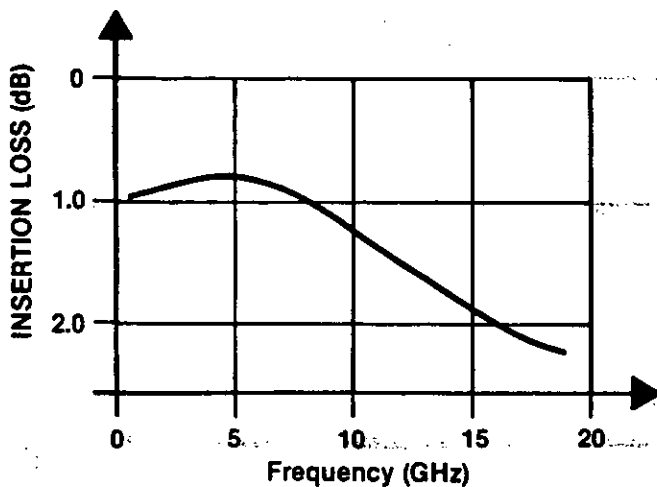
FREQUENCY (GHz)	<u>0.3</u>	<u>2.0</u>	<u>4.0</u>	<u>8.0</u>	<u>12.0</u>	<u>18.0</u>
MAX. INSERTION LOSS (dB)	1.2	1.2	1.1	1.0	1.8	3.0
MIN. ISOLATION (dB)	85	80	75	70	65	55
MAX. VSWR	1.7	1.5	1.5	1.9	2.0	2.0

HUMIDITY, SHOCK, ETC. PER MIL-STD 202C

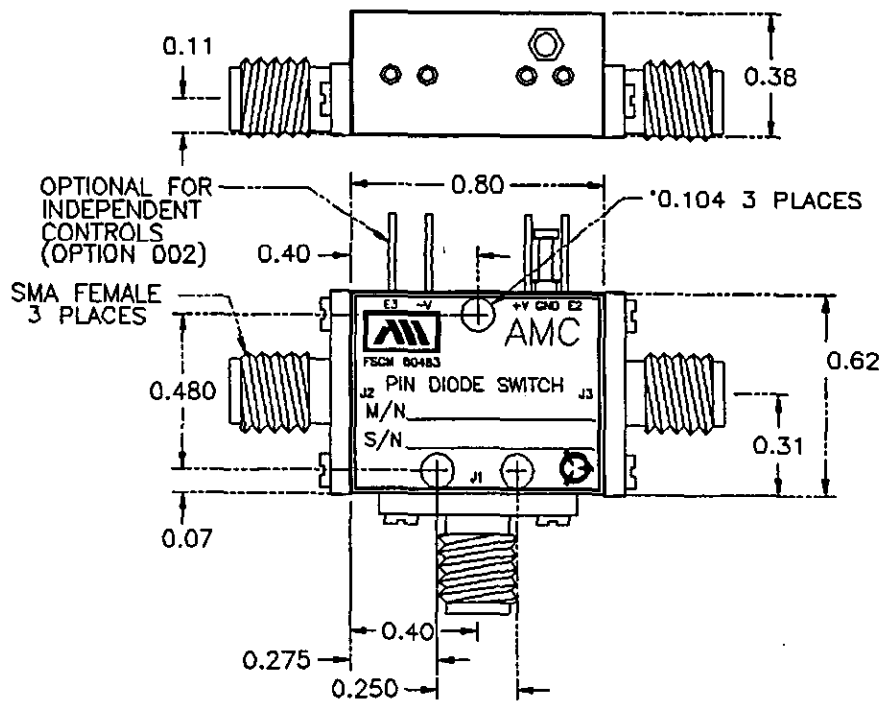
OPTIONS:

- 001 35 dB MINIMUM ISOLATION
- 002 INDEPENDANT CONTROLS
- 003 SMA MALE CONNECTORS
- 005 REVERSE LOGIC
- 006 -15 VOLT SUPPLY
- 007 10 NS, MAXIMUM RISE/FALL TIME
- 008 EXTENDED FREQUENCY TO 100 MHz
- 009 30 NS, MAXIMUM DELAY
- 010 OFF ARM TERMINATION
- INSERTION LOSS OF 3.5 dB MAXIMUM
- 103 INTEGRAL VIDEO FILTERS (2 - 18 GHz)
- INSERTION LOSS INCREASE OF 0.75 dB MAXIMUM

TYPICAL PERFORMANCE



MECHANICAL DATA

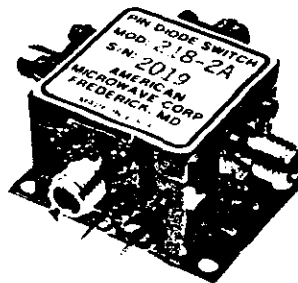


LOGIC TABLE

LOGIC	RF ON	RF OFF
0	J1-J2	J1-J3
1	J1-J3	J1-J2

**AMERICAN Microwave
corporation**

2 - 18 GHz SP3T SWITCHES WITH DRIVERS



FEATURES

- 10 MHz to 18 GHz
- Low Insertion Loss
- High Isolation
- Small Size

DESCRIPTION

SP3T PIN diode switches that cover the frequency range from 2 to 18 GHz are available in octave to multi-decade bandwidths.

All feature rugged, bonded diode chip and micro-strip construction that meet MIL-STD-202C environmental requirements. TTL drivers feature ultra reliable discrete component construction. Drivers, in addition, will withstand up to 300% overload and reverse polarity connection for up to 30 seconds without damage.

Optional control port connectors, power supply voltages, male RF connectors and truth tables are available.

10/89

7311G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

SPECIFICATIONS

MODEL NUMBER	SWITCH TYPE	FREQUENCY RANGE (GHz)	MAXIMUM INSERTION LOSS (dB)	MINIMUM ISOLATION (dB)	MAXIMUM VSWR
SW-2040-3A	SP3T	2-4	1.6	45	1.5
SW-4080-3A	SP3T	4-8	1.7	40	1.6
SW-8012-3A	SP3T	8-12	1.8	35	1.7
SW-1218-3A	SP3T	12-18	2.6	30	1.9
SW-218-3A	SP3T	2-18	2.8	30	2.5

RISE/FALL TIME: (10% RF to 90% RF) 50 ns, Max
(90% RF to 10% RF) 50 ns, Max

POWER HANDLING: +23 dBm, Max

TTL DELAY: 50 ns, typical

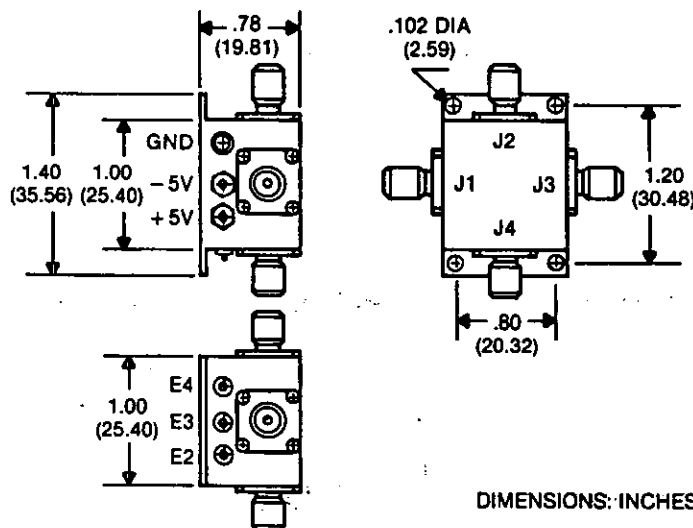
POWER SUPPLY: +5VDC @ 100 mA, Max
-5VDC @ 50 mA, Max

OPTIONS: 001 -55 dB, Min Isolation
002 Independent Controls (SPDT)
003 SMA Male Connectors
004 Solder Pin Control Terminal
005 Reverse Logic
006 -15V Supply
007 -12V Supply

ENVIRONMENTAL RATINGS

Operating Temperature -65° C to 110° C
Non-Operating Temperature -65° C to 125° C
Humidity MIL-STD-202F, METHOD 103B
Shock MIL-STD-202F, METHOD 213B
Vibration MIL-STD-202F, METHOD 204D
Altitude MIL-STD-202F, METHOD 105C
Temp Cycling MIL-STD-202F, METHOD 107D

MECHANICAL DATA



DIMENSIONS: INCHES (MILLIMETERS)

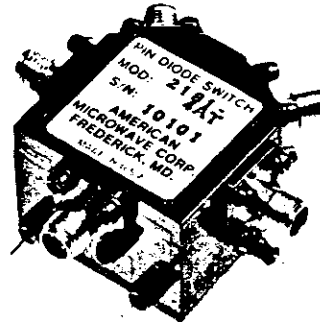
STANDARD LOGIC TABLE	
LOGIC-H	RF-ON
E2	J1-J2
E3	J1-J3
E4	J1-J4

INVERTED LOGIC	
LOGIC-L	RF-ON
E2	J1-J2
E3	J1-J3
E4	J1-J4



AMERICAN Microwave
corporation

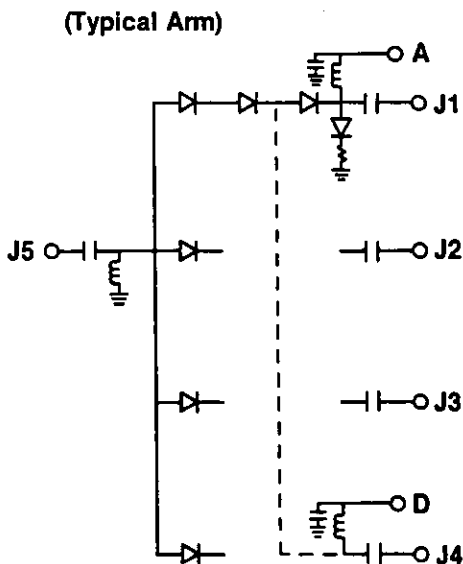
**PIN DIODE SWITCH SP4T
MODEL SW-2181-4AT
NON-REFLECTIVE
2-18 GHz**



FEATURES

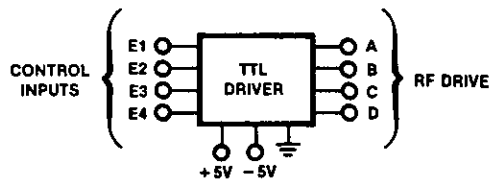
- Integral TTL Driver
- Rugged Microstrip Construction
- Reverse Polarity Protection on +5V and -5V Lines
- Off-Arm Terminations

FUNCTIONAL SCHEMATIC



DESCRIPTION

Model SW-2181-4AT is a broadband SP4T switch covering the 2-18 GHz band. It features Off-Arm terminations that provide reflectionless performance when arm is switched "on" or "off". Integral TTL Driver is "unit load" TTL compatible, one control per arm.



10/89

7311G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

SPECIFICATIONS

CHARACTERISTICS	FREQUENCY (GHz)			
	2-4	4-8	8-12.4	12.4-18
MAX. INS LOSS (dB)	2.0	2.2	2.7	3.5
MIN. ISOLATION (dB)	60	60	60	55
MAX. VSWR (on)	1.8	1.8	2.0	2.0
MAX. VSWR (off)	1.8	1.8	2.0	2.0

Switching Speed: (10% to 90% RF) 50 ns, Max.
 (90% to 10% RF) 50 ns, Max.

RF Power: + 20 dBm, Max.

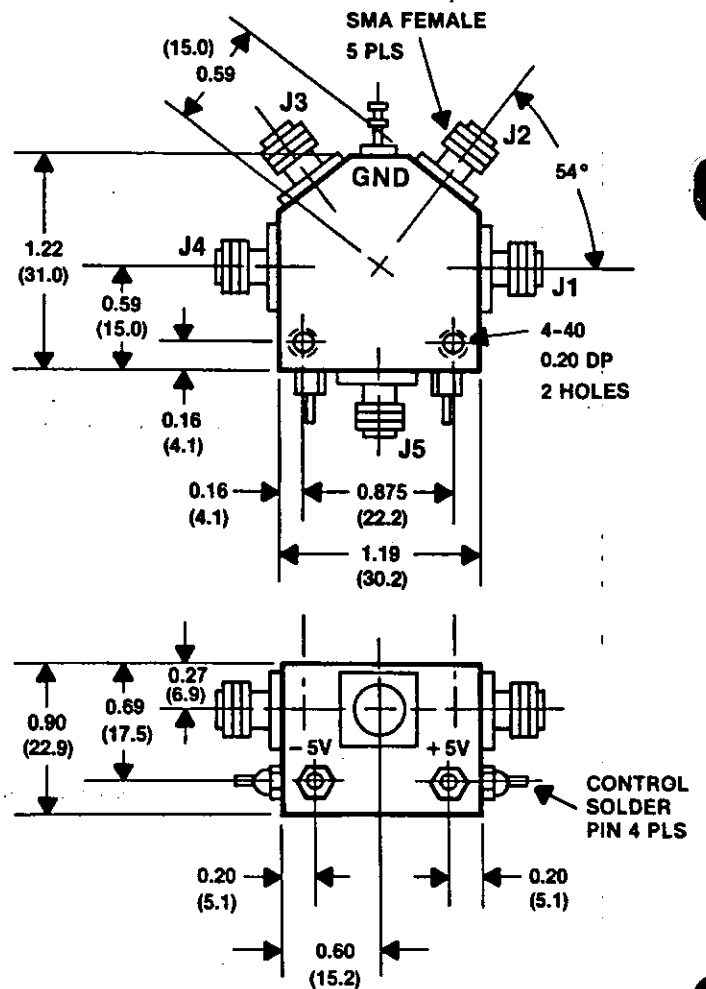
Control: TTL compatible, one "unit load"
 4 individual controls. Logic "1" - RF On;
 Logic "0" - RF Off

Power Requirements: + 5V @ 200 mA, Max.

Connectors: RF: SMA Female
 Power: RFI Solder Pin
 Control: Solder Pin

- Options: 001 RF Male SMA Connectors
 002 35 dB, Min. Isolation
 003 - 12V Supply
 004 + 15 Volt Supply
 005 Reverse Logic
 006 - 15 Volt Supply
 007 Decoder
 008 SMC Male CTL Connector
 009 10 ns, Max Rise/Fall Time
 010 Extend Frequency Range to 500 MHz

MECHANICAL DATA



ENVIRONMENTAL RATINGS

Operating Temperature - 65° C to 110° C
 Non-Operating Temperature - 65° C to 125° C
 Humidity MIL-STD-202F, METHOD 103B
 Shock MIL-STD-202F, METHOD 213B
 Vibration MIL-STD-202F, METHOD 204D
 Altitude MIL-STD-202F, METHOD 105C
 Temp Cycling MIL-STD-202F, METHOD 107D

DIMENSIONS: INCHES (MILLIMETERS)

**PIN DIODE SWITCH SP5T
WITH TTL DRIVER
MODEL SW-2181-5A
2-18 GHz**

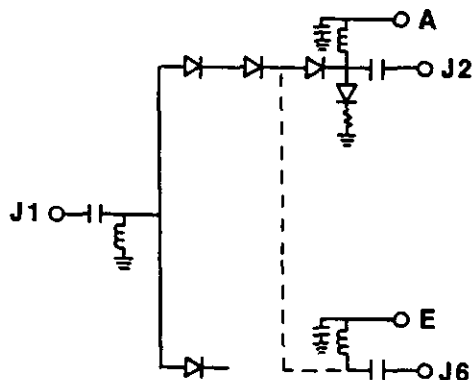


FEATURES

- Integral TTL Driver
- Rugged Microstrip Construction
- Reverse Polarity Protection on +5V and -15V Lines
- Available with Off-Arm Terminations

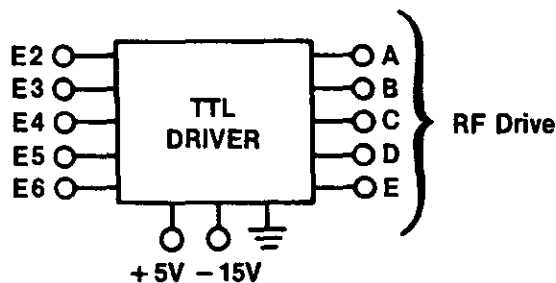
FUNCTIONAL SCHEMATIC

(Typical Arm)



DESCRIPTION

Model SW-2181-5A is a Broadband SP5T Switch covering the 2-18 GHz Band. Integral TTL Driver is "unit load" TTL compatible, one control per arm.



11/89

SPECIFICATIONS

CHARACTERISTICS	FREQUENCY (GHz)				
	.5-2 (Option 010)	2-4	4-8	8-12.4	12.4-18
MAX. INS. LOSS (dB)	2.7	2.7	2.7	3.3	3.6
MIN. ISOLATION (dB)	75	65	65	60	60
MAX. VSWR (On)	1.8	1.8	1.8	2.0	2.0
MAX. VSWR (Off) (Option 011)	1.8	1.8	1.8	1.8	2.0

Switching Speed: (10% to 90% RF) 50 ns, Max.
(90% to 10% RF) 50 ns, Max.

RF Power: + 20 dBm, Max.

Control: TTL compatible, one "unit load"
5 individual controls.

Control Logic: Logic "1" (-0.3 to +0.7V) Port On
Logic "0" (+2.0 to +5.0V) Port Off

Power Requirements: + 5 VDC @ 250 mA, Max.
- 15 VDC @ 100 mA, Max.

Connectors: RF: SMA Female

Power: RFI Solder Pin

Control: Solder Pin

Options: 001 RF SMA Male Connectors
002 35 dB, Min. Isolation
003 - 12 VDC Power Supply
004 + 15 VDC Power Supply
005 Reverse Logic
006 - 5 VDC Power Supply
007 Decoder
008 SMC - Male Control Connector
009 10 ns, Max. Rise/Fall Time
010 Extend Frequency Range to 500 MHz
011 Off-Arm Terminations
103 Video Filters

ENVIRONMENTAL RATINGS

Operating Temperature - 50° C to 85° C

Non-Operating Temperature - 65° C to 125° C

Humidity MIL-STD-202F, METHOD 103B

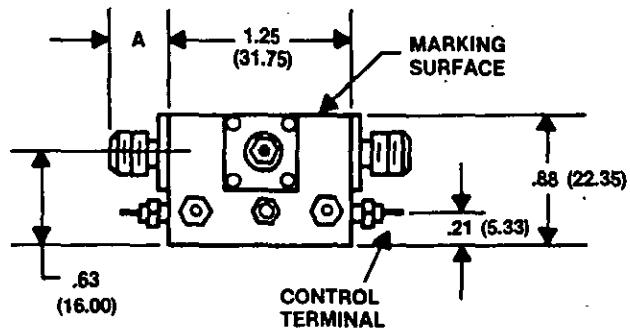
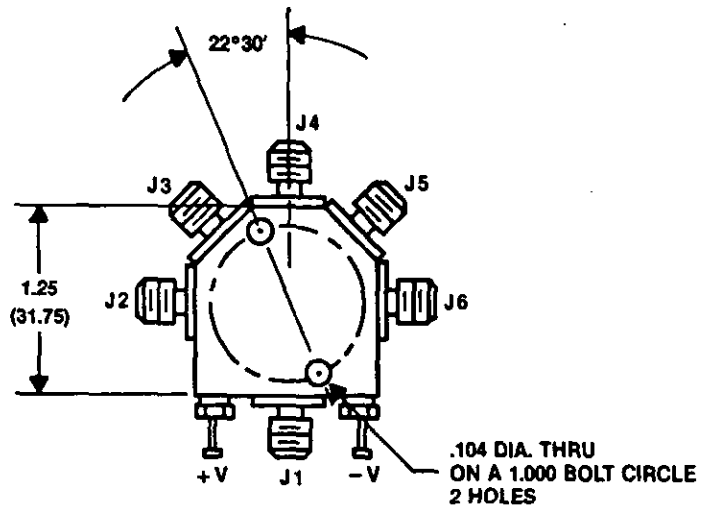
Shock MIL-STD-202F, METHOD 213B

Vibration MIL-STD-202F, METHOD 204D

Altitude MIL-STD-202F, METHOD 105C

Temp Cycling MIL-STD-202F, METHOD 107D

MECHANICAL DATA



DIMENSIONS: INCHES (MILLIMETERS)

AMERICAN Microwave Corporation

**PIN DIODE SWITCH SP8T
NON-REFLECTIVE
WITH TTL DRIVER**
SW-2000-8AT .01-2.0 GHz
SW-2181-8AT 2-18 GHz



FEATURES

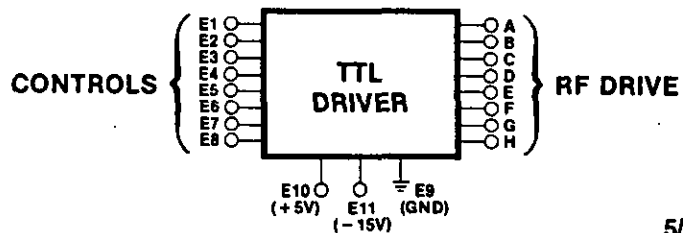
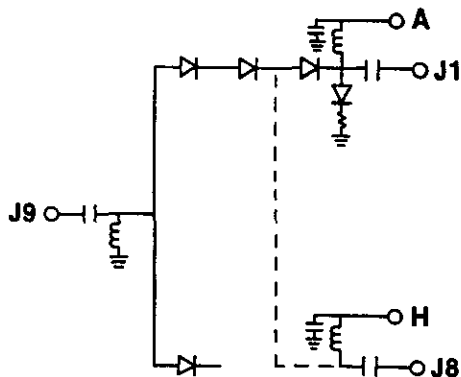
- Integral TTL Driver
- Rugged Microstrip Construction
- Reverse Polarity Protection
- 300% Overload for up to 2 Minutes
- Off-Arm Terminations

DESCRIPTION

SP8T switch is available in two models, SW-2000-8AT covers .01-2.0 GHz and SW-2181-8AT covers 2-18 GHz. Both models feature Off-Arm terminations that provide reflectionless performance when the arm is switched "on" or "off". Integral TTL Driver is one "unit load" compatible, one control per arm.

FUNCTIONAL SCHEMATIC

(Typical Arm)



5/89

7311G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

SPECIFICATIONS

MODEL	CHARACTERISTICS	FREQUENCY (GHz)				
		.01-2	2-4	4-8	8-12.4	12.4-18
SW-2000-8AT	MAX. INS LOSS (dB)	2.0	—	—	—	—
	MIN. ISOLATION (dB)	80	—	—	—	—
	MAX. VSWR (on)	1.5:1	—	—	—	—
	MAX. VSWR (off)	1.45:1	—	—	—	—
SW-2181-8AT	MAX. INS LOSS (dB)	—	2.8	3.0	3.8	4.5
	MIN. ISOLATION (dB)	—	80	75	60	60
	MAX. VSWR (on)	—	1.9:1	1.9:1	1.9:1	1.9:1
	MAX. VSWR (off)	—	1.9:1	1.9:1	1.9:1	1.9:1

Switching Speed: (10% to 90% RF) 50 ns, Max.
(90% to 10% RF) 50 ns, Max.

RF Power: + 20 dBm, Max.

Control: TTL compatible, one "unit load"

8 individual controls

TTL "Hi" - RF on

TTL "Lo" - RF off

Power Requirements: + 5VDC @ 350 mA, Max.
- 15VDC @ 100 mA, Max.

Connectors: RF: SMA Female

Power: RFI Solder Pin

Control: Solder Pin

Options: 001 RF Male Connectors

002 Inverted Logic

003 + 15VDC Supply

004 Decoder

005 10 ns, Max. Rise/Fall Time (not available on SW-2000-8AT)

103 Video Filters (not available on SW-2000-8AT)

ENVIRONMENTAL RATINGS

Operating Temperature - 65° C to 110° C

Non-Operating Temperature - 65° C to 125° C

Humidity MIL-STD-202F, METHOD 103B

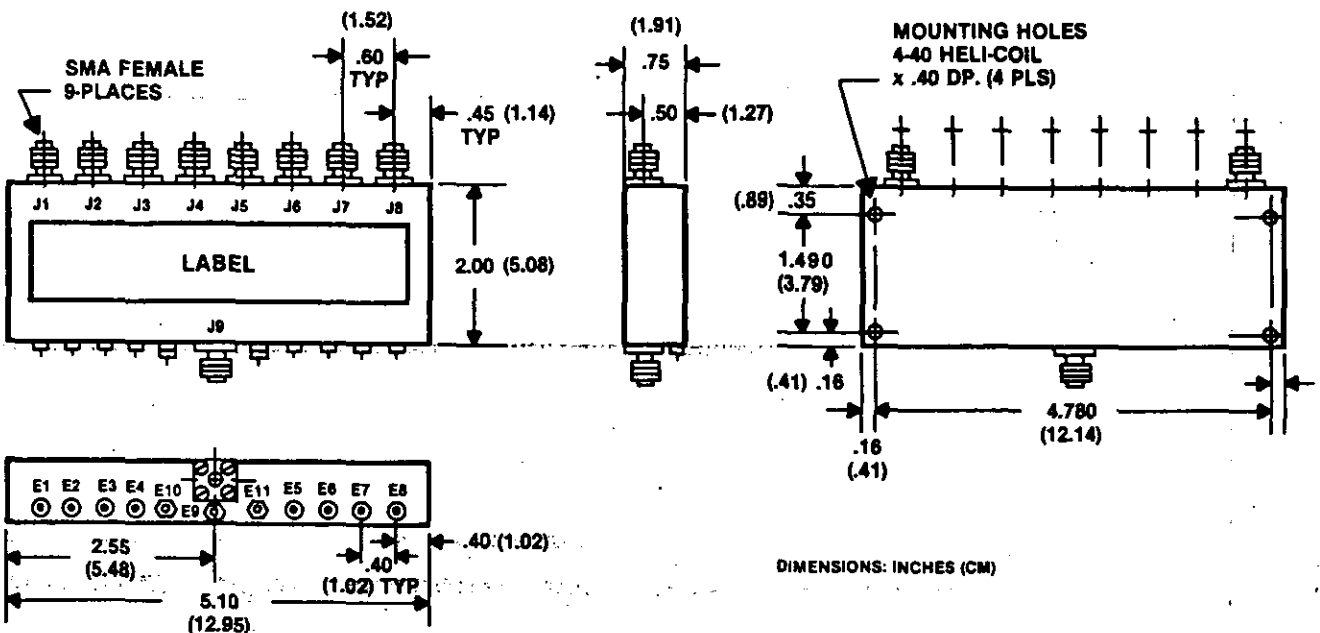
Shock MIL-STD-202F, METHOD 213B

Vibration MIL-STD-202F, METHOD 204D

Altitude MIL-STD-202F, METHOD 105C

Temp Cycling MIL-STD-202F, METHOD 107D

MECHANICAL DATA



How to Specify PIN Diode Switches

I. INTRODUCTION

When purchasing PIN diode switches, it is important that they are completely specified to assure system performance. It is also important that the specifications be achievable. This paper is designed to help a systems designer specify realizable PIN diode switches.

There are six key parameters essential to specify PIN diode switches. These are:

- 1) Type, i.e., SPST, SPDT, SP3T, DPDT, etc.
- 2) Operating frequency band
- 3) Insertion loss
- 4) Isolation
- 5) Switching speed
- 6) Power handling

There are five secondary parameters that may require specification. These are:

- 1) Logic compatible driver type and speed
- 2) Phase tracking arm to arm and/or unit to unit
- 3) Off arm terminations
- 4) Intercept point or compression point
- 5) Video transients

II. SWITCH TYPE

Most PIN diode switches are of the single pole multiple throw type. They range from single throw up through 8-12 throws. The most popular type is the SPST or pulse modulator type. In general, the greater the number of throws, the less popular the switch, and, hence, the less readily available it is. American Microwave has standard switch designs up through 5 throws in the three popular bands of interest: HF, UHF/VHF, and Microwave. We also have designs for 8 and 10 throws at HF and Microwave.

The most popular multi-pole switch is the DPDT type, commonly known as the *Transfer Switch*. These units are available in UHF/VHF and Microwave bands. High order multi-pole switches are generally referred to as switch matrices, which is a whole subject matter by itself.

III. OPERATING FREQUENCY BANDS

American Microwave classifies PIN switches into five operating frequency bands. They are:

- a) Video, which covers from 10MHz to 2MHz, not manufactured at AMC.
- b) HF, which covers 2MHz to 32MHz, AMC series SW-0230 switches.
- c) UHF/VHF, covering 10MHz to 2000MHz, AMC series SW-2000 switches.
- d) Microwave, covering 10MHz to 20GHz and above, AMC series SW-218 switches.
- e) Millimeter wave switches, 20GHz and up

The above bands have loosely defined boundaries which overlap. They are more indicative of the five different technologies available to the switch manufacturer as well as distinct application areas of switch requirements.

There are some special application bands and technologies such as the high speed, low transient IF switching technology which is reflected in the SWB-0070 series of switches in the AMC catalog.

IV. THE PIN DIODE

A simplified equivalent circuit of the PIN diode is shown in figure 1. The forward biased diode is a current controlled resistor. The resistance vs current behavior of a typical PIN diode is shown in figure 2. The reversed biased diode is a voltage-controlled capacitor. The capacitance vs voltage of a typical PIN diode is shown in figure 3.

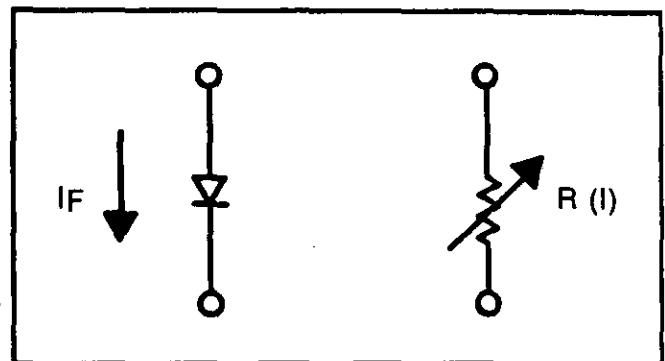


Figure 1. The forward biased PIN diode.

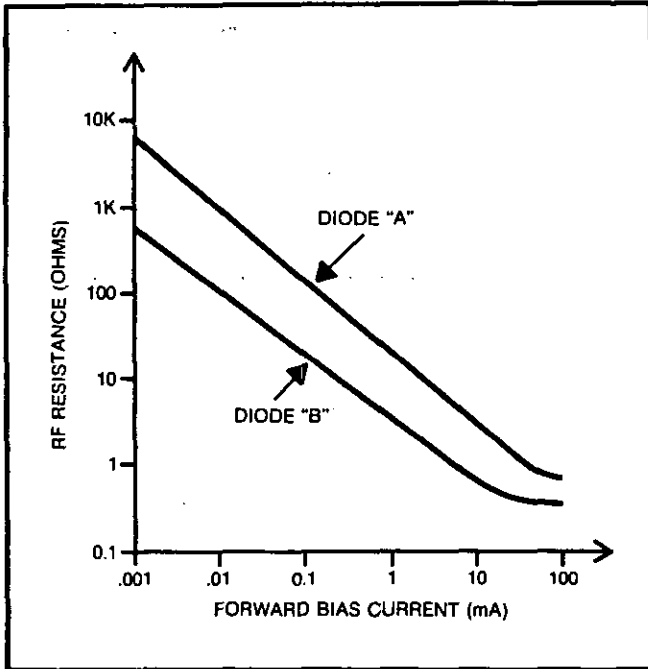


Figure 2. RF resistance vs. forward bias current.

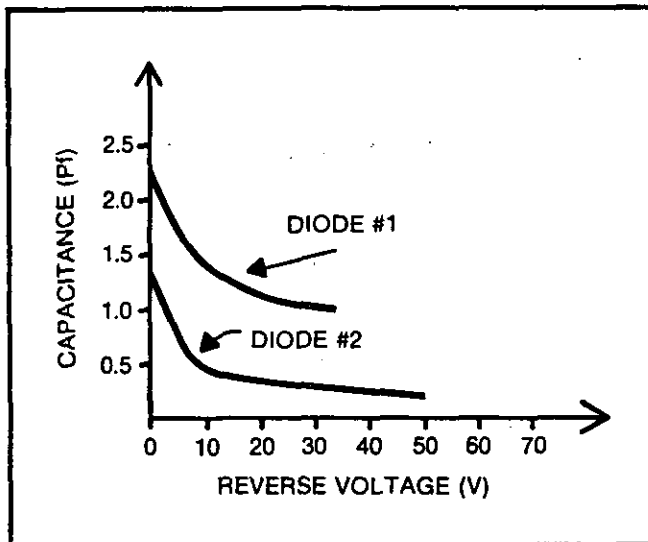


Figure 3. PIN diode capacitance vs. voltage.

V. INSERTION LOSS

Simple, most basic switches have the lowest loss for any given operating band. For a given technology or operating band, insertion loss increases with increasing frequency proportional to the square root of frequency in a well-designed PIN switch. Insertion loss originates in four basic areas.

- Conductor or transmission line loss within the switch itself due to the presence of microstrip, coaxial line, or waveguide inter-connecting lines.
- Resistance losses due to finite resistance of series connected components such as PIN diodes and/or finite Q capacitors.

c) VSWR losses due to mismatch of components within the switch or at the terminals of the switch. VSWR losses at the terminals of the switch can be tuned out externally to improve losses; those within the switch must be minimized in design. These actually are the cause for ripples in the insertion loss vs frequency characteristic.

Assuming a switch is well designed, i.e., lowest loss transmission media, lowest resistance diodes and other series components are employed and all internal VSWRs are minimized, the loss of the switch is then dependent on the complexity of the design. In general, multi-throw units are more lossy as the number of throws increases. The addition of off-arm terminations and video filters increases the loss of the switch for a given technology. Also, increased on/off isolation will contribute slightly to the loss. The insertion loss is lowest in the least complex switch configurations. For low loss switches, keep the specification simple.

VI. ISOLATION

PIN diodes are connected to the transmission line in series or in shunt. Isolation is achieved by reverse biasing series connected diodes for forward biasing shunt connected diodes. The shunt mounted diode provides the most effective means for achieving broadband, relatively frequency independent isolation. It is ideally frequency independent, but, practically, small parasitic reactances generally affect broadband performance. Isolation is also achieved by reverse biasing series mounted diodes. Isolation for the series mounted diode decreases with increasing frequency.

Series-shunt diode configurations are frequently employed in multi-throw broadband switches to achieve relatively high isolation in a simple structure. An example of the performance of a series-shunt connection is shown in figure 4 for the AMC model SW-218-2 switch. Note how the isolation decreases with increasing frequency. Multiple diodes connected in series or in shunt are frequently employed in PIN switches to achieve relatively high isolation over a broad band of frequencies. The isolation vs frequency characteristic of a shunt connected array of forward biased diodes is shown in figure 5. An example of a shunt mounted switch is the AMC model SW-2184-1A SPST unit, shown in figure 6, which achieves 85 dB isolation over the 2-18 GHz band by judiciously spacing four shunt connected diodes. An example of a switch employing an array of reverse biased series connected diodes is the AMC model SW-2000-1, shown in figure 7, which achieves 70 dB minimum isolation over the 10-2000 MHz band. It is interesting to note that the SW-2000-1 unit has more insertion loss at the low end of the band than that of the SW-218-1A unit. This, of course, is due to the finite resistance of the forward biased series diodes in the SW-2000-1 unit.

For narrowband applications, the possibilities are endless for combining and tuning diodes for excellent tradeoffs between insertion loss and isolation. Many designers have employed series and shunt inductors to resonate the capacitance of reverse biased PIN diodes to achieve excellent isolation-insertion loss performance over limited frequency bands. (See reference 1.)

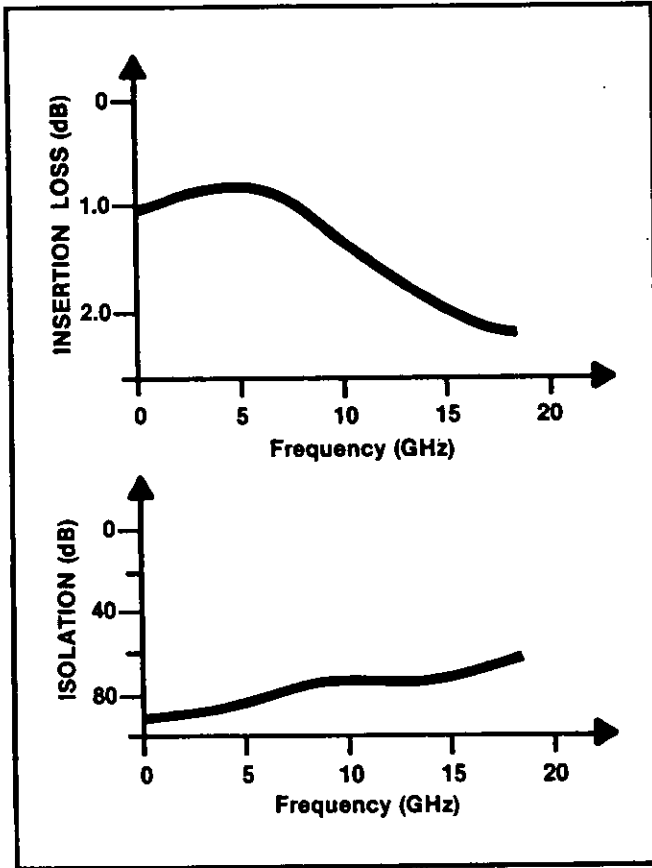


Figure 4.

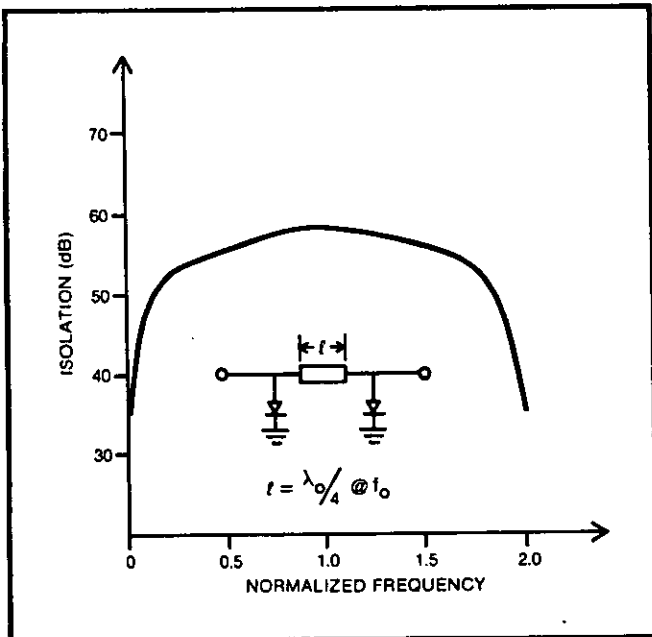


Figure 5. Isolation vs. frequency, shunt array.

MODEL NO.	CHARACTERISTICS	FREQUENCY (GHz)					
		0.3 to 1.0	1.0 to 2.0	2.0 to 4.0	4.0 to 8.0	8.0 to 12.4	12.4 to 18.0
SW-2182-1A	Min Isolation (dB)	30	40	45	45	45	45
	Max Ins Loss (dB)	1.0	1.0	1.0	1.1	1.6	2.0
	Max VSWR (ON Pos)	1.3	1.3	1.4	1.6	1.9	1.9
SW-2183-1A	Min Isolation (dB)	40	60	70	70	70	70
	Max Ins Loss (dB)	1.0	1.0	1.1	1.4	1.6	2.3
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9
SW-2184-1A	Min Isolation (dB)	45	70	85	85	85	80
	Max Ins Loss (dB)	1.0	1.0	1.2	1.5	2.0	2.5
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.8	1.9	1.9

Figure 6.

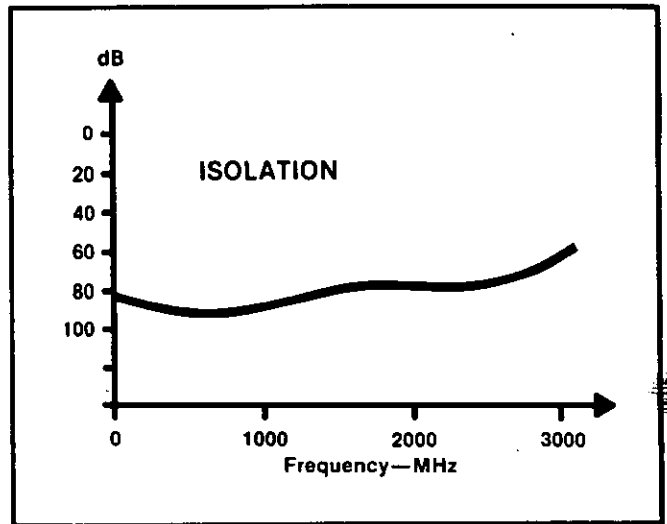


Figure 7.

VII. SWITCHING SPEED

Switching speed of a PIN diode switch is generally defined as the time for the RF to traverse 10% to 90% levels. Other definitions, such as the time from 1 dB to 60 dB levels, are occasionally employed for high isolation requirements. The switching speed is generally controlled by two factors, the time required to remove the stored charge from the diode junction and the theoretical maximum speed at which the charge can be removed from the junction. The time required to remove the stored charge from the junction is limited by the transit time of the PIN diode. The transit time given by

$$t = W1/Vs$$

where $W1$ = the device i-region thickness (cm)

Vs = maximum saturated velocity = 10^7 cm/sec

The i-region thickness is related to the breakdown voltage Vb by

$$W1 = Vb/20$$

Additionally, the stored charge in the forward biased diode junction is related to the minority carrier lifetime of the junction by

$$Qs = I \cdot T$$

Where Qs = stored charge (coulombs)

I = forward current (amperes)

T = minority carrier lifetime (seconds)

As a minimum for operation as a PIN switch, the diode lifetime is shown vs the lowest operating frequency in figure 8. Further, the transit time as a function of breakdown voltage is shown in figure 9. (see reference 2.) For minority carrier lifetimes shorter than 10 ns, state-of-the-art PIN drivers can switch in approximately the transition time of the device. Longer lifetimes require higher currents and larger, slower switching transistors causing switching times to be longer than the transition time.

Low intermodulation and harmonic distortion PIN switches require diodes with longer than minimum minority carrier lifetimes and hence switch more slowly.

High power PIN switches require higher V_b diodes which results in slower transition times and slower switching times.

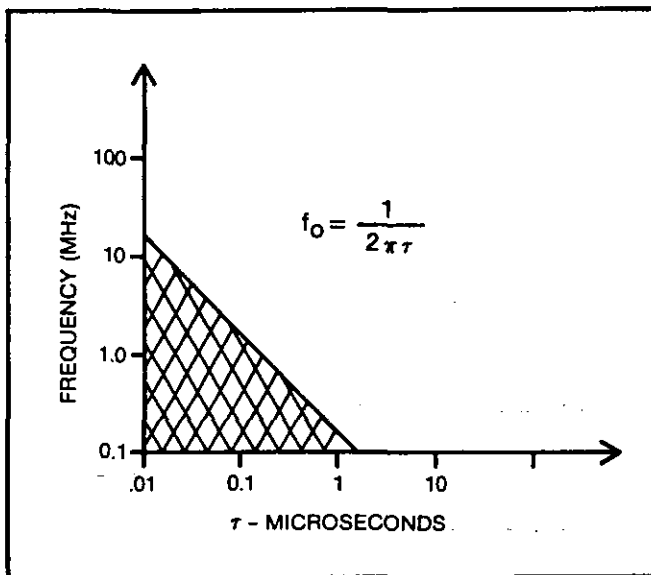


Figure 8. Minimum lifetime vs. frequency.

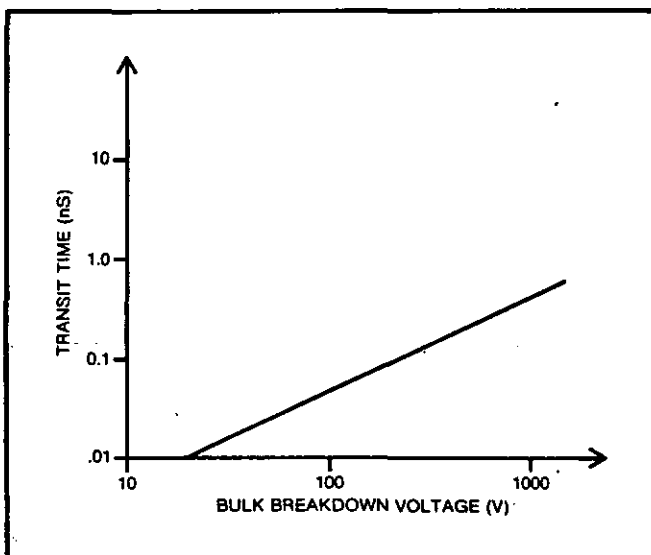


Figure 9. Transit time vs. bulk breakdown voltage.

VIII. POWER HANDLING

The power handling capability of PIN diode switches is controlled by three parameters. First is the upper operating temperature of the device. Second is the breakdown voltage and third the charge storage capability of the device. For silicon PIN diodes, best reliability is achieved by keeping junction operating temperatures below 200 degrees centigrade. Since series mounted diodes are more dissipative and have poorer heat sinking capabilities than shunt mounted configurations, switch designers tend to avoid series configurations in high power applications. Since series configurations are essential to wideband multi-throw switches, these units tend to be the lowest power handling configurations. Hence, high power broadband switches are difficult to realize. One usually ends up trading power for bandwidth.

It is necessary that the breakdown voltage be at least twice the peak RF voltage that the diode will see and that the forward charge stored in the junction be greater than the charge moved on one-half cycle of the RF current waveform. The former requirement will assure that the diode not exceed its voltage breakdown and the latter that the forward biased junction will not be depleted in operation. The elements are essential to linear non-destructive operation of the diode under high power operation.

IX. LOGIC COMPATIBLE DRIVERS

The three most popular logic families are Transistor-Translator-Logic (TTL), Emitter Coupled Logic (ECL) and Metal Oxide Semiconductor (MOS/CMOS).

Of the three, TTL logic is by far the most popular, ECL and CMOS are a distant second. Four of the most popular forms of TTL driver circuits are shown in figure 10. We will confine this discussion to TTL compatible drivers. For best performance, switch drivers must be electrically as well as mechanically integrated in the switch unit. It is possible to achieve clean, transient free switching by designing electrically compatible drivers.

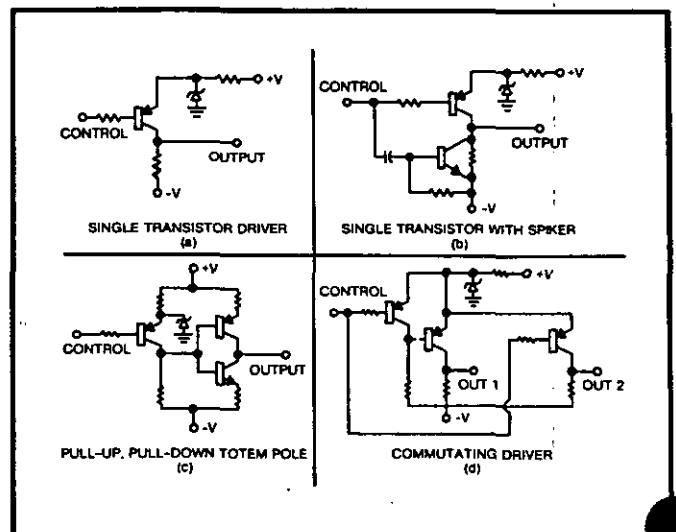


Figure 10. TTL driver circuits.

"Unit load" drivers are highly desirable because they are compatible with the widest range of TTL product line I.C.s. A "unit load" is defined as 40 microamperes maximum source current and 1.6 milliamperes maximum sink current. Drivers are available in multiples of "unit load." True TTL compatibility also requires a logic "low" to be 0-.8 volts and a logic "high" to be 2.0-5.0 volts at the input (0.8-2.0 volts is an undefined region.)

All TTL compatible drivers have delay. Generally the driver delay is defined as the time from 50% TTL level to where the RF signal changes by 10%, i.e., 0-10% for turn-on or 100-90% for turn-off. It is caused by energy storage in the driver and/or RF circuitry. The delay is a result of the time required to remove the stored energy before the switch state can be changed. The stored energy can be stored charge in the base region of a switching transistor or stored in various capacitors and inductors in the driver circuit or the bias decoupling circuit. Often this delay is different for turn-on or turn-off. This phenomenon can lead to pulse shrinkage or pulse expansion when the PIN switch is operated in a pulse mode. Since driver delay is consistent from unit to unit in a well designed PIN switch, a systems designer can often pre-trigger the switch and essentially "program-out" the driver delay. When it is not possible to anticipate the delay, it is necessary to specify delay equalization. An example of a PIN switch with equalized delay is the AMC model SW-218-1A series pulse modulator with modulation characteristics shown in figure 11. This unit has on/off delay equalization to 5 ns, maximum.

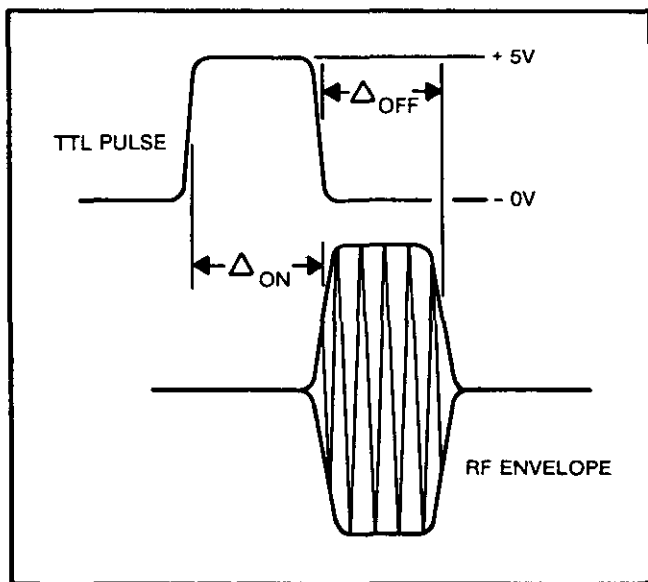


Figure 11. Driver delay equalized.

Another phenomenon of driver delay is minimum pulse width. Since delay involves charging and discharging of components within the driver circuit, it is necessary to "charge" or "discharge" the driver before any RF changes in signal level are observed. This results in minimum pulse width for any switch with integral logic drivers. The minimum pulse width is approximately equal to the delay in the driver.

X. PHASE TRACKING

Often systems require switches that are "phase tracked". A phase tracking requirement is best achieved by first equalizing the time delay between arms of a multi-throw switch (if a multi-throw is indicated) and equalizing the time delay from unit to unit within a production run or product line, if required.

Since the PIN switch is made up internally of many elements, i.e., diodes, capacitors, and chokes with their accompanying mounting parasitic reactances and losses, it is necessary to control the uniformity of parts and assembly techniques to achieve best phase tracking.

For unit-to-unit phase tracking on a lot-to-lot basis, it is necessary to build a phase standard unit that is maintained at the switch vendor's facility which has an impact on the price of the initial lot of switches.

Typical state-of-the-art phase tracking is as follows:

BAND	PHASE TRACKING
HF	1 Degree
UHF/VHF	2 Degrees
Microwave	10 Degrees

XI. OFF ARM TERMINATIONS

Often PIN switches are employed to commutate or switch VSWR sensitive components such as antenna elements in an array, oscillators or amplifiers. Normally, switches have an infinite VSWR in the OFF position. Figure 12 shows a switch with off arm terminations having an extra switching section that switch the terminal in question into a matched load when that arm is turned off. This, in effect, controls and stabilizes the VSWR in both the ON and OFF condition of the switch. You must specify off arm terminations when it is necessary to control OFF VSWR.

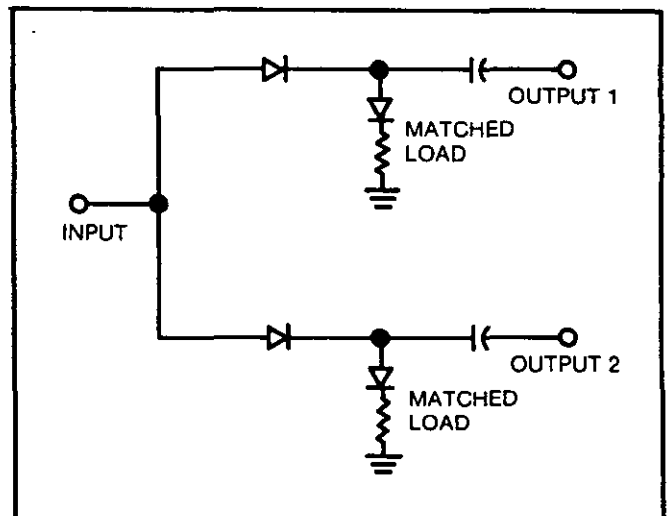


Figure 12. Off arm terminations.

Be aware that when the specified arm is commutated or switched there is a period of time when the VSWR is unspecified. This is particularly important in high power switches where momentary high reflected power levels can be troublesome.

The addition to off arm terminations adds complexity to the switch which results in additional insertion loss and poorer phase tracking.

XII. INTERCEPT POINT OR COMPRESSION POINT

Compression in a PIN switch is a less well defined parameter than in, say, an amplifier. So, we will limit our remarks in this section to intercept point. The concept of intercept point is well documented in the literature and we will not go into it here. Rather, we will examine the elements that control intercept point of PIN diode switches and their tradeoff on overall switch performance.

Intermodulation is a result of nonlinear mechanisms within the PIN diode primarily and occasionally caused by other elements such as nonlinear capacitors, resistors, and/or ferrite cores in the bias decoupling chokes. We will confine this discussion to the PIN diode only.

The primary intermod generator in a PIN switch is the forward biased series PIN diode. Intermod is generated in the diode when the stored charge becomes close to being swept out (or depleted) from the I layer region. Hence, low intermod switches employ diodes with longer than minimum minority carrier lifetimes and are biased at relatively high forward currents to store a lot of charge in the junction. The degree of linearity is controlled by the percentage of charge depleted from the junction by the RF cycle. Highly linear switches have small percentage of charge depletion. See reference 3 for a more complete discussion of Intermodulation Distortion Mechanisms.

A secondary intermod generator is the non-linear capacitance vs voltage characteristic of the reversed biased PIN diode. This phenomenon is relatively easily controlled by selecting diodes with flat capacitance vs voltage characteristics and biasing the device into that region of the curve.

XIII. VIDEO TRANSIENTS

Refer to figure 13, the equivalent circuit of a typical PIN switch. When the diodes are switched between biasing conditions, a change of voltage or current occurs at the bias decoupling element adjacent to the output terminals. This element acts to differentiate the waveform (current for the shunt inductor and voltage for the series capacitor) and cause a pulse, spike, or video transient at the output terminal. This transient occurs in all PIN switches but is controlled by various means.

The most effective means of controlling video transients are:

- 1) Slowing the switching waveform
- 2) Filtering the video spectrum
- 3) Balancing or cancelling two equal video transients

The first is very effective when switching speed is not important. Slowing the switching waveform will slow switching speed. The second is effective when the switch operating band is above the frequency band where the video spectrum is concentrated. The addition of high pass filters at the input and

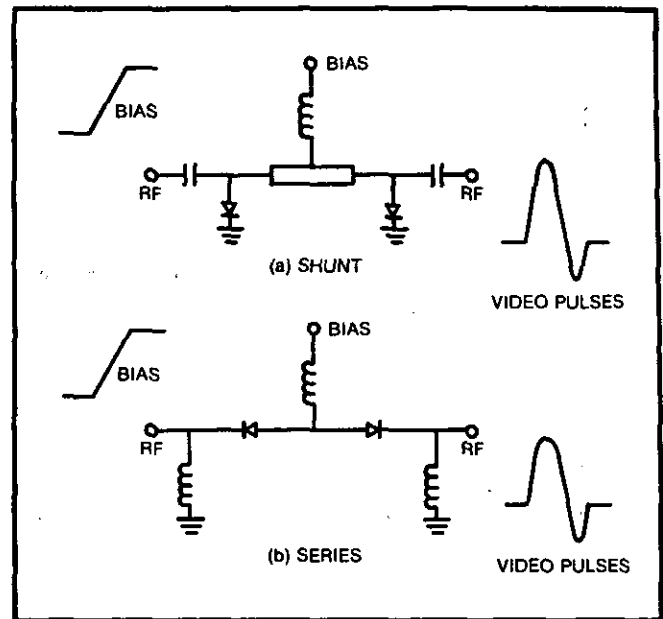


Figure 13. PIN switch equivalent circuits.

output terminals of PIN switches at frequencies above 500 MHz has proven very effective in reducing transients. Typically, the highest speed switches (1ns) have at least 90% of the video spectrum below 1 GHz. Filtering has its accompanying side effects. It will often introduce unwanted "ringing" in the switching waveform. Balancing has been employed very effectively as a means of reducing video transients without affecting switching speed or introducing "ringing". Unfortunately, present state-of-the-art technology has limited balancing technique to UHF/VHF band. An example of the balancing technique is the AMC SWB-0700 series of IF switches shown in figure 14.

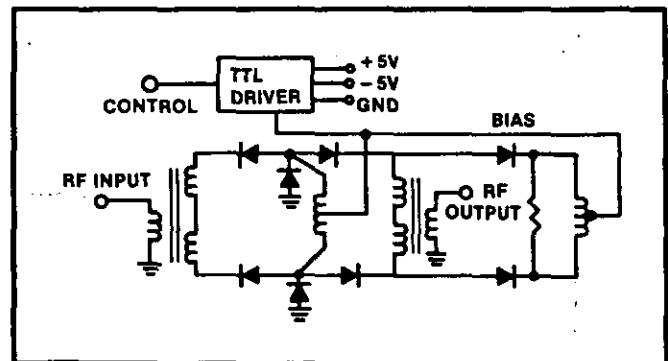


Figure 14.

XIV. CONCLUSION

Six essential and five supplementary parameters have been presented to aid in the specification of PIN diode switches. Tradeoffs between the various parameters have also been explored. It is hoped that this will help bridge the gap between switch users and switch designers.

A sample specification is presented in figure 15 to serve as a prototype switch specification to aid in bridging the gap.



AMERICAN MICROWAVE CORPORATION

SWITCH SPECIFICATIONS DATA SHEET

CUSTOMER: _____ MODEL: _____ OPT.: _____

1.0 CONFIGURATION:

2.0 FREQUENCY BAND (GHZ):

3.0 INSERTION LOSS:

- 3.1) MAXIMUM:
- 3.2) VARIATION:

4.0 ISOLATION:

- 4.1) MINIMUM:
- 4.2) TYPICAL:

5.0 SWITCHING SPEED:

- 5.1) 50% TTL TO 90% RF
- 5.2) 50% TTL TO 10% RF
- 5.3) 10% RF TO 90% RF
- 5.4) 90% RF TO 10% RF

6.0 VSWR:

- 6.1) INPUT
- 6.2) OUTPUT (ON)
- 6.3) OUTPUT (OFF)

7.0 RF POWER:

- 7.1) CW
- 7.2) PEAK POWER
- 7.3) PULSE DUTY RATIO

8.0 CONTROL: NO DRIVER

TTL DRIVER

TTL DECODER

9.0 POWER SUPPLY: VOLTAGE CURRENT (mA)

- + 5
- + 15
- 5
- 15

10.0 CONNECTORS:

- 10.1) RF: SMA N BNC TNC
- 10.2) POWER: MULTI-PIN SOLDER PIN
- 10.3) CONTROL: SOLDER PIN SMC SMA

11.0 INTERCEPT POINT:

- 11.1 3rd ORDER
_____dBm @ _____dBm input power
- 11.2 2nd ORDER
_____dBm @ _____dBm input power

12.0 VIDEO TRANSIENTS:

_____MV, MAX

13.0 PHASE TRACKING:

_____DEGREES MAXIMUM DEVIATION

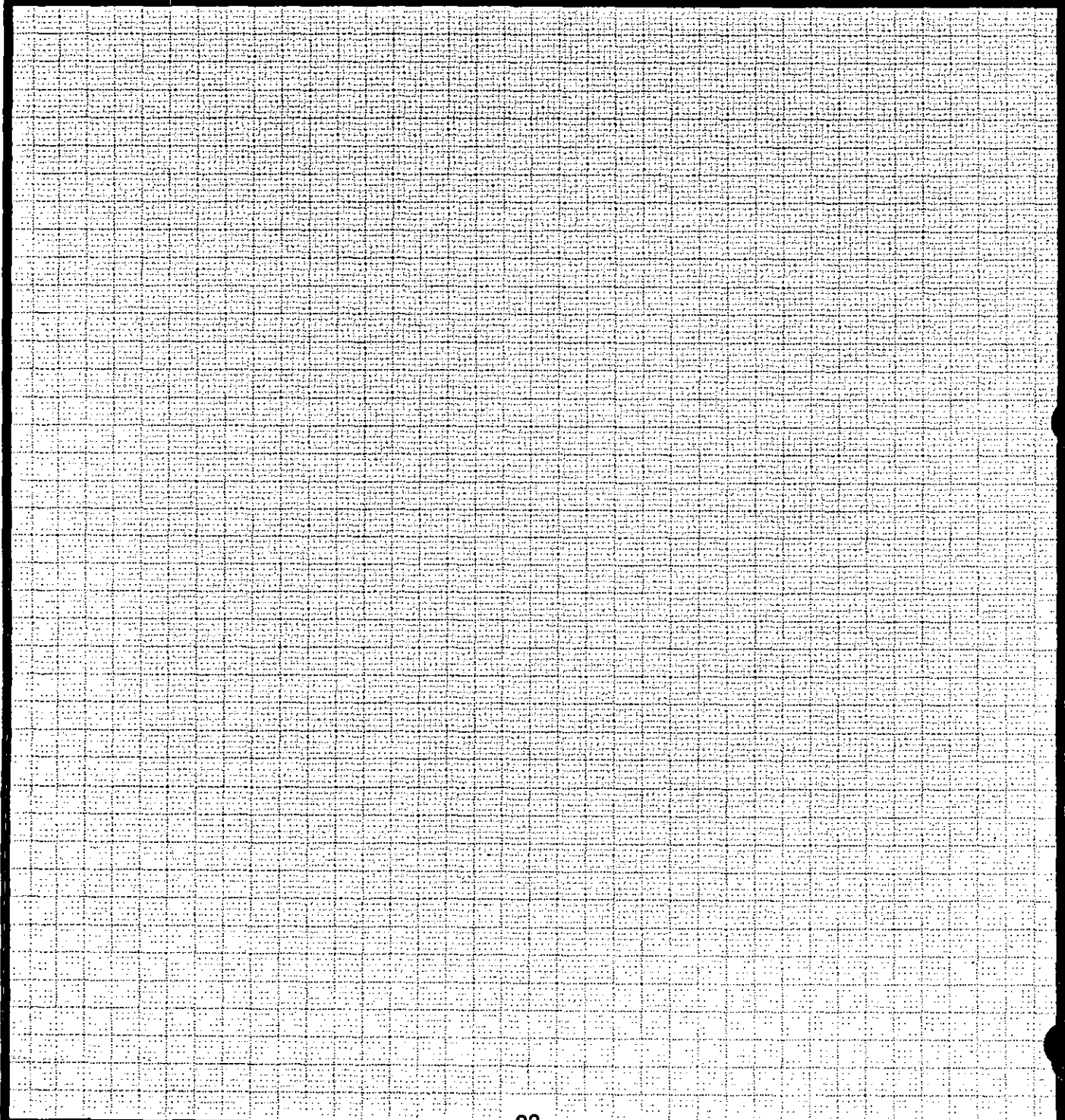
Figure 15.

7311-G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

References:

1. R. N. Assaly, "PIN Diode Switches for Space Applications," MTT, 1967.
2. M/A COMM PIN Diode Designers' Guide, 1983.
3. R. H. Cauerly and G. Hiller, "Distortion in PIN Diode Control Circuits," IEEE Transactions on Microwave Theory and Techniques, MMT-35, p492.

NOTES





AMERICAN MICROWAVE CORPORATION

SWITCH SPECIFICATIONS DATA SHEET

CUSTOMER: _____ MODEL: _____ OPT.: _____

1.0 CONFIGURATION:

2.0 FREQUENCY BAND (GHZ):

3.0 INSERTION LOSS:

3.1) MAXIMUM:

3.2) VARIATION:

4.0 ISOLATION:

4.1) MINIMUM:

4.2) TYPICAL:

5.0 SWITCHING SPEED:

5.1) 50% TTL TO 90% RF

5.2) 50% TTL TO 10% RF

5.3) 10% RF TO 90% RF

5.4) 90% RF TO 10% RF

6.0 VSWR:

6.1) INPUT

6.2) OUTPUT (ON)

6.3) OUTPUT (OFF)

7.0 RF POWER:

7.1) CW

7.2) PEAK POWER

7.3) PULSE DUTY RATIO

8.0 CONTROL: NO DRIVER

TTL DRIVER

TTL DECODER

9.0 POWER SUPPLY: VOLTAGE CURRENT (mA)

+5

+15

-5

-15

10.0 CONNECTORS:

10.1) RF: SMA N BNC TNC

10.2) POWER: MULTI-PIN SOLDER PIN

10.3) CONTROL: SOLDER PIN SMC SMA

11.0 INTERCEPT POINT:

11.1 3rd ORDER

_____dBm @ _____dBm input power

11.2 2nd ORDER

_____dBm @ _____dBm input power

12.0 VIDEO TRANSIENTS:

_____MV, MAX

13.0 PHASE TRACKING:

_____DEGREES MAXIMUM DEVIATION

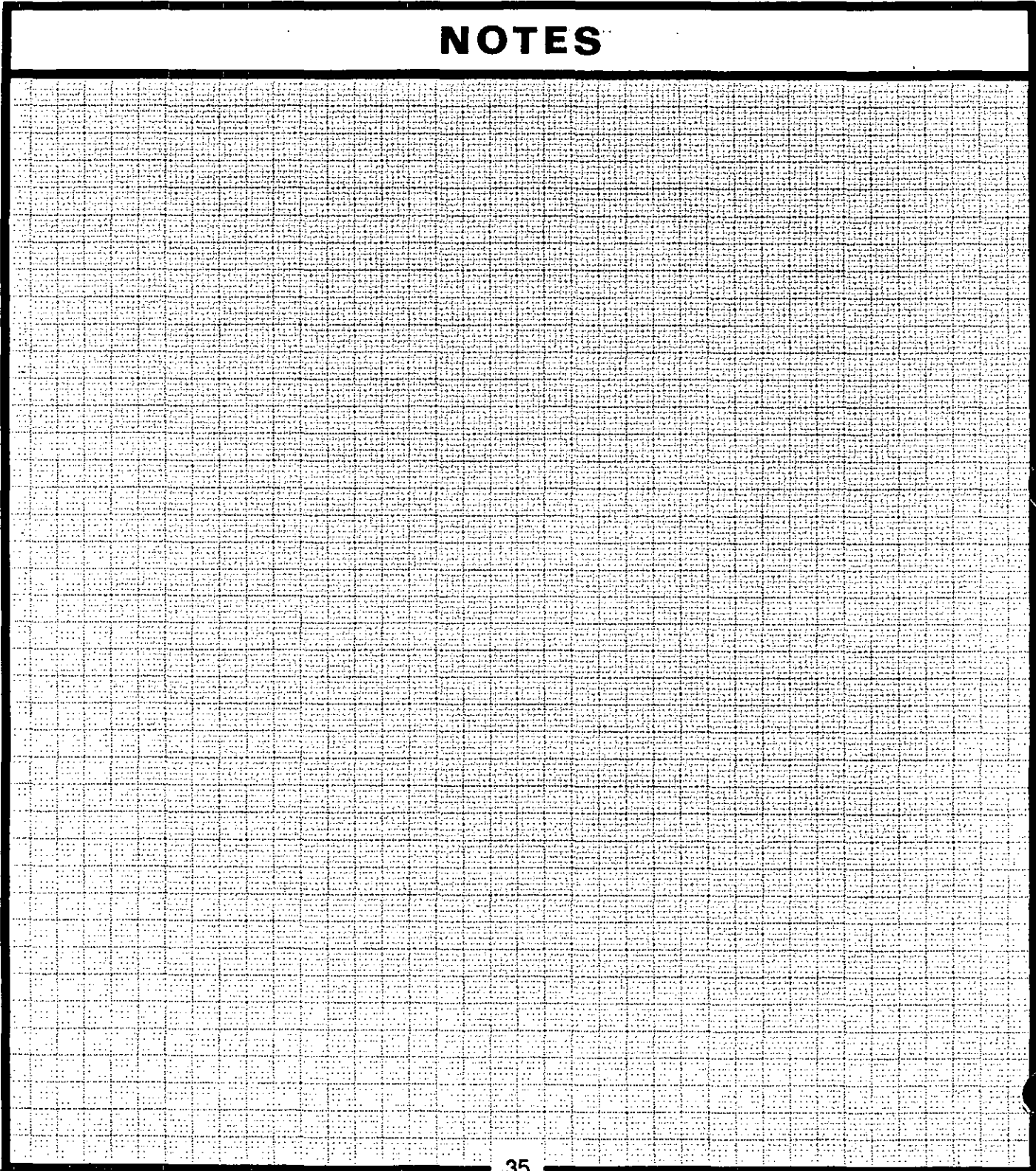
Figure 15.

7311-G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700

References:

1. R. N. Assaly, "PIN Diode Switches for Space Applications," MTT, 1967.
2. M/A COMM PIN Diode Designers' Guide, 1983.
3. R. H. Cauerly and G. Hiller, "Distortion in PIN Diode Control Circuits," IEEE Transactions on Microwave Theory and Techniques, MMT-35, p492.

NOTES





**AMERICAN
MICROWAVE
CORPORATION**

7311-G GROVE ROAD, FREDERICK, MARYLAND 21701 (301) 662-4700 • FAX 301-662-4938



PIN-DIODE SWITCHES

NEW

PRODUCT DEVELOPMENTS

AT

AMERICAN MICROWAVE CORPORATION

AUGUST 10, 1993



**PIN-DIODE
SWITCHES**

**NEW
PRODUCT DEVELOPMENTS**



**SUMMARY
TABLE OF CONTENTS**

SECTION	PRODUCT DESCRIPTION	PAGES
1	SPST, REFLECTIVE.....	1-1 TO 1-22
2	SPST, NON-REFLECTIVE/ABSORPTIVE.....	2-1 TO 2-18
3	SP2T, REFLECTIVE.....	3-1 TO 3-36
4	SP2T, NON-REFLECTIVE/ABSORPTIVE.....	4-1 TO 4-16
5	SP3T, REFLECTIVE.....	5-1 TO 5-8
6	SP3T, NON-REFLECTIVE/ABSORPTIVE.....	6-1 TO 6-14
7	SP4T, REFLECTIVE.....	7-1 TO 7-12
8	SP4T, NON-REFLECTIVE/ABSORPTIVE.....	8-1 TO 8-6
9	SP5T, REFLECTIVE.....	9-1 TO 9-8
10	SP5T, NON-REFLECTIVE/ABSORPTIVE.....	10-1 TO 10-4
11	SP6T, REFLECTIVE.....	11-1 TO 11-8
12	SP6T, NON-REFLECTIVE/ABSORPTIVE.....	12-1 TO 12-6
13	SP7T, REFLECTIVE.....	13-1 TO 13-6
14	SP7T, NON-REFLECTIVE/ABSORPTIVE.....	14-1 TO 14-6
15	SP8T, NON-REFLECTIVE/ABSORPTIVE.....	15-1 TO 15-12
16	TRANSFER SWITCH.....	16-1 TO 16-4



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
1	SPST, REFLECTIVE.....	1-1
● DC-20 GHz	GaAs, MMIC, ULTRA BROAD-BAND, SWITCH/MODULATOR, AMC MODEL NO: SWM-DC20-1D.....	1-3
● 0.5-18 GHz	10 nsec MINIATURE PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2184-1A-225.....	1-5
● 0.5-18 GHz	20 nsec PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2187-1DS.....	1-7
● 1-18 GHz	10 nsec SLIM LINE, PULSE MODULATOR/ SWITCH, AMC MODEL NO: SWS-2184-1D.....	1-9
● 1-18 GHz	2 nsec, 65 dB ULTRA FAST PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2184-1A-115.....	1-11
● 2-18 GHz	1 nsec 100 dB, LOW VIDEO TRANSIENTS, ULTRA FAST PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2187-1DU.....	1-13
● 2-18 GHz	2 nsec 80 dB, EQUAL ON/OFF TIME, ULTRA FAST PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2184-1A-243.....	1-15
● 2-18 GHz	10 nsec 80 dB, EQUAL ON/OFF TIME, ULTRA FAST PULSE MODULATOR/SWITCH, AMC MODEL NO: SW-2184-1A-113.....	1-17
● 2-18 GHz	10 nsec, CURRENT/VOLTAGE CONTROLLED PULSE MODULATOR SWITCH, AMC MODEL NO: SW-2184-1-30.....	1-19
● 8-18 GHz	10 WATT SWITCH MODULE AMC MODEL NO: SW-2182-1A-230.....	1-21

DESCRIPTION

AMC MODEL SWM-DC20-1D IS A REFLECTIVE GaAs MMIC SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, DESIGNED FOR ULTRA BROAD-BAND, FAST SWITCHING TIME, AND LOW DC POWER CONSUMPTION, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

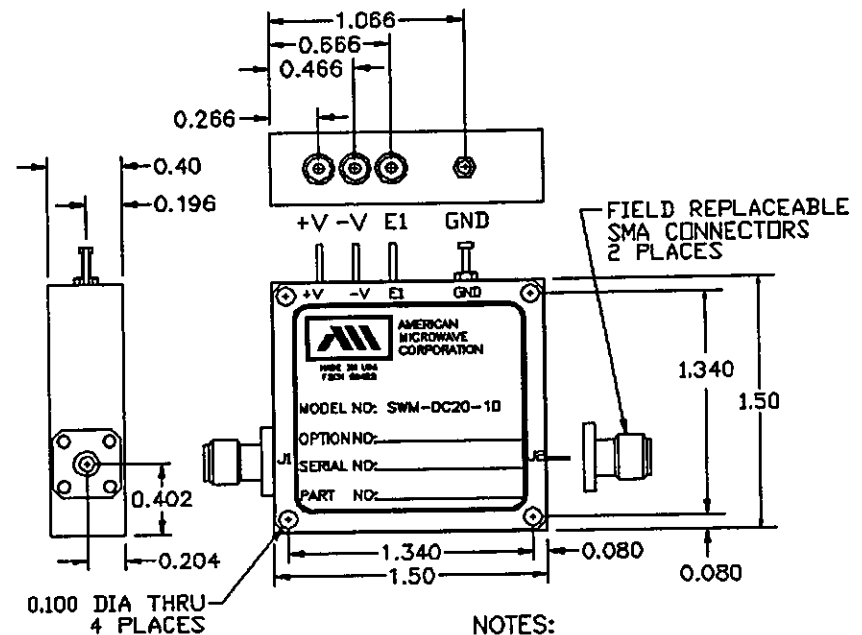
- FREQUENCY RANGE DC-20 GHz
- INSERTION LOSS DC-10 GHz, 2.2 dB MAXIMUM
10-18 GHz, 2.5 dB MAXIMUM
18-20 GHz, 3.2 dB MAXIMUM
- ISOLATION DC-10 GHz, 40 dB MINIMUM
10-18 GHz, 35 dB MINIMUM
18-20 GHz, 30 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 20 ns MAXIMUM
OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- RF POWER RATINGS (1DB COMP.)
0.5-20 GHz +25 dBm TYPICAL
0.05 GHz +18 dBm TYPICAL
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" ISOLATION
LOGIC "1" INSERTION LOSS.
- POWER SUPPLY +7VDC TO +18VDC ±5% @ 25 mA MAXIMUM
-7VDC TO -18VDC ±5% @ 25 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
NOTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.
(CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
- SIZE 1.50" x 1.50" x 0.40"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 HERMETIC SEALING (MIL-STD-883)
- A04 ±5VDC POWER SUPPLY
- A05 INVERSE CONTROL LOGIC (LOGIC "0" = INSERTION LOSS)
- A06 SINGLE ENDED ECL CONTROL LOGIC
- A07 BALANCED ECL CONTROL LOGIC
- A08 DIFFERENTIAL TTL CONTROL LOGIC (R2-422 LOGIC FAMILY)
- A09 HIGH ISOLATION (CONSULT FACTORY)
- A10 SMC MALE CONTROL CONNECTOR
- A11 SMA FEMALE CONTROL CONNECTOR
- A12 OTHER POWER SUPPLIES (CONSULT FACTORY)

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
A		ORIGINAL RELEASE, NEW DEVELOPMENT		11/22/92	<i>JMY</i>

MECHANICAL OUTLINE




NOTES:

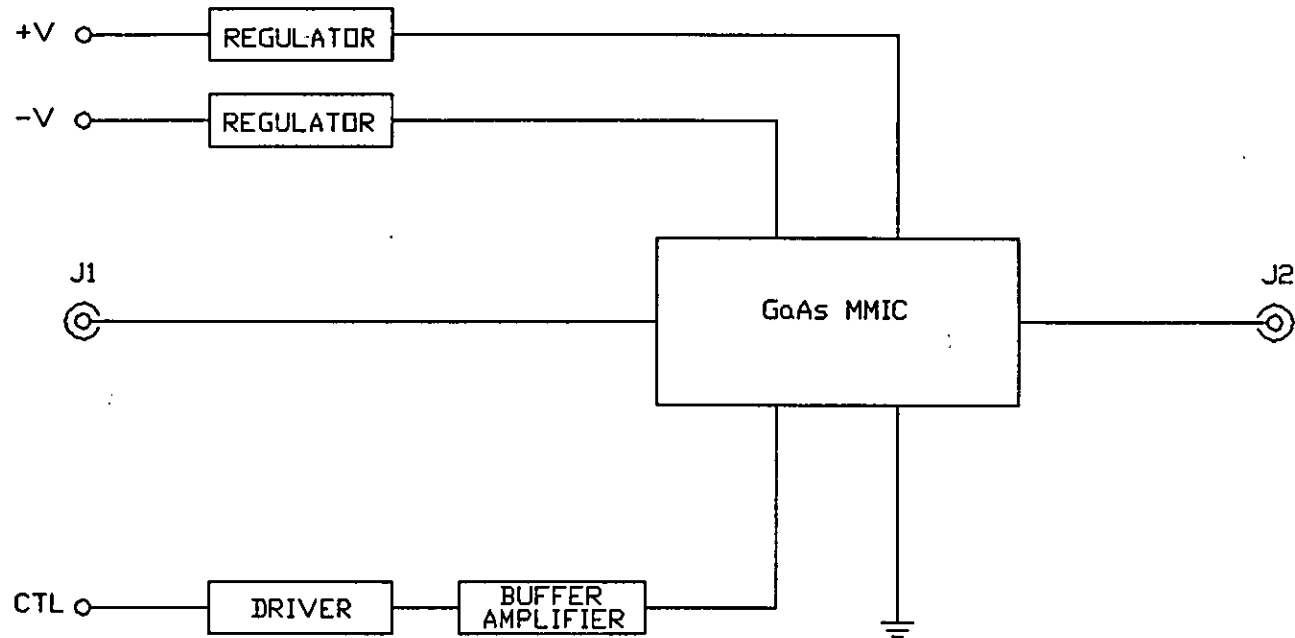
- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SWM-DC20-1D DC-20 GHz, GaAs MMIC, REFLECTIVE, ULTRA BROAD-BAND SPST SWITCH/MODULATOR	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	11/22/92	A	DWG. # 100-2914

FUNCTIONAL SCHEMATIC



1-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SWM-DC20-1D DC-20 GHz, GaAs MMIC, REFLECTIVE, ULTRA BROAD-BAND SPST SWITCH/MODULATOR	
APPROVALS	DATE	SIZE	SHEET 2 OF 2
DRAWN <i>WSP</i>	DATE 11/22/92	DWG. # 100-2914	
CHECKED <i>[Signature]</i>	DATE 11/22/92		

DESCRIPTION

AMC MODEL SW-2184-1A-225 IS A REFLECTIVE BROAD BAND PULSE MODULATOR/SWITCH WITH INTEGRAL TTL DRIVER, AND BUILT IN INPUT/OUTPUT VIDEO FILTER. DESIGNED FOR WIDE BAND, HIGH SPEED AND LOW DISTORTION RF-LINKED, DATA COMMUNICATIONS.

SPECIFICATIONS

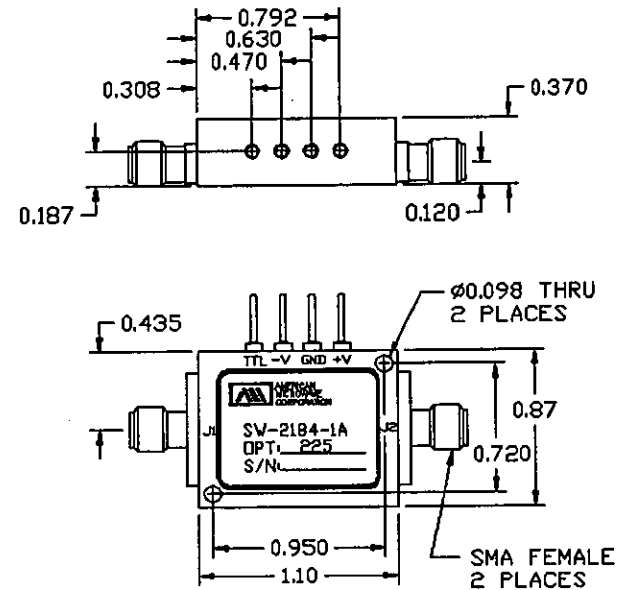
- FREQUENCY RANGE 0.5-18 GHz MINIMUM
- INSERTION LOSS 0.5-1 GHz, 1.0 dB MAXIMUM
1-2 GHz, 1.2 dB MAXIMUM
2-4 GHz, 1.5 dB MAXIMUM
4-8 GHz, 2.0 dB MAXIMUM
8-18 GHz, 2.8 dB MAXIMUM
- ISOLATION 0.5-1 GHz, 60 dB MINIMUM
1-2 GHz, 70 dB MINIMUM
2-8 GHz, 85 dB MINIMUM
8-18 GHz, 80 dB MINIMUM
- VSWR (ON) 0.5-4 GHz, 1.5:1 MAXIMUM
4-8 GHz, 1.8:1 MAXIMUM
8-18 GHz, 1.9:1 MAXIMUM
- RF POWER RATINGS 2W CW MAXIMUM, 10W PEAK (1 μS, PW)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 20 ns MAXIMUM
OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- IN-BAND VIDEO TRANSIENTS 50mV P-P ACROSS 50Ω IMPEDANCE
IN 20 MHz BANDWIDTH.
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 50 mA MAXIMUM
-12VDC ±5% @ 5 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.10" x 0.87" x 0.37"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY TO 100 MHz
- A05 5 WATTS CW MAXIMUM
- A06 2ns RISE/FALL TIME
- A07 SINGLE ENDED ECL DRIVER (10ns ON/OFF TIME)
- A09 BALANCED ECL DRIVER (10ns ON/OFF TIME)
- A10 -15 VOLT POWER SUPPLY

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE, JOB # 208202	11/22/92	<i>JM</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

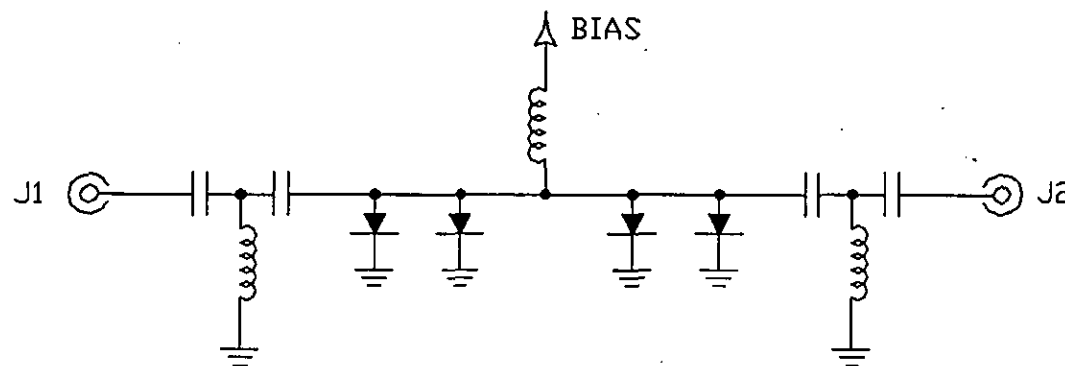
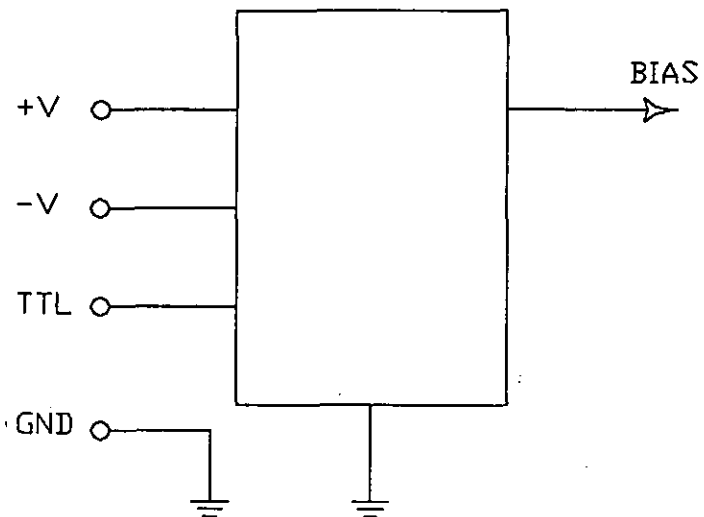
APPROVALS	DATE
<i>WSP</i>	11/22/92
<i>K. Nelson</i>	11/22/92

PRODUCT FEATURE		
SW-2184-1A-225		
0.5-18 GHz, REFLECTIVE SPST SWITCH/MODULATOR		
SIZE A	SHEET 1 OF 2	DWG. # 100-2863


FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



1-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	11/22/92 11/22/92	SW-2184-1A-225 0.5-18 GHz, REFLECTIVE SPST SWITCH/MODULATOR	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2863	

DESCRIPTION

AMC MODEL SW-2187-1DS IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL ECL DRIVER, DESIGNED TO MAINTAIN A VERY HIGH ISOLATION, LOW IN BAND VIDEO TRANSIENT SIGNALS AND FAST SWITCHING RESPONSE TIME.

SPECIFICATIONS

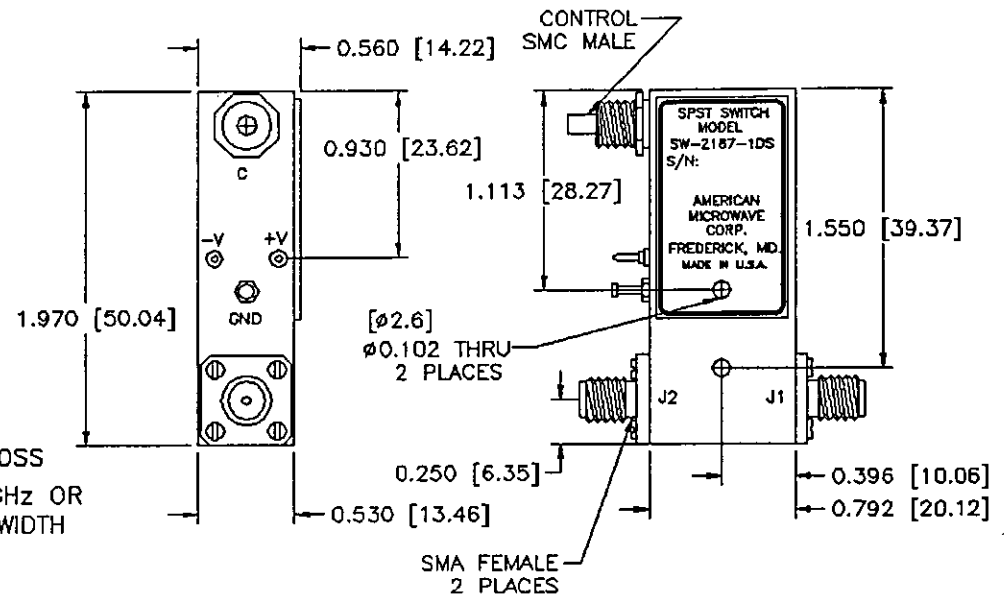
- FREQUENCY RANGE 0.7-18 GHz MINIMUM
- INSERTION LOSS 0.7-18 GHz, 4.0 dB MAXIMUM
- ISOLATION 0.7-1.0 GHz, 95 dB MINIMUM
1.0-18.0 GHz, 110 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- RF POWER RATINGS 2W CW, 10 W PEAK (1 μ S, PW)
- CONTROL SINGLE ENDED ECL LOGIC
LOGIC "0" (-1.75V) = ISOLATION
LOGIC "1" (-0.9V) = INSERTION LOSS
- IN BAND VIDEO POWER/TRANSIENTS ≤ -70 dBm @ 0.5 GHz TO 18 GHz OR
20 mV (P-P) IN 100 MHz BANDWIDTH
- POWER SUPPLY +5VDC \pm 5% @ 50 mA MAXIMUM
-5VDC \pm 5% @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 0.792" x 1.97" x 0.56"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A05 5 WATTS CW MAXIMUM
- A09 BALANCED ECL LOGIC
- A10 \pm 9VDC TO \pm 18VDC SUPPLY POWER
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS
- A16 SOLDER PIN CONTROL TERMINAL
- A17 SMA FEMALE CONTROL TERMINAL
- A18 CANNON MULTIPIN MDM9SSP
- A19 STANDARD TTL CONTROL LOGIC
(LOGIC "0" = INSERTION LOSS)

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, NEW DEVELOPMENT		7/30/93	<i>Jay</i>

MECHANICAL OUTLINE



NOTES:

1. DIMENSIONS ARE IN INCHES [MILLIMETERS]
2. TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
3. WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



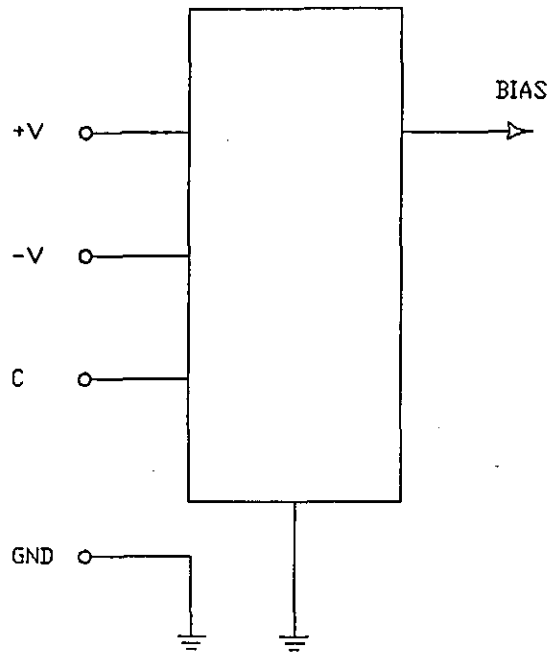
AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

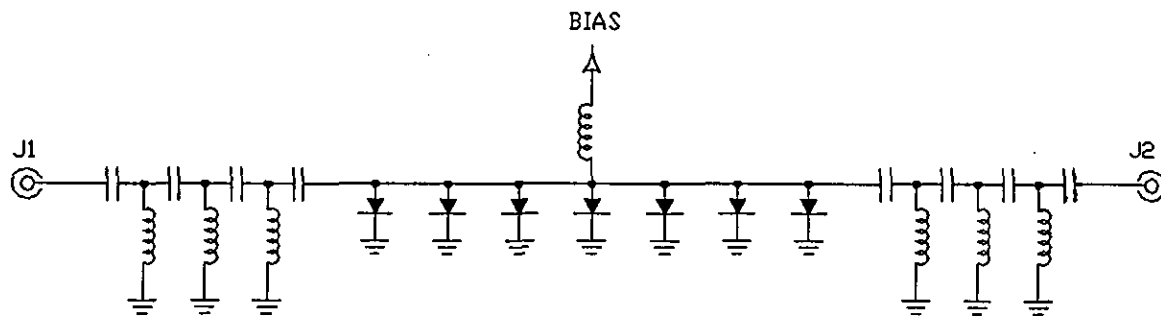
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	7/30/93	SW-2187-1DS	
CHECKED <i>R. Hilde</i>	7/21/93	0.7-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND FAST SPST PULSE MODULATOR/SWITCH	
		SIZE A	SHEET 1 OF 2
			DWG. # 100-2856

FUNCTIONAL SCHEMATIC

ECL DRIVER



RF SECTION



1-8



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WJP</i>	7/30/93
CHECKED	

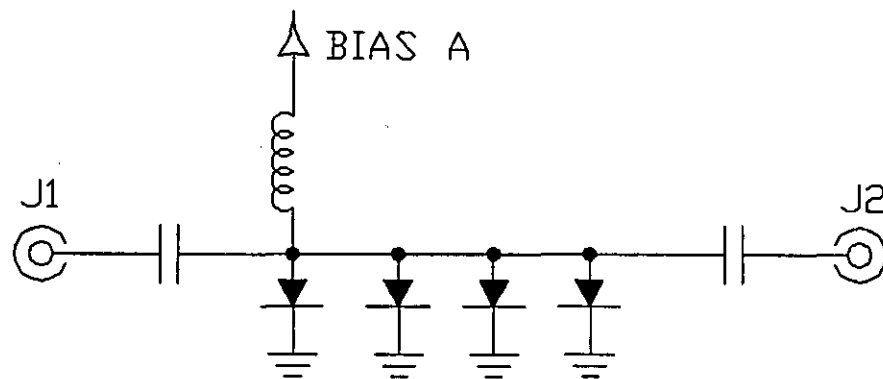
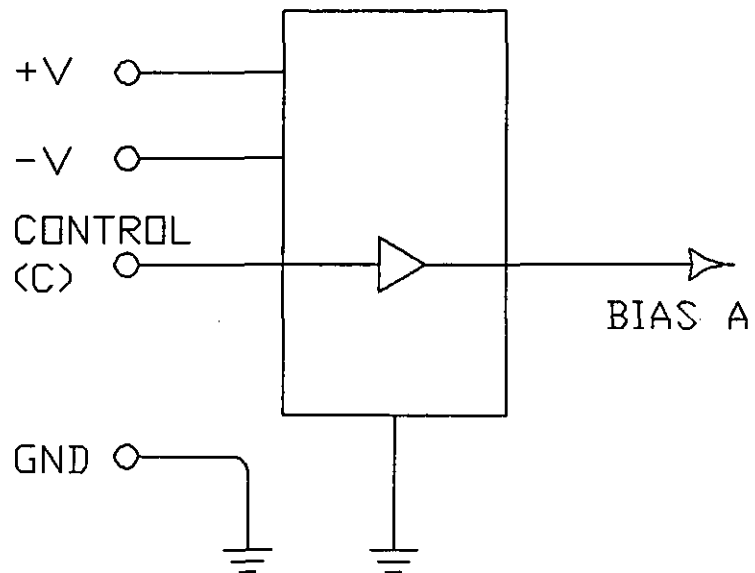
PRODUCT FEATURE
SW-2187-1DS
0.7-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND
FAST SPST PULSE MODULATOR/SWITCH

SIZE A SHEET 2 OF 2 DWG. # 100-2856


FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



1-10

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>Wayne Pugh</i>	11/17/02	SWS-2184-1D	
CHECKED <i>[Signature]</i>	11/22/02	SLIM LINE 1 TO 18 GHz, REFLECTIVE, PULSE MODULATOR SWITCH	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2534	

DESCRIPTION

AMC MODEL SW-2187-1DU IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL ECL DRIVER, DESIGNED TO MAINTAIN A VERY HIGH ISOLATION, LOW IN-BAND VIDEO TRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE TIME.

SPECIFICATIONS

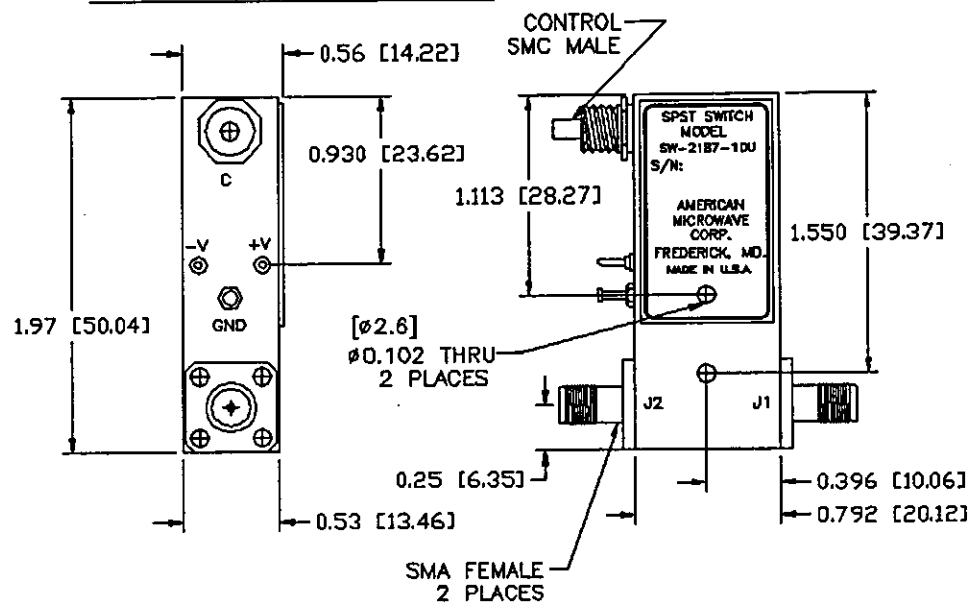
- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 2-4 GHz, 2.5 dB MAXIMUM
4-8 GHz, 3.5 dB MAXIMUM
8-18 GHz, 4.5 dB MAXIMUM
- ISOLATION 100 dB MINIMUM
- VSWR (ON) 2-4 GHz, 1.8:1 MAXIMUM
4-8 GHz, 1.9:1 MAXIMUM
8-18 GHz, 2.0:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 1 nS MAXIMUM
FALL (90% RF TO 10% RF) 2 nS MAXIMUM
ON (50% TTL TO 90% RF) 9 nS MAXIMUM
OFF (50% TTL TO 10% RF) 20 nS MAXIMUM
- RF POWER RATINGS 100mW CW MAXIMUM
- CONTROL SINGLE ENDED ECL LOGIC
LOGIC "0" (-1.75V)= ISOLATION
LOGIC "1" (-0.9V)= INSERTION LOSS
- IN-BAND VIDEO POWER/TRANSIENTS ≤ -70 dBm @ 2 GHz TO 18 GHz, OR
50mV P-P IN 100 MHz BANDWIDTH
- POWER SUPPLY +5VDC ±5% @ 50 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 0.792" x 1.97" x 0.56"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A09 BALANCED ECL LOGIC (SOLDER PINS)
- A10 ±9VDC TO ±18VDC SUPPLY POWER
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS
- A16 SOLDER PIN CONTROL TERMINAL
- A17 SMA FEMALE CONTROL TERMINAL
- A18 CANNON MULTIPIN MDM9SSP

REV.		DESCRIPTION	DATE	APPROVED
ZONE	REV.			
A		ORIGINAL RELEASE, NEW DEVELOPMENT	11/22/92	<i>M-2</i>

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

APPROVALS	DATE
<i>WSP</i>	11/22/92
<i>WSP</i>	11/22/92

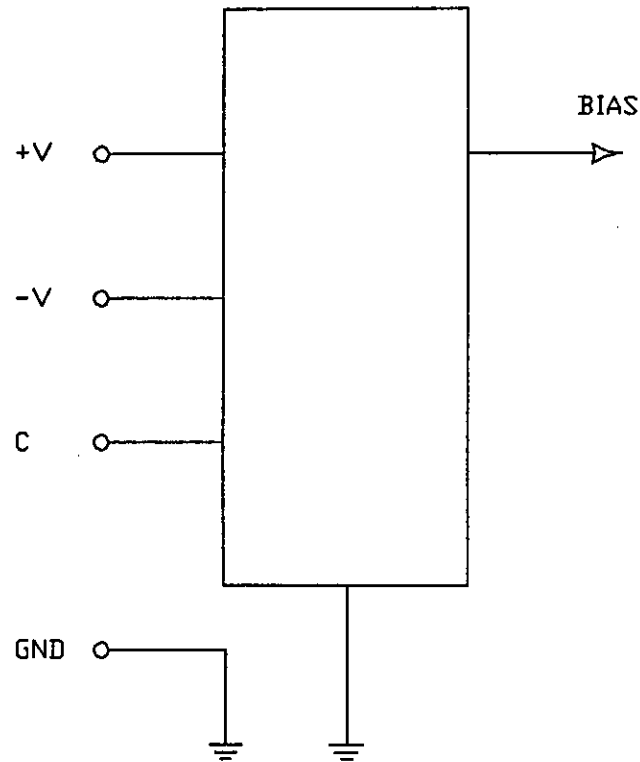
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE SW-2187-1DU		
2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND ULTRA FAST SPST PULSE MODULATOR/SWITCH		
SIZE A	SHEET 1 OF 2	DWG. # 100-2857

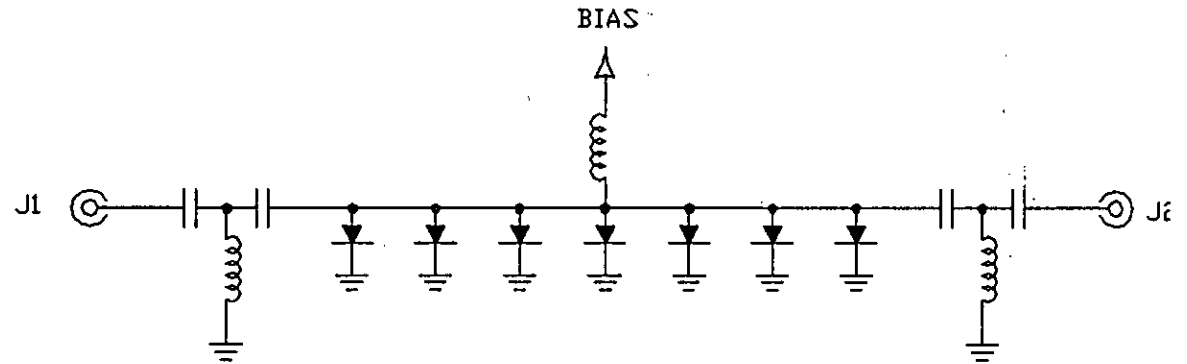
1-13

FUNCTIONAL SCHEMATIC

DRIVER CIRCUIT



RF SECTION



1-14



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE	
SW-2187-1DU	
2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND ULTRA FAST SPST PULSE MODULATOR/SWITCH	
SIZE A	SHEET 2 OF 2
DWG. # 100-2857	

DESCRIPTION

AMC MODEL SW-2184-1A-243 IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN VERY LOW IN-BAND VIDEO TRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE TIME.

SPECIFICATIONS

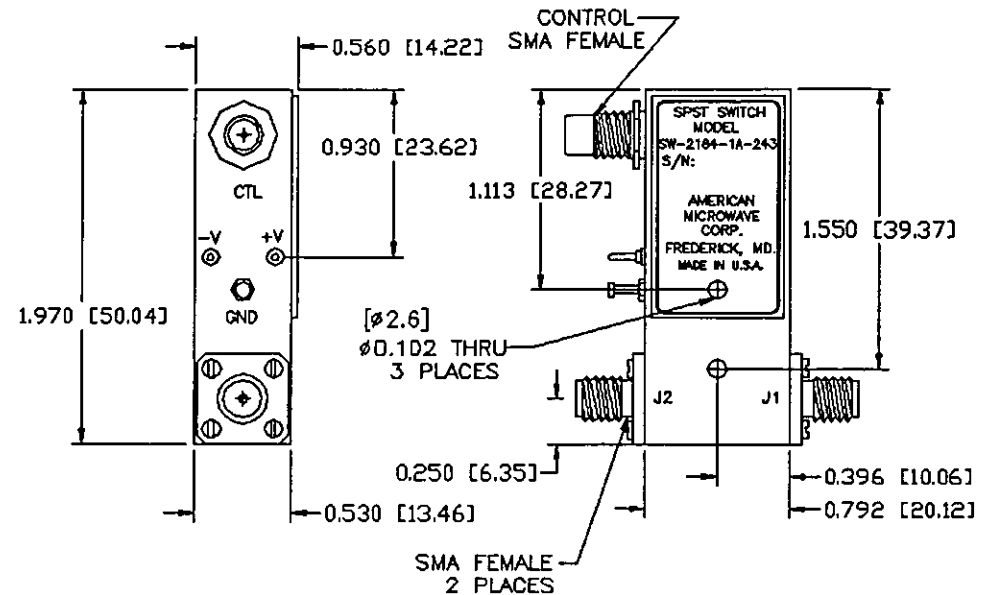
- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 2-12 GHz, 2.5 dB MAXIMUM
12-18 GHz, 3.1 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 2 ns MAXIMUM
FALL (90% RF TO 10% RF) 2 ns MAXIMUM
ON (50% TTL TO 90% RF) 10 ns MAXIMUM
OFF (50% TTL TO 10% RF) 10 ns MAXIMUM
- RF POWER RATINGS 2W CW MAXIMUM,
10W PEAK (1 μ s pw) MAXIMUM
- CONTROL STANDARD TTL
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- IN-BAND VIDEO POWER/TRANSIENTS 50mV P-P IN 20 MHz BANDWIDTH
- POWER SUPPLY +5VDC \pm 5% @ 100 mA MAXIMUM
-15VDC \pm 5% @ 45 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 0.792" x 1.97" x 0.56"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A09 BALANCED ECL LOGIC (SOLDER PIN CONTROLS)
- A10 \pm 9VDC TO \pm 18VDC SUPPLY POWER
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS
- A16 SOLDER PIN CONTROL TERMINAL
- A17 SMA MALE CONTROL TERMINAL
- A18 SMA FEMALE CONTROL TERMINAL
- A19 CANNON MULTIPIN MDM9SSP
- 240 2ns RISE/FALL TIME

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 211282		8/10/93	<i>WYP</i>

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
- 3) WEIGHT: APPROX. 1.3 OZ

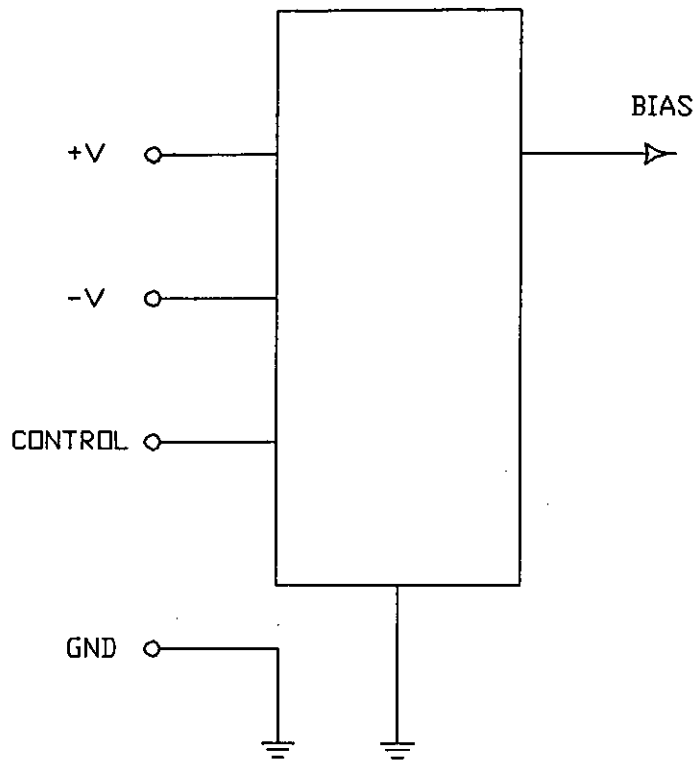
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

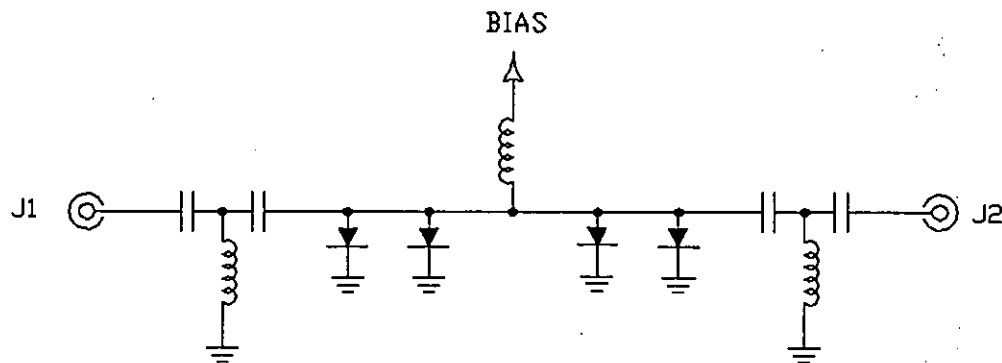
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>WYP</i>	8/10/93	A	DWG. # 100-3168
CHECKED <i>[Signature]</i>	6/10/93		

FUNCTIONAL SCHEMATIC


DRIVER CIRCUIT



RF SECTION



1-16

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2184-1A-243 2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, ULTRA FAST SPST PULSE MODULATOR/SWITCH	
APPROVALS	DATE	SIZE	SHEET 2 OF 2
DRAWN <i>WSP</i>	6/10/93	A	DWG. # 100-3168
CHECKED <i>[Signature]</i>	6/10/93		

DESCRIPTION

AMC MODEL SW-2184-1A-113 IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL ECL DRIVER, DESIGNED TO MAINTAIN VERY LOW IN-BAND VIDEO TRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE TIME.

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 112249	11/22/82	<i>JM</i>

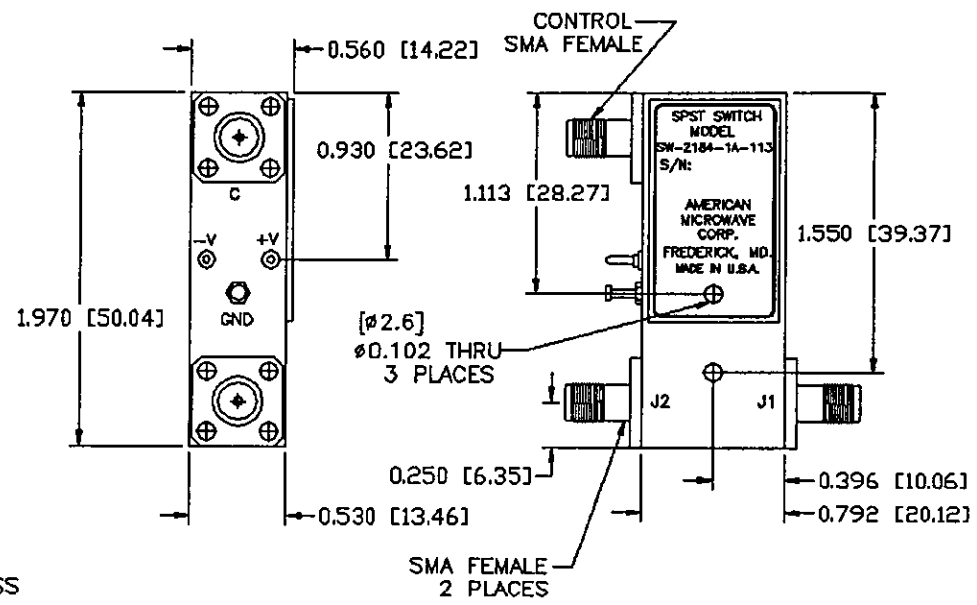
SPECIFICATIONS

- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 2-12 GHz, 2.5 dB MAXIMUM
12-18 GHz, 3.1 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 15 ns MAXIMUM
OFF (50% TTL TO 10% RF) 15 ns MAXIMUM
- RF POWER RATINGS 2W CW MAXIMUM,
10W PEAK (1 μs pw) MAXIMUM
- CONTROL SINGLE ENDED ECL LOGIC,
50Ω CONTROL IMPEDANCE
LOGIC "0" (-1.75V)= ISOLATION
LOGIC "1" (-0.9V)= INSERTION LOSS
- IN-BAND VIDEO POWER/TRANSIENTS 50mV P-P IN 20 MHz BANDWIDTH
- POWER SUPPLY +5VDC ±5% @ 100 mA MAXIMUM
-5VDC ±5% @ 80 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMA (FEMALE)
- SIZE 0.792" x 1.97" x 0.56"

AVAILABLE OPTIONS

- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A09 BALANCED ECL LOGIC (SOLDER PIN CONTROLS)
- A10 ±9VDC TO ±18VDC SUPPLY POWER
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS
- A16 SOLDER PIN CONTROL TERMINAL
- A17 SMA MALE CONTROL TERMINAL
- A18 SMC MALE CONTROL TERMINAL
- A19 CANNON MULTIPIN MDM9SSP
- 240 2ns RISE/FALL TIME

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

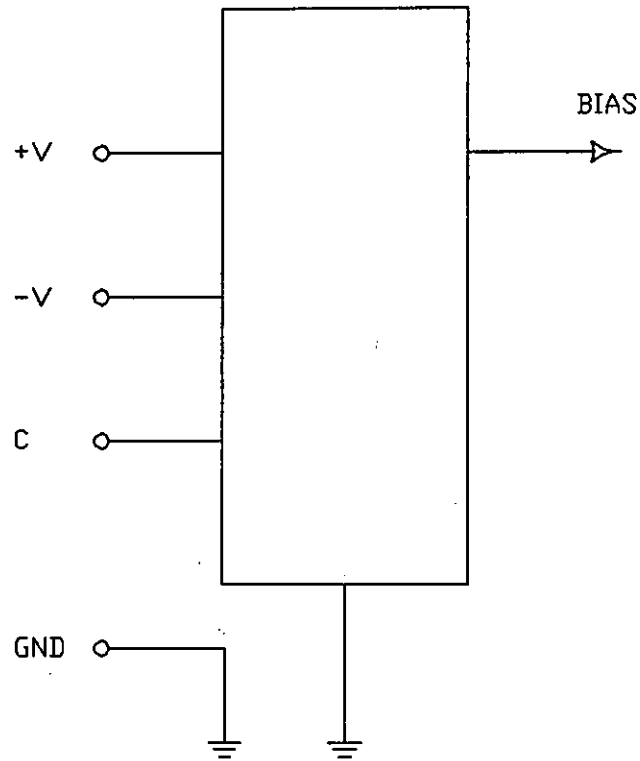
- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2184-1A-113 2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, ULTRA FAST SPST PULSE MODULATOR/SWITCH	
APPROVALS DRAWN <i>WSP</i> CHECKED <i>[Signature]</i>	DATE 11/22/82 11/22/82	SIZE A	SHEET 1 OF 2

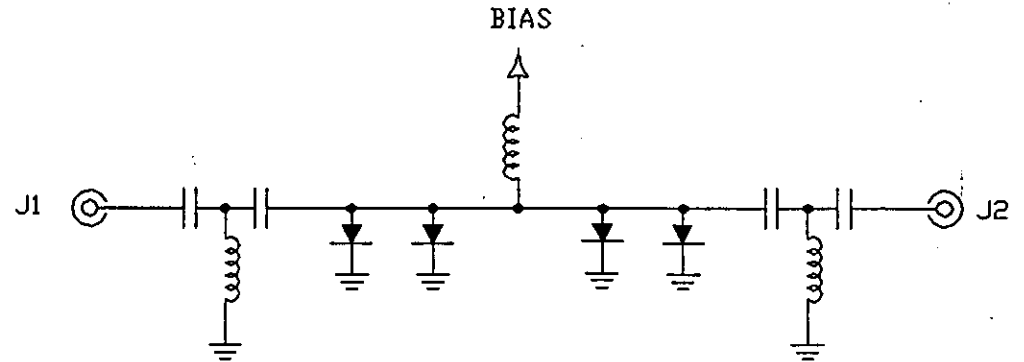
1-17

FUNCTIONAL SCHEMATIC


DRIVER CIRCUIT



RF SECTION



1-18

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2184-1A-113 2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, ULTRA FAST SPST PULSE MODULATOR/SWITCH	
APPROVALS	DATE	SIZE	SHEET 2 OF 2
DRAWN <i>WSP</i>	11/22/02	A	DWG. # 100-2860
CHECKED <i>[Signature]</i>	11/22/02		

ZONE		REV.	DESCRIPTION	DATE	APPROVED
A			ORIGINAL RELEASE, JOB # 108158E	11/22/02	<i>[Signature]</i>

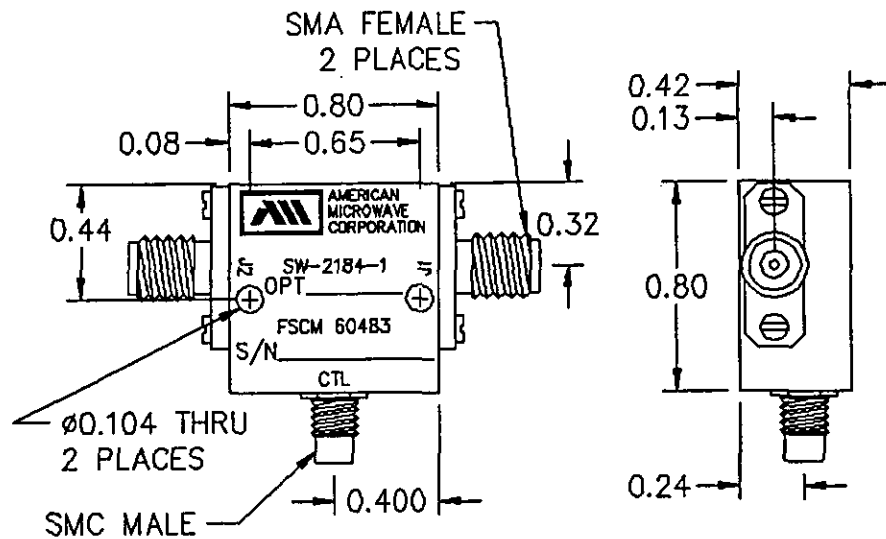
DESCRIPTION

AMC MODEL SW-2184-1-30 IS A REFLECTIVE BROAD-BAND SPST SWITCH MODULE WITHOUT DRIVER CIRCUITRY, PACKAGED IN A MINIATURE CONNECTORIZED HOUSING.

SPECIFICATIONS

- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 2 dB MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM, OR +40 dBm PEAK @ 1 μsec PW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 10 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 10 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 20 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- CONTROLS CURRENT/VOLTAGE DRIVEN, SINGLE CONTROL
 - 10 VDC = INSERTION LOSS
 - +30 mA = ISOLATION
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - CONTROL SMC MALE
- SIZE 0.80" x 0.80" x 0.42"

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1 OZ

AVAILABLE OPTIONS

- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 EXTENDED FREQUENCY RANGE TO 100 MHz
- A06 5 WATTS CW MAXIMUM
- A07 2 ns RISE/FALL TIME
- A13 J1 SMA MALE, J2 SMA FEMALE
- A14 TWO SMA MALE CONNECTORS
- A15 REMOVABLE CONNECTORS (DROP IN APPLICATIONS)
- A16 SOLDER PIN CONTROL CONNECTOR
- A17 SMA FEMALE CONTROL CONNECTOR

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

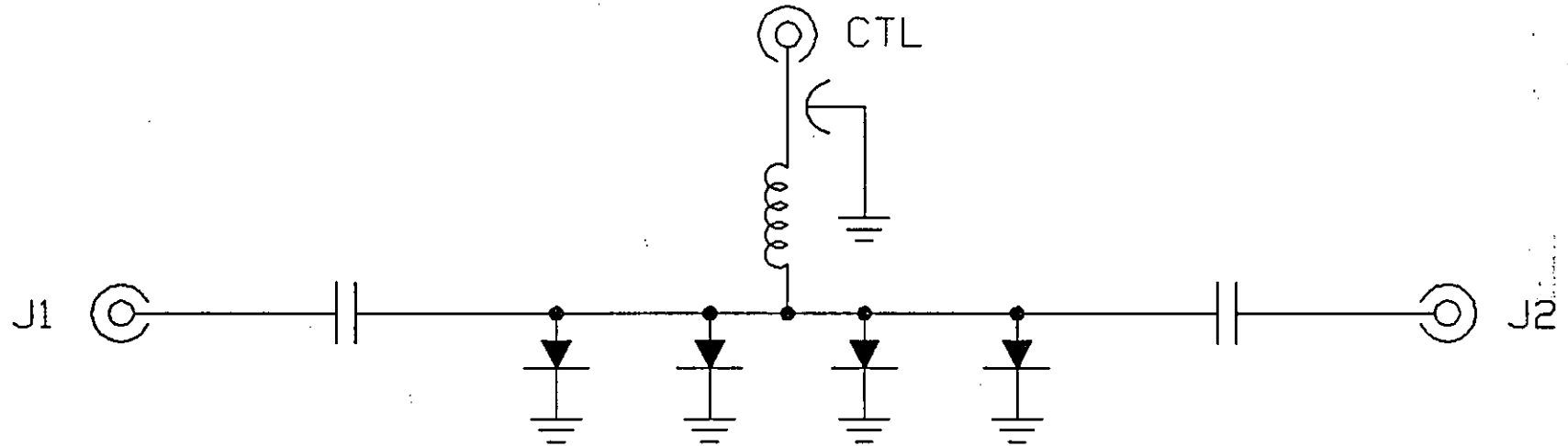


AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938


APPROVALS	DATE
DRAWN <i>WSP</i>	11/22/02
CHECKED <i>[Signature]</i>	11/22/02

PRODUCT FEATURE		
SW-2184-1-30		
2-18 GHz, REFLECTIVE SPST PULSE MODULATOR SWITCH		
SIZE A	SHEET 1 OF 2	DWG. # 100-2904

FUNCTIONAL SCHEMATIC



1-20

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2184-1-30 2-18 GHz, REFLECTIVE SPST PULSE MODULATOR SWITCH	
APPROVALS DRAWN CHECKED	DATE 11/22/92 01/22/92	SIZE A	SHEET 2 OF 2 DWG. # 100-2904

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 112239E	11/22/92	<i>Jay</i>

DESCRIPTION

AMC MODEL SW-2182-1A-230 IS A REFLECTIVE SPST SWITCH MODULE WITH INTEGRAL DRIVER, CAPABLE OF HANDLING 10 W CW RF POWER OVER 8 TO 18 GHz BAND WIDTH.

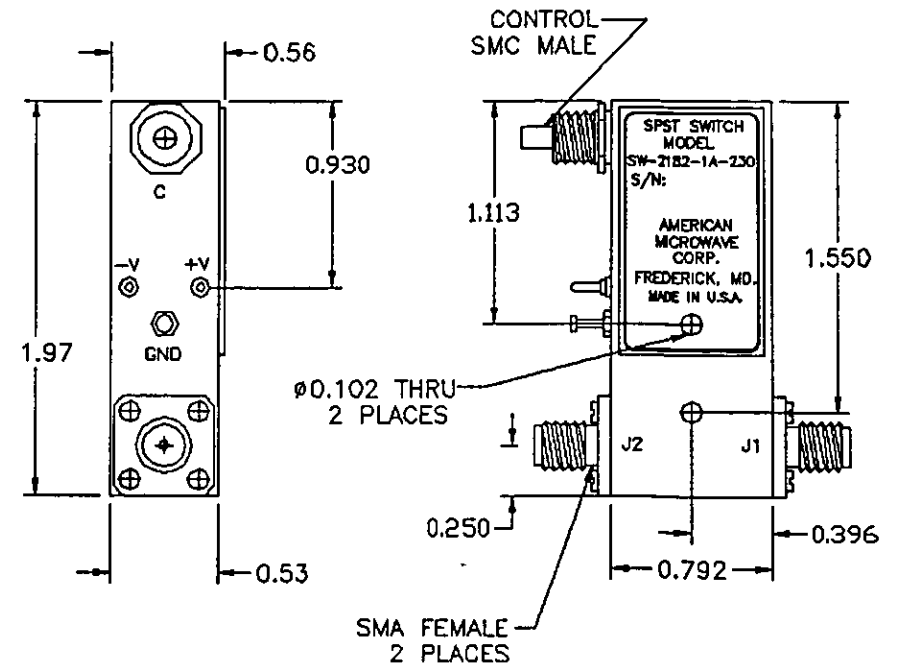
SPECIFICATIONS

- FREQUENCY RANGE 8-18 GHz MINIMUM
- INSERTION LOSS 1.9 dB MAXIMUM
- ISOLATION 45 dB MINIMUM
- VSWR (ON) 1.7:1 MAXIMUM
- RF POWER RATINGS 10 W CW MAXIMUM (COLD SWITCHING)
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 150 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 150 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 200 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 200 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +15VDC ±5% @ 55 mA MAXIMUM
-30VDC ±5% @ 35 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SMC MALE
- SIZE 0.792" x 1.97" x 0.56"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDEO FILTER (0.5 dB EXCESS LOSS)
- A08 SINGLE ENDED ECL LOGIC
- A09 BALANCED ECL LOGIC (SOLDER PINS)
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS
- A16 SOLDER PIN CONTROL TERMINAL
- A17 SMA FEMALE CONTROL TERMINAL
- A18 CANNON MULTIPIN MDM9SSP

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE

SW-2182-1A-230

8-18 GHz, REFLECTIVE, 10W SPST SWITCH MODULE

SIZE A

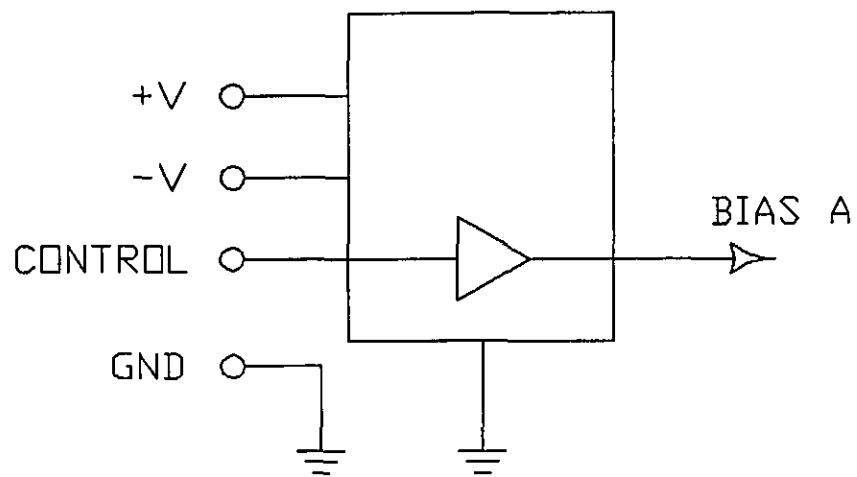
SHEET 1 OF 2

DWG. # 100-2890

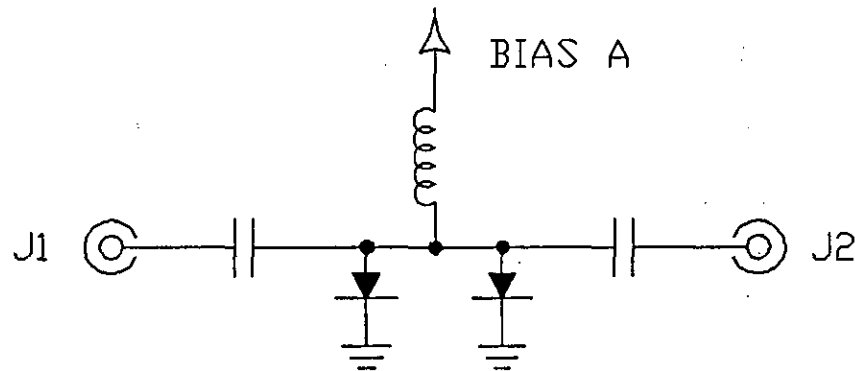
APPROVALS	DATE
DRAWN <i>WJP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

FUNCTIONAL SCHEMATIC

DRIVER CIRCUIT



RF SECTION



1-22


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WYP</i>	11/22/82	SW-2182-1A-230	
CHECKED <i>[Signature]</i>	11/22/82	8-18 GHz, REFLECTIVE, 10W SPST SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2890	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
2	SPST, NON-REFLECTIVE/ABSORPTIVE.....	2-1
●	400-500 MHz SOLID STATE, B BAND, SWITCH MODULE, AMC MODEL NO: SW-0405-1DT.....	2-3
●	DC-6 GHz 10 nsec, GaAs MMIC, LOW INSERTION LOSS, AND FAST, SWITCH/MODULATOR, AMC MODEL NO: SWM-6000-1DT.....	2-5
●	DC-6 GHz 5 nsec, GaAs MMIC SWITCH/MODULATOR, AMC MODEL NO: SWM-6000-1DTU.....	2-7
●	0.01-18 GHz 15 nsec, 70 dB HIGH SPEED MODULATOR/SWITCH, AMC MODEL NO: SW-2183-1AT-250.....	2-9
●	0.3-18GHz 10 nsec, 70 dB, HIGH SPEED MODULATOR/SWITCH, AMC MODEL NO: SW-2183-1AT-107.....	2-11
●	0.3-18GHz 10 nsec, 70 dB, BALANCED ECL, HIGH SPEED MODULATOR/SWITCH, AMC MODEL NO: SW-2183-1AT-210.....	2-13
●	2-18 GHz 10 nsec, 80 dB, TTL DRIVER, SWITCH/MODULATOR, AMC MODEL NO: SW-2184-1AT-230.....	2-15
●	2-18 GHz 10 nsec, 80 dB TTL DRIVER, MINIATURE SWITCH/MODULATOR, AMC MODEL: SW-2184-1AT-231.....	2-17

DESCRIPTION

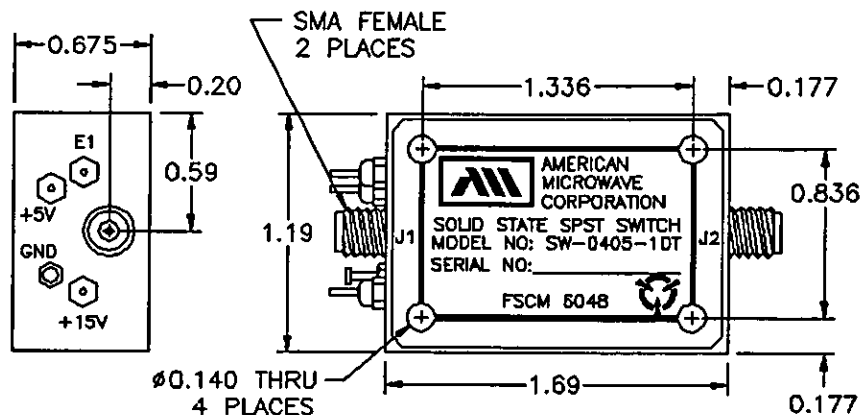
AMC MODEL SW-0405-1DT IS A REFLECTIVE SPST SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

- FREQUENCY RANGE 400-500 MHz MINIMUM
- INSERTION LOSS 1.0 dB MAXIMUM
- INSERTION LOSS VARIATION ±0.3 dB MAXIMUM OVER ALL OPERATING CONDITIONS OF INPUT POWER, FREQUENCY, AND ENVIRONMENTAL EXTREMES
- ISOLATION 70 dB MINIMUM
- VSWR (ON/OFF) 1.3:1 MAXIMUM
- RF POWER +16 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 300 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 300 ns MAXIMUM
- SETTLING TIME
 - ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 μs MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 μs MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE SINGLE CONTROL LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION
- HARMONIC DISTORTION PRODUCTS 50 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND) 100 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY +5VDC ±5% @ 90 mA MAXIMUM +15VDC ±5% @ 80 mA MAXIMUM (OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.69" x 1.19" x 0.675"

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 10358-3E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010
 - 3) WEIGHT: APPROX. 3 OZ
 - 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-W-38510 CLASS B, MIL-F-18870 JANTX TYPE, ER COMPONENTS
 - 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870

ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO +65°C (OPERATING) -55°C TO +70°C (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I OR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSOIDAL 25 Hz TO 2000 Hz
- MTBF 1 x 10⁶ HOURS, @ +50°C OPERATION

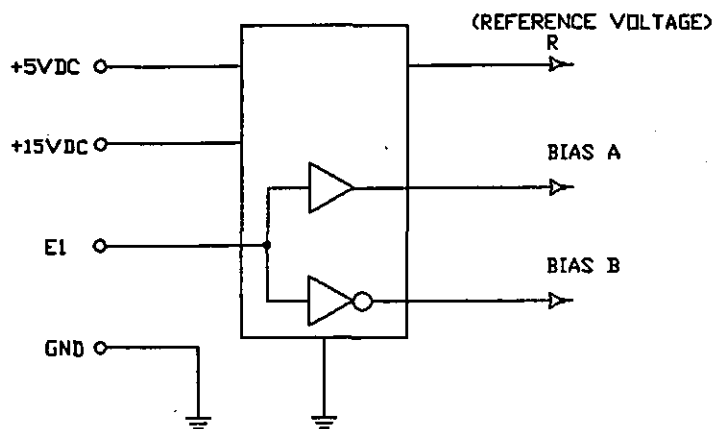
ENVIRONMENTAL STRESS SCREENING (ESS)

- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SOAK MINUTE, -55°C TO +85°C
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO +85°C
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B, 160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5°C PER MINUTE, -55°C TO +55°C.
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +55°C/-55°C

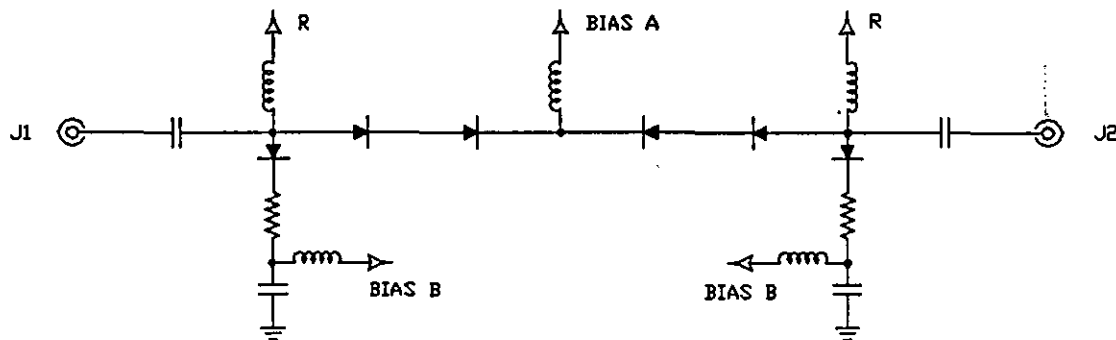
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>[Signature]</i>	11/22/92	SW-0405-1DT (B-BAND)	
CHECKED <i>[Signature]</i>	11/22/92	400-500 MHz, NON-REFLECTIVE SOLID STATE SPST SWITCH MODULE	
		SIZE A	SHEET 1 OF 2
		DWG. # 100-2907	

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



2-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-0405-1DT (B-BAND)	
DRAWN <i>WSP</i>	1/22/92	400-500 MHz, NON-REFLECTIVE SOLID STATE SPST SWITCH MODULE	
CHECKED <i>[Signature]</i>	1/22/92		
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2907	

DESCRIPTION

AMC MODEL SWM-6000-1DT IS AN ABSORPTIVE GaAs MMIC SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

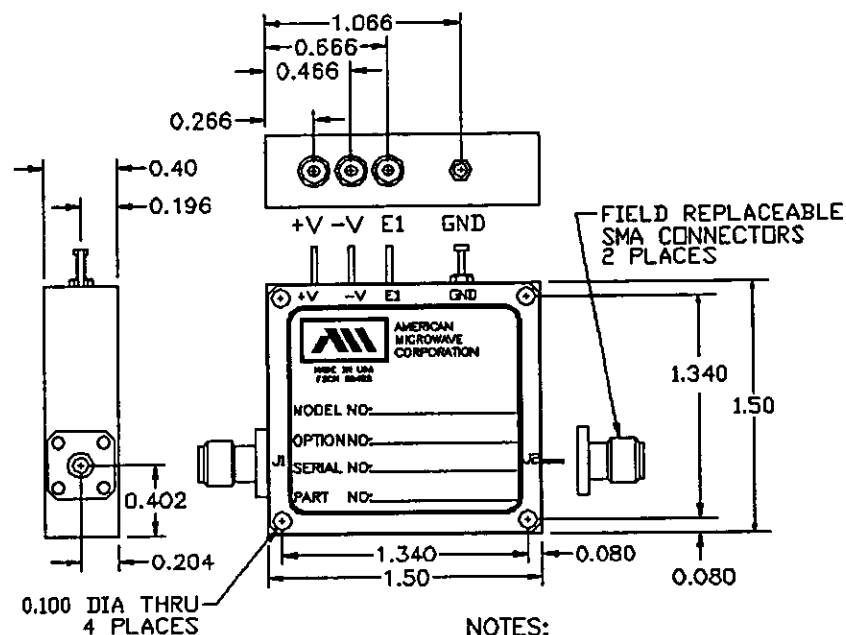
- FREQUENCY RANGE DC-6.0 GHz
- INSERTION LOSS DC-1 GHz, 1.2 dB MAXIMUM
1-2 GHz, 1.4 dB MAXIMUM
2-4 GHz, 1.9 dB MAXIMUM
4-6 GHz, 2.5 dB MAXIMUM
- ISOLATION DC-1 GHz, 50 dB MINIMUM
1-4 GHz, 45 dB MINIMUM
4-6 GHz, 40 dB MINIMUM
- VSWR (ON/OFF) DC-1 GHz, 1.5:1 MAXIMUM
1-2 GHz, 1.8:1 MAXIMUM
2-6 GHz, 2.0:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 20 ns MAXIMUM
OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- VIDEO TRANSIENTS 30 mV (P-P) MAXIMUM,
300 MHz BW
- RF POWER RATINGS (1DB COMP.)
0.5-6 GHz +20 dBm TYPICAL
0.001 GHz +12 dBm TYPICAL
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" ISOLATION
LOGIC "1" INSERTION LOSS.
- POWER SUPPLY +5VDC ±5% @ 5 mA MAXIMUM
-5VDC ±5% @ 5 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
NOTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.
(CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
- SIZE 1.50" x 1.50" x 0.40"

AVAILABLE OPTIONS

- A01. 50 Ω CONTROL IMPEDANCE
- A02. 100 Ω CONTROL IMPEDANCE
- A03. HERMETIC SEALING (MIL-STD-883)
- A04. ±9V TO ±18V SUPPLY
- A05. INVERSE CONTROL LOGIC (LOGIC "0" = INSERTION LOSS)
- A06. SINGLE ENDED ECL CONTROL LOGIC
- A07. BALANCED ECL CONTROL LOGIC
- A08. DIFFERENTIAL TTL CONTROL LOGIC(R2-422 LOGIC FAMILY)
- A09. HIGH ISOLATION (CONSULT FACTORY)
- A10. SMC MALE CONTROL CONNECTOR
- A11. SMA FEMALE CONTROL CONNECTOR

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 211278E		11/22/82	<i>[Signature]</i>

MECHANICAL OUTLINE




NOTES:

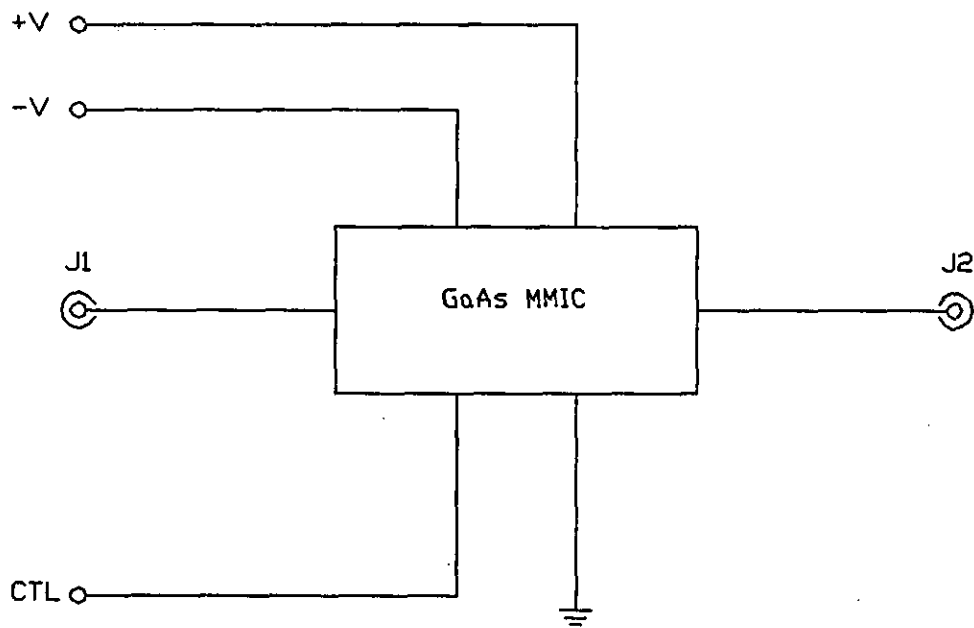
- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	DC-8 GHz, GaAs MMIC, NON-REFLECTIVE, LOW INSERTION LOSS AND FAST SPST SWITCH/MODULATOR	
DRAWN <i>[Signature]</i>	11/22/82	SIZE A	SHEET 1 OF 2
CHECKED <i>[Signature]</i>	11/22/82	DWG. # 100-2854	

FUNCTIONAL SCHEMATIC



2-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-6000-1DT	
DRAWN	DATE	DC-6 GHz, GaAs MMIC, NON-REFLECTIVE, LOW INSERTION LOSS AND FAST SPST SWITCH/MODULATOR	
CHECKED	DATE	SIZE A	SHEET 2 OF 2
DWG. # 100-2854			

DESCRIPTION

AMC MODEL SWM-6000-1DTU IS AN ABSORPTIVE GaAs MMIC SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN HIGH ISOLATION AND VERY FAST SWITCHING TIME, PACKAGED IN A SMALL RUGGED HOUSING.

SPECIFICATIONS

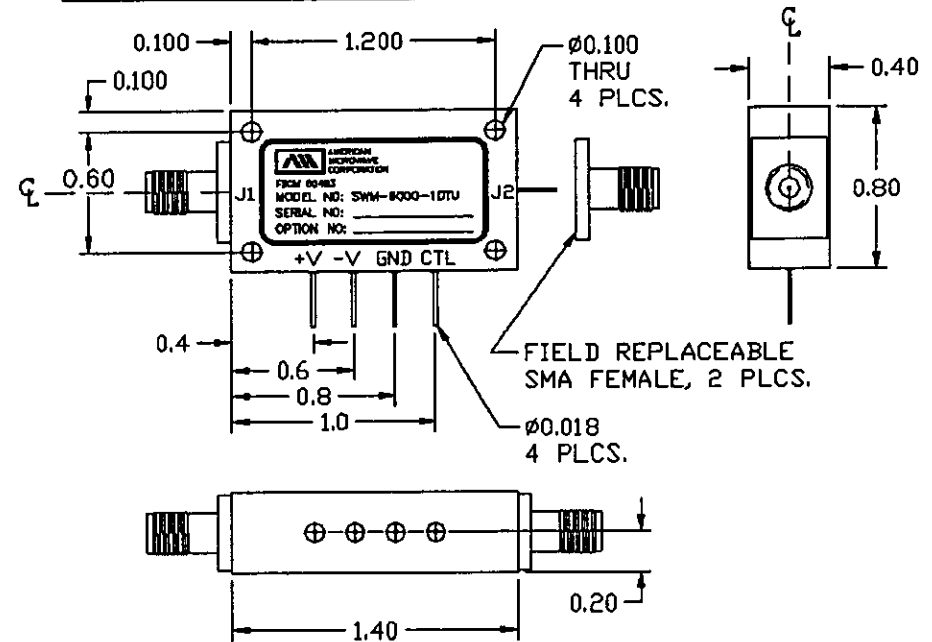
- FREQUENCY RANGE DC-6.0 GHz
- INSERTION LOSS DC-500 MHz, 2.0 dB MAXIMUM
0.5-3.0 GHz, 2.5 dB MAXIMUM
3.0-5.0 GHz, 3.0 dB MAXIMUM
5.0-6.0 GHz, 3.5 dB MAXIMUM
- ISOLATION DC-3.0 GHz, 80 dB MAXIMUM
3.0-4.0 GHz, 60 dB MINIMUM
4.0-6.0 GHz, 50 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 5 nS MAXIMUM
FALL (90% RF TO 10% RF) 5 nS MAXIMUM
ON (50% TTL TO 90% RF) 15 nS MAXIMUM
OFF (50% TTL TO 10% RF) 15 nS MAXIMUM
- RF POWER RATINGS
DC-2.0 GHz +22 dBm MAXIMUM
2.0-6.0 GHz +26 dBm MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD,
LOGIC "0" ISOLATION
LOGIC "1" INSERTION LOSS.
- VOLTAGE TRANSIENTS 50 mV P-P, 100 MHz BANDWIDTH
- POWER SUPPLY +5VDC ±5% @ 40 mA MAXIMUM
-5VDC ±5% @ 40 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.40" x 0.80" x 0.40"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A10 ±9VDC TO ±18VDC SUPPLY
- A11 SMC MALE CONTROL CONNECTOR
- A12 SMA FEMALE CONTROL CONNECTOR
- A13 DIFFERENTIAL TTL LOGIC CONTROLS
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 TWO SMA MALE CONNECTORS

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10465E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 2.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

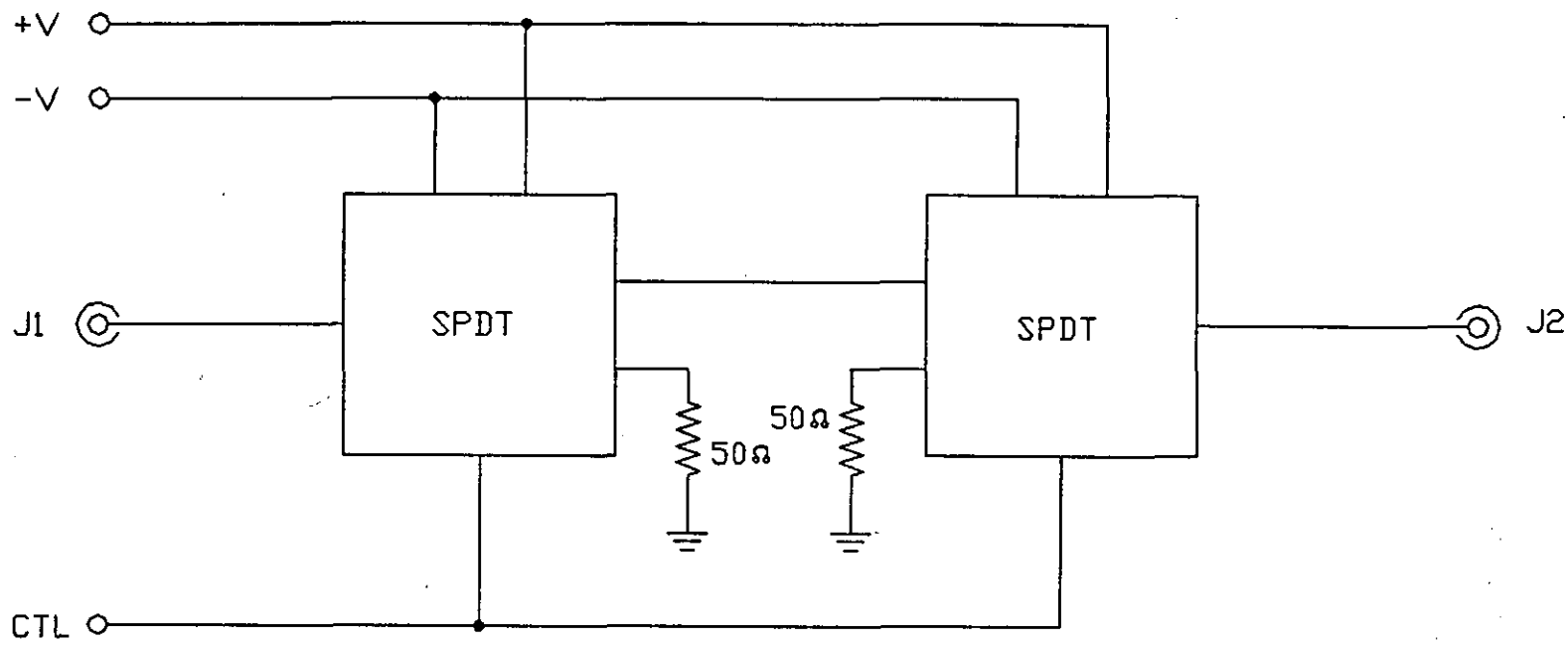
APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

PRODUCT FEATURE SWM-6000-1DTU


DC TO 6 GHz, NON-REFLECTIVE, GaAs MMIC SPST SWITCH/MODULATOR

SIZE A SHEET 1 OF 2 DWG. # 100-2826

FUNCTIONAL SCHEMATIC



2-8

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-6000-1DTU	
DRAWN <i>WSP</i>	11/22/92	DC TO 6 GHz, NON-REFLECTIVE, GaAs MMIC SPST SWITCH/MODULATOR	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2826	

DESCRIPTION

AMC MODEL SW-2183-1AT-250 IS AN ABSORPTIVE ULTRA BROAD BAND (10 MHz-18 GHz) SPST SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

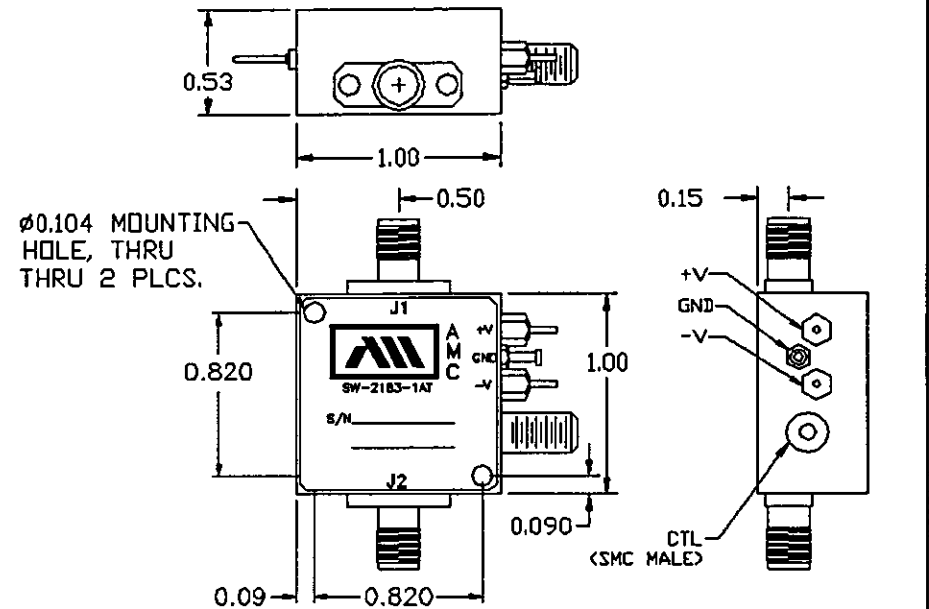
- FREQUENCY RANGE 0.01-18 GHz MINIMUM
- INSERTION LOSS 3.5 dB MAXIMUM
- ISOLATION 0.01-0.02 GHz 60 dB MINIMUM
0.02-1.0 GHz 70 dB MINIMUM
1.0-12.4 GHz 80 dB MINIMUM
12.4-18.0 GHz 70 dB MINIMUM
- VSWR (ON/OFF) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 15 nS MAXIMUM
FALL (90% RF TO 10% RF) 15 nS MAXIMUM
ON (50% CTL TO 90% RF) 80 nS MAXIMUM
OFF (50% CTL TO 10% RF) 40 nS MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- RF POWER RATINGS :
OPERATING +20dBm CW MAXIMUM
SURVIVAL +27dBm CW OR 10 W (1μS, PW)
- POWER SUPPLY +5VDC ±5% @ 90 mA MAXIMUM
-12VDC ±5% @ 75 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SMC MALE
- SIZE 1.00" x 1.00" x 0.53"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A13 +12 TO +15 VOLTS SUPPLY
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 J1, J2 SMA MALE
- A17 -15 VOLTS SUPPLY
- A18 SOLDER TYPE CONTROL TERMINAL

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 208206-1E	11/10/92	<i>WJP</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

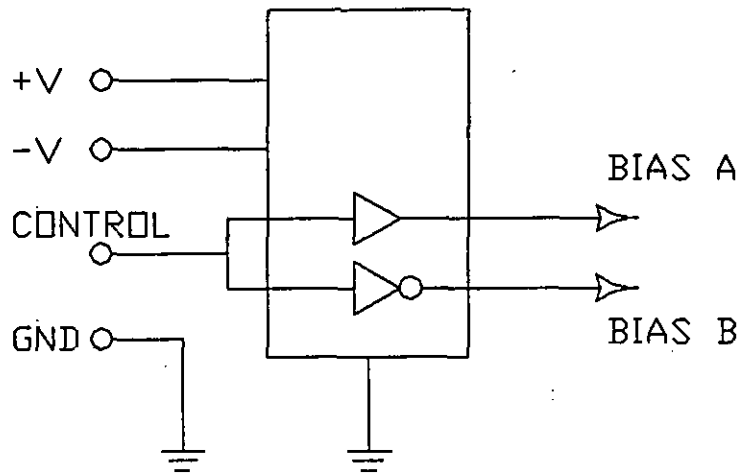
APPROVALS	DATE
DRAWN <i>WJP</i>	11/10/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE		
SW-2183-1AT-250		
HIGH SPEED, 0.01-18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH		
SIZE A	SHEET 1 OF 2	OWG. # 100-2807

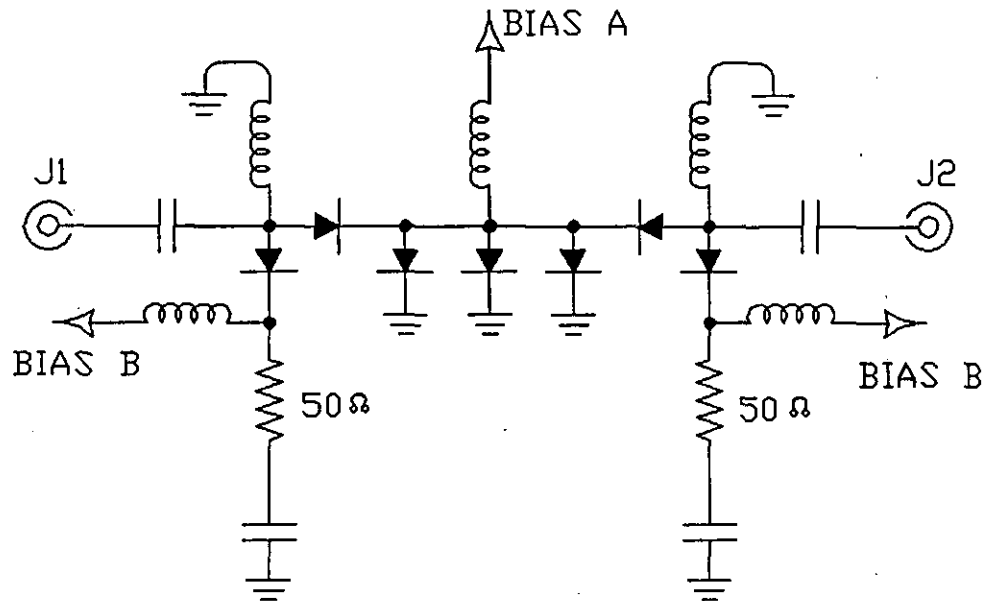
2-5

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



2-10

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN	DATE	SW-2183-1AT-250	
CHECKED	DATE	HIGH SPEED, 0.01-18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2807	

DESCRIPTION

AMC MODEL SW-2183-1AT-107 IS AN ABSORPTIVE BROAD BAND SPST SWITCH MODULE WITH INTEGRAL DRIVER AND DIFFERENTIAL LINE RECEIVER INTERFACE CAPABILITY FOR APPLICATIONS WHERE CONTROL SIGNALS ARE CARRIED BY LONG AND NOISY TRANSMISSION LINES.

SPECIFICATIONS

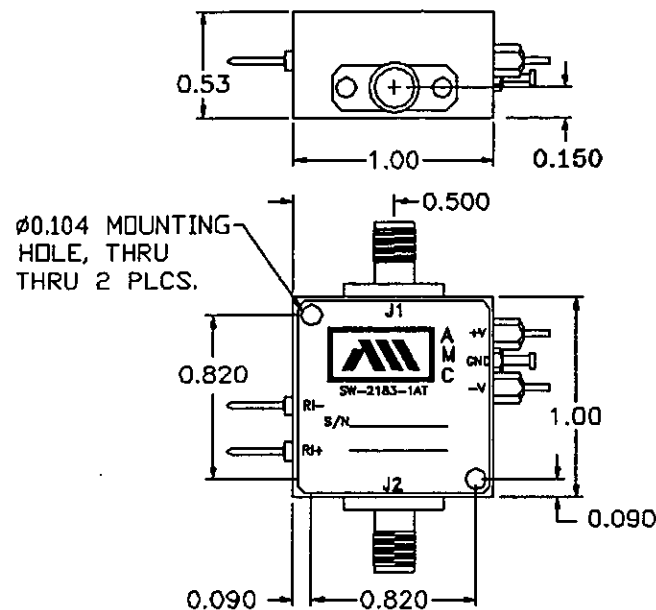
- FREQUENCY RANGE..... 0.3-18 GHz MINIMUM
- INSERTION LOSS..... 3.5 dB MAXIMUM
- ISOLATION..... 0.3- 1.0 GHz 70 dB MINIMUM
1.0-12.4 GHz 80 dB MINIMUM
12.4-18.0 GHz 70 dB MINIMUM
- VSWR (ON/OFF)..... 2 : 1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF)..... 10 nS MAXIMUM
FALL (90% RF TO 10% RF)..... 10 nS MAXIMUM
ON (50% CTL TO 90% RF)..... 50 nS MAXIMUM
OFF (50% CTL TO 10% RF)..... 50 nS MAXIMUM
- CONTROL..... DIFFERENTIAL LINE RECEIVER, PAIRS (RI+, RI-), COMPATIBLE TO ST506, ST412, ESPI, AND RS-422 LOGIC FAMILIES. (100Ω INPUT IMPEDANCE).
- RF POWER RATINGS :
OPERATING..... +27 dBm CW, MAXIMUM
SURVIVAL..... +30 dBm CW, OR 10 W (1μ S, PW)
- POWER SUPPLY..... +5VDC ±5% @ 90 mA MAXIMUM
-5VDC ±5% @ 75 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT..... SMA FEMALE
POWER..... SOLDER PIN
CONTROL..... SOLDER PIN
- SIZE..... 1.00" x 1.00" x 0.53"

AVAILABLE OPTIONS

- A03..... INVERSE LOGIC
- A07..... INPUT/OUTPUT VIDEO FILTER
(0.5 dB EXCESS LOSS, 2-18 GHz)
- A13..... +12 TO +15 VOLTS SUPPLY
- A14..... J1 SMA MALE, J2 SMA FEMALE
- A15..... J1, J2 SMA MALE
- A16..... 85 dB ISOLATION (2-18 GHz,
0.3 dB EXCESS LOSS)
- A17..... -12 TO -15 VOLTS SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 210273	11/16/92	<i>MSJ</i>

MECHANICAL OUTLINE



LOGIC TABLE		
RI+	RI-	RF PATH
H	L	ON
L	H	OFF

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE:..... -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY..... MIL-STD-202F, METHOD 103B COND. B
- SHOCK..... MIL-STD-202F, METHOD 213B COND. B
- VIBRATION..... MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE..... MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE..... MIL-STD-202F, METHOD 107D COND. A



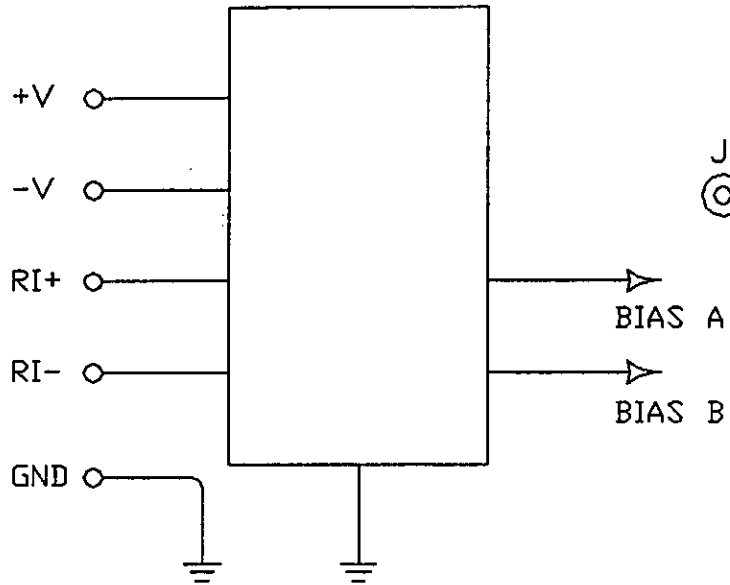
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>Wayne Pundham</i>	11/16/92
<i>[Signature]</i>	11/22/92

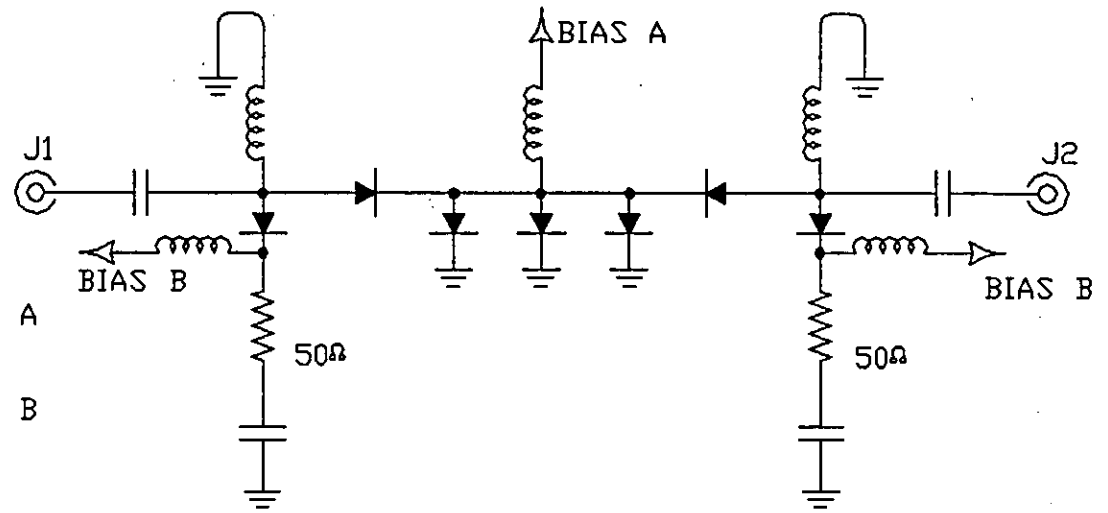
PRODUCT FEATURE		
SW-2183-1AT-107		
HIGH SPEED, 0.3-18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH		
SIZE A	SHEET 1 OF 2	DWG. # 100-2754

FUNCTIONAL SCHEMATIC


DIFFERENTIAL TTL DRIVER



RF SECTION



2-12

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2183-1AT-107	
DRAWN <i>Wayne Purdum</i>	11/16/92	HIGH SPEED, 0.3-18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH	
CHECKED <i>W. Purdum</i>	11/22/92		
SIZE A	SHEET 2 OF 2	DWG. # 100-2754	

DESCRIPTION

AMC MODEL SW-2183-1AT-210 IS AN ABSORPTIVE BROAD BAND SPST SWITCH MODULE WITH INTEGRAL DRIVER AND BALANCED ECL CONTROL CAPABILITY FOR HIGH SPEED APPLICATIONS.

SPECIFICATIONS

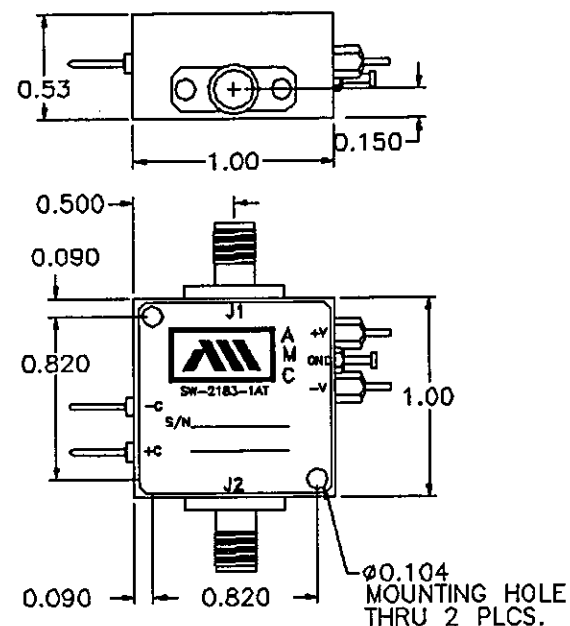
- FREQUENCY RANGE 0.3-18 GHz MINIMUM
- INSERTION LOSS 3.5 dB MAXIMUM
- ISOLATION 0.3- 1.0 GHz 70 dB MINIMUM
1.0-12.4 GHz 80 dB MINIMUM
12.4-18.0 GHz 70 dB MINIMUM
- VSWR (ON/OFF) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 nS MAXIMUM
FALL (90% RF TO 10% RF) 10 nS MAXIMUM
ON (50% CTL TO 90% RF) 35 nS MAXIMUM
OFF (50% CTL TO 10% RF) 20 nS MAXIMUM
- CONTROL BALANCED ECL PAIRS (-C, +C),
(100Ω INPUT IMPEDANCE).
- RF POWER RATINGS
OPERATING +27 dBm CW, MAXIMUM
SURVIVAL +30 dBm CW, OR 10 W (1 μS, PW)
- POWER SUPPLY +5VDC ±5% @ 90 mA MAXIMUM
-5VDC ±5% @ 75 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.00" x 1.00" x 0.53"

AVAILABLE OPTIONS

- A03 INVERSE LOGIC
- A07 INPUT/OUTPUT VIDEO FILTER
(0.5 dB EXCESS LOSS, 2-18 GHz)
- A13 +12 TO +15 VOLTS SUPPLY
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 J1, J2 SMA MALE
- A16 85 dB ISOLATION (2-18 GHz,
0.3 dB EXCESS LOSS)
- A17 -12 TO -15 VOLTS SUPPLY
- A18 EXTENDED FREQUENCY TO 10 MHz

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 108170E-1		11/17/92	<i>MY</i>

MECHANICAL OUTLINE




LOGIC TABLE		
C+	C-	RF PATH
1(-0.9V)	0(-1.75V)	ON
0(-1.75V)	1(-0.9V)	OFF

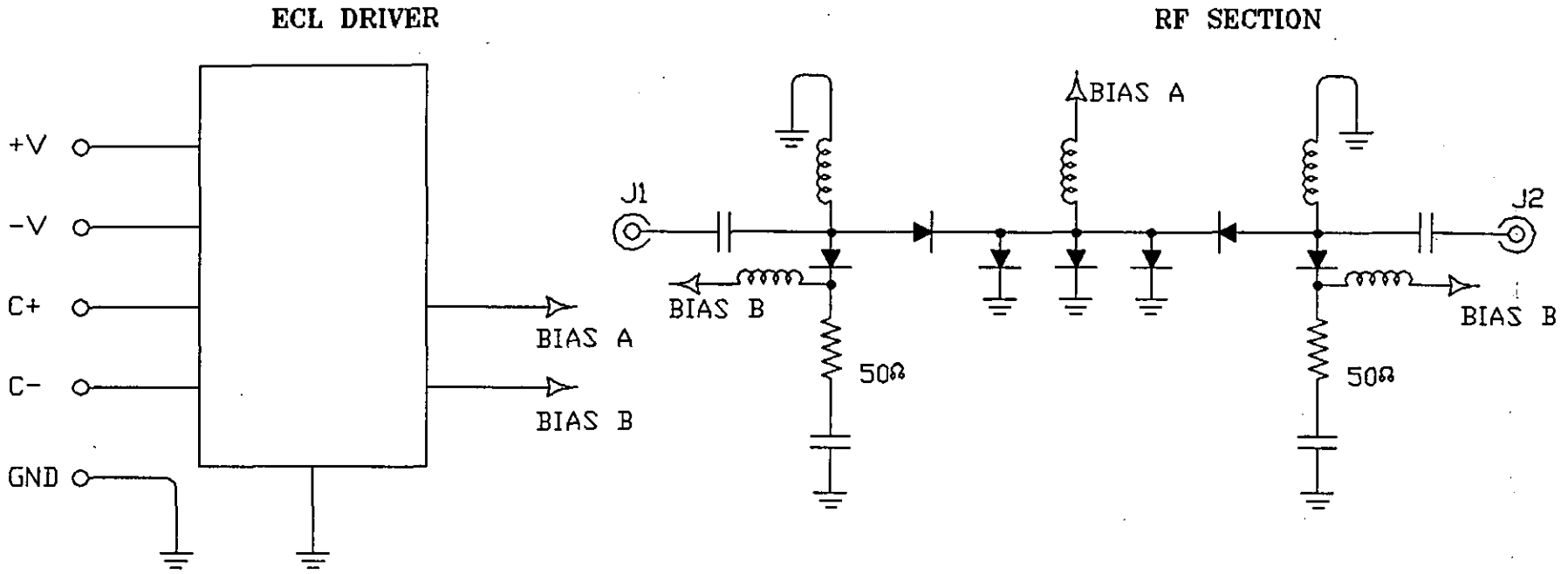
- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE: -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2183-1AT-210 HIGH SPEED, 0.3 TO 18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>Wayne Purdy</i> 11/17/92 CHECKED <i>[Signature]</i> 11/22/92		A	OWG. # 100-2755

FUNCTIONAL SCHEMATIC



2-14

		AMERICAN MICROWAVE CORPORATION	
		7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
PRODUCT FEATURE		SW-2183-1AT-210	
		HIGH SPEED, 0.3 TO 18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH	
APPROVALS	DATE	SIZE A	SHEET 2 OF 2
DRAWN <i>Wayne Pundharg</i>	11/17/02		
CHECKED <i>[Signature]</i>	11/22/92	DWG. # 100-2755	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20250E-1	11/22/02	<i>WJ</i>

DESCRIPTION

AMC MODEL SW-2184-1AT IS AN ABSORPTIVE SPST SWITCH WITH INTEGRAL TTL DRIVER DESIGNED FOR HIGH ISOLATION, HIGH SPEED, AND LOW VIDEO TRANSIENT APPLICATIONS.

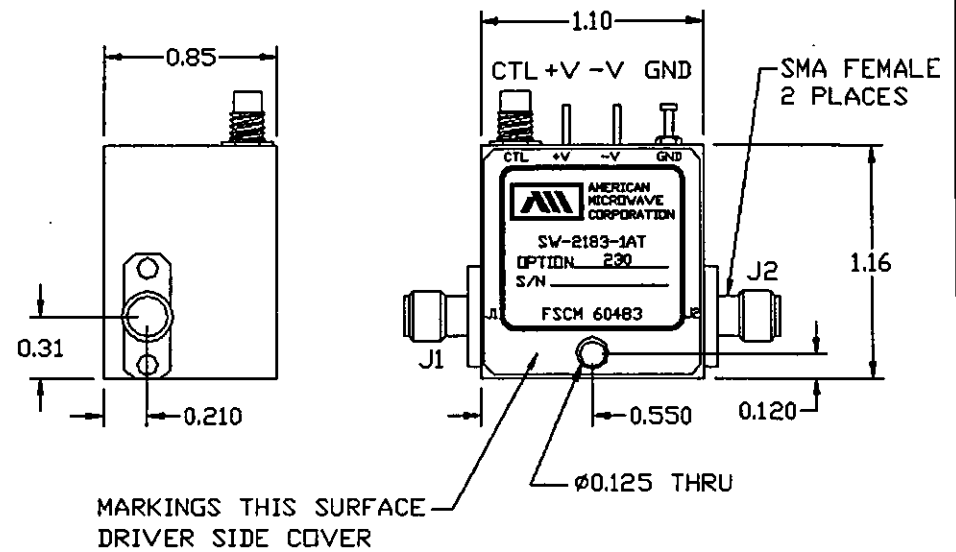
SPECIFICATIONS

- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 3.5 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 2.0:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 10 nsec MAXIMUM
 - FALL (90% RF TO 10% RF) 10 nsec MAXIMUM
 - ON (50% TTL TO 90% RF) 50 nsec MAXIMUM
 - OFF (50% TTL TO 10% RF) 50 nsec MAXIMUM
- RF POWER RATINGS +23 dBm CW MAXIMUM
- IN-BAND VIDEO POWER/TRANSIENTS -60 dBm MAXIMUM, OR
10 mV (P-P) IN 100 MHz BW
- CONTROLS TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @70 mA MAXIMUM
-5VDC ±5% @70 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN (EMI)
 - CONTROL SMC (MALE)
- SIZE 1.10" x 1.16" x 0.85"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A13 ±9 TO ±15 VOLTS SUPPLY
- A14 J1 SMA MALE, J2 SMA FEMALE CONNECTORS
- A15 TWO SMA MALE CONNECTORS
- A18 SOLDER TYPE CONTROL TERMINAL
- 240 6.0-18.5 GHz, 1 WATT CW RF POWER

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

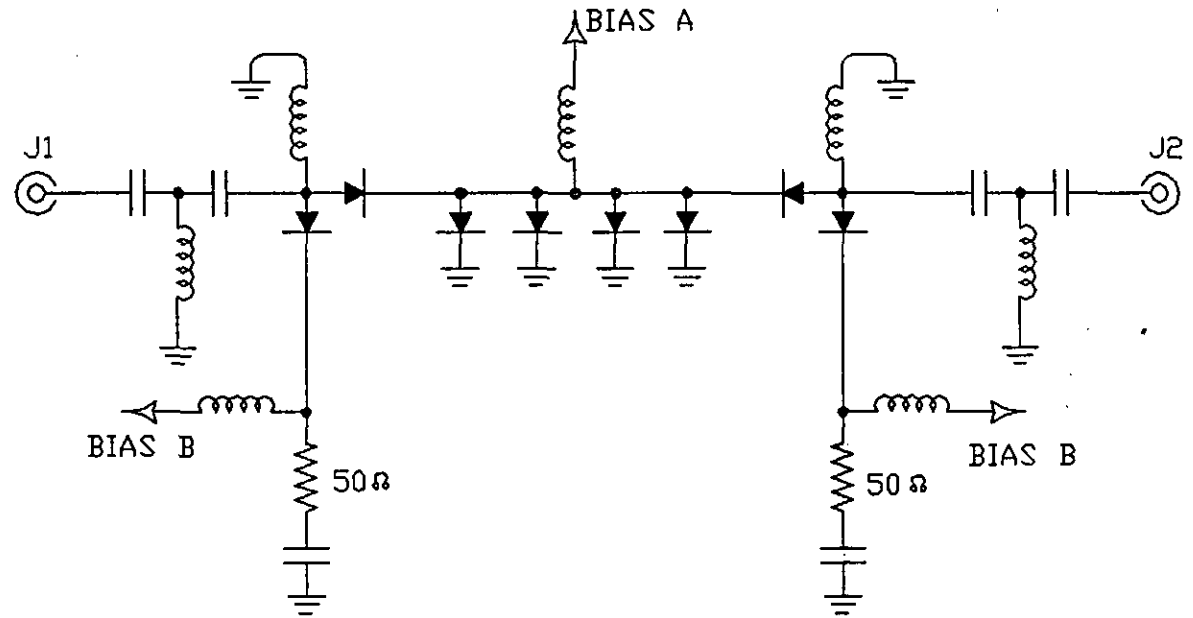
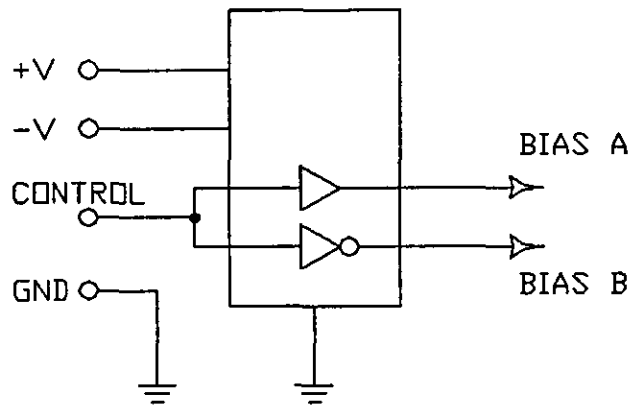
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2184-1AT-230 2-18 GHz, NON-REFLECTIVE SPST SWITCH/MODULATOR	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>WSP</i> CHECKED <i>[Signature]</i>	11/22/02 11/22/02	A	DWG. # 100-2880

2-15


FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



2-16

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>W. J. P.</i>	11/22/92	SW-2184-1AT-230	
CHECKED <i>[Signature]</i>	11/22/92	2-18 GHz, NON-REFLECTIVE SPST SWITCH/MODULATOR	
SIZE	A	SHEET	2 OF 2
		DWG. # 100-2880	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, NEW DEVELOPMENT	11/22/92	<i>JM</i>

DESCRIPTION

AMC MODEL SW-2184-1AT IS AN ABSORPTIVE SPST SWITCH WITH INTEGRAL TTL DRIVER DESIGNED FOR HIGH ISOLATION, HIGH SPEED, AND LOW VIDEO TRANSIENT APPLICATIONS.

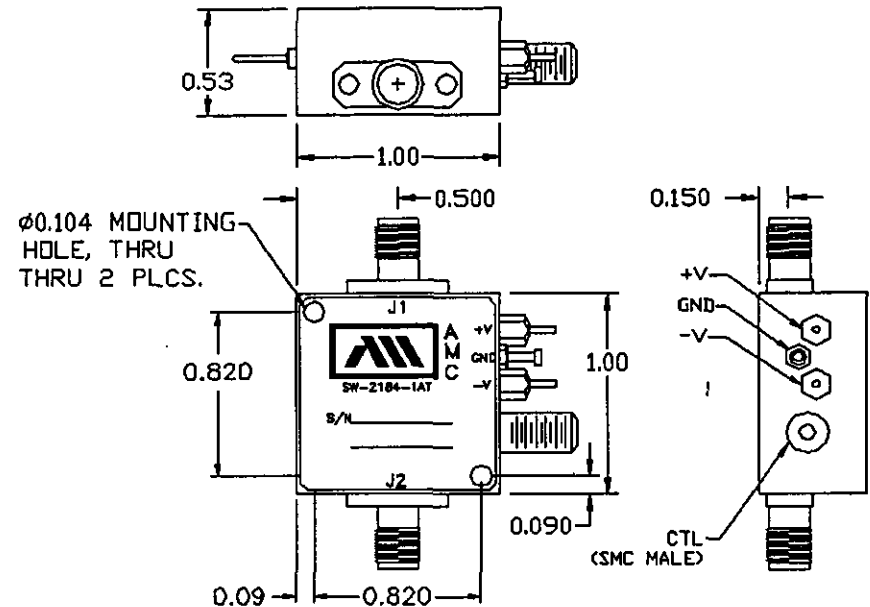
SPECIFICATIONS

- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 3.5 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 2.0:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 10 nsec MAXIMUM
 - FALL (90% RF TO 10% RF) 10 nsec MAXIMUM
 - ON (50% TTL TO 90% RF) 30 nsec MAXIMUM
 - OFF (50% TTL TO 10% RF) 30 nsec MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- IN-BAND VIDEO POWER/TRANSIENTS -60 dBm MAXIMUM, OR
10 mV (P-P) IN 100 MHz BW
- CONTROLS TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 70 mA MAXIMUM
-5VDC ±5% @ 70 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN (EMI)
 - CONTROL SMC (MALE)
- SIZE 1.0" x 1.0" x 0.53"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A13 ±9 TO ±15 VOLTS SUPPLY
- A14 J1 SMA MALE, J2 SMA FEMALE CONNECTORS
- A15 TWO SMA MALE CONNECTORS
- A18 SOLDER TYPE CONTROL TERMINAL

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	1/22/92
CHECKED <i>[Signature]</i>	1/22/92

PRODUCT FEATURE

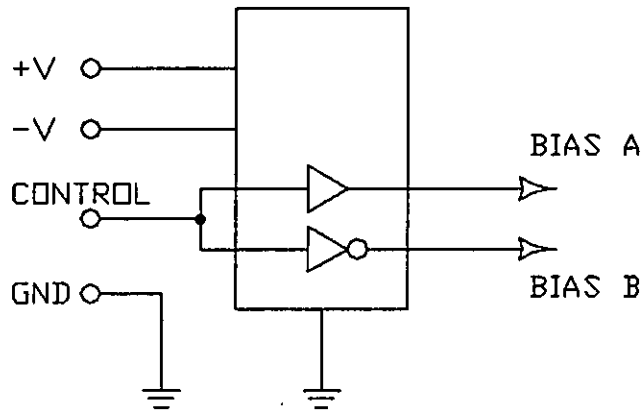
SW-2184-1AT-231

2-18 GHz, NON-REFLECTIVE SPST SWITCH/MODULATOR

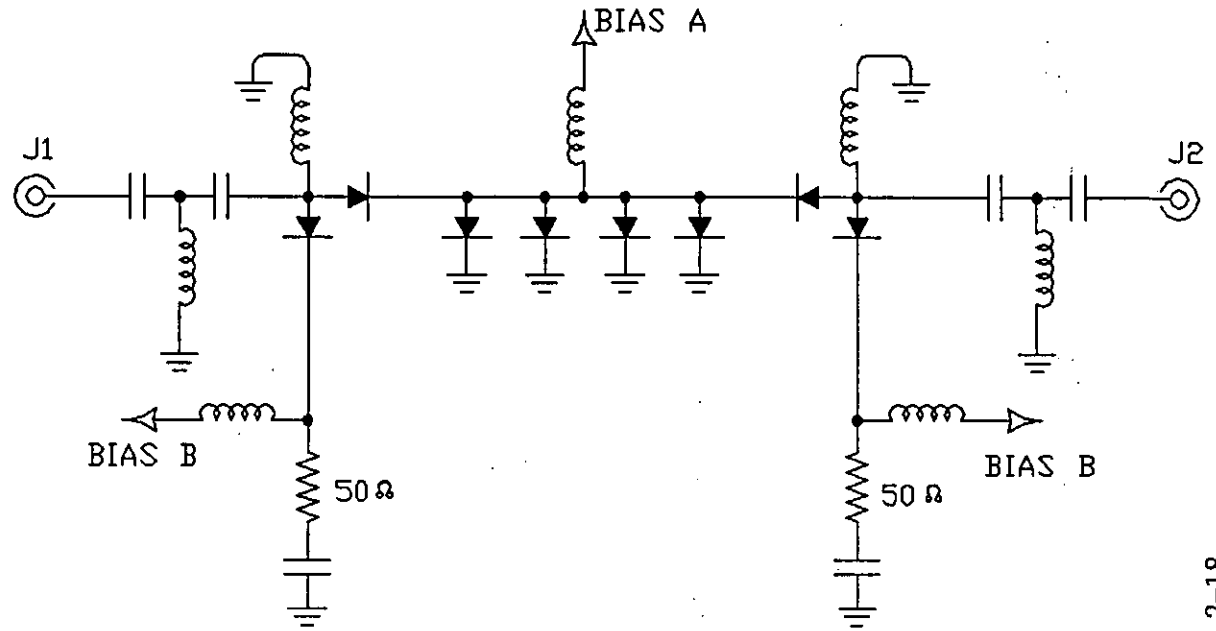
SIZE A SHEET 1 OF 2 DWG. # 100-2871

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



2-18


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSG</i>	<i>1/22/92</i>	SW-2184-1AT-231	
CHECKED <i>W.S.G.</i>	<i>1/22/92</i>	2-18 GHz, NON-REFLECTIVE SPST SWITCH/MODULATOR	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2871	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
3	SP2T, REFLECTIVE.....	3-1
●	DC-20 GHz GaAs, MMIC, ULTRA BROAD-BAND, SWITCH/MODULATOR, AMC MODEL NO: SWM-DC20-2D.....	3-5
●	100-500 MHz LOW NOISE SWITCH MODULE, AMC MODEL NO: SW-0105-2A.....	3-7
●	200-500 MHz SOLID STATE, B BAND, SWITCH MODULE, AMC MODEL NO: SW-0205-2D.....	3-9
●	0.01-3GHz 50 nsec MINIATURE SWITCH MODULE, AMC MODEL NO: SW-2181-2A-202.....	3-11
●	0.5-4.0 GHz 8 nsec SWITCH MODULE, AMC MODEL NO: SW-0540-2A.....	3-13
●	3-9 GHz 10 nsec, 2 WATTS SWITCH MODULE, AMC MODEL NO: SW-4080-2D.....	3-15
●	9-10 GHz SOLID STATE, I BAND, SWITCH MODULE, AMC MODEL NO: SW-0910-2D.....	3-17
●	0.2-18.2 GHz 5 usec, LOW SWITCHING TRANSIENT SWITCH MODULE, AMC MODEL NO: SW-2181-2A-CS01.....	3-19
●	0.3-18 GHz 5 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2A-ST02.....	3-21
●	0.3-18 GHz 50 nsec, 2 WATTS, HIGH POWER SWITCH MODULE, AMC MODEL NO: SW-218-2A-112.....	3-23
●	0.3-18 GHz CURRENT CONTROLLED SWITCH MODULE, AMC MODEL NO: SW-218-2 (2L).....	3-25
●	0.3-18 GHz 50 nsec, 2 WATT, MINIATURE SWITCH MODULE, AMC MODEL NO: SW-2181-2A-309.....	3-27
●	1-18GHz 5 nsec, 70 dB ISOLATION, MINIATURE SWITCH MODULE, AMC MODEL NO: SW-2181-2A-171.....	3-29



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
3	SP2T, REFLECTIVE.....	3-3
● 2-18 GHz	2 WATT SWITCH, AMC MODEL NO: SW-2181-2A-113.....	3-31
● 0.3-20 GHz	10 nsec CURRENT CONTROLLED, MINIATURE SWITCH MODULE, AMC MODEL NO: SW-2181-2.....	3-33
● 0.5-20 GHz	50 nsec, SLIM LINE SWITCH MODULE, AMC MODEL NO: SW-2181-2A-305.....	3-35

DESCRIPTION

AMC MODEL SWM-DC20-2D IS A REFLECTIVE GaAs MMIC SPDT SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, DESIGNED FOR ULTRA BROAD-BAND, FAST SWITCHING TIME, AND LOW DC POWER CONSUMPTION, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

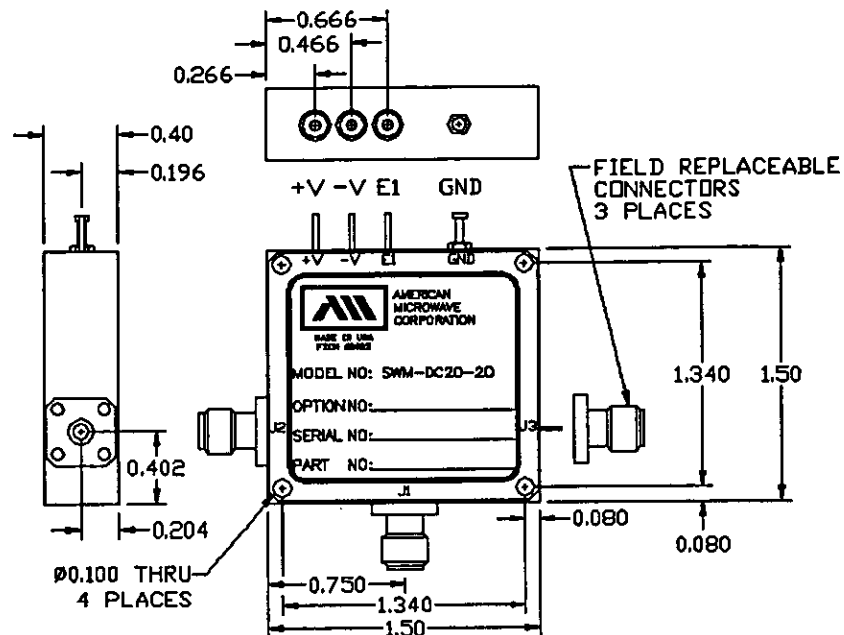
- FREQUENCY RANGE DC-20 GHz
- INSERTION LOSS DC-10 GHz, 2.2 dB MAXIMUM
10-18 GHz, 2.8 dB MAXIMUM
18-20 GHz, 3.5 dB MAXIMUM
- ISOLATION DC-10 GHz, 50 dB MINIMUM
10-18 GHz, 42 dB MINIMUM
18-20 GHz, 40 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 20 ns MAXIMUM
OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- RF POWER RATINGS (1DB COMP.)
0.5-20 GHz +25 dBm TYPICAL
0.05 GHz +18 dBm TYPICAL
- CONTROL TTL COMPATIBLE, UNITY LOAD
SINGLE CONTROL (TOGGLE)
(SEE LOGIC TABLE)
- POWER SUPPLY +7VDC TO +18VDC ±5% @ 40 mA MAXIMUM
-7VDC TO -18VDC ±5% @ 40 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
NOTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.
(CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
- SIZE 1.50" x 1.50" x 0.40"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 HERMETIC SEALING (MIL-STD-883)
- A04 ±5VDC POWER SUPPLY
- A05 INVERSE CONTROL LOGIC (LOGIC "0" = J1-J2 PATH ON)
- A06 SINGLE ENDED ECL CONTROL LOGIC
- A07 BALANCED ECL CONTROL LOGIC
- A08 DIFFERENTIAL TTL CONTROL LOGIC (RS-422 LOGIC FAMILY)
- A09 HIGH ISOLATION (CONSULT FACTORY)
- A10 SMC MALE CONTROL CONNECTOR
- A11 SMA FEMALE CONTROL CONNECTOR
- A12 OTHER POWER SUPPLIES (CONSULT FACTORY)

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE, NEW DEVELOPMENT	11/22/82	<i>MJ</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.5 OZ

LOGIC TABLE		
E1	J1-J2	J1-J3
1	ON	OFF
0	OFF	ON

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



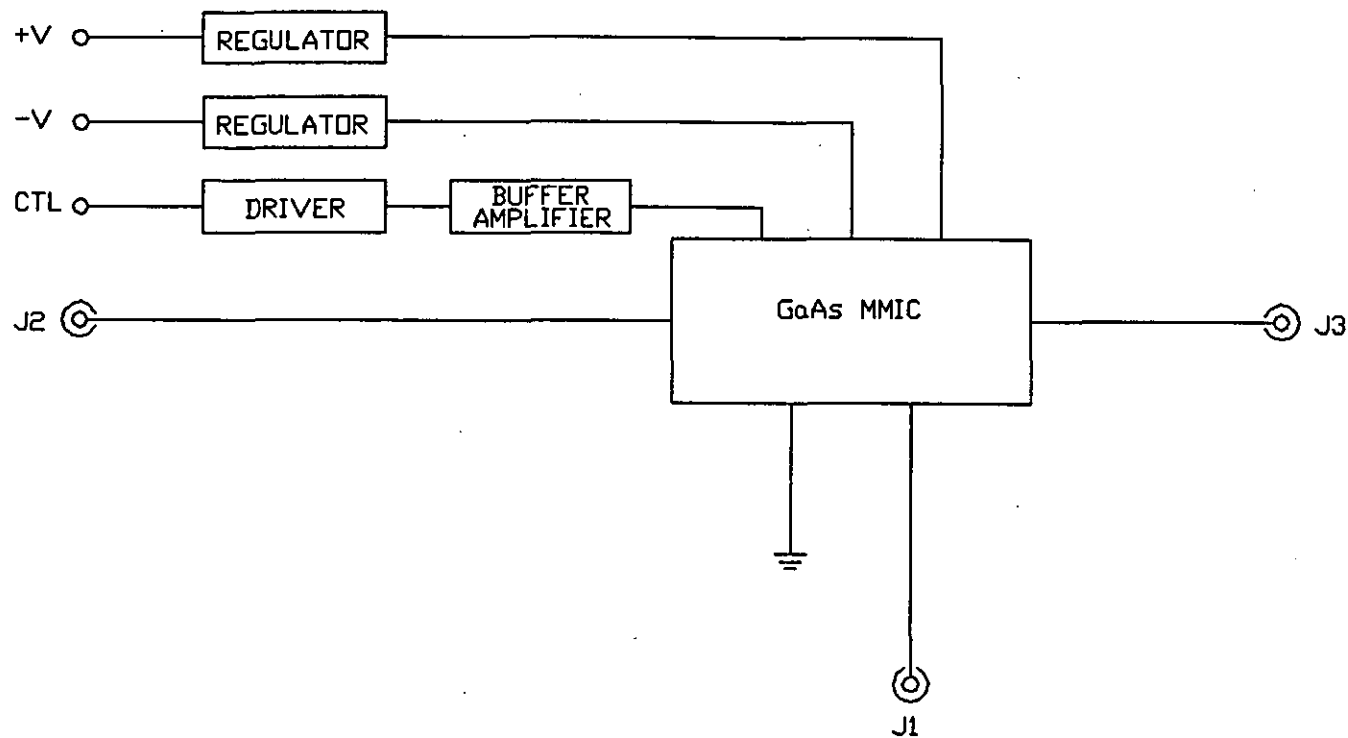
AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938


APPROVALS	DATE
<i>[Signature]</i>	11/22/82
<i>[Signature]</i>	11/22/82

PRODUCT FEATURE		
SWM-DC20-2D		
DC-20 GHz, GaAs MMIC, REFLECTIVE, ULTRA BROAD-BAND SPDT SWITCH/MODULATOR		
SIZE A	SHEET 1 OF 2	DWG. # 100-2915

FUNCTIONAL SCHEMATIC



3-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-DC20-2D	
DRAWN <i>WSP</i>	11/22/92	DC-20 GHz, GaAs MMIC, REFLECTIVE, ULTRA BROAD-BAND SPDT SWITCH/MODULATOR	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2915	

DESCRIPTION

AMC MODEL SW-0105-2A IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL DRIVER, DESIGNED TO MAINTAIN LOW LOSS/VSWR AND VIDEO TRANSIENT RESPONSES. APPLICATIONS ARE FOR HIGHLY SENSITIVE LOW-NOISE RADARS, RECEIVERS, AND MISSILE SYSTEMS.

SPECIFICATIONS

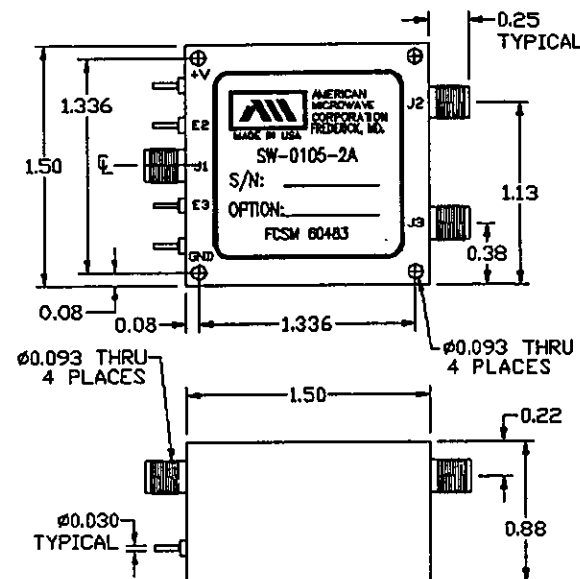
- FREQUENCY RANGE 100-500 MHz MINIMUM
- INSERTION LOSS 0.8 dB MAXIMUM
- AMPLITUDE BALANCE ± 0.1 dB MAXIMUM
- PHASE BALANCE $\pm 0.5^\circ$ MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR 1.3:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 300 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 300 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 500 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 500 ns MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM
- RF LEAKAGE (CONDUCTIVE/RADIATED) ... 60 dBc MINIMUM
- IN-BAND VIDEO POWER/TRANSIENTS ... -60 dBm MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- POWER SUPPLY +5VDC $\pm 5\%$ @ 130 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.5" x 1.5" x 0.88"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A08 SINGLE CONTROL LOGIC (LOGIC "0" = J1-J2 PATH ON)
- A16 +9 TO +18 VDC POWER SUPPLY
- A17 EXTENDED FREQUENCY BAND
(FROM 10 MHz TO 18 GHz, CONSULT FACTORY)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20384E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE




TRUTH TABLE		
E3	E2	RF PATH ON
1	0	J1-J2
0	1	J1-J3

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 5 OZ

ENVIRONMENTAL RATINGS

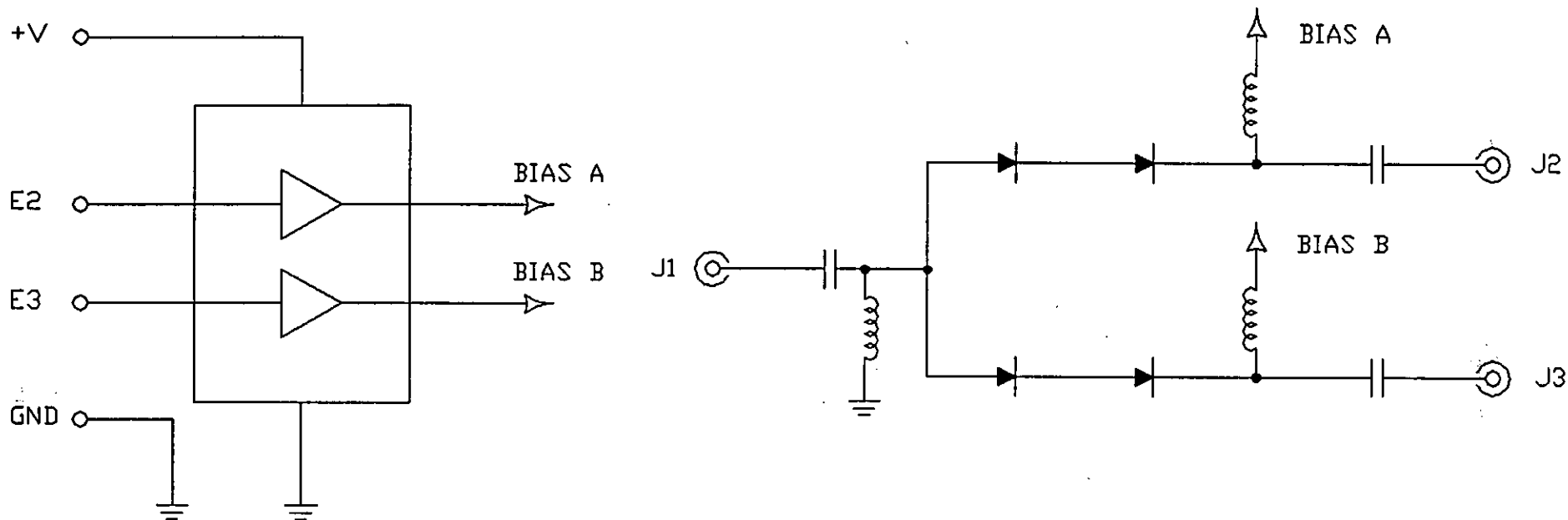
- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938		
		PRODUCT FEATURE SW-0105-2A 100-500 MHz, LOW NOISE, REFLECTIVE SPDT SWITCH MODULE		
APPROVALS DRAWN <i>[Signature]</i> CHECKED <i>[Signature]</i>	DATE 11/22/92	SIZE A	SHEET 1 OF 2	DWG. # 100-2870


FUNCTIONAL SCHEMATIC

DRIVER

RF SECTION



3-8

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>[Signature]</i>	11/22/92	SW-0105-2A	
CHECKED <i>[Signature]</i>	11/22/92	100-500 MHz, LOW NOISE, REFLECTIVE SPDT SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2870	

DESCRIPTION

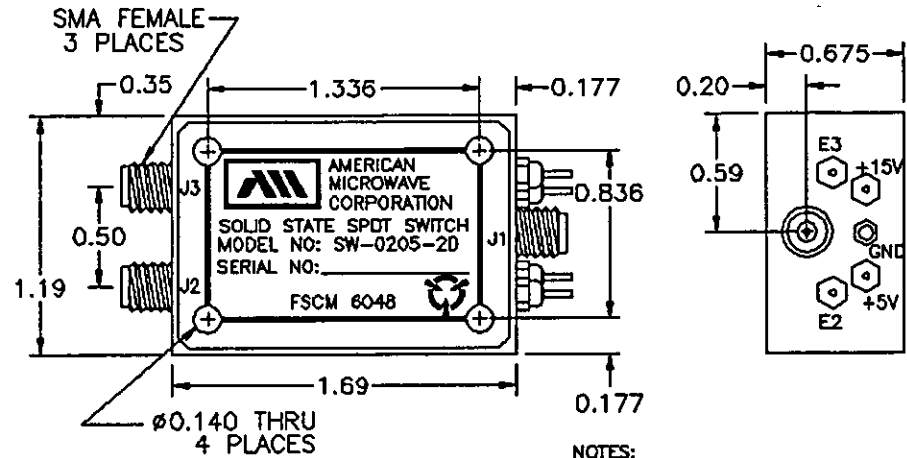
AMC MODEL SW-0205-2D IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

- FREQUENCY RANGE 200-500 MHz MINIMUM
- INSERTION LOSS 0.6 ± 0.2 dB
- INSERTION LOSS BALANCE 0.2 dB MAXIMUM
- INSERTION LOSS VARIATION OVER TEMPERATURE ±0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANGE
- INSERTION LOSS VARIATION OVER FREQUENCY ±0.1 dB MAXIMUM
- ISOLATION 45 dB MINIMUM
- VSWR (ON) 1.3:1 MAXIMUM
- RF POWER +16 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 300 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 300 ns MAXIMUM
- SETTling TIME
 - ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 μs MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 μs MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE
2 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- HARMONIC DISTORTION PRODUCTS 50 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND) 90 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY +5VDC ±5% @ 90 mA MAXIMUM
+15VDC ±5% @ 40 mA MAXIMUM
(OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.69" x 1.19" x 0.675"

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10358-4E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



E3	E2	RF PATH ON
1	0	J1-J2
0	1	J1-J3


- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 3 OZ
 - 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-M-38510 CLASS B, MIL-F-18870 JANTX TYPE, ER COMPONENTS
 - 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870

ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO +65°C (OPERATING)
-55°C TO +70°C (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I OR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSOIDAL 25 Hz TO 2000 Hz
- MTEF 1 x 10⁶ HOURS, @ +50°C OPERATION

ENVIRONMENTAL STRESS SCREENING (ESS)

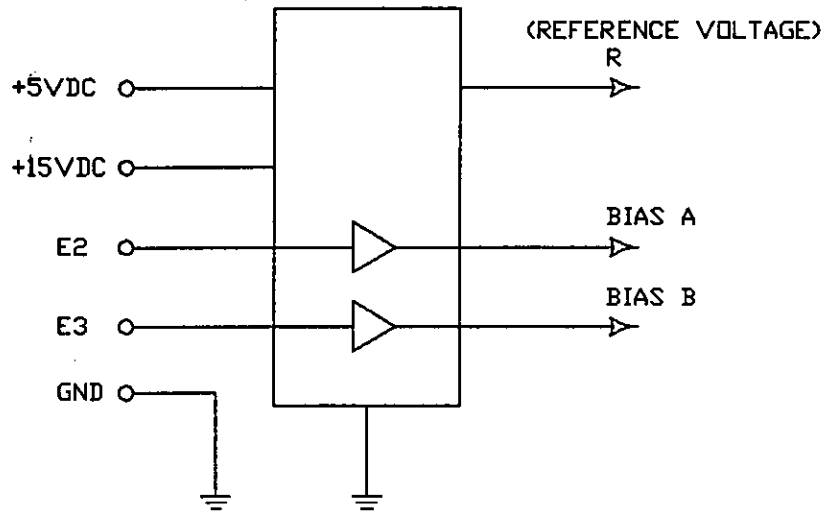
- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SOAK MINUTE, -55°C TO +85°C
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO +85°C
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B, 160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5°C PER MINUTE, -55°C TO +55°C.
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +55°C/-55°C.

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938		
		PRODUCT FEATURE SW-0205-2D (B-BAND) 200-500 MHz, REFLECTIVE SOLID STATE SPDT SWITCH MODULE		
APPROVALS DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	DATE 11/22/92 11/22/92	SIZE A	SHEET 1 OF 2	DWG. # 100-2908

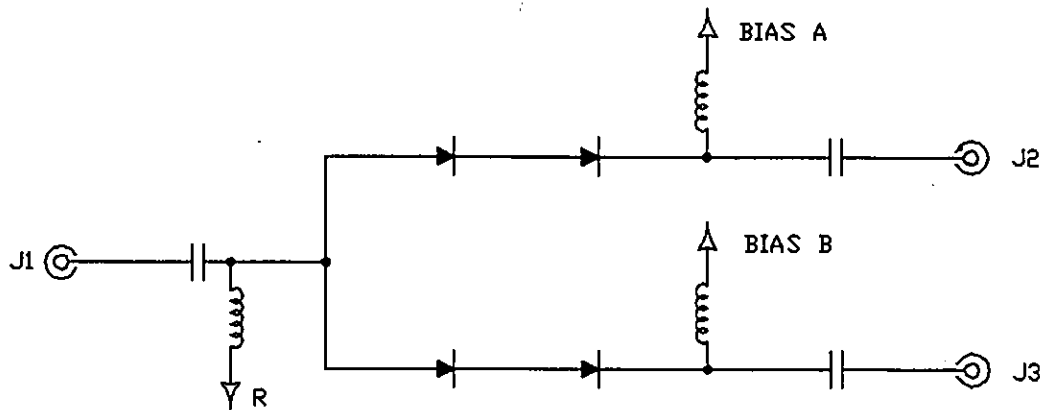
3-9

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-10

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-0205-2D (B-BAND)	
DRAWN <i>WSP</i>	1/22/92	200-500 MHz, REFLECTIVE SOLID STATE SPDT SWITCH MODULE	
CHECKED <i>[Signature]</i>	1/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-290B	

DESCRIPTION

AMC MODEL SW-2181-2A-202 IS A REFLECTIVE SPDT BAND-SELECT SWITCH WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE POSTAGE STAMP SIZE HOUSING, DESIGNED FOR ULTRA BROAD-BAND APPLICATIONS SUCH AS WIDE-BAND SWEEP GENERATORS.

SPECIFICATIONS

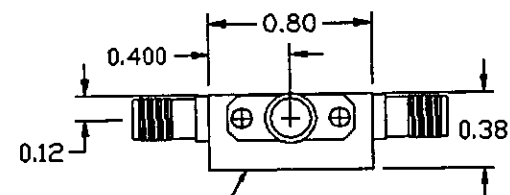
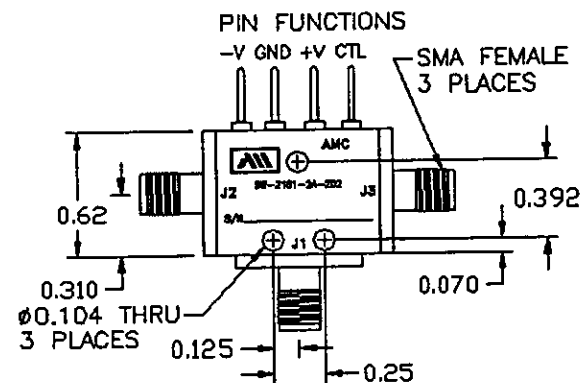
- **FREQUENCY**
 - LOW-BAND (J1-J2) 0.01-3 GHz MINIMUM
 - HIGH-BAND (J1-J3) 1.0-20 GHz MINIMUM
- **INSERTION LOSS**
 - LOW-BAND 1.3 dB MAXIMUM
 - HIGH-BAND 2.4 dB MAXIMUM
- **ISOLATION**
 - LOW-BAND 0.01-3 GHz, 70 dB MINIMUM
 - HIGH-BAND 1-12 GHz, 65 dB MINIMUM
 - 12-18 GHz, 60 dB MINIMUM
 - 18-20 GHz, 55 dB MINIMUM
- **VSWR (ON)**
 - LOW-BAND 1.6:1 MAXIMUM
 - HIGH-BAND 1.8:1 MAXIMUM
- **SWITCHING TIME**
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 100 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 100 ns MAXIMUM
- **CONTROL** TTL COMPATIBLE, UNITY LOAD
SINGLE CONTROL (TOGGLE)
LOGIC "0" = J1-J2 PATH ON (LOW BAND)
LOGIC "1" = J1-J3 PATH ON (HIGH BAND)
- **RF POWER RATINGS** +27 dBm CW MAXIMUM
- **POWER SUPPLY** +5VDC ±5% @ 65 mA MAXIMUM
-15VDC ±5% @ 65 mA MAXIMUM
- **CONNECTORS**
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- **SIZE** 0.80" x 0.62" x 0.38"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC
- A08 TWO INDIVIDUAL CONTROLS
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 2816E		11/22/92	<i>JMD</i>


MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.0 OZ

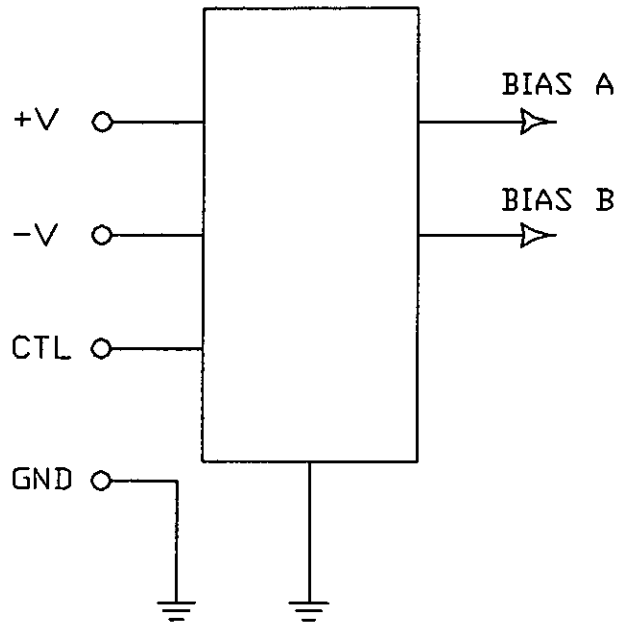
ENVIRONMENTAL RATINGS

- **TEMPERATURE** -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE** MIL-STD-202F, METHOD 107D COND. A

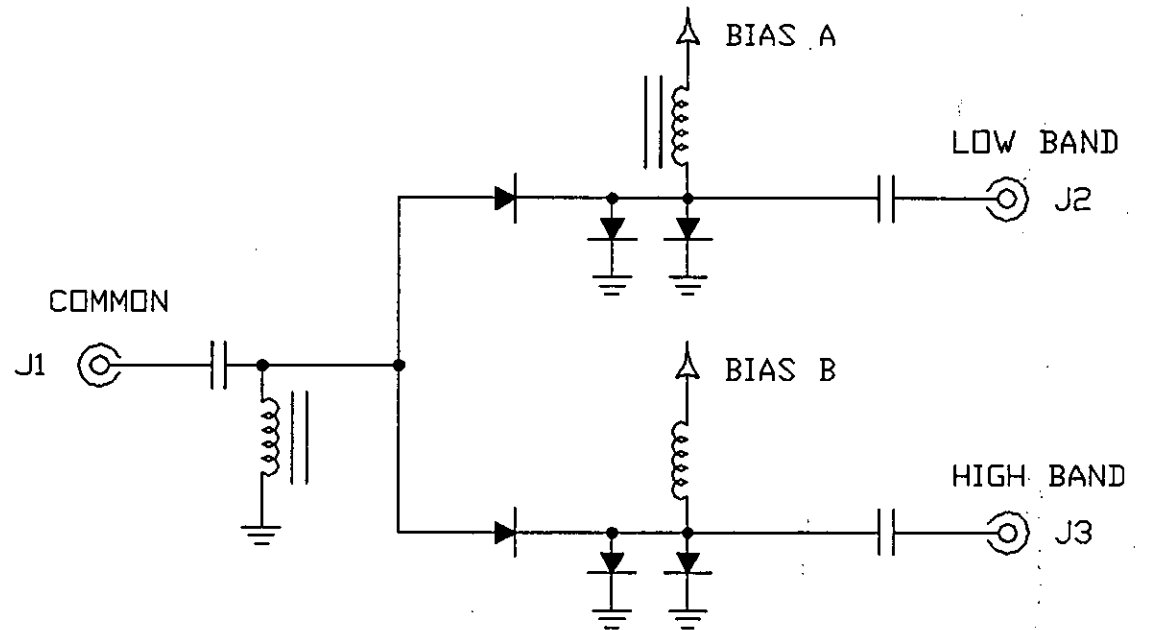
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
<i>W.J.P.</i>	11/22/92	SW-2181-2A-202	
CHECKED	11/22/92	0.01-3 GHz, REFLECTIVE SPDT SWITCH MODULE	
SIZE A	SHEET 1 OF 2	DWG. # 100-2867	

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-12

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2181-2A-202 0.01-9.0 GHz, REFLECTIVE SPDT SWITCH MODULE	
DRAWN <i>WSP</i>	<i>11/22/92</i>	SIZE A SHEET 2 OF 2 DWG. # 100-2867	
CHECKED <i>[Signature]</i>	<i>11/22/92</i>		

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 2754E	11/22/92	<i>MJ</i>

DESCRIPTION

AMC MODEL SW-0540-2A IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR ULTRA HIGH SPEED SWITCHING APPLICATIONS.

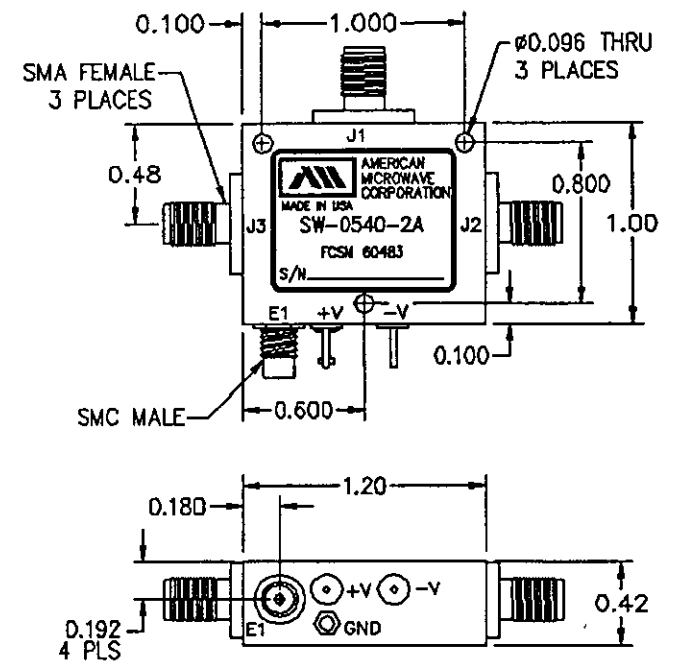
SPECIFICATIONS

- FREQUENCY RANGE 0.5-4.0 GHz MINIMUM
- INSERTION LOSS 0.8 dB MAXIMUM
- ISOLATION 70 dB MINIMUM
- VSWR (ON) 1.5:1 MAXIMUM
- RF POWER RATINGS 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 8 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 8 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 15 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 15 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
1 SINGLE CONTROL (TOGGLE)
LOGIC "0" = J1-J2 PATH ON
LOGIC "1" = J1-J3 PATH ON
- POWER SUPPLY +5VDC ±5% @ 50 mA MAXIMUM
-15VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SMC MALE
- SIZE 1.20" x 1.00" x 0.42"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC
- A04 EXTENDED FREQUENCY, FROM 100 MHz TO 18 GHz (CONSULT FACTORY)
- A06 SOLDER PIN CONTROL TERMINAL
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A10 +12 VDC TO +18 VDC SUPPLY
- A11 -5 VDC SUPPLY


MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

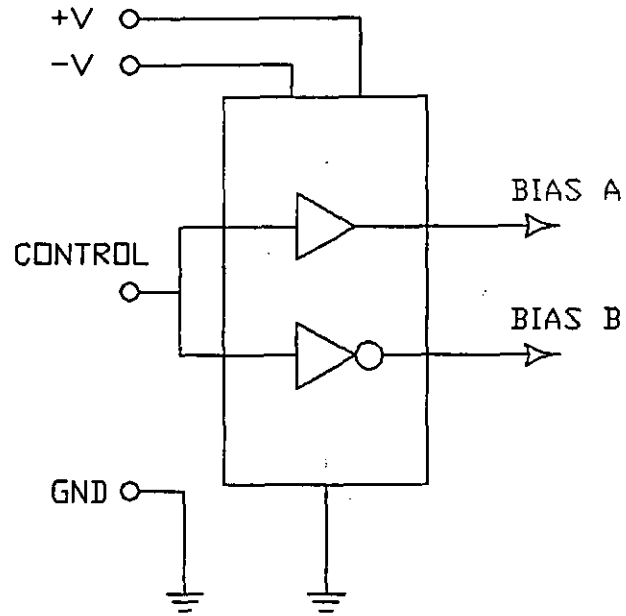
- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WYP</i>	11/22/92	SW-0540-2A	
CHECKED <i>[Signature]</i>	11/22/92	0.5-4.0 GHz, REFLECTIVE SPDT SWITCH MODULE	
		SIZE A	SHEET 1 OF 2
		DWG. # 100-2883	

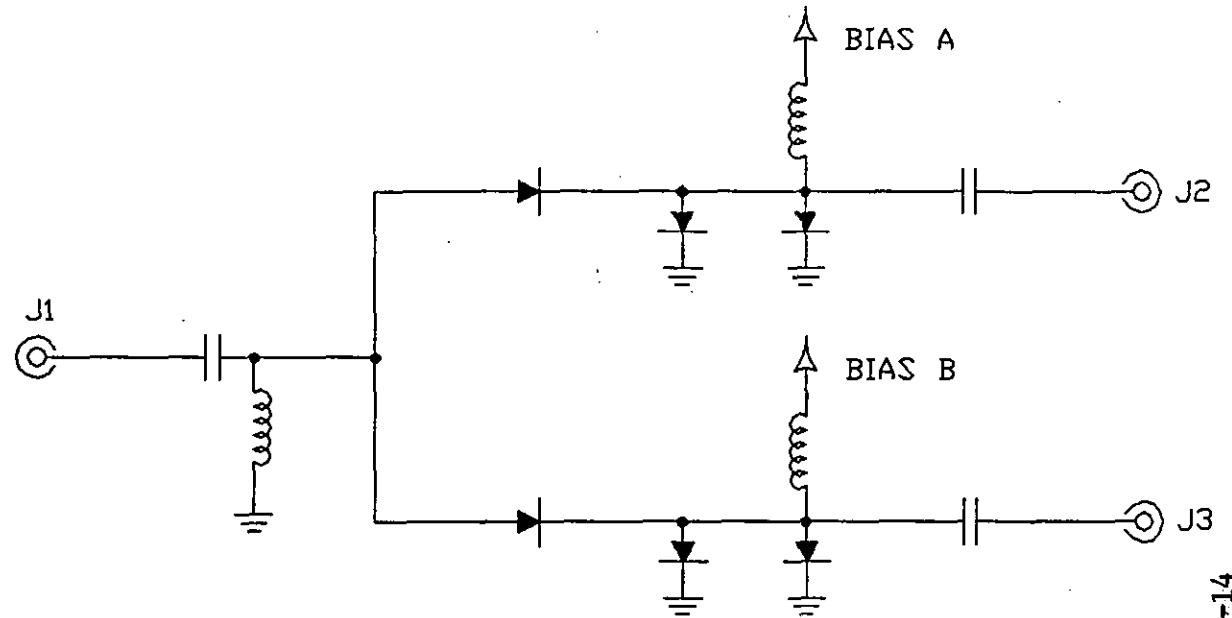
3-13

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-14

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-0540-2A 0.5-4.0 GHz, REFLECTIVE SPDT SWITCH MODULE	
APPROVALS _____ DATE _____	DRAWN WSP 11/22/92	CHECKED _____ 11/22/92	SIZE A SHEET 2 OF 2 DWG. # 100-2883

DESCRIPTION

AMC MODEL SW-4080-2D IS A REFLECTIVE, OCTAVE BAND SPDT SWITCH MODULE WITH HIGH SPEED AND HIGH POWER CAPABILITIES.

SPECIFICATIONS

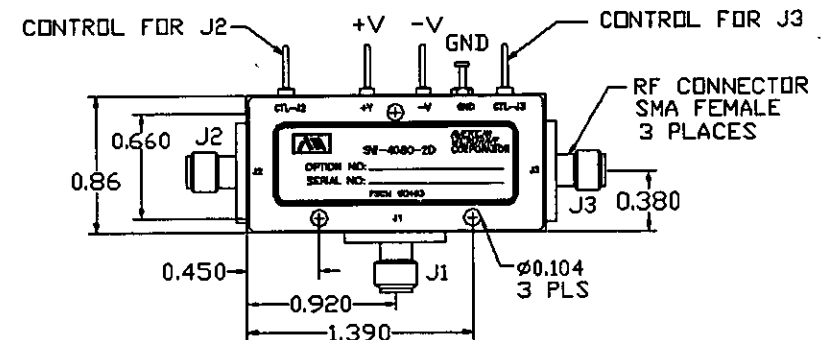
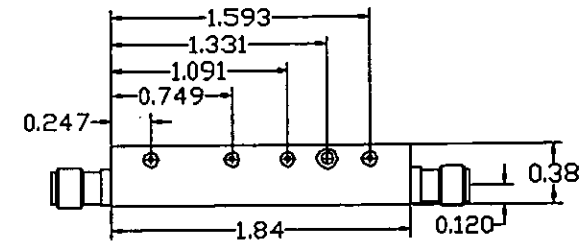
- FREQUENCY RANGE 3-9 GHz
- INSERTION LOSS 4-8 GHz 1.4 dB MAXIMUM
3-9 GHz 2.3 dB MAXIMUM
- ISOLATION 4-8 GHz 50 dB MAXIMUM
3-9 GHz 45 dB MAXIMUM
- VSWR (ON) 4-8 GHz 1.5:1 MAXIMUM
3-9 GHz 2.2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 nS MAXIMUM
FALL (90% RF TO 10% RF) 10 nS MAXIMUM
ON (50% TTL TO 90% RF) 25 nS MAXIMUM
OFF (50% TTL TO 10% RF) 20 nS MAXIMUM
- RF POWER RATINGS 2W CW, 10W PEAK (1μ S, PW)
- CONTROL TTL COMPATIBLE, UNITY LOAD
2 INDEPENDENT CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 65 mA
-12 TO -15VDC ±5% @ 2 mA
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.84" x 0.86" x 0.38"

AVAILABLE OPTIONS

- A01 50 CONTROL IMPEDANCE
- A02 100 CONTROL IMPEDANCE
- A03 INVERSE LOGIC (LOGIC "0" ISOLATION)
- A05 5 WATTS CW MAXIMUM (100 nS RISE/FALL)
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A13 +12 TO +15 VOLTS SUPPLY
- A14 J1 SMA MALE, J2 SMA FEMALE
- A15 J1, J2 SMA MALE
- A16 70 dB ISOLATION (0.5 dB EXCESS LOSS)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 204110	11/17/92	<i>Jmy</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.2 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND.
- SHOCK MIL-STD-202F, METHOD 213B COND.
- VIBRATION MIL-STD-202F, METHOD 204D COND.
- ALTITUDE MIL-STD-202F, METHOD 105C COND.
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 102D COND.



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

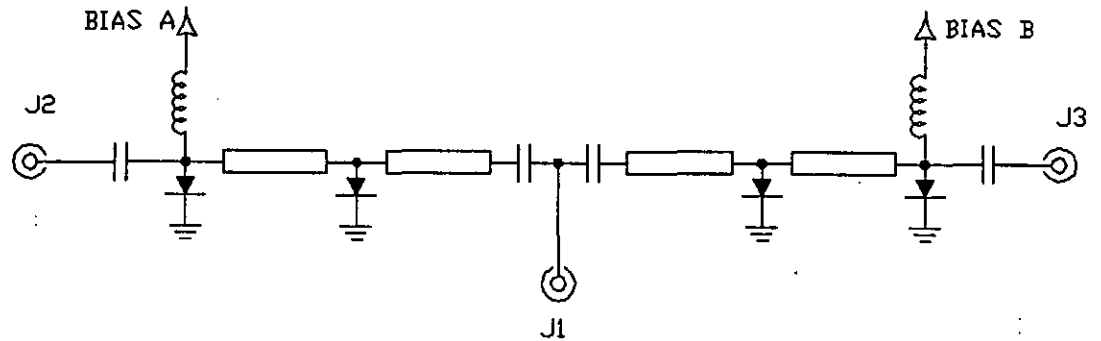
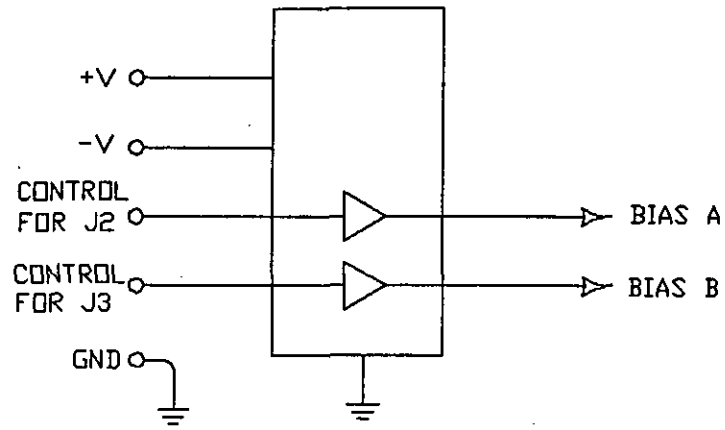
APPROVALS	DATE
<i>Wayne P...</i>	11/17/92
<i>...</i>	11/22/92

PRODUCT FEATURE		
SW-4080-2D		
HIGH SPEED, REFLECTIVE, HIGH POWER, 3-9 GHz SPDT SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2520


FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



3-16

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 862-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-4080-2D	
DRAWN <i>Wayne P. [Signature]</i>	11/17/02	HIGH SPEED, REFLECTIVE, HIGH POWER, 3-9 GHz SPDT SWITCH MODULE	
CHECKED <i>[Signature]</i>	11/22/02		
		SIZE A	SHEET 2 OF 2
		DWG. # 100-252D	

DESCRIPTION

AMC MODEL SW-0910-2D IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

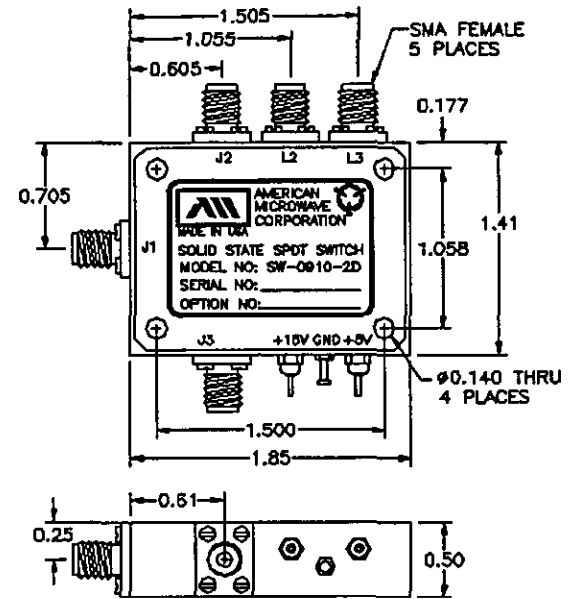
- FREQUENCY RANGE 9-10 GHz MINIMUM
- INSERTION LOSS -1.1 ± 0.3 dB @ $+25^\circ \pm 5^\circ\text{C}$
- INSERTION LOSS BALANCE -0.2 dB MAXIMUM
- INSERTION LOSS VARIATION OVER TEMPERATURE ± 0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANGE
- INSERTION LOSS VARIATION OVER FREQUENCY ± 0.1 dB MAXIMUM
- ISOLATION -40 dB MINIMUM
- VSWR (ON) $1.4:1$ MAXIMUM
- RF POWER $+20$ dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 400 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 400 ns MAXIMUM
- SETTLING TIME
 - ON (90% TO WITHIN ± 0.25 dB OF INSERTION LOSS) $0.7 \mu\text{s}$ MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) $1.2 \mu\text{s}$ MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE
 - 2 INDIVIDUAL CONTROLS
 - LOGIC "0" = INSERTION LOSS
 - LOGIC "1" = ISOLATION (SEE TRUTH TABLE)
- HARMONIC DISTORTION PRODUCTS -50 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND) -80 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY $+5\text{VDC} \pm 5\%$ @ 90 mA MAXIMUM
 $+15\text{VDC} \pm 5\%$ @ 30 mA MAXIMUM (OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SMA FEMALE
- SIZE $1.85" \times 1.41" \times 0.50"$

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10358-2E	11/22/82	<i>[Signature]</i>

MECHANICAL OUTLINE

TRUTH TABLE		
L3	L2	RF PATH ON
1	0	J1-J2
0	1	J1-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
 - 3) WEIGHT: APPROX. 3 OZ
 - 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-M-38510 CLASS B, MIL-F-18870 JANTX TYPE, ER COMPONENTS
 - 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870



ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO $+65^\circ\text{C}$ (OPERATING)
 -55°C TO $+70^\circ\text{C}$ (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I OR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSOIDAL 25 Hz TO 2000 Hz
- MTBF 1×10^9 HOURS, @ $+50^\circ\text{C}$ OPERATION

ENVIRONMENTAL STRESS SCREENING (ESS)

- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SDAK MINUTE, -55°C TO $+85^\circ\text{C}$
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO $+85^\circ\text{C}$
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B, 160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5° PER MINUTE, -55°C TO $+55^\circ\text{C}$.
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT $+55^\circ\text{C}/-55^\circ\text{C}$.



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

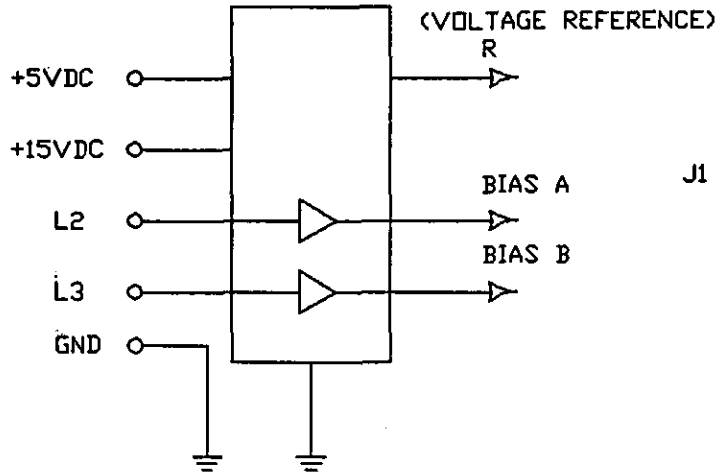
APPROVALS	DATE
DRAWN <i>[Signature]</i>	11/22/82
CHECKED <i>[Signature]</i>	11/22/82

PRODUCT FEATURE		
SW-0910-2D		
(I-BAND)		
9-10 GHz, REFLECTIVE SOLID STATE SPDT SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2910

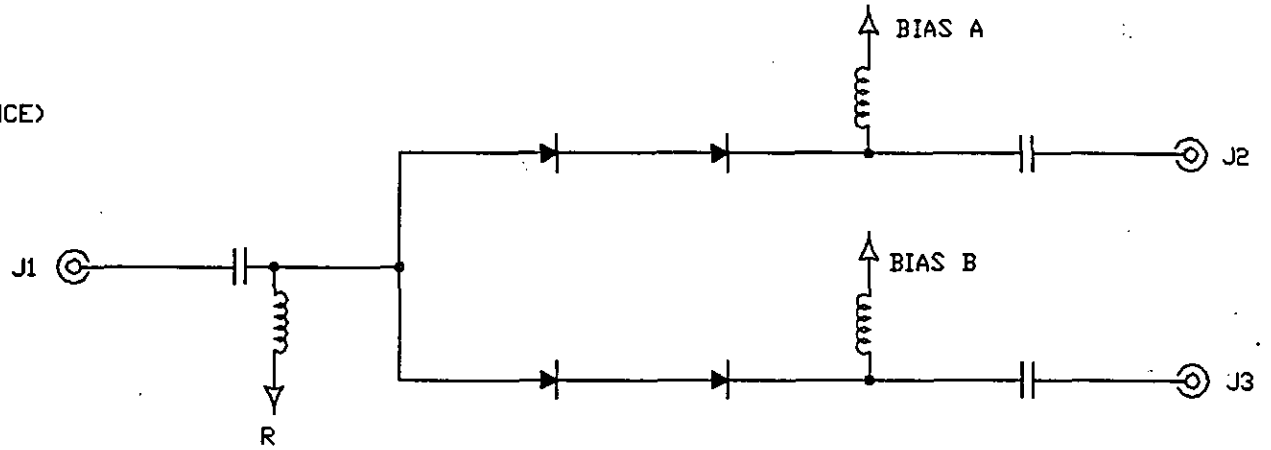
3-17

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-18

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-0910-2D (1-BAND)	
DRAWN <i>WSP</i>	11/22/82	9-10 GHz, REFLECTIVE SOLID STATE SPDT SWITCH MODULE	
CHECKED <i>M. Schmitt</i>	11/22/82	SIZE A	SHEET 2 OF 2
		DWG. # 100-2910	

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 204107S		11/22/82	<i>[Signature]</i>

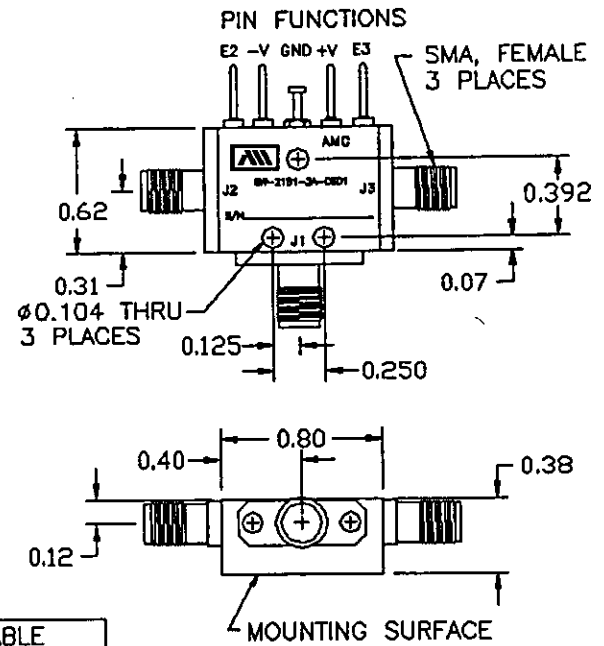
DESCRIPTION

AMC MODEL SW-2181-2A-CS01 IS A REFLECTIVE BROAD-BAND SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE HOUSING, DESIGNED TO MAINTAIN A VERY LOW SWITCHING TRANSIENT DISTORTION ON RF PORTS. APPLICATIONS ARE FOR HIGHLY SENSITIVE MULTICHANNEL RECEIVERS AND SIGNAL DETECTING DEVICES.

MECHANICAL OUTLINE

SPECIFICATIONS

- FREQUENCY RANGE 0.25-18.25 GHz MINIMUM
- INSERTION LOSS 2.5 dB MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 5 μs MINIMUM, 25 μs MAXIMUM
 - FALL (90% RF TO 10% RF) 5 μs MINIMUM, 25 μs MAXIMUM
 - ON (50% TTL TO 90% RF) 30 μs MAXIMUM
 - OFF (50% TTL TO 10% RF) 30 μs MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
(SEE LOGIC TABLE)
- RF POWER RATINGS +20 dBm CW MAXIMUM
- POWER SUPPLY +5VDC ±5% @ 65 mA MAXIMUM
-12VDC ±5% @ 65 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 0.80" x 0.62" x 0.38"



E3	E2	RF PATH
0	1	J1-J2
1	0	J1-J3

NOTES:
 1) DIMENSIONS ARE IN INCHES
 2) TOLERANCES: X.XX ±0.020
 X.XXX ±0.010
 APPROX. 1.0 OZ
 3) WEIGHT:

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

AVAILABLE OPTIONS

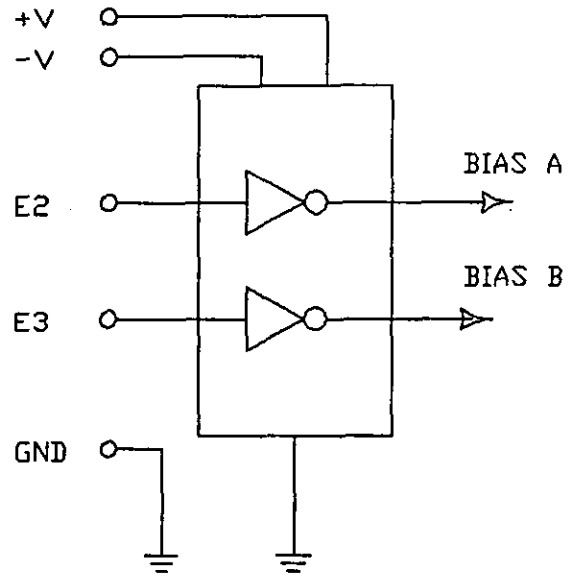
- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A08 SINGLE CONTROL (LOGIC "0", J1-J2 PATH ON)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A17 -15 VDC SUPPLY
- A18 -5 VDC SUPPLY

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS		DATE	
DRAWN <i>[Signature]</i>		11/22/82	
CHECKED <i>[Signature]</i>		11/22/82	
PRODUCT FEATURE			
SW-2181-2A-CS01			
0.25-18.25 GHz, REFLECTIVE, SPDT SWITCH MODULE			
SIZE A	SHEET 1 OF 2	DWG. # 100-2886	

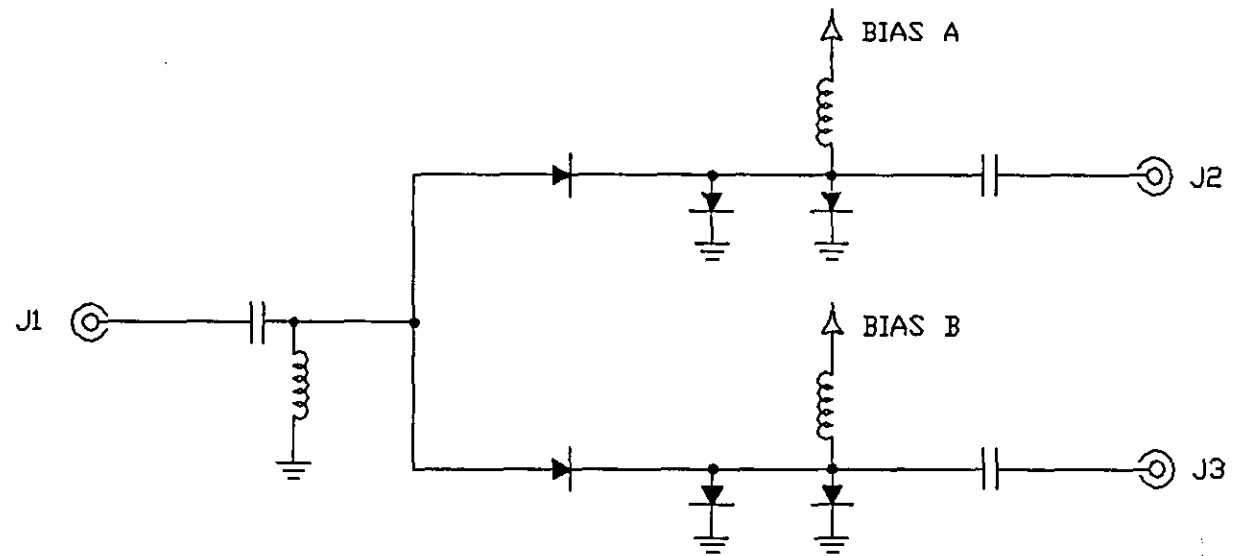
3-19

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-20

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	<i>11/22/92</i>	SW-2181-2A-CS01	
CHECKED <i>[Signature]</i>	<i>11/22/92</i>	D.25-18.25 GHz, REFLECTIVE, SPDT SWITCH MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2886	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20374E	11/20/82	<i>[Signature]</i>

DESCRIPTION

AMC MODEL SW-2181-2A-ST02 IS A REFLECTIVE BROAD BAND SPDT SWITCH MODULE WITH AN INTEGRAL BALANCED ECL DRIVER, DESIGNED FOR ULTRA FAST SWITCHING APPLICATIONS.

SPECIFICATIONS

- FREQUENCY RANGE 0.3-18 GHz MINIMUM
- INSERTION LOSS

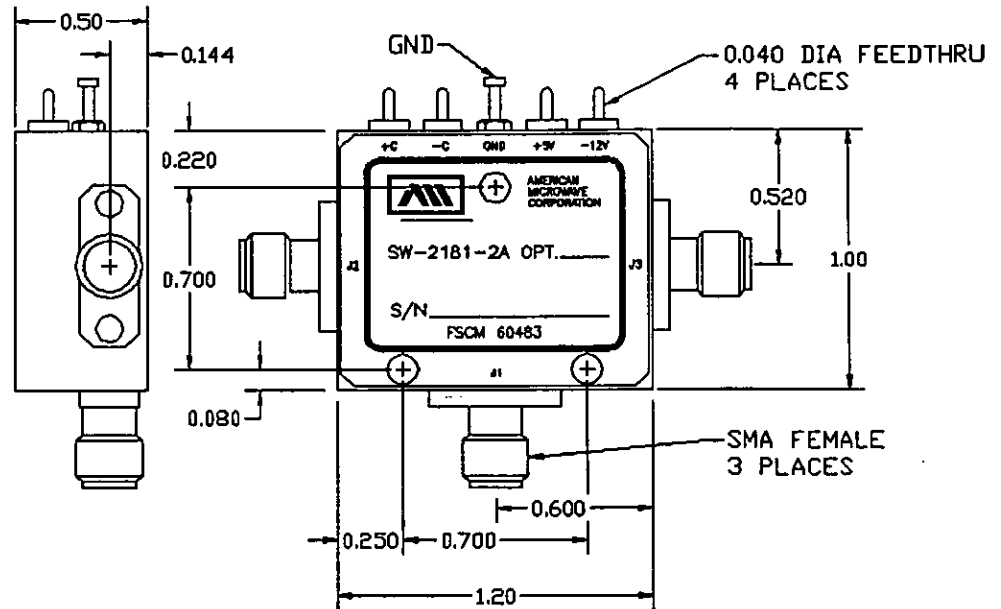
1-2 GHz	1.2 dB	MAXIMUM
2-4 GHz	1.6 dB	MAXIMUM
4-8 GHz	2.1 dB	MAXIMUM
8-12 GHz	2.6 dB	MAXIMUM
12-18 GHz	3.0 dB	MAXIMUM
- ISOLATION 50 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME

RISE (10% RF TO 90% RF)	5 nS	MAXIMUM
FALL (90% RF TO 10% RF)	5 nS	MAXIMUM
ON (50% CTL TO 90% RF)	10 nS	MAXIMUM
OFF (50% CTL TO 10% RF)	10 nS	MAXIMUM
- CONTROL BALANCED ECL PAIRS (-C,+C)
(100Ω INPUT IMPEDANCE).
- RF POWER RATINGS :

OPERATING	+27 dBm CW	MAXIMUM
SURVIVAL	+30 dBm CW OR 10 W (1 μS, PW)	
- POWER SUPPLY +5VDC ±5% @ 50 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS

RF INPUT/OUTPUT	SMA FEMALE
POWER	SOLDER PIN
CONTROL	SOLDER PIN
- SIZE 1.2" x 1.0" x 0.5"

MECHANICAL OUTLINE



C+	C-	RF PATH
1(-0.9V)	0(-1.75V)	J1-J2
0(-1.75V)	1(-0.9V)	J1-J3


- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.4 OZ.

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

AVAILABLE OPTIONS

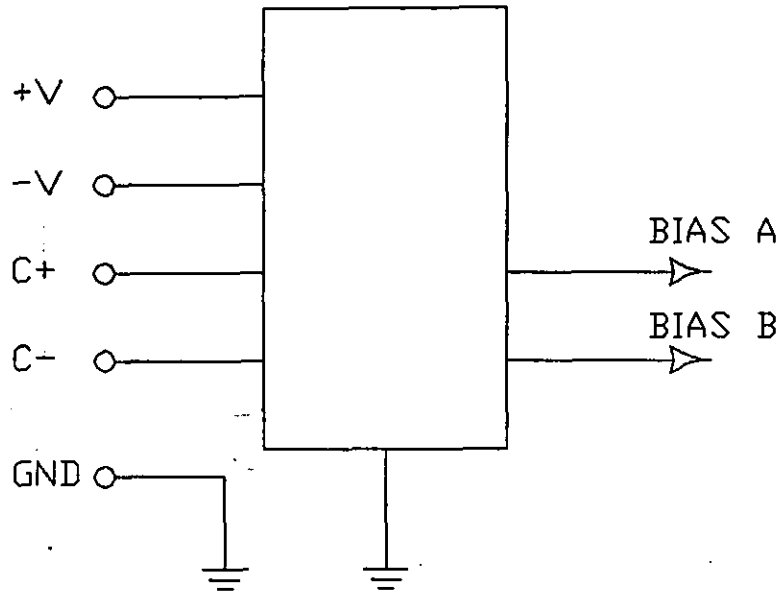
- A03 INVERTED LOGIC
- A04 EXTENDED FREQUENCY TO 100 MHz
- A07 INPUT/OUTPUT VIDEO FILTER
(0.5 dB EXCESS LOSS, 2-18 GHz)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16 65 dB ISOLATION
(0.3 dB EXCESS LOSS, 1-18 GHz)
- A17 -12 TO -15 VOLTS SUPPLY

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>R. A. FABY</i> CHECKED <i>[Signature]</i>	11/20/82 11/22/82	A	DWG. # 100-2759

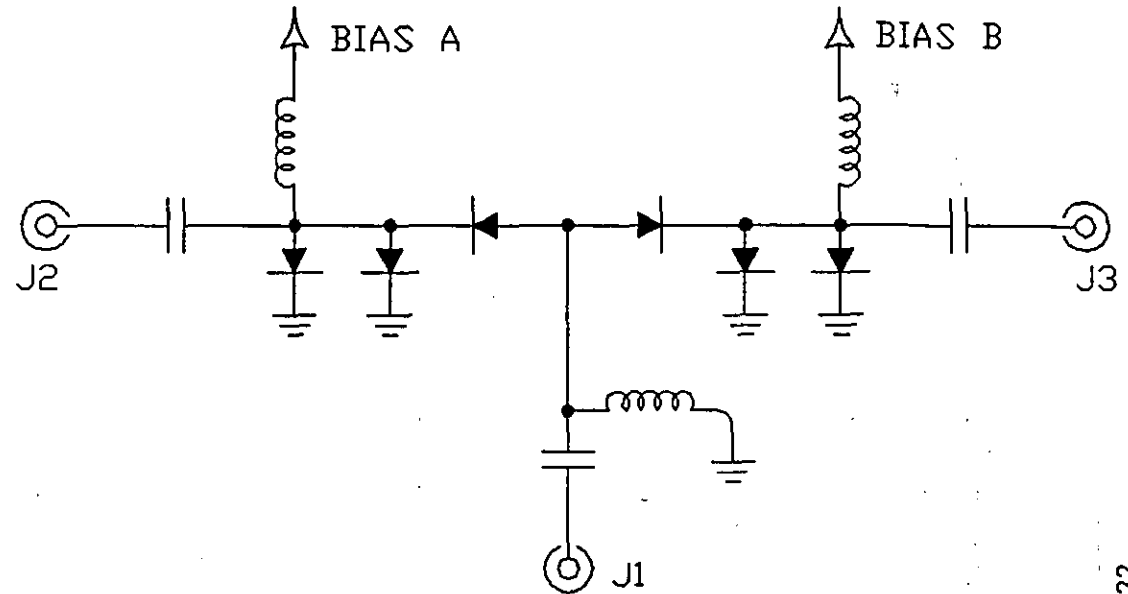
3-21

FUNCTIONAL SCHEMATIC


ECL DRIVER



RF SECTION



3-22

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2181-2A-ST02 0.3 TO 18 GHz, REFLECTIVE, SPDT SWITCH MODULE	
DRAWN <i>R. A. FARRELL</i>	11/20/82	SIZE A	SHEET 2 OF 2
CHECKED		DWG. # 100-2759	

DESCRIPTION

AMC MODEL SW-218-2A-112 IS A REFLECTIVE BROAD BAND SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO OPERATE AT +33 dBm CW SIGNAL.

SPECIFICATIONS

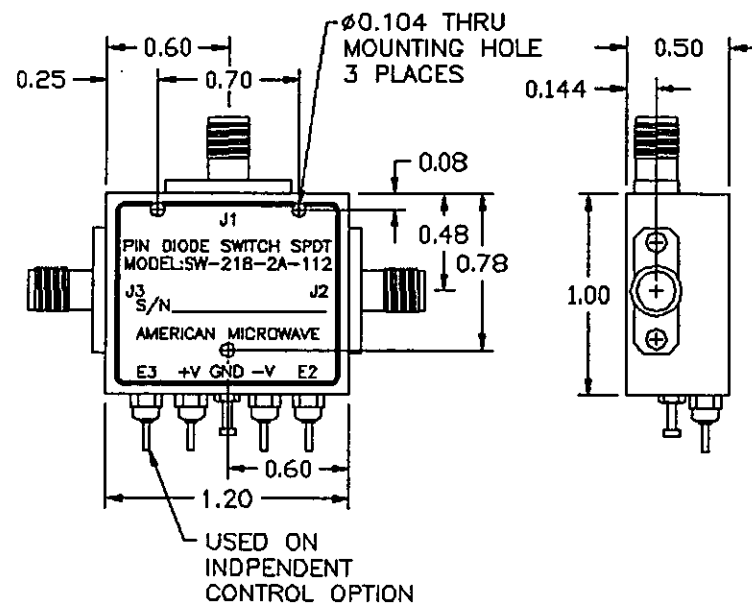
- FREQUENCY RANGE 0.3-18 GHz MINIMUM
- INSERTION LOSS 0.3-4.0 GHz, 1.2 dB MAXIMUM
4.0-8.0 GHz, 1.3 dB MAXIMUM
8.0-12.0 GHz, 2.0 dB MAXIMUM
12.0-18.0 GHz, 2.5 dB MAXIMUM
- ISOLATION 0.3-4.0 GHz, 75 dB MINIMUM
4.0-8.0 GHz, 70 dB MINIMUM
8.0-12.0 GHz, 65 dB MINIMUM
12.0-18.0 GHz, 55 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 50 ns MAXIMUM
FALL (90% RF TO 10% RF) 50 ns MAXIMUM
ON (50% TTL TO 90% RF) 100 ns MAXIMUM
OFF (50% TTL TO 10% RF) 100 ns MAXIMUM
- RF POWER RATINGS +33 dBm CW, MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
1 DEPENDANT CONTROL (TOGGLE)
LOGIC "0" J1-J2 PATH ON
LOGIC "1" J1-J3 PATH ON
- POWER SUPPLY +5VDC ±5% @ 65 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN (EMI)
CONTROL SOLDER PIN
- SIZE 1.20" x 1.0" x 0.50"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0", J1-J3 PATH ON)
- A04 2 INDEPENDENT CONTROLS (LOGIC "0" INSERTION LOSS)
- A05 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A17 ±9 VDC TO ±18 VDC SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207186E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.4 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE

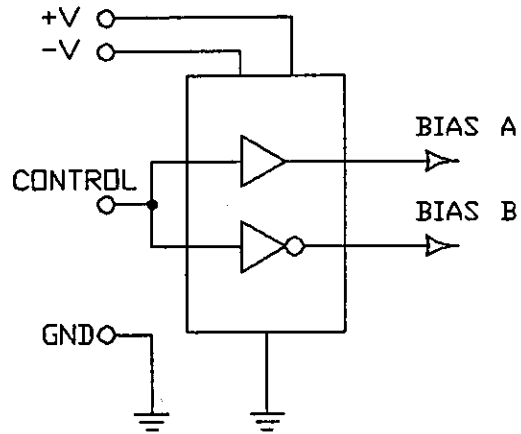
SW-218-2A-112

0.3-18 GHz, REFLECTIVE, HIGH POWER, SPDT SWITCH MODULE

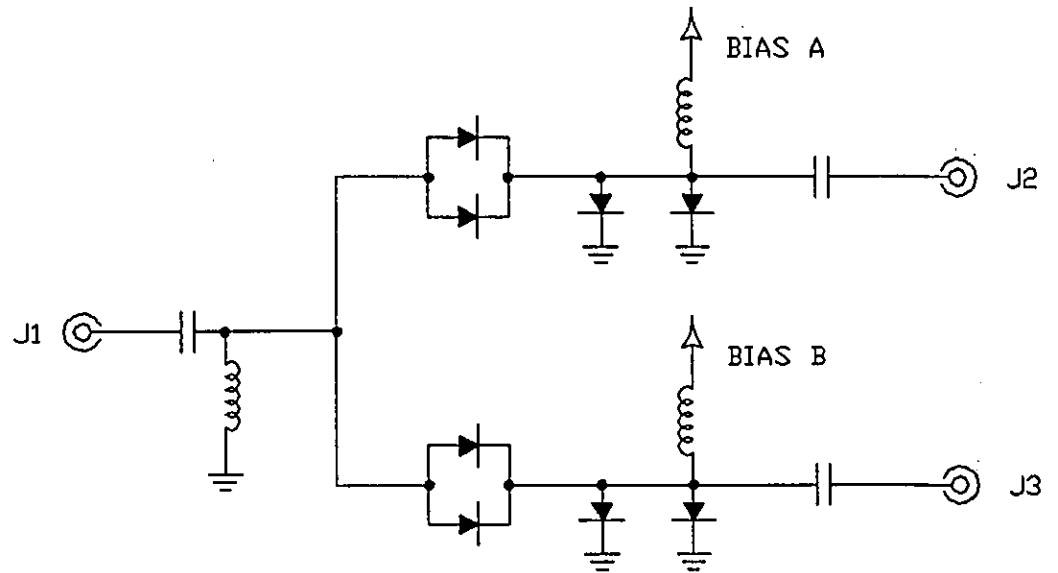
SIZE A SHEET 1 OF 2 DWG. # 100-2878

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



3-24

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>W. J. J.</i>	11/22/92	SW-218-2A-112	
CHECKED <i>[Signature]</i>	11/22/92	0.3-18 GHz, REFLECTIVE, HIGH POWER, SPDT SWITCH MODULE	
SIZE A		SHEET 2 OF 2	DWG. # 100-2878

DESCRIPTION

AMC MODEL SW-218-2 (2L) IS A REFLECTIVE BROAD-BAND SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

SPECIFICATIONS

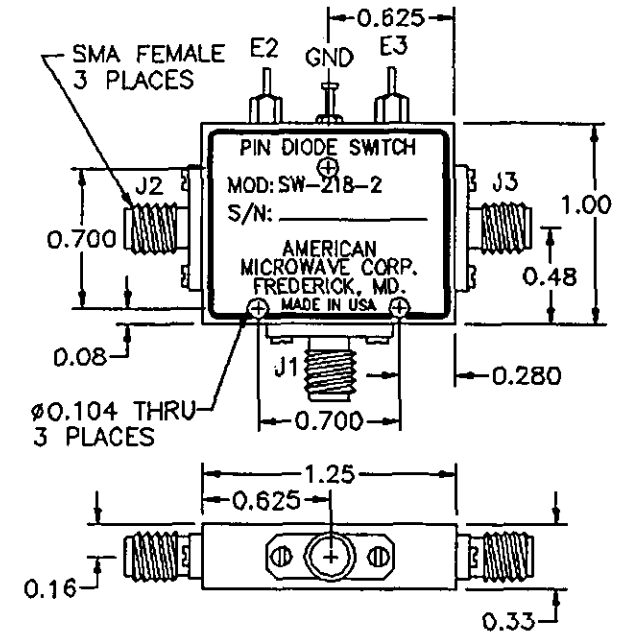
- FREQUENCY RANGE 0.3-18 GHz MINIMUM
- INSERTION LOSS
 - (-2) 2.5 dB MAXIMUM
 - (-2L) 2.0 dB MAXIMUM
- ISOLATION 55 dB MINIMUM
- VSWR (ON) 2.3:1 MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 100 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 100 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 200 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 200 ns MAXIMUM
- CONTROLS CURRENT CONTROLLED
2 INDEPENDENT CONTROLS
+30 mA = ISOLATION
-30 mA = INSERTION LOSS
(SEE TRUTH TABLE)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - CONTROL SOLDER PIN
- SIZE 1.25" x 1.00" x 0.325"

AVAILABLE OPTIONS

- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 EXTENDED FREQUENCY RANGE TO 100 MHz
- A13 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A14 J1 SMA FEMALE, J2 AND J3 SMA MALE

ZONE		REV.	DESCRIPTION	DATE	APPROVED
		A	ORIGINAL RELEASE	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



TRUTH TABLE		
E3	E2	RF PATH
+30mA	-30mA	J1-J2
-30mA	+30mA	J1-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

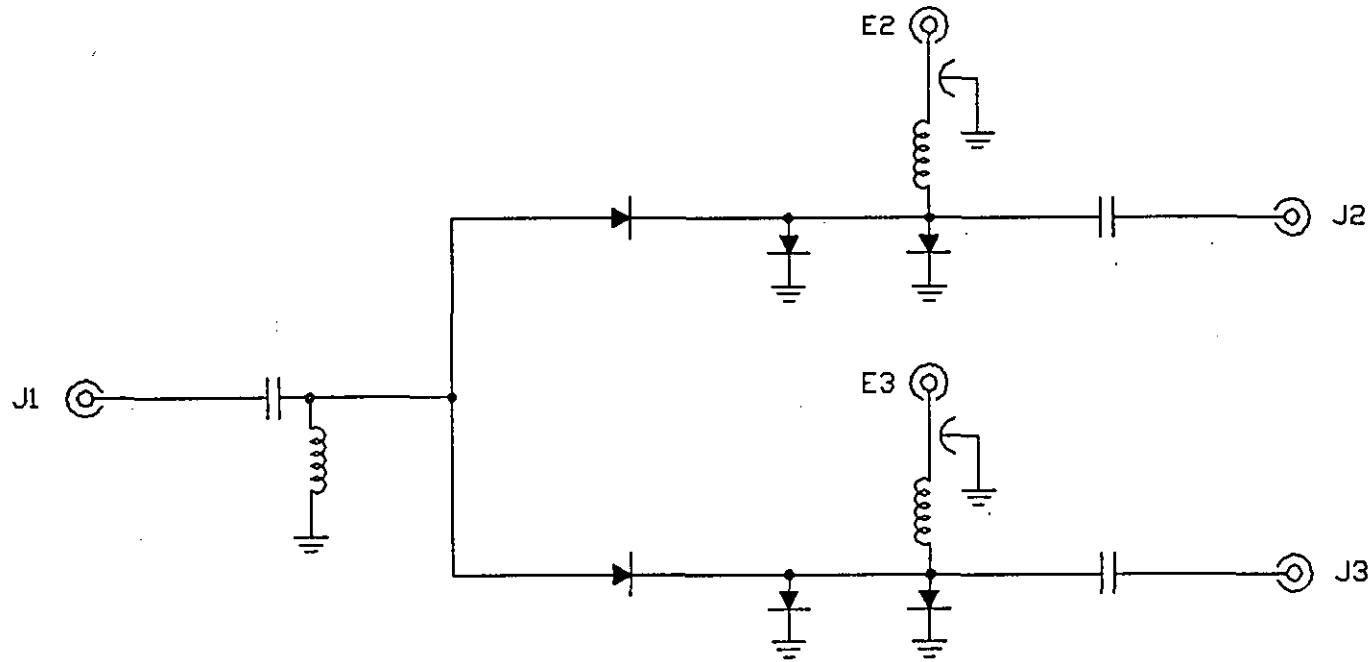
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

PRODUCT FEATURE
SW-218-2 (2L)
0.3-18 GHz, REFLECTIVE SPDT SWITCH MODULE

SIZE A SHEET 1 OF 2 DWG. # 100-2901

FUNCTIONAL SCHEMATIC



3-26



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WJP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE
SW-218-2A (2L)
 0.3-18 GHz, REFLECTIVE SPDT SWITCH MODULE

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE, JOB # 211299E	6/10/99	<i>[Signature]</i>

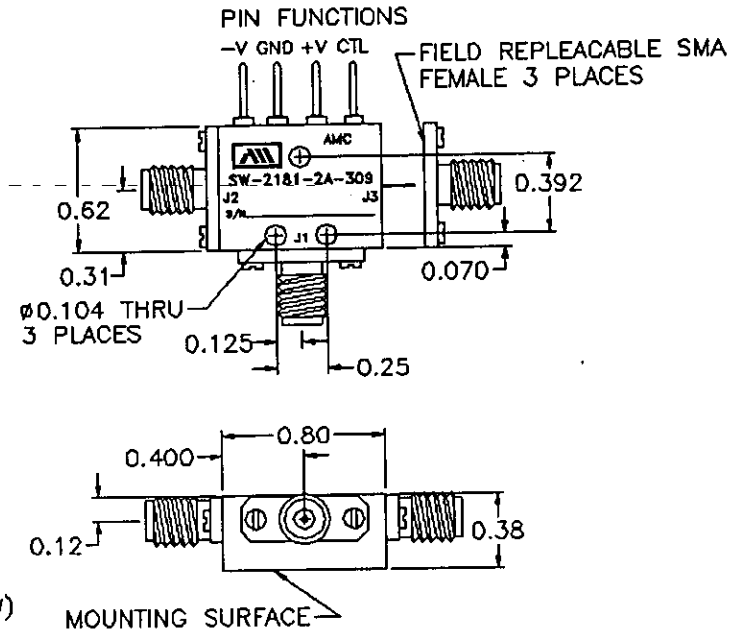
DESCRIPTION

AMC MODEL SW-2181-2A-309 IS A REFLECTIVE BROAD BAND SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE HOUSING, CAPABLE OF HANDLING 2 WATTS OF CW POWER.

SPECIFICATIONS

- FREQUENCY RANGE 0.3-18 GHz MINIMUM
- INSERTION LOSS 2-4 GHz 1.2 dB MAXIMUM
4-8 GHz 1.6 dB MAXIMUM
8-12 GHz 2:1 dB MAXIMUM
12-18 GHz 2.5 dB MAXIMUM
- ISOLATION 55 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 50 nS MAXIMUM
FALL (90% RF TO 10% RF) 50 nS MAXIMUM
ON (50% TTL TO 90% RF) 200 nS MAXIMUM
OFF (50% TTL TO 10% RF) 200 nS MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
1 DEPENDANT CONTROL (TOGGLE)
LOGIC "0" J1-J2 PATH ON
LOGIC "1" J1-J3 PATH ON
- RF POWER RATINGS 2 WATTS CW, MAXIMUM, 75 WATT PEAK (1μs PW)
- POWER SUPPLY +15VDC ±5% @ 70 mA MAXIMUM
-15VDC ±5% @ 65 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 0.80" x 0.62" x 0.38"

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 INPUT/OUTPUT VIDEO FILTER
(0.5 dB EXCESS LOSS 2-18 GHz)
- A08 TWO INDIVIDUAL CONTROLS
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16 -5 VDC SUPPLY
- A17 +5 VDC SUPPLY
- A18 ±12 VDC SUPPLY



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE

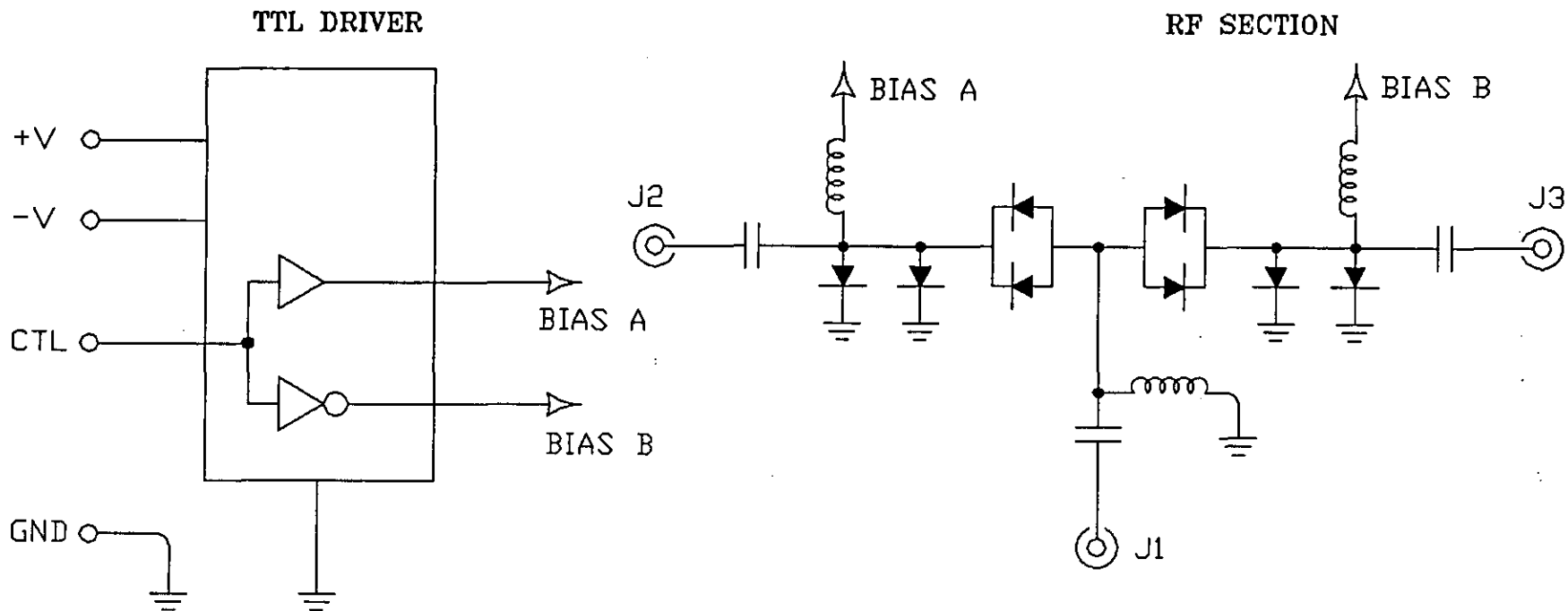
SW-2181-2A-309

0.3-18 GHz, REFLECTIVE, 2 WATT SPDT SWITCH


APPROVALS	DATE
DRAWN <i>W.S.P.</i>	6/10/99
CHECKED <i>[Signature]</i>	6/10/99

SIZE A SHEET 1 OF 2 DWG. # 100-2954

FUNCTIONAL SCHEMATIC



3-28

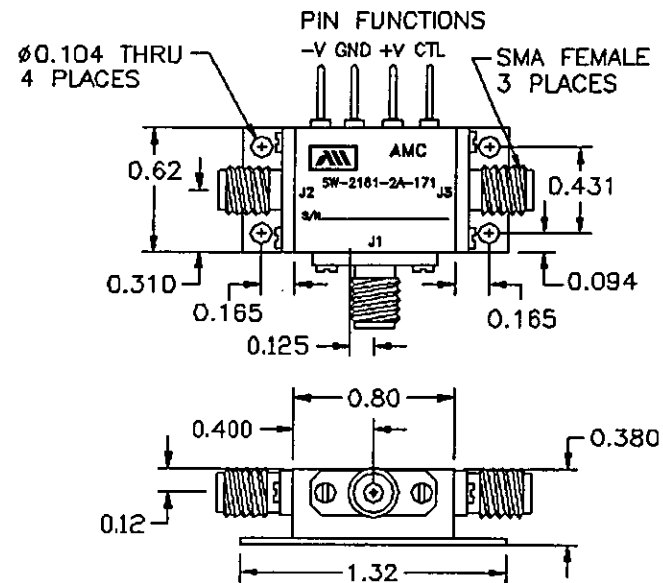
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>W.S.P.</i>	6/10/93	SW-2181-2A-309	
CHECKED <i>M.W.</i>	6/10/93	2-18 GHz, REFLECTIVE, 2 WATT SPDT SWITCH	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2954	

ZONE		REV.	DESCRIPTION	DATE	APPROVED
A			ORIGINAL RELEASE, JOB # 212326-1	7/8/93	<i>[Signature]</i>

DESCRIPTION

AMC MODEL SW-2181-2A-171 IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE POSTAGE STAMP SIZE HOUSING, DESIGNED FOR HIGH ISOLATION AND FAST SWITCHING APPLICATIONS.

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.0 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE-55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITYMIL-STD-202F, METHOD 103B COND. B
- SHOCKMIL-STD-202F, METHOD 213B COND. B
- VIBRATIONMIL-STD-202F, METHOD 204D COND. B
- ALTITUDEMIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLEMIL-STD-202F, METHOD 107D COND. A

SPECIFICATIONS

- FREQUENCY..... 1-18 GHz MINIMUM
- INSERTION LOSS..... 3.5 dB MAXIMUM
- ISOLATION..... 70 dB MINIMUM
- VSWR (ON)..... 1.4:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF)..... 5 ns MAXIMUM
 - FALL (90% RF TO 10% RF)..... 5 ns MAXIMUM
 - ON (50% TTL TO 90% RF)..... 25 ns MAXIMUM
 - OFF (50% TTL TO 10% RF)..... 25 ns MAXIMUM
- CONTROL..... TTL COMPATIBLE, UNITY LOAD
SINGLE CONTROL (TOGGLE)
LOGIC "0" = J1-J3 PATH ON
LOGIC "1" = J1-J2 PATH ON
- RF POWER RATINGS..... +27 dBm CW MAXIMUM
- POWER SUPPLY..... +5VDC ±5% @ 80 mA MAXIMUM
-6VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT..... SMA (FEMALE)
 - POWER..... SOLDER PIN
 - CONTROL..... SOLDER PIN
- SIZE..... 0.80" x 0.62" x 0.38"

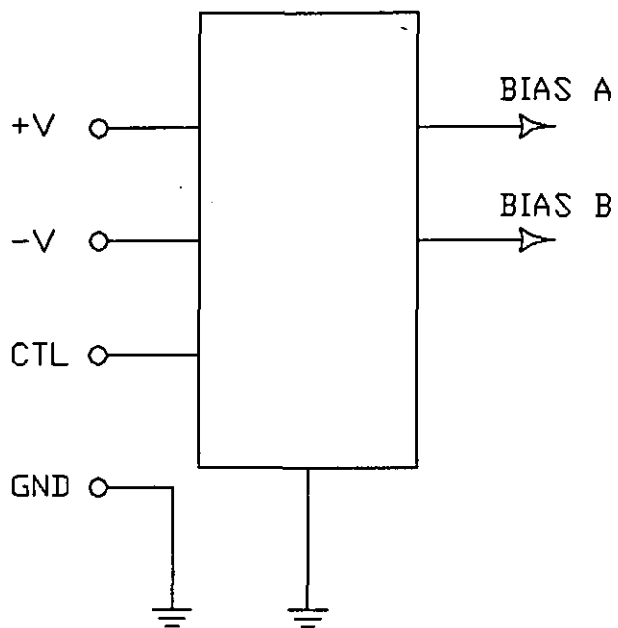
AVAILABLE OPTIONS

- A01..... 50Ω CONTROL IMPEDANCE
- A02..... 100Ω CONTROL IMPEDANCE
- A03..... INVERSE CONTROL LOGIC
- A08..... TWO INDIVIDUAL CONTROLS
- A09..... INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A14..... J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15..... J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16..... -12 VDC
- A17..... -15 VDC
- A18..... -5 VDC

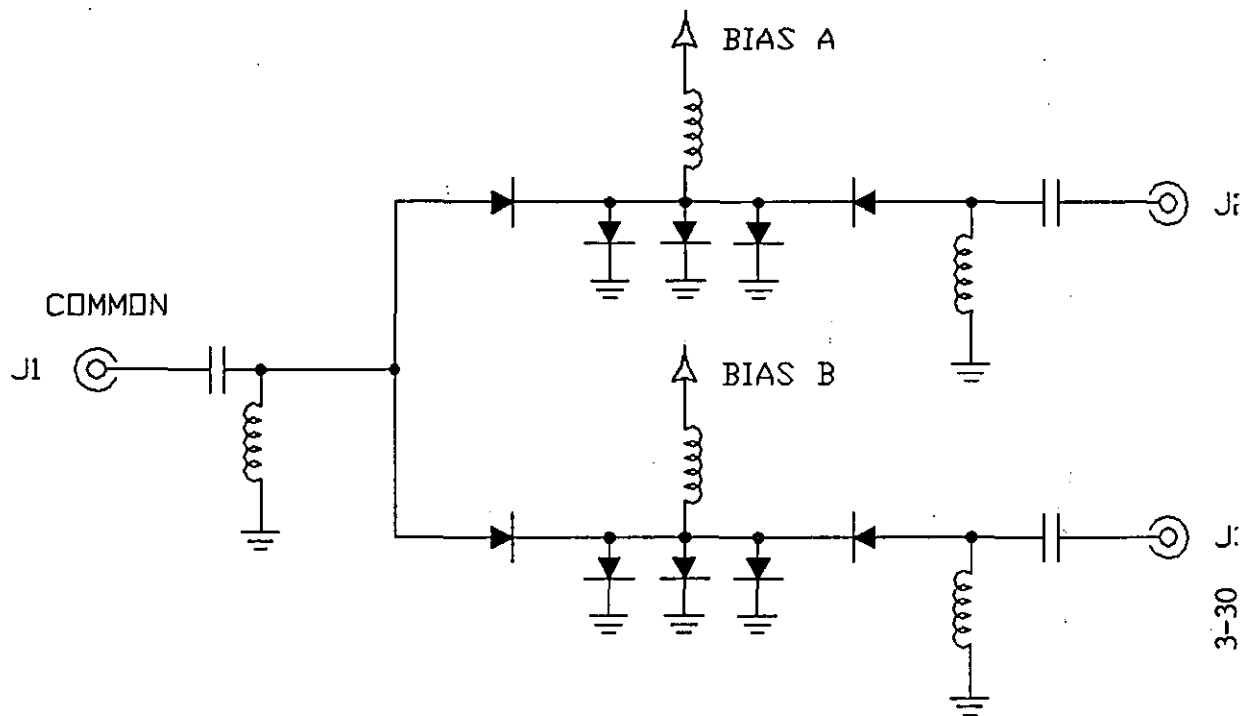
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	7/8/93	SW-2181-2A-171	
CHECKED <i>[Signature]</i>	7/8/93	1-18 GHz, REFLECTIVE SPDT SWITCH MODULE	
SIZE A	SHEET 1 OF 2	DWG. # 100-3197	

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



3-30

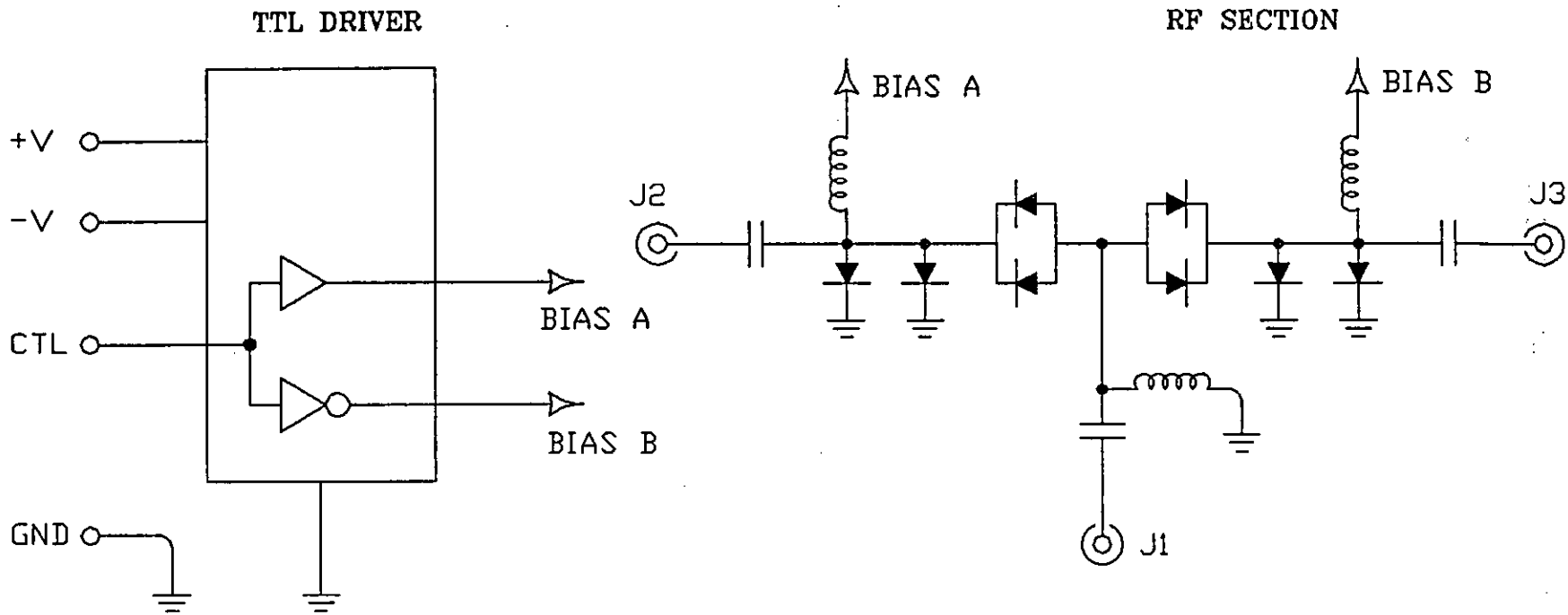


AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938


APPROVALS	DATE
<small>DRAWN</small> <i>WSP</i>	7/8/93
<small>CHECKED</small> <i>[Signature]</i>	7/8/93

PRODUCT FEATURE	
SW-2181-2A-171	
1-18 GHz, REFLECTIVE SPDT SWITCH MODULE	
SIZE A	DWG. # 100-3197

FUNCTIONAL SCHEMATIC



3-32

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>W. J. P.</i>	11/17/92	SW-2181-2A-113	
CHECKED <i>[Signature]</i>	11/22/92	2-18 GHz, REFLECTIVE, 2 WATT SPOT SWITCH	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2757	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, AMC DWG# 200-1613	11/22/92	<i>My</i>

DESCRIPTION

AMC MODEL SW-2181-2 IS A REFLECTIVE BROAD-BAND SPDT SWITCH MODULE WITHOUT DRIVER CIRCUITRY, PACKAGED IN A MINIATURE CONNECTORIZED HOUSING.

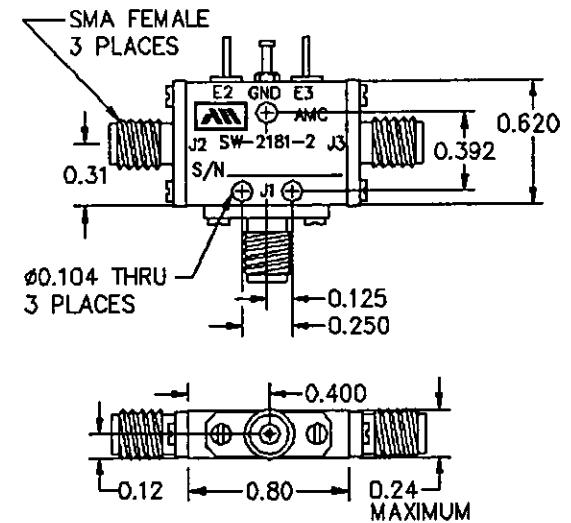
SPECIFICATIONS

- FREQUENCY RANGE 0.3-20 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- ISOLATION 0.3-18 GHz, 60 dB MINIMUM
18-20 GHz, 55 dB MINIMUM
- VSWR (ON) 2.0:1 MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 10 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 10 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 20 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- CONTROLS CURRENT CONTROLLED
2 INDEPENDENT CONTROLS
+20 mA = ISOLATION
-20 mA = INSERTION LOSS
(SEE TRUTH TABLE)
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - CONTROL SOLDER PIN
- SIZE 0.80" x 0.62" x 0.24"

AVAILABLE OPTIONS

- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 EXTENDED FREQUENCY RANGE TO 100 MHz
- A06 2 WATTS CW MAXIMUM (2-20 GHz)
- A13 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A14 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A15 REMOVABLE CONNECTORS (DROP IN APPLICATIONS)

MECHANICAL OUTLINE



TRUTH TABLE		
E3	E2	RF PATH
+20mA	-20mA	J1-J2
-20mA	+20mA	J1-J3

- NOTES:
 1) DIMENSIONS ARE IN INCHES
 2) TOLERANCES: X.XX ±0.020
 X.XXX ±0.010
 3) WEIGHT: APPROX. 1.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

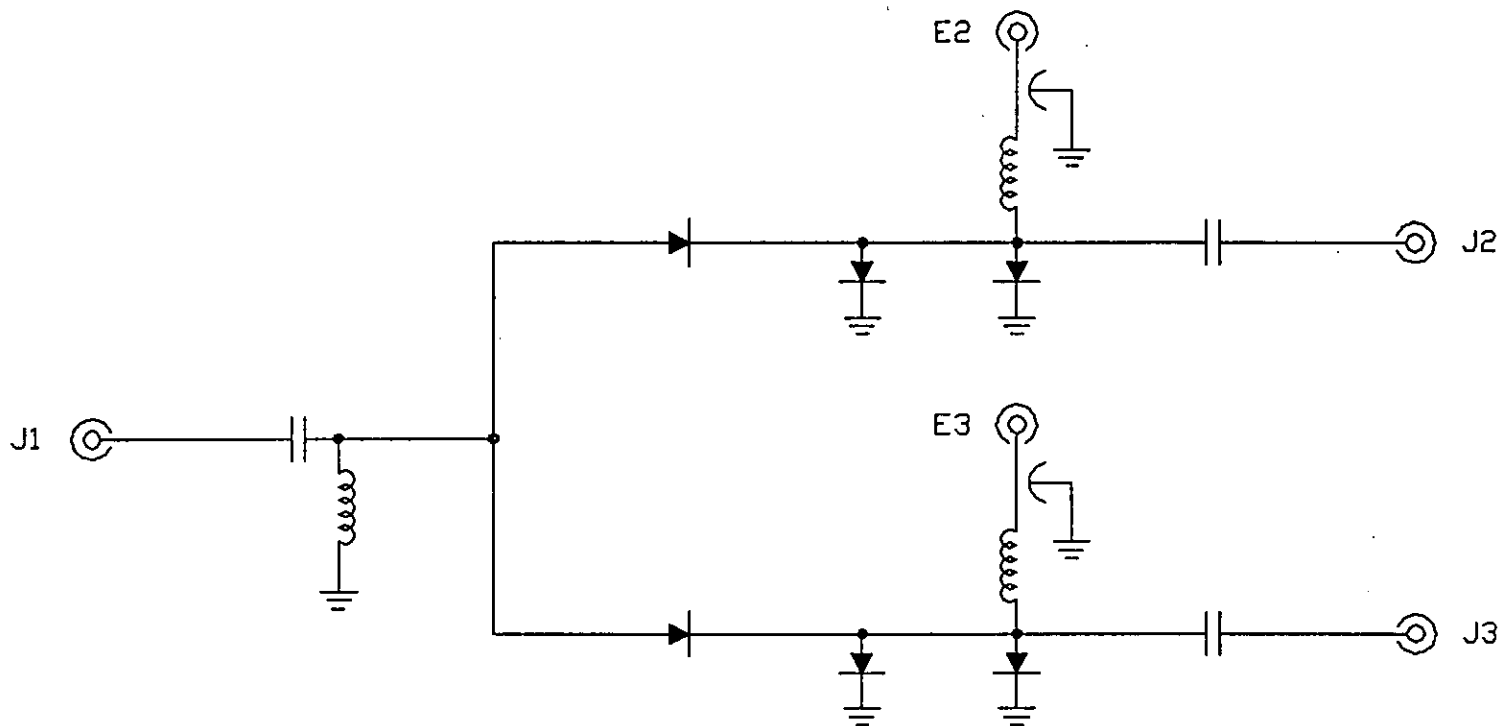
PRODUCT FEATURE

SW-2181-2


0.3-20 GHz, REFLECTIVE SPDT SWITCH MODULE

SIZE A SHEET 1 OF 2 DWG. # 100-2903

FUNCTIONAL SCHEMATIC



3-34

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-2181-2	
CHECKED <i>[Signature]</i>	11/22/92	0.3-20 GHz, REFLECTIVE SPDT SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2903	

DESCRIPTION

AMC MODEL SW-2181-2A-305 IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

- FREQUENCY RANGE 0.5-20 GHz MINIMUM
- INSERTION LOSS 2.5 dB MAXIMUM
- ISOLATION 0.5-2 GHz, 85 dB MINIMUM
2-4 GHz, 80 dB MINIMUM
4-8 GHz, 75 dB MINIMUM
8-12 GHz, 65 dB MINIMUM
12-18 GHz, 55 dB MINIMUM
18-20 GHz, 50 dB MINIMUM
- VSWR (ON) 0.5-18 GHz, 1.9:1 MAXIMUM
18-20 GHz, 2.0:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 50 ns MAXIMUM
FALL (90% RF TO 10% RF) 50 ns MAXIMUM
ON (50% TTL TO 90% RF) 150 ns MAXIMUM
OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
2 INDEPENDENT CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- RF POWER RATINGS 1W CW MAXIMUM
- POWER SUPPLY +5VDC $\pm 5\%$ @ 75 mA MAXIMUM
-15VDC $\pm 5\%$ @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.0" x 1.5" x 0.3"

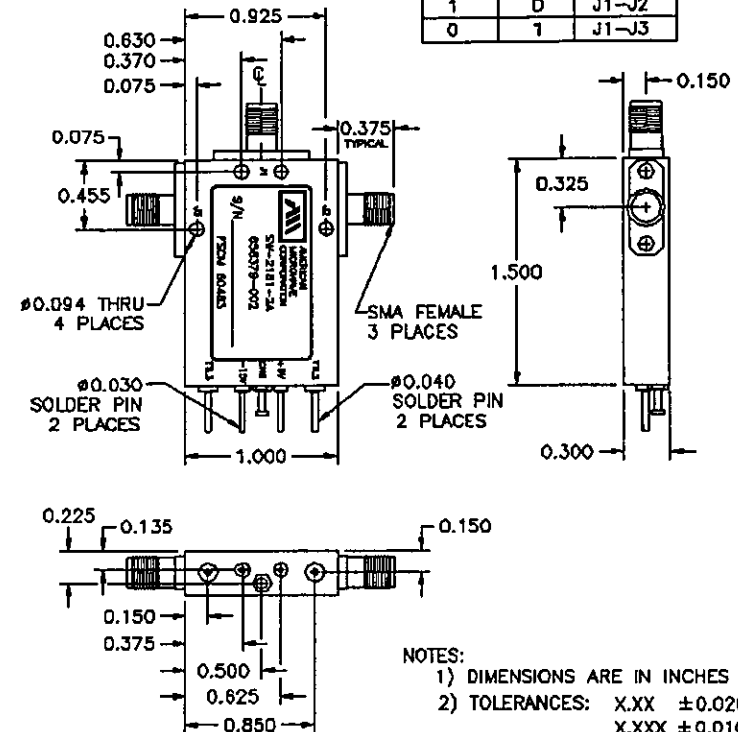
AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 SINGLE CONTROL (LOGIC "0" = J1-J2 PATH ON)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16 +15VDC SUPPLY

ZONE		REV.	DESCRIPTION	DATE	APPROVED
		A	ORIGINAL RELEASE, JOB # 20118-1	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE

TRUTH TABLE		
TTL 3	TTL 2	RF PATH
1	0	J1-J2
0	1	J1-J3



- NOTES:
 1) DIMENSIONS ARE IN INCHES
 2) TOLERANCES: X.XX ± 0.020
 X.XXX ± 0.010
 3) WEIGHT: APPROX. 1.2 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



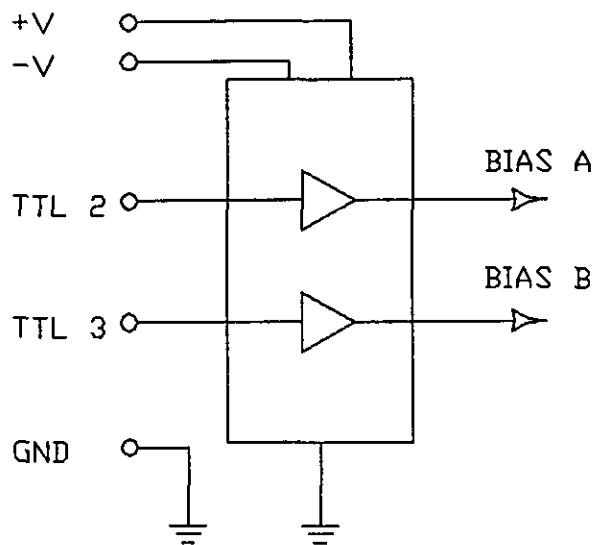
AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

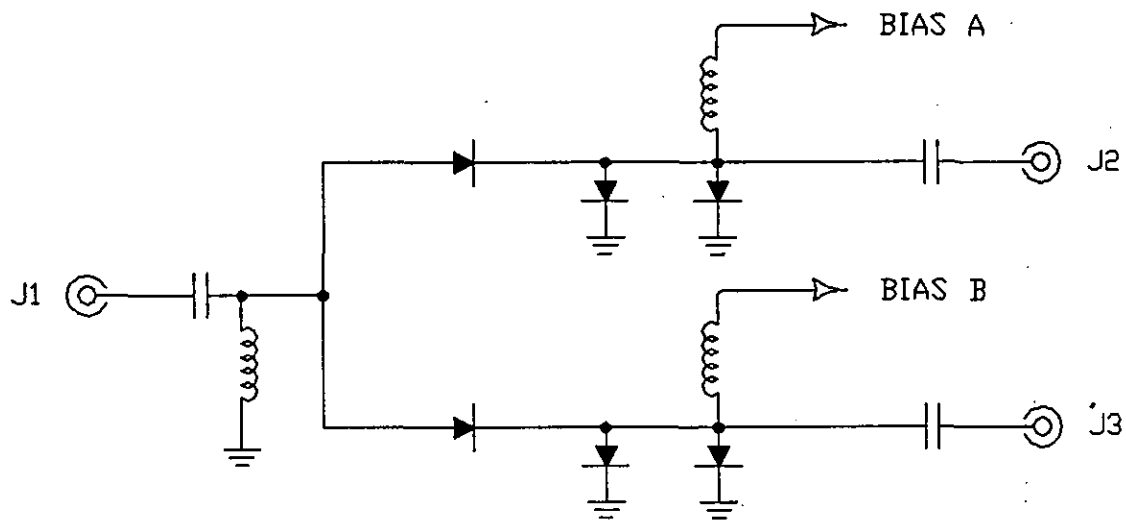
PRODUCT FEATURE		
SW-2181-2A-305		
0.5-20 GHz, SPDT REFLECTIVE SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2864

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



3-36


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2181-2A-305 0.5-20 GHz, SPOT REFLECTIVE SWITCH MODULE	
DRAWN <i>W.P.P.</i>	1/22/92	SIZE A SHEET 2 OF 2 DWG. # 100-2864	
CHECKED <i>[Signature]</i>	11/22/92		



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
4	SP2T, NON-REFLECTIVE/ABSORPTIVE.....	4-1
●	DC-2.0 GHz GaAs MMIC, SWITCH MODULE, AMC MODEL NO: SWM-2000-2DT.....	4-3
●	DC-6 GHz GaAs MMIC, LOW INSERTION LOSS, AND FAST SWITCH/MODULE, AMC MODEL NO: SWM-6000-2DT.....	4-5
●	1-2 GHz 50 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2AT-10.....	4-7
●	1-2 GHz 500 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2AT-B1072 & B2072.....	4-9
●	2-4 GHz 500 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2AT-A1072 & A2072.....	4-11
●	0.01-18 GHz 35 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2AT-011.....	4-13
●	2-18 GHz 100 nsec SWITCH MODULE, AMC MODEL NO: SW-2182-2AT.....	4-15

DESCRIPTION

AMC MODEL SWM-2000-2DT IS AN ABSORPTIVE GaAs SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH SPEED, LOW POWER CONSUMPTION, AND BROAD-BAND SWITCHING APPLICATIONS.

SPECIFICATIONS

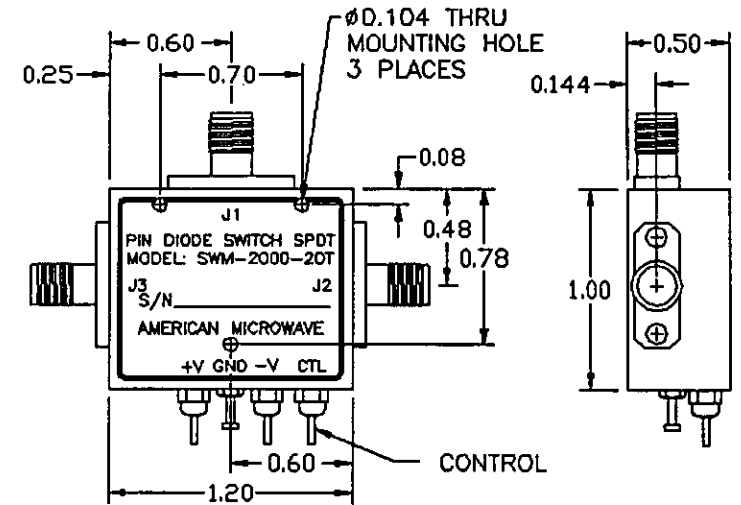
- FREQUENCY RANGE DC-2.0 GHz MINIMUM
- INSERTION LOSS DC-1.0 GHz, 1.0 dB MAXIMUM
1.0-2.0 GHz, 1.5 dB MAXIMUM
- ISOLATION DC-1.0 GHz, 50 dB MINIMUM
1.0-2.0 GHz, 45 dB MINIMUM
- VSWR (ON/OFF) DC-1.0 GHz, 1.5:1 MAXIMUM
1.0-2.0 GHz, 1.7:1 MAXIMUM
- RF POWER RATINGS 1 MHz @ +12 dBm TYPICAL
(1 dB COMPRESSION) 0.5-2.0 GHz @ +20 dBm TYPICAL
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 15 ns MAXIMUM
OFF (50% TTL TO 10% RF) 15 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
1 INDIVIDUAL CONTROL (TOGGLE)
LOGIC "0" = J1-J3 PATH ON
LOGIC "1" = J1-J2 PATH ON
- POWER SUPPLY +5VDC ±5% @ 5 mA MAXIMUM
-5VDC ±5% @ 10 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN (EMI)
CONTROL SOLDER PIN
- SIZE 1.20" x 1.00" x 0.50"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A17 ±9 VDC TO ±18 VDC SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 20489	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.4 OZ

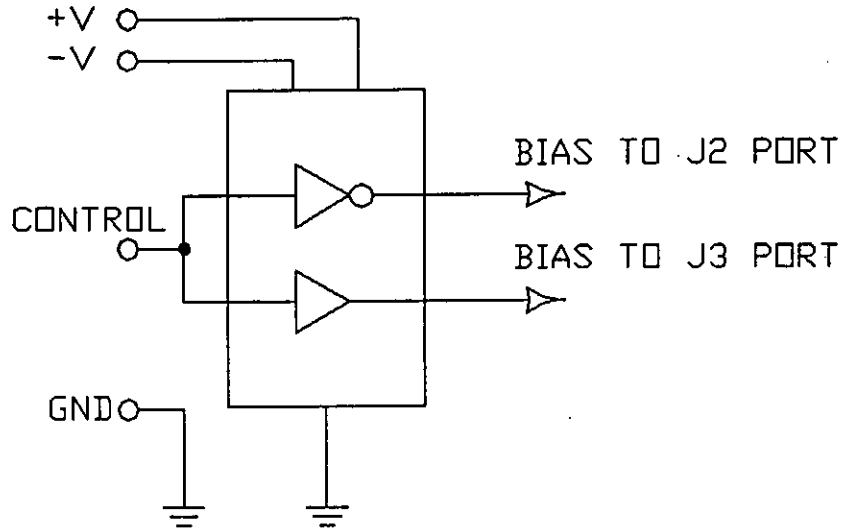
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

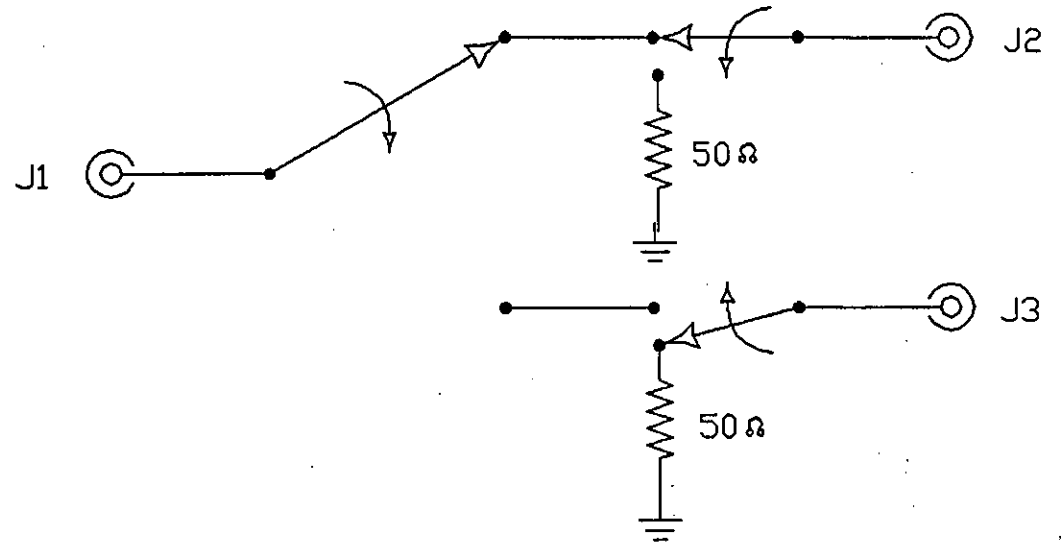
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-2000-2DT (SP2TG-0110)	
DRAWN <i>[Signature]</i>	11/22/92	DC-20 GHz, NON-REFLECTIVE, GaAs SPDT SWITCH MODULE	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 1 OF 2
		DWG. # 100-2879	

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



4-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-2000-2DT (SP2TG-0110)	
DRAWN <i>WJP</i>	11/22/92	DC-20 GHz, NON-REFLECTIVE, GaAs SPDT SWITCH MODULE	
CHECKED <i>WJP</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2879	

DESCRIPTION

AMC MODEL SWM-6000-2DT IS AN ABSORPTIVE GaAs MMIC SPDT SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

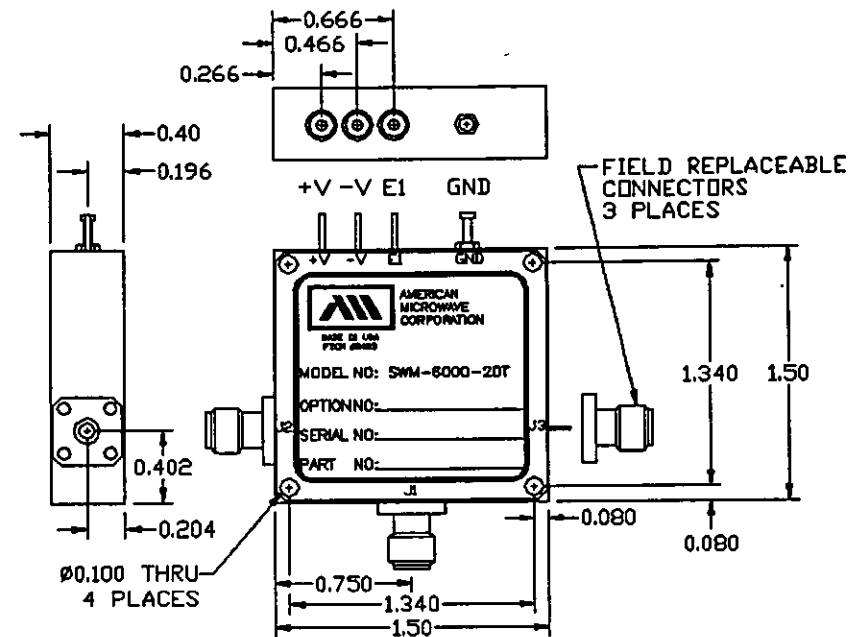
- FREQUENCY RANGEDC-6.0 GHz
- INSERTION LOSSDC-0.5 GHz, 1.0 dB MAXIMUM
0.5-1.0 GHz, 1.1 dB MAXIMUM
1.0-2.0 GHz, 1.4 dB MAXIMUM
2.0-4.0 GHz, 1.7 dB MAXIMUM
4.0-6.0 GHz, 2.2 dB MAXIMUM
- ISOLATIONDC-1.0 GHz, 50 dB MINIMUM
1.0-2.0 GHz, 45 dB MINIMUM
2.0-4.0 GHz, 30 dB MINIMUM
4.0-6.0 GHz, 20 dB MINIMUM
- VSWR (ON/OFF)DC-1.0 GHz, 1.5:1 MAXIMUM
1.0-2.0 GHz, 1.7:1 MAXIMUM
2.0-6.0 GHz, 2.0:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF)10 ns MAXIMUM
FALL (90% RF TO 10% RF)10 ns MAXIMUM
ON (50% TTL TO 90% RF)20 ns MAXIMUM
OFF (50% TTL TO 10% RF)20 ns MAXIMUM
- VIDEO TRANSIENTS30 mV (P-P) MAXIMUM, 300 MHz BANDWIDTH.
- RF POWER RATINGS (1DB COMP.)
0.5-6 GHz+20 dBm TYPICAL
0.001 GHz+12 dBm TYPICAL
- CONTROLTTL COMPATIBLE, UNITY LOAD
SINGLE CONTROL (TOGGLE)
(SEE LOGIC TABLE)
- POWER SUPPLY+7VDC TO +18VDC $\pm 5\%$ @ 5 mA MAXIMUM
-7VDC TO -18VDC $\pm 5\%$ @ 5 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUTFIELD REPLACEABLE SMA (FEMALE)
POWERSOLDER PIN
CONTROLSOLDER PIN
NOTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.
(CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
- SIZE1.50" x 1.50" x 0.40"

AVAILABLE OPTIONS

- A0150Ω CONTROL IMPEDANCE
- A02100Ω CONTROL IMPEDANCE
- A03HERMETIC SEALING (MIL-STD-883)
- A04±5VDC POWER SUPPLY
- A05INVERSE CONTROL LOGIC (LOGIC "0"= J1-J2 PATH ON)
- A06SINGLE ENDED ECL CONTROL LOGIC
- A07BALANCED ECL CONTROL LOGIC
- A08DIFFERENTIAL TTL CONTROL LOGIC (RS-422 LOGIC FAMILY)
- A09HIGH ISOLATION (CONSULT FACTORY)
- A10SMC MALE CONTROL CONNECTOR
- A11SMA FEMALE CONTROL CONNECTOR
- A12OTHER POWER SUPPLIES (CONSULT FACTORY)

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 211278E (NEW DEVELOPMENT)		11/22/82	<i>JW</i>

MECHANICAL OUTLINE




- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
 - 3) WEIGHT: APPROX. 1.5 OZ

E1	J1-J2	J1-J3
1	ON	OFF
0	OFF	ON

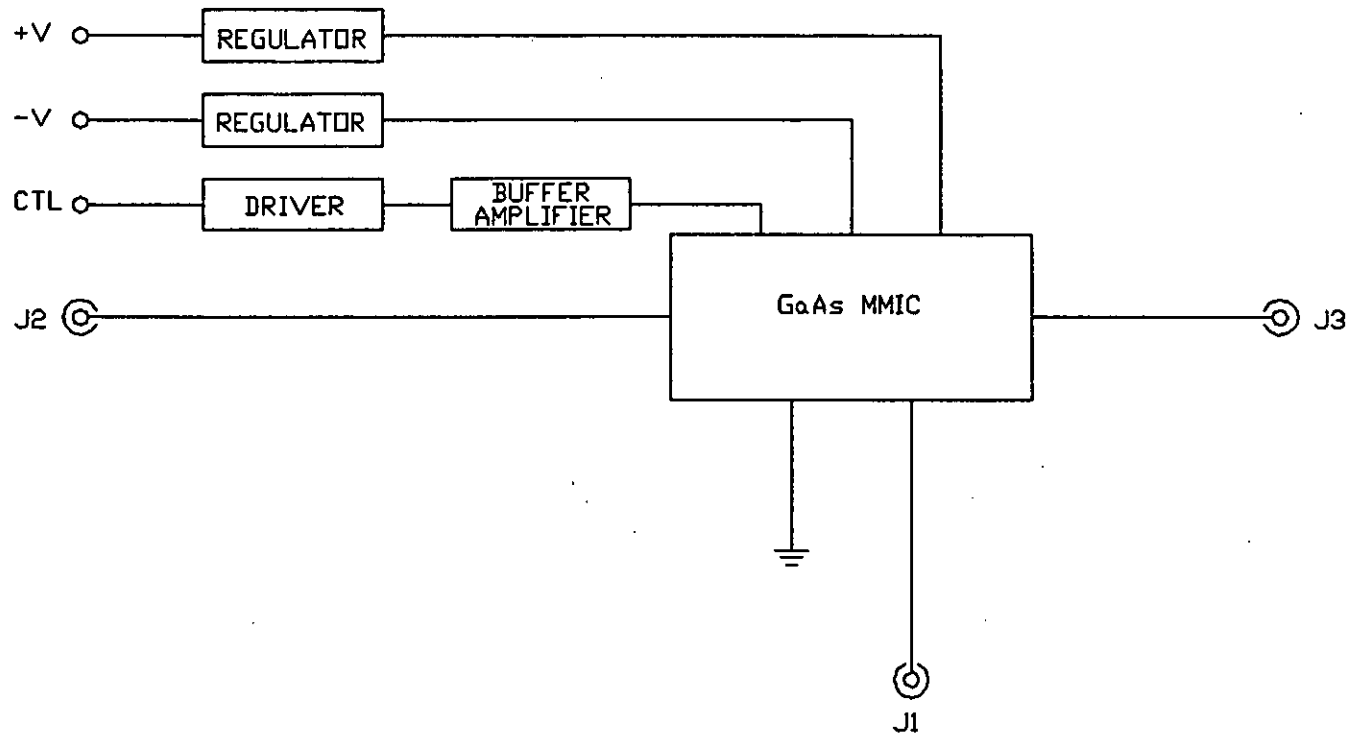
ENVIRONMENTAL RATINGS

- TEMPERATURE-55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITYMIL-STD-202F, METHOD 103B COND. B
- SHOCKMIL-STD-202F, METHOD 213B COND. B
- VIBRATIONMIL-STD-202F, METHOD 204D COND. B
- ALTITUDEMIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLEMIL-STD-202F, METHOD 107D COND. A


 APPROVALS DATE	AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
	PRODUCT FEATURE SWM-6000-2DT DC-6 GHz, GaAs MMIC, NON-REFLECTIVE, LOW INSERTION LOSS AND FAST SPDT SWITCH/MODULATOR	
DRAWN: <i>WJP</i> CHECKED: <i>JW</i>	DATE: 11/22/82	SIZE A SHEET 1 OF 2 DWG. # 100-2855

4-5

FUNCTIONAL SCHEMATIC



4-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWM-6000-2DT	
DRAWN <i>WSP</i>	11/22/92	DC-8 GHz, GoAs MMIC, NON-REFLECTIVE, LOW INSERTION LOSS AND FAST SPDT SWITCH/MODULATOR	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2855	

DESCRIPTION

AMC MODEL SW-2181-2AT-10 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

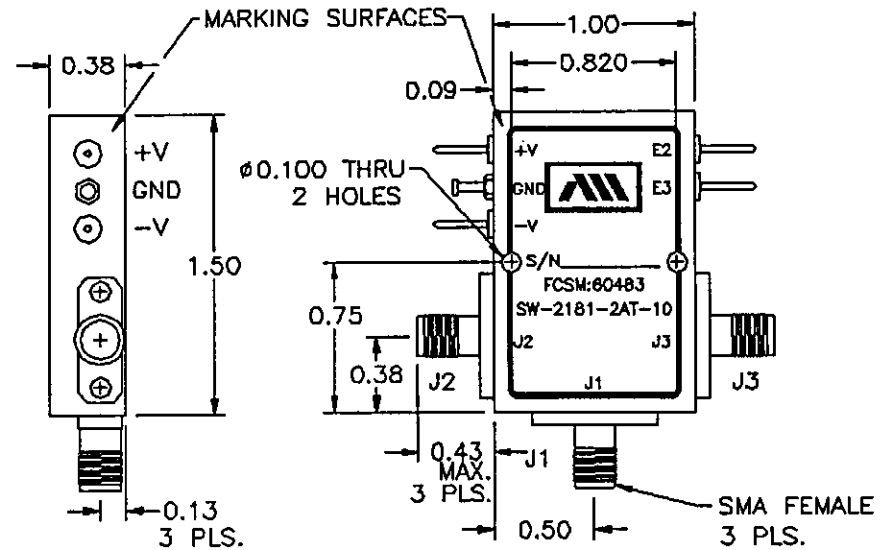
- ◆ FREQUENCY RANGE 1-2 GHz MINIMUM
- ◆ INSERTION LOSS 1.5 dB MAXIMUM
- ◆ ISOLATION 80 dB MINIMUM
- ◆ VSWR (ON/OFF) 1.4:1 MAXIMUM
- ◆ RF POWER RATINGS 1 WATT CW MAXIMUM
- ◆ SWITCHING TIME
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- ◆ CONTROL TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- ◆ POWER SUPPLY +5VDC ±5% @ 130 mA MAXIMUM
-15VDC ±5% @ 60 mA MAXIMUM
- ◆ CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- ◆ SIZE 1.0" x 1.50" x 0.38"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A16 -5 VDC SUPPLY
- A17 +12 VDC TO +15 VDC SUPPLY
- A18 SINGLE CONTROL (LOGIC "0", J1-J2 PATH ON)
- A19 EXTENDED FREQUENCY BAND (CONSULT FACTORY)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207181-1	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



E3	E2	RF PATH
1	0	J1-J2
0	1	J1-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

- ◆ TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- ◆ HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- ◆ SHOCK MIL-STD-202F, METHOD 213B COND. B
- ◆ VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ◆ ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- ◆ TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

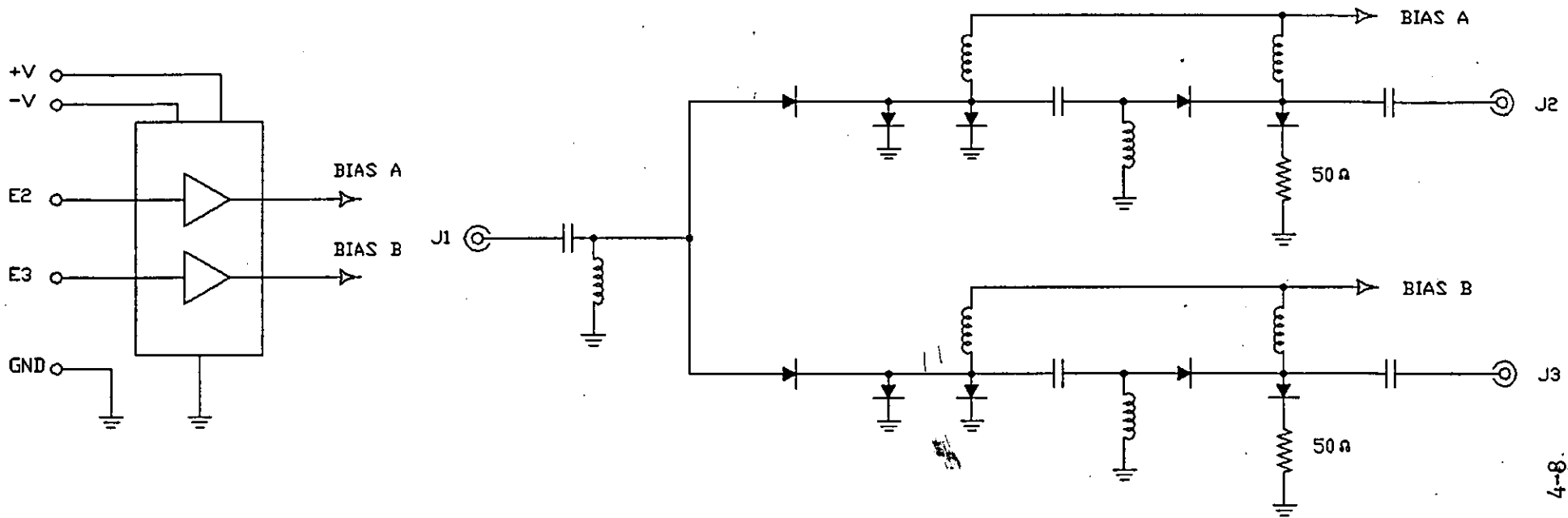
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-2181-2AT-10	
CHECKED <i>[Signature]</i>	11/22/92	1-2 GHz, NON-REFLECTIVE, SPDT SWITCH MODULE	
SIZE A		SHEET 1 OF 2	
		DWG. # 100-2882	

4-7


FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



4-8.

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2181-2AT-10	
DRAWN <i>WSG</i>	11/22/92	1-2 GHz, NON-REFLECTIVE, SPOT SWITCH MODULE	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2882	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 305103-2E & 3E	8/22/83	6/27/93 MJS

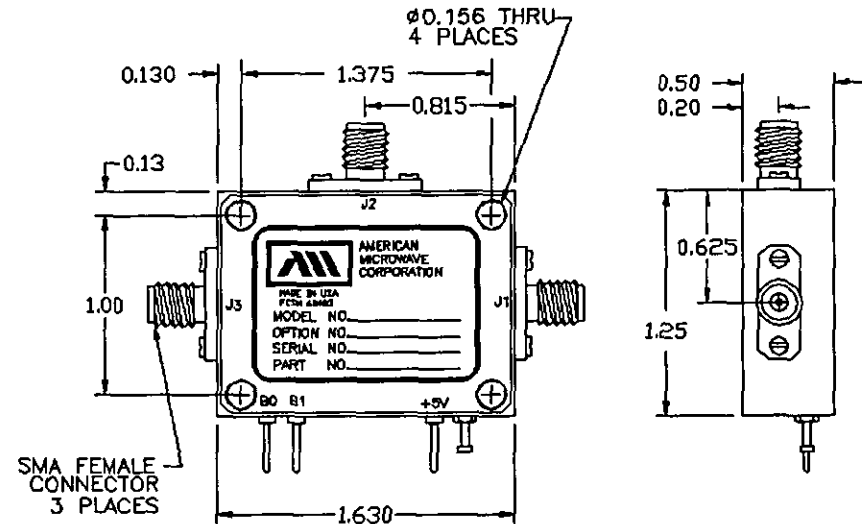
DESCRIPTION

AMC MODEL SW-2181-2AT-B1072 & B2072 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.

SPECIFICATIONS

- FREQUENCY RANGE 1-2 GHz MINIMUM
- INSERTION LOSS
 - B1072 1.3 dB MAXIMUM
 - B2072 1.1 dB MAXIMUM
- ISOLATION
 - B1072 70 dB MINIMUM
 - B2072 50 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- RF POWER RATINGS +20 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 500 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 500 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 1 μ s MAXIMUM
 - OFF (50% TTL TO 10% RF) 1 μ s MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- SUPPLY POWER +5VDC \pm 5% @ 100 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.63" x 1.25" x 0.50"

MECHANICAL OUTLINE



B1	B0	RF PATH
1	0	J1-J2
0	1	J1-J3


- NOTES:
1. DIMENSIONS ARE IN INCHES
 2. TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 3. WEIGHT: APPROX. 2 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

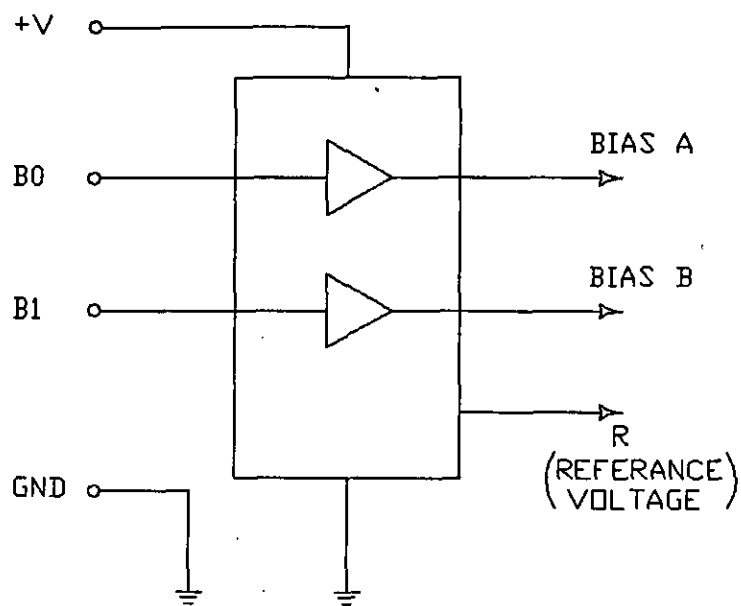
AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDE FILTER (0.5 dB EXCESS LOSS)
- A05 SINGLE CONTROL (LOGIC "0" J1-J2)
- A06 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A13 J1 SMA MALE, J2-J3 SMA FEMALE
- A14 J1 SMA FEMALE, J2-J3 SMA MALE
- A16 +9 VDC TO +18 VDC SUPPLY

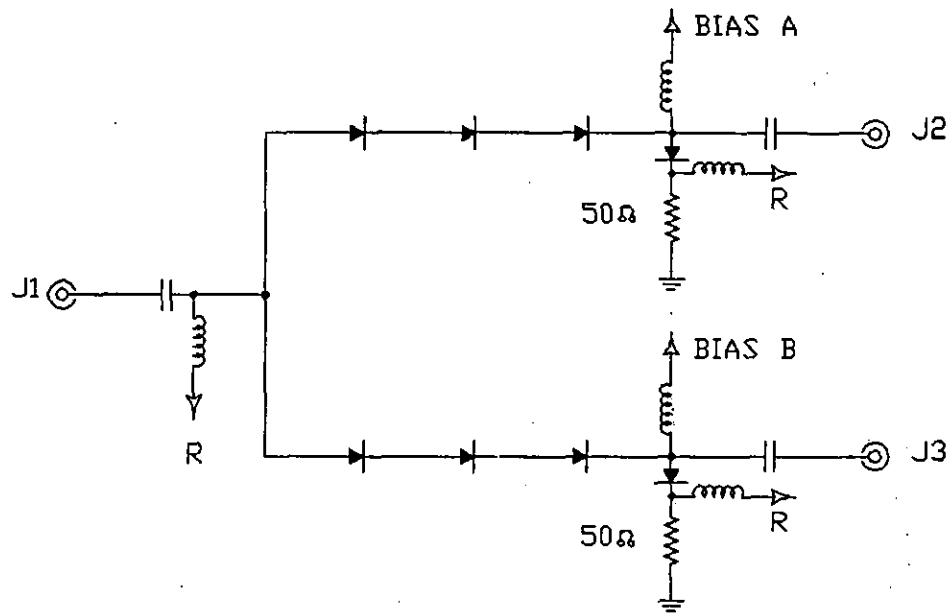
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-2AT-B1072 & B2072 1-2 GHz, NON-REFLECTIVE SPDT SWITCH MODULE	
APPROVALS DRAWN: W/SJP CHECKED: MJS	DATE 8/22/83 6/27/93	SIZE A	SHEET 1 OF 2

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



4-10



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WYP</i>	8/22/93
CHECKED <i>[Signature]</i>	6/20/93

PRODUCT FEATURE
SW-2181-2AT-B1072 & B2072
 1-2 GHz, NON-REFLECTIVE SPDT SWITCH MODULE

SIZE A SHEET 2 OF 2 DWG. # 100-3186

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207177-1&2	11/22/92	<i>[Signature]</i>

DESCRIPTION

AMC MODEL SW-2181-2AT-A1072 & A2072 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.

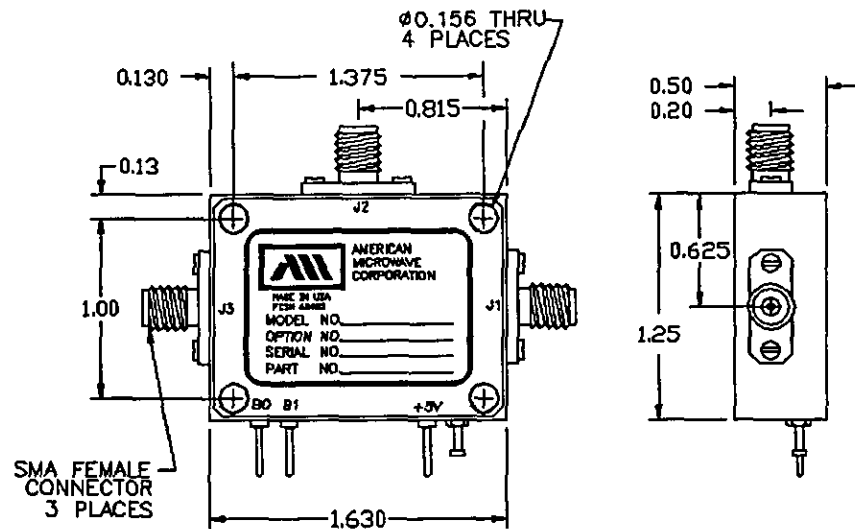
MECHANICAL OUTLINE

SPECIFICATIONS

- FREQUENCY RANGE 2-4 GHz MINIMUM
- INSERTION LOSS
 - A1072 1.3 dB MAXIMUM
 - A2072 1.1 dB MAXIMUM
- ISOLATION
 - A1072 70 dB MINIMUM
 - A2072 50 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- RF POWER RATINGS +20 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 500 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 500 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 1 μs MAXIMUM
 - OFF (50% TTL TO 10% RF) 1 μs MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- SUPPLY POWER +5VDC ±5% @ 100 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.63" x 1.25" x 0.50"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 SINGLE CONTROL (LOGIC "0" J1-J2)
- A06 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A13 J1 SMA MALE, J2-J3 SMA FEMALE
- A14 J1 SMA FEMALE, J2-J3 SMA MALE
- A16 +9 VDC TO +18 VDC SUPPLY




TRUTH TABLE		
B1	B0	RF PATH
1	0	J1-J2
0	1	J1-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 2 OZ

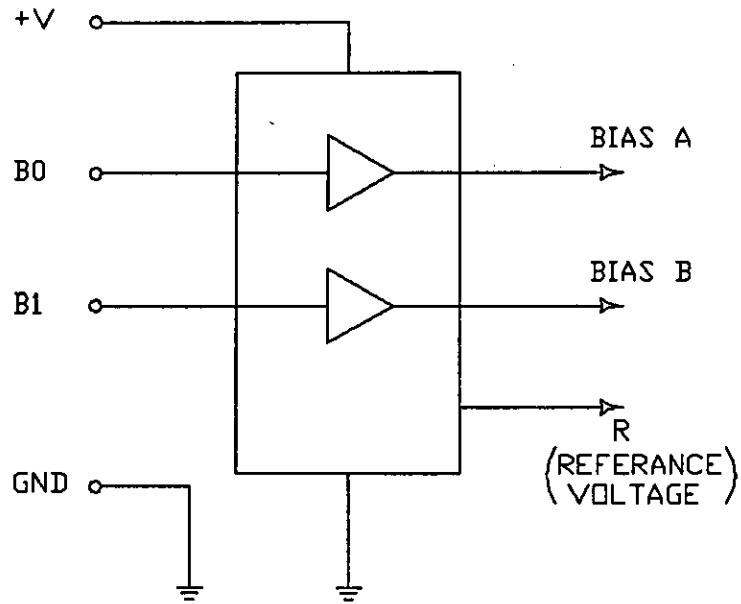
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

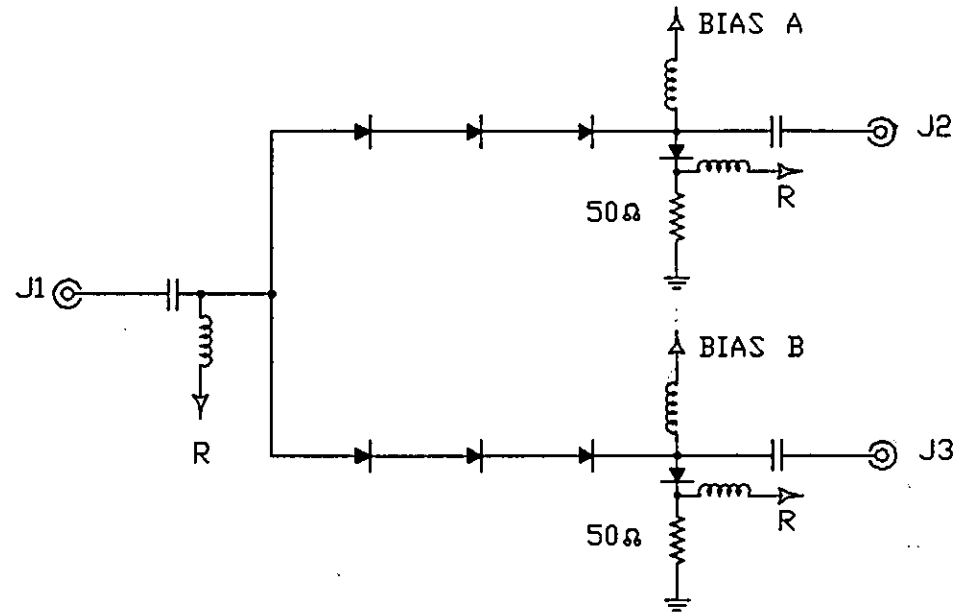
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-2AT-A1072 & A2072 2-4 GHz, NON-REFLECTIVE SPDT SWITCH MODULE	
APPROVALS DRAWN <i>WSP</i> CHECKED <i>[Signature]</i>	DATE 11/22/92 11/22/92	SIZE A	SHEET 1 OF 2

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



4-12

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-2181-2AT-A1072 & A2072 2-4 GHz, NON-REFLECTIVE SPDT SWITCH MODULE	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2906	

SPECIFICATIONS

AMC MODEL SW-2181-2AT-011 IS AN ABSORPTIVE SPDT BAND SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

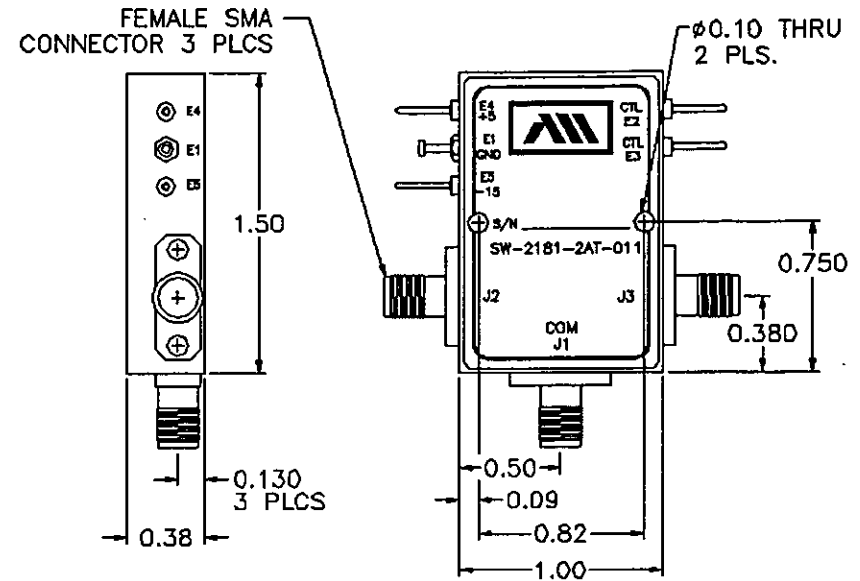
- FREQUENCY RANGE 0.01-18 GHz MINIMUM
- INSERTION LOSS :
 - J1-J2 (LOW BAND) 0.01-2.0 GHz 2.0 dB MAXIMUM
 - J1-J3 (HIGH BAND) 2.0-18.0 GHz 3.0 dB MAXIMUM
- ISOLATION :
 - J1-J2 (LOW BAND) 0.01-2.0 GHz 80 dB MINIMUM
 - J1-J3 (HIGH BAND) 2.0-18.0 GHz 60 dB MINIMUM
- VSWR (ON/OFF) :
 - J1-J2 (LOW BAND) 0.01-2.0 GHz 1.3:1 MAXIMUM
 - J1-J3 (HIGH BAND) 2.0-18.0 GHz 2:1 MAXIMUM
- SWITCHING TIME :
 - RISE (10% RF TO 90% RF) 35 nS MAXIMUM
 - FALL (90% RF TO 10% RF) 35 nS MAXIMUM
 - ON (50% TTL TO 90% RF) 800 nS MAXIMUM
 - OFF (50% TTL TO 10% RF) 100 nS MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
2 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
- POWER SUPPLY + 5VDC ±5% @ 50 mA MAXIMUM
-12VDC ±5% @ 90 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.00" x 1.50" x 0.38"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16 -5VDC SUPPLY
- A17 +12VDC TO +15VDC SUPPLY
- A18 SINGLE CONTROL (TOGGLE)
(LOGIC "0" = J1-J3 PATH ON)

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
A		ORIGINAL RELEASE, JOB # 208206-2E		11/20/92	<i>MJ</i>

MECHANICAL OUTLINE



E3	E2	RF PATH
0	1	J1-J2
1	0	J1-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

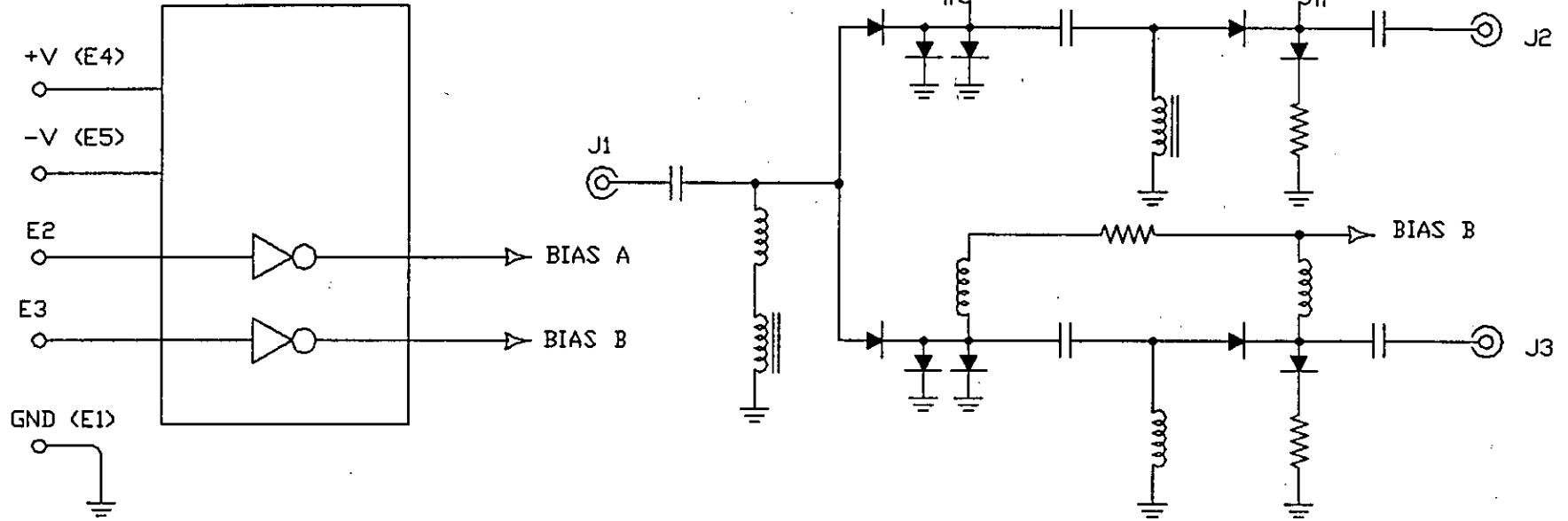
		AMERICAN MICROWAVE CORPORATION	
7311G GROVE RD., FREDERICK, MD. 21701		TEL: (301) 662-4700 FAX: (301) 662-4938	
PRODUCT FEATURE		SW-2181-2AT-011	
0.01 TO 18 GHz, NON-REFLECTIVE SPDT BAND SWITCH MODULE		SIZE A	
APPROVALS		DATE	
DRAWN <i>WJ</i>		11/20/92	
CHECKED <i>WJ</i>		11/22/92	
SHEET 1 OF 2		DWG. # 100-2758	

4-13


TTL DRIVER

FUNCTIONAL SCHEMATIC

RF SECTION



4-14

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-2AT-011 D.01 TO 18 GHz, NON-REFLECTIVE SPOT BAND SWITCH MODULE	
APPROVALS DRAWN CHECKED	DATE 11/20/92 11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-275B	

DESCRIPTION

AMC MODEL SW-2182-2AT IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER AND BUILT IN VIDEO FILTER.

SPECIFICATIONS

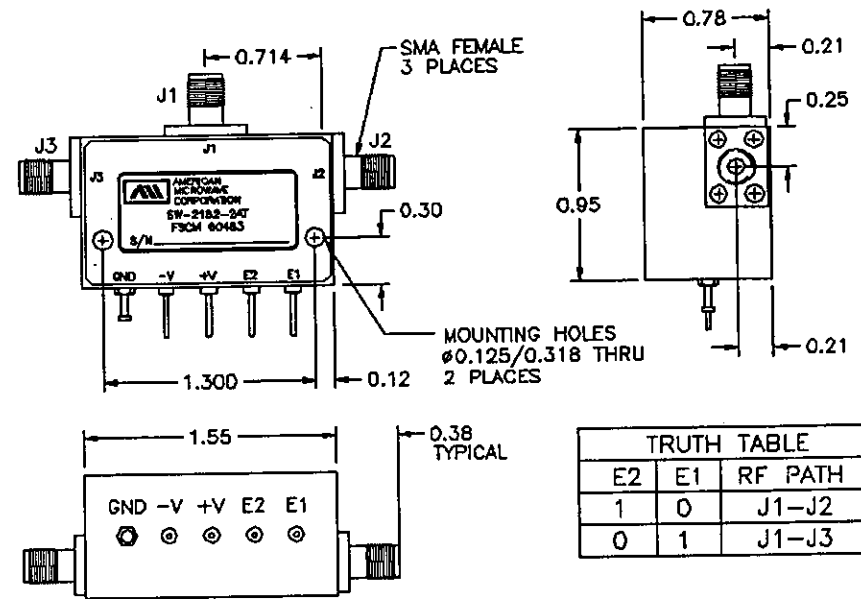
- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 1-12 GHz, 3.5 dB MAXIMUM
12-18 GHz, 4.5 dB MAXIMUM
- ISOLATION 1-12 GHz, 70 dB MINIMUM
12-18 GHz, 55 dB MINIMUM
- VSWR (ON/OFF) 2.0:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 100 ns MAXIMUM
FALL (90% RF TO 10% RF) 100 ns MAXIMUM
ON (50% TTL TO 90% RF) 150 ns MAXIMUM
OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION (SEE TRUTH TABLE)
- RF POWER RATINGS +27 dBm CW MAXIMUM
- POWER SUPPLY +5VDC ±5% @ 80 mA MAXIMUM
-5VDC ±5% @ 80 mA MAXIMUM
- RF LEAKAGE (CONDUCTIVE/RADIATED) -60 dBc MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.55" x 0.95" x 0.78"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" = ISOLATION)
- A08 SINGLE CONTROL (LOGIC "0" = J1-J2 PATH "ON")
- A14 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 AND J3 SMA MALE
- A16 ±9V TO ±18V DC SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 2707E	11/22/92	JMY

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 3.0 OZ

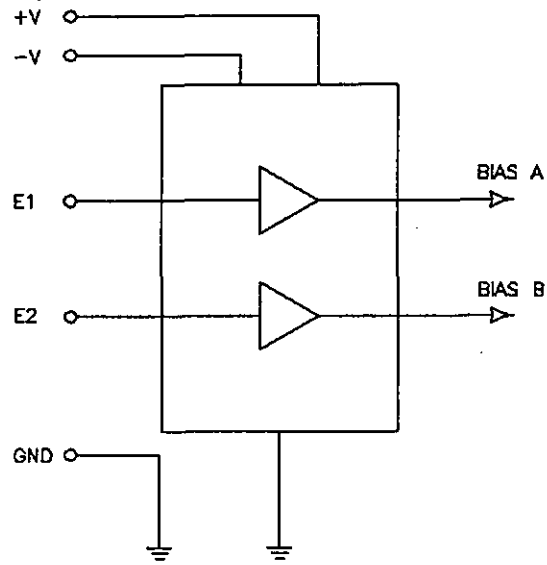
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

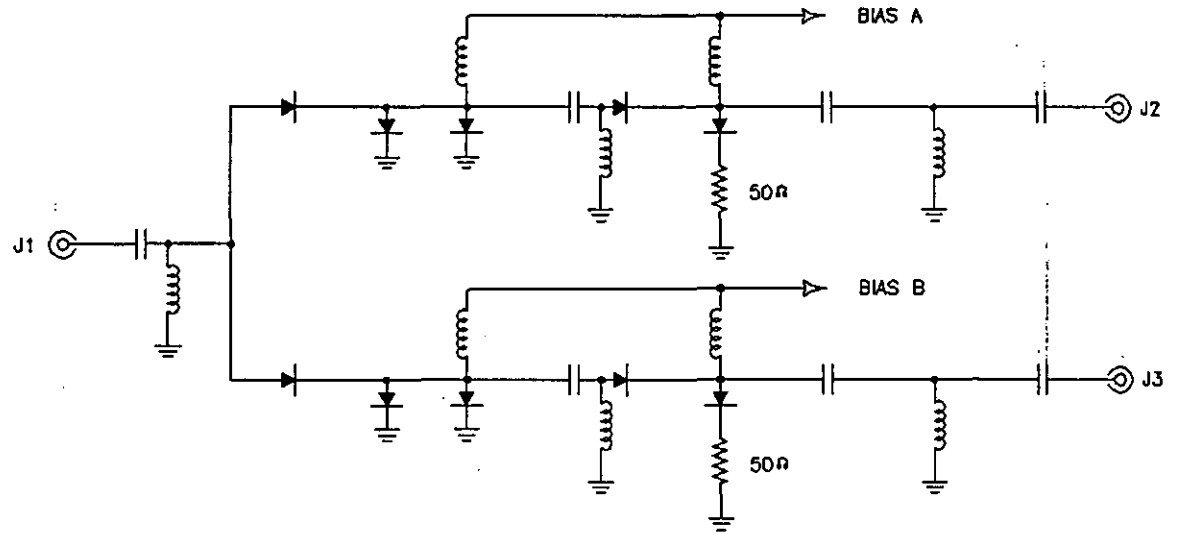
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2182-2AT 2-18 GHz, NON-REFLECTIVE, SPDT SWITCH MODULE	
APPROVALS DRAWN CHECKED	DATE 11/22/92 11/22/92	SIZE A	SHEET 1 OF 2
		DWG. # 100-2866	

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



4-16


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2182-2AT	
DRAWN <i>WSP</i>	11/22/92	2-18 GHz, NON-REFLECTIVE, SPDT SWITCH MODULE	
CHECKED <i>[Signature]</i>	11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2866	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
5	SP3T, REFLECTIVE.....	5-1
• 1-18 GHz	SLIM-LINE SWITCH MODULE, AMC MODEL NO: SWS-2183-3D.....	5-3
• 1.75-18 GHz	SWITCH MODULE, AMC MODEL NO: SW-2181-3 (3S).....	5-5
• 0.3-20 GHz	SWITCH MODULE, AMC MODEL NO: SW-2182-3.....	5-7

DESCRIPTION

AMC MODEL SWS-2183-3D IS A REFLECTIVE BROAD BAND SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER IN A LOW PROFILE HERMETICALLY SEALED HOUSING.

SPECIFICATIONS

- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS

1- 2 GHz	1.2 dB	MAXIMUM
2- 4 GHz	1.5 dB	MAXIMUM
4- 8 GHz	2.0 dB	MAXIMUM
8-12 GHz	2.5 dB	MAXIMUM
12-18 GHz	3.0 dB	MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON) 2 : 1 MAXIMUM
- SWITCHING TIME

RISE (10% RF TO 90% RF)	10 nS	MAXIMUM
FALL (90% RF TO 10% RF)	10 nS	MAXIMUM
ON (50% TTL TO 90% RF)	20 nS	MAXIMUM
OFF (50% TTL TO 10% RF)	20 nS	MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- RF POWER RATING 1W CW, MAXIMUM
- POWER SUPPLY + 5VDC ±5% @ 110 mA MAXIMUM
-12VDC ±5% @ 60 mA MAXIMUM
- CONNECTORS

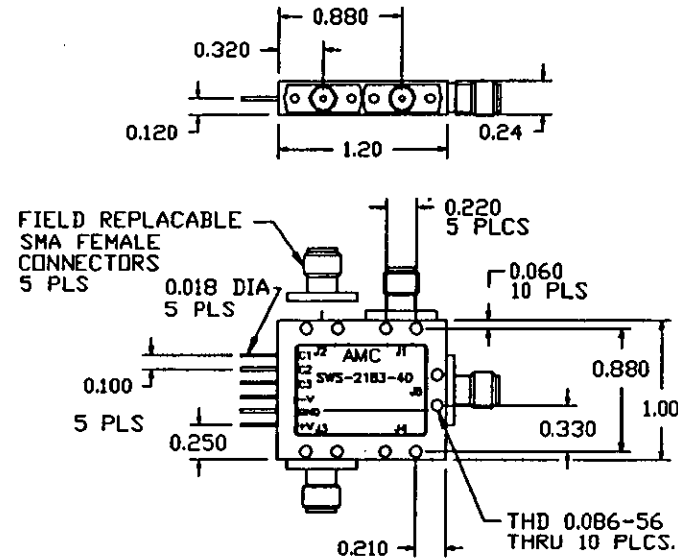
RF INPUT/OUTPUT	FIELD REPLACEABLE SMA (FEMALE)
POWER	SOLDER PIN
CONTROL	SOLDER PIN
- SIZE 1.20" x 1.00" x 0.24"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 INPUT/OUTPUT VIDEO FILTER
(ADDITIONAL 0.5 dB LOSS, 2-18 GHz)
- A10 -15VDC SUPPLY
- A12 2 BIT DECODER OPTION (30 nS EXCESS DELAY)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20382-3	11/17/82	JM

MECHANICAL OUTLINE




LOGIC TABLE			
C3	C2	C1	RF PATH
1	1	0	J4-J1
1	0	1	J4-J2
0	1	1	J4-J3

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 1.0 OZ

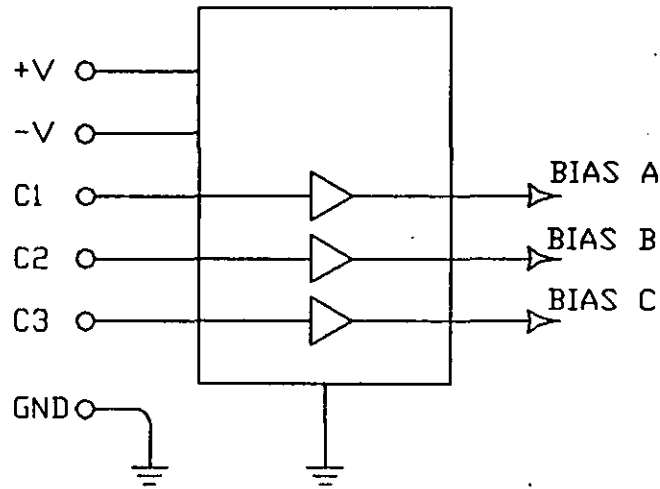
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

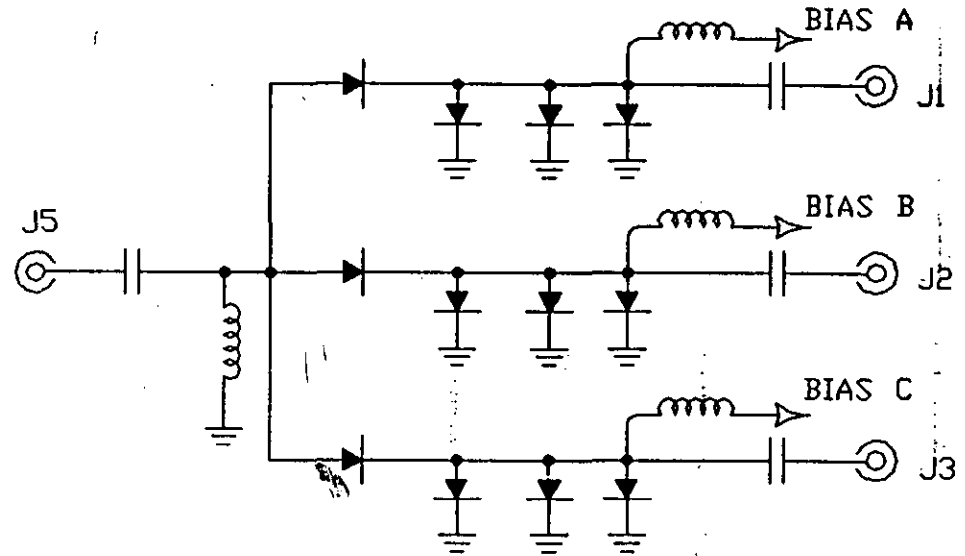
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWS-2183-3D	
DESIGN W. J. P. / 11/17/82		SLIM LINE 1 TO 18 GHz, REFLECTIVE, SP3T SWITCH MODULE	
CHECKED J. J. / 11/22/82		SIZE A	SHEET 1 OF 2
		DWG. # 100-2535-3	

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



5-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS DRAWN Wayne Pugh CHECKED 11/22/92	DATE 11/17/92	PRODUCT FEATURE SWS-2183-3D SLIM LINE 1 TO 18 GHz, REFLECTIVE, SP3T SWITCH MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2535-3	

DESCRIPTION

AMC MODEL SW-2181-3 (3S) IS A REFLECTIVE BROAD-BAND SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

SPECIFICATIONS

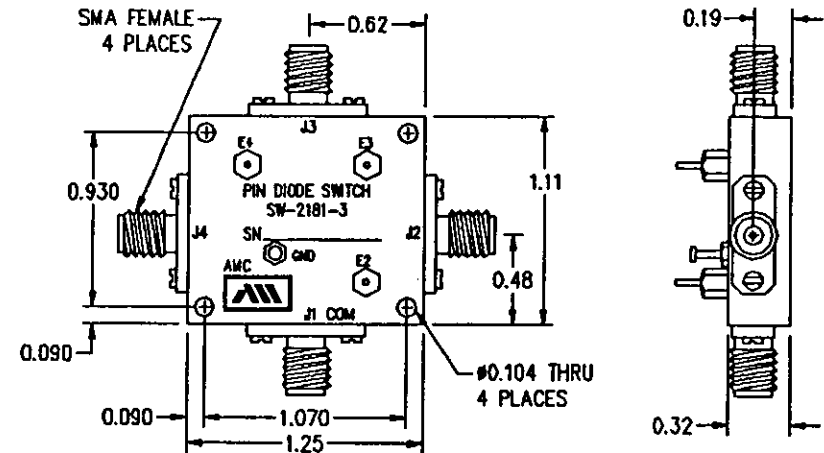
- FREQUENCY RANGE
 - (-3) 1.75-18 GHz MINIMUM
 - (-3S) 0.3-20 GHz MINIMUM
- INSERTION LOSS
 - (-3) 2.5 dB MAXIMUM
 - (-3S) 3.0 dB MAXIMUM
- ISOLATION
 - (-3) 30 dB MINIMUM
 - (-3S) 55 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 300 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 300 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 500 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 500 ns MAXIMUM
- CONTROLS CURRENT CONTROLLED
3 INDIVIDUAL CONTROLS
+30 mA = ISOLATION
-30 mA = INSERTION LOSS
(SEE TRUTH TABLE)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - CONTROL SOLDER PIN
- SIZE 1.25" x 1.11" x 0.32"

AVAILABLE OPTIONS

- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 EXTENDED FREQUENCY TO 100 MHz
- A13 J1 SMA MALE, J2 AND J3 SMA FEMALE
- A14 J1 SMA FEMALE, J2 AND J3 SMA MALE

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, AMC DWG# 200-1568 & 200-1904	11/22/92	<i>My</i>

MECHANICAL OUTLINE



TRUTH TABLE			
E4	E3	E2	RF PATH
+30mA	+30mA	-30mA	J1-J2
+30mA	-30mA	+30mA	J1-J3
-30mA	+30mA	+30mA	J1-J4

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>WSP</i>	11/22/92
<i>WSP</i>	11/22/92

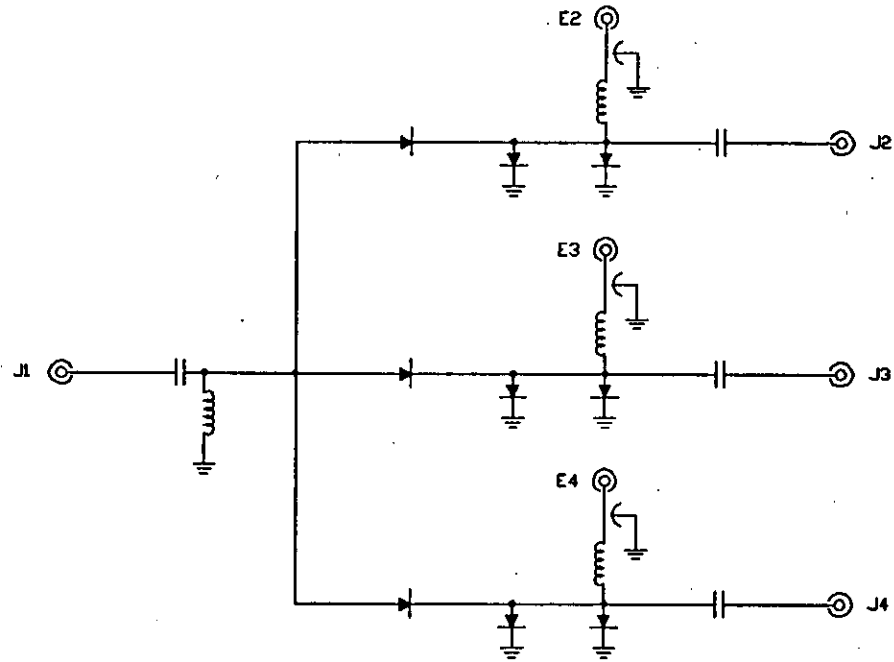
PRODUCT FEATURE

SW-2181-3 (3S)


1.75-18 GHz, REFLECTIVE SP3T SWITCH MODULE

SIZE A SHEET 1 OF 2 DWG. # 100-2900

FUNCTIONAL SCHEMATIC



5-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2181-3 (3S) 1.75-18 GHz, REFLECTIVE SP3T SWITCH MODULE	
DRAWN	DATE	SIZE A SHEET 2 OF 2 DWG. # 100-2900	
CHECKED	DATE		

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
A		ORIGINAL RELEASE, AMC DWG# 200-1748	11/22/02		<i>[Signature]</i>

DESCRIPTION

AMC MODEL SW-2182-3 IS A REFLECTIVE BROAD-BAND SWITCH MODULE WITHOUT DRIVER CIRCUITRY, PACKAGED IN A MINIATURE CONNECTORIZED HOUSING.

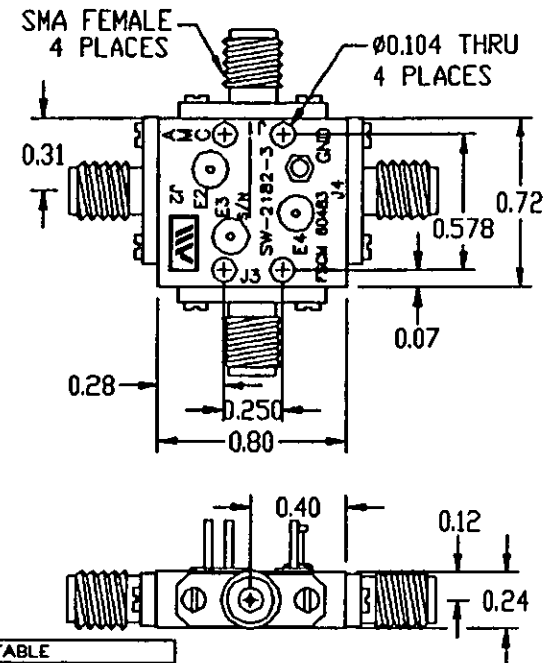
SPECIFICATIONS

- FREQUENCY RANGE 0.3-20 GHz MINIMUM
- INSERTION LOSS 3.2 dB MAXIMUM
- ISOLATION 0.3-18 GHz, 60 dB MINIMUM
18-20 GHz, 55 dB MINIMUM
- VSWR (ON) 2.0:1 MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 10 ns MAXIMUM
FALL (90% RF TO 10% RF) 10 ns MAXIMUM
ON (50% TTL TO 90% RF) 20 ns MAXIMUM
OFF (50% TTL TO 10% RF) 20 ns MAXIMUM
- CONTROLS CURRENT CONTROLLED
+20 mA = ISOLATION
-20 mA = ISOLATION
(SEE TRUTH TABLE)
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
CONTROL SOLDER PIN
- SIZE 0.80" x 0.72" x 0.24"

AVAILABLE OPTIONS

- A04 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A06 2 WATTS CW MAXIMUM (2-20 GHz)
- A13 J1 SMA MALE, J2-J4 SMA FEMALE
- A14 J1 SMA FEMALE, J2-J4 SMA MALE
- A15 REMOVABLE CONNECTORS (DROP IN APPLICATIONS)

MECHANICAL OUTLINE



E4	E3	E2	RF PATH
+20mA	+20mA	-20mA	J1-J2
+20mA	-20mA	+20mA	J1-J3
-20mA	+20mA	+20mA	J1-J4

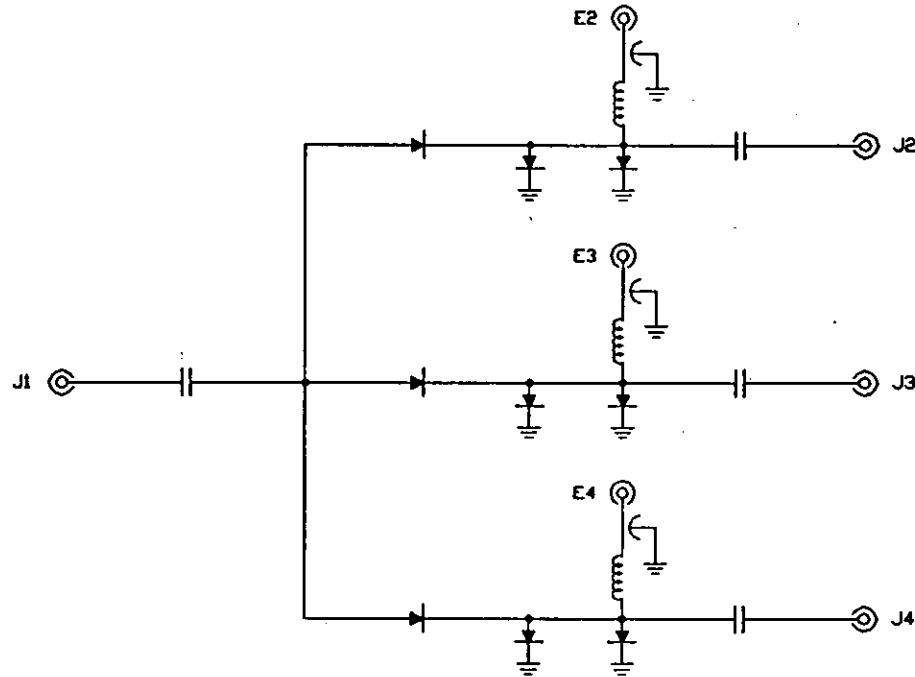
- NOTES:
 1) DIMENSIONS ARE IN INCHES
 2) TOLERANCES: X.XX ±0.020
 X.XXX ±0.010
 3) WEIGHT: APPROX. 1.3 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2182-3 0.3-20 GHz, REFLECTIVE SP3T SWITCH MODULE	
DRAWN <i>[Signature]</i>	11/22/02	SIZE A	SHEET 1 OF 2
CHECKED <i>[Signature]</i>	11/24/02		DWG. # 100-2902

FUNCTIONAL SCHEMATIC

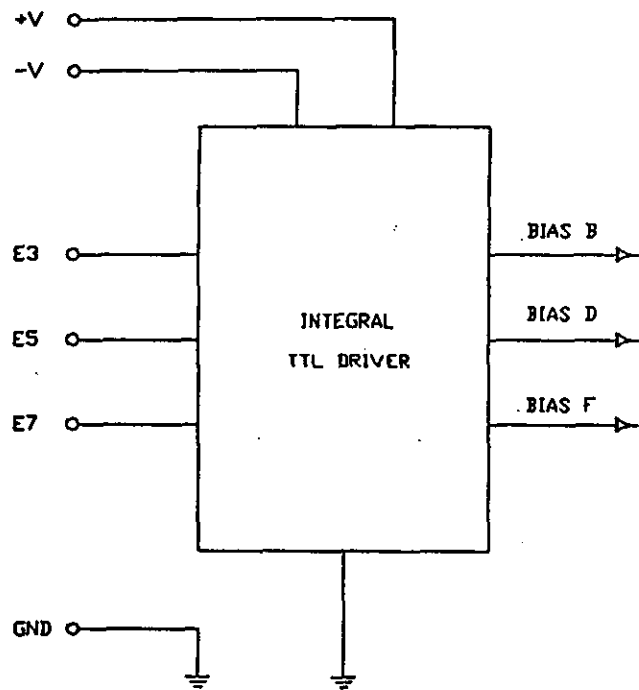


5-8

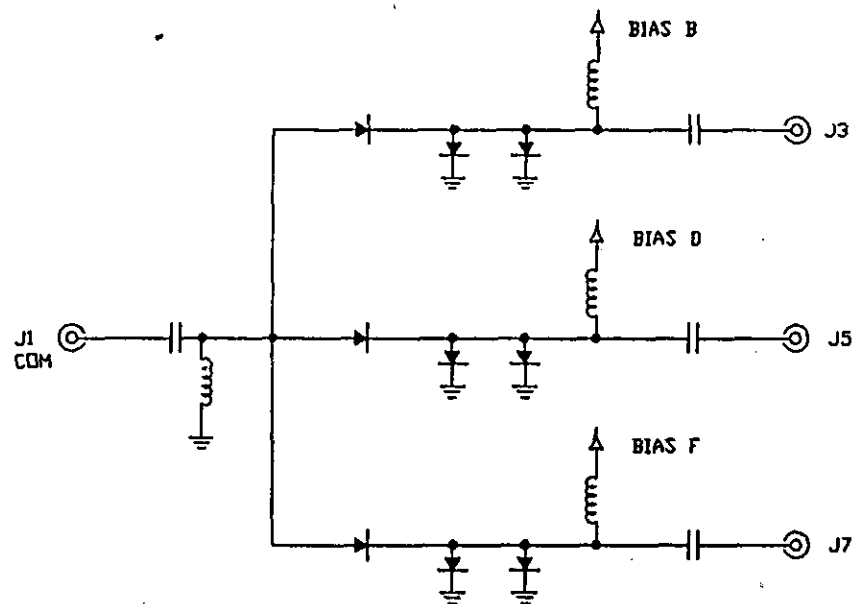
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-2182-3	
CHECKED <i>[Signature]</i>	11/27/92	0.3-20 GHz, REFLECTIVE SP3T SWITCH MODULE	
SIZE A		SHEET 2 OF 2	DWG. # 100-2902

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION



5-9

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-1182-3D 1.0-18 GHz, SP4T SWITCH MODULE	
DRAWN <i>WSP</i>	3/6/05	SIZE	A SHEET 2 OF 2 DWG. # 100-3674
CHECKED			

DESCRIPTION

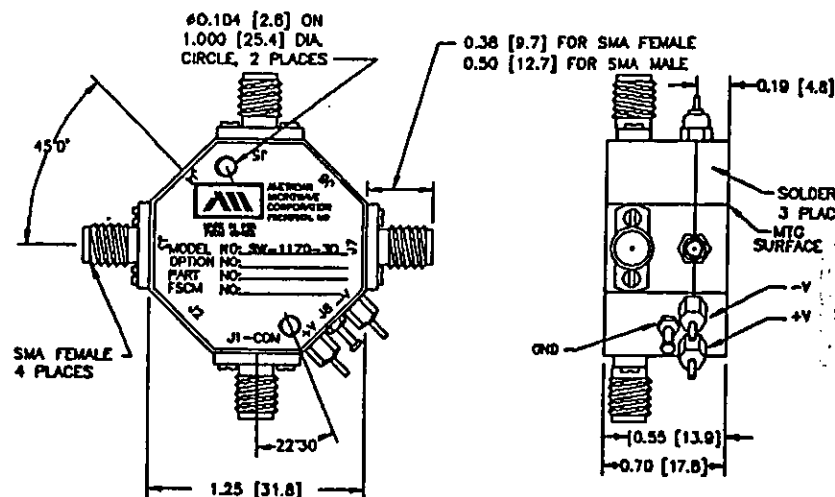
AMC MODEL SW-1170-3D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
A		ORIGINAL RELEASE, JOB #30110E	3/8/95		<i>[Signature]</i>

SPECIFICATIONS

- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS
 - 1-4 GHz, 1.4 dB MAXIMUM
 - 4-8 GHz, 1.5 dB MAXIMUM
 - 8-12.4 GHz, 2.0 dB MAXIMUM
 - 12.4-18 GHz, 2.6 dB MAXIMUM
- ISOLATION
 - 1-12.4 GHz, 65 dB MINIMUM
 - 12.4-18 GHz, 55 dB MINIMUM
- VSWR (ON) 1.8:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1μS, PW MAXIMUM)
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 20 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 20 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 50 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 150 mA MAXIMUM
-12 TO -15VDC @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.25" x 1.25" x 0.70"

MECHANICAL OUTLINE



TRUTH TABLE			
E7	E5	E3	RF PATH ON
1	1	0	J1-J3
1	0	1	J1-J5
0	1	1	J1-J7

NOTES:


- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE:
 - OPERATING -65°C TO +110°C
 - NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

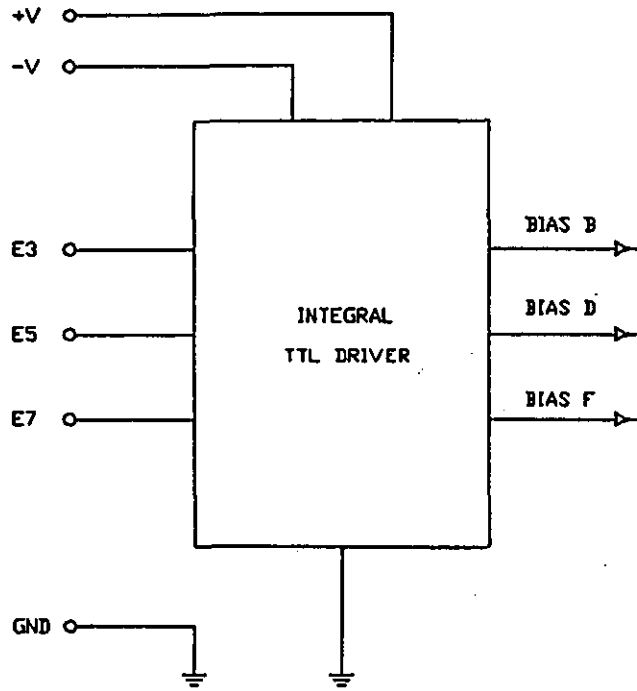
AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SMC MALE CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

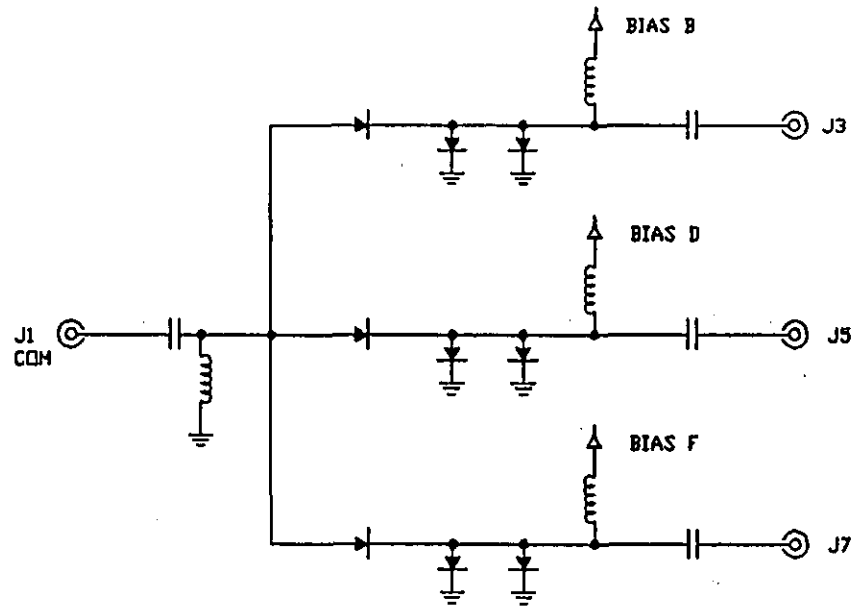
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-1170-3D 1.0-18 GHz, SP4T SWITCH MODULE	
APPROVALS DRAWN <i>WSP</i> CHECKED	DATE 3/8/95	SIZE A	SHEET 1 OF 2
		DWG. # 100-3669	

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT



RF SECTION



5-9A


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WYP</i>	3/8/95	SW-1170-3D	
CHECKED		1.0-18 GHz, SP4T SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-3669	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
6	SP3T, NON-REFLECTIVE/ABSORPTIVE.....	6-1
	● 50-1500 MHz SWITCH MODULE AMC MODEL NO: SW-2000-3AH.....	6-3
	● 0.5-2.25 GHz AMPLITUDE AND PHASE BALANCED SWITCH MODULE, AMC MODEL NO: SW-2250-3AT.....	6-5
	● 1-2 GHz 100 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-3AT-10.....	6-7
	● 1-2 GHz 500 nsec SWITCH MODULE AMC MODEL NO: SW-2181-3AT-B3072.....	6-9
	● 2-4 GHz SWITCH MODULE, AMC MODEL NO: SW-2181-3AT-A3072.....	6-11
	● 0.1-18 GHz 50 nsec SWITCH MODULE AMC MODEL NO: SW-2181-3AT-230.....	6-13

DESCRIPTION

AMC MODEL SW-2000-3AH IS A REFLECTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW LOSS AND LOW VSWR RF APPLICATIONS.

SPECIFICATIONS

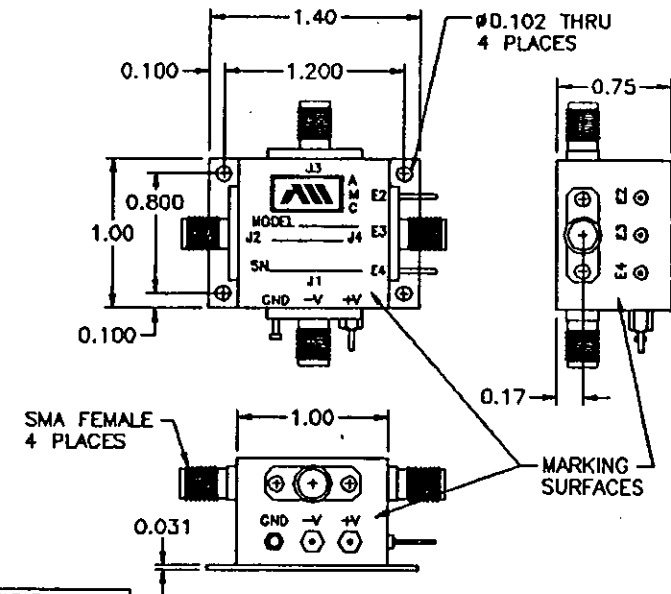
- FREQUENCY RANGE 50-1500 MHz MINIMUM
- INSERTION LOSS 1.5 dB MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON) 1.3:1 MAXIMUM
- RF POWER RATINGS +20 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 250 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 250 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 500 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 500 ns MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION (SEE TRUTH TABLE)
- POWER SUPPLY +5VDC ±5% @ 150 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.40" x 1.00" x 0.75"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A13 ±9VDC TO ±18VDC SUPPLY
- A14 J1 SMA MALE, J2-J4 SMA FEMALE
- A15 J1 SMA FEMALE, J2-J4 SMA MALE

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 106107	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



TRUTH TABLE				
E5	E4	E3	E2	RF PATH
1	1	1	0	J1-J2
1	1	0	1	J1-J3
1	0	1	1	J1-J4
0	1	1	1	J1-J5

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



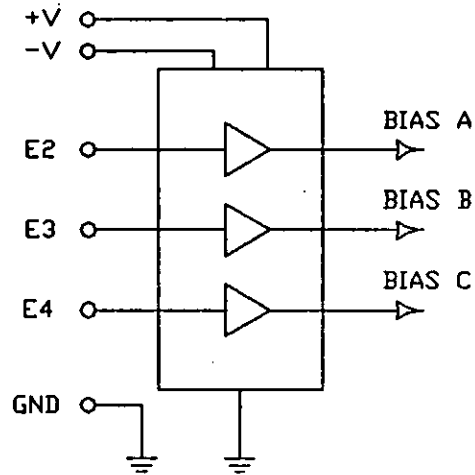
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

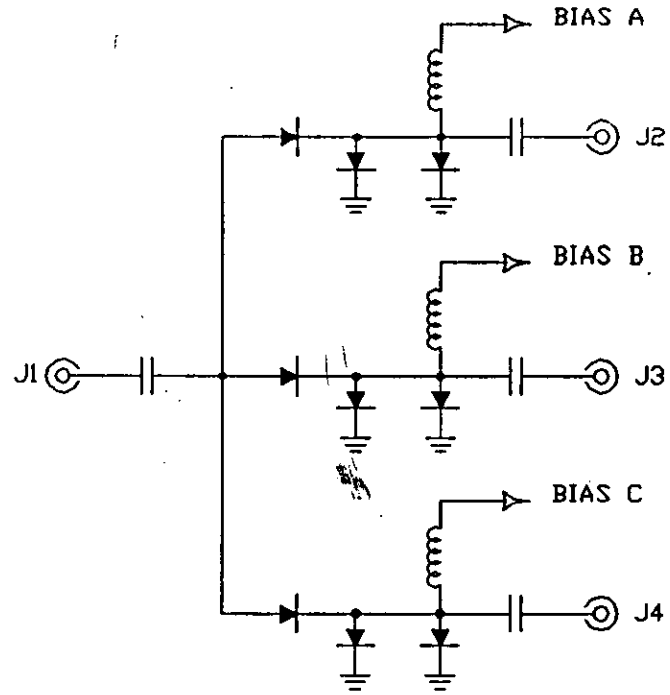
PRODUCT FEATURE		
SW-2000-3AH		
50-1500 MHz, REFLECTIVE SP3T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2889

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



6-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2000-3AH	
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	11/22/02 11/22/02	50-1500 MHz, REFLECTIVE SP3T SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-2889	

DESCRIPTION

AMC MODEL SW-2250-3AT IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER DESIGNED FOR LOW LOSS, LOW VSWR, AMPLITUDE AND PHASE BALANCED APPLICATIONS.

SPECIFICATIONS

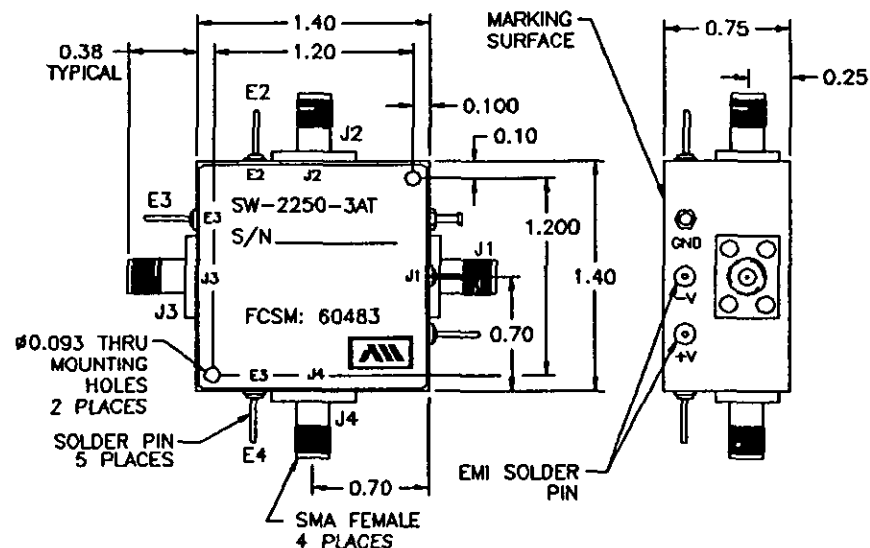
- FREQUENCY RANGE 500 MHz-2.25 GHz MINIMUM
- INSERTION LOSS 1.3 dB MAXIMUM
- AMPLITUDE BALANCE ± 0.1 dB MAXIMUM
- PHASE BALANCE $\pm 1^\circ$ MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON/OFF) 1.4:1 MAXIMUM
- SWITCHING TIME 3 MHz PRF MAXIMUM
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- RF POWER RATINGS +23 dBm CW MAXIMUM
- RF LEAKAGE (CONDUCTIVE/RADIATED) 60 dBc MINIMUM
- IN-BAND VIDEO LEAKAGE -65 dBm MAXIMUM @ 500 MHz
- CONTROLS TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC $\pm 5\%$ @ 70 mA MAXIMUM
-5VDC $\pm 5\%$ @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.40" x 1.40" x 0.75"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A14 J1 SMA MALE, J2-J4 SMA FEMALE
- A15 J1 SMA FEMALE, J2-J4 SMA MALE
- A16 ± 9 TO ± 18 VDC POWER SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 2765E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE
SW-2250-3AT

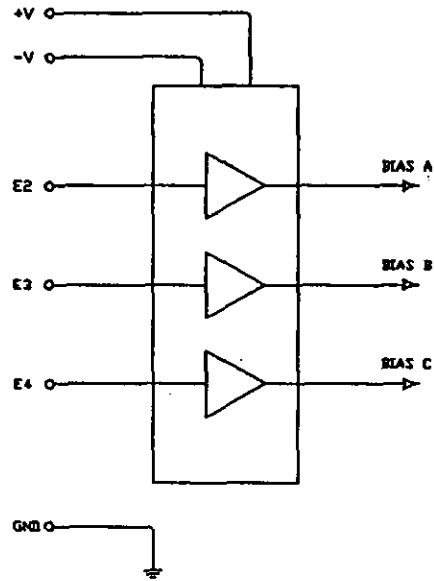
0.5-2.25 GHz, AMPLITUDE AND PHASE BALANCED, NON-REFLECTIVE, SP3T SWITCH MODULE

SIZE A SHEET 1 OF 2 DWG. # 100-2858

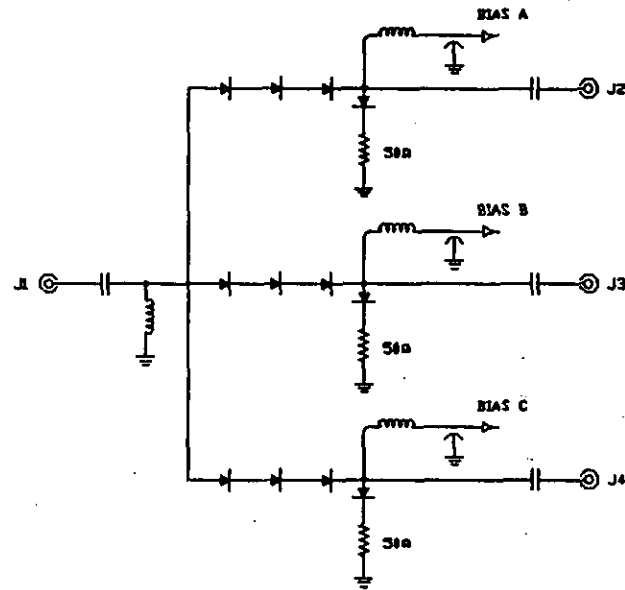
APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



6-6



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	1/22/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE		
SW-2250-3AT		
0.5-2.25 GHz, AMPLITUDE AND PHASE BALANCED, NON-REFLECTIVE, SP3T SWITCH MODULE		
SIZE A	SHEET 2 OF 2	DWG. # 100-2858

DESCRIPTION

AMC MODEL SW-2181-3AT-10 IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

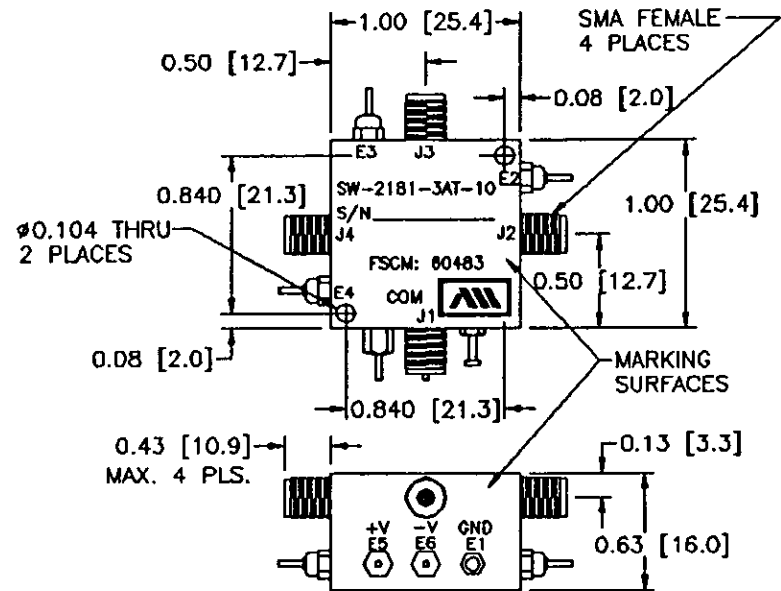
- FREQUENCY RANGE 1-2 GHz MINIMUM
- INSERTION LOSS 1.5 dB MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR (ON/OFF) 1.4:1 MAXIMUM
- RF POWER RATINGS 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 100 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 100 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- POWER SUPPLY +5VDC ±5% @ 130 mA MAXIMUM
-15VDC ±5% @ 60 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.00" x 1.00" x 0.63"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A14 J1 SMA MALE, J2-J4 SMA FEMALE
- A15 J1 SMA FEMALE, J2-J4 SMA MALE
- A16 -5 VDC SUPPLY
- A17 +12 TO +15 SUPPLY
- A18 EXTENDED FREQUENCY BAND (CONSULT FACTORY)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207181-2	11/22/02	<i>JMJ</i>

MECHANICAL OUTLINE




TRUTH TABLE				
E4	E3	E2	RF PATH	
1	1	0	J1-J2	
1	0	1	J1-J3	
0	1	1	J1-J4	

- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
APPROX. 4 OZ
 - 3) WEIGHT:

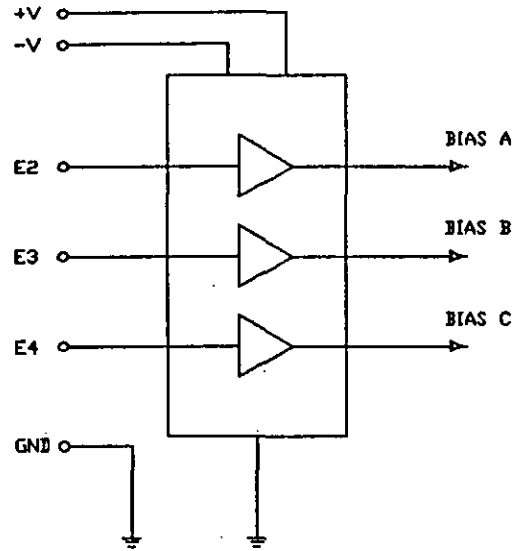
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

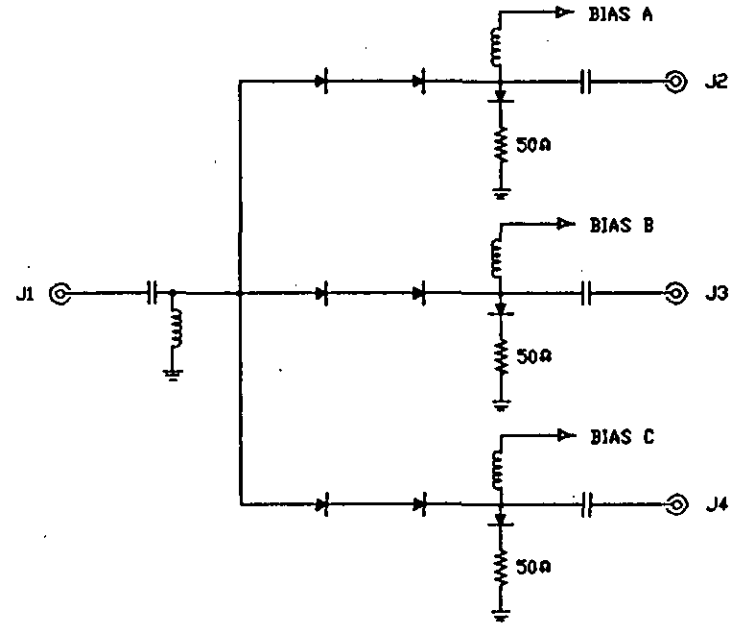
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938		
		PRODUCT FEATURE SW-2181-3AT-10 1-2 GHz, NON-REFLECTIVE, SP3T SWITCH MODULE		
APPROVALS DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	DATE 11/22/02 11/22/02	SIZE A	SHEET 1 OF 2	DWG. # 100-2885

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



6-8

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-3AT-10 1-2 GHz, NON-REFLECTIVE, SP3T SWITCH MODULE	
APPROVALS	DATE	SIZE	SHEET 2 OF 2
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	11/22/92 11/22/92	A	DWG. # 100-2885

DESCRIPTION

AMC MODEL SW-2181-3AT-B3072 IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.

SPECIFICATIONS

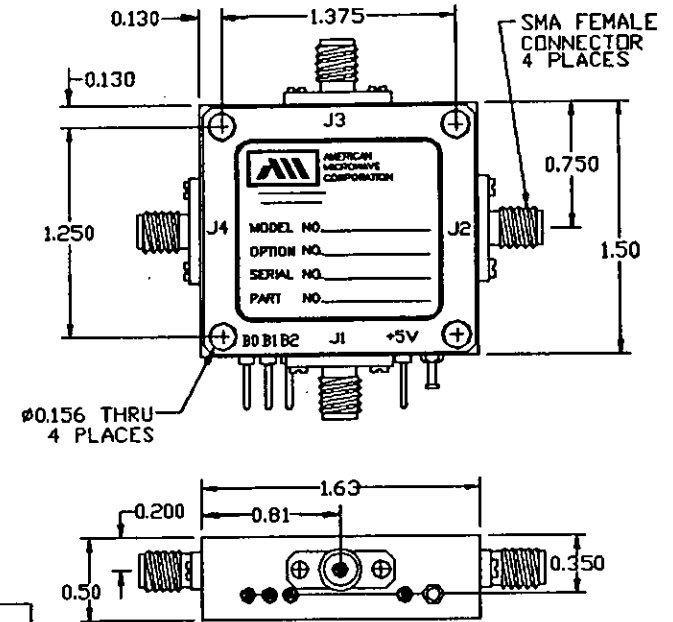
- FREQUENCY RANGE 1-2 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- RF POWER HANDLING 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 500 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 500 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 1 μ s MAXIMUM
 - OFF (50% TTL TO 10% RF) 1 μ s MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- SUPPLY POWER +5VDC \pm 5% @ 200 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.63" x 1.50" x 0.50"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 2 BIT BINARY DECODER
- A06 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A13 J4 SMA MALE, J1-J3 SMA FEMALE
- A14 J4 SMA FEMALE, J1-J3 SMA MALE
- A16 +9 VDC TO +18 VDC SUPPLY

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 305103-1E		6/22/93	6/29/93 [Signature]

MECHANICAL OUTLINE



TRUTH TABLE			
B2	B1	B0	RF PATH
1	1	0	J4-J1
1	0	1	J4-J2
0	1	1	J4-J3

- NOTES:
1. DIMENSIONS ARE IN INCHES
 2. TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 3. WEIGHT: APPROX. 2.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



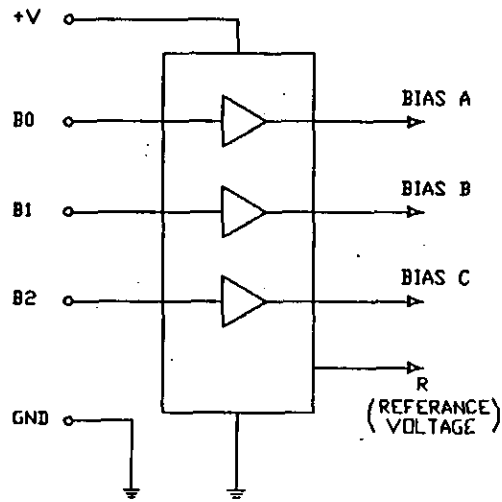
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN [Signature]	6/22/93
CHECKED [Signature]	6/29/93

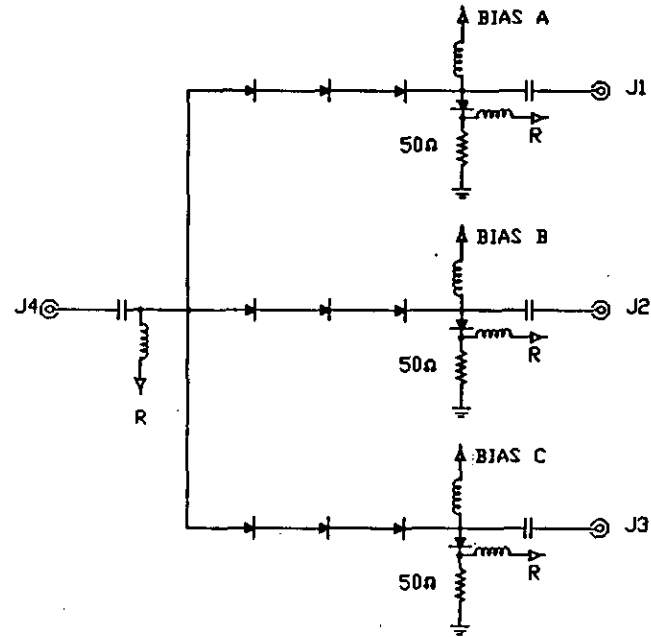
PRODUCT FEATURE
SW-2181-3AT-B3072
1-2 GHz, NON-REFLECTIVE SP3T SWITCH MODULE
SIZE A SHEET 1 OF 2 DWG. # 100-3185

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



6-10

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-3AT-B3072 1-2 GHz, NON-REFLECTIVE SP3T SWITCH MODULE	
APPROVALS	DATE	SIZE	SHEET 2 OF 2
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	1/22/93 6/27/93	A	DWG. # 100-3185

DESCRIPTION

AMC MODEL SW-2181-3AT-A3072 IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.

SPECIFICATIONS

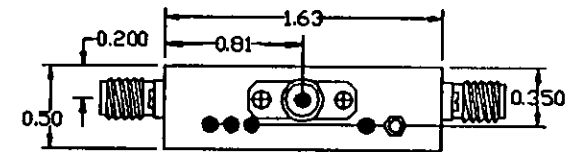
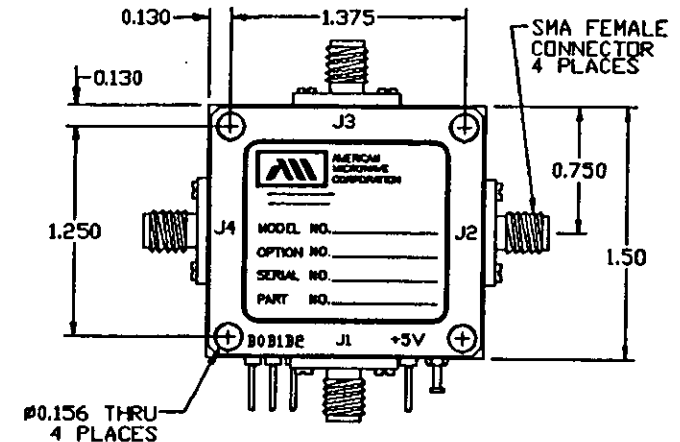
- FREQUENCY RANGE 2-4 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- RF POWER HANDLING 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 500 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 500 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 1 μ s MAXIMUM
 - OFF (50% TTL TO 10% RF) 1 μ s MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- SUPPLY POWER +5VDC \pm 5% @ 200 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 1.63" x 1.50" x 0.50"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDEO FILTER (0.5 dB EXCESS LOSS)
- A05 2 BIT BINARY DECODER
- A06 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A13 J4 SMA MALE, J1-J3 SMA FEMALE
- A14 J4 SMA FEMALE, J1-J3 SMA MALE
- A16 +9 VDC TO +18 VDC SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207177-3	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE




TRUTH TABLE			
B2	B1	B0	RF PATH
1	1	0	J4-J1
1	0	1	J4-J2
0	1	1	J4-J3

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 - 3) WEIGHT: APPROX. 2.5 OZ

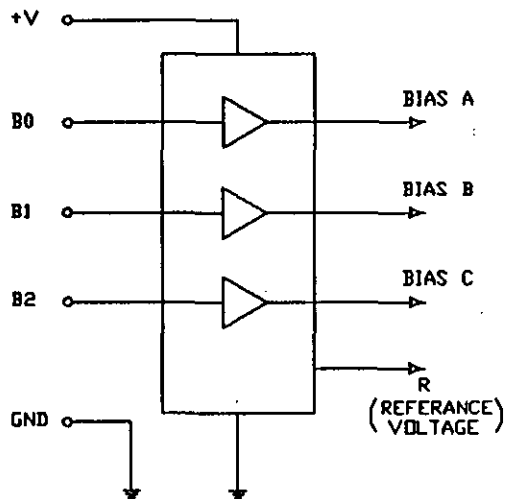
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

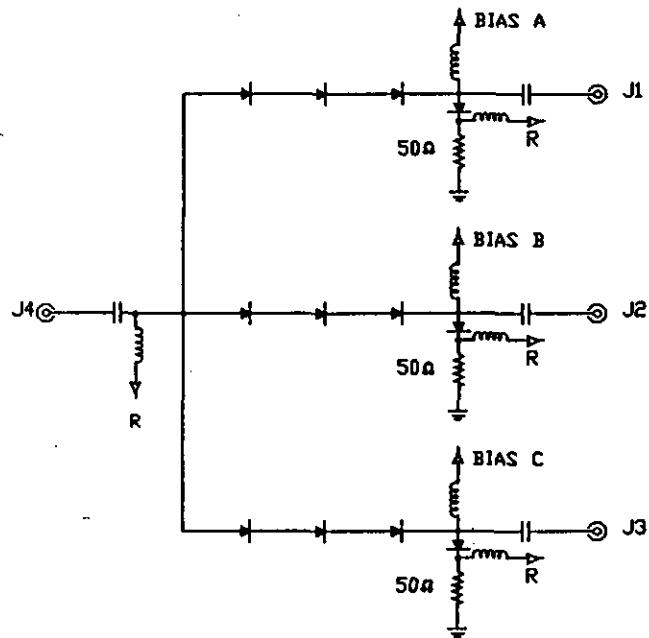
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-3AT-A3072 2-4 GHz, NON-REFLECTIVE SP3T SWITCH MODULE	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DWRN <i>WSP</i>	11/22/92	A	DWG. # 100-2905
CHECKED <i>[Signature]</i>	11/22/92		

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



6-12



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WJP</i>	11/22/92
CHECKED <i>[Signature]</i>	11/22/92

PRODUCT FEATURE		
SW-2181-3AT-A3072		
2-4 GHz, NON-REFLECTIVE SP3T SWITCH MODULE		
SIZE A	SHEET 2 OF 2	DWG. # 100-2905

DESCRIPTION

AMC MODEL SW-2181-3AT IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER DESIGNED FOR BROAD BAND AND LOW IN-BAND VIDEO TRANSIENT SIGNAL APPLICATIONS.

SPECIFICATIONS

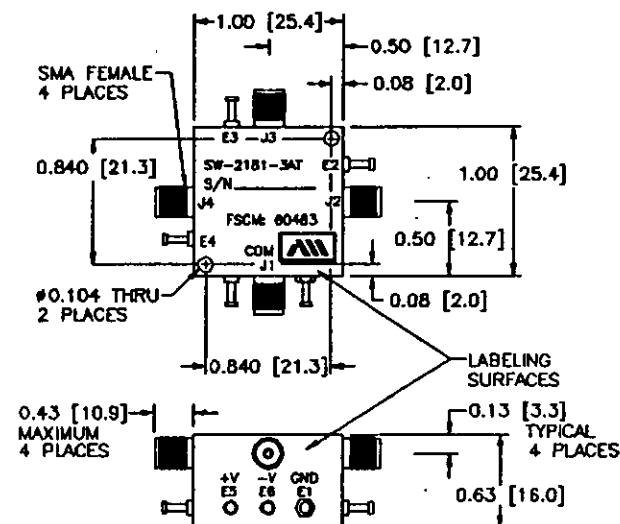
- FREQUENCY RANGE 0.1-18 GHz MINIMUM
- INSERTION LOSS 4.0 dB MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR (ON/OFF) 2.0:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- IN BAND VIDEO POWER/TRANSIENTS -60 dBm MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
3 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- POWER SUPPLY +5VDC ±5% @ 120 mA MAXIMUM
-5VDC ±5% @ 60 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.0" x 1.0" x 0.63"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0", ISOLATION)
- A13 ±9VDC TO ±18VDC SUPPLY
- A14 J1 SMA MALE, J2-J4 SMA FEMALE CONNECTORS
- A14 J1 SMA FEMALE, J2-J4 SMA MALE CONNECTORS

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 202250E-2	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE




TRUTH TABLE			
E4	E3	E2	RF PATH ON
1	1	0	J1-J2
1	0	1	J1-J3
0	1	1	J1-J4

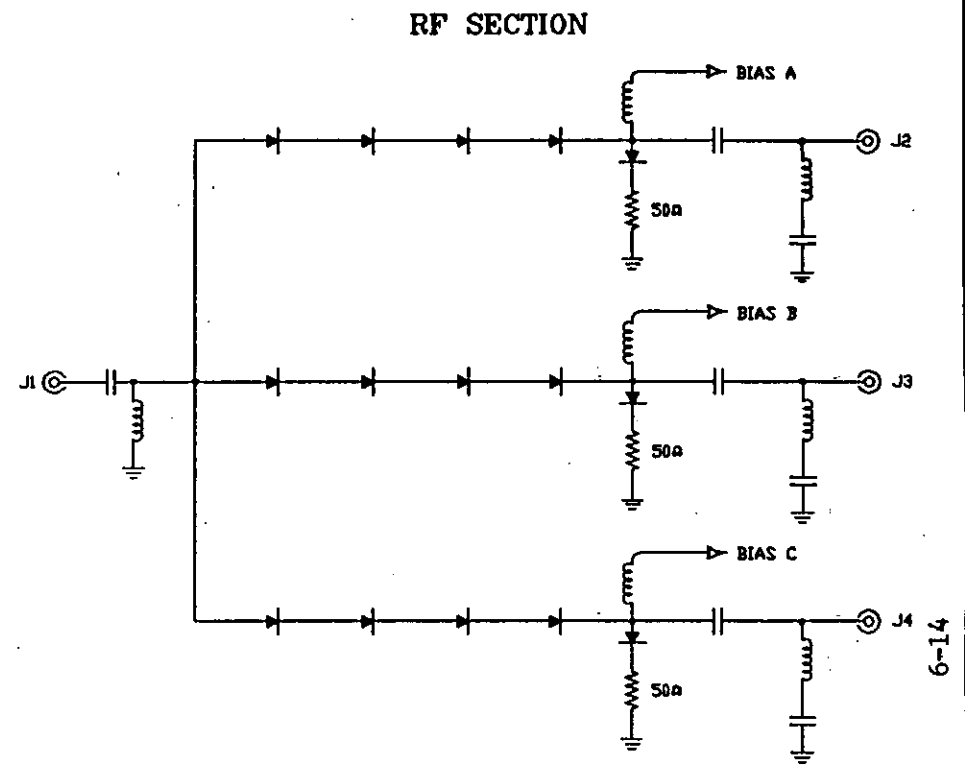
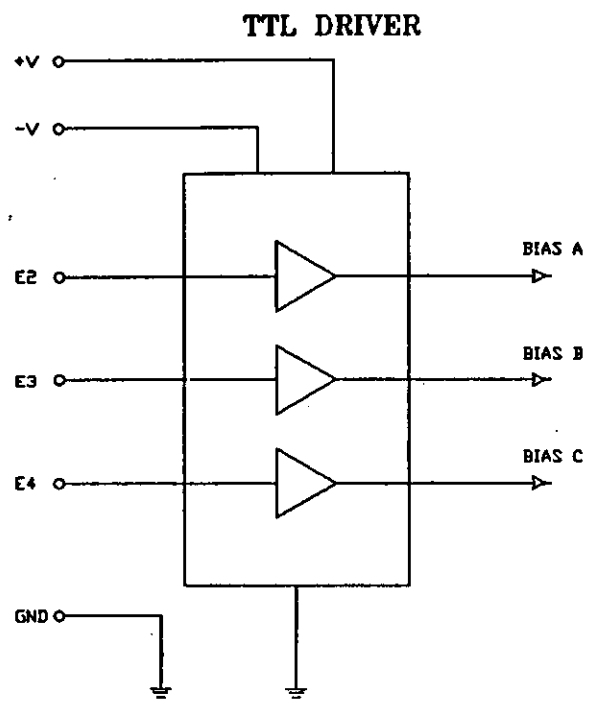
- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-3AT-230 0.1-18 GHz, NON-REFLECTIVE SP3T SWITCH MODULE	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN: <i>[Signature]</i> CHECKED: <i>[Signature]</i>	11/22/92 11/22/92	A	DWG. # 100-2869

FUNCTIONAL SCHEMATIC




		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WJG</i>	DATE 11/22/92	SW-2181-3AT-230	
CHECKED <i>[Signature]</i>	DATE 11/22/92	D.1-18 GHz, NON-REFLECTIVE SP3T SWITCH MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2869	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
7	SP4T, REFLECTIVE	7-1
	● 8.5-10.5 GHz 2KW PEAK/2W AVERAGE POWER SWITCH MODULE, AMC MODEL NO: SWH-0811-4.....	7-3
	● 8-18 GHz SWITCH MODULE, AMC MODEL NO: SW-8018-4A.....	7-5
	● 2-18 GHz BAND-SWITCH MODULE, AMC MODEL NO: SW-218-4S.....	7-7
	● 1-18GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-4D.....	7-9
	● 1-18 GHz SLIM-LINE SWITCH MODULE, AMC MODEL NO: SWS-2183-4D.....	7-11

DESCRIPTION

AMC MODEL SWH-0811-4 IS A REFLECTIVE, ALL SHUNT SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, CAPABLE OF HANDLING 2KW PEAK POWER.

SPECIFICATIONS

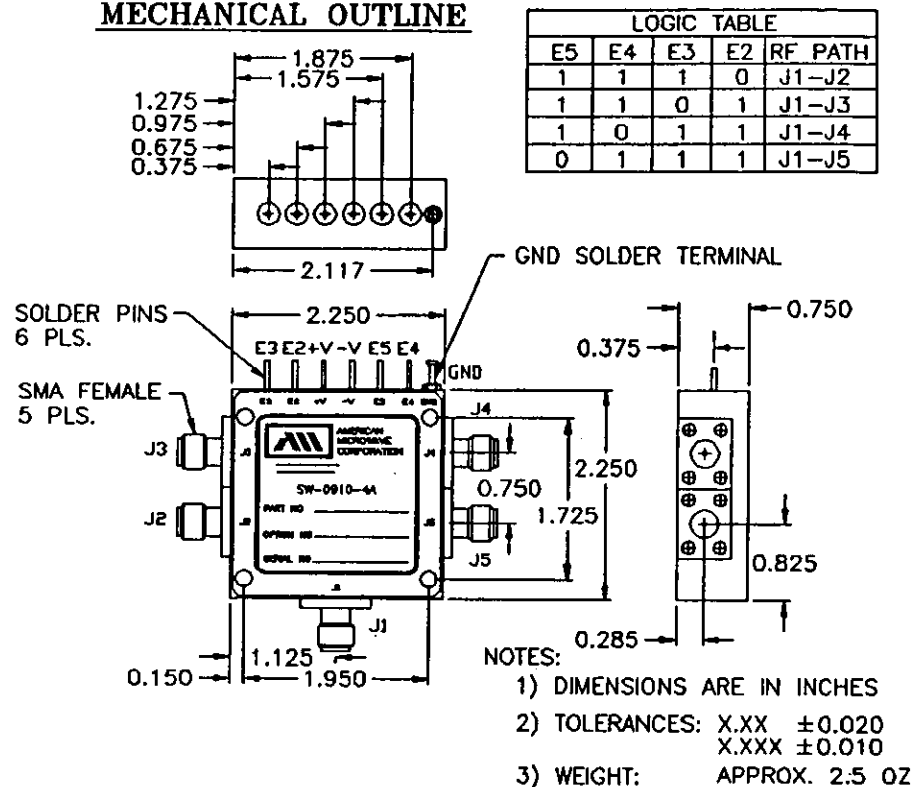
- FREQUENCY RANGE 8.5-10.5 GHz MINIMUM
- INSERTION LOSS 9.0-10.0 GHz 1.8dB MAXIMUM
8.5-10.5 GHz 2.0dB MAXIMUM
- ISOLATION 50dB MINIMUM
- VSWR (ON/OFF) 1.8:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 50ns MAXIMUM
FALL (90% RF TO 10% RF) 100ns MAXIMUM
ON (50% TTL TO 90% RF) 150ns MAXIMUM
OFF (50% TTL TO 10% RF) 250ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
4 INDEPENDENT CONTROLS
LOGIC "0" PATH ON
LOGIC "1" PATH OFF
(SEE LOGIC TABLE)
- RF POWER RATINGS 2KW PEAK/2W AVERAGE
0.2 TO 1.5 μ S PULSE WIDTH
800 TO 4000 Hz PRF RATE
OR
1DOW PEAK/5W AVERAGE
0.2 TO 65 μ S PULSE WIDTH
UP TO 150 KHz PRF RATE
- POWER SUPPLY +5VDC \pm 5% @ 100mA MAXIMUM
-15VDC \pm 5% @ 40mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 2.25" x 2.25" x .75"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A14 J1 SMA MALE, J2 TO J5 SMA FEMALE
- A15 J1 SMA FEMALE, J2 TO J5 SMA MALE
- A16 +15VDC POWER SUPPLY


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20379E	11/8/92	<i>JM</i>

MECHANICAL OUTLINE



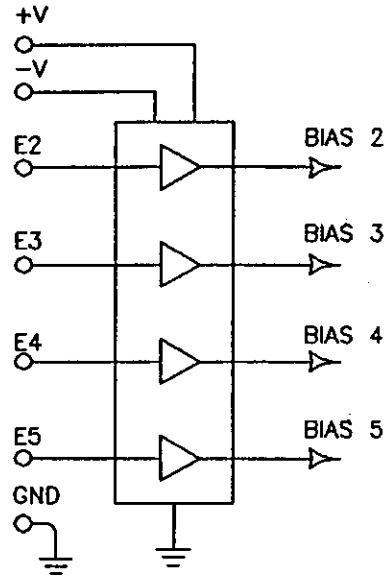
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

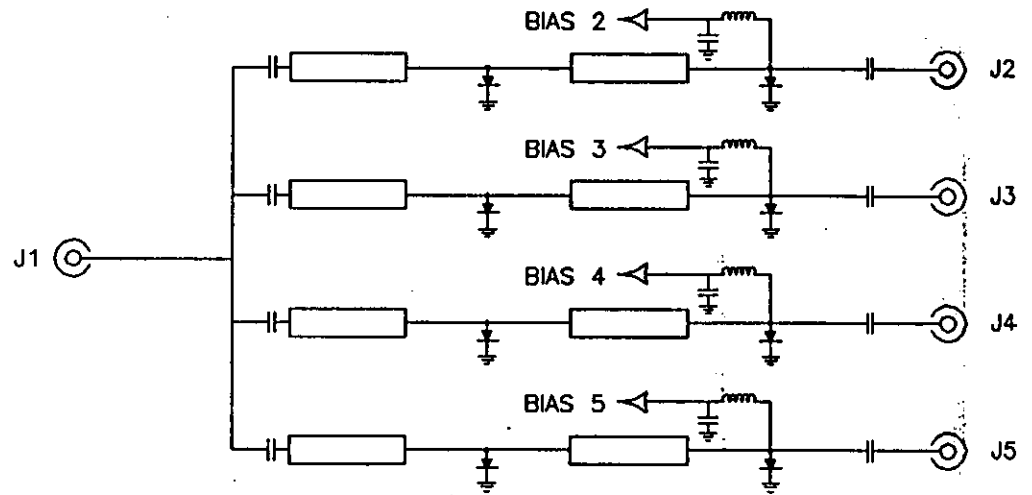
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SWH-0811-4	
<i>[Signature]</i>	11/8/92	8.5-10.5 GHz, REFLECTIVE, 2KW PEAK POWER SP4T SWITCH	
CHECKED	11/22/92	SIZE A	SHEET 1 OF 2
		DWG. # 100-2804	

FUNCTIONAL SCHEMATIC

DRIVER CIRCUIT



RF SECTION



7-4



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS

DATE

DRAWN

W.Y.P.

11/6/92

CHECKED

[Signature]

11/22/92

PRODUCT FEATURE

SWH-0811-4

8.5-10.5 GHz, REFLECTIVE, 2KW PEAK POWER SP4T SWITCH

SIZE A

SHEET 2 OF 2

DWG. # 100-2804

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10339	11/22/92	<i>Jay</i>

DESCRIPTION

AMC MODEL SW-8018-4A IS A REFLECTIVE SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

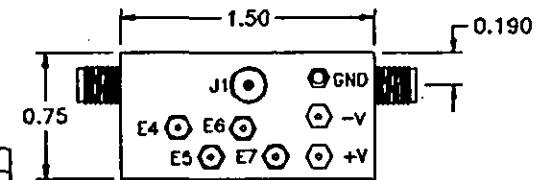
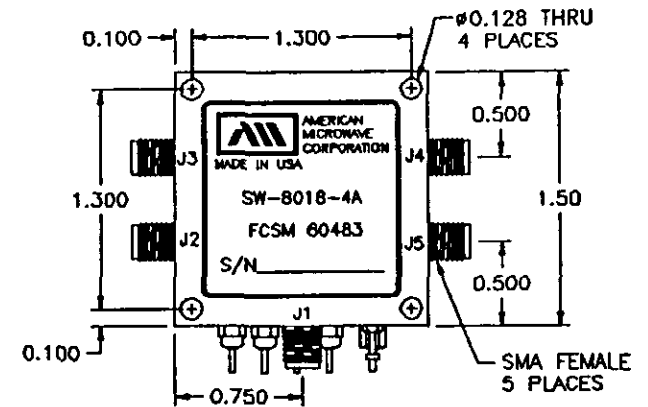
SPECIFICATIONS

- FREQUENCY RANGE 8-18 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- ISOLATION 50 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- RF POWER RATINGS 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 100 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 100 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 200 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 200 ns MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
4 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- POWER SUPPLY +5VDC ±5% @175 mA MAXIMUM
-15VDC ±5% @175 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.50" x 1.50" x 0.75"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 VIDEO FILTER (0.5 dB EXCESS LOSS)
- A13 +15 VDC SUPPLY

MECHANICAL OUTLINE




TRUTH TABLE				
E7	E8	E5	E4	RF PATH
1	1	1	0	J1-J2
1	1	0	1	J1-J3
1	0	1	1	J1-J4
0	1	1	1	J1-J5

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 6 OZ

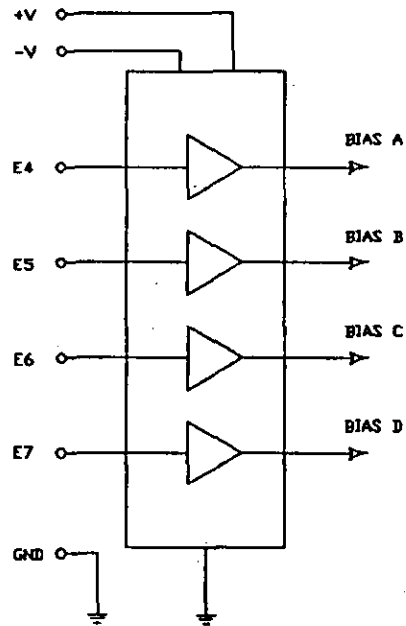
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

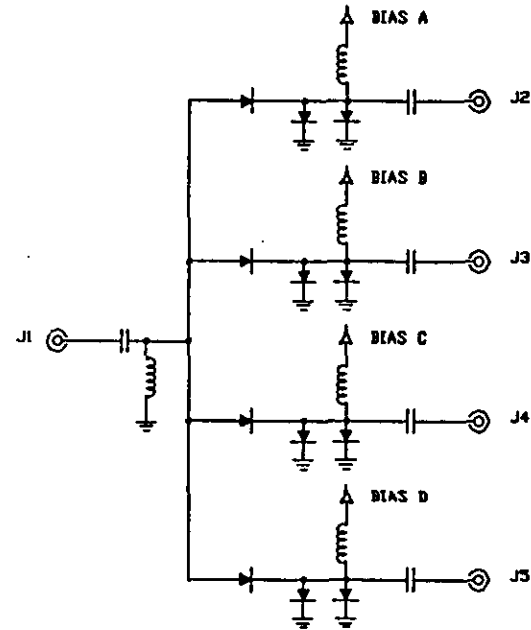
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938		
		PRODUCT FEATURE SW-8018-4A 8-18 GHz, REFLECTIVE SP4T SWITCH MODULE		
APPROVALS <i>WSP</i> DATE 11/22/92	APPROVALS <i>Jay</i> DATE 11/22/92	SIZE A	SHEET 1 OF 2	DWG. # 100-2887

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



7-6

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/82	SW-8018-4A	
CHECKED <i>W. Dehler</i>	11/22/82	8-18 GHz, REFLECTIVE SP4T SWITCH MODULE	
SIZE	A	SHEET 2 OF 2	DWG. # 100-2887

DESCRIPTION

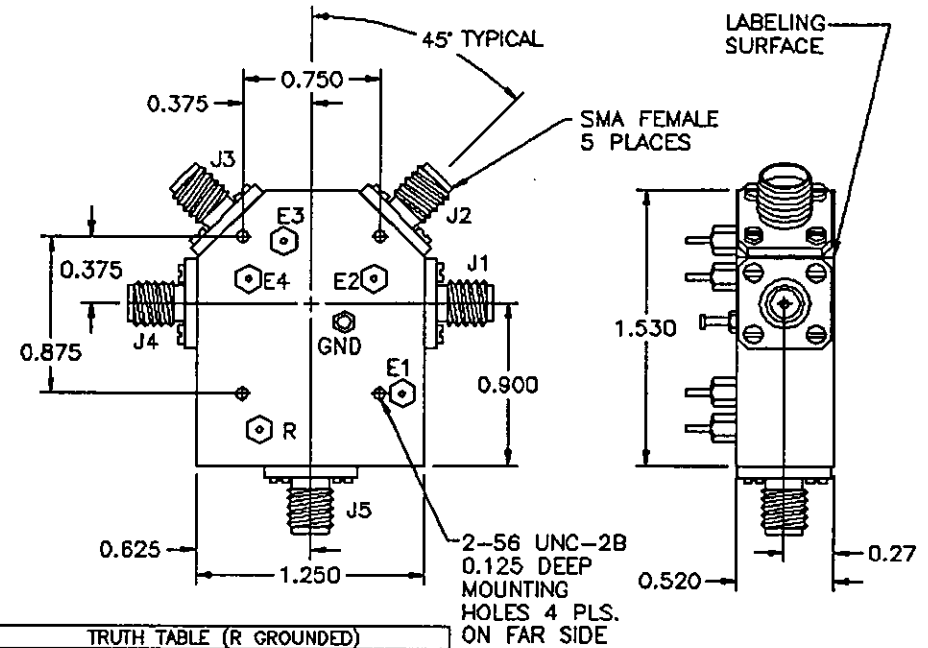
AMC MODEL SW-218-4S IS A REFLECTIVE SP4T BAND-SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, AMC DWG # 200-370	11/22/92	<i>[Signature]</i>

SPECIFICATIONS

- **FREQUENCY**
 - J5-J1 2-4 GHz MINIMUM
 - J5-J2 4-8 GHz MINIMUM
 - J5-J4 8-12.4 GHz MINIMUM
 - J5-J3 12.4-18 GHz MINIMUM
- **INSERTION LOSS**
 - J5-J1 1.1 dB MAXIMUM
 - J5-J2 1.2 dB MAXIMUM
 - J5-J4 1.8 dB MAXIMUM
 - J5-J3 2.3 dB MAXIMUM
- **ISOLATION**
 - J5-J1 45 dB MINIMUM
 - J5-J2 40 dB MINIMUM
 - J5-J4 35 dB MINIMUM
 - J5-J3 30 dB MINIMUM
- **VSWR (ON)**
 - J5-J1 1.8:1 MAXIMUM
 - J5-J2 2.0:1 MAXIMUM
 - J5-J4 2.2:1 MAXIMUM
 - J5-J3 2.5:1 MAXIMUM
- **RF POWER RATINGS** +27 dBm CW MAXIMUM
- **SWITCHING TIME**
 - RISE (10% RF TO 90% RF) 300 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 300 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 500 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 500 ns MAXIMUM
- **CONTROLS** CURRENT CONTROLLED
4 INDIVIDUAL CONTROLS
+2D mA = ISOLATION
-2D mA = INSERTION LOSS
(SEE TRUTH TABLE)
- **CONNECTORS**
 - RF INPUT/OUTPUT SMA (FEMALE)
 - CONTROL SOLDER PIN
- **SIZE** 1.25" x 1.53" x 0.52"

MECHANICAL OUTLINE



TRUTH TABLE (R GROUNDED)				
E4	E3	E2	E1	RF PATH
+20mA	+20mA	+20mA	-20mA	J5-J1
+20mA	+20mA	-20mA	+20mA	J5-J2
+20mA	-20mA	+20mA	+20mA	J5-J3
-20mA	+20mA	+20mA	+20mA	J5-J4


- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 2.5 OZ

ENVIRONMENTAL RATINGS

- **TEMPERATURE** -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- **HUMIDITY** MIL-STD-202F, METHOD 103B COND. B
- **SHOCK** MIL-STD-202F, METHOD 213B COND. B
- **VIBRATION** MIL-STD-202F, METHOD 204D COND. B
- **ALTITUDE** MIL-STD-202F, METHOD 105C COND. B
- **TEMPERATURE CYCLE** MIL-STD-202F, METHOD 107D COND. A

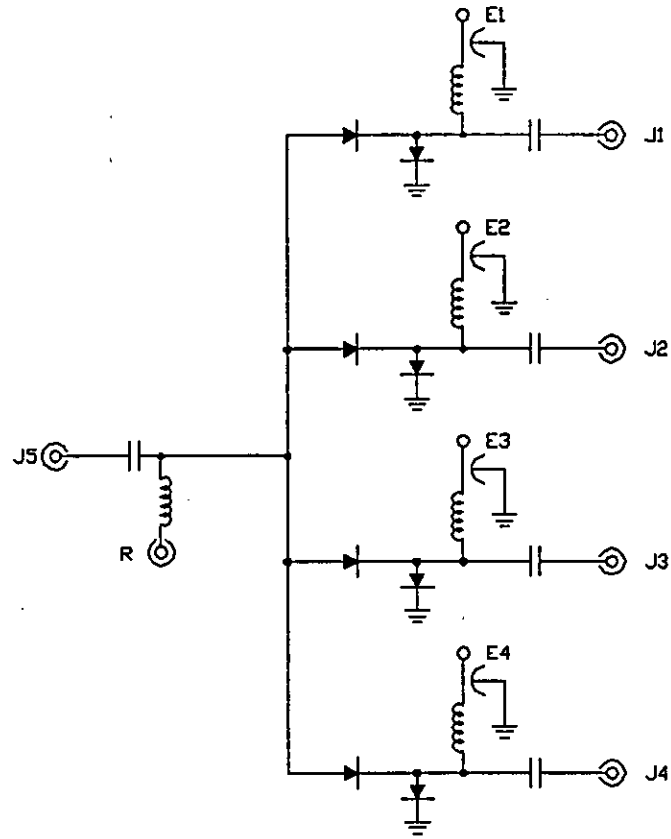
AVAILABLE OPTIONS

- A13 J5 SMA MALE, J1-J4 SMA FEMALE
- A14 J5 SMA FEMALE, J1-J4 SMA MALE
- A15 60 dB ISOLATION (CONSULT FACTORY)

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-218-4S 2-18 GHz, REFLECTIVE SP4T BAND-SWITCH MODULE	
APPROVALS DRAWN <i>W. J. P.</i> CHECKED <i>[Signature]</i>	DATE 11/22/92 1/22/92	SIZE A	SHEET 1 OF 2
		DWG. # 100-2898	

7-7

FUNCTIONAL SCHEMATIC



7-8



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<small>DRAWN</small> <i>WYD</i>	11/22/92
<small>CHECKED</small> <i>[Signature]</i>	11/22/92

PRODUCT FEATURE

SW-218-4S

2-18 GHz, REFLECTIVE SP4T BAND-SWITCH MODULE

DESCRIPTION

AMC MODEL SW-1182-4D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

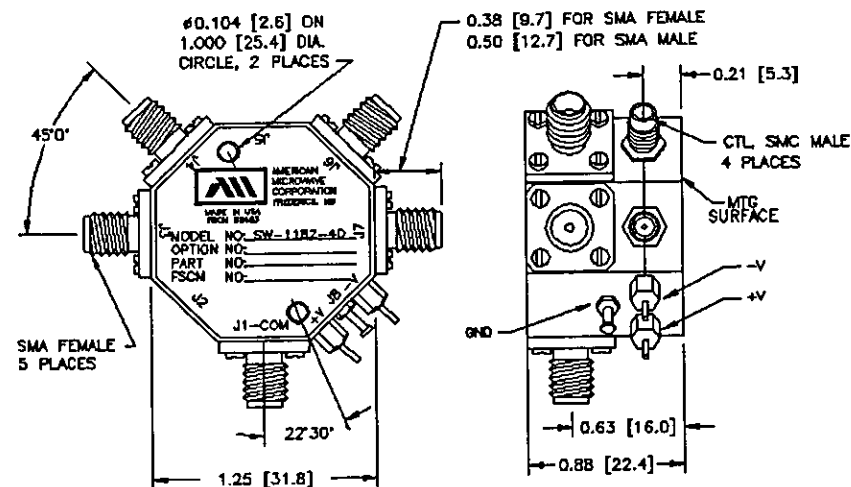
- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.4 dB MAXIMUM
4-8 GHz, 1.5 dB MAXIMUM
8-12.4 GHz, 2.0 dB MAXIMUM
12.4-18 GHz, 2.6 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 65 dB MINIMUM
12.4-18 GHz, 55 dB MINIMUM
- VSWR (ON) 1.8:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1 μ S, PW MAXIMUM)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 20 ns MAXIMUM
FALL (90% RF TO 10% RF) 20 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC \pm 5% @ 150 mA MAXIMUM
-12 TO -15VDC @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 1.25" x 1.25" x 0.88"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SOLDER PIN CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
A		ORIGINAL RELEASE, JOB #30110E	6/10/93	<i>[Signature]</i>

MECHANICAL OUTLINE



TRUTH TABLE				
E7	E6	E4	E3	RF PATH ON
1	1	1	0	J1-J3
1	1	0	1	J1-J4
1	0	1	1	J1-J6
0	1	1	1	J1-J7

NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



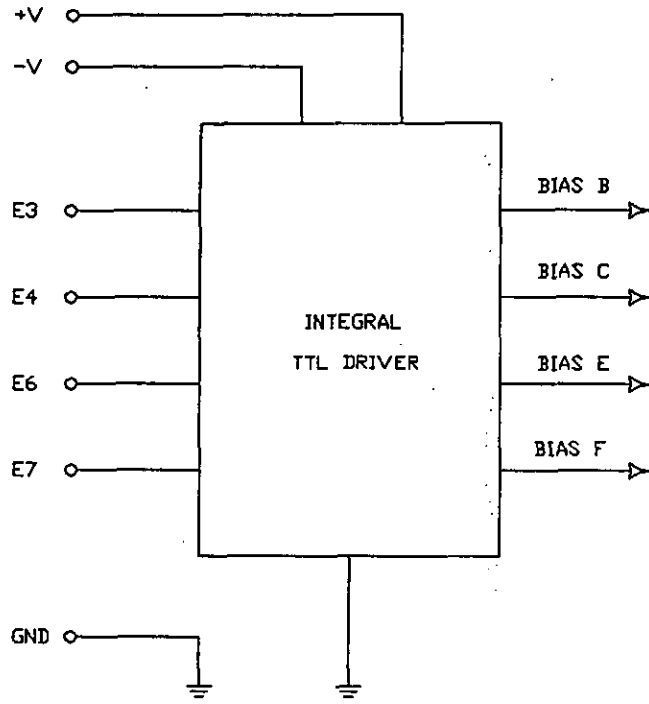
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	6/10/93
CHECKED <i>[Signature]</i>	6/10/93

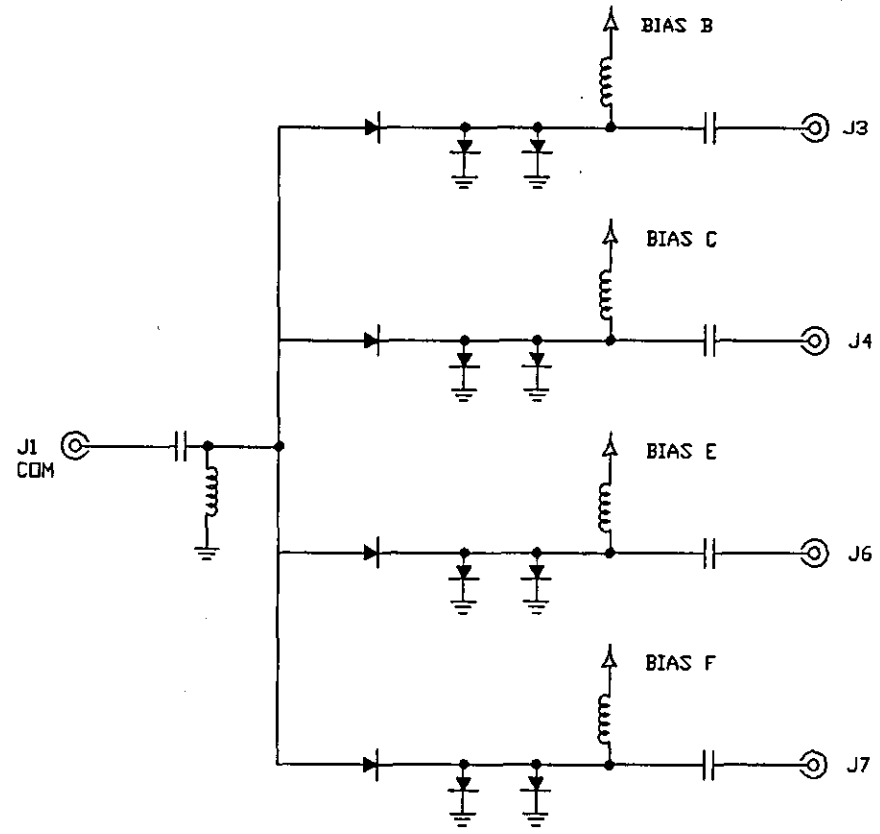
PRODUCT FEATURE
SW-1182-4D
1.0-18 GHz, SP4T SWITCH MODULE

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION



7-10

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-1182-4D 1.0-18 GHz, SP4T SWITCH MODULE.	
DRAWN <i>WSP</i>	6/10/93	SIZE	A SHEET 2 OF 2 DWG. # 100-2964
CHECKED <i>[Signature]</i>	6/10/93		

DESCRIPTION

AMC MODEL SW-1182-4D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

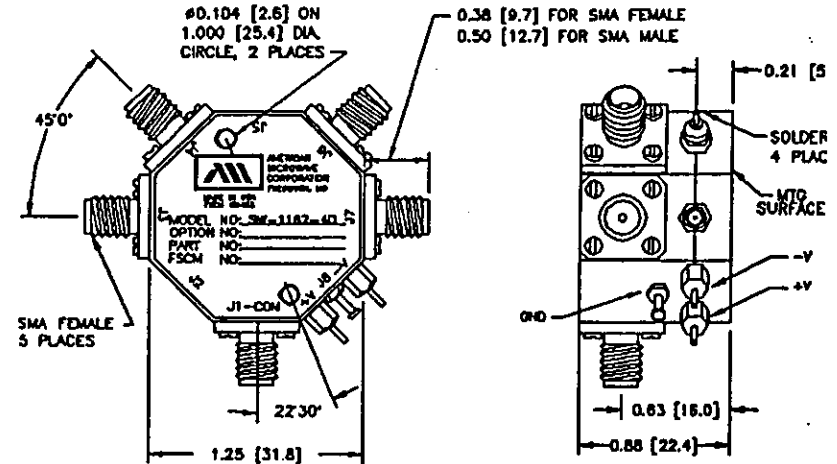
- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.4 dB MAXIMUM
4-8 GHz, 1.5 dB MAXIMUM
8-12.4 GHz, 2.0 dB MAXIMUM
12.4-18 GHz, 2.6 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 65 dB MINIMUM
12.4-18 GHz, 55 dB MINIMUM
- VSWR (ON) 1.8:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1μS, PW MAXIMUM)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 20 ns MAXIMUM
FALL (90% RF TO 10% RF) 20 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 150 mA MAXIMUM
-12 TO -15VDC @ 50 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.25" x 1.25" x 0.88"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SMC MALE CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB #30110E	3/8/95	<i>My</i>

MECHANICAL OUTLINE



TRUTH TABLE				
E7	E6	E4	E3	RF PATH ON
1	1	1	0	J1-J3
1	1	0	1	J1-J4
1	0	1	1	J1-J6
0	1	1	1	J1-J7

NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 1038 COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 1070 COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

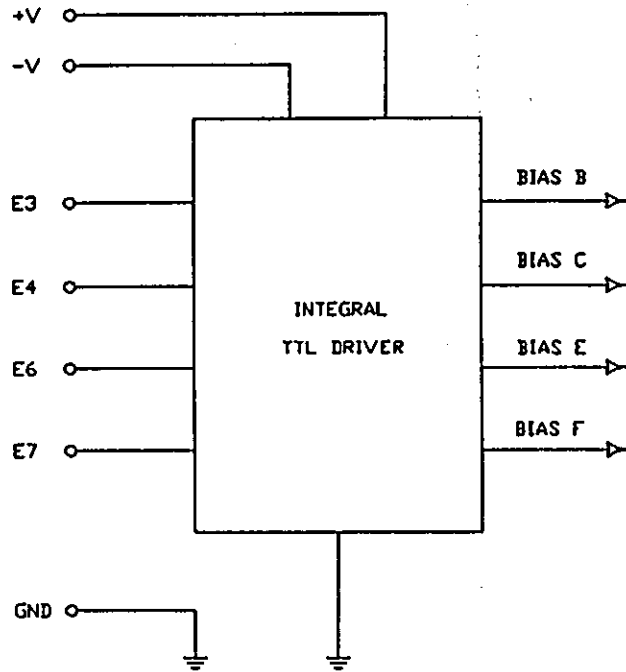
APPROVALS	DATE
DRAWN <i>WSP</i>	3/8/95
CHECKED	

PRODUCT FEATURE
SW-1182-4D
1.0-18 GHz, SP4T SWITCH MODULE

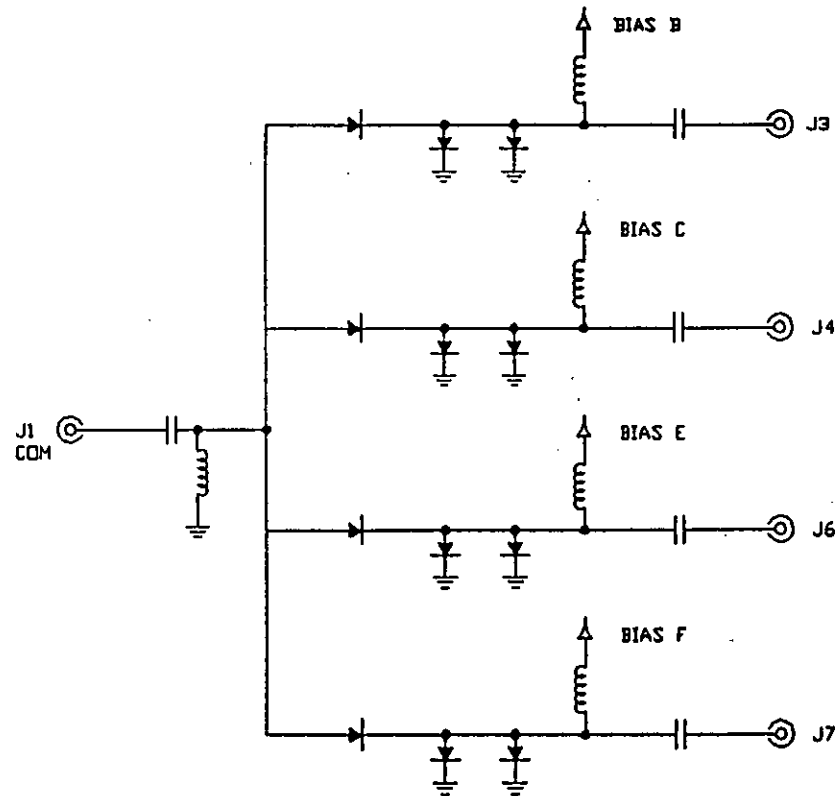
SIZE A SHEET 1 OF 2 DWG. # 100-2964

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION



7-10A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-1182-4D 1.0-18 GHz, SP4T SWITCH MODULE	
DRAWN <i>WSP</i>	3/6/95	SIZE	SHEET 2 OF 2
CHECKED		A	DWG. # 100-2964

DESCRIPTION

AMC MODEL SW-1170-4D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

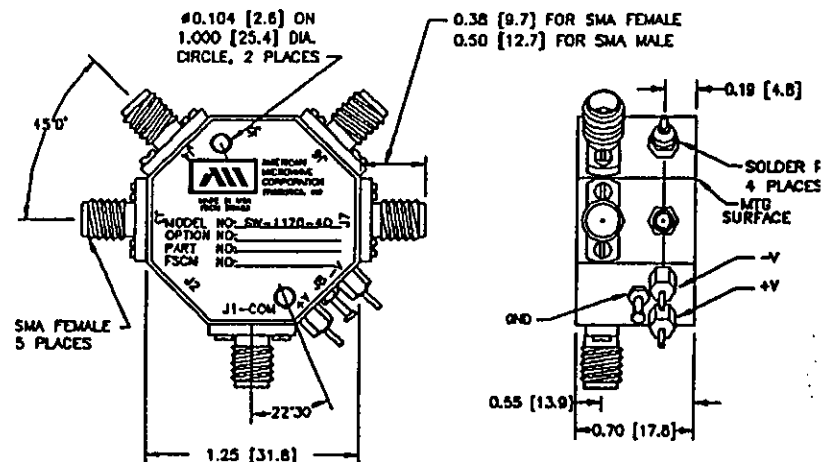
SPECIFICATIONS

● FREQUENCY RANGE	1-18 GHz MINIMUM
● INSERTION LOSS	1-4 GHz, 1.4 dB MAXIMUM 4-8 GHz, 1.5 dB MAXIMUM 8-12.4 GHz, 2.0 dB MAXIMUM 12.4-18 GHz, 2.6 dB MAXIMUM
● ISOLATION	1-12.4 GHz, 65 dB MINIMUM 12.4-18 GHz, 55 dB MINIMUM
● VSWR (ON)	1.8:1 MAXIMUM
● RF POWER RATING	1W CW, 75W PEAK (1μS, PW MAXIMUM)
● SWITCHING TIME	
RISE (10% RF TO 90% RF)	20 ns MAXIMUM
FALL (90% RF TO 10% RF)	20 ns MAXIMUM
ON (50% TTL TO 90% RF)	50 ns MAXIMUM
OFF (50% TTL TO 10% RF)	50 ns MAXIMUM
● CONTROL	TTL, LOW POWER SCHOTTKY, (UNITY LOAD) (SEE TRUTH TABLE) LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION
● POWER SUPPLY	+5VDC ±5% @ 150 mA MAXIMUM -12 TO -15VDC @ 50 mA MAXIMUM
● CONNECTORS	
RF INPUT/OUTPUT	SMA (FEMALE)
POWER	SOLDER PIN
CONTROL	SOLDER PIN
● SIZE	1.25" x 1.25" x 0.70"

AVAILABLE OPTIONS

A01	50Ω CONTROL IMPEDANCE
A02	100Ω CONTROL IMPEDANCE
A03	INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
A04	EXTENDED FREQUENCY RANGE TO 100 MHz
A07	VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
A08	VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
A09	VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
A10	SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
A11	SMC MALE CONTROL TERMINALS
A13	+12 TO +18 VDC POWER SUPPLY
A14	-5 VDC POWER SUPPLY

MECHANICAL OUTLINE



TRUTH TABLE					
E7	E6	E4	E3	RF PATH ON	
1	1	1	0	J1-J3	
1	1	0	1	J1-J4	
1	0	1	1	J1-J6	
0	1	1	1	J1-J7	

NOTES:

- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

● TEMPERATURE:

OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C

- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

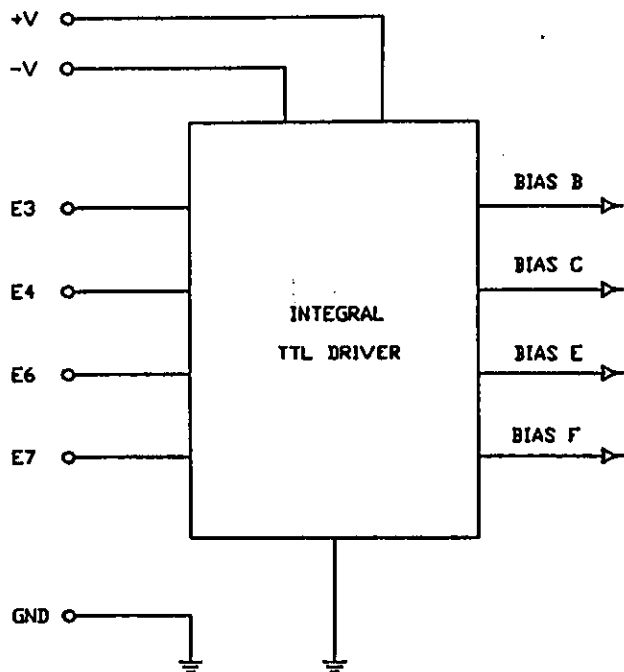
APPROVALS	DATE
DRAWN WSP	3/6/95
CHECKED	

PRODUCT FEATURE
SW-1170-4D
1.0-18 GHz, SP4T SWITCH MODULE

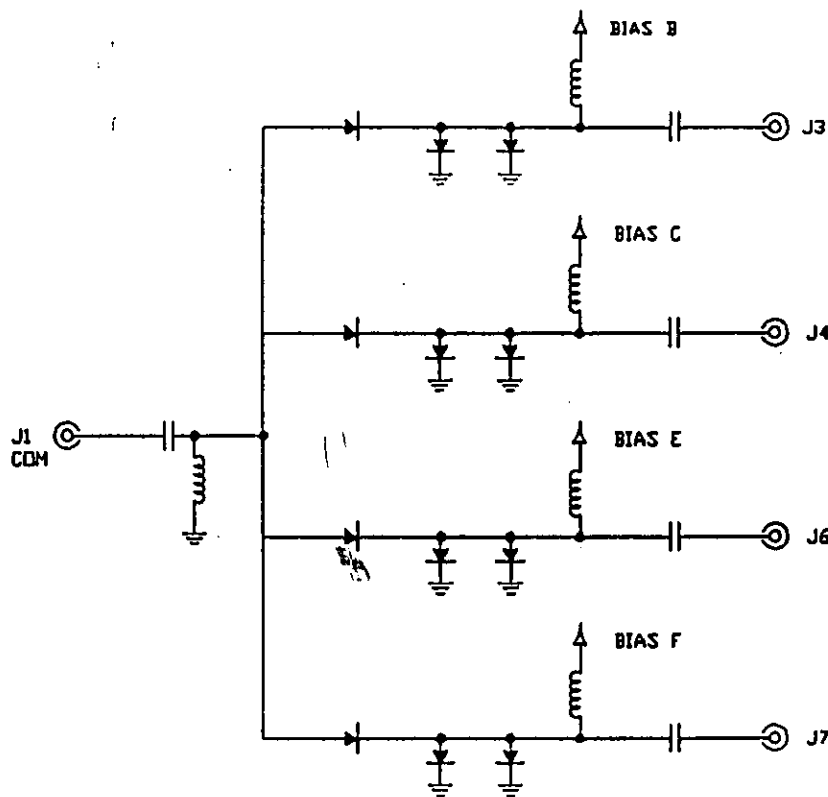
SIZE A SHEET 1 OF 2 DWG. # 100-3670

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION

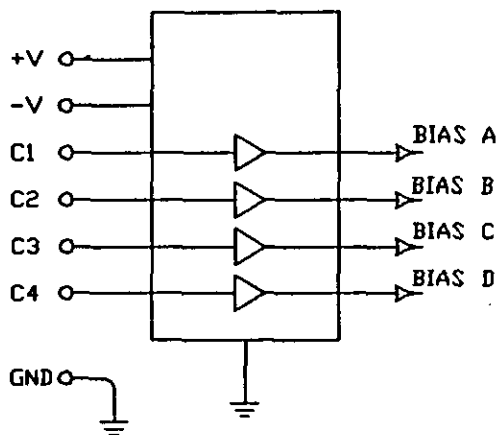


7-10B

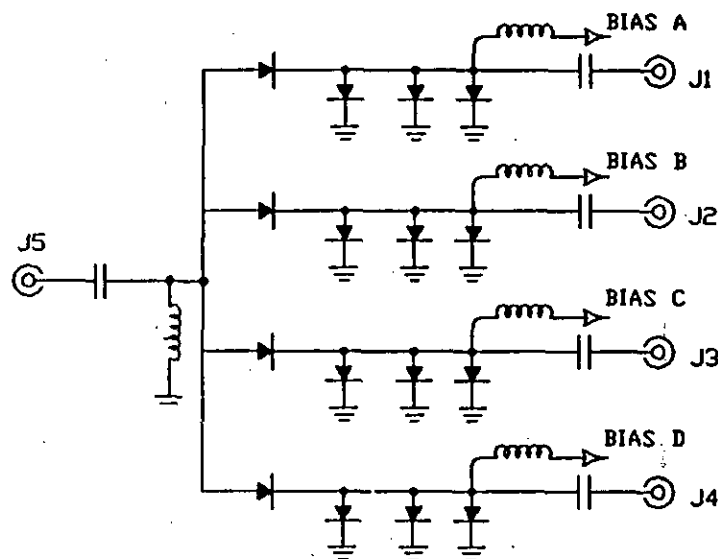
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	3/8/95	SW-1170-4D	
CHECKED		1.0-18 GHz, SP4T SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-3670	

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



7-12


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
<small>APPROVALS</small>	<small>DATE</small>	PRODUCT FEATURE	
<small>DESIGN</small> <i>[Signature]</i>	11/17/02	SWS-2183-4D	
<small>CHECKED</small> <i>[Signature]</i>	11/22/02	1 TO 18 GHz, SLIM LINE, REFLECTIVE, SP4T SWITCH MODULE	
		<small>SIZE A</small>	<small>SHEET 2 OF 2</small>
			<small>DWG. # 100-2535-4</small>



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
8	SP4T, NON-REFLECTIVE/ABSORPTIVE.....	8-1
	● 0.01-2.0 GHz SWITCH MODULE, AMC MODEL NO: SW-2000-4AT.....	8-3
	● 0.1-20 GHz HIGH ISOLATION SWITCH MODULE, AMC MODEL NO: SW-2185-4AT.....	8-5

DESCRIPTION

AMC MODEL SW-2000-4AT IS AN ABSORPTIVE SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW LOSS AND LOW VSWR BROAD BAND APPLICATIONS.

SPECIFICATIONS

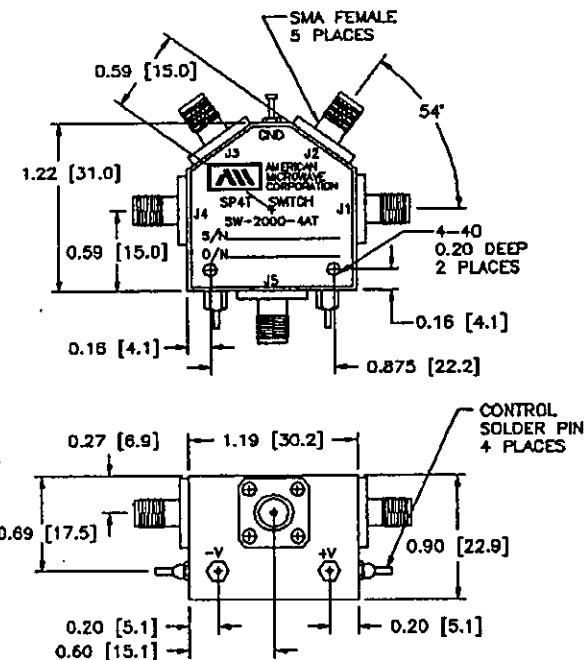
- FREQUENCY RANGE 0.1-2 GHz MINIMUM
- INSERTION LOSS 1 dB MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON/OFF) 1.2:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
- POWER SUPPLY +5VDC ±5% @ 200 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.19" x 1.22" x 0.90"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A08 SMA MALE CONNECTORS
- A10 ±12VDC TO ±18VDC SUPPLY POWER
- A11 SMC MALE CTL CONNECTOR

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207197-2E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 6 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE	PRODUCT FEATURE SW-2000-4AT (SW-2181-4AT-A3052) 0.01-2.0 GHz, NON-REFLECTIVE SP4T SWITCH MODULE
DRAWN <i>[Signature]</i>	11/22/92	
CHECKED <i>[Signature]</i>	11/22/92	
SIZE A		SHEET 1 OF 2
		DWG. # 100-2876

DESCRIPTION

AMC MODEL SW-2000-4AT IS AN ABSORPTIVE SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW LOSS AND LOW VSWR BROAD BAND APPLICATIONS.

SPECIFICATIONS

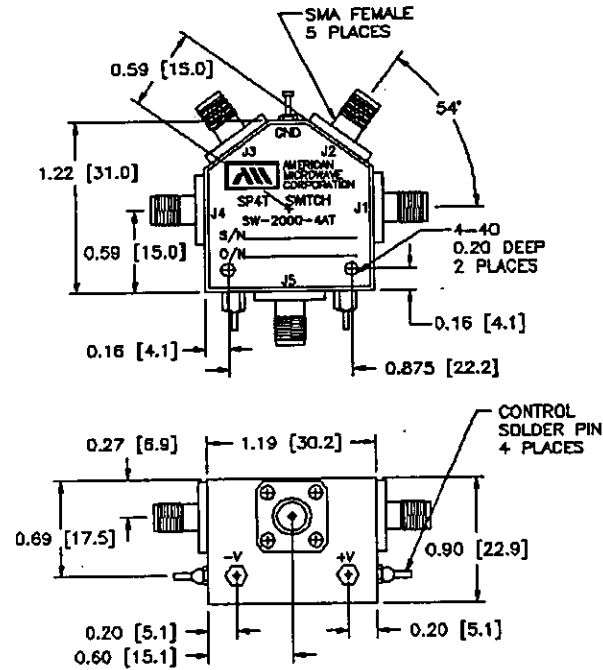
- FREQUENCY RANGE 0.1-2 GHz MINIMUM
- INSERTION LOSS 1 dB MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON/OFF) 1.2:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
- POWER SUPPLY +5VDC ±5% @ 200 mA MAXIMUM
-5VDC ±5% @ 50 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN (EMI)
 - CONTROL SOLDER PIN
- SIZE 1.19" x 1.22" x 0.90"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A08 SMA MALE CONNECTORS
- A10 ±12VDC TO ±18VDC SUPPLY POWER
- A11 SMC MALE CTL CONNECTOR

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 207197-2E	11/22/92	<i>[Signature]</i>


MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 6 OZ

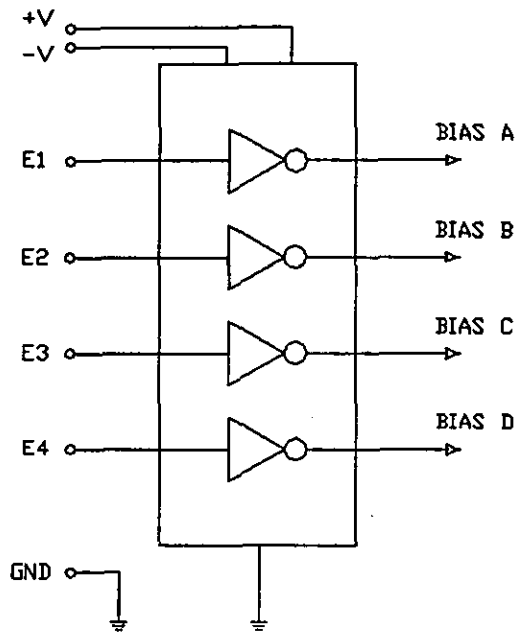
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

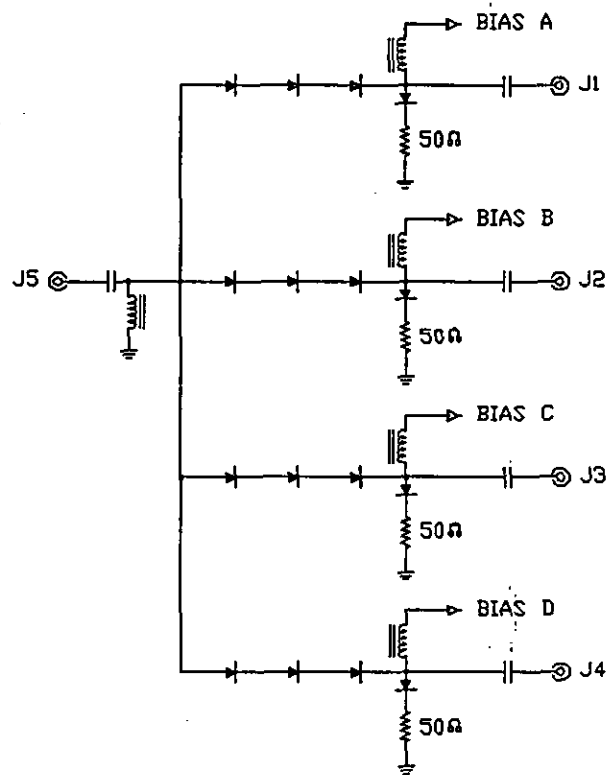
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2000-4AT (SW-2181-4AT-A3052)	
APPROVALS	DATE	D.01-2.0 GHz, NON-REFLECTIVE SP4T SWITCH MODULE SIZE A SHEET 1 OF 2 DWG. # 100-2876	
DRAWN <i>[Signature]</i> CHECKED <i>[Signature]</i>	11/22/92 11/22/92		

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION



8-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2000-4AT (SW-2181-4AT-A3052)	
DRAWN <i>W. J. P.</i>	DATE 1/22/92	0.01-2.0 GHz, NON-REFLECTIVE SP4T SWITCH MODULE	
CHECKED <i>[Signature]</i>		SIZE A	SHEET 2 OF 2
		DWG. # 100-2876	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 2013	11/22/02	<i>[Signature]</i>

DESCRIPTION

AMC MODEL SW-2185-4AT IS AN ABSORPTIVE SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD-BAND, VERY HIGH ISOLATION, AND PHASE MATCHED APPLICATIONS.

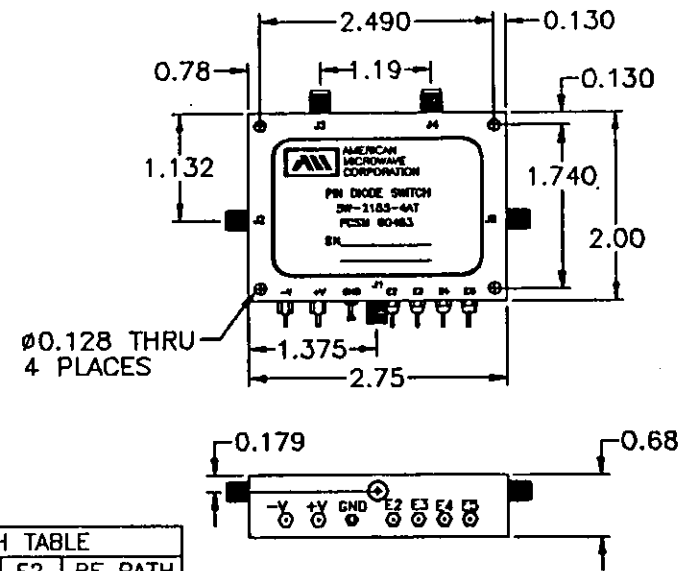
SPECIFICATIONS

- FREQUENCY RANGE 0.1-20 GHz MINIMUM
- INSERTION LOSS 5.0 dB MAXIMUM
- ISOLATION 110 dB MINIMUM
- VSWR (ON/OFF) 2:1 MAXIMUM
- RF POWER RATINGS 1 WATT CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 50 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 50 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 150 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 150 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
4 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- POWER SUPPLY +5VDC ±5% @ 250 mA MAXIMUM
-12VDC ±5% @ 150 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN EMI
 - CONTROL SOLDER PIN
- SIZE 2.75" x 2.00" x 0.68"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A14 +12 VDC TO +15 VDC SUPPLY
- A15 -15 VDC SUPPLY
- A16 9 PIN MINIATURE MULTIPIN

MECHANICAL OUTLINE




TRUTH TABLE				
E5	E4	E3	E2	RF PATH
1	1	1	0	J1-J2
1	1	0	1	J1-J3
1	0	1	1	J1-J4
0	1	1	1	J1-J5

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 10 OZ

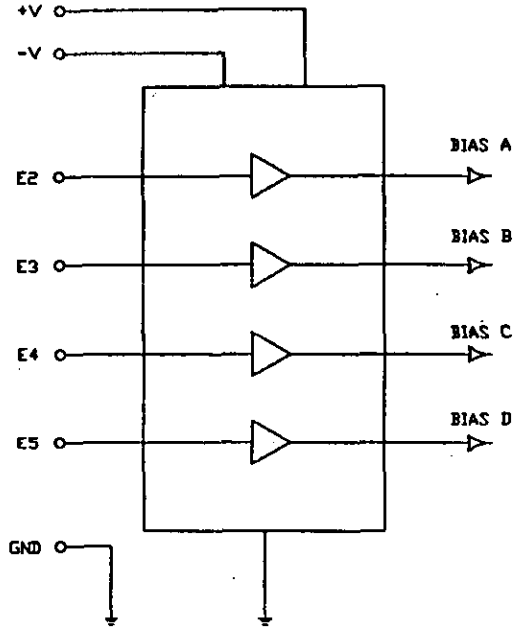
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

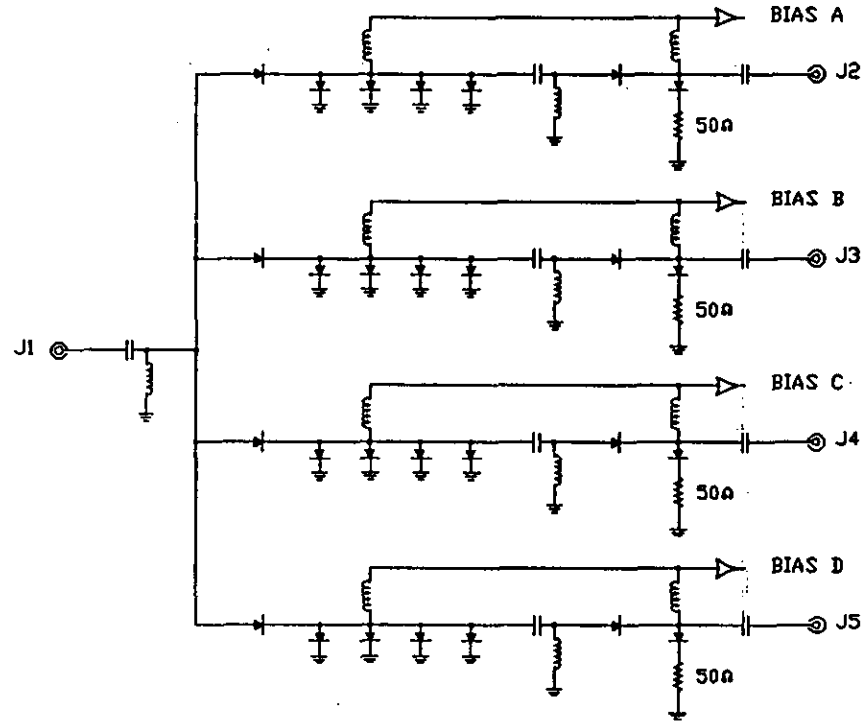
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-2185-4AT	
DRAWN <i>WSP</i>	11/22/02	0.1-20 GHz, NON-REFLECTIVE, HIGH ISOLATION SP4T SWITCH MODULE.	
CHECKED <i>[Signature]</i>	11/24/02	SIZE A	SHEET 1 OF 2 DWC. # 100-2884

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



8-6



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS

DATE

DRAWN

11/22/92

CHECKED

11/22/92

PRODUCT FEATURE

SW-2185-4AT

0.1-20 GHz, NON-REFLECTIVE, HIGH ISOLATION SP4T SWITCH MODULE.

SIZE A

SHEET 2 OF 2

DWG. # 100-2884



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
9	SP5T, REFLECTIVE.....	9-1
●	0.01-18 GHz BAND-SWITCH MODULE, AMC MODEL NO: SW-218-5.....	9-3
●	1.0-18 GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-5D.....	9-5
●	0.3-20 GHz SWITCH MODULE, AMC MODEL NO: SW-2181-5A-171.....	9-7

DESCRIPTION

AMC MODEL SW-218-5 IS A REFLECTIVE SP5T BAND-SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

SPECIFICATIONS

FREQUENCY

J6-J1	0.01-2	GHz	MINIMUM
J6-J2	2-4	GHz	MINIMUM
J6-J3	4-8	GHz	MINIMUM
J6-J4	8-12.4	GHz	MINIMUM
J6-J5	12.4-18	GHz	MINIMUM

INSERTION LOSS

J6-J1	1.7	dB	MAXIMUM
J6-J2	2.0	dB	MAXIMUM
J6-J3	2.3	dB	MAXIMUM
J6-J4	2.8	dB	MAXIMUM
J6-J5	3.5	dB	MAXIMUM

ISOLATION

J6-J1	45	dB	MINIMUM
J6-J2	45	dB	MINIMUM
J6-J3	40	dB	MINIMUM
J6-J4	35	dB	MINIMUM
J6-J5	30	dB	MINIMUM

VSWR (ON)

J6-J1	1.35:1	MAXIMUM
J6-J2	1.8:1	MAXIMUM
J6-J3	2.0:1	MAXIMUM
J6-J4	2.2:1	MAXIMUM
J6-J5	2.5:1	MAXIMUM

RF POWER RATINGS

+27 dBm CW MAXIMUM

SWITCHING TIME

RISE (10% RF TO 90% RF)	300	ns	MAXIMUM
FALL (90% RF TO 10% RF)	300	ns	MAXIMUM
ON (50% TTL TO 90% RF)	500	ns	MAXIMUM
OFF (50% TTL TO 10% RF)	500	ns	MAXIMUM

CONTROLS

CURRENT CONTROLLED
5 INDIVIDUAL CONTROLS
+20 mA = ISOLATION
-20 mA = INSERTION LOSS
(SEE TRUTH TABLE)

CONNECTORS

RF INPUT/OUTPUT SMA (FEMALE)
CONTROL SOLDER PIN

SIZE

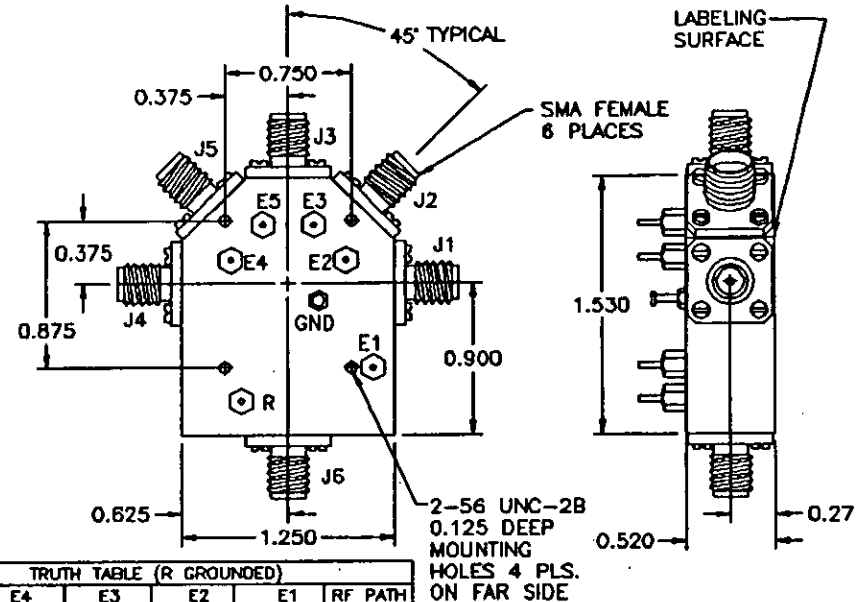
1.25" x 1.53" x 0.52"

AVAILABLE OPTIONS

A13	J6 SMA MALE, J1-J5 SMA FEMALE
A14	J6 SMA FEMALE, J1-J5 SMA MALE
A15	60 dB ISOLATION (CONSULT FACTORY)

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE	11/22/92

MECHANICAL OUTLINE



TRUTH TABLE (R GROUNDED)					
E5	E4	E3	E2	E1	RF PATH
+20mA	+20mA	+20mA	+20mA	-20mA	J6-J1
+20mA	+20mA	+20mA	-20mA	+20mA	J6-J2
+20mA	+20mA	-20mA	+20mA	+20mA	J6-J3
+20mA	-20mA	+20mA	+20mA	+20mA	J6-J4
-20mA	+20mA	+20mA	+20mA	+20mA	J6-J5

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 3.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE: -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE

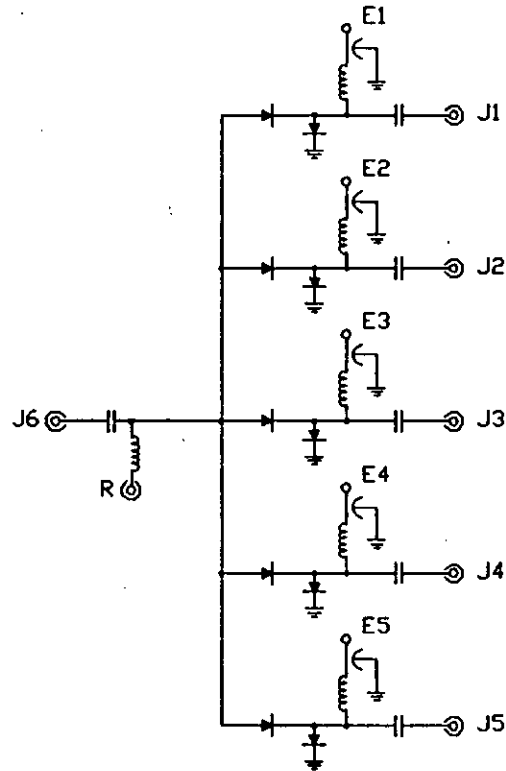
SW-218-5

0.01-18 GHz, REFLECTIVE SP5T BAND-SWITCH MODULE


SIZE A SHEET 1 OF 2 DWC. # 100-2899

APPROVALS	DATE
W.99	11/22/92
11/22/92	11/22/92

FUNCTIONAL SCHEMATIC



9-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-218-5 0.01-18 GHz, REFLECTIVE SPST BAND-SWITCH MODULE	
APPROVALS DRAWN <i>WSP</i> CHECKED <i>[Signature]</i>	DATE 11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2899	

DESCRIPTION

AMC MODEL SW-1182-5D IS A REFLECTIVE BROAD BAND SP5T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

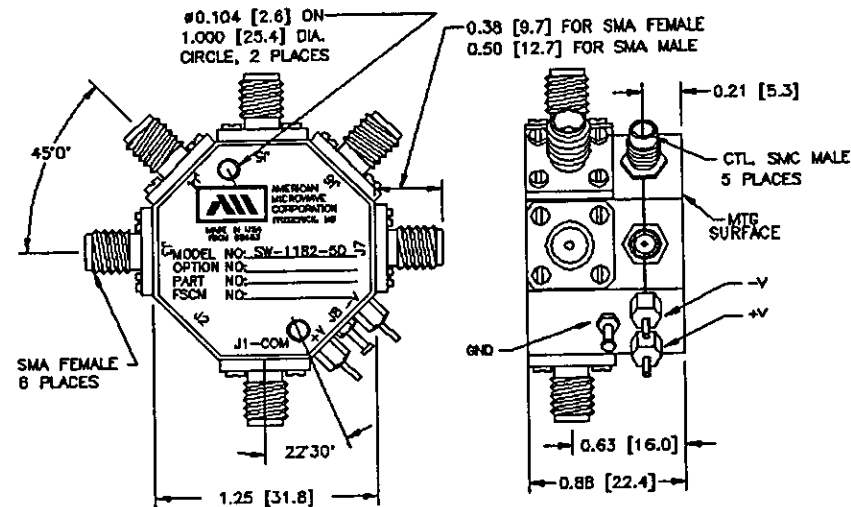
- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.4 dB MAXIMUM
4-8 GHz, 1.5 dB MAXIMUM
8-12.4 GHz, 2.0 dB MAXIMUM
12.4-18 GHz, 2.8 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 65 dB MINIMUM
12.4-18 GHz, 55 dB MINIMUM
- VSWR (ON) 1.9:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1μS, PW MAXIMUM)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 20 ns MAXIMUM
FALL (90% RF TO 10% RF) 20 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 200 mA MAXIMUM
-12 TO -15VDC @ 55 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 1.25" x 1.25" x 0.88"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SOLDER PIN CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

REV. NO.		DESCRIPTION	DATE	APPROVED
A	1	ORIGINAL RELEASE, JOB #30110E	7/8/93	<i>[Signature]</i>

MECHANICAL OUTLINE




TRUTH TABLE						
E7	E6	E5	E4	E3	RF PATH ON	
1	1	1	1	0	J1-J3	
1	1	1	0	1	J1-J4	
1	1	0	1	1	J1-J5	
1	0	1	1	1	J1-J6	
0	1	1	1	1	J1-J7	

- NOTES:
 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 3) WEIGHT: APPROX. 2.0 OZ

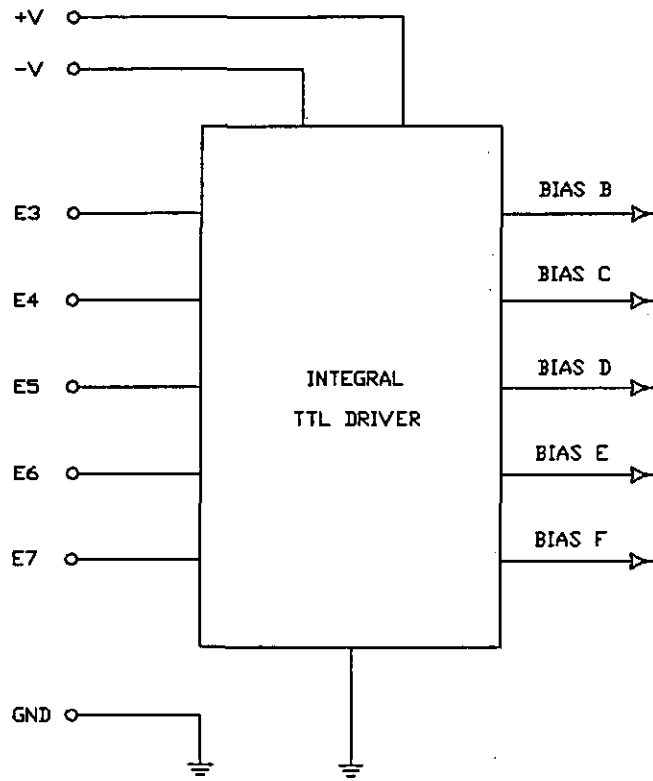
ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

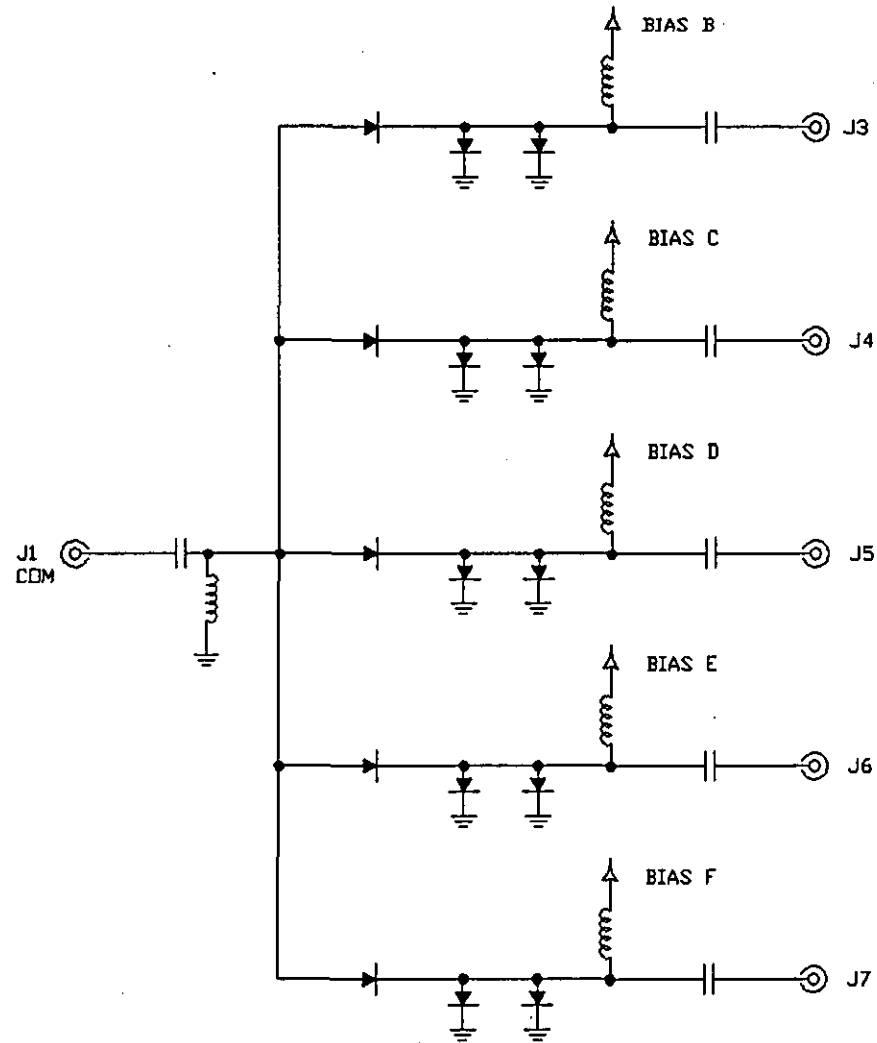
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	7/8/93	SW-1182-5D	
CHECKED <i>[Signature]</i>	7/8/93	1.0-18 GHz, SP5T SWITCH MODULE	
SIZE A	SHEET 1 OF 2	DWG. # 100-3198	

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION

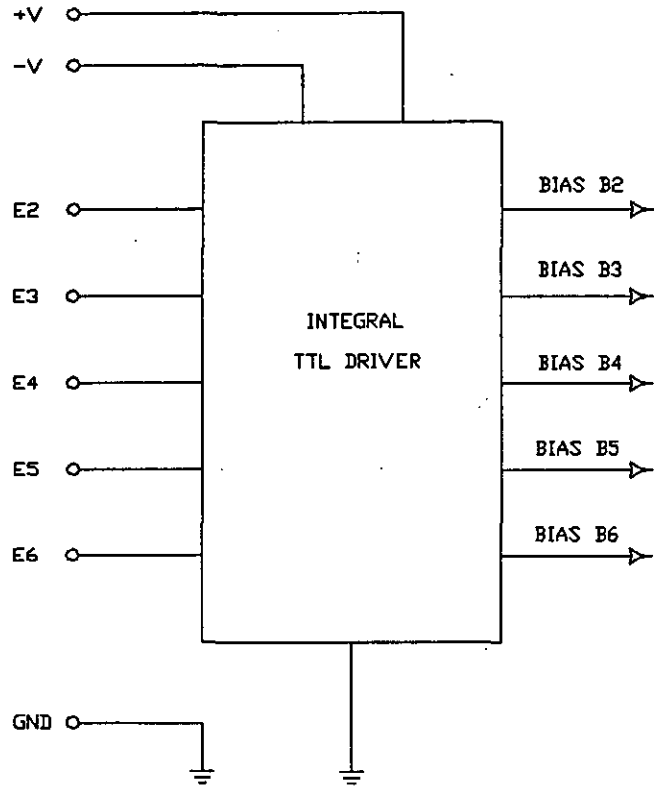


9-6

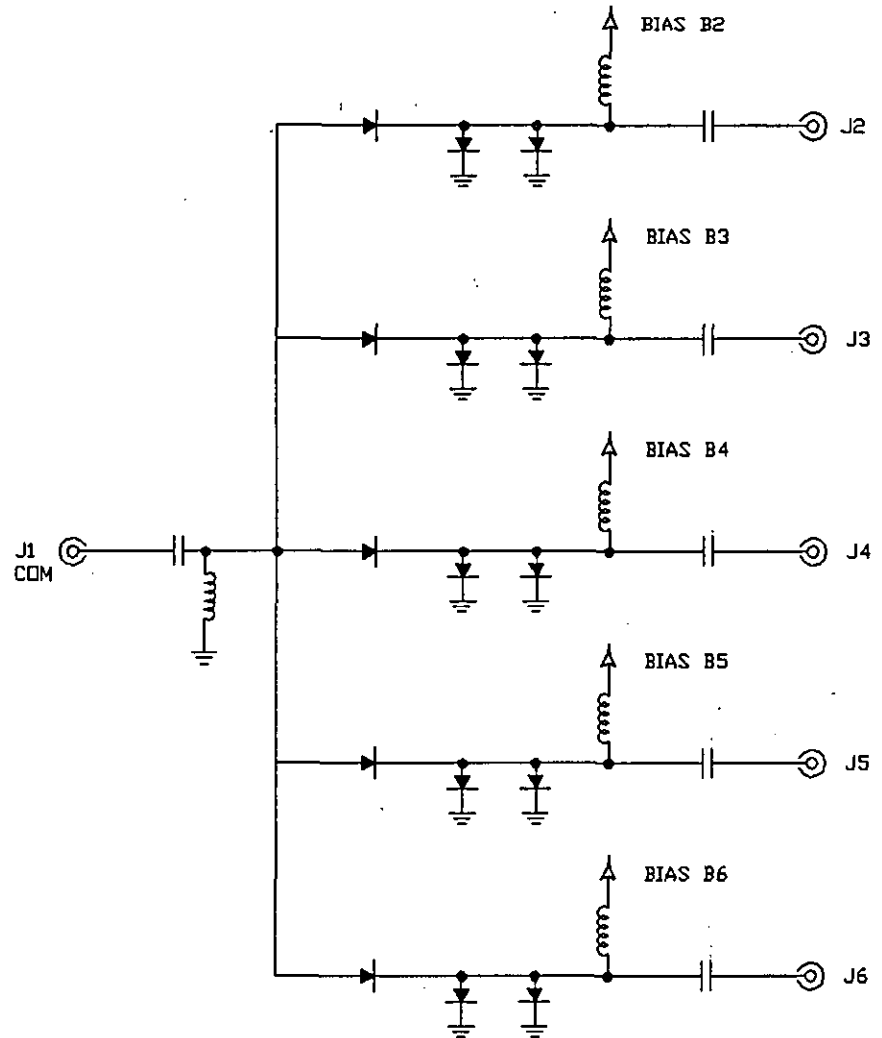
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	7/8/93	SW-1182-5D	
CHECKED <i>[Signature]</i>	7/9/93	1.0-18 GHz, SP5T SWITCH MODULE	
SIZE A		SHEET 2 OF 2	DWG. # 100-3198

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT



RF SECTION



9-8



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	5/22/93
CHECKED <i>[Signature]</i>	6/2/93

PRODUCT FEATURE		
SW-2181-5A-171		
0.3-20 GHz, SP5T SWITCH MODULE		
SIZE A	SHEET 2 OF 2	DWG. # 100-3184



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
10	SP5T, NON-REFLECTIVE/ABSORPTIVE.....	10-1
	● 400-450 MHz SOLID STATE, B BAND, SWITCH MODULE, AMC MODEL NO: SW-4045-5DT.....	10-3

DESCRIPTION

AMC MODEL SW-4045-5DT IS AN ABSORPTIVE SP5T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

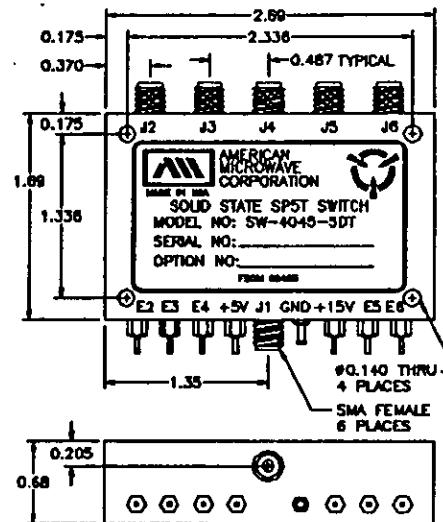
- FREQUENCY RANGE 400-450 MHz MINIMUM
- INSERTION LOSS -1.4 Db MAXIMUM
- INSERTION LOSS BALANCE 0.2 dB MAXIMUM
- INSERTION LOSS VARIATION OVER TEMPERATURE ±0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANGE
- INSERTION LOSS VARIATION OVER FREQUENCY ±0.1 dB MAXIMUM
- ISOLATION 90 dB MINIMUM
- VSWR (ON/OFF) 1.3:1 MAXIMUM
- RF POWER +16 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 300 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 300 ns MAXIMUM
- SETTLING TIME
 - ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 μs MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 μs MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE
5 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE)
- HARMONIC DISTORTION PRODUCTS 50 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND) 100 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY +5VDC ±5% @ 90 mA MAXIMUM
+15VDC ±5% @ 80 mA MAXIMUM
(OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 2.69" x 1.69" x 0.68"

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10358-5E	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE

TRUTH TABLE						
E6	E5	E4	E3	E2	RF PATH	ON
1	1	1	1	0	J1-J2	
1	1	1	0	1	J1-J3	
1	1	0	1	1	J1-J4	
1	0	1	1	1	J1-J5	
0	1	1	1	1	J1-J6	

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4 OZ
 - 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-M-38510 CLASS B, MIL-F-18870 JANTX TYPE, ER COMPONENTS
 - 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870



ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO +65°C (OPERATING)
-55°C TO +70°C (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I OR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSOIDAL 25 Hz TO 2000 Hz
- MTBF 1 x 10⁶ HOURS, @ +50°C OPERATION

ENVIRONMENTAL STRESS SCREENING (ESS)

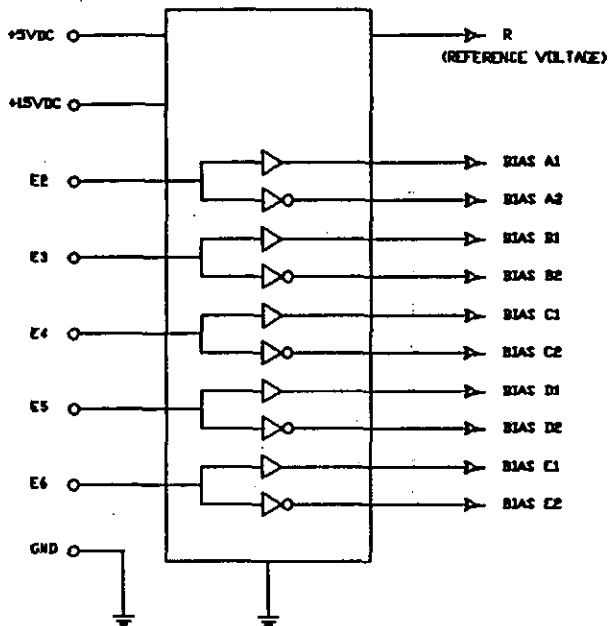
- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SOAK MINUTE, -55°C TO +85°C
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO +85°C
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B, 160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5°C PER MINUTE, -55°C TO +55°C.
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +55°C/-55°C

10-3

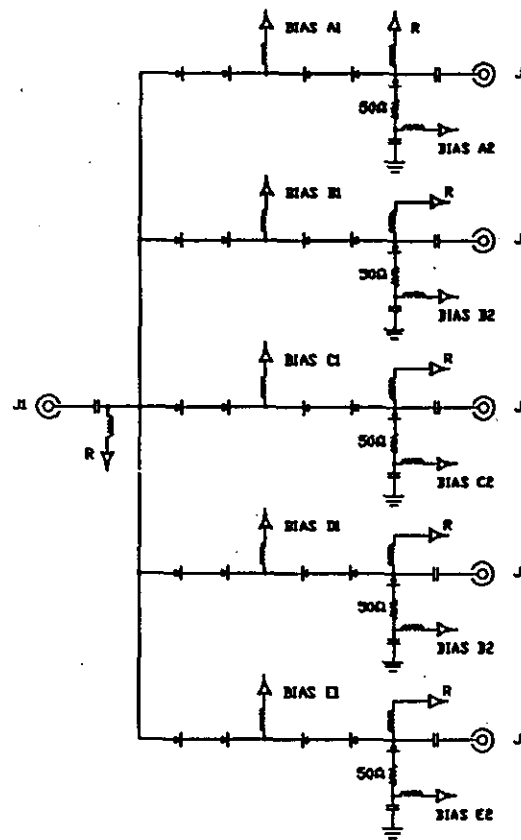
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS		DATE	
<i>[Signature]</i>		11/22/92	
<i>[Signature]</i>		11/22/92	
PRODUCT FEATURE		SW-4045-5DT (B-BAND)	
400-450 MHz, NON-REFLECTIVE SOLID STATE SP5T SWITCH MODULE		SIZE A	
SHEET 1 OF 2		DWG. # 100-2911	

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



10-4



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DESIGN <i>WSP</i>	11/22/92
CHECKED <i>[Signature]</i>	1/22/92

PRODUCT FEATURE
SW-4045-5DT
 (B-BAND)

400-450 MHz, NON-REFLECTIVE SOLID STATE SP5T SWITCH MODULE

SIZE A SHEET 2 OF 2 DWG. # 100-2911



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
11	SP6T, REFLECTIVE.....	11-1
	● 400-450 MHz SOLID STATE, B BAND SWITCH MODULE, AMC MODEL NO: SW-4045-6D.....	11-3
	● 2.0-2.5 GHz SOLID STATE, E BAND, SWITCH MODULE, AMC MODEL NO: SW-2025-6D.....	11-5
	● 1-18 GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-6D.....	11-7

DESCRIPTION

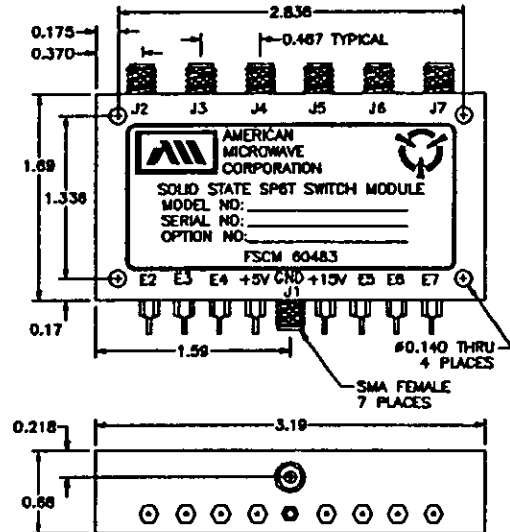
AMC MODEL SW-4045-6D IS A REFLECTIVE SP6T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

- FREQUENCY RANGE 400-450 MHz MINIMUM
- INSERTION LOSS 0.9 dB MAXIMUM
- INSERTION LOSS BALANCE 0.2 dB MAXIMUM
- INSERTION LOSS VARIATION OVER TEMPERATURE ± 0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANGE
- INSERTION LOSS VARIATION OVER FREQUENCY ± 0.1 dB MAXIMUM
- ISOLATION 45 dB MINIMUM
- VSWR (ON) 1.3:1 MAXIMUM
- RF POWER +16 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 300 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 300 ns MAXIMUM
- SETTLING TIME
 - ON (90% TO WITHIN ± 0.25 dB OF INSERTION LOSS) 0.7 μ s MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 μ s MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50 Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE
6 INDIVIDUAL CONTROLS
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- HARMONIC DISTORTION PRODUCTS 50 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND) 100 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT,
1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF
-20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -78 dBm FOR RF INTERFERENCE LEVEL
OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF
INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY +5VDC $\pm 5\%$ @ 90 mA MAXIMUM
+15VDC $\pm 5\%$ @ 40 mA MAXIMUM
(OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 3.19" x 1.69" x 0.68"

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE, JOB # 10358-6E	11/22/92

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 5 OZ
- 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-M-38510 CLASS B, MIL-F-18870 JANTX TYPE, ER COMPONENTS
- 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870

ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO +65°C (OPERATING)
-55°C TO +70°C (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I OR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSOIDAL 25 Hz TO 2000 Hz
- MTBF 1 x 10⁶ HOURS, @ +50°C OPERATION

ENVIRONMENTAL STRESS SCREENING (ESS)

- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SOAK MINUTE, -55°C TO +85°C
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO +85°C
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B,
160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5°C PER MINUTE, -55°C TO +55°C
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +55°C/-55°C



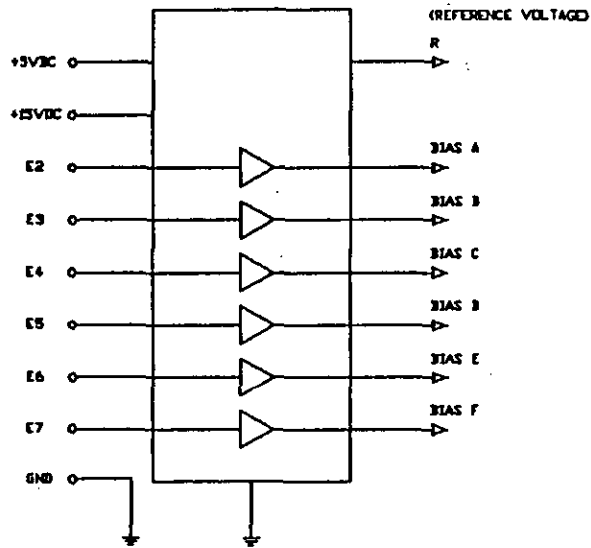
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DESIGN: <i>[Signature]</i>	11/22/92
CHECKED: <i>[Signature]</i>	11/24/92

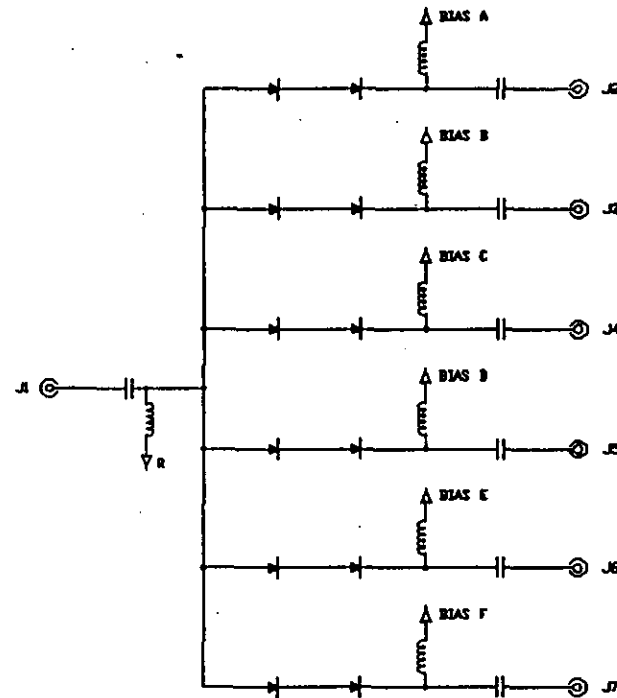
PRODUCT FEATURE		
SW-4045-6D (B-BAND)		
400-450 MHz, REFLECTIVE SOLID STATE SP6T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2912

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



TRUTH TABLE						
E7	E6	E5	E4	E3	E2	RF PATH ON
1	1	1	1	1	0	J1-J2
1	1	1	1	0	1	J1-J3
1	1	1	0	1	1	J1-J4
1	1	0	1	1	1	J1-J5
1	0	1	1	1	1	J1-J6
0	1	1	1	1	1	J1-J7

APPROVALS	DATE
DRAWN <i>WSP</i>	<i>11/22/92</i>
CHECKED <i>[Signature]</i>	<i>11/24/92</i>

AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE

SW-4045-6D

(B-BAND)

400-450 MHz, REFLECTIVE SOLID STATE SP6T SWITCH MODULE

SIZE A

SHEET 2 OF 2

OWC. # 100-2912

DESCRIPTION

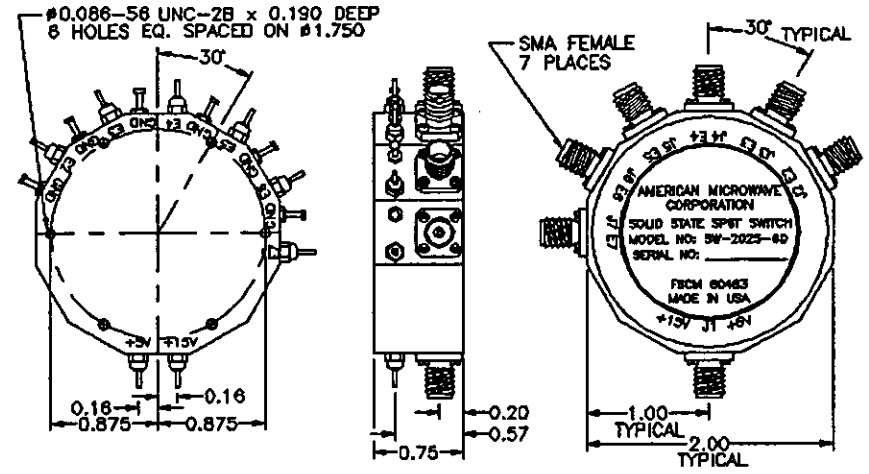
AMC MODEL SW-2025-6D IS A REFLECTIVE SP6T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.

SPECIFICATIONS

- FREQUENCY RANGE 2.0-2.5 GHz MINIMUM
- INSERTION LOSS 1.5 dB MAXIMUM
- INSERTION LOSS BALANCE 0.4 dB MAXIMUM
- INSERTION LOSS VARIATION OVER TEMPERATURE ±0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANGE
- INSERTION LOSS VARIATION OVER FREQUENCY ±0.1 dB MAXIMUM
- ISOLATION 40 dB MINIMUM
- VSWR (ON) 1.4:1 MAXIMUM
- RF POWER +30 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 40 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 40 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 400 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 400 ns MAXIMUM
- SETTling TIME
 - ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 μs MAXIMUM
 - OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 μs MAXIMUM
- VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 50Ω LOAD
- CONTROLS STANDARD TTL COMPATIBLE
 - 6 INDIVIDUAL CONTROLS
 - LOGIC "0" = INSERTION LOSS
 - LOGIC "1" = ISOLATION
 - (SEE TRUTH TABLE, ON SHEET 2 OF 2)
- HARMONIC DISTORTION PRODUCTS 65 dBc MINIMUM
- SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEBANDS IN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (100 MHz-2 GHz & 2.5 TO 10 GHz) 65 dB BELOW THE OUTPUT SIGNAL LEVEL
- RF LEAKAGE
 - RADIATIVE -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY
 - CONDUCTIVE -90 dBm ON SUPPLY AND CONTROL LINES.
- RADIATION SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT
- CONDUCTED SUSCEPTIBILITY ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES
- CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES
- POWER SUPPLY +5VDC ±5% @ 120 mA MAXIMUM
+15VDC ±5% @ 40 mA MAXIMUM (OVER VOLTAGE PROTECTED)
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 2" DIAMETER x 0.75" THICK

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 10358-1E		11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE




- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 6 OZ
 - 4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500, MIL-M-38510 CLASS B, MIL-F-18870 JANXX TYPE, ER COMPONENTS REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870
 - 5) REQUIREMENT MIL-STD-454 (5 AND 9), MIL-F-18870

ENVIRONMENTAL RATINGS

- TEMPERATURE 0°C TO +65°C (OPERATING)
-55°C TO +70°C (STORAGE)
- HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
- SHOCK MIL-S-901 GRADE A, CLASS I DR II
- VIBRATION MIL-S-167, TYPE 1 VIBRATION, 0.1G SINUSODAL 25 Hz TO 2000 Hz
- MTBF 1 x 10⁶ HOURS, @ +50°C OPERATION

ENVIRONMENTAL STRESS SCREENING (ESS)

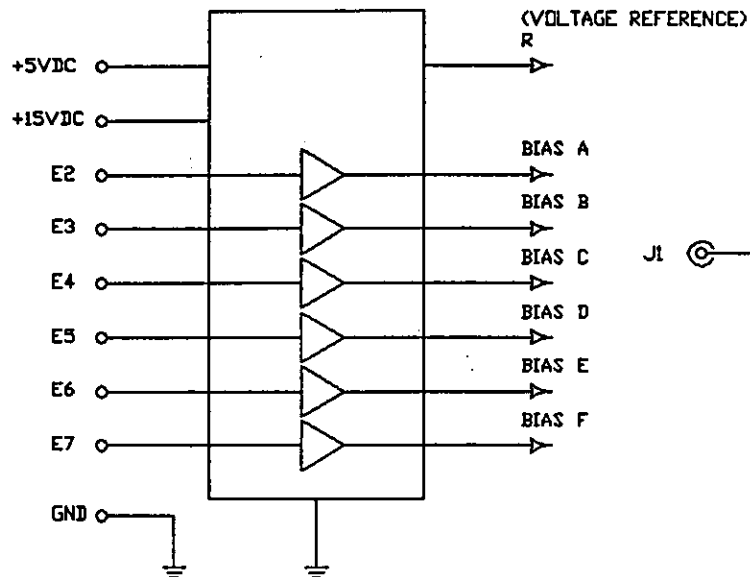
- TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SOAK MINUTE, -55°C TO +85°C
- TEMPERATURE SHOCK 4 CYCLES, -55°C TO +85°C
- VIBRATION 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
- BURN IN (OPERATING) MIL-STD-883 METHOD 1015.4 TEST CONDITION B, 160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)
- ESS (NEXT HIGHER ASSEMBLY)
 - THERMAL 5 CYCLES, 5°C PER MINUTE, -55°C TO +55°C.
 - RANDOM VIBRATION 20 TO 2000 Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +55°C/-55°C.

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2025-6D (E-BAND) 2.0-2.5 GHz, REFLECTIVE SOLID STATE SP6T SWITCH MODULE	
APPROVALS DRAWN: <i>WYP</i> CHECKED: <i>[Signature]</i>	DATE 11/22/92	SIZE A	SHEET 1 OF 2 DWG. # 100-2909

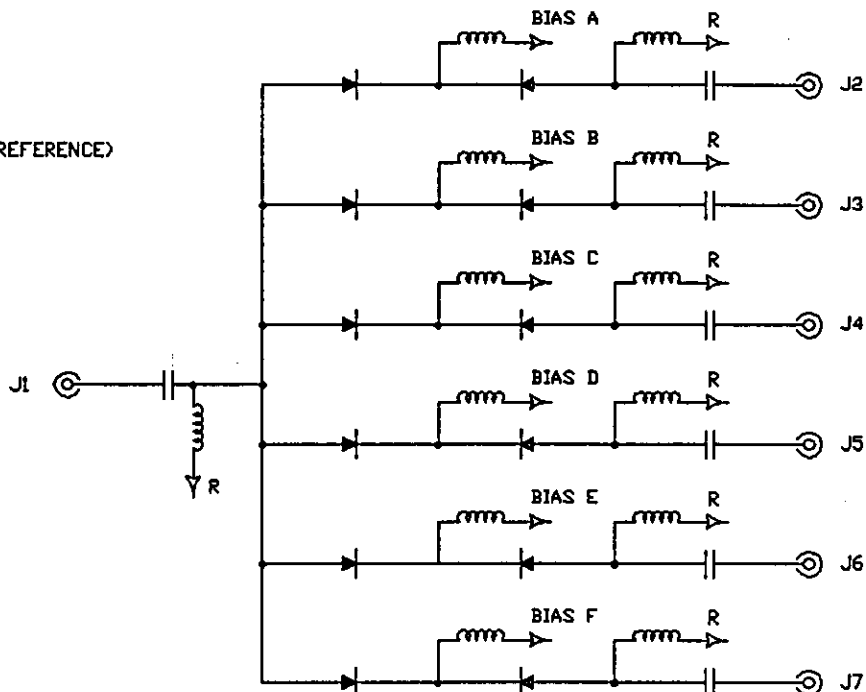
5-11

FUNCTIONAL SCHEMATIC


TTL DRIVER



RF SECTION

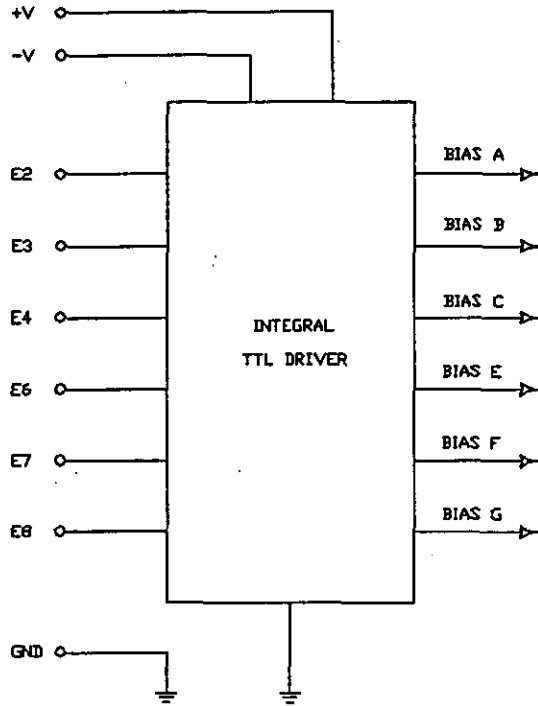


TRUTH TABLE						
E7	E6	E5	E4	E3	E2	RF PATH "ON"
1	1	1	1	1	0	J1-J2
1	1	1	1	0	1	J1-J3
1	1	1	0	1	1	J1-J4
1	1	0	1	1	1	J1-J5
1	0	1	1	1	1	J1-J6
0	1	1	1	1	1	J1-J7

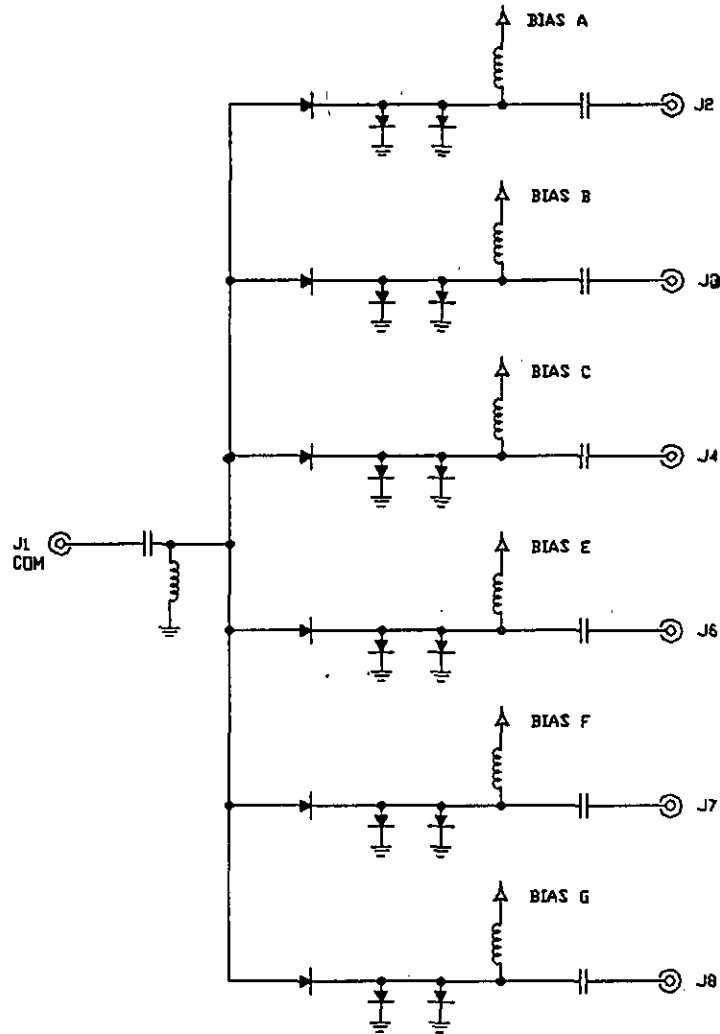
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS _____ DATE _____ DRAWN <i>WSP</i> 11/22/92 CHECKED <i>[Signature]</i> 11/22/92		PRODUCT FEATURE SW-2025-6D (E-BAND) 2.0-2.5 GHz, REFLECTIVE SOLID STATE SP6T SWITCH MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2909	

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT



RF SECTION



11-8


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	7/8/93 7/8/93	SW-1182-6D 1.0-18 GHz, SP6T SWITCH MODULE	
		SIZE A	SHEET 2 OF 2
		DWG. # 100-3199	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
12	SP6T, NON-REFLECTIVE/ABSORPTIVE.....	12-1
●	0.2-0.4 GHz SWITCH MODULE AMC MODEL NO: SW-0204-6DT.....	12-3
●	1-20 GHz RADIAL, SWITCH MODULE, AMC MODEL NO: SW-2181-6AT.....	12-5

DESCRIPTION

AMC MODEL SW-0204-6DT IS AN ABSORPTIVE SP6T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW NOISE, LOW LOSS, LOW VSWR, AND HIGH ISOLATION SWITCHING APPLICATIONS.

SPECIFICATIONS

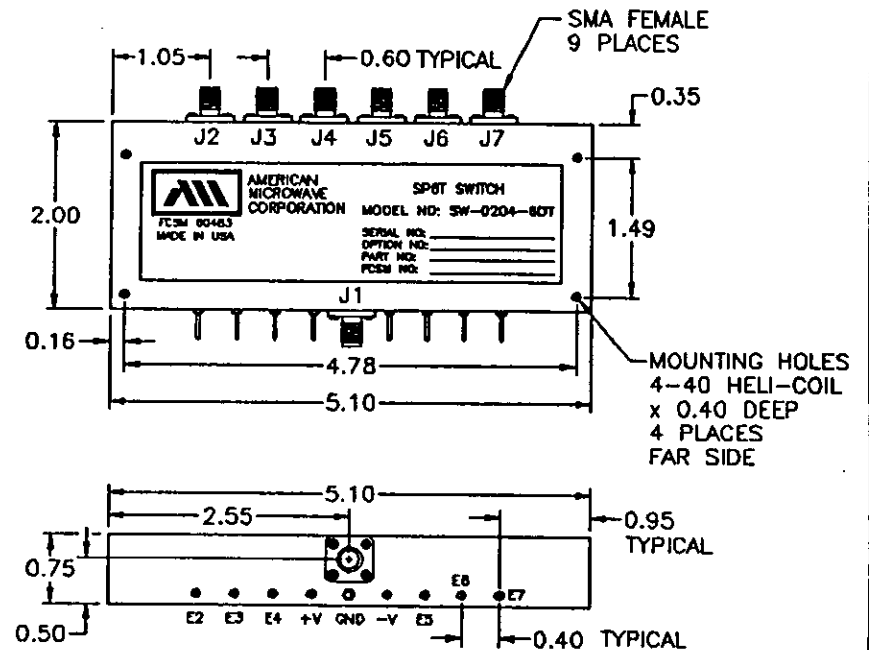
- FREQUENCY RANGE 0.2-0.4 GHz MINIMUM
- INSERTION LOSS 1.0 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 1.25:1 MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 30 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 30 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 100 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 100 ns MAXIMUM
- CONTROLS TTL COMPATIBLE, UNITY LOAD
6 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +5VDC $\pm 5\%$ @ 200 mA MAXIMUM
-15VDC $\pm 5\%$ @ 80 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 5.10" x 2.00" x 0.75"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A13 +15 VDC SUPPLY
- A14 SMA MALE CONNECTORS
- A15 CANNON MULTIPIN MDM9SSP
- A16 3 BIT BINARY TTL CONTROL LOGIC

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 10465-2	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



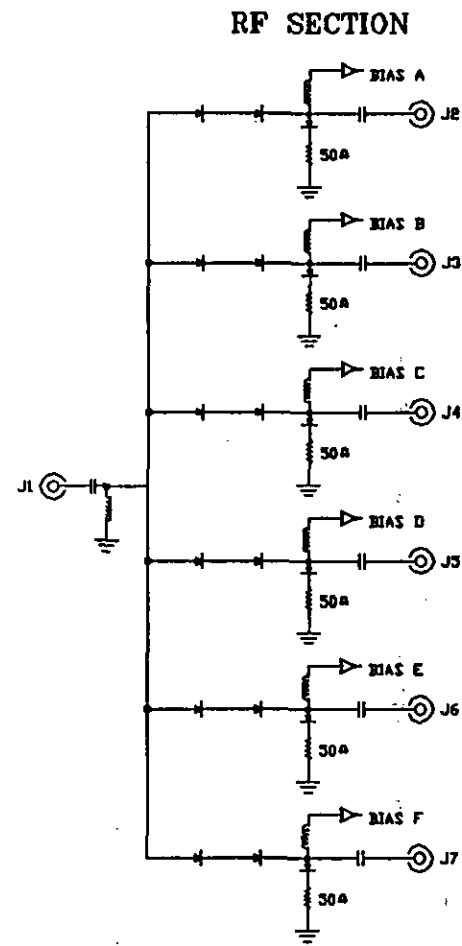
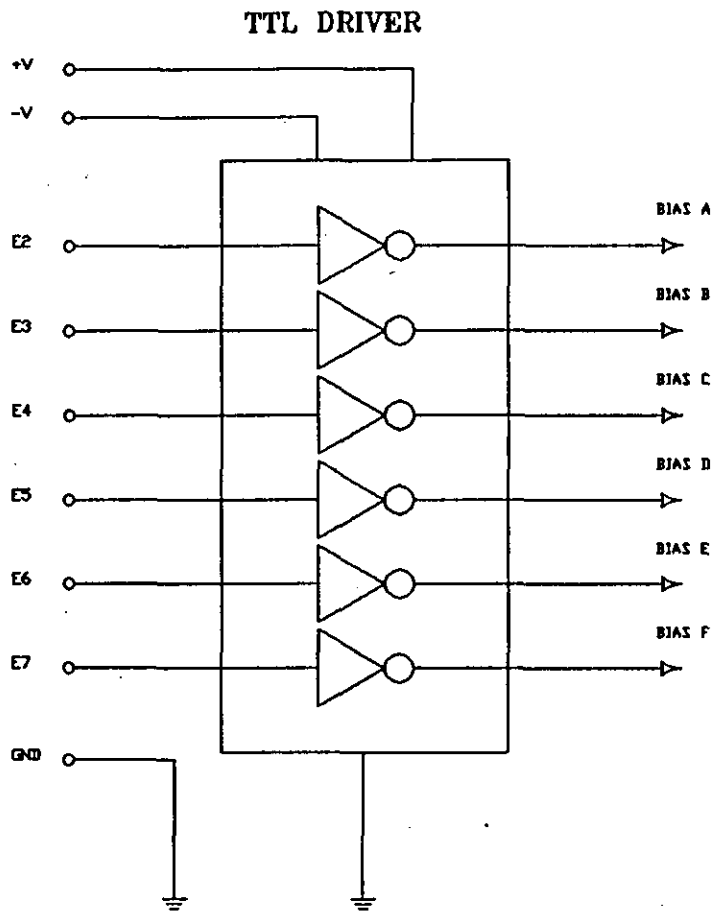
- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
 - 3) WEIGHT: APPROX. 12 OZ

ENVIRONMENTAL RATINGS


- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-0204-6DT 0.2-0.4 GHz, NON-REFLECTIVE SP6T SWITCH MODULE	
<i>[Signature]</i>	11/22/92	SIZE A	SHEET 1 OF 2
<i>[Signature]</i>	11/24/92	DWC. # 100-2888	

FUNCTIONAL SCHEMATIC



TRUTH TABLE						
E7	E6	E5	E4	E3	E2	RF PATH
0	0	0	0	0	1	J1-J2
0	0	0	0	1	0	J1-J3
0	0	0	1	0	0	J1-J4
0	0	1	0	0	0	J1-J5
0	1	0	0	0	0	J1-J6
1	0	0	0	0	0	J1-J7

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-0204-6DT	
CHECKED <i>[Signature]</i>	11/22/92	0.2-0.4 GHz, NON-REFLECTIVE SP6T SWITCH MODULE	
SIZE	A	SHEET	2 OF 2
		DWG. #	100-2888

DESCRIPTION

AMC MODEL SW-2181-6AT IS AN ABSORPTIVE BROAD BAND SP6T SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A RADIAL HOUSING.

SPECIFICATIONS

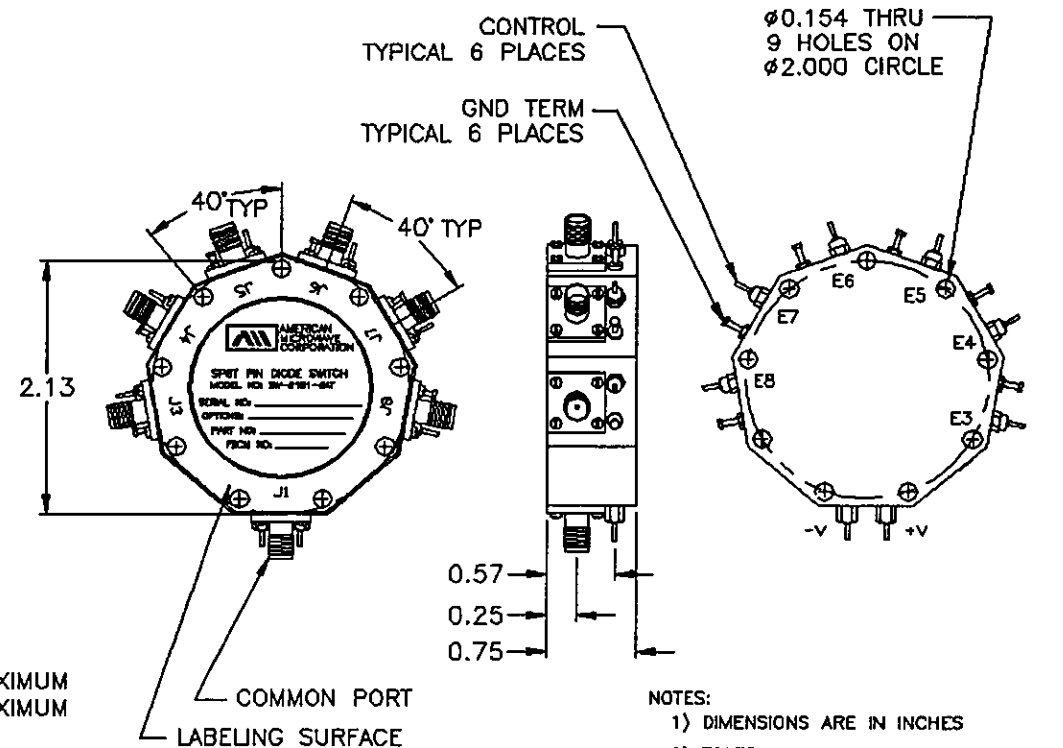
- FREQUENCY RANGE 1-20 GHz MINIMUM
- INSERTION LOSS 1-8 GHz 2.5 dB MAXIMUM
8-18 GHz 3.5 dB MAXIMUM
18-20 GHz 4.5 dB MAXIMUM
- ISOLATION 1-18 GHz, 65 dB MINIMUM
18-20 GHz, 60 dB MINIMUM
- VSWR (ON/OFF) 2:1 MAXIMUM
- SWITCHING TIME
RISE (10% RF TO 90% RF) 200 nS MAXIMUM
FALL (90% RF TO 10% RF) 10 nS MAXIMUM
ON (50% TTL TO 90% RF) 800 nS MAXIMUM
OFF (50% TTL TO 10% RF) 20 nS MAXIMUM
- RF POWER RATINGS +27 dBm, MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
6 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
- POWER SUPPLY +5VDC ±5% @ 260 mA MAXIMUM
-15VDC ±5% @ 70 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 2.13" DIAMETER x 0.75" THICK

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A08 SMA MALE CONNECTORS
- A10 +12 TO +15VDC SUPPLY
- A12 3 BIT BINARY TTL LOGIC DECODER

REVISIONS			DATE	APPROVED
ZONE	REV.	DESCRIPTION		
	A	ORIGINAL RELEASE, JOB # 208208	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

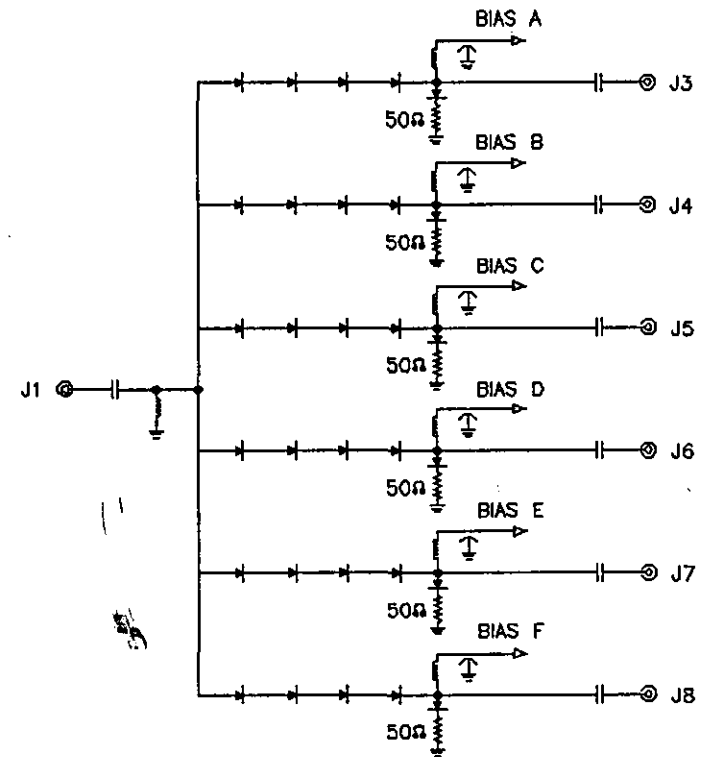
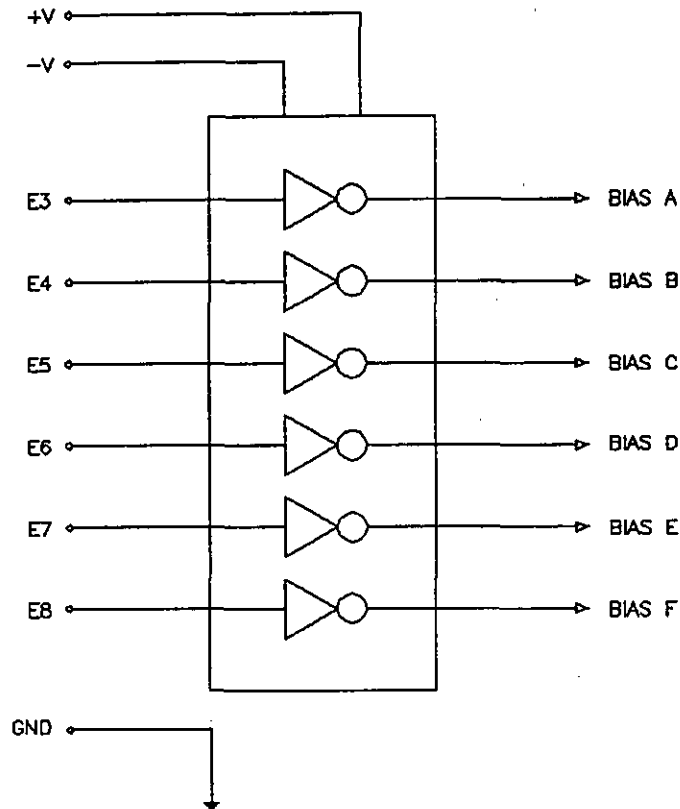
APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

PRODUCT FEATURE		
SW-2181-6AT		
RADIAL 1 TO 20 GHz, NON-REFLECTIVE, SP6T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2824

DRIVER CIRCUIT

FUNCTIONAL SCHEMATIC

RF SECTION



12-6


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2181-6AT RADIAL 1 TO 20 GHz, NON-REFLECTIVE, SP6T SWITCH MODULE	
APPROVALS DRAWN CHECKED	DATE 11/22/92 11/22/92	SIZE A	SHEET 2 OF 2
		DWG. # 100-2824	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
13	SP7T, REFLECTIVE.....	13-1
●	0.02-2.6GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-2560-7D.....	13-3
●	1.0-18 GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-7D.....	13-5

DESCRIPTION

AMC MODEL SW-2560-7D (OR -7DT) IS A REFLECTIVE (OR AN ABSORPTIVE) SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN LOW HARMONIC RF CONTENTS, GOOD PHASE AND AMPLITUDE BALANCE, AND HIGH ISOLATION. APPLICATIONS ARE FOR HIGHLY SENSITIVE LOW-NOISE RADARS AND MISSILE SYSTEMS.

SPECIFICATIONS

- FREQUENCY RANGE 20 MHz-2.56 GHz
- INSERTION LOSS
 - (-7D) REFLECTIVE 2.0 dB MAXIMUM
 - (-7DT) ABSORPTIVE 2.5 dB MAXIMUM
- AMPLITUDE BALANCE ±0.1 dB MAXIMUM
- PHASE BALANCE ±0.1 dB MAXIMUM
- ISOLATION
 - (-7D) REFLECTIVE 65 dB MINIMUM
 - (-7DT) ABSORPTIVE 70 dB MINIMUM
- VSWR 1.7:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 200 nsec MAXIMUM
 - FALL (90% RF TO 10% RF) 200 nsec MAXIMUM
 - ON (50% TTL TO 90% RF) 800 nsec MAXIMUM
 - OFF (50% TTL TO 10% RF) 800 nsec MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- HARMONIC CONTENTS
 - 2nd HARMONIC INTERCEPT +56 dBm MINIMUM
 - 2nd ORDER TWO-TONE INTERCEPT +50 dBm MINIMUM
 - @ 0 dBm INPUT RF POWER
 - 3rd ORDER TWO-TONE INTERCEPT +40 dBm MINIMUM
 - @ 0 dBm INPUT RF POWER
- RF LEAKAGE (CONDUCTIVE/RADIATED) ... > 70 dBc @ 2.56 GHz
- CONTROL 3 BIT BINARY TTL LOGIC
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +12VDC TO +18VDC @ 250 mA MAXIMUM
-12VDC TO -18VDC @ 250 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER AND CONTROLS 15 PIN D TYPE CONNECTOR
- SIZE 3.0" x 2.0" x 1.5"

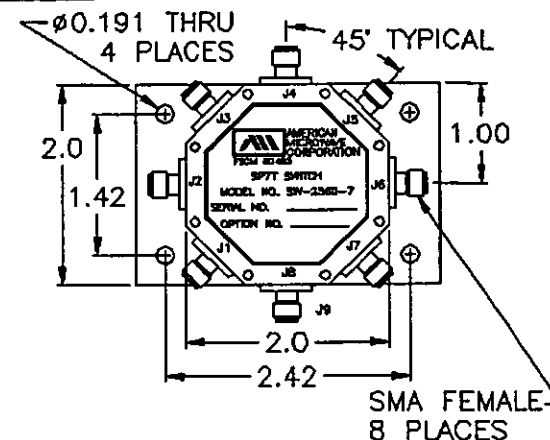
AVAILABLE OPTIONS

- A01SMA MALE CONNECTORS
- A027 INDIVIDUAL CONTROLS
- A03DIFFERENTIAL TTL LINE RECEIVER/DECODER (RS-422-A)
- A04INVERSE CONTROL LOGIC

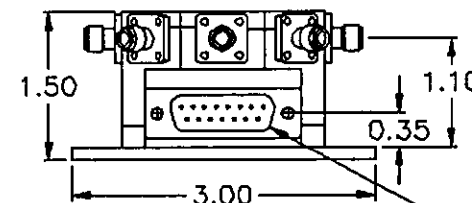
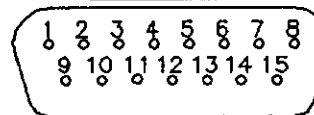
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 107134	11/22/92	JXJ

MECHANICAL OUTLINE

PINOUT TABLE	
PIN NUMBER	FUNCTION
1	EO
2	N/C
3	E1
4	N/C
5	E2
6	N/C
7	N/C
8	N/C
9	GND
10	GND
11	GND
12	GND
13	GND
14	+V
15	-V



DETAIL A



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 12 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE-55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

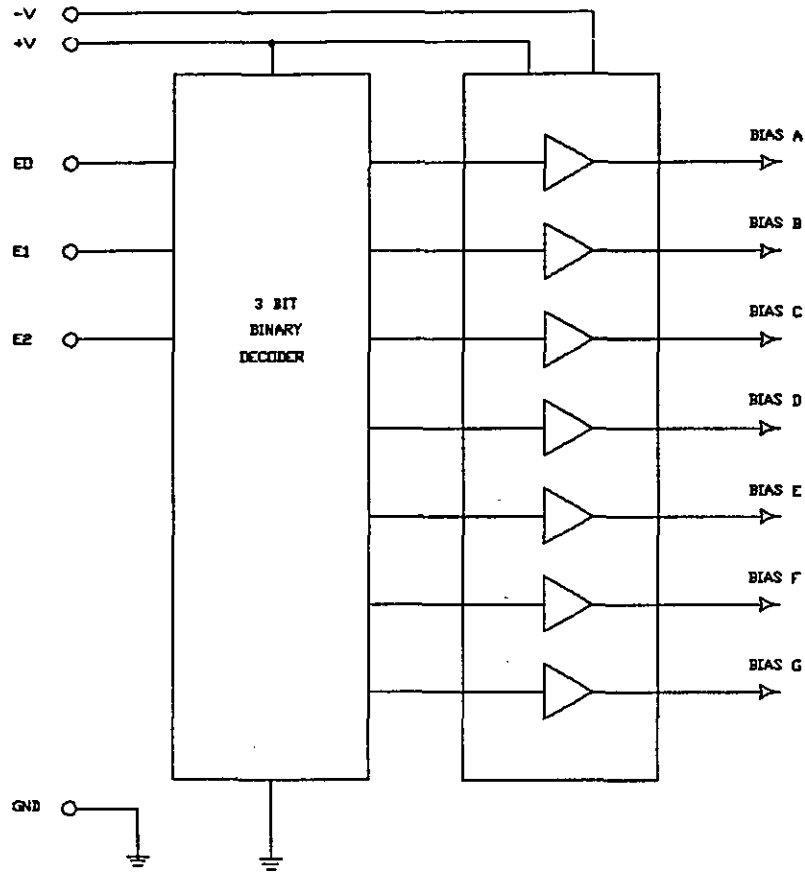
APPROVALS	DATE
DRAWN W/SJP	11/22/92
CHECKED [Signature]	11/22/92

PRODUCT FEATURE		
SW-2560-7D (OR 7DT)		
20 MHz-2.56 GHz, REFLECTIVE OR NON-REFLECTIVE, SP7T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2865

13-3

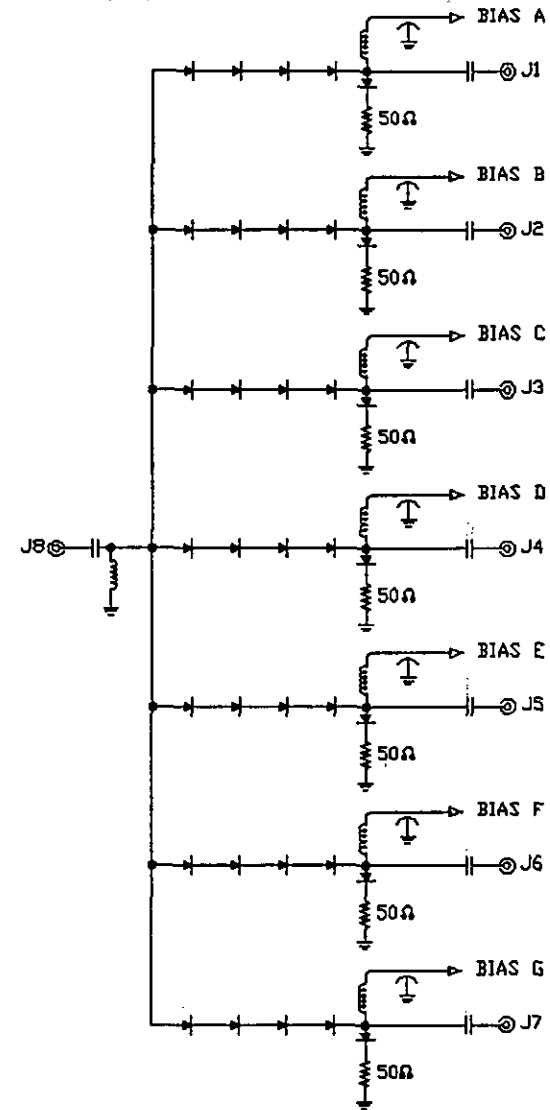
FUNCTIONAL SCHEMATIC


DRIVER



TRUTH TABLE			
RF PATH	E2	E1	E0
J8-J1	L	L	L
J8-J2	L	L	H
J8-J3	L	H	L
J8-J4	L	H	H
J8-J5	H	L	L
J8-J6	H	L	H
J8-J7	H	H	L
L=0-0.8 VDC			
H=2.4-5.0 VDC			

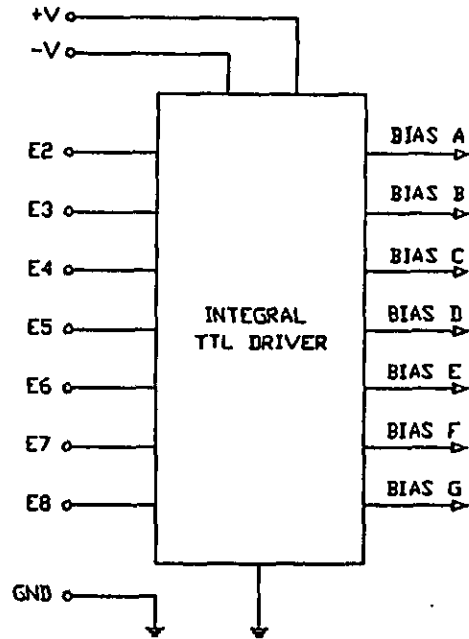
RF SECTION



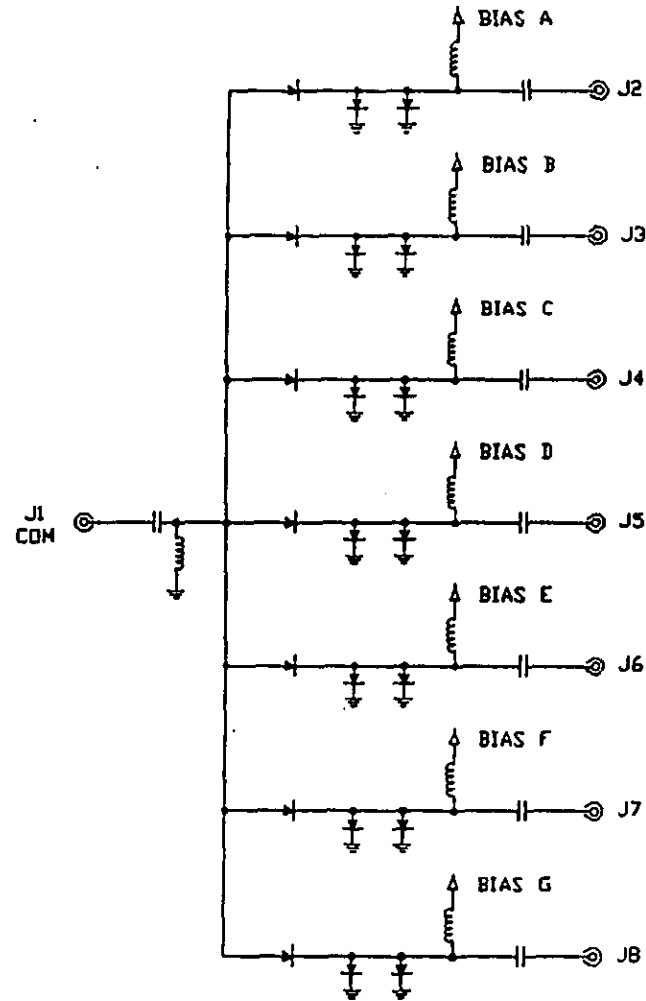
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2560-7D (OR 7DT) 20 MHz-2.56 GHz, REFLECTIVE OR NON-REFLECTIVE, SP7T SWITCH MODULE	
APPROVALS DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	DATE 11/22/92	SIZE A	SHEET 2 OF 2

FUNCTIONAL BLOCK DIAGRAM


DRIVER CIRCUIT



RF SECTION



13-58

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-1170-7D 1.0-18 GHz, SP7T SWITCH MODULE	
DRAWN <i>WSP</i>	3/8/95	SIZE A	SHEET 2 OF 2 DWG. / 100-3673

DESCRIPTION

AMC MODEL SW-1170-7D IS A REFLECTIVE BROAD BAND SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

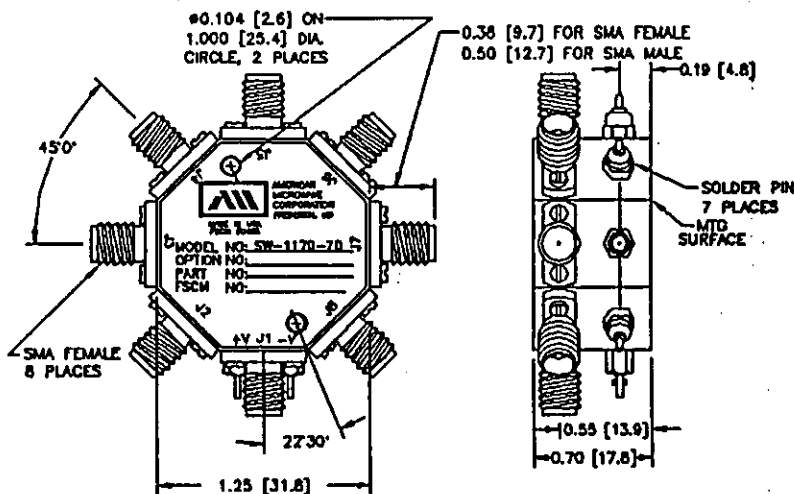
- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.7 dB MAXIMUM
4-8 GHz, 2.0 dB MAXIMUM
8-12.4 GHz, 2.5 dB MAXIMUM
12.4-18 GHz, 3.5 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 60 dB MINIMUM
12.4-18 GHz, 50 dB MINIMUM
- VSWR (ON) 2.2:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1μS, PW MAXIMUM)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 20 ns MAXIMUM
FALL (90% RF TO 10% RF) 20 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 300 mA MAXIMUM
-12 TO -15VDC @ 60 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.25" x 1.25" x 0.70"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SMC MALE CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB #30110E	3/8/95	<i>Jay</i>

MECHANICAL OUTLINE




TRUTH TABLE							
E8	E7	E6	E5	E4	E3	E2	RF PATH ON
1	1	1	1	1	1	0	J1-J2
1	1	1	1	1	0	1	J1-J3
1	1	1	1	0	1	1	J1-J4
1	1	1	0	1	1	1	J1-J5
1	1	0	1	1	1	1	J1-J6
1	0	1	1	1	1	1	J1-J7
0	1	1	1	1	1	1	J1-J8

- NOTES:
 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 3) WEIGHT: APPROX. 2.7 OZ

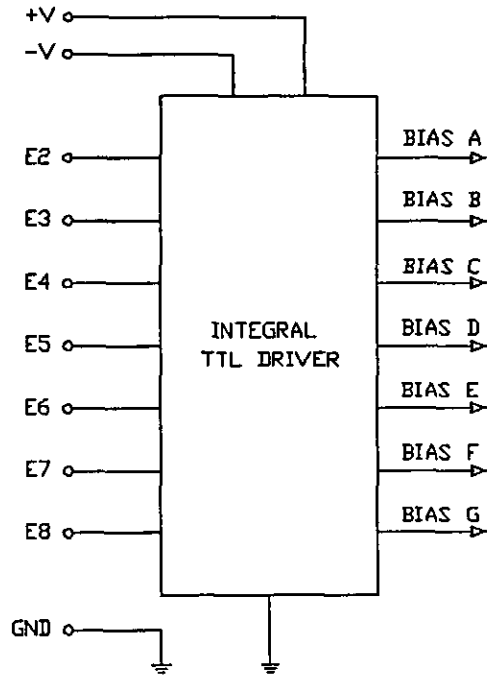
ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

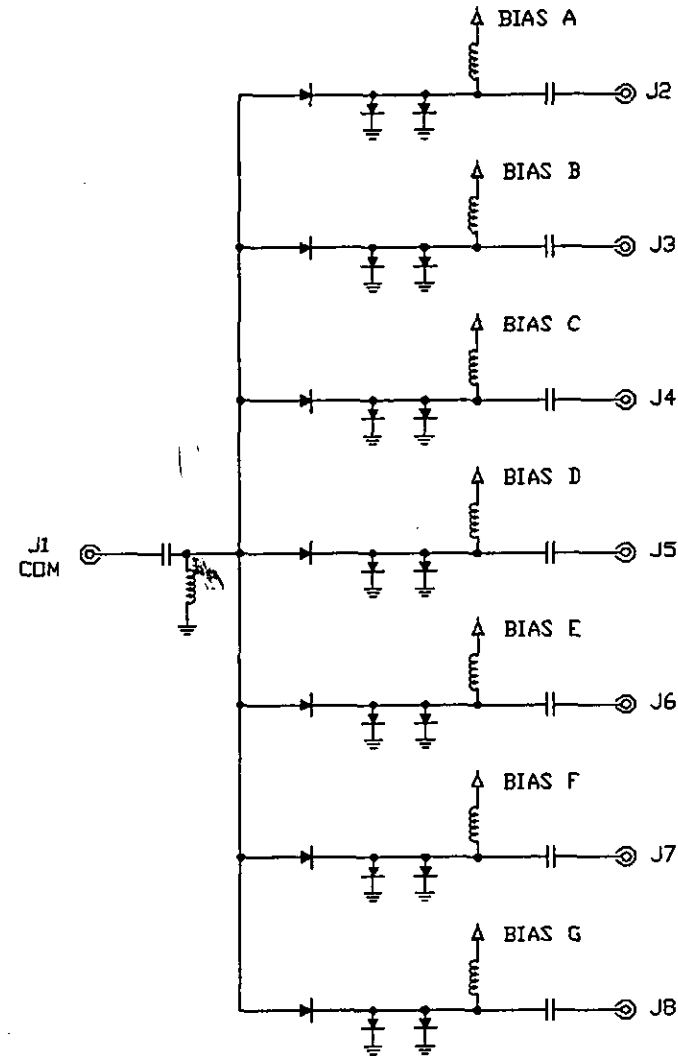
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-1170-7D 1.0-18 GHz, SP7T SWITCH MODULE	
APPROVALS	DATE	SIZE	A
DRAWN <i>WJP</i>	3/8/95	SHEET	1 OF 2
CHECKED			100-3873

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT



RF SECTION



13-6



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	7/8/93
CHECKED <i>[Signature]</i>	7/10/93

PRODUCT FEATURE

SW-1182-7D

1.0-18 GHz, SP7T SWITCH MODULE

SIZE A

SHEET 2 OF 2

WG. 100-3200

DESCRIPTION

AMC MODEL SW-1182-7D IS A REFLECTIVE BROAD BAND SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

SPECIFICATIONS

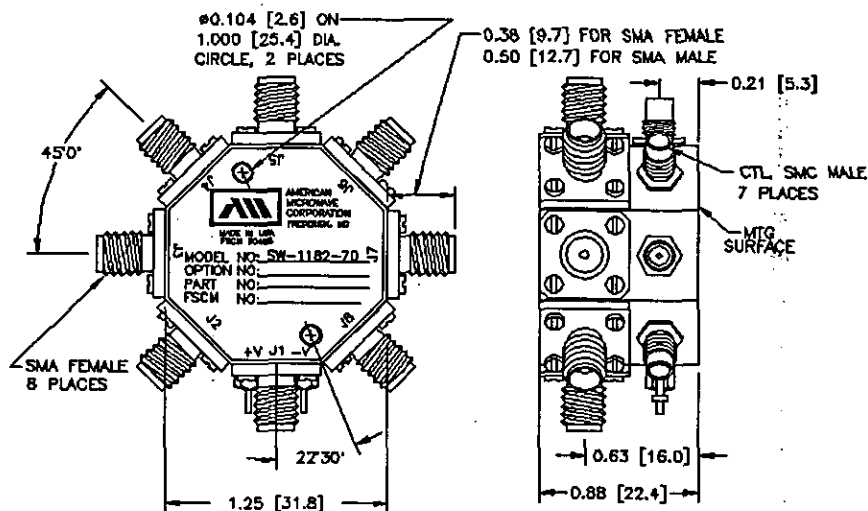
- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.7 dB MAXIMUM
4-8 GHz, 2.0 dB MAXIMUM
8-12.4 GHz, 2.5 dB MAXIMUM
12.4-18 GHz, 3.5 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 60 dB MINIMUM
12.4-18 GHz, 50 dB MINIMUM
- VSWR (ON) 2.2:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1μS, PW MAXIMUM)
- SWITCHING TIME
RISE {10% RF TO 90% RF} 20 ns MAXIMUM
FALL {90% RF TO 10% RF} 20 ns MAXIMUM
ON {50% TTL TO 90% RF} 50 ns MAXIMUM
OFF {50% TTL TO 10% RF} 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC ±5% @ 300 mA MAXIMUM
-12 TO -15VDC @ 60 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SMC (MALE)
- SIZE 1.25" x 1.25" x 0.88"

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SOLDER PIN CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

ZONE		REV.	DESCRIPTION	DATE	APPROVED
A		1	ORIGINAL RELEASE, JOB #30110E	7/8/93	<i>[Signature]</i>

MECHANICAL OUTLINE




E8	E7	E6	E5	E4	E3	E2	RF PATH ON
1	1	1	1	1	1	0	J1-J2
1	1	1	1	1	0	1	J1-J3
1	1	1	1	0	1	1	J1-J4
1	1	1	0	1	1	1	J1-J5
1	1	0	1	1	1	1	J1-J6
1	0	1	1	1	1	1	J1-J7
0	1	1	1	1	1	1	J1-J8

- NOTES:
 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 3) WEIGHT: APPROX. 2.7 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-1182-7D 1.0-18 GHz, SP7T SWITCH MODULE	
APPROVALS	DATE	SIZE A SHEET 1 OF 2 G. # 100-3200	
DRAWN <i>WSP</i>	7/8/93		
CHECKED <i>[Signature]</i>	7/8/93		

DESCRIPTION

AMC MODEL SW-1182-7D IS A REFLECTIVE BROAD BAND SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A	ORIGINAL RELEASE, JOB #30110E	3/8/95

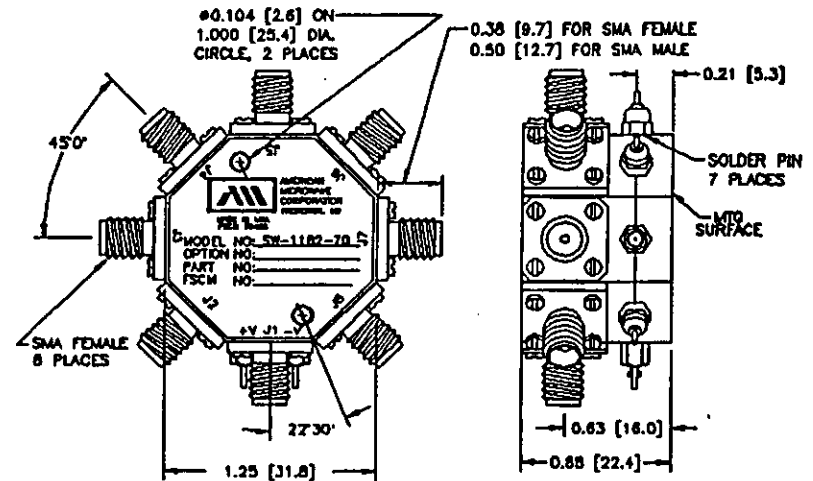
SPECIFICATIONS

- FREQUENCY RANGE 1-18 GHz MINIMUM
- INSERTION LOSS 1-4 GHz, 1.7 dB MAXIMUM
4-8 GHz, 2.0 dB MAXIMUM
8-12.4 GHz, 2.5 dB MAXIMUM
12.4-18 GHz, 3.5 dB MAXIMUM
- ISOLATION 1-12.4 GHz, 60 dB MINIMUM
12.4-18 GHz, 50 dB MINIMUM
- VSWR (ON) 2.2:1 MAXIMUM
- RF POWER RATING 1W CW, 75W PEAK (1 μ S, PW MAXIMUM)
- SWITCHING TIME
RISE (10% RF TO 90% RF) 20 ns MAXIMUM
FALL (90% RF TO 10% RF) 20 ns MAXIMUM
ON (50% TTL TO 90% RF) 50 ns MAXIMUM
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM
- CONTROL TTL, LOW POWER SCHOTTKY, (UNITY LOAD)
(SEE TRUTH TABLE)
LOGIC "0" = INSERTION LOSS
LOGIC "1" = ISOLATION
- POWER SUPPLY +5VDC \pm 5% @ 300 mA MAXIMUM
-12 TO -15VDC @ 60 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA (FEMALE)
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.25" x 1.25" x 0.88"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)
- A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)
- A09 VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)
- A10 SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)
- A11 SMC MALE CONTROL TERMINALS
- A13 +12 TO +18 VDC POWER SUPPLY
- A14 -5 VDC POWER SUPPLY

MECHANICAL OUTLINE




TRUTH TABLE							
E8	E7	E6	E5	E4	E3	E2	RF PATH ON
1	1	1	1	1	1	0	J1-J2
1	1	1	1	1	0	1	J1-J3
1	1	1	1	0	1	1	J1-J4
1	1	1	0	1	1	1	J1-J5
1	1	0	1	1	1	1	J1-J6
1	0	1	1	1	1	1	J1-J7
0	1	1	1	1	1	1	J1-J8

- NOTES:
 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 3) WEIGHT: APPROX. 2.7 OZ

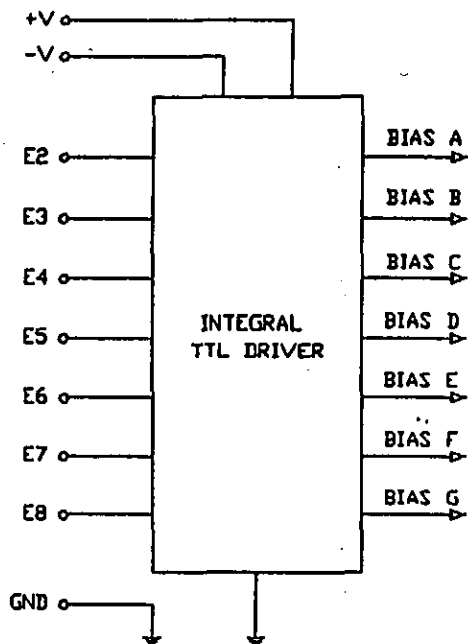
ENVIRONMENTAL RATINGS

- TEMPERATURE:
OPERATING -65°C TO +110°C
NON-OPERATING -65°C TO +125°C
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

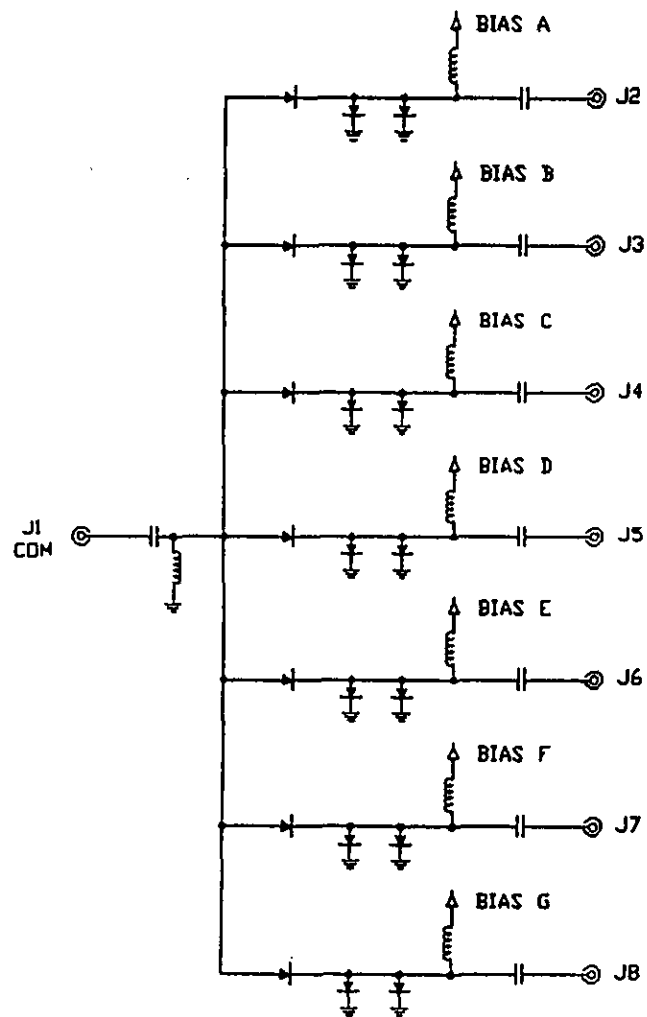
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-1182-7D 1.0-18 GHz, SP7T SWITCH MODULE	
APPROVALS DRAWN WSP CHECKED	DATE 3/8/95	SIZE A	SHEET 1 OF 2 DWG. # 100-3200

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT



RF SECTION



13-5A


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SW-1182-7D 1.0-18 GHz, SP7T SWITCH MODULE	
DRAWN <i>WSP</i>	3/6/95	SIZE A	SHEET 2 OF 2
CHECKED		DWG. / 100-3200	



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
14	SP7T, NON-REFLECTIVE/ABSORPTIVE.....	14-1
● 0.02-2 GHz	SWITCH MODULE, AMC MODEL NO: SW-2000-7AT.....	14-3
● 0.02-2.6 GHz	RADIAL SWITCH MODULE, AMC MODEL NO: SW-2560-7DT.....	14-5

DESCRIPTION

AMC MODEL SW-2000-7AT IS AN ABSORPTIVE BROAD BAND SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN LOW HARMONIC RF CONTENTS, AND HIGH ISOLATION. APPLICATIONS ARE FOR HIGHLY SENSITIVE LOW-NOISE RADARS AND MISSILE SYSTEMS.

SPECIFICATIONS

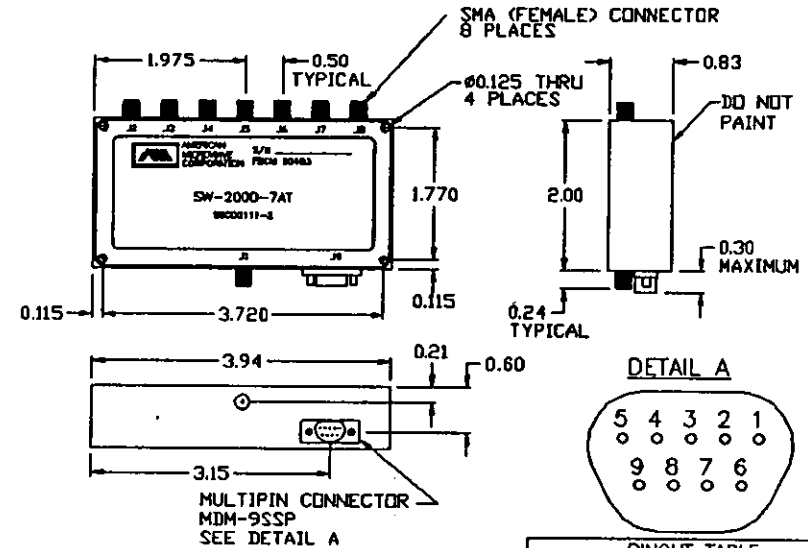
- FREQUENCY RANGE 20 MHz-2.0 GHz MINIMUM
- INSERTION LOSS 2.0dB MAXIMUM
- AMPLITUDE BALANCE ± 0.25 dB MAXIMUM
- ISOLATION 80dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 200 nsec MAXIMUM
 - FALL (90% RF TO 10% RF) 200 nsec MAXIMUM
 - ON (50% TTL TO 90% RF) 700 nsec MAXIMUM
 - OFF (50% TTL TO 10% RF) 700 nsec MAXIMUM
- RF POWER RATINGS +20 dBm CW MAXIMUM
- HARMONIC CONTENTS
 - 2nd HARMONIC INTERCEPT +56 dBm MINIMUM
 - 2nd ORDER TWO-TONE INTERCEPT +50 dBm MINIMUM
 - ① 0 dBm INPUT RF POWER
 - ② 0 dbm INPUT RF POWER
 - 3rd ORDER TWO-TONE INTERCEPT +40 dBm MINIMUM
 - ① 0 dbm INPUT RF POWER
 - ② 0 dbm INPUT RF POWER
- RF LEAKAGE (CONDUCTIVE/RADIATED) ... > 80 dBc @ 2.0 GHz
- CONTROL 3 BIT BINARY TTL LOGIC
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +5VDC $\pm 5\%$ @ 200 mA MAXIMUM
-15VDC $\pm 5\%$ @ 120 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER AND CONTROLS 9 PIN MALE MINIATURE MULTIPIN CONNECTOR (MDH-9SSP)
- SIZE 3.94" x 2.00" x 0.83"

AVAILABLE OPTIONS

- A01 SMA MALE CONNECTORS
- A02 ± 12 TO ± 18 VDC SUPPLIES
- A03 7 INDIVIDUAL CONTROLS
- A04 INVERSE CONTROL LOGIC

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 204108-2	11/22/92	<i>M</i>

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 12 OZ

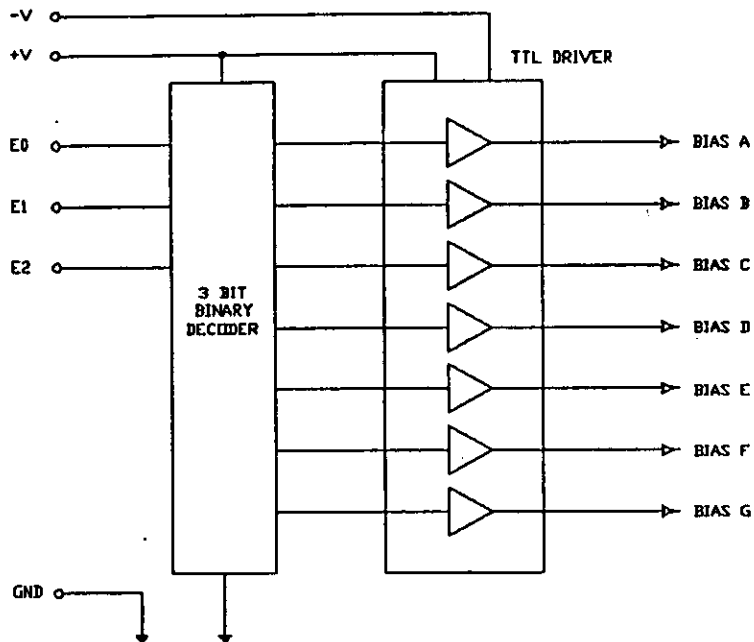
PINOUT TABLE	
PIN NUMBER	FUNCTION
1	E0 CONTROL
2	E1 CONTROL
3	E2 CONTROL
4-7	GROUND
8	+5 VDC
9	-15 VDC

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

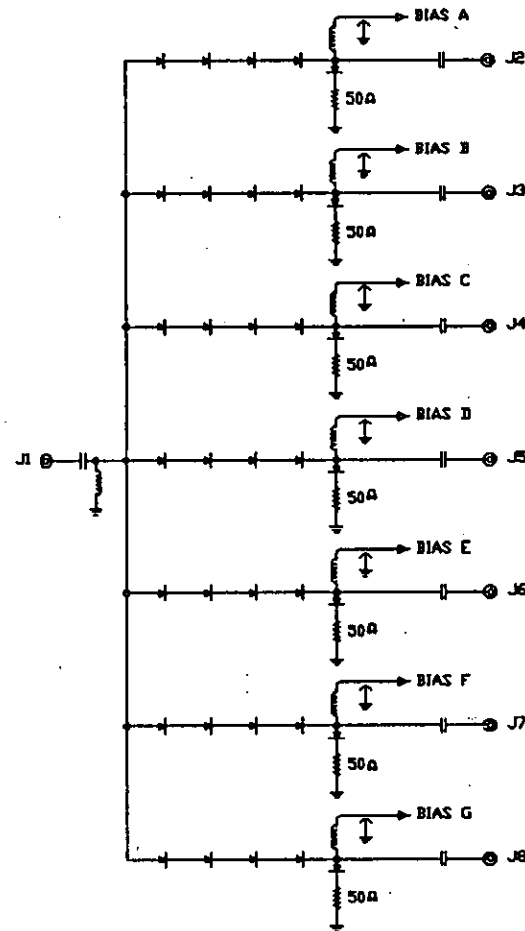
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2000-7AT 20 MHz TO 2 GHz, NON-REFLECTIVE, SP7T SWITCH MODULE	
APPROVALS DRAWN: <i>WSP</i> CHECKED: <i>[Signature]</i>	DATE 11/22/92	SIZE A	SHEET 1 OF 2
DWG. # 100-2859			

DRIVER CIRCUIT




FUNCTIONAL SCHEMATIC

RF SECTION



TRUTH TABLE			
RF PATH	E2	E1	E0
J1-J2	L	L	L
J1-J3	L	L	H
J1-J4	L	H	L
J1-J5	L	H	H
J1-J6	H	L	L
J1-J7	H	L	H
J1-J8	H	H	L
L=0.0-0.8 VDC			
H=2.4-5.0 VDC			

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2000-7AT 20 MHz TO 2 GHz, NON-REFLECTIVE, SP7T SWITCH MODULE	
APPROVALS WSP H. [Signature]	DATE 11/22/02 11/22/02	SIZE A	SHEET 2 OF 2

DESCRIPTION

AMC MODEL SW-2560-7D (OR -7DT) IS A REFLECTIVE (OR AN ABSORPTIVE) SP7T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN LOW HARMONIC RF CONTENTS, GOOD PHASE AND AMPLITUDE BALANCE, AND HIGH ISOLATION. APPLICATIONS ARE FOR HIGHLY SENSITIVE LOW-NOISE RADARS AND MISSILE SYSTEMS.

SPECIFICATIONS

- FREQUENCY RANGE 20 MHz-2.56 GHz
- INSERTION LOSS
 - {-7D} REFLECTIVE 2.0 dB MAXIMUM
 - {-7DT} ABSORPTIVE 2.5 dB MAXIMUM
- AMPLITUDE BALANCE ± 0.1 dB MAXIMUM
- PHASE BALANCE ± 0.1 dB MAXIMUM
- ISOLATION
 - {-7D} REFLECTIVE 65 dB MINIMUM
 - {-7DT} ABSORPTIVE 70 dB MINIMUM
- VSWR 1.7:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 200 nsec MAXIMUM
 - FALL (90% RF TO 10% RF) 200 nsec MAXIMUM
 - ON (50% TTL TO 90% RF) 800 nsec MAXIMUM
 - OFF (50% TTL TO 10% RF) 800 nsec MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- HARMONIC CONTENTS
 - 2nd HARMONIC INTERCEPT +56 dBm MINIMUM
 - 2nd ORDER TWO-TONE INTERCEPT +50 dBm MINIMUM
 - @ 0 dBm INPUT RF POWER
 - 3rd ORDER TWO-TONE INTERCEPT +40 dBm MINIMUM
 - @ 0 dBm INPUT RF POWER
- RF LEAKAGE (CONDUCTIVE/RADIATED) ... > 70 dBc @ 2.56 GHz
- CONTROL 3 BIT BINARY TTL LOGIC
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +12VDC TO +18VDC @ 250 mA MAXIMUM
-12VDC TO -18VDC @ 250 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER AND CONTROLS 15 PIN D TYPE CONNECTOR
- SIZE 3.0" x 2.0" x 1.5"

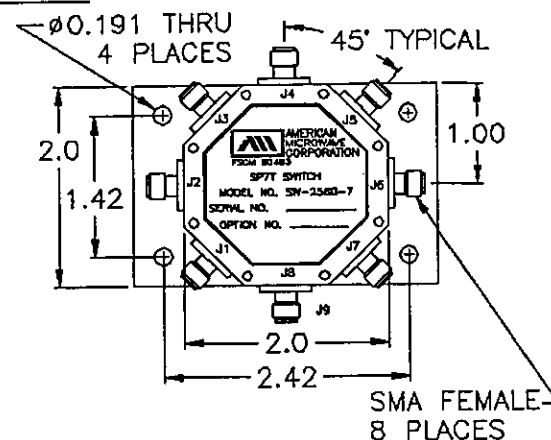
AVAILABLE OPTIONS

- A01 SMA MALE CONNECTORS
- A02 7 INDIVIDUAL CONTROLS
- A03 DIFFERENTIAL TTL LINE RECEIVER/DECODER (RS-422-A)
- A04 INVERSE CONTROL LOGIC

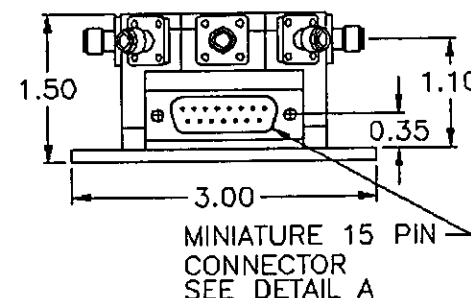
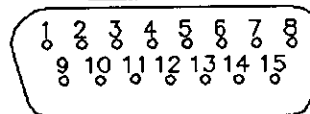
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 107134	11/22/92	<i>[Signature]</i>

MECHANICAL OUTLINE

PINOUT TABLE	
PIN NUMBER	FUNCTION
1	E0
2	N/C
3	E1
4	N/C
5	E2
6	N/C
7	N/C
8	N/C
9	GND
10	GND
11	GND
12	GND
13	GND
14	+V
15	-V



DETAIL A



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 12 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

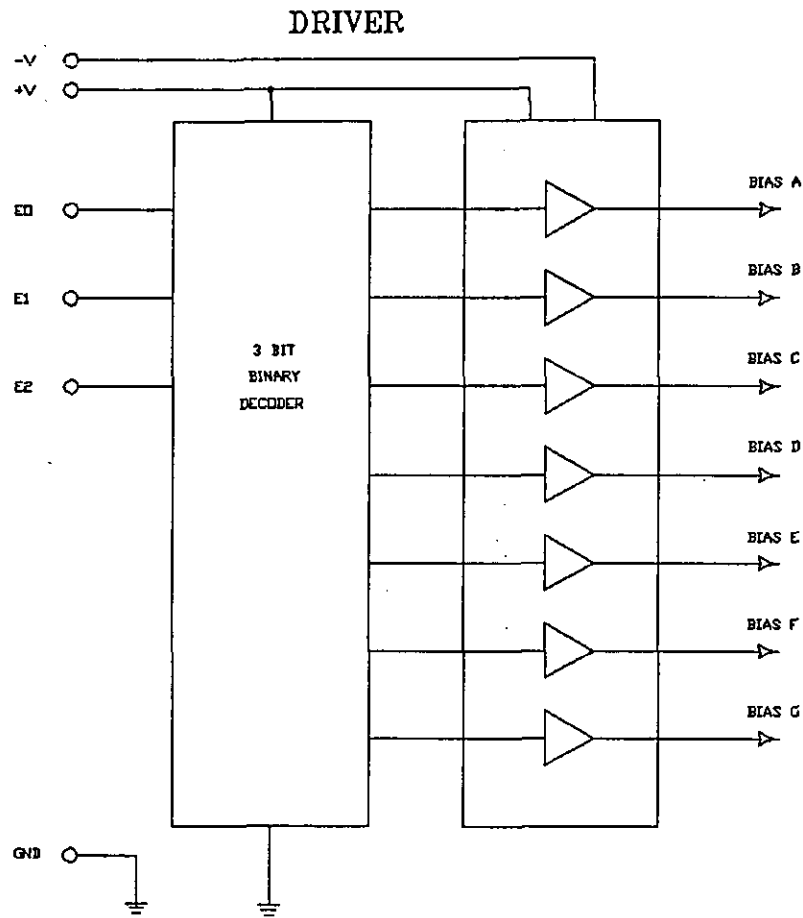


AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

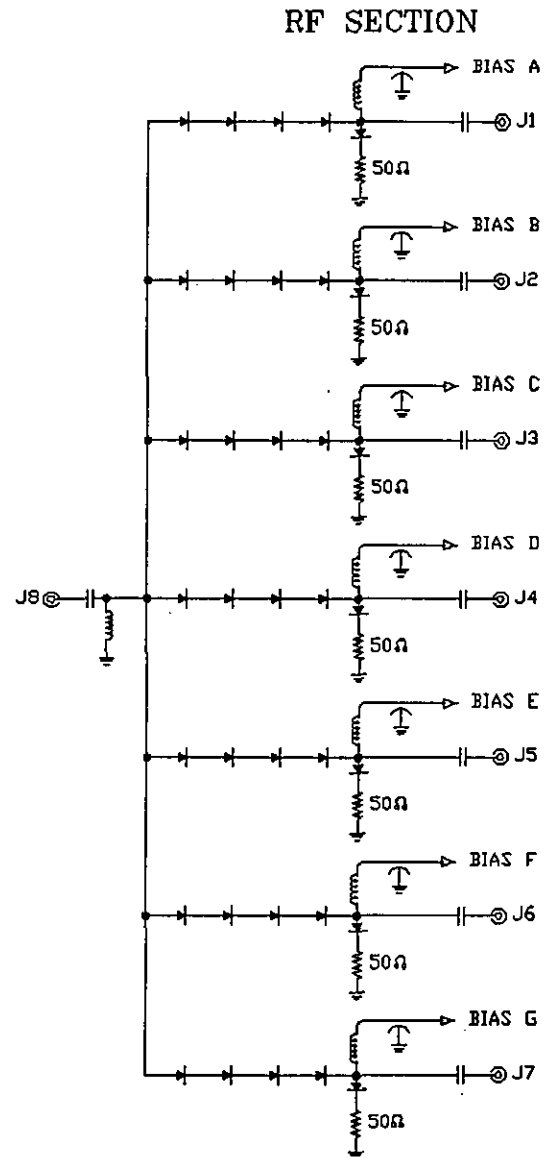
APPROVALS	DATE
<i>[Signature]</i>	11/22/92
<i>[Signature]</i>	11/22/92

PRODUCT FEATURE		
SW-2560-7D (OR 7DT)		
20 MHz-2.56 GHz, REFLECTIVE OR NON-REFLECTIVE, SP7T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2865

FUNCTIONAL SCHEMATIC



TRUTH TABLE			
RF PATH	E2	E1	E0
J8-J1	L	L	L
J8-J2	L	L	H
J8-J3	L	H	L
J8-J4	L	H	H
J8-J5	H	L	L
J8-J6	H	L	H
J8-J7	H	H	L
L=0-0.8 VDC			
H=2.4-5.0 VDC			



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	11/22/92
CHECKED	

PRODUCT FEATURE		
SW-2560-7D (OR 7DT)		
20 MHz-2.56 GHz, REFLECTIVE OR NON-REFLECTIVE, SP7T SWITCH MODULE		
SIZE A	SHEET 2 OF 2	DWG. # 100-2865



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
15	SP8T, NON-REFLECTIVE/ABSORPTIVE.....	15-1
●	0.01-2.0 GHz SWITCH MODULE, AMC MODEL NO: SW-2000-8AT-A1052.....	15-3
●	250-500 MHz NOISE IMMUNE, WITH TTL COMPATIBLE OPTO-COUPLER, SWITCH MODULE, AMC MODEL NO: SW-2000-8AT-200.....	15-5
●	1-2 GHz RADIAL SWITCH MODULE AMC MODEL NO: SW-1020-8AT.....	15-7
●	2-4 GHz RADIAL SWITCH MODULE AMC MODEL NO: SW-2040-8AT.....	15-9
●	1-20 GHz RADIAL SWITCH MODULE, AMC MODEL NO: SW-2181-8AT.....	15-11

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 207197-1E	11/22/92	JW

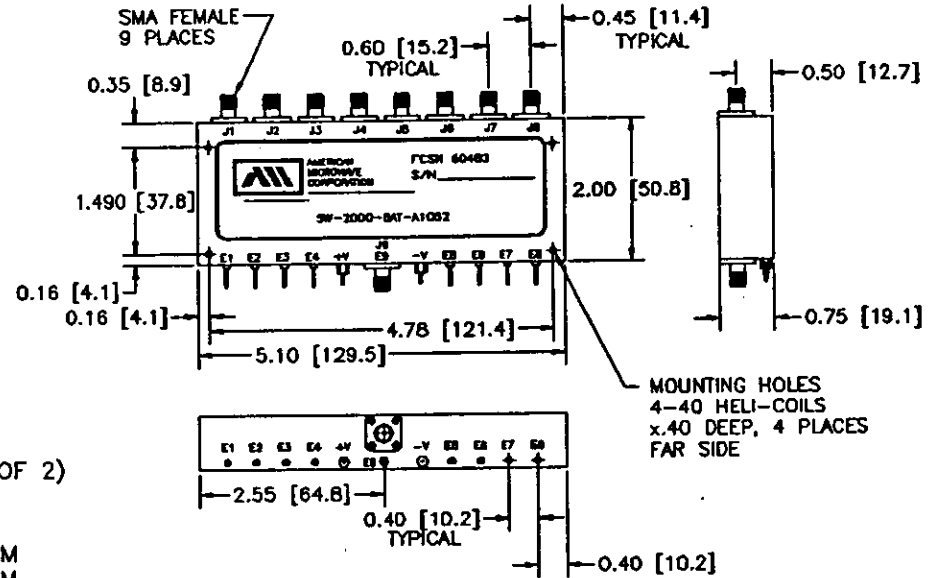
DESCRIPTION

AMC MODEL SW-2000-BAT-A1052 IS AN ABSORPTIVE SP8T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW LOSS AND LOW VSWR BROAD BAND APPLICATIONS.

SPECIFICATIONS

- FREQUENCY RANGE 0.01-2.0 GHz MINIMUM
- INSERTION LOSS 1.0 dB MAXIMUM
- ISOLATION 65 dB MINIMUM
- VSWR (ON/OFF) 1.3:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 400 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 400 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 800 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 800 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
 LOGIC "0" = ISOLATION
 LOGIC "1" = INSERTION LOSS
 (SEE TRUTH TABLE ON SHEET 2 OF 2)
- RF POWER RATINGS +27 dBm CW MAXIMUM
- POWER SUPPLY +5VDC ±5% @ 350 mA MAXIMUM
 -15VDC ±5% @ 100 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA (FEMALE)
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 5.1" x 2.0" x 0.75"

MECHANICAL OUTLINE



NOTES:


- 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 10 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

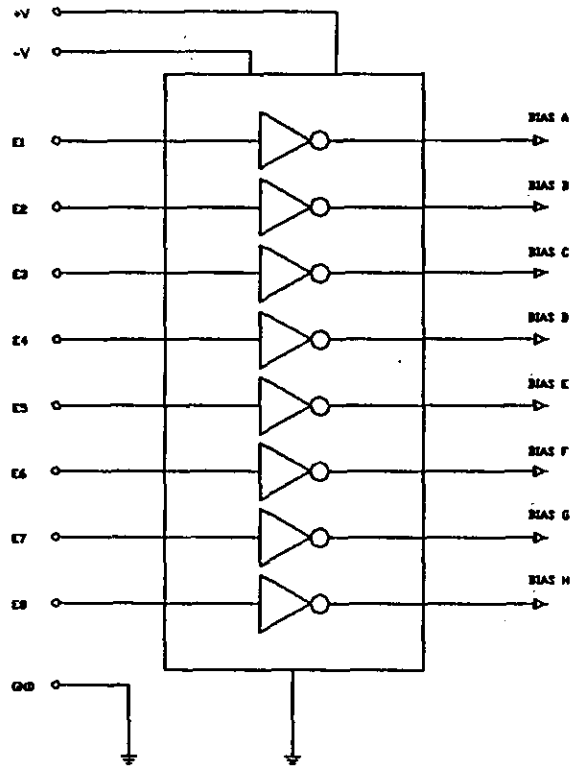
AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A08 SMA MALE CONNECTORS
- A10 ±12VDC TO ±15VDC SUPPLY POWER
- A12 3 BIT BINARY TTL LOGIC

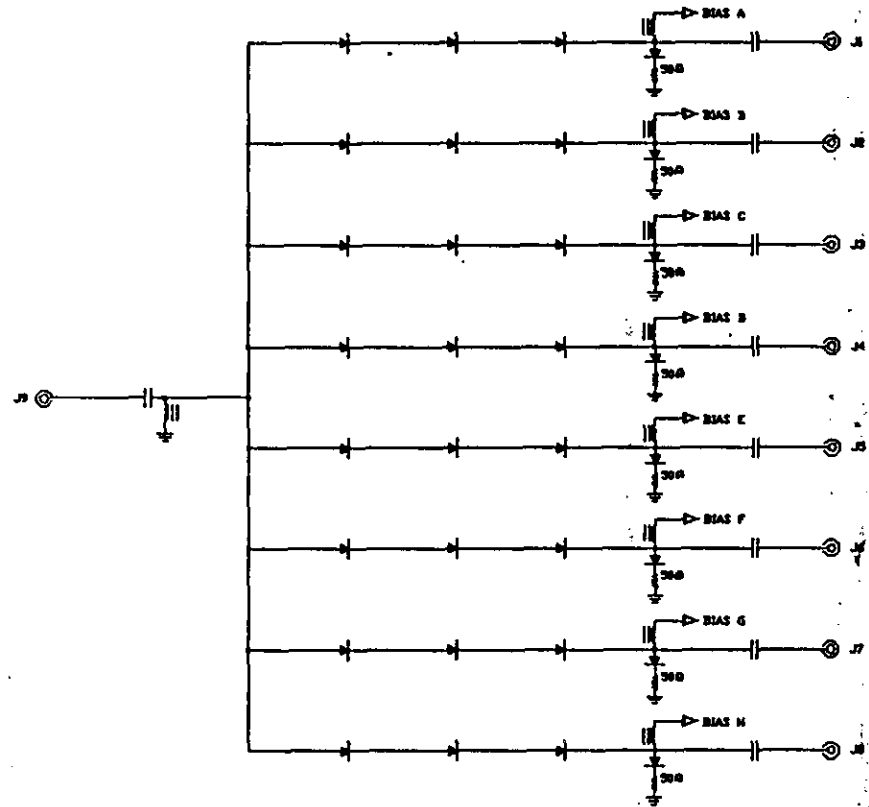
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938		
		PRODUCT FEATURE SW-2000-BAT-A1052 0.01-2.0 GHz, NON-REFLECTIVE, SP8T SWITCH MODULE		
APPROVALS	DATE	SIZE	SHEET	DWG. #
DRAWN: WSP CHECKED: J. Nelson	11/22/92	A	1 OF 2	100-2877

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



TRUTH TABLE								RF PATH
E8	E7	E6	E5	E4	E3	E2	E1	
0	0	0	0	0	0	0	1	J9-J1
0	0	0	0	0	0	1	0	J9-J2
0	0	0	0	0	1	0	0	J9-J3
0	0	0	0	1	0	0	0	J9-J4
0	0	0	1	0	0	0	0	J9-J5
0	0	1	0	0	0	0	0	J9-J6
0	1	0	0	0	0	0	0	J9-J7
1	0	0	0	0	0	0	0	J9-J8



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700, FAX: (301) 662-4938

PRODUCT FEATURE

SW-2000-8AT-A1052

0.01-2.0 GHz, NON-REFLECTIVE, SP8T SWITCH MODULE

APPROVALS	DATE
DRAWN: <i>W. J. [Signature]</i> CHECKED: <i>[Signature]</i>	11/22/82 11/22/82

DESCRIPTION

AMC MODEL SW-2000-8AT-200 IS AN ABSORPTIVE SP8T SWITCH MODULE DESIGNED TO MAINTAIN LOW HARMONIC RF CONTENTS, AND HIGH ISOLATION FROM EXTENSIVE NOISY ENVIRONMENTS BY APPLYING OPTO-ISOLATORS ON CONTROL SIGNAL PORTS AND VOLTAGE TRANSIENT SUPPRESSORS. APPLICATIONS ARE FOR HIGHLY SENSITIVE LOW-NOISE RADARS, MISSILE SYSTEMS, EW-SYSTEMS, ETC.

SPECIFICATIONS

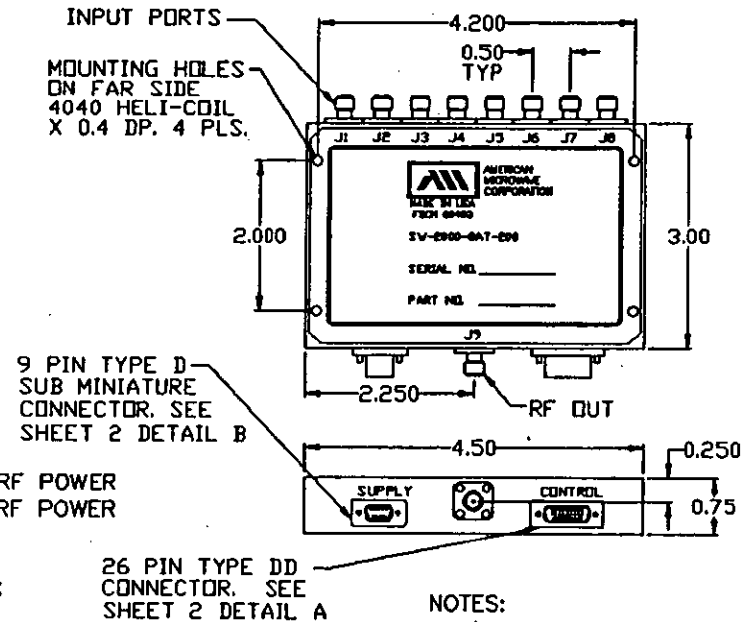
- FREQUENCY RANGE 250-500 MHz MINIMUM
- INSERTION LOSS 0.5 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR (ON/OFF) 1.5:1 MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 150 nS MAXIMUM
 - FALL (90% RF TO 10% RF) 250 nS MAXIMUM
 - ON (50% TTL TO 90% RF) 200 nS MAXIMUM
 - OFF (50% TTL TO 10% RF) 500 nS MAXIMUM
- RF POWER RATINGS 1W CW, MAXIMUM
- HARMONIC CONTENT
 - 2nd HARMONIC -80 dBC MAXIMUM @ +10dBm INPUT RF POWER
 - 3rd HARMONIC -110 dBC MAXIMUM @ +10dBm INPUT RF POWER
- RF LEAKAGE (CONDUCTIVE/RADIATED) ... > 80 dBC @ 500 MHz
- CONTROLS DIFFERENTIAL TTL, WITH OPTO COUPLERS;
8 INDIVIDUAL CONTROL PAIRS.
LOGIC "1" INSERTION LOSS
LOGIC "0" ISOLATION
- POWER SUPPLY +5 ±0.25VDC @ 380 mA MAXIMUM
-5.2 ±0.25VDC @ 440 mA MAXIMUM
DC LINES ARE FILTERED TO PREVENT
RF LEAKAGE AND PROVIDE TRUE
POWER SUPPLY DECOUPLING.
- CONNECTIONS
 - RF INPUT/OUTPUT SMA FEMALE
 - CONTROL 26 PIN TYPE DD
 - SUPPLY 9 PIN SUB MINIATURE TYPE D
- SIZE 4.50" x 3.00" x 0.75"

AVAILABLE OPTIONS

- A01 ±12 TO ±18VDC SUPPLIES
- A02 EXTENDED FREQUENCY BAND FROM 10 MHz TO
2000 MHz (RF PERFORMANCE IS SUBJECT
TO CHANGE, CONSULT FACTORY)
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A04 SMA MALE CONNECTORS

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 110199S	11/17/82	<i>JM</i>

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 14 OZ

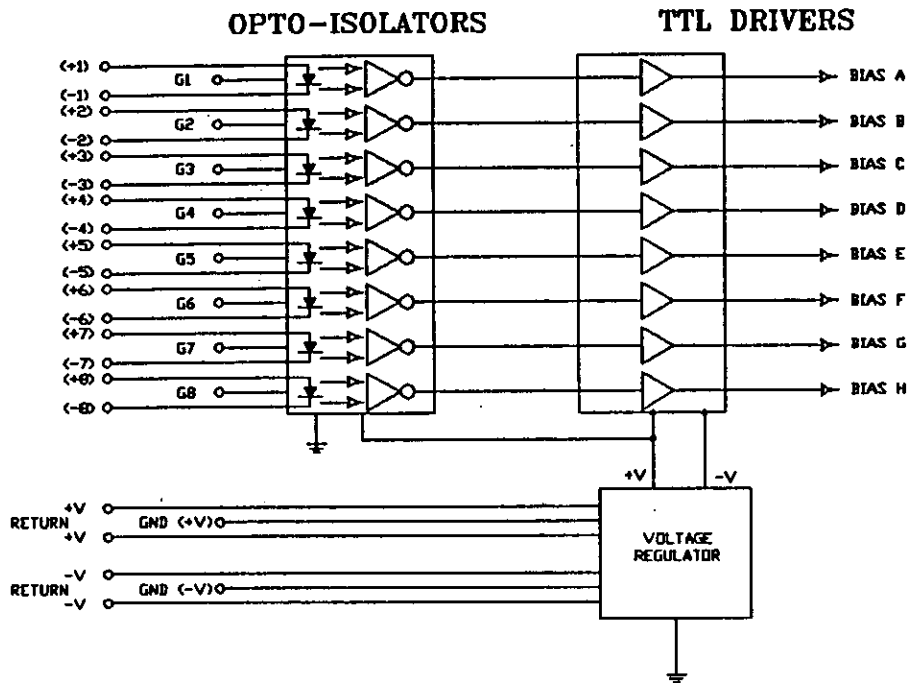
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

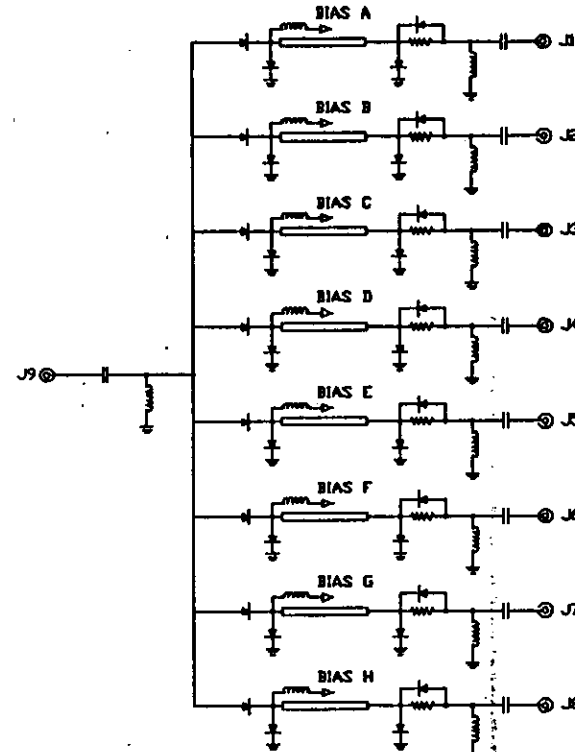
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-2000-8AT-200 250-500 MHz, NON-REFLECTIVE, NOISE IMMUNE SP8T SWITCH MODULE WITH TTL COMPATIBLE OPTO-COUPLER	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>WSP</i>	DATE 11/17/82		
CHECKED <i>[Signature]</i>	DATE 11/27/82		
			DWG. # 100-2814

FUNCTIONAL SCHEMATIC

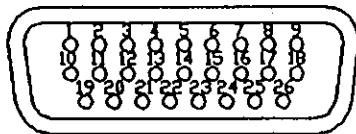
DRIVER CIRCUIT



RF SECTION



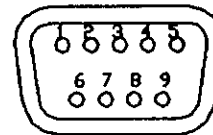
DETAIL A



PIN FUNCTION TABLE (CONTROL)

PIN NO.	PIN FUNC	PIN NO.	PIN FUNC	PIN NO.	PIN FUNC
1	N/C GND	10	N/C GND	19	+1
2	+2	11	G1	20	-1
3	-2	12	G2	21	+3
4	+4	13	G3	22	-3
5	-4	14	G4	23	+5
6	+6	15	G5	24	-5
7	-6	16	G6	25	+7
8	+8	17	G7	26	-7
9	-8	18	G8		

DETAIL B



PIN FUNCTION TABLE (SUPPLY)

PIN NO.	PIN FUNCTION
1	+5V
2	+5.0V RET
3	N/C GND
4	-5.2V
5	-5.2V RET
6	+5.0V GND
7	N/C GND
8	N/C GND
9	-5.2V GND



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS: _____ DATE: _____
DRAWN: WJP 11/17/92
CHECKED: [Signature] 11/22/92

PRODUCT FEATURE
SW-2000-8AT-200
250-300 MHz, NON-REFLECTIVE, NOISE IMMUNE SP8T SWITCH MODULE
WITH TTL COMPATIBLE OPTO-COUPLED

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 2237E	11/22/92	<i>[Signature]</i>

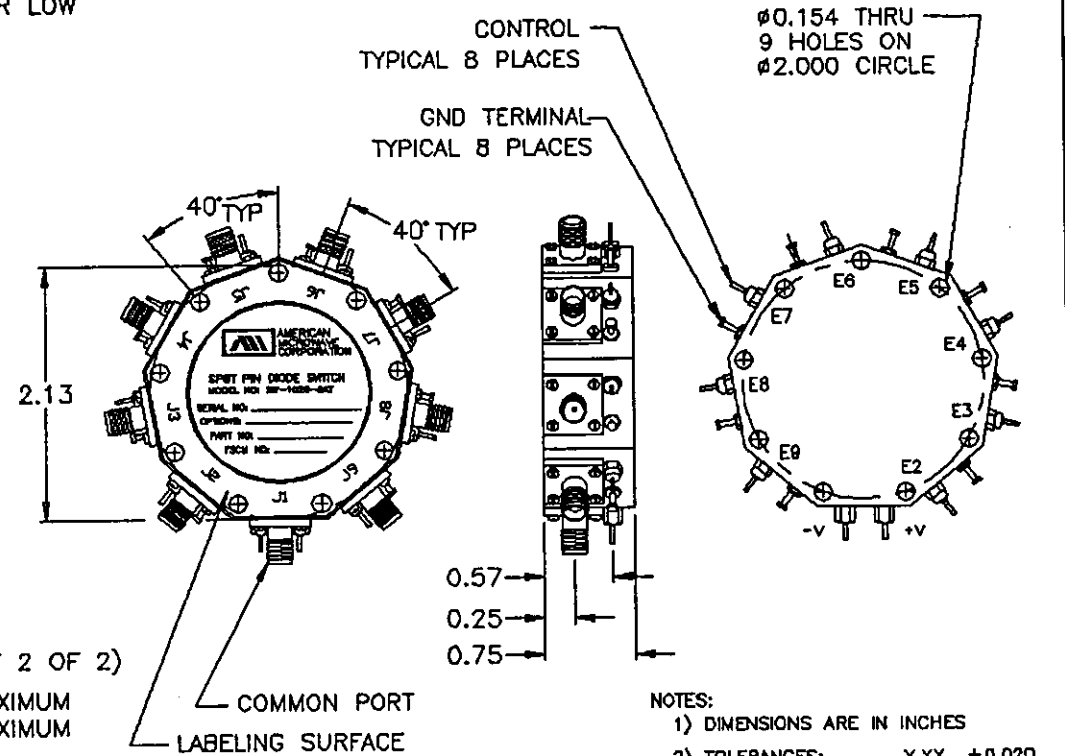
DESCRIPTION

AMC MODEL SW-1020-8AT IS AN ABSORPTIVE SP8T SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A RADIAL HOUSING. DESIGNED FOR LOW LOSS, LOW VSWR, AMPLITUDE AND PHASE BALANCED APPLICATIONS.

SPECIFICATIONS

- FREQUENCY RANGE 1-2 GHz MINIMUM
- INSERTION LOSS 1.5 dB MAXIMUM
- AMPLITUDE BALANCE ±0.3 dB MAXIMUM
- PHASE BALANCE ±3° MAXIMUM
- ISOLATION 70 dB MINIMUM
- VSWR (ON/OFF) 1.3:1 MAXIMUM
- RF POWER RATINGS +27 dBm, MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 100 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 100 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 800 ns MAXIMUM
 - OFF (50% TTL TO 10% RF) 800 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
8 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +5VDC ±5% @ 280 mA MAXIMUM
-15VDC ±5% @ 75 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 2.13" DIAMETER x 0.75"

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A04 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A08 SMA MALE CONNECTORS
- A10 +12 TO +15VDC SUPPLY
- A12 3 BIT BINARY TTL LOGIC DECODER

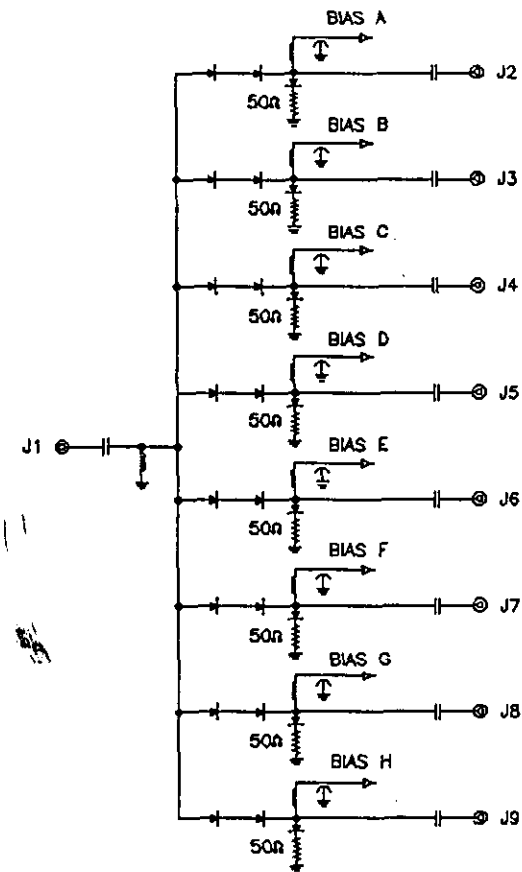
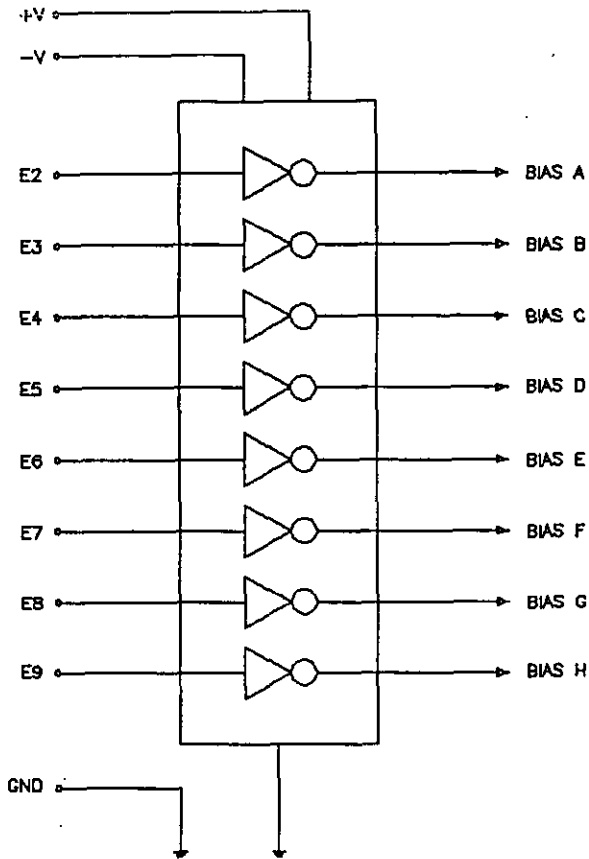
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>[Signature]</i>	11/22/92	SW-1020-8AT	
CHECKED <i>[Signature]</i>	11/22/92	1 TO 2 GHz, NON-REFLECTIVE, RADIAL, SP8T SWITCH MODULE	
		SIZE A	SHEET 1 OF 2
			DWG. # 100-2895

-15-7

DRIVER CIRCUIT

FUNCTIONAL SCHEMATIC

RF SECTION



TRUTH TABLE

E9	E8	E7	E6	E5	E4	E3	E2	RF PATH
0	0	0	0	0	0	0	1	J1-J2
0	0	0	0	0	0	1	0	J1-J3
0	0	0	0	0	1	0	0	J1-J4
0	0	0	0	1	0	0	0	J1-J5
0	0	0	1	0	0	0	0	J1-J6
0	0	1	0	0	0	0	0	J1-J7
0	1	0	0	0	0	0	0	J1-J8
1	0	0	0	0	0	0	0	J1-J9



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS
 DRAWN *WSP*
 CHECKED *[Signature]*

DATE
 11/22/92
 11/22/92

PRODUCT FEATURE

SW-1020-8AT

1 TO 2 GHz, NON-REFLECTIVE, RADIAL, SP8T SWITCH MODULE

SIZE A

SHEET 2 OF 2

DWG. # 100-2895

DESCRIPTION

AMC MODEL SW-2040-8AT IS AN ABSORPTIVE SP8T SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A RADIAL HOUSING. DESIGNED FOR LOW LOSS, LOW VSWR, AMPLITUDE AND PHASE BALANCED APPLICATIONS.

SPECIFICATIONS

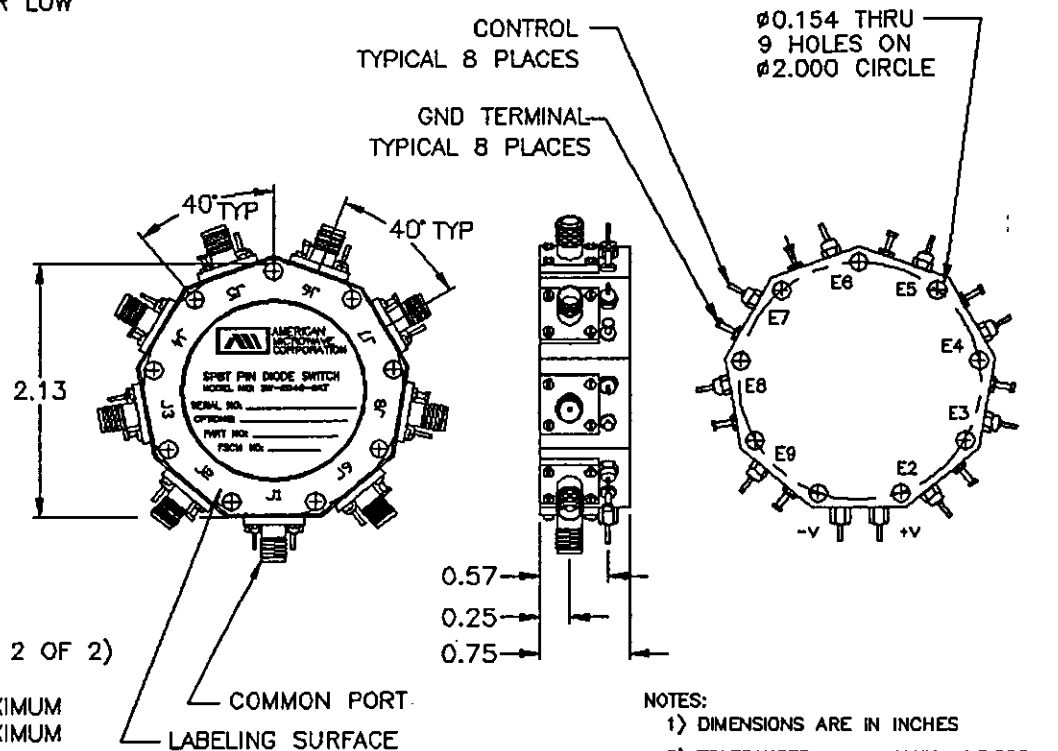
- FREQUENCY RANGE 2-4 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM
- AMPLITUDE BALANCE ± 0.3 dB MAXIMUM
- PHASE BALANCE $\pm 5^\circ$ MAXIMUM
- ISOLATION 60 dB MINIMUM
- VSWR (ON/OFF) 1.3:1 MAXIMUM
- RF POWER RATINGS +27 dBm, MAXIMUM
- SWITCHING TIME
 - RISE {10% RF TO 90% RF} 100 ns MAXIMUM
 - FALL {90% RF TO 10% RF} 100 ns MAXIMUM
 - ON {50% TTL TO 90% RF} 800 ns MAXIMUM
 - OFF {50% TTL TO 10% RF} 800 ns MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
8 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
(SEE TRUTH TABLE ON SHEET 2 OF 2)
- POWER SUPPLY +5VDC $\pm 5\%$ @ 280 mA MAXIMUM
-15VDC $\pm 5\%$ @ 75 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 2.13" DIAMETER x 0.75"

AVAILABLE OPTIONS

- A01 50 Ω CONTROL IMPEDANCE
- A02 100 Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A04 EXTENDED FREQUENCY RANGE (CONSULT FACTORY)
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A08 SMA MALE CONNECTORS
- A10 +12 TO +15VDC SUPPLY
- A12 3 BIT BINARY TTL LOGIC DECODER

REVISIONS				DATE	APPROVED
ZONE	REV.	DESCRIPTION			
	A	ORIGINAL RELEASE, JOB # 2086		11/22/82	<i>My</i>

MECHANICAL OUTLINE




NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
X.XXX ± 0.010
- 3) WEIGHT: APPROX. 4.5 OZ

ENVIRONMENTAL RATINGS

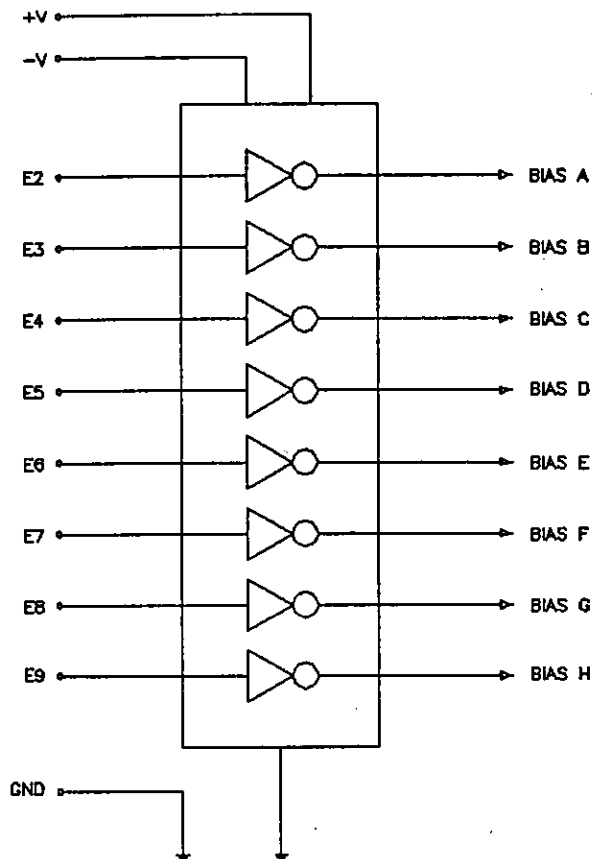
- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/82	SW-2040-8AT	
CHECKED <i>H. H. H.</i>	11/24/82	2 TO 4 GHz, NON-REFLECTIVE, RADIAL, SP8T SWITCH MODULE	
		SIZE A	SHEET 1 OF 2
			DWG. # 100-2896

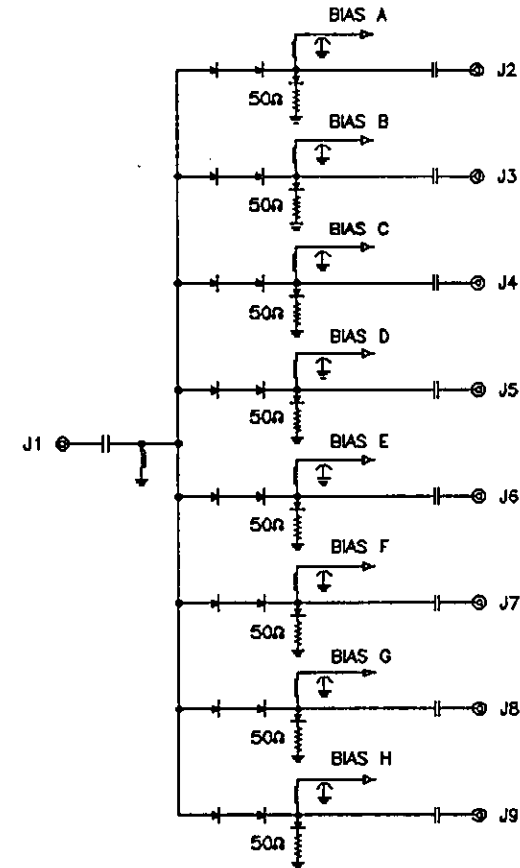
15-9

FUNCTIONAL SCHEMATIC

DRIVER CIRCUIT



RF SECTION



TRUTH TABLE

E9	E8	E7	E6	E5	E4	E3	E2	RF PATH
0	0	0	0	0	0	0	1	J1-J2
0	0	0	0	0	0	1	0	J1-J3
0	0	0	0	1	0	0	0	J1-J4
0	0	0	1	0	0	0	0	J1-J5
0	0	1	0	0	0	0	0	J1-J6
0	1	0	0	0	0	0	0	J1-J7
1	0	0	0	0	0	0	0	J1-J8
0	0	0	0	0	0	0	0	J1-J9



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRWN <i>WSP</i>	11/22/02
CHECKED	

PRODUCT FEATURE
SW-2040-8AT
 2 TO 4 GHz, NON-REFLECTIVE, RADIAL, SP8T SWITCH MODULE

SIZE A	SHEET 2 OF 2	DWG. # 100-2896
--------	--------------	-----------------

DESCRIPTION

AMC MODEL SW-2181-8AT IS AN ABSORPTIVE BROAD BAND SP8T SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A RADIAL HOUSING.

SPECIFICATIONS

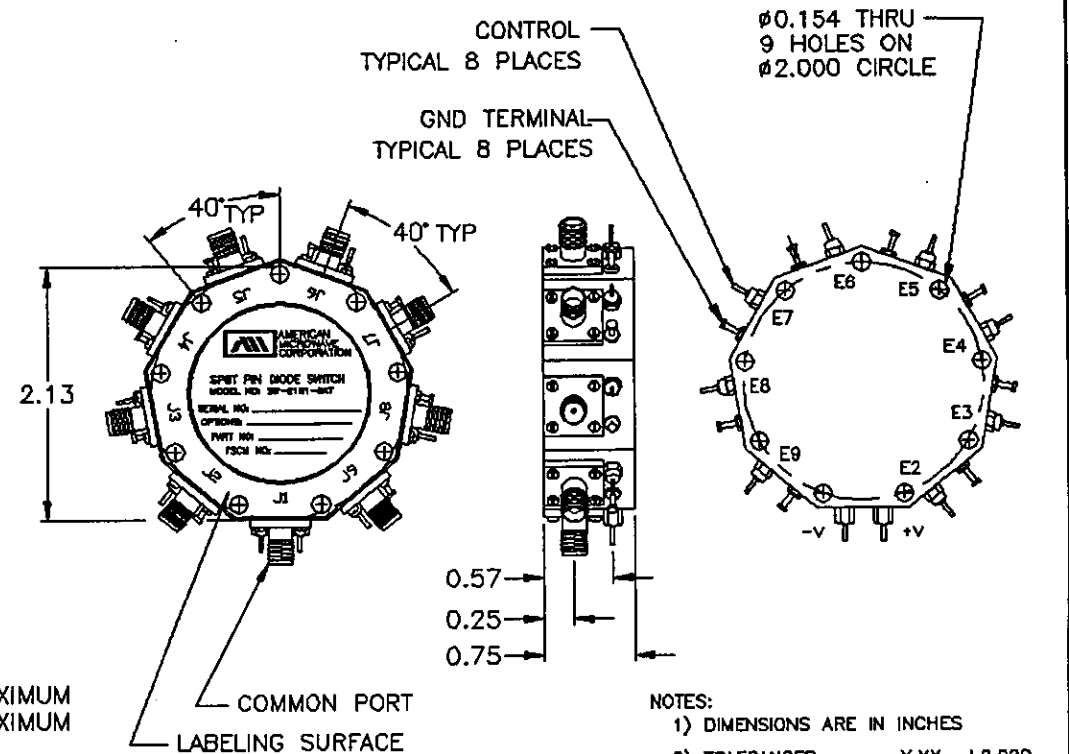
- FREQUENCY RANGE 1-20 GHz MINIMUM
- INSERTION LOSS 1-8 GHz 2.5 dB MAXIMUM
8-18 GHz 3.5 dB MAXIMUM
18-20 GHz 4.5 dB MAXIMUM
- ISOLATION 1-18 GHz, 65 dB MINIMUM
18-20 GHz, 60 dB MINIMUM
- VSWR (ON/OFF) 2:1 MAXIMUM
- SWITCHING TIME
RISE {10% RF TO 90% RF} 200 nS MAXIMUM
FALL {90% RF TO 10% RF} 10 nS MAXIMUM
ON {50% TTL TO 90% RF} 800 nS MAXIMUM
OFF {50% TTL TO 10% RF} 20 nS MAXIMUM
- RF POWER RATINGS +27 dBm, MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
8 INDIVIDUAL CONTROLS
LOGIC "0" = ISOLATION
LOGIC "1" = INSERTION LOSS
- POWER SUPPLY +5VDC ±5% @ 280 mA MAXIMUM
-15VDC ±5% @ 75 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 2.13" DIAMETER x 0.75" THICK

AVAILABLE OPTIONS

- A01 50Ω CONTROL IMPEDANCE
- A02 100Ω CONTROL IMPEDANCE
- A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)
- A04 EXTENDED FREQUENCY RANGE TO 100 MHz
- A07 INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
- A08 SMA MALE CONNECTORS
- A10 +12 TO +15VDC SUPPLY
- A12 3 BIT BINARY TTL LOGIC DECODER

ZONE		REV.		DESCRIPTION	DATE	APPROVED
	A			ORIGINAL RELEASE, JOB # 208212E	11/22/92	JMM

MECHANICAL OUTLINE



- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 4.5 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

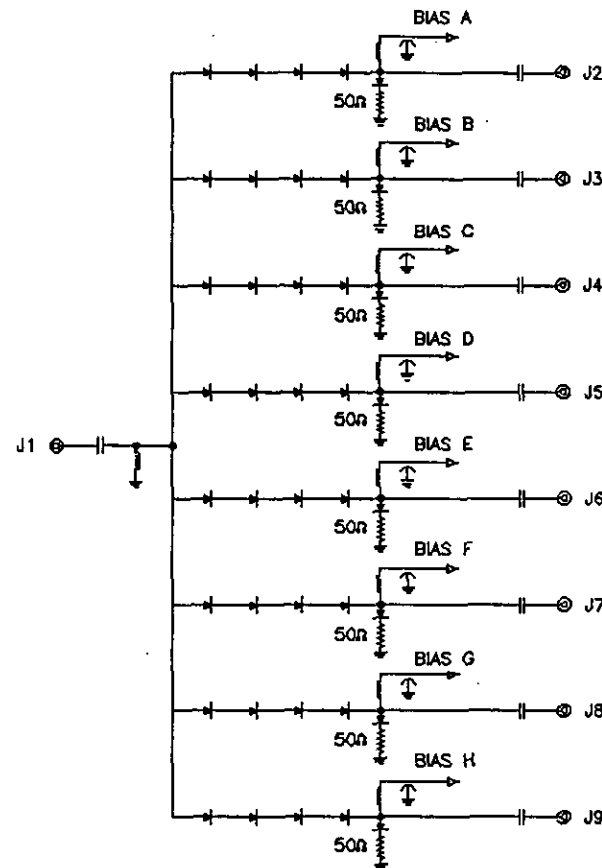
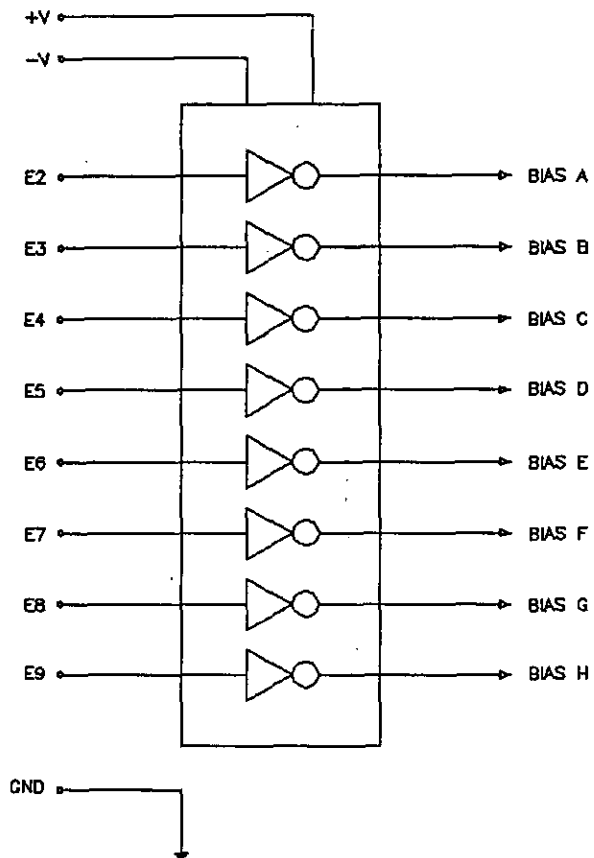
APPROVALS	DATE
DRAWN: WJP	11/22/92
CHECKED: [Signature]	11/22/92

PRODUCT FEATURE		
SW-2181-8AT		
RADIAL 1 TO 20 GHz, NON-REFLECTIVE, SP8T SWITCH MODULE		
SIZE A	SHEET 1 OF 2	DWG. # 100-2825

DRIVER CIRCUIT

FUNCTIONAL SCHEMATIC

RF SECTION



15-12



AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN WSP	11/22/92
CHECKED [Signature]	11/22/92

PRODUCT FEATURE
SW-2181-8AT
 RADIAL 1 TO 20 GHz, NON-REFLECTIVE, SP8T SWITCH MODULE

SIZE A SHEET 2 OF 2 DWG. # 100-2825



TABLE OF CONTENTS

SECTION	PRODUCT DESCRIPTION	PAGES
16	TRANSFER SWITCH.....	16-1
	● 0.4-0.6 GHz 1 WATT SWITCH MODULE AMC MODEL NO: SW-0406-TR.....	16-3

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 10103	11/22/92	<i>MJ</i>

DESCRIPTION

AMC MODEL SW-0406-TR IS A TRANSFER SWITCH MODULE CAPABLE OF HANDLING 1 WATT CW RF POWER.

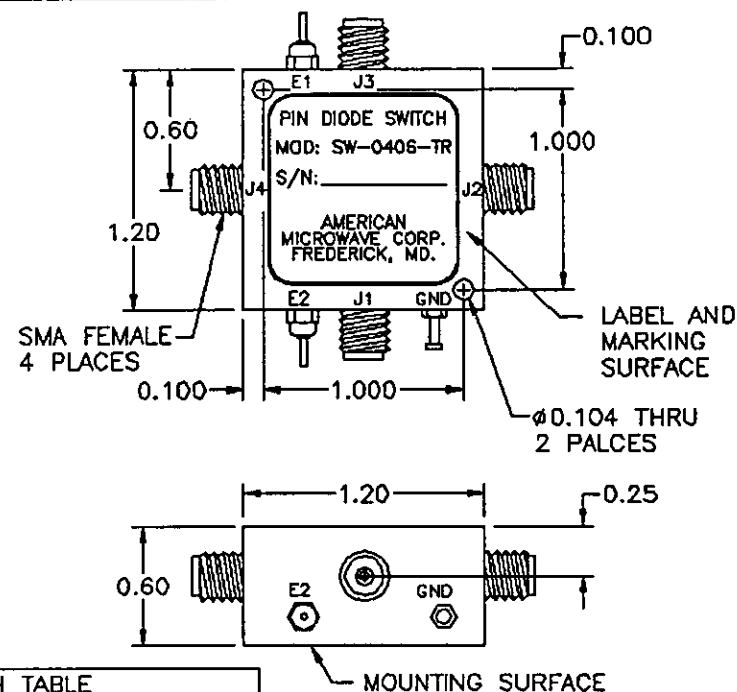
SPECIFICATIONS

- FREQUENCY RANGE 0.4-0.6 GHz MINIMUM
- INSERTION LOSS 0.8 dB MAXIMUM
- ISOLATION 80 dB MINIMUM
- VSWR 1.3:1 MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM
- SWITCHING TIME
 - RISE (10% RF TO 90% RF) 500 ns MAXIMUM
 - FALL (90% RF TO 10% RF) 500 ns MAXIMUM
 - ON (50% TTL TO 90% RF) 1 μ s MAXIMUM
 - OFF (50% TTL TO 10% RF) 1 μ s MAXIMUM
- CONTROL VOLTAGE CONTROLLED
2 DEPENDENT CONTROLS (TOGGLE)
-1V @ 80 mA TYPICAL
+1V @ 40 mA TYPICAL
(SEE TRUTH TABLE)
- CONNECTORS
 - RF PORTS SMA FEMALE
 - CONTROLS SOLDER PIN
- SIZE 1.20" x 1.20" x 0.60"

AVAILABLE OPTIONS

- A01 INTEGRAL TTL DRIVER
- A02 EXTENDED FREQUENCY BAND (CONSULT FACTORY)
- A03 SMC MALE CONTROL TERMINALS

MECHANICAL OUTLINE




TRUTH TABLE		
E2	E1	RF PATH ON
+1VDC	-1VDC	J2-J3 & J1-J4
-1VDC	+1VDC	J1-J2 & J3-J4

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 - 3) WEIGHT: APPROX. 5 OZ

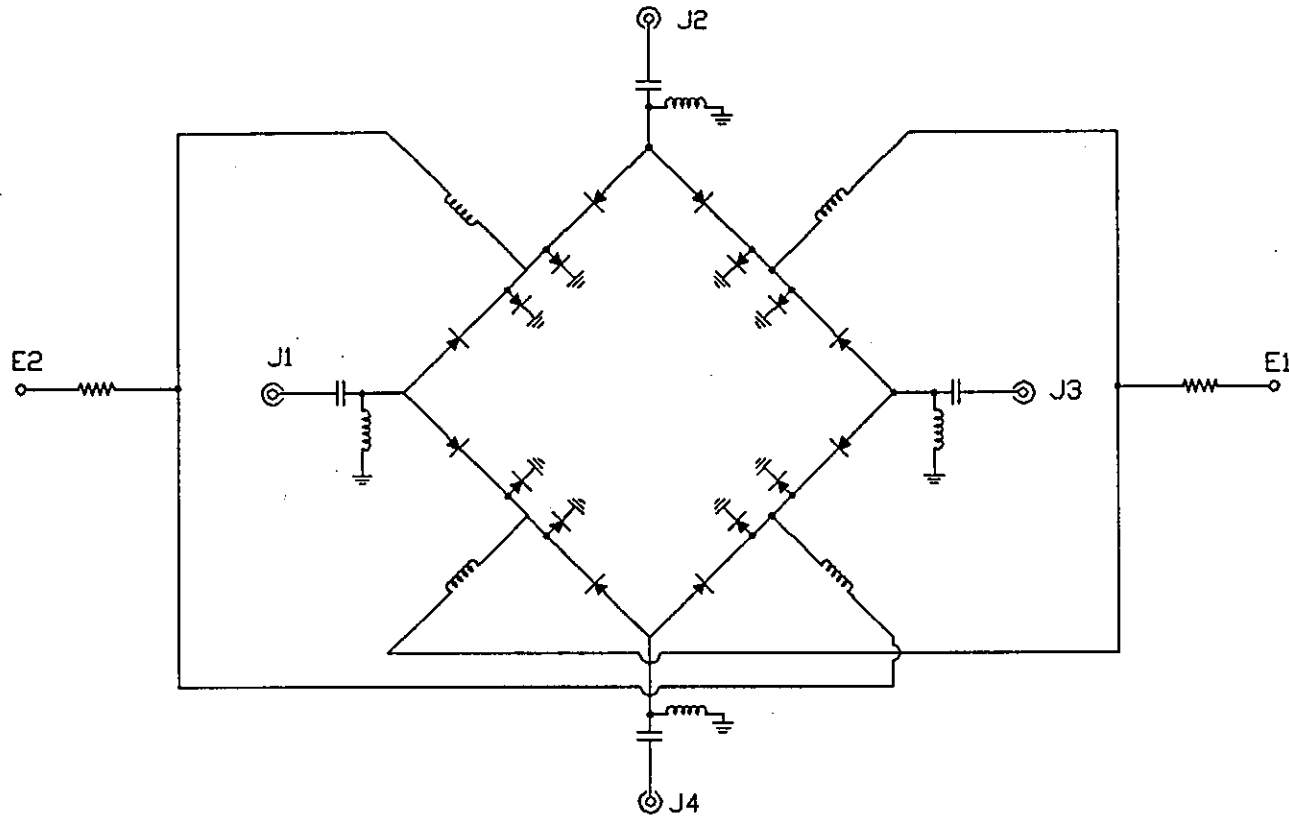
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A


		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
		PRODUCT FEATURE SW-0406-TR 0.4-0.6 GHz-TRANSFER SWITCH MODULE	
APPROVALS	DATE	SIZE	SHEET 1 OF 2
DRAWN <i>WSP</i> CHECKED <i>M. Hal</i>	11/22/92 11/22/92	A	DWG. # 100-2897

16-3

FUNCTIONAL SCHEMATIC



16-4

		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE	
DRAWN <i>WSP</i>	11/22/92	SW-0406-TR	
CHECKED <i>[Signature]</i>	11/22/92	0.4-0.6 GHz-TURNER SWITCH MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2897	



AMERICAN MICROWAVE CORPORATION
7311-G GROVE ROAD, FREDERICK MD. 21701 •USA•
TEL: (201) 662-4700, FAX: (301) 662-4938



**AMERICAN MICROWAVE
CORPORATION**

**SWITCHED
FILTER BANKS**

**NEW
PRODUCT DEVELOPMENTS
AT
AMERICAN MICROWAVE CORPORATION
NOVEMBER 22, 1992**

TABLE OF CONTENTS

1.0 SP6T, 0.01-8 GHz SWITCHED FILTER BANK1-2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE	11/10/02	<i>[Signature]</i>

DESCRIPTION

AMC MODEL SFB-0108-6P IS A 6 CHANNEL SWITCHED FILTER BANK WITH INTEGRAL TTL DRIVER.

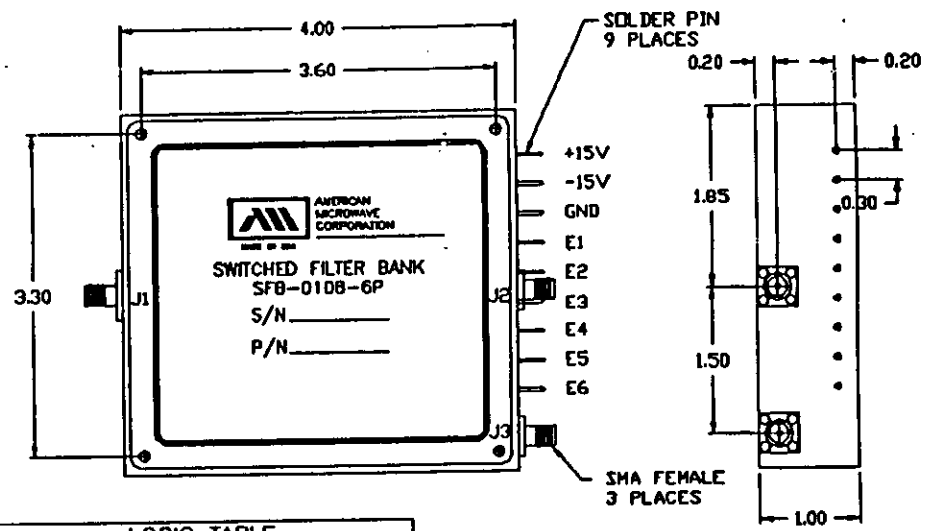
SPECIFICATIONS

- FREQUENCY RANGE 0.01-8 GHz
- INSERTION LOSS
 - CHANNEL 1 0.01-0.5 GHz, 3.0dB MAXIMUM
 - CHANNEL 2 0.45-0.9 GHz, 3.3dB MAXIMUM
 - CHANNEL 3 0.8-1.5 GHz, 3.6dB MAXIMUM
 - CHANNEL 4 1.4-2.7 GHz, 3.8dB MAXIMUM
 - CHANNEL 5 2.2-4.3 GHz, 4.0dB MAXIMUM
 - CHANNEL 6 3.8-7.5 GHz, 5.0dB MAXIMUM
- NOTE: (DIFFERENT FREQUENCY BANDS AVAILABLE; CONSULT FACTORY)
- ISOLATION 60 dB MINIMUM
- VSWR (ON) 2:1 MAXIMUM
- SWITCHING TIME
 - DELAY ON (50% TTL TO 90% RF) 500nS MAXIMUM
 - DELAY OFF (50% TTL TO 10% RF) 500nS MAXIMUM
- CONTROL TTL COMPATIBLE, UNITY LOAD
6 INDIVIDUAL CONTROLS
LOGIC "0" INSERTION LOSS
LOGIC "1" ISOLATION
- RF POWER RATINGS +27dBm CW MAXIMUM
- POWER SUPPLY +12VDC @ 100mA MAXIMUM
-12VDC @ 250mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER SOLDER PIN
 - CONTROL SOLDER PIN
- SIZE 4.0" x 3.3" x 1.0"

AVAILABLE OPTIONS

- A13 ±15 VOLT DC SUPPLY
- A14 J1 SMA MALE, J2 & J3 SMA FEMALE
- A15 J1 SMA FEMALE, J2 & J3 SMA MALE
- A19 SMC CONTROL TERMINALS
- A20 MULTIPIN OPTION
- A21 3 BIT DECODER OPTION

MECHANICAL OUTLINE



LOGIC TABLE		
E1=0	J1-J2	0.01-0.5 GHz
E2=0	J1-J2	0.45-0.9 GHz
E3=0	J1-J2	0.8-1.5 GHz
E4=0	J1-J2	1.4-2.7 GHz
E5=0	J1-J2	2.2-4.3 GHz
E6=0	J1-J3	3.8-7.5 GHz

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
 - 3) WEIGHT: APPROX. 16 OZ

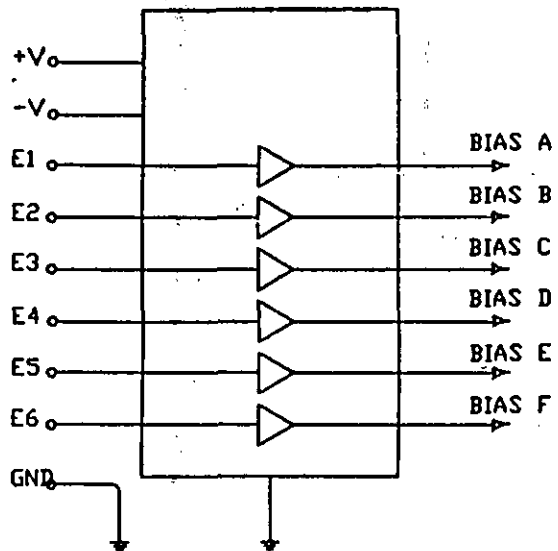
ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +95°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

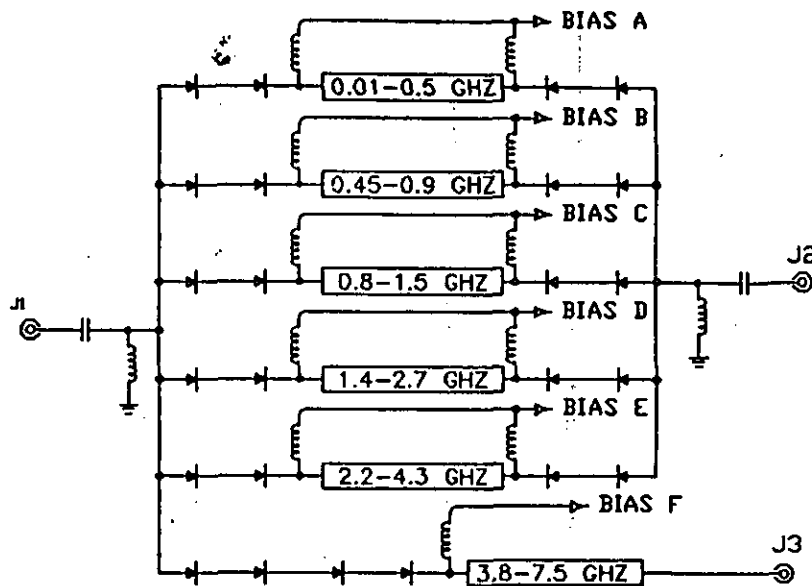
		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS	DATE	PRODUCT FEATURE SFB-0108-6P 0.01-8 GHz, SWITCHED FILTER	
DESIGNED <i>WSP</i>	11/10/02	SIZE A	SHEET 1 OF 2
CHECKED <i>H. [Signature]</i>	11/22/02	DWC. # 100-2806	

FUNCTIONAL SCHEMATIC

TTL DRIVER



RF SECTION



AMERICAN MICROWAVE CORPORATION

7311G GROVE RD., FREDERICK, MD. 21701

TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DRAWN <i>WSP</i>	11/10/92
CHECKED	

PRODUCT FEATURE

SFB-0108-6P

0.01-8 GHz, SWITCHED FILTER

SIZE A

SHEET 2 OF 2

DWG. # 100-2806



AMERICAN MICROWAVE CORPORATION

7311-G GROVE ROAD, FREDERICK, MD 21701 • USA •

TEL: (301) 662-4700, FAX: (301) 662-4938



TEST DATA

ON

10 MHz TO 2 Ghz
(10 MHz GHz TO 18 GHz ALSO AVAILABLE)

LOW LOSS

HIGH ISOLATION

ABSORPTIVE & REFLECTIVE

SP8T PIN DIODE SWITCH

AMC MODEL Nos:

SWN-2000-8DT-0012 (ABSORPTIVE)

SWN-2000-8DR-0012 (REFLECTIVE)

Serial No: 8MS60475

AND

MSN-8DR/DT-05-10M2 (REFLECTIVE or ABSORPTIVE)

MSN-8DR/DT-06-10M2 (REFLECTIVE or ABSORPTIVE)

MSNC-8DR/DT-06-10M2 (REFLECTIVE or ABSORPTIVE)

**DESIGNED
BY
A. K. GORWARA**

**REPORTED
BY
P. D. WOOD**

MAY 29, 1998

WEBSITE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

E-MAIL: AMCPMI@AOL.COM

7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



**AMERICAN MICROWAVE
CORPORATION**

**10 MHz TO 2 GHz
ABSORPTIVE
LOW LOSS, HIGH ISOLATION
SP8T PIN DIODE SWITCH**

- LOW LOSS
- ABSORPTIVE
- HIGH ISOLATION

AMC MODEL Nos:

SWN-2000-8DR/DT-0012 (ABSORPTIVE or REFLECTIVE)
MSN-8DR/DT-05-10M2 (ABSORPTIVE or REFLECTIVE)
MSN-8DR/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)
MSNC-8DR/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)

SPECIFICATIONS:

- **FREQUENCY RANGE** : 10 MHz GHz TO 2 GHz
- **INSERTION LOSS** : 2.50 dB MAX.
(For Absorptive, Non-Absorptive or Reflective reduces Loss by about 0.5 dB)
: 1.50 dB TYP. @ 0.01 GHz
: 1.30 dB TYP. @ 0.5 GHz
: 1.50 dB TYP. @ 1.0 GHz
: 2.00 dB TYP. @ 2.0 GHz
- **ISOLATION** : 75 dB MIN.
: 90 dB TYP. @ 0.05 GHz
: 95 dB TYP. @ 0.1 GHz
: 95 dB TYP. @ 0.5 GHz
: 90 dB TYP. @ 1.0 GHz
: 80 dB TYP. @ 2.0 GHz
- **VSWR** : 2.0:1
- **SWITCHING SPEED** :

	<u>ALL SERIES DESIGN</u>	<u>SERIES/SHUNT DESIGN</u>
RISE	50 nS Maximum	25 nS Maximum
FALL	50 nS Maximum	25 nS Maximum
ON	250 nS Maximum	100 nS Maximum
OFF	250 nS Maximum	100 nS Maximum
- **CONTROL** : TTL Compatible (Independent Control, Standard; 3-bit Binary Decoder Available)
- **VIDEO TRANSIENTS** : 2.5 V Peak to Peak in a 20 MHz BW (Without Video Filters)
: 3.0 V Peak to Peak in a 300 MHz BW (Without Video Filters)
- **RF INPUT POWER** : +20 dBm Operating, 1 Watt Survival
- **DC POWER SUPPLY** : +5vdc @ 250 mA MAX., <200 mA TYP. (+5/-5vdc Standard,
: -5vdc @ 75 mA MAX., <50 mA TYP. Other Voltage Options Also Available)
- **SIZE & WEIGHT** : SWN : 5.1" X 2.0" X 0.56" @ <7.0 oz. (5.10" X 2.0" X 0.75" Also Available)
: MSN-05: 4.0" X 1.5" X 0.40", MSN-06: 4.75" X 1.5" X 0.5" Both <6.0oz.
: MSNC-06: 4.76" X 1.5" X 0.40" <6.0oz.

ABOVE DATA IS TYPICAL FOR ABSORPTIVE OR REFLECTIVE VERSIONS.
OTHER MULTI-THROW (SP2T, SP3T, SP4T, SP5T, SP6T & SP7T) DESIGNS AVAILABLE.

WEBSITE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

E-MAIL: AMCPMI@AOL.COM

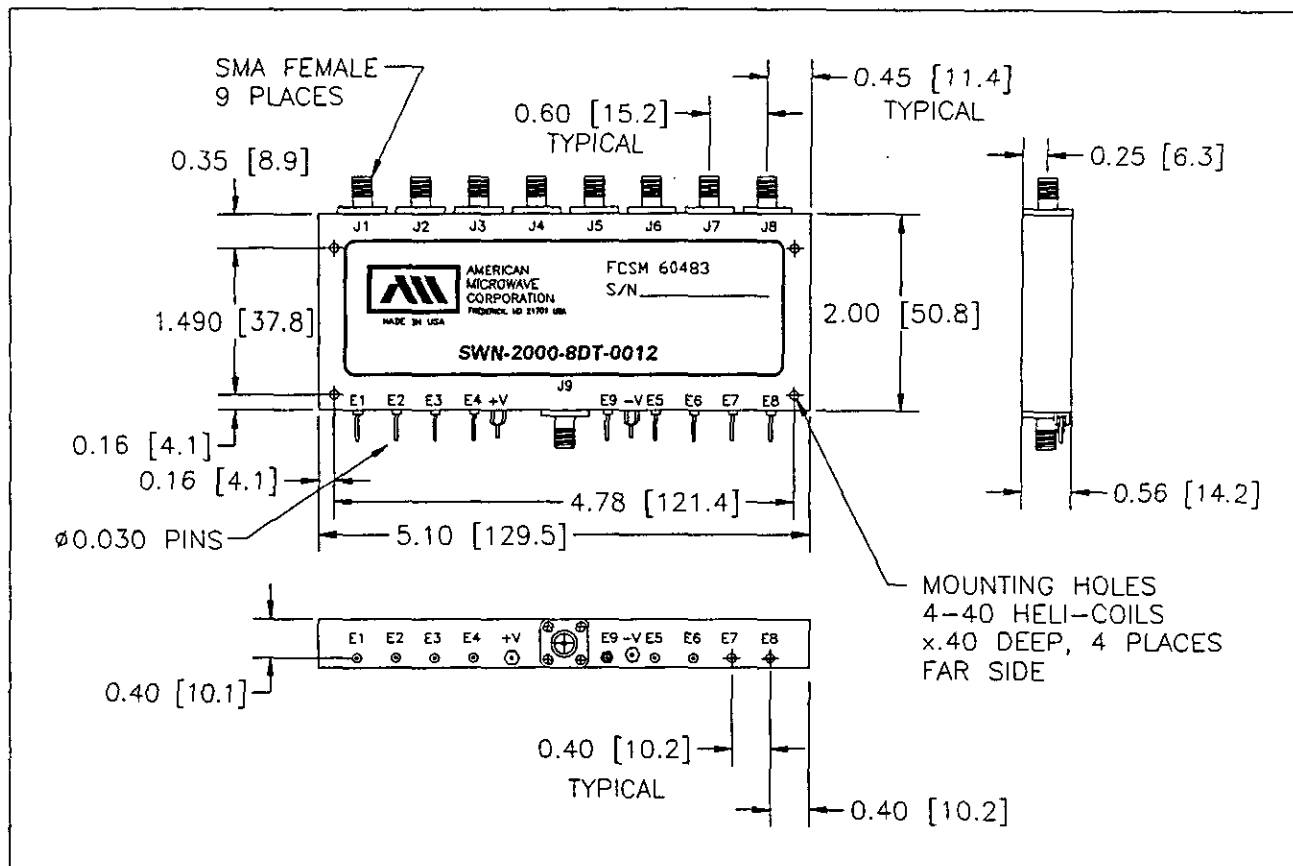
7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE

MECHANICAL OUTLINES



SWN-2000-8DT-0012
 TOLERANCE: X.XX ±0.05 INCHES, X.XXX ±0.002 INCHES

ENVIRONMENTAL RATINGS

- TEMPERATURE : -54°C TO +85°C (OPERATING)
-65°C TO +100°C (STORAGE)
- HUMIDITY : MIL-STD-202F, METHOD 103B COND. B
- SHOCK : MIL-STD-202F, METHOD 213B COND. B
- VIBRATION : MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE : MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE : MIL-STD-202F, METHOD 107D COND. A

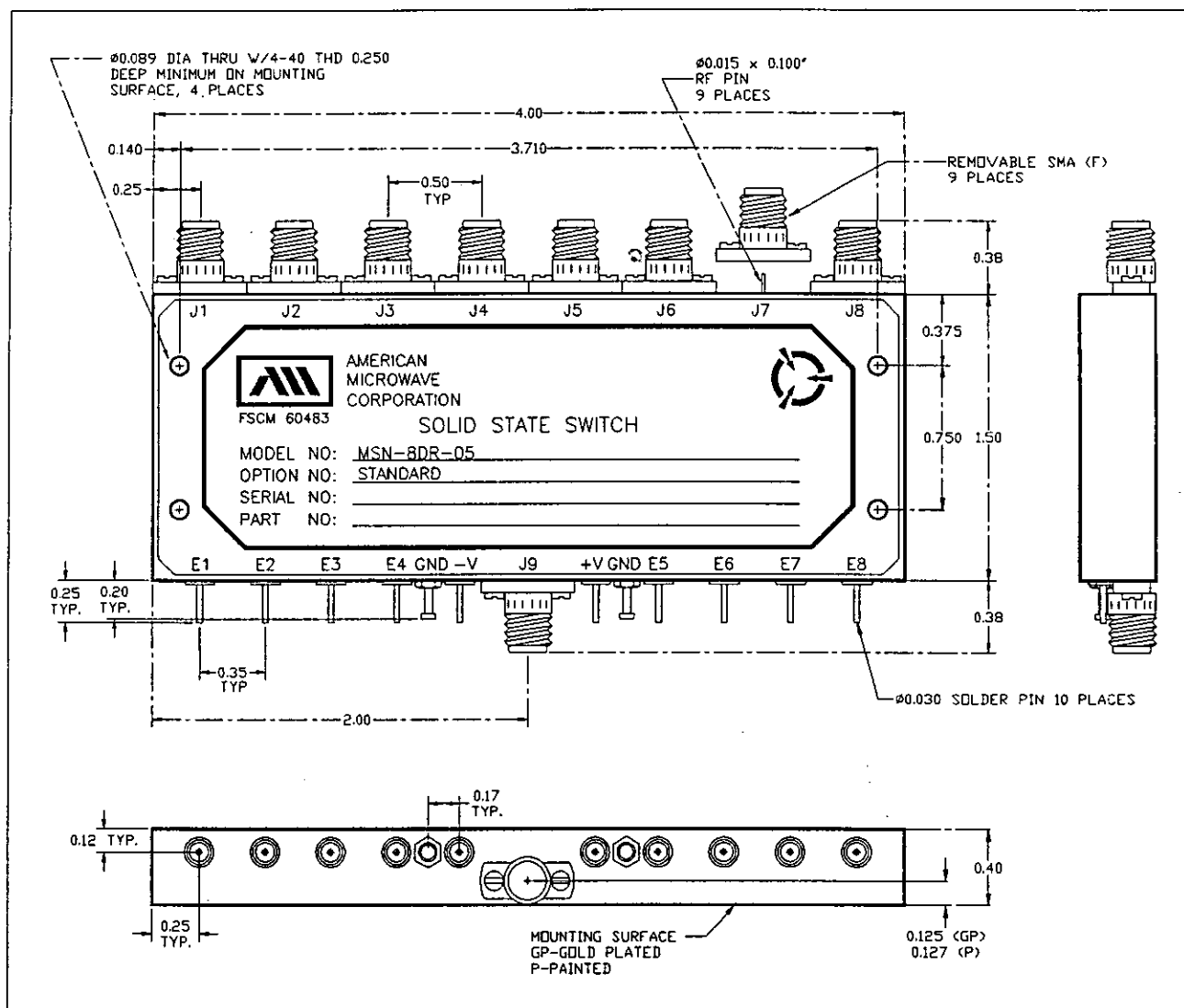
MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE

MECHANICAL OUTLINES (CONTINUED)



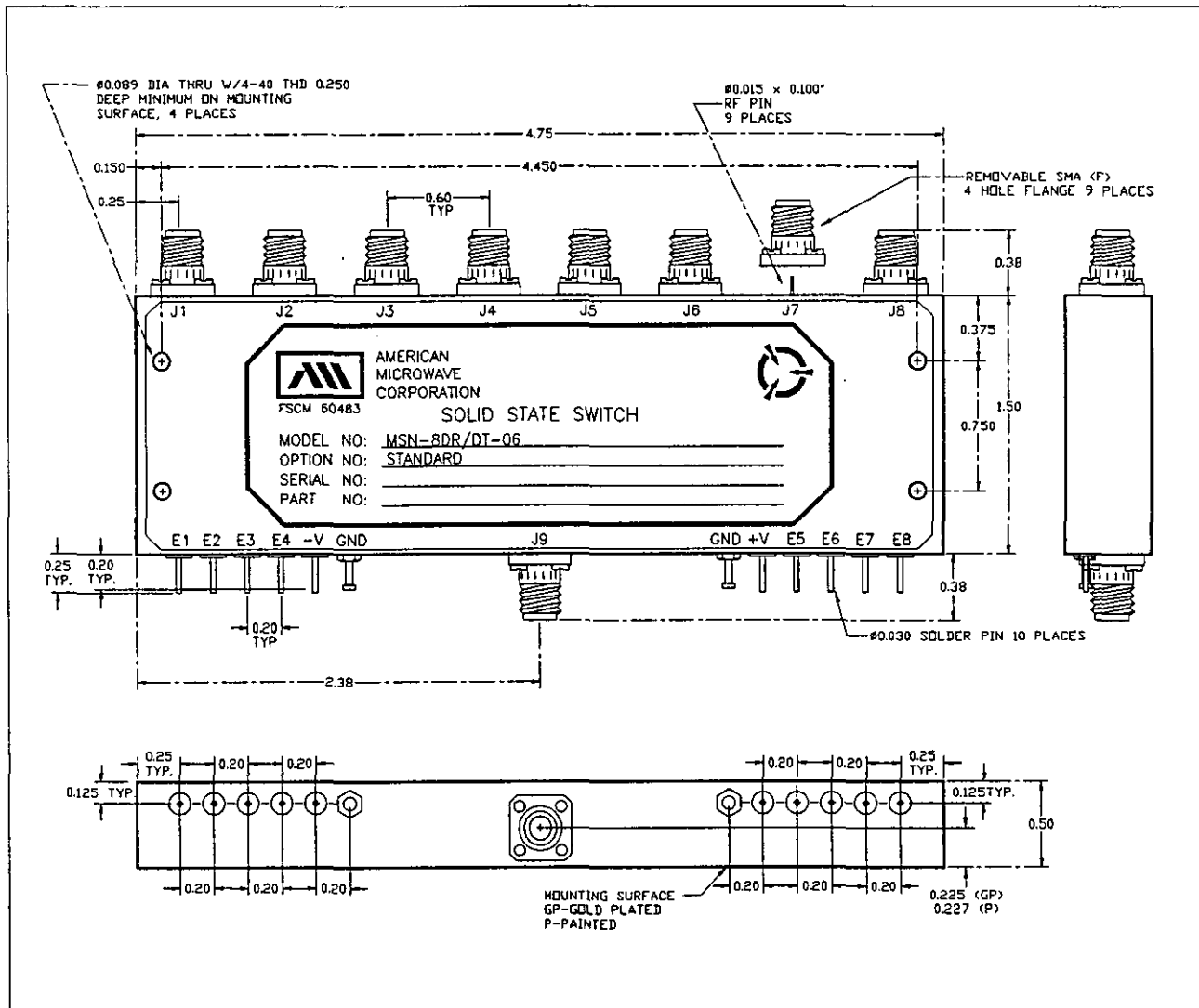
MSN-8DR/DT-05-STANDARD
WITH INDEPENDENT CONTROLS



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE

MECHANICAL OUTLINES (CONTINUED)



**MSN-8DR/DT-06-STANDARD
WITH INDEPENDENT CONTROLS**

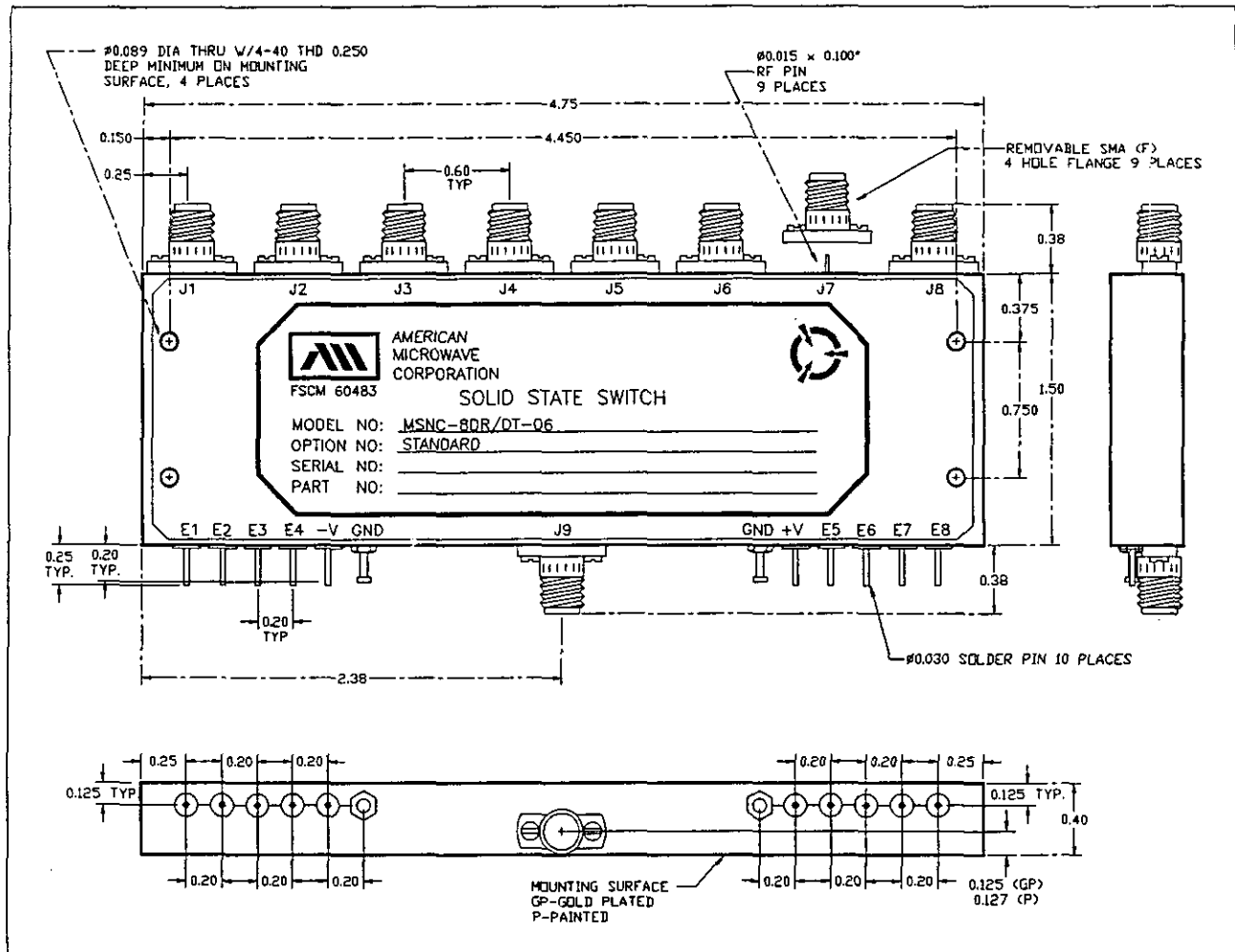
MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE

MECHANICAL OUTLINES (CONTINUED)



MSNC-8DR/DT-06-STANDARD
WITH INDEPENDENT CONTROLS

MAY 25, 1998



AVAILABLE OPTIONS AND HOW TO ORDER SWN-2000 SERIES OF SWITCHES

EXAMPLE :

SWN - 2000 - 8 D T - XXXX - ###
1 2 3 4 5 6 7

- 1. : SWN : Switch Designator (SW = Older Models, SWN = Newer Models)
- 2. : 2000 : Series Designator (2181 = Older Models, 218 or 1170 = Newer Models)
- 3. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 4. : D : Indicates Integral Driver
- 5. : T : T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 6. : XXXX : Frequency Range of Switch as Illustrated Below
- 7. : ### : Available Options as Noted Below

OPTION:	MULTI-THROW SWITCH OPTIONS
001	SMA Male RF Connectors (Increases Insertion Loss by 0.25dB per Arm)
002	Inverted Logic, "0" = ON (Standard TTL Logic is "1" = ON)
003	+ 12vdc DC Power Supply (Standard is \pm 5vdc)
004	+ 15vdc DC Power Supply (Standard is \pm 5vdc)
005	3-bit Binary Decoder
006	- 12vdc DC Power Supply (Standard is \pm 5vdc)
007	- 15vdc DC Power Supply (Standard is \pm 5vdc)
008	MULTIPIN CONNECTOR
009	0.4" THICK OPTION AVAILABLE (Consult Factory For Details)
XXXX	<p style="text-align: center;">Indicates the Frequency for which the Switch has been Adjusted</p> <p>For Example:</p> <p style="margin-left: 40px;">10M2 = 10 MHz to 2.0 GHz 40M2 = 40 MHz to 2.0 GHz 12 = 1.0 GHz to 2.0 GHz 1052 = 1.5 GHz to 2.0 GHz</p>

AMERICAN MICROWAVE CORPORATION
 7311-G GROVE ROAD, FREDERICK, MARYLAND 21704
 TELEPHONE NUMBER : 301-662-4700
 FACIMILE NUMBER : 301-662-4938

PLEASE CALL OR FAX FOR CATALOGS, TEST REPORTS AND ORDERING INFORMATION
ON ANY OF OUR PRODUCTS

MAY 25, 1998



AVAILABLE OPTIONS AND HOW TO ORDER

MSN SERIES OF SWITCHES

EXAMPLE :

MSN - 8 DR/DT - 05 - XXX - ###
 1 2 3 4 5 6

- 1. : MSN : Switch Designator Microwave Switch New
- 2. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 3. : DT/DR : D=Integral Driver, T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 4. : 05 : 05=0.5" between SMA connectors center to center, 06=0.6" between SMA connectors center to center
- 5. : XXXX : Available Options as Noted Below
- 6. : ### : Frequency Range of Switch as Illustrated Below

OPTION:	MSN MULTI-THROW SWITCH OPTIONS
(NOTE)	INDEPENDENT CONTROL WITH SOLDER PINS IN STANDARD
DEC-MP	3-BIT BINARY DECODER WITH MULTIPIN CONNECTOR
DEC-SP	3-BIT BINARY DECODER WITH SOLDER PINS
MP-IND	INDEPENDENT CONTROL WITH MULTIPIN CONNECTOR
10M2	10 Mhz TO 2.0 GHZ FREQUENCY RANGE
10M18	10 Mhz TO 18.0 GHZ FREQUENCY RANGE)
100M18	100 Mhz TO 18.0 Ghz
118	1 Ghz TO 18 Ghz
218	2 Ghz TO 18 Ghz
412	4 Ghz TO 12 Ghz
618	6 Ghz TO 18 Ghz
1218	12 Ghz TO 18 Ghz
100M20	100 Mhz TO 20.0 Ghz
220	2 Ghz TO 20 Ghz
1020	10 Ghz TO 20 Ghz
B01	-12 VOLT POWER SUPPLIES
B02	-15 VOLT POWER SUPPLIES
B03	REVERSE LOGIC "1" = ON, "0" = OFF
B04	DRIVERLESS CONFIGURATION (CURRENT CONTROLLED)
B05	HIGH SPEED, TURNON/TURNOFF 20 nS MAXIMUM WHEN APPLICABLE
B06	HIGH POWER - SPECIFY CW & PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
B07	CUSTOM DESIGNED PRODUCT - SPECIFY WITH INITIALS OF CUSTOMER
B08	LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
B09	LOW INSERTION LOSS VERSION
B10	HIGHER ISOLATION VERSION

AMERICAN MICROWAVE CORPORATION
 7311-G GROVE ROAD, FREDERICK, MARYLAND 21704
 TELEPHONE NUMBER : 301-662-4700
 FACIMILE NUMBER : 301-662-4938

PLEASE CALL OR FAX FOR CATALOGS, TEST REPORTS AND ORDERING INFORMATION ON ANY OF OUR PRODUCTS

MAY 25, 1998



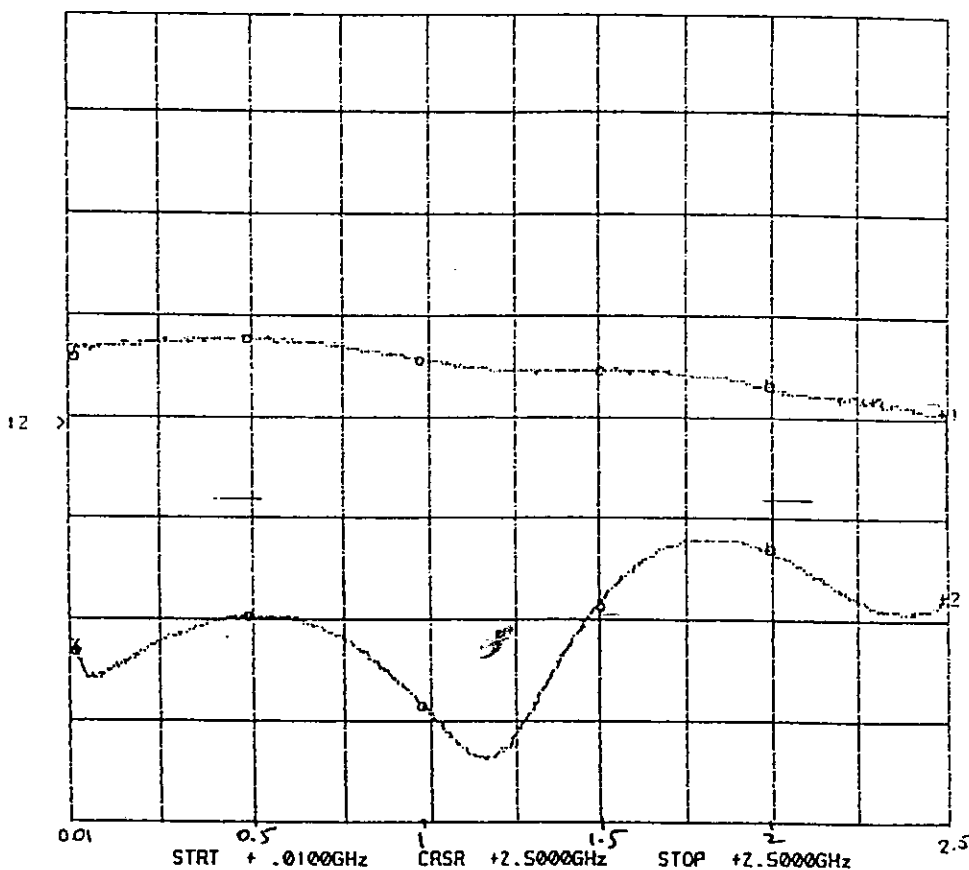
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J1

CH1: A -M - 1.94 dB
 1.0 dB/ REF - 2.00 dB
 CH2: B -M - 18.41 dB
 5.0 dB/ REF - 9.54 dB



Markers		Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
10 kHz	1	1E+07	- 1.382	- 20.949
500 "	2	4.955501E+08	- 1.200	- 19.268
1 GHz	3	9.997751E+08	- 1.404	- 23.756
1.5 "	4	1.497775E+09	- 1.503	- 18.730
2 "	act	1.995775E+09	- 1.673	- 16.131
Cursors				
2-5 GHz	1	2.5E+09	- 1.936	- 18.416

MAY 25, 1998

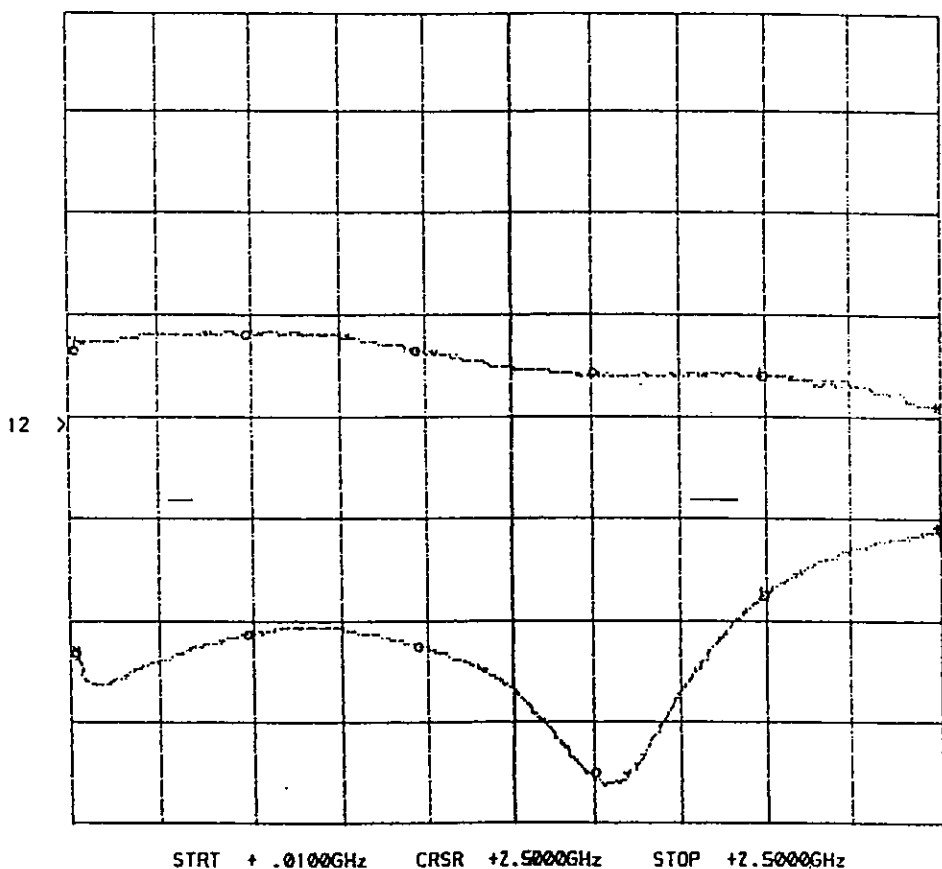


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J2

CH1: A -M - 1.89 dB CH2: B -M - 15.10 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.338	- 21.141
2	4.955501E+08	- 1.156	- 20.141
3	9.997751E+08	- 1.321	- 20.718
4	1.497775E+09	- 1.568	- 26.898
act	1.995775E+09	- 1.557	- 18.158
<u>Cursors</u>			
1	2.5E+09	- 1.898	- 15.071

MAY 25, 1998

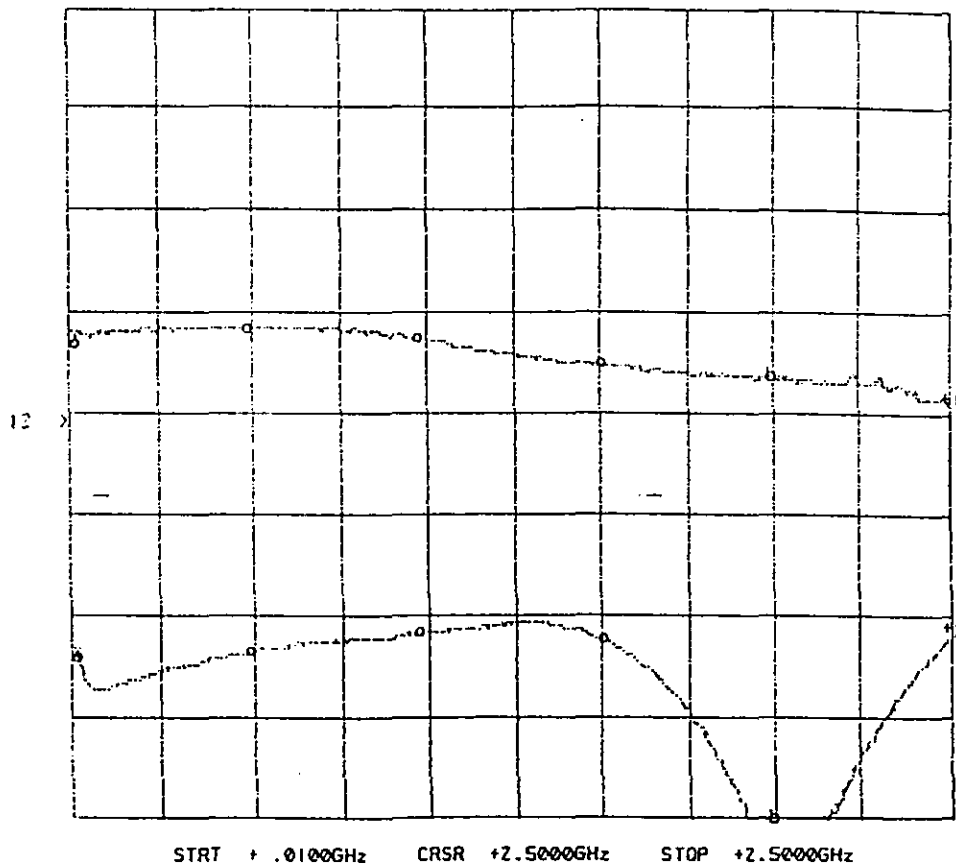


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J3

CH1: A -M - 1.86 dB CH2: B -M - 20.25 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.283	- 21.410
2	4.955501E+08	- 1.134	- 21.306
3	9.997751E+08	- 1.233	- 20.317
4	1.497775E+09	- 1.492	- 20.460
end	1.995775E+09	- 1.629	- 31.304

Cursor

1	2.5E+09	- 1.860	- 20.229
---	---------	---------	----------

MAY 25, 1998



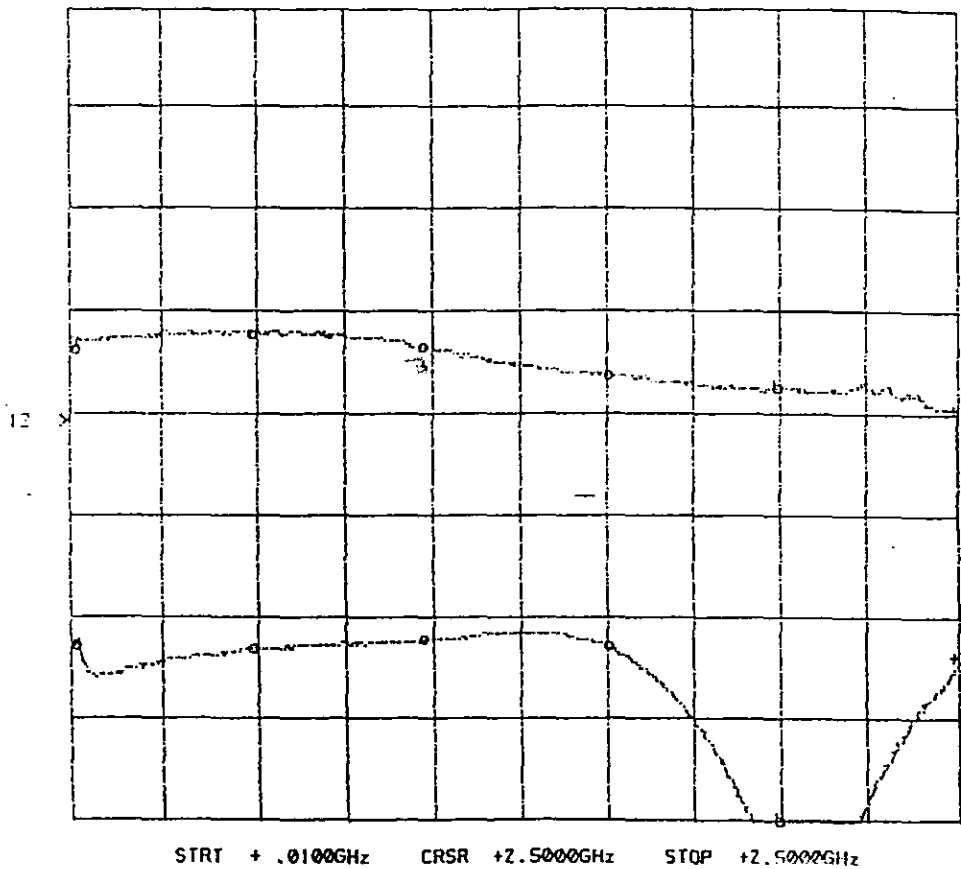
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J4

CH1: A -M - 1.95 dB CH2: B -M - 21.64 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.365	- 21.031
2	4.955501E+08	- 1.178	- 21.130
3	9.997751E+08	- 1.316	- 20.630
4	1.497775E+09	- 1.590	- 20.828
act	1.995775E+09	- 1.733	- 32.545

Cursors

1	2.5E+09	- 1.942	- 21.603
---	---------	---------	----------

MAY 25, 1998

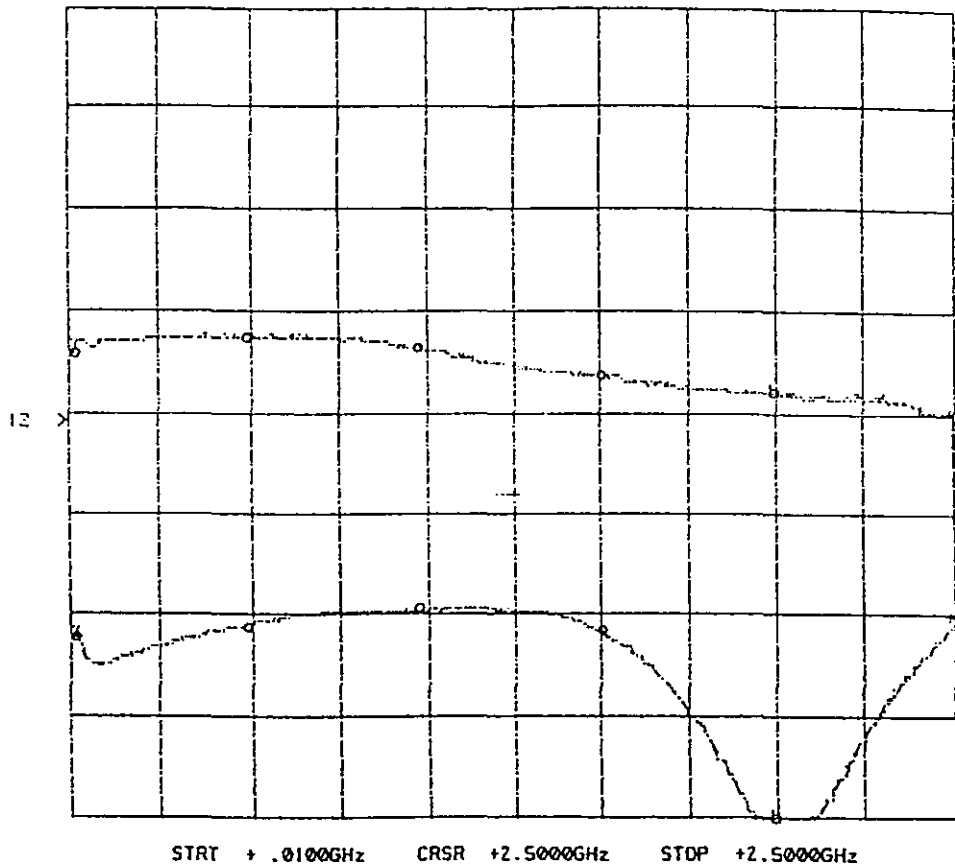


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J5

CH1: A -M - 2.01 dB CH2: B -M - 19.71 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.404	- 20.570
2	4.955501E+08	- 1.228	- 19.999
3	9.997751E+08	- 1.349	- 19.257
4	1.497775E+09	- 1.640	- 20.224
oct	1.995775E+09	- 1.788	- 30.573

Cursor

1	2.5E+09	- 2.019	- 19.790
---	---------	---------	----------

MAY 25, 1998

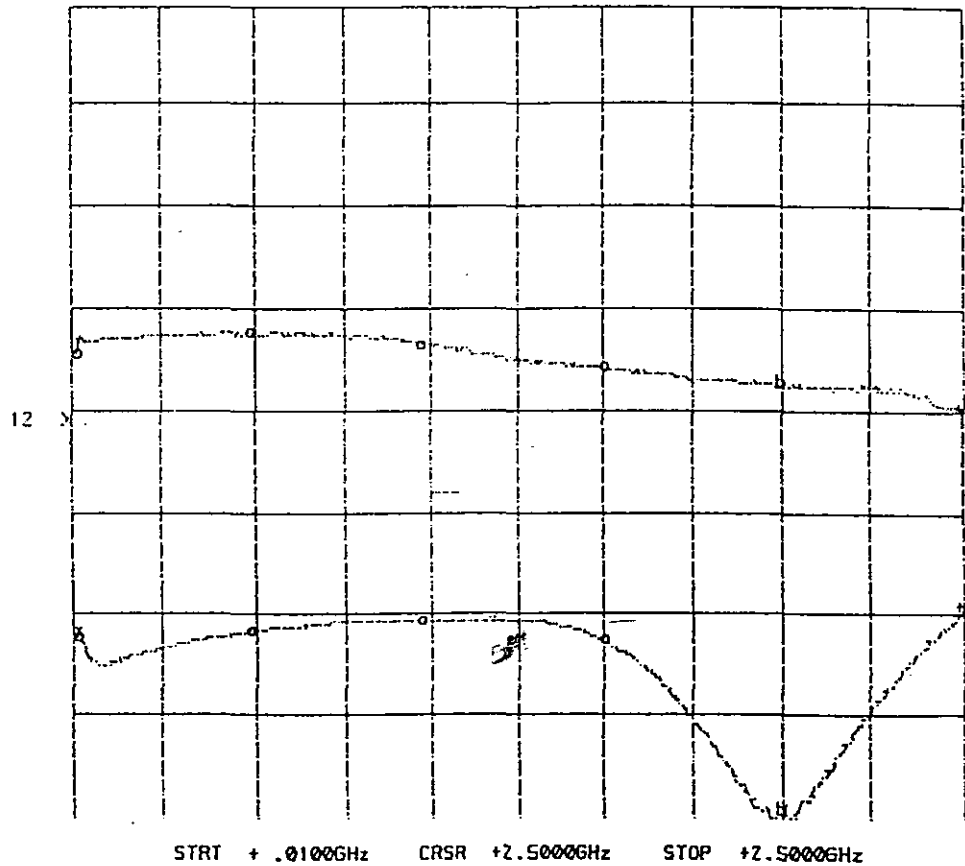


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J6

CH1: A -M - 1.96 dB CH2: B -M - 19.21 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.415	- 20.531
2	4.955501E+08	- 1.233	- 20.350
3	9.997751E+08	- 1.321	- 19.773
4	1.497775E+09	- 1.563	- 20.707
act	1.995775E+09	- 1.722	- 29.315

<u>Cursors</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	2.5E+09	- 1.969	- 19.208

MAY 25, 1998



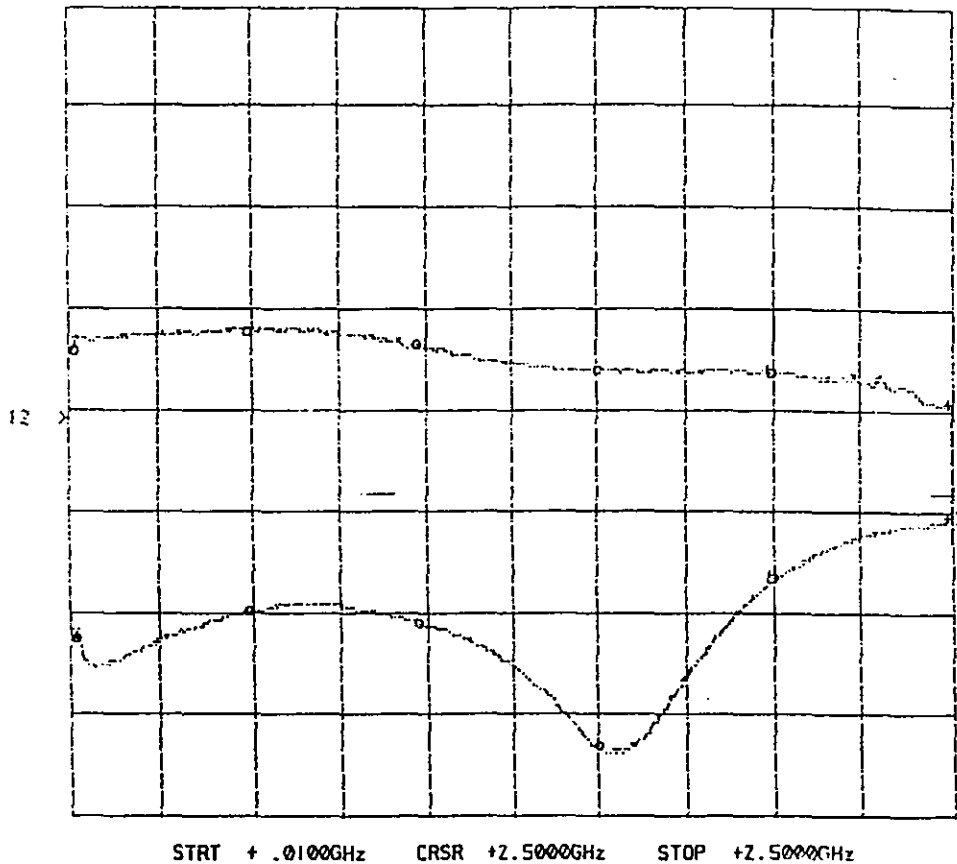
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS

J9 TO J7

CH1: A -M - 1.94 dB CH2: B -M - 14.99 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.376	- 20.680
2	4.955501E+08	- 1.189	- 19.433
3	9.997751E+08	- 1.327	- 19.916
4	1.497775E+09	- 1.579	- 25.816
act	1.995775E+09	- 1.607	- 17.851
<u>Cursors</u>			
1	2.5E+09	- 1.953	- 14.862

MAY 25, 1998

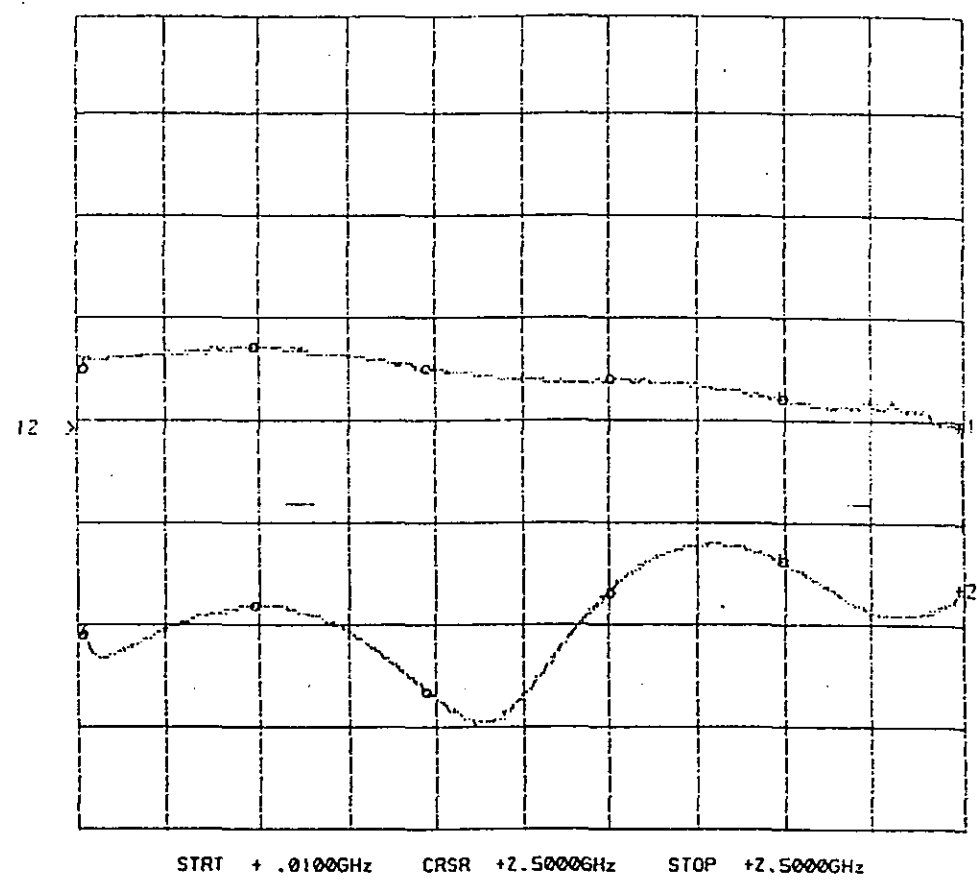


SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

INSERTION LOSS & RETURN LOSS J9 TO J8

CH1: A -M - 2.05 dB CH2: B -M - 17.71 dB
 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 1.481	- 20.010
2	4.955501E+08	- 1.288	- 18.603
3	9.997751E+08	- 1.470	- 22.773
4	1.497775E+09	- 1.612	- 17.977
act	1.995775E+09	- 1.772	- 16.395

<u>Cursors</u>			
1	2.5E+09	- 2.052	- 17.664

MAY 25, 1998



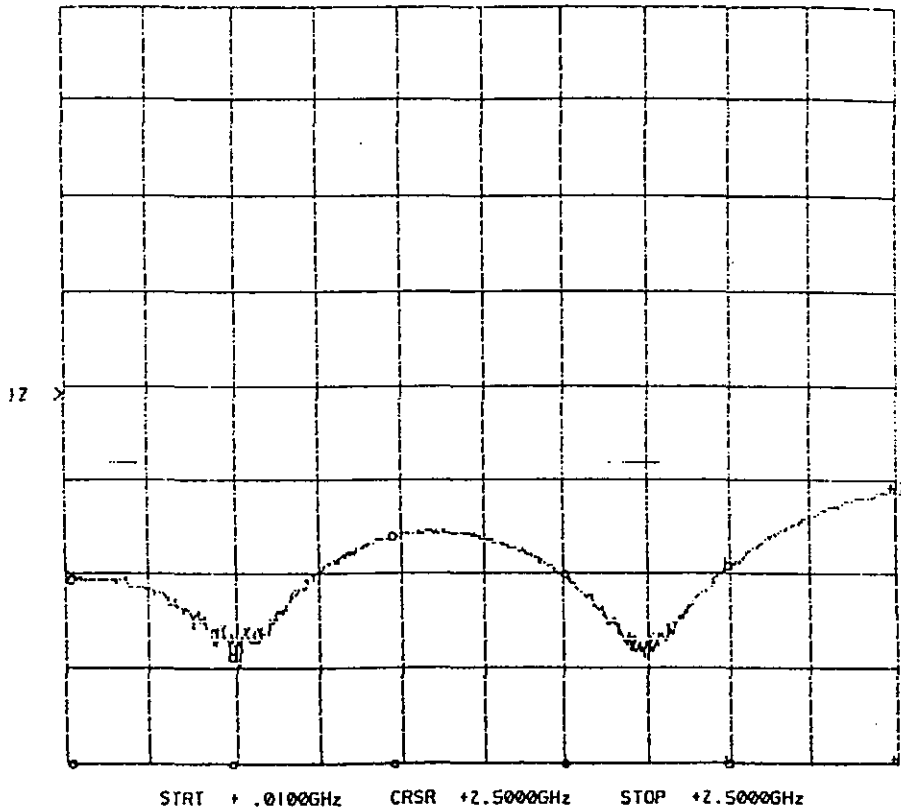
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J1-J9

CH1: 4 -M - 47.22 dB CH2: 0 -M - 20.38 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 50.596	- 29.529
2	4.955501E+08	- 48.053	- 37.028
3	9.997751E+08	- 53.178	- 25.415
4	1.497775E+09	- 48.399	- 29.425
act	1.995775E+09	- 49.789	- 28.678

Cursors

1	2.5E+09	- 48.102	- 20.389
---	---------	----------	----------

MAY 25, 1998



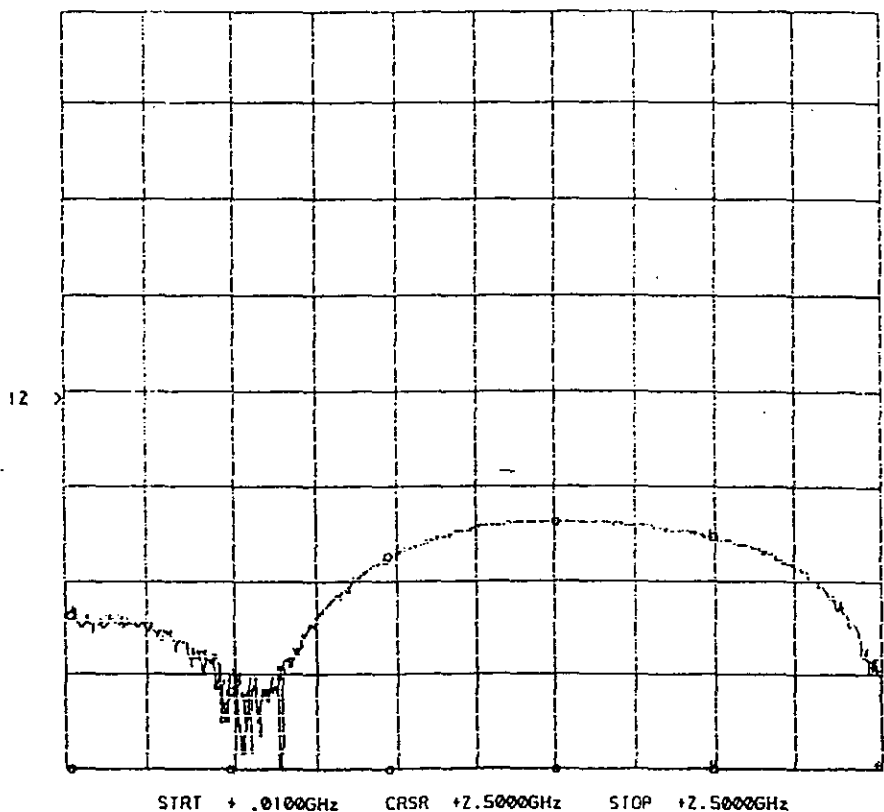
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J2-J9

CH1: A -H - 48.71 dB CH2: B -H - 39.51 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 43.213	- 33.029
2	4.955501E+08	- 47.674	- 40.368
3	9.997751E+08	- 52.673	- 27.206
4	1.457775E+09	- 45.317	- 23.119
act	1.995775E+09	- 46.042	- 24.822
CURSOR			
1	2.5E+09	- 49.866	- 43.114

MAY 25, 1998



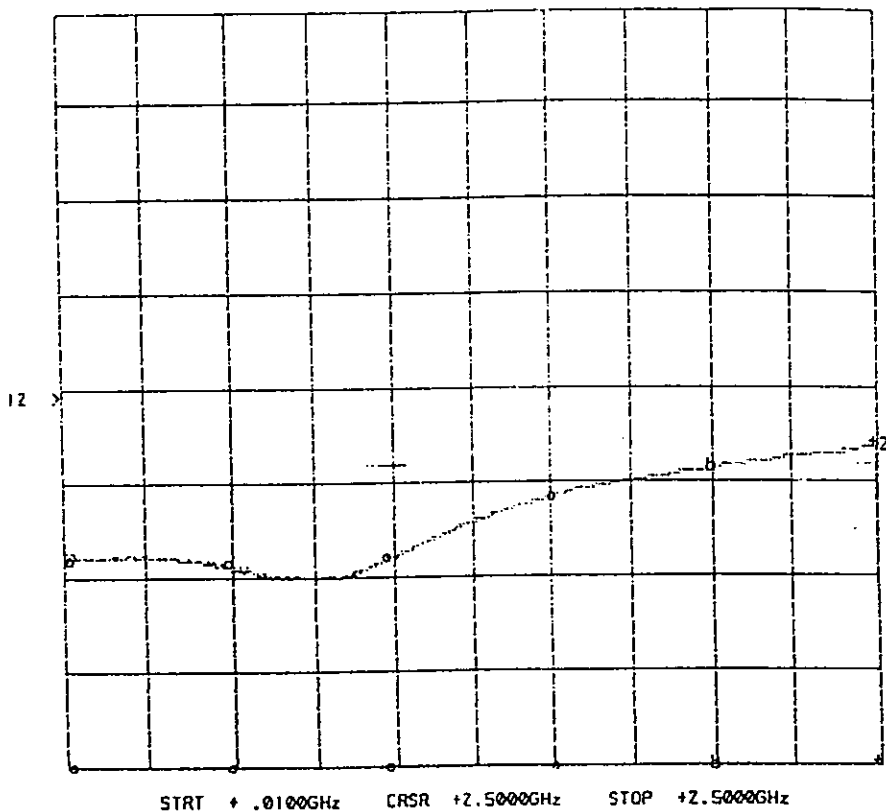
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J3-J9

CH1: A -M - 47.35 dB CH2: B -M - 15.68 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 47.009	- 27.491
2	4.95501E+08	- 43.971	- 27.876
3	9.997751E+08	- 51.761	- 27.233
4	1.497775E+09	- 47.136	- 20.987
act	1.995775E+09	- 49.888	- 17.955

Cursors

1	2.5E+09	- 48.218	- 15.697
---	---------	----------	----------

MAY 25, 1998



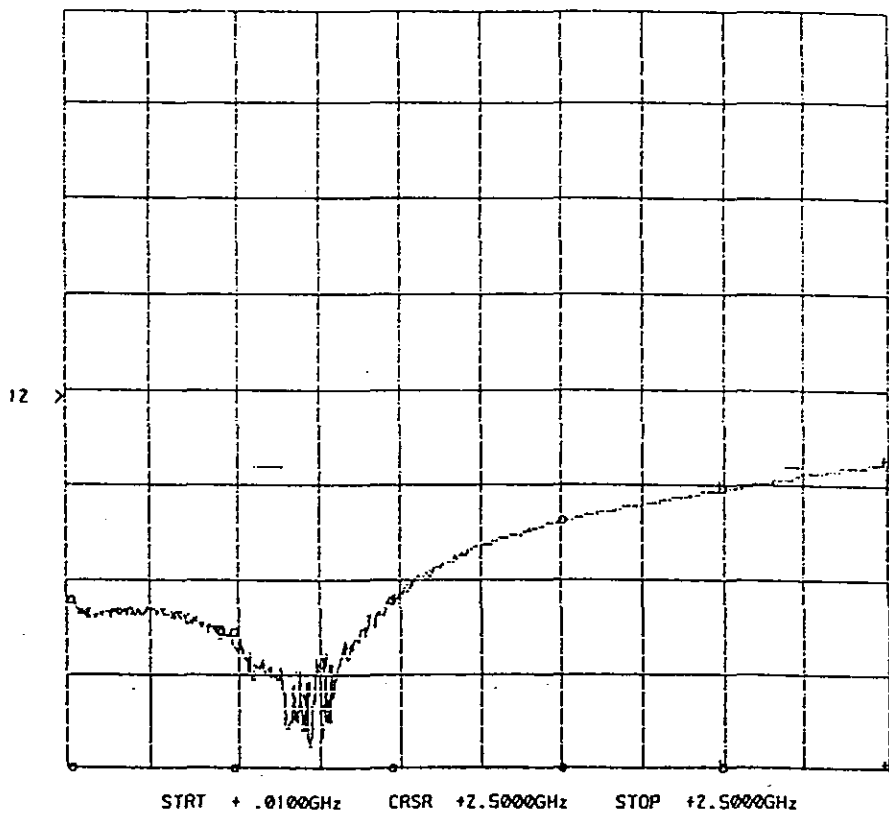
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J4-J9

CH1: A -M - 50.88 dB CH2: B -M - 17.13 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 46.224	- 32.468
2	4.955501E+08	- 44.543	- 35.742
3	9.997751E+08	- 44.713	- 31.359
4	1.497775E+09	- 50.811	- 23.437
act	1.995775E+09	- 46.916	- 19.839

Cursors

1	2.5E+09	- 44.872	- 17.126
---	---------	----------	----------

MAY 25, 1998



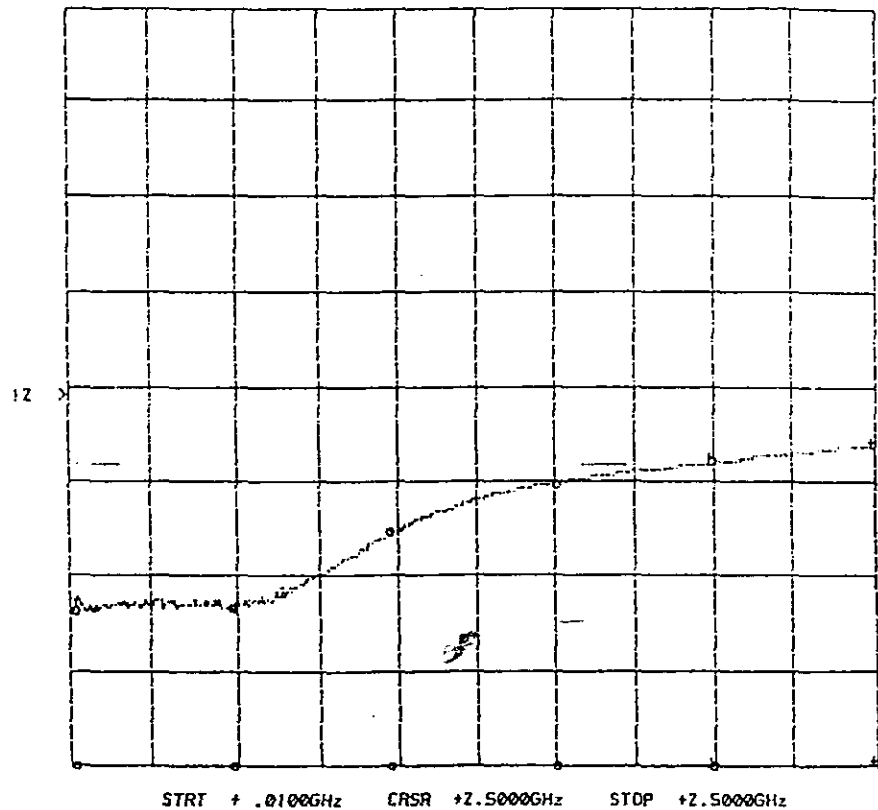
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J5-J9

CH1: A -M - 47.19 dB CH2: B -M - 15.53 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan: 1 (dB)	Chan: 2 (dB)
1	1E+07	- 49.910	- 32.974
2	4.955501E+08	- 48.102	- 32.639
3	9.997751E+08	- 45.312	- 24.866
4	1.497775E+09	- 49.025	- 19.592
act	1.995775E+09	- 49.053	- 17.367
<u>Cursors</u>			
1	2.5E+09	- 51.091	- 15.609

MAY 25, 1998



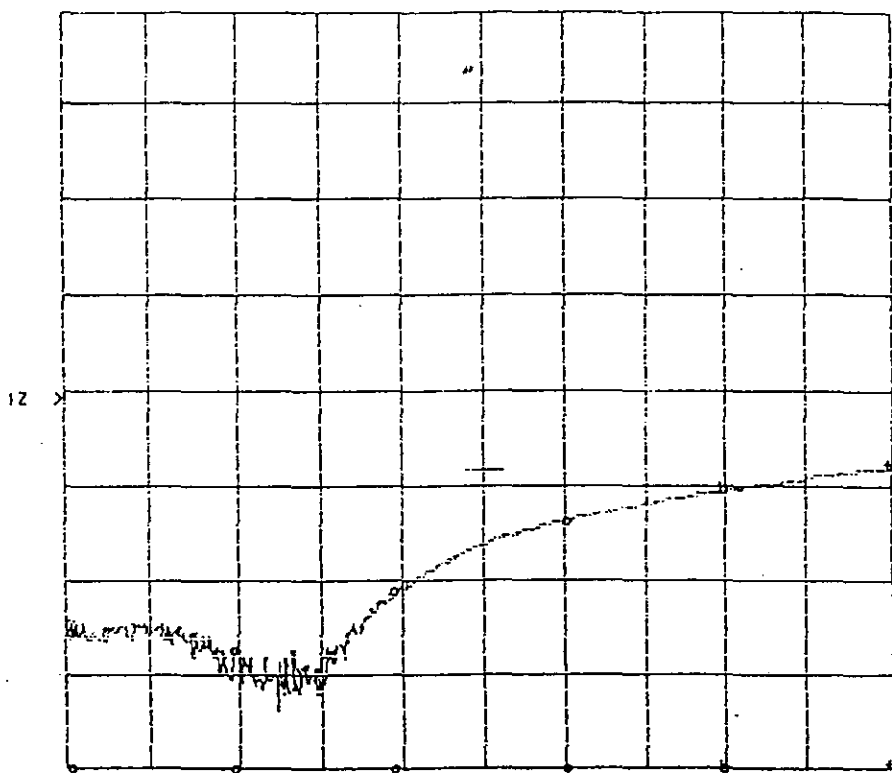
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J6-J9

CH1: A -M - 45.11 dB CH2: B -M - 17.40 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



STRT + .01000GHz CRSR +2.50000GHz STOP +2.50000GHz

Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	-53.024	-35.308
2	4.955501E+08	-46.652	-35.924
3	9.997751E+08	-50.679	-30.469
4	1.497775E+09	-45.795	-23.108
act	1.995775E+09	-45.070	-19.872

Cursors

1	2.5E+09	-47.586	-17.395
---	---------	---------	---------

MAY 25, 1998



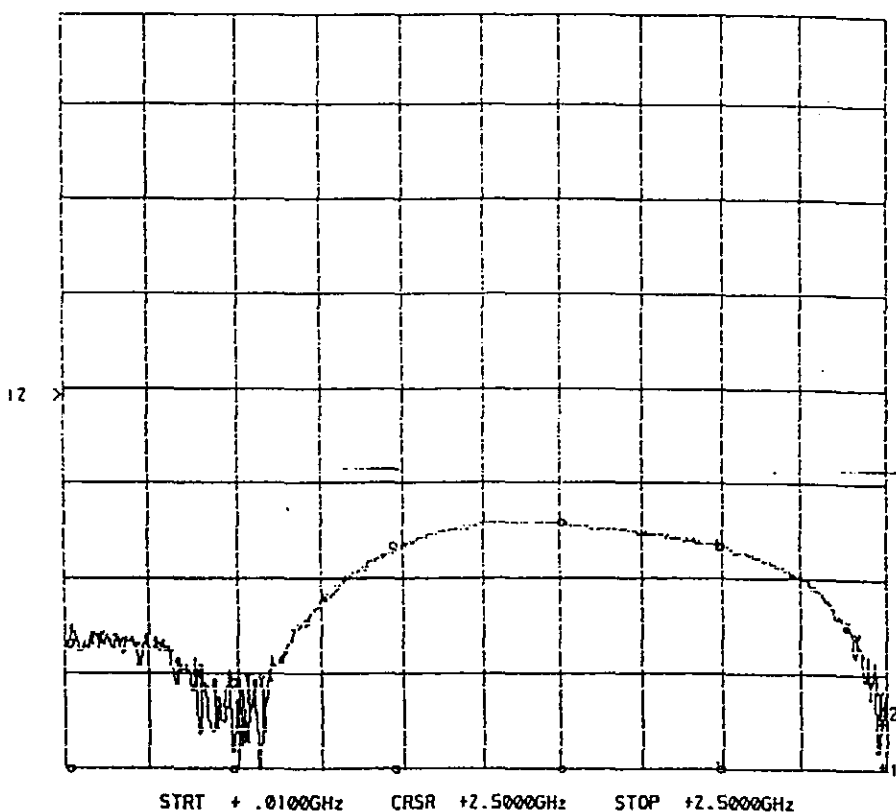
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J7-J9

CH1: A -M - 53.00 dB CH2: B -M - 44.97 dB
 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 46.608	- 37.121
2	4.955501E+08	- 46.603	- 44.993
3	9.997751E+08	- 45.911	- 25.953
4	1.497775E+09	- 49.119	- 23.652
act	1.995775E+09	- 52.711	- 26.025
<u>Cursors</u>			
1	2.5E+09	- 47.295	- 47.388

MAY 25, 1998



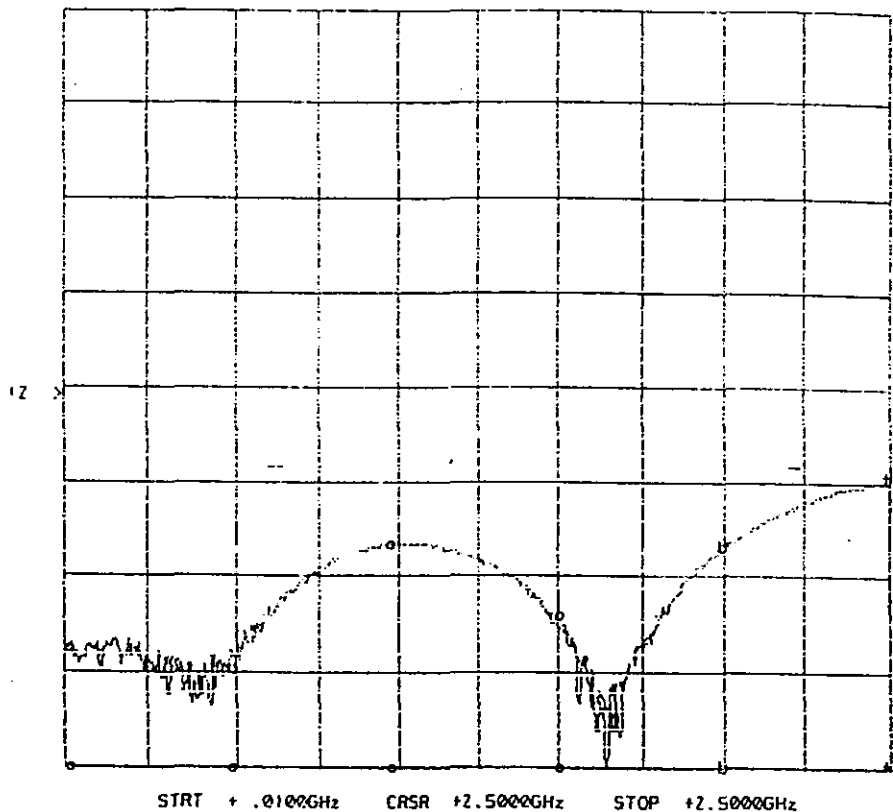
SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

OFF-ARM TERMINATION

J8-J9

CH1: A -11 -43.21 dB CH2: B -11 -19.02 dB
 1.0 dB/ REF - 0.00 dB 10.0 dB/ REF - 9.54 dB



Markers			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	-47.635	-36.407
2	4.955501E+08	-44.730	-37.121
3	9.997751E+08	-47.833	-26.019
4	1.497775E+09	-49.338	-33.452
act	1.995775E+09	-44.719	-26.404

Cursors			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	2.5E+09	-47.729	-18.999

MAY 25, 1998

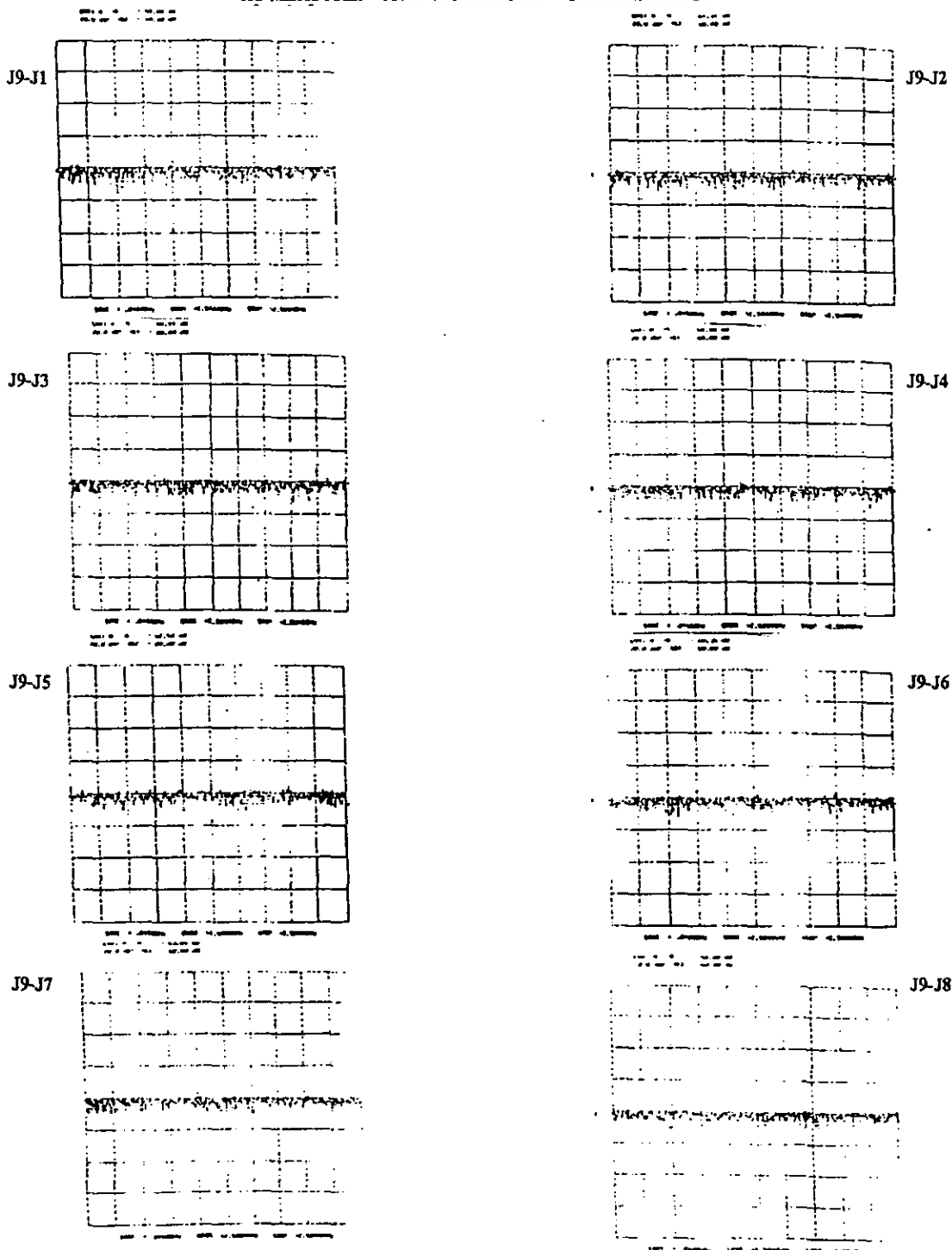
SUMMARY TEST DATA



MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

ISOLATION

AS MEASURED ON A SCALAR NETWORK ANALYZER



MAY 25, 1998

SUMMARY TEST DATA



MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
: MSN-9DR/DT-06-10M2
TECHNICIAN : R. AFABLE
SERIAL NUMBER : 8MS60475

ISOLATION

ISOLATION AS MEASURED ON A SPECTRUM ANALYSES

J9 (COMMON ARM) TO:

	J1	J2	J3	J4	J5	J6	J7	J8
50 MHz	94 dB	96 dB	100 dB	96 dB	98 dB	93 dB	94	94 dB
100 MHz	102 dB	102 dB	104 dB	104 dB	104 dB	102 dB	102 dB	102 dB
500 GHz	98 dB	98 dB	98 dB	96 dB	99 dB	99 dB	102 dB	95 dB
1.0 GHz	98 dB	100 dB	100 dB	100 dB	102 dB	94 dB	90 dB	92 dB
2.0 GHz	88 dB	84 dB	81 dB	81 dB	86 dB	86 dB	86 dB	81 dB
2.5 GHz	92 dB	84 dB	84 dB	89 dB	84 dB	91 dB	82 dB	85 dB
3.0 GHz	86 dB	94 dB	96 dB	84 dB	90 dB	79 dB	91 dB	72 dB
3.5 GHz	90 dB	80 dB	80 dB	79 dB	82 dB	79 dB	72 dB	70 dB
4.0 GHz	84 dB	81 dB	78 dB	79 dB	80 dB	84 dB	86 dB	72 dB

MAY 25, 1998



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
: MSN-8DR/DT-05-10M2
TECHNICIAN : MSN-9DR/DT-06-10M2
: R. AFABLE
SERIAL NUMBER : 8MS60475

SWITCHING SPEED

TYPICAL FOR ALL ARMS

"RISE/FALL" TIME: 10%RF TO 90%RF & 90%RF TO 10%RF

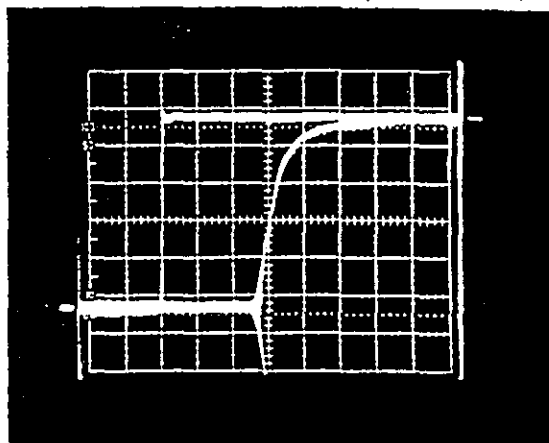
"ON/OFF" TIME: 50%TTL TO 90%RF OR 10%RF

"ON" 180nS, "RISE" 50nS

HORIZONTAL SCALE:
50nS/DIVISION

SW-2000-8AT

S/N: 8MS60475



5mV/DIV

50ns/DIV

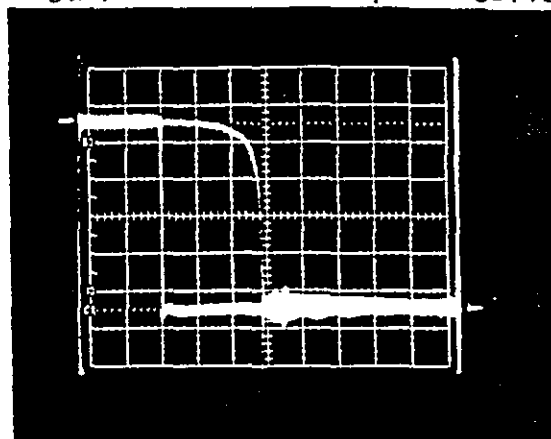
VERTICAL SCALE:
5mV/DIVISION

"OFF" 150nS, "FALL" 20nS

HORIZONTAL SCALE:
50nS/DIVISION

SW-2000-8AT

S/N: 8MS60475



5mV/DIV

50ns/DIV

VERTICAL SCALE:
5mV/DIVISION

MAY 25, 1998

PAGE 28



SUMMARY TEST DATA

MODEL NUMBER : SWN-2000-8DR/DT-0012
 : MSN-8DR/DT-05-10M2
 : MSN-9DR/DT-06-10M2
 TECHNICIAN : R. AFABLE
 SERIAL NUMBER : 8MS60475

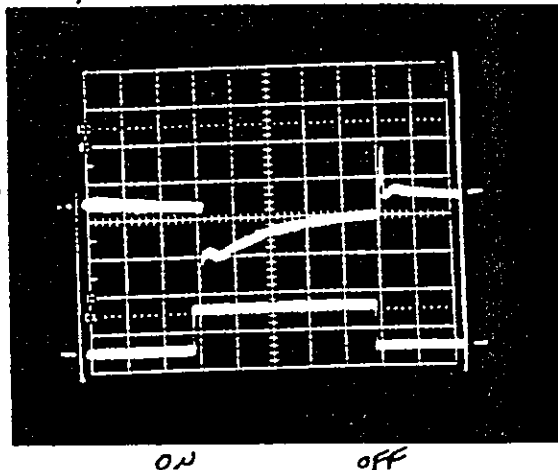
VIDEO TRANSIENTS TYPICAL FOR ALL ARMS

AS MEASURED IN A
300MHz BANDWIDTH

HORIZONTAL SCALE:
0.2μS/DIVISION

VERTICAL SCALE:
1.0 V/DIVISION

1V/0.1μ 300 MHz BAND 0.2μS/0.1μ

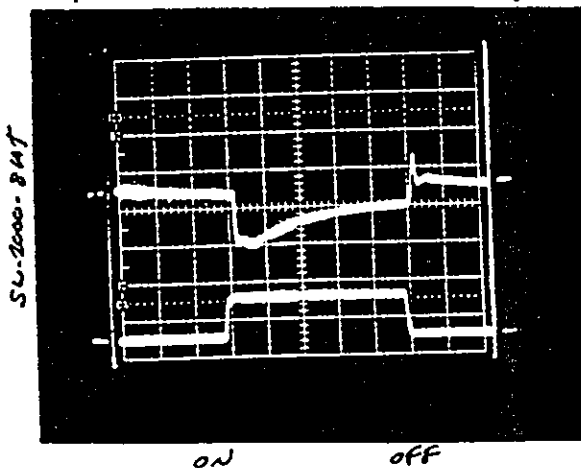


AS MEASURED IN A
20MHz BANDWIDTH

HORIZONTAL SCALE:
0.2μS/DIVISION

VERTICAL SCALE:
1.0 V/DIVISION

1V/0.1μ 20 MHz BAND 0.2μS/0.1μ



MAY 25, 1998



TEST DATA

ON

10 MHz TO 18 GHz

LOW LOSS

HIGH SPEED

HIGH ISOLATION

ABSORPTIVE AND REFLECTIVE

SP7T & SP8T PIN DIODE SWITCHES

AMC MODEL Nos:

SWN-1170-7DT-00418 (1.25" dia. RADIAL DESIGN)

Serial No: 7MS60525

AND

SW-2181-8AT-00118 (RECTANGULAR DESIGN)

SWNR-218-8DT-00118 (2.0" dia. RADIAL DESIGN)

SLIMLINE MODELS:

SWN-218-8DT-00118 (RECTANGULAR DESIGN)

MSN-8DR/DT-05-10M18 (RECTANGULAR DESIGN)

MSN-8DR/DT-06-10M18 (RECTANGULAR DESIGN)

MSNC-8DR/DT-06-10M18 (RECTANGULAR DESIGN)

DESIGNED

BY

A. K. GORWARA

REPORTED

BY

P. D. WOOD

JUNE 1, 1998

WEBSITE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

E-MAIL: AMCPMI@AOL.COM

7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



**AMERICAN MICROWAVE
CORPORATION**

**10 MHz TO 18 GHz
ABSORPTIVE & REFLECTIVE
LOW LOSS, HIGH ISOLATION
SP7T & SP8T PIN DIODE SWITCHES**

- LOW LOSS
- ABSORPTIVE
- HIGH ISOLATION
- ULTRA-BROADBAND

AMC MODEL Nos:

**SWN-1170-7DT-00418 (RADIAL), SW-2181-8AT-00118 (RECTANGULAR)
SWNR-218-8DT-00118(RADIAL), SWN-218-8DT-00118(RECTANGULAR)
MSN-8DR/DT-05-10M18 (RECTANGULAR), MSN-8DR/DT-06-10M18 (RECTANGULAR)
MSNC-8DR/DT-06-10M18 (RECTANGULAR)**

SPECIFICATIONS:

- **FREQUENCY RANGE** : 10 MHz GHz TO 18 GHz
- **INSERTION LOSS** : 3.75 dB MAX. (For Absorptive, Non-Absorptive or Reflective reduces Loss by about 0.50dB)
: 3.50 dB TYP. @ 0.01 GHz
: 1.00 dB TYP. @ 2.0 GHz
: 2.20 dB TYP. @ 10.0 GHz
: 3.50 dB TYP. @ 18.0 GHz
- **ISOLATION** : 60 dB MIN.
: 70 dB TYP. @ 0.05 GHz
: 90 dB TYP. @ 2.0 GHz
: 75 dB TYP. @ 12.0 GHz
: 75 dB TYP. @ 18.0 GHz
- **VSWR** : 2.0:1
- **SWITCHING SPEED** : "RISE" : 10 nS MAX., 5nS TYP.
: "FALL" : 10 nS MAX., 5nS TYP.
: "ON" : 150nS MAX., 80nS TYP.
: "OFF" : 50 nS MAX., 25nS TYP.
- **CONTROL** : TTL Compatible (Independent Control, Standard; 3-bit Binary Decoder Available)
- **VIDEO TRANSIENTS** : 2.0 V Peak to Peak in a 20 MHz BW (Without Video Filters)
: 3.0 V Peak to Peak in a 300 MHz BW (Without Video Filters)
- **RF INPUT POWER** : +20 dBm Operating, 1 Watt Survival
- **DC POWER SUPPLY** : + 5vdc @ 250 mA MAX., <200 mA TYP. (±5vdc Standard, Other Voltage Options
: - 5vdc @ 75 mA MAX., < 50 mA TYP. Also Available)
- **SIZE & WEIGHT** : SWN-1170-7DT(Radial) : 1.25" dia. X 0.70" @ <3.0 oz.
: SWN-218-8DT (Rectangular) : 5.10" X 2.0" X 0.56" @ <7.0 oz.
: SW-2181-8AT (Rectangular) : 5.10" X 2.0" X 0.75" @ <7.0 oz.
: SWNR-218-8DT (Radial) : 2.0" dia. X 0.75" @ <4.5 oz.
: MSN-8DR/DT-05-10M18 (Rectangular) : 4.00" X 1.5" X 0.40" @ <4.5 oz.
: MSN-8DR/DT-06-10M18 (Rectangular) : 4.75" X 1.5" X 0.50" @ <4.5 oz.
: MSNC-8DR/DT-06-10M18 (Rectangular) : 4.75" X 1.5" X 0.40" @ <4.5 oz.

**ABOVE DATA IS TYPICAL FOR ABSORPTIVE OR REFLECTIVE VERSIONS
OTHER MULTI-THROW (SP2T, SP3T, SP4T, SP5T, SP6T & SP7T) DESIGNS AVAILABLE**

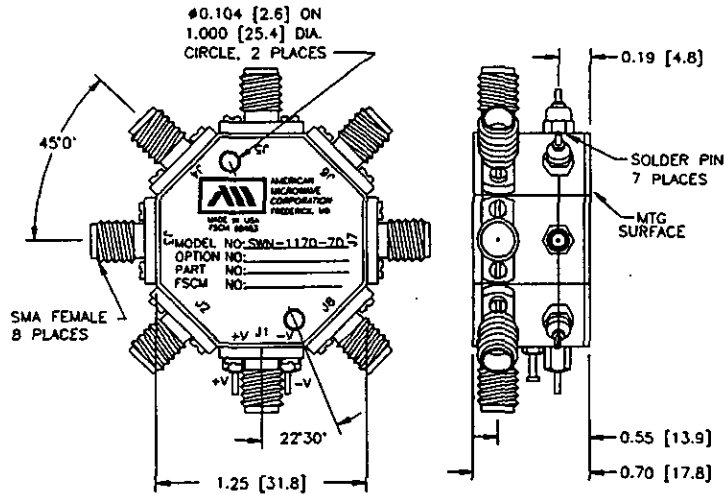
WEBSITE: [HTTP://WWW.AMWAVE.COM](http://www.amwave.com)

E-MAIL: AMCPMI@AOL.COM

7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel: (301) 662-4700 • Fax (301) 662-4938

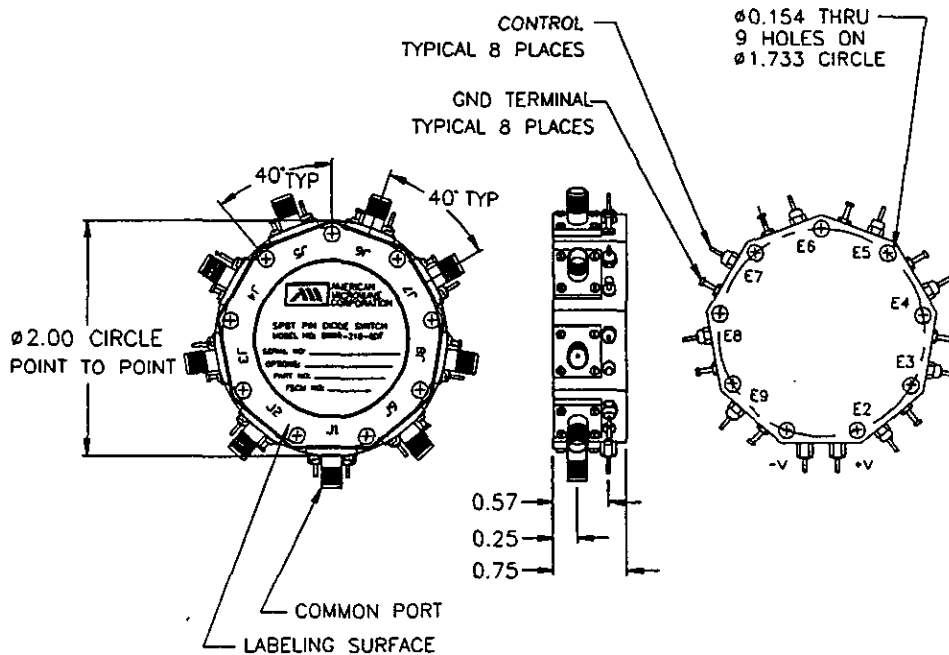


MECHANICAL OUTLINES



SWN-1170-7DT

0.4" Thick Option Available, Inquire with Factory for Details

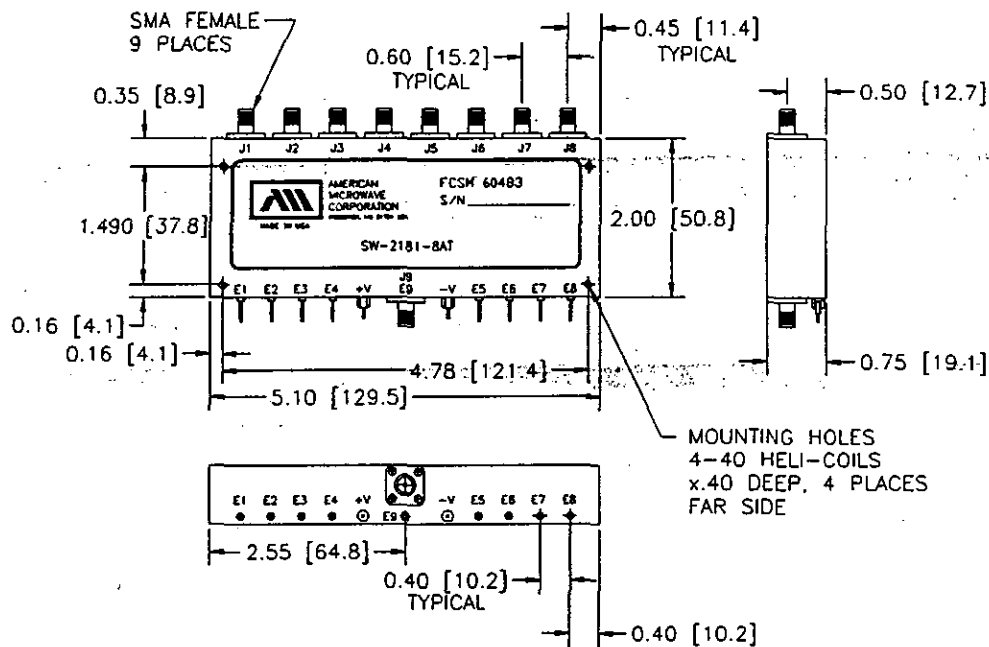


SWNR-218-8DT (RADIAL)

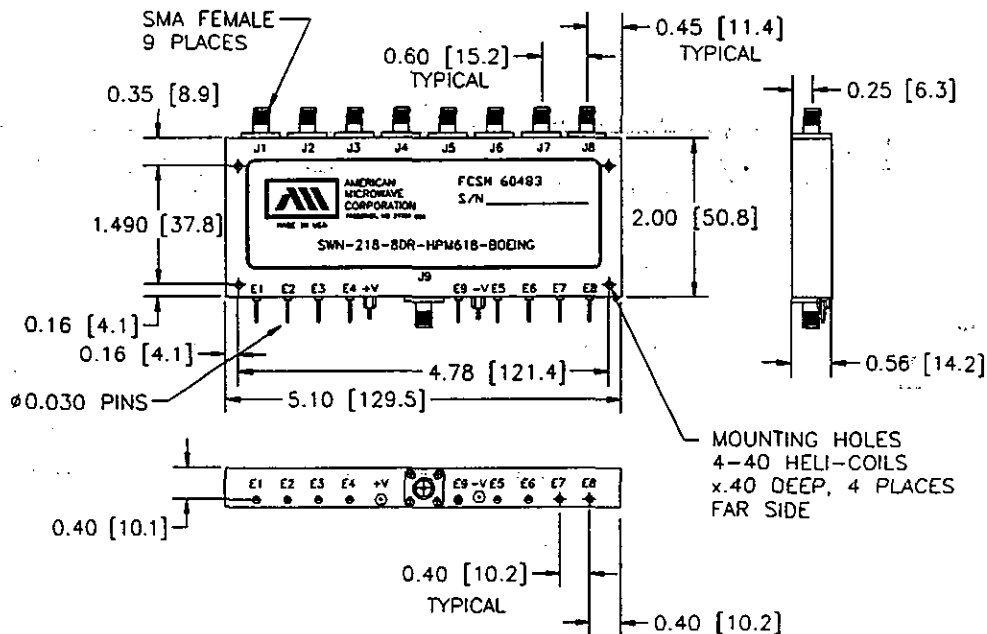
0.4" Thick Option Available, Inquire with Factory for Details
 TOLERANCES: X.XX ± 0.02 INCHES, X.XXX ± 0.005 INCHES



MECHANICAL OUTLINES



SW-2181-8AT



SWN-218-8DT

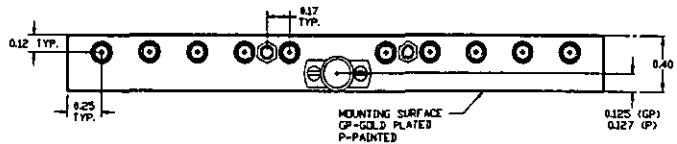
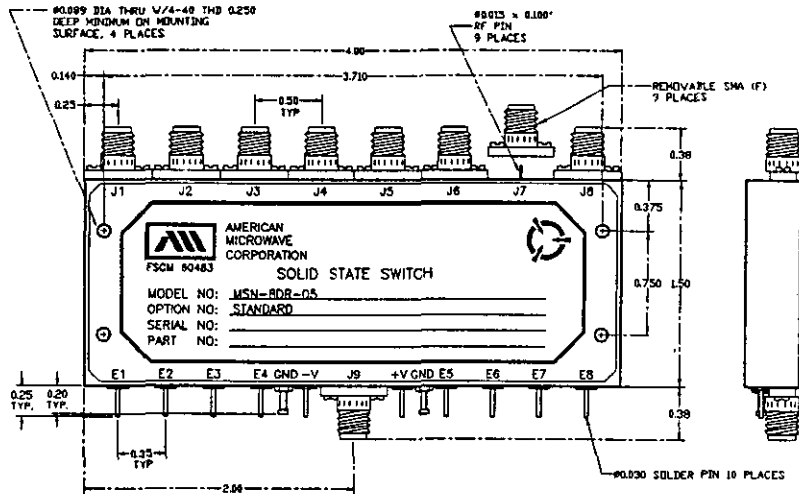
0.4" Thick Option Available, Inquire with Factory for Details
 TOLERANCES: X.XX ± 0.02 INCHES, X.XXX ± 0.005 INCHES

JUNE 1, 1998

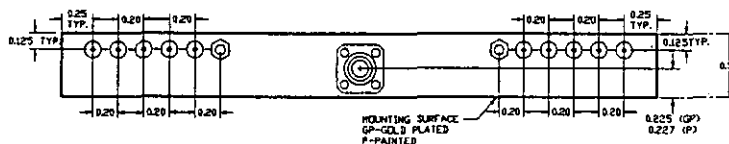
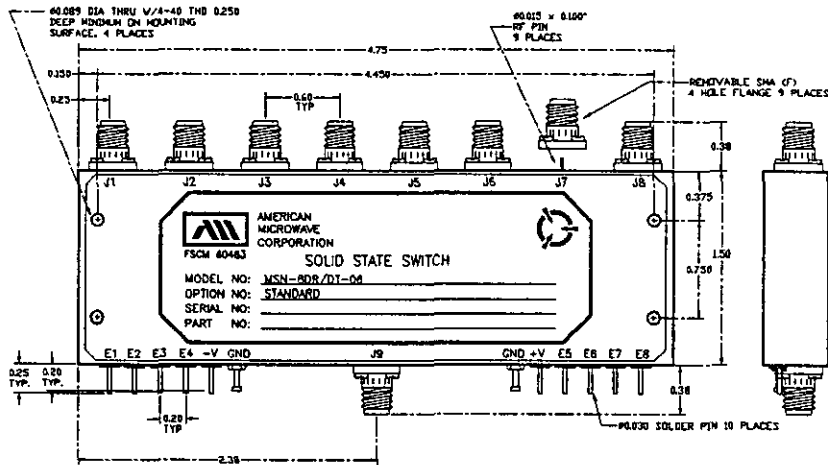
SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



MECHANICAL OUTLINES
 CONTINUED



MSN-8DR/DT-05-STANDARD



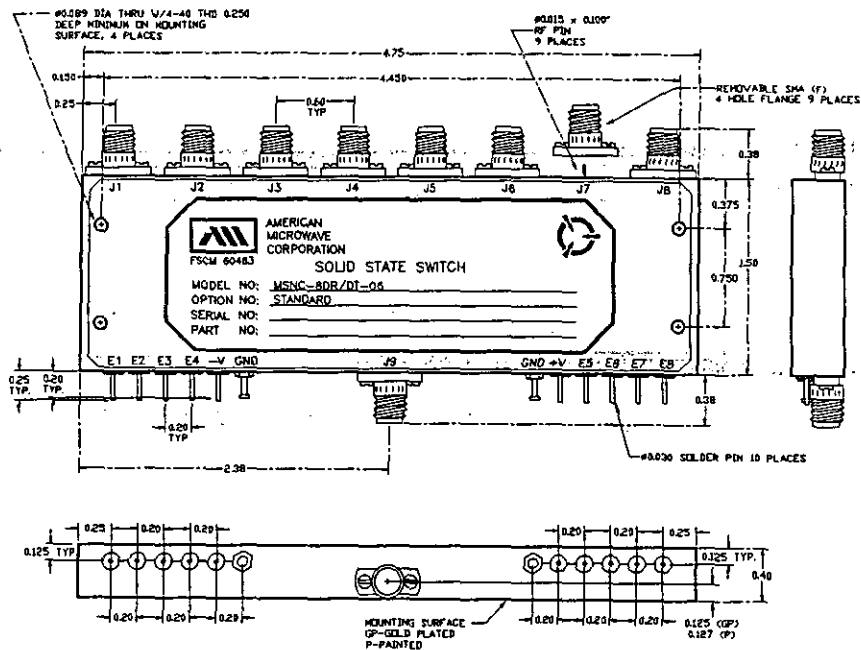
MSN-8DR/DT-06-STANDARD
 Tolerance: X.XX ± 0.002", X.XXX ± 0.005"

JUNE 1, 1998

SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



MECHANICAL OUTLINES
CONTINUED



MSNC-8DR/DT-06-STANDARD
WITH INDEPENDENT CONTROLS

JUNE 1, 1998

**SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES**



**AVAILABLE OPTIONS
AND
HOW TO ORDER**

EXAMPLE :

SWN - 218 - 8 D T - XXXX - ###
 1 2 3 4 5 6 7

- 1. : SWN : Switch Designator (SW = Older Models, SWN = Newer Models)
- 2. : 218 : Series Designator (2181 = Older Models, 218 or 1170 = Newer Models)
- 3. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 4. : D : Indicates Integral Driver
- 5. : T : T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 6. : XXXX : Frequency Range of Switch
- 7. : ### : Available Options as Noted Below

OPTION NO:	MULTI-THROW SWITCH OPTIONS
001	SMA Male RF Connectors (Increases Insertion Loss by 0.25dB per Arm)
002	Inverted Logic, "0" = ON (Standard TTL Logic is "1" = ON)
003	+ 12vdc DC Power Supply (Standard is ± 5vdc)
004	+ 15vdc DC Power Supply (Standard is ± 5vdc)
005	3-bit Binary Decoder (Available with Solder Pin Controls Only on Radial designs and either Solder Pins or Multipin Connectors on Rectangular designs)
006	- 12vdc DC Power Supply (Standard is ± 5vdc)
007	- 15vdc DC Power Supply (Standard is ± 5vdc)
008	MULTIPIN CONNECTOR (Available on Rectangular models only)
009	0.4" THICK OPTION (WHERE AVAILABLE)
103	Integral Band Pass Video Filters (Only available on units with Frequency Ranges starting above 2.0 GHz) (Increases Insertion Loss by 0.75dB, overall)
XXXX	Indicates the Frequency for which the Switch has been Adjusted For Example: 00418 = 40 MHz to 18.0 GHz 00118 = 10 MHz to 18.0 GHz 0012 = 10 MHz to 2.0 GHz 48 = 4.0 to 8.0 GHz

AMERICAN MICROWAVE CORPORATION
7311-G GROVE ROAD, FREDERICK, MARYLAND 21704
TELEPHONE NUMBER : 301-662-4700
FACIMILE NUMBER : 301-662-4938

PLEASE CALL OR FAX FOR CATALOGS, TEST REPORTS AND ORDERING INFORMATION ON ANY OF OUR PRODUCTS

JUNE 1, 1998

PAGE 7

**SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES**



AVAILABLE OPTIONS AND HOW TO ORDER
MSN SERIES OF SWITCHES

EXAMPLE :

MSN - 8 DR/DT - 05 - XXXX - ###
1 2 3 4 5 6

- 1. : MSN : Switch Designator Microwave Switch New
- 2. : 8 : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 3. : DT/DR : D = Integral Driver, T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
- 4. : 05 : 05=0.5" between SMA connectors center to center, 06=0.6" between SMA connectors center to center
- 5. : XXXX : Available Options as Noted Below
- 6. : ### : Frequency Range of Switch as Illustrated Below

OPTION:	MSN MULTI-THROW SWITCH OPTIONS
(NOTE)	INDEPENDENT CONTROL WITH SOLDER PINS IN STANDARD
DEC-MP	3-BIT BINARY DECODER WITH MULTIPIN CONNECTOR
DEC-SP	3-BIT BINARY DECODER WITH SOLDER PINS
MP-IND	INDEPENDENT CONTROL WITH MULTIPIN CONNECTOR
10M2	10 Mhz TO 2.0 GHZ FREQUENCY RANGE
10M18	10 Mhz TO 18.0 GHZ FREQUENCY RANGE (INSERTION LOSS INCREASES BY 1.5 dB AT 10 MHz AND 0.5 dB AT 18 GHz)
100M18	100 Mhz TO 18.0 Ghz (INSERTION LOSS INCREASES BY 1.5 dB at 100 MHz AND 0.5 dB AT 18 GHz)
118	1 Ghz TO 18 Ghz (NO CHANGE IN INSERTION LOSS)
218	2 Ghz TO 18 Ghz (NO CHANGE IN INSERTION LOSS)
412	4 Ghz TO 12 Ghz (NO CHANGE IN INSERTION LOSS)
618	6 Ghz TO 18 Ghz (NO CHANGE IN INSERTION LOSS)
1218	12 Ghz TO 18 Ghz (NO CHANGE IN INSERTION LOSS)
100M20	100 Mhz TO 20.0 Ghz (INSERTION LOSS INCREASES BY 1.5 dB at 10 MHz AND 1.0 dB AT 20 GHz)
220	2 Ghz TO 20 Ghz (INSERTION LOSS INCREASES BY 1.0 dB AT 20 GHz)
1020	10 Ghz TO 20 Ghz (INSERTION LOSS INCREASES BY 1.0 dB AT 20 GHz)
B01	-12 VOLT POWER SUPPLIES
B02	-15 VOLT POWER SUPPLIES
B03	REVERSE LOGIC "1" = ON, "0" = OFF
B04	DRIVERLESS CONFIGURATION (CURRENT CONTROLLED)
B05	HIGH SPEED, TURNON/TURNOFF 20 nS MAXIMUM WHEN APPLICABLE
B06	HIGH POWER - SPECIFY CW & PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
B07	CUSTOM DESIGNED PRODUCT - SPECIFY WITH INITIALS OF CUSTOMER
B08	LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
B09	LOW INSERTION LOSS VERSION
B10	HIGHER ISOLATION VERSION

AMERICAN MICROWAVE CORPORATION
7311-G GROVE ROAD, FREDERICK, MARYLAND 21704
TELEPHONE NUMBER : 301-662-4700
FACIMILE NUMBER : 301-662-4938

PLEASE CALL OR FAX FOR CATALOGS, TEST REPORTS AND ORDERING INFORMATION ON ANY OF OUR PRODUCTS

JUNE 1, 1998



**ACTUAL
TEST DATA
ON
ABSORPTIVE
SP7T**

PIN DIODE SWITCH

AMC MODEL No: SWN-1170-7DT-00418

SERIAL No: 7MS60525

APPLICABLE

FOR ALL TYPES

10 MHz TO 18 GHz OR 40 MHz TO 18 GHz

ABSORPTIVE OR REFLECTIVE

(REFLECTIVE SWITCHES OFFER APPROXIMATELY 0.5 dB LESS INSERTION LOSS)

SP7T OR SP8T

PIN DIODE SWITCHES

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

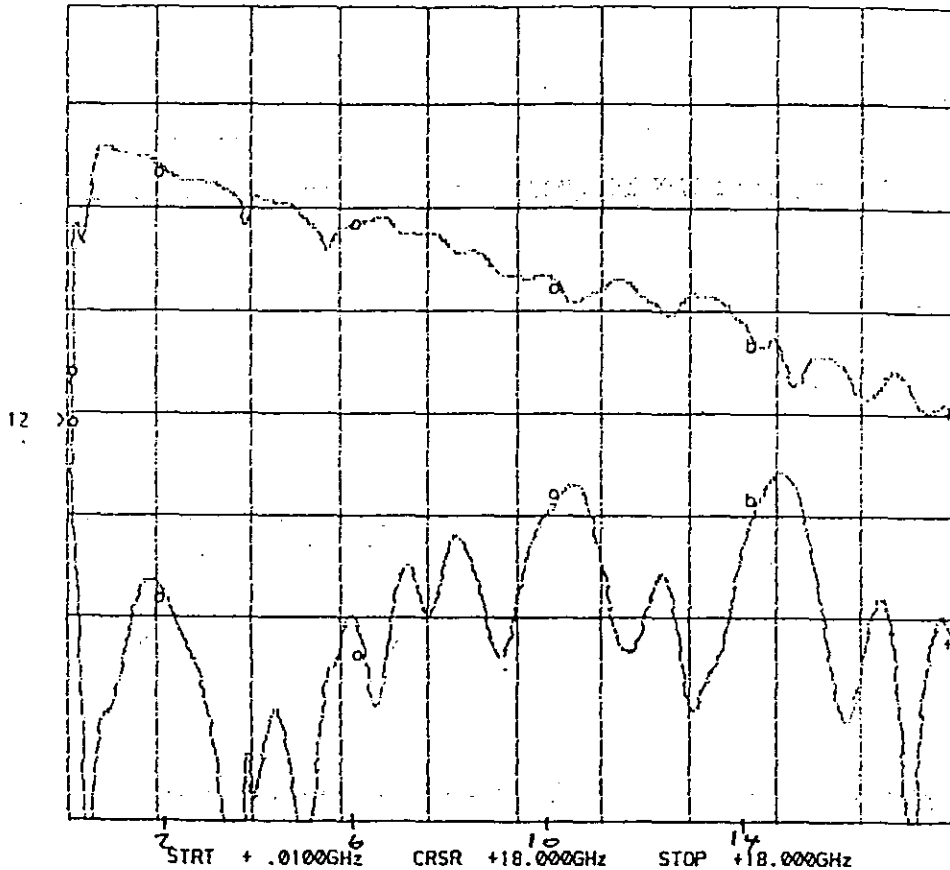


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J2

CH1: A -M - 3.50 dB CH2: B -M - 20.78 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



Markers		Frequency (Hz)	I.L.		USWR	
No.	Chan. 1 (dB)		Chan. 2 (dB)			
10 MHz	1	1E+07	- 3.594	- 7.292		
2 GHz	2	1.9989E+09	- 1.091	- 18.653		
6	3	5.991674E+09	- 1.596	- 21.333		
10	4	9.994452E+09	- 2.255	- 13.418		
14	act	1.399723E+10	- 2.804	- 13.703		
Cursors						
18 GHz	1	1.8E+10	- 3.488	- 20.740		

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

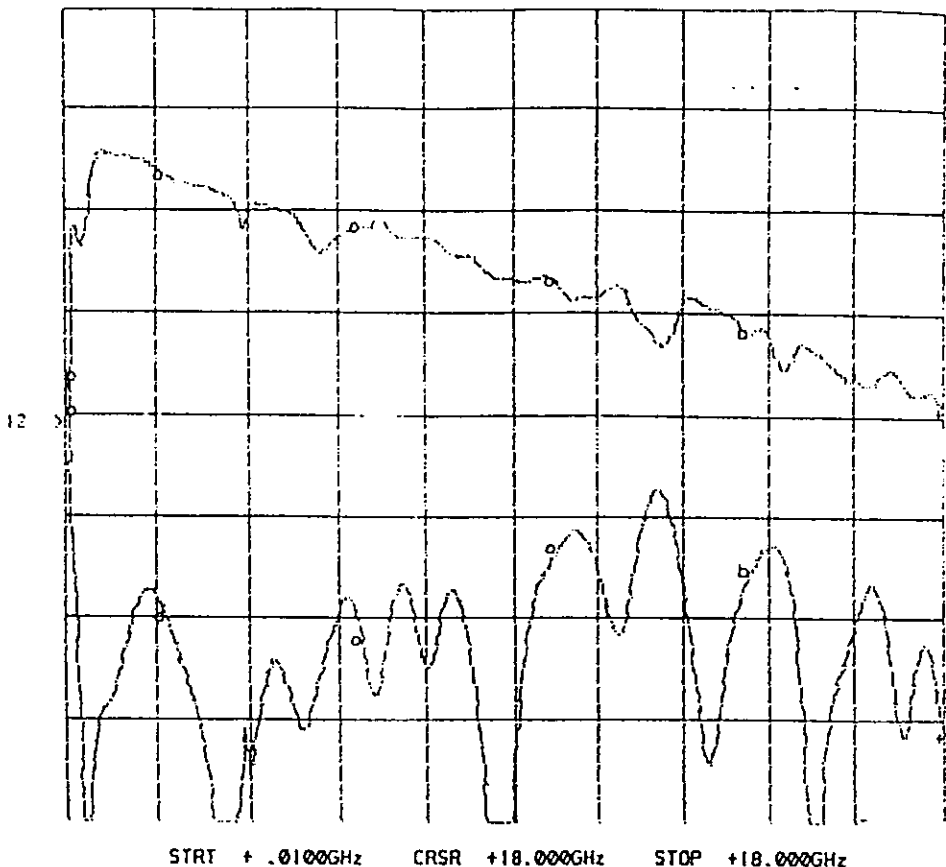


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J3

CH1: A -M - 3.45 dB CH2: B -M - 25.57 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 3.749	- 7.282
2	1.9389E+09	- 1.295	- 19.548
3	5.991674E+09	- 1.521	- 20.592
4	9.994452E+09	- 2.155	- 16.170
act	1.399723E+10	- 2.529	- 17.098

Cursors

1	1.8E+10	- 3.409	- 25.453
---	---------	---------	----------

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

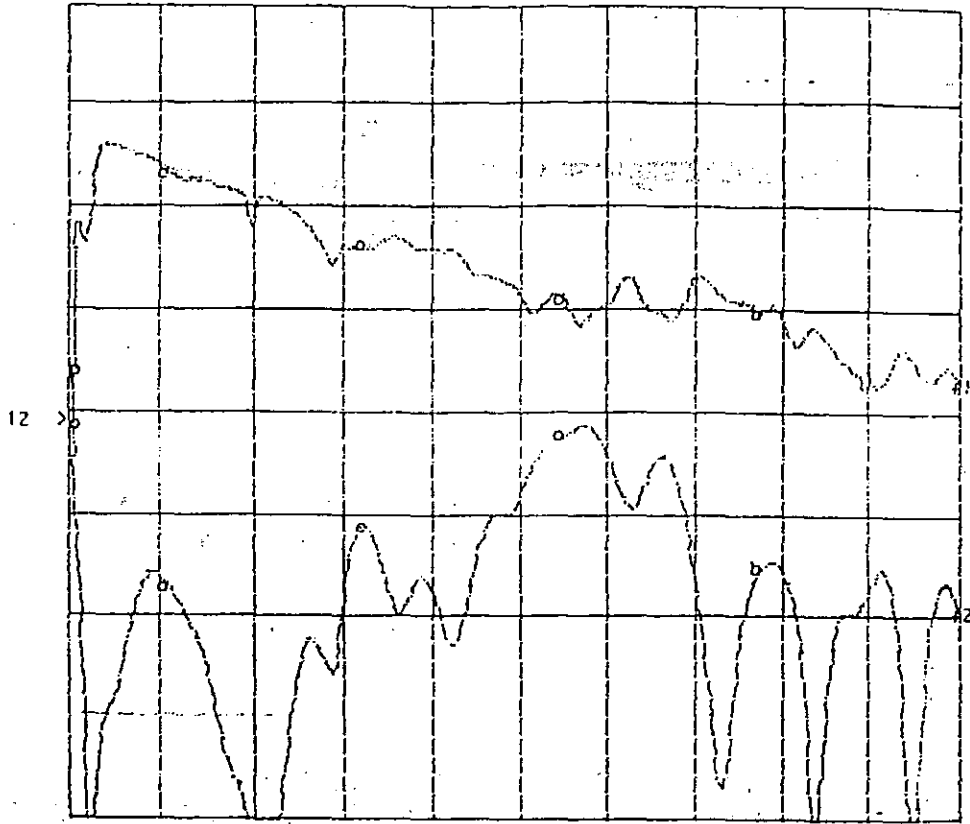


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J4

CH1: A -M - 3.27 dB CH2: B -M - 19.47 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



STRT + .0100GHz CRSR +18.000GHz STOP +18.000GHz

Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 3.595	- 7.397
2	1.3889E+09	- 1.134	- 18.136
3	5.991674E+09	- 1.838	- 15.120
4	9.994452E+09	- 2.365	- 10.605
act	1.399723E+10	- 2.486	- 17.027

Cursors

1	1.8E+10	- 3.238	- 19.510
---	---------	---------	----------

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

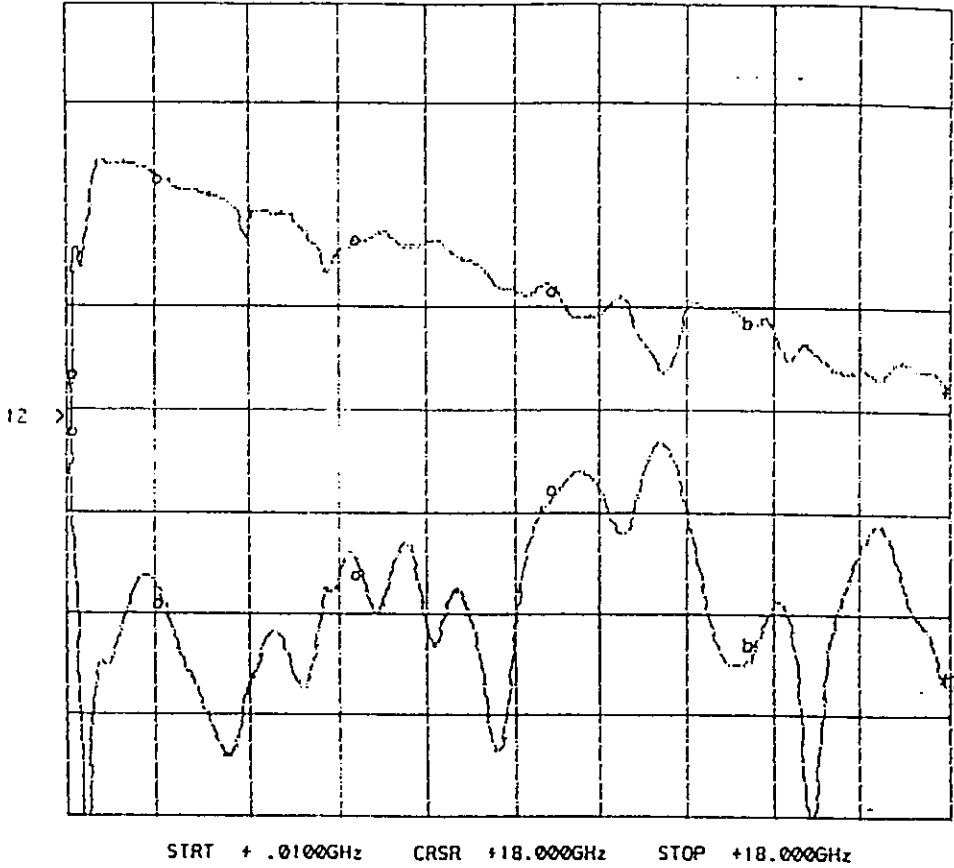


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J5

CH1: A -M - 3.30 dB CH2: B -M - 22.68 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 3.793	- 7.545
2	1.9889E+09	- 1.244	- 19.164
3	5.991674E+09	- 1.799	- 17.609
4	3.994452E+09	- 2.332	- 13.418
act	1.399723E+10	- 2.645	- 21.191

<u>Cursors</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1.8E+10	- 3.315	- 22.778

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

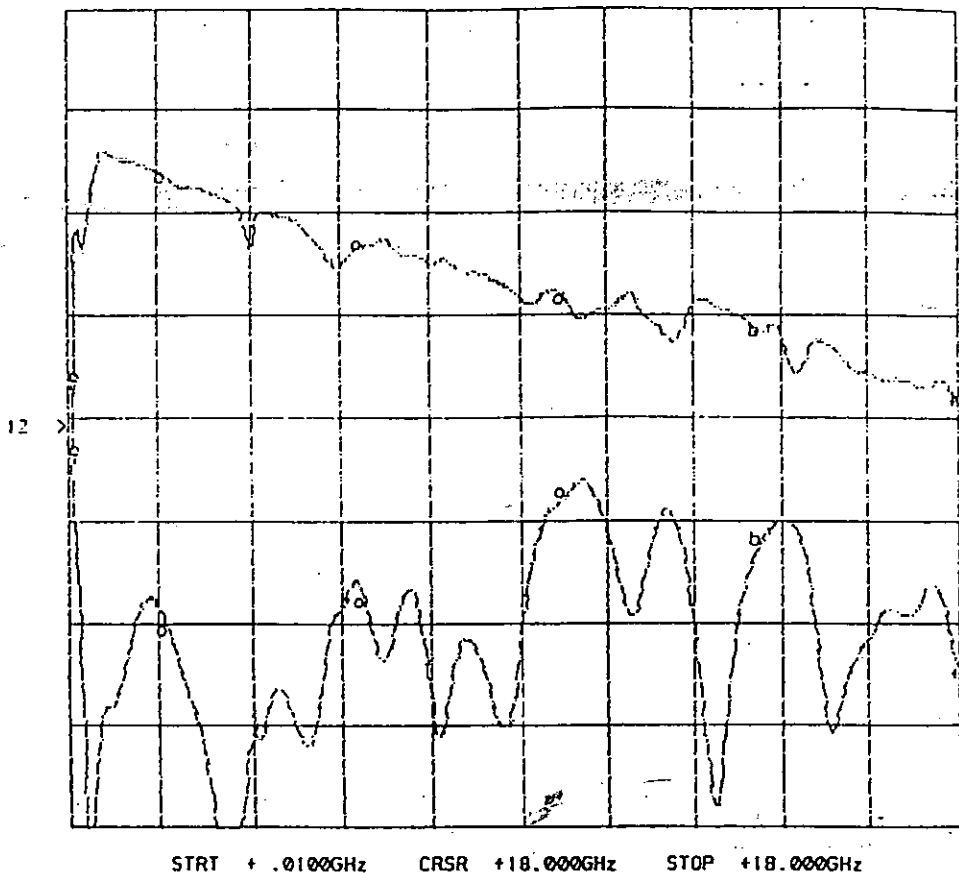


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J6

CH1: A -M - 3.35 dB CH2: B -M - 22.08 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 3.799	- 7.402
2	1.9889E+09	- 1.134	- 19.790
3	5.991674E+09	- 1.788	- 18.416
4	9.994452E+09	- 2.316	- 13.126
act	1.399723E+10	- 2.623	- 15.373

<u>Cursors</u>			
	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1.8E+10	- 3.332	- 22.059

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

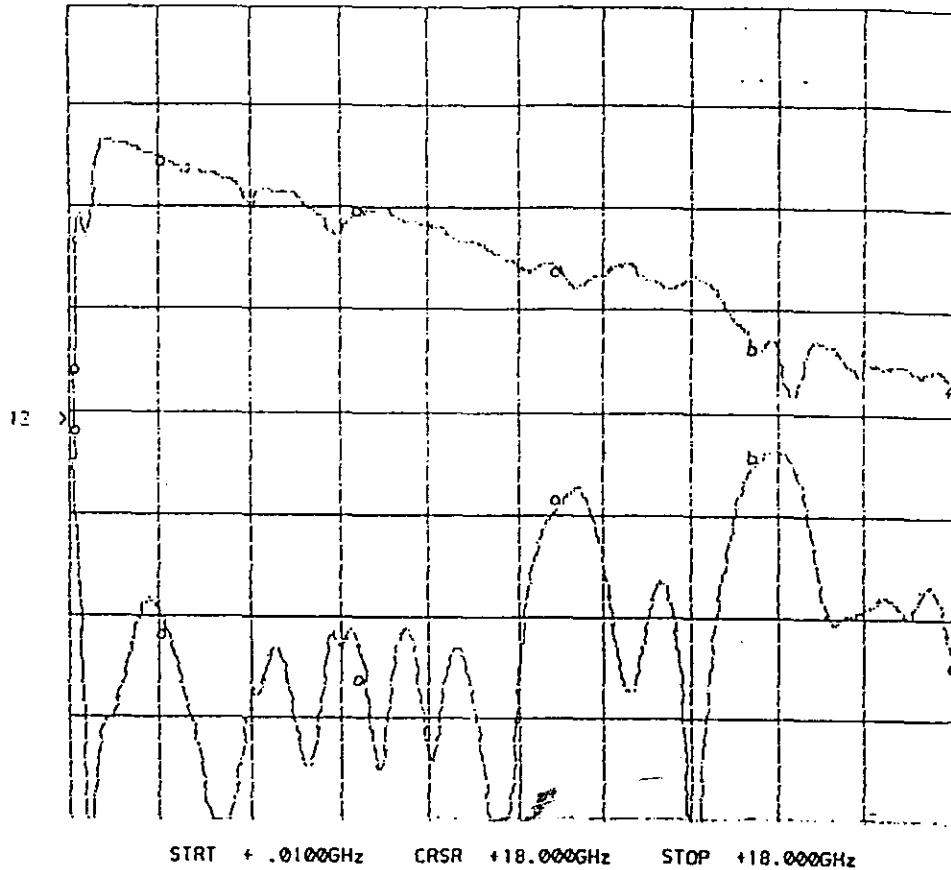


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J7

CH1: A -M - 3.28 dB CH2: B -M - 22.08 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 3.617	- 7.375
2	1.9889E+09	- 1.014	- 20.444
3	5.991674E+09	- 1.503	- 22.553
4	9.994452E+09	- 2.085	- 13.731
act	1.399723E+10	- 2.843	- 11.627

Cursors

1	1.8E+10	- 3.250	- 22.037
---	---------	---------	----------

JUNE 1, 1998

PAGE 15

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

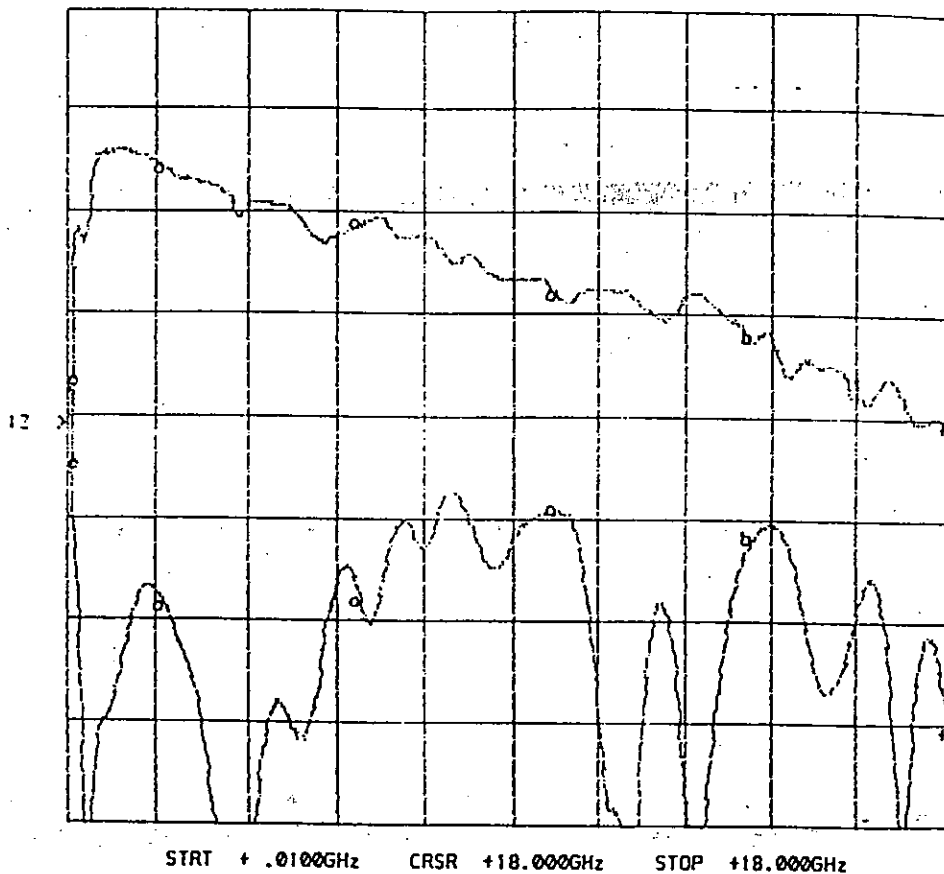


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

INSERTION LOSS & RETURN LOSS
 J1 TO J8

CH1: A -M - 3.61 dB CH2: B -M - 25.02 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
<u>No.</u>	<u>Frequency (Hz)</u>	<u>Chan. 1 (dB)</u>	<u>Chan. 2 (dB)</u>
1	1E+07	- 3.996	- 7.622
2	1.9889E+09	- 1.053	- 18.872
3	5.991674E+09	- 1.595	- 18.581
4	9.994452E+09	- 2.277	- 14.044
act	1.399723E+10	- 2.700	- 15.340

<u>Cursors</u>			
<u>1</u>	<u>Frequency (Hz)</u>	<u>Chan. 1 (dB)</u>	<u>Chan. 2 (dB)</u>
1	1.0E+10	- 3.585	- 25.036

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

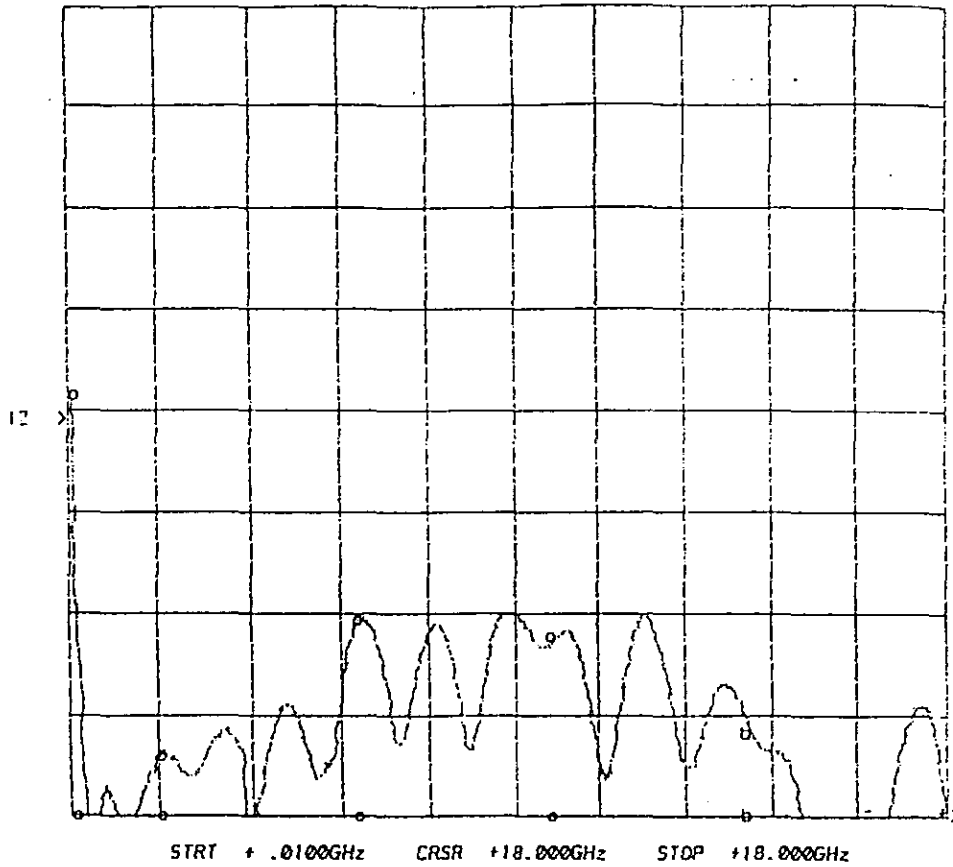


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

OFF-ARM TERMINATION
 J1-J2

CH1: A -M - 45.48 dB CH2: B -M - 31.53 dB
 1.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



<u>Markers</u>			
No.	Frequency (Hz)	Chan. 1 (dB)	Chan. 2 (dB)
1	1E+07	- 43.169	- 7.853
2	1.9889E+09	- 45.273	- 26.525
3	5.991674E+09	- 44.158	- 19.691
4	9.994452E+09	- 48.481	- 20.600
act	1.399723E+10	- 43.499	- 25.382
<u>Cursors</u>			
1	1.0E+10	- 45.240	- 31.815

JUNE 1, 1998

PAGE 17

SUMMARY TEST DATA

SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



SERIAL NUMBER

: 7MS60525

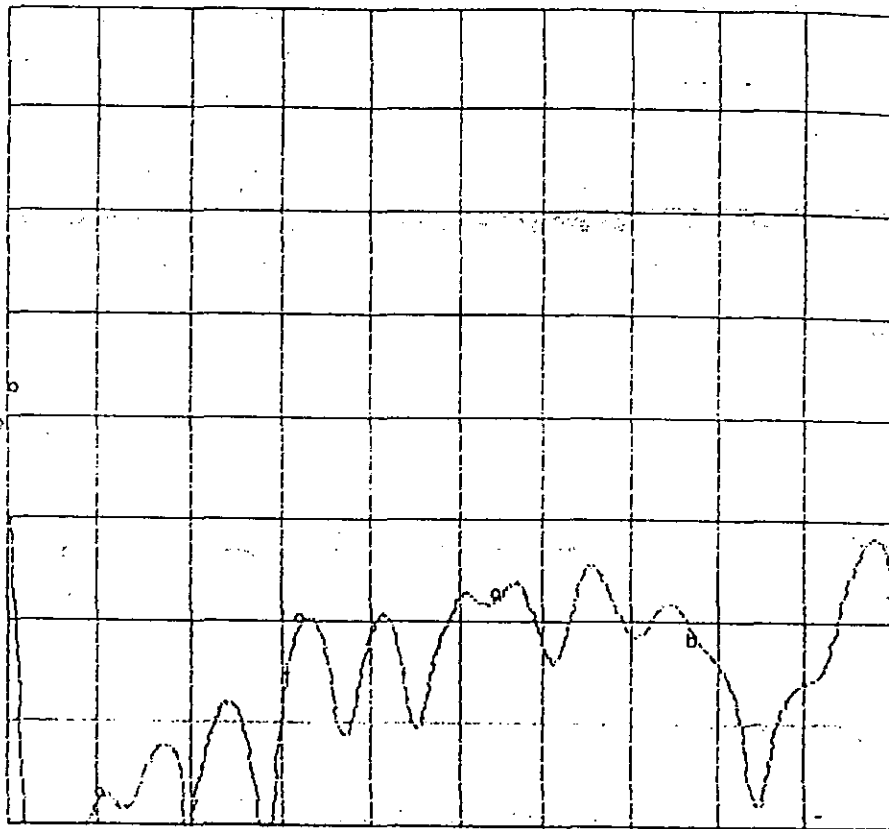
TECHNICIAN

: R. AFABLE

OFF-ARM TERMINATION

J1-J3

CH2: B -H - 18.25 dB
 5.0 dB/ REF - 9.54 dB



STRT +.0100GHz CRSR +18.000GHz STOP +18.000GHz

Markers

No.	Frequency [Hz]	Chan. 2 (dB)
1	1E+07	- 7.886
2	1.9869E+09	- 28.013
3	5.991674E+09	- 19.262
4	9.994452E+09	- 18.103
act	1.399723E+10	- 20.460

Cursors

1	1.8E+10	- 18.230
---	---------	----------

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

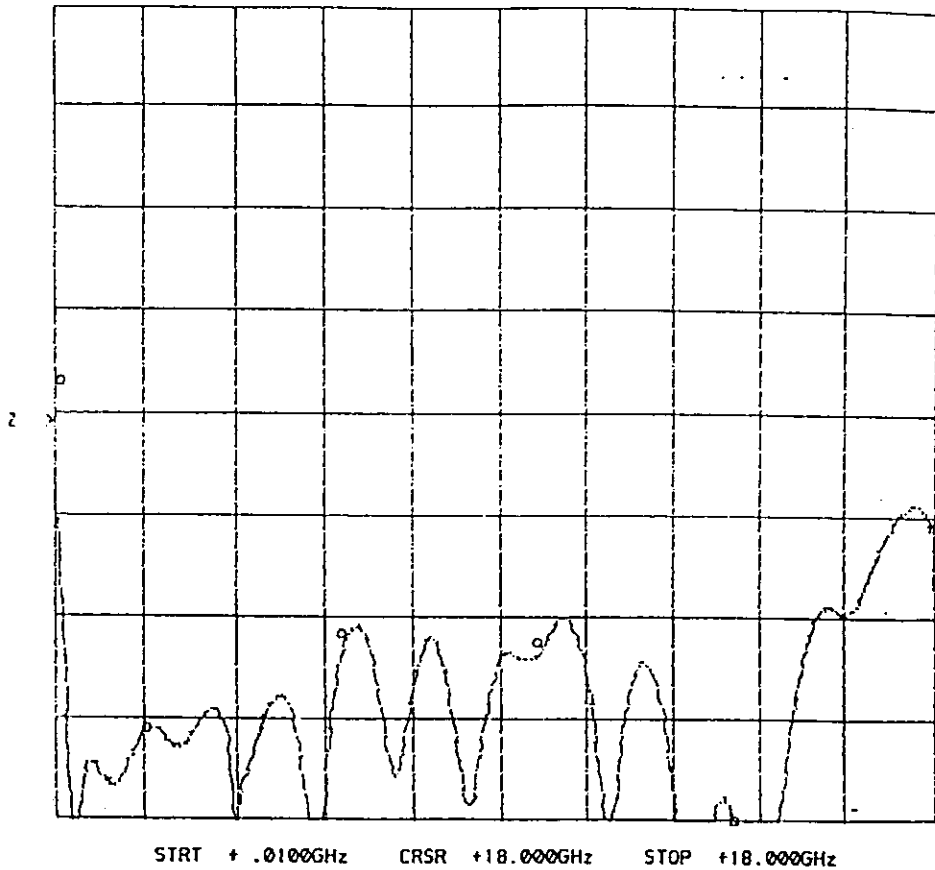


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

OFF-ARM TERMINATION
 J1-J4

CH2: B -M - 14.95 dB
 5.0 dB/ REF - 9.54 dB



<u>Markers</u>		
No.	Frequency (Hz)	Chan. 2 (dB)
1	1E+07	- 8.226
2	1.9889E+09	- 24.954
3	5.991674E+09	- 20.257
4	9.994452E+09	- 20.751
act	1.399723E+10	- 31.595
<u>Cursors</u>		
1	1.8E+10	- 14.967

JUNE 1, 1998

SUMMARY TEST DATA

SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



SERIAL NUMBER

: 7MS60525

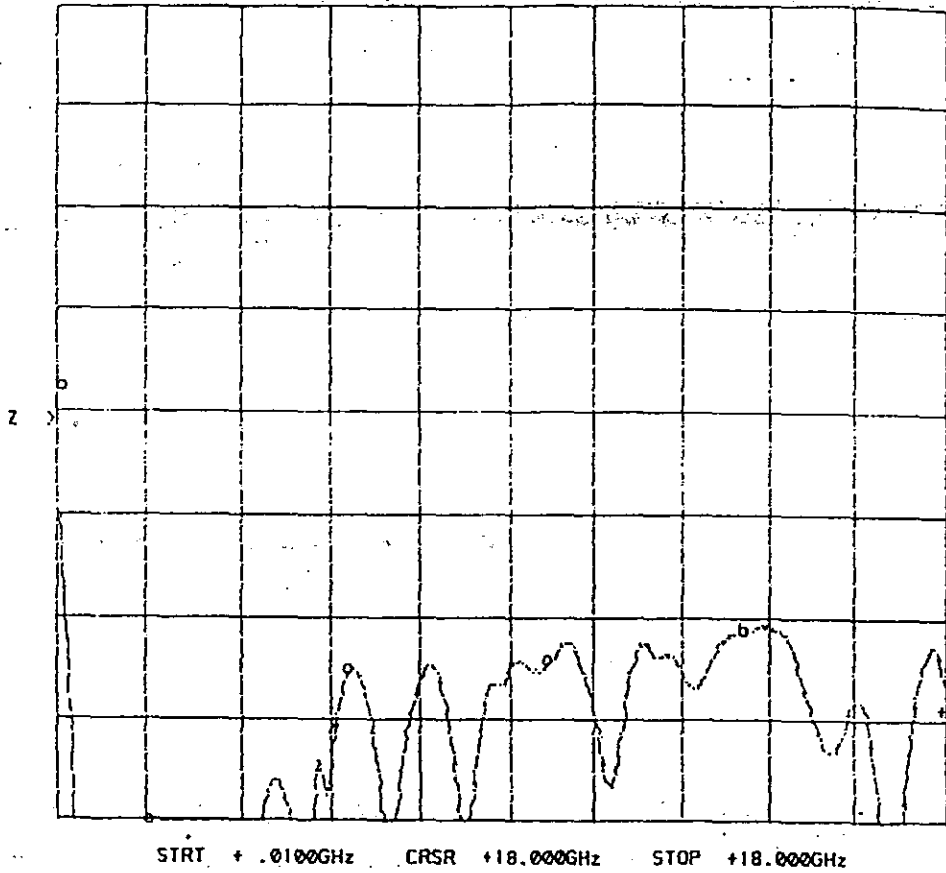
TECHNICIAN

: R. AFABLE

OFF-ARM TERMINATION

J1-J5

CHZ: B -M - 24.14 dB
5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 2 (dB)
1	1E+07	- 7.968
2	1.9889E+09	- 31.057
3	5.991674E+09	- 22.135
4	9.994452E+09	- 21.427
act	1.399723E+10	- 20.037

Cursors

1	1.8E+10	- 24.135
---	---------	----------

JUNE 1, 1998

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

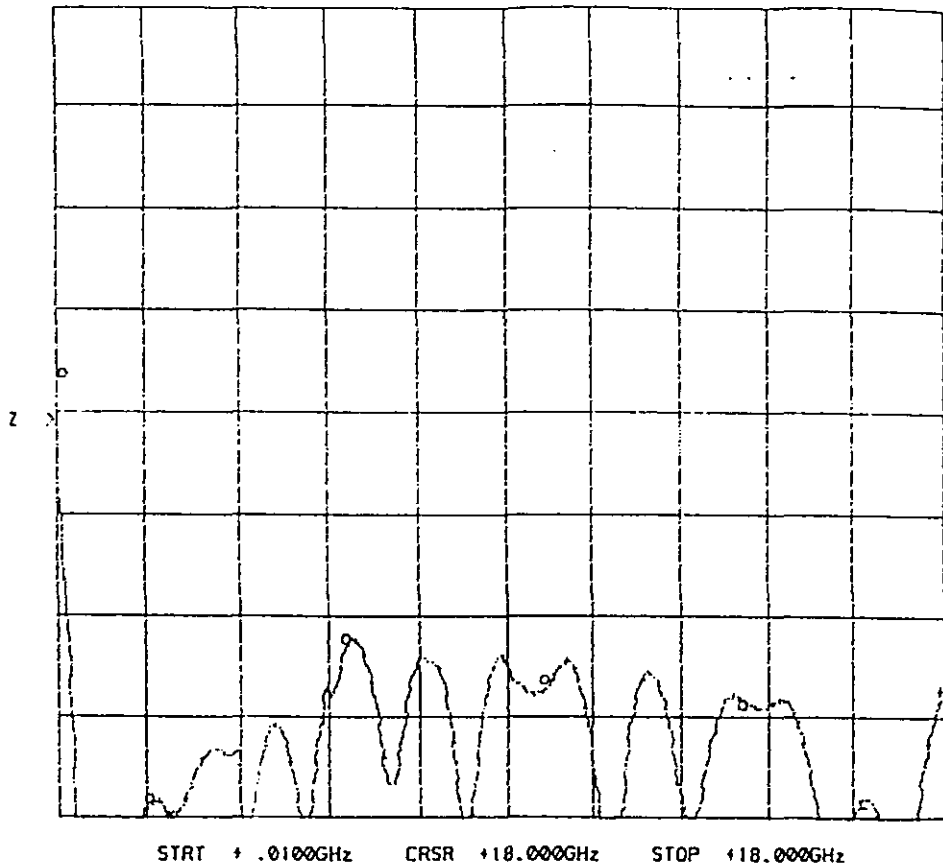


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

OFF-ARM TERMINATION
 J1-J6

CHZ: 8 -M - 23.38 dB
 5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 2 (dB)
1	1E+07	- 7.292
2	1.9889E+09	- 28.738
3	5.991674E+09	- 20.614
4	9.994452E+09	- 22.509
act	1.399723E+10	- 23.822

Cursors

1	1.8E+10	- 23.349
---	---------	----------

JUNE 1, 1998

SUMMARY TEST DATA

SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

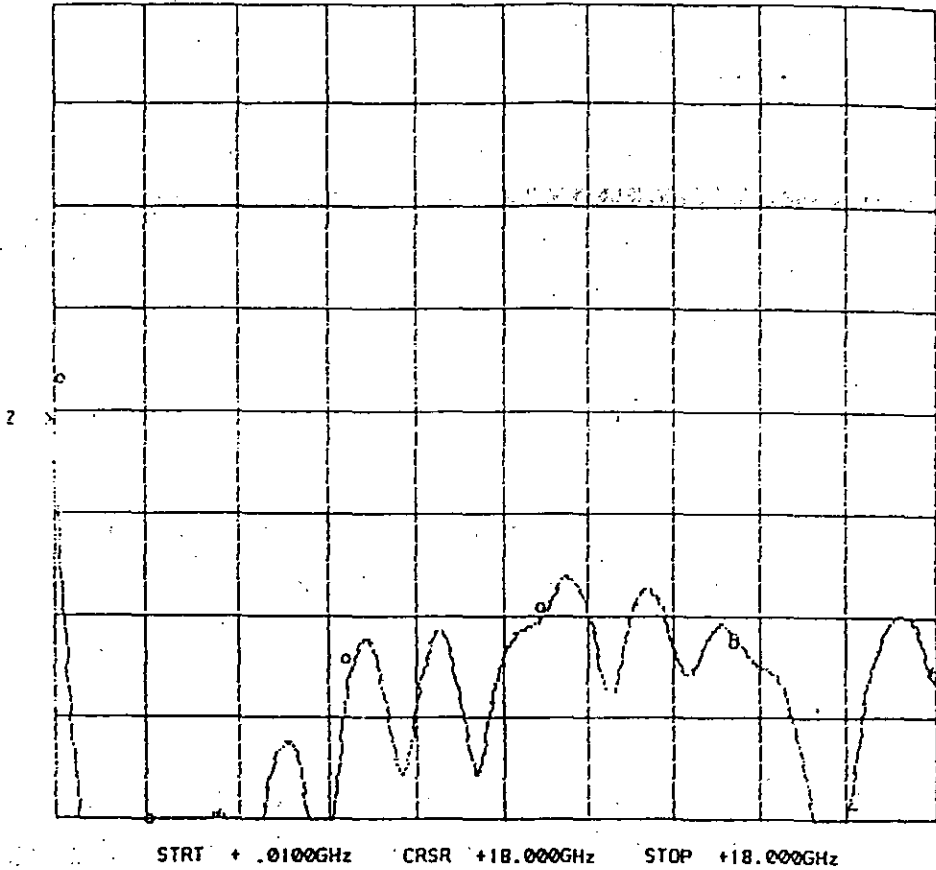


SERIAL NUMBER
TECHNICIAN

: 7MS60525
: R. AFABLE

OFF-ARM TERMINATION
J1-J7

CHZ: B -H - 22.29 dB
5.0 dB/ REF - 9.54 dB



Markers

No.	Frequency (Hz)	Chan. 2 (dB)
1	1E+07	- 7.545
2	1.9889E+09	- 34.040
3	5.991674E+09	- 21.663
4	9.994452E+09	- 18.935
act	1.393723E+10	- 20.878

Cursors

1	1.8E+10	- 22.273
---	---------	----------

JUNE 1, 1998

PAGE 22

SUMMARY TEST DATA
 SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

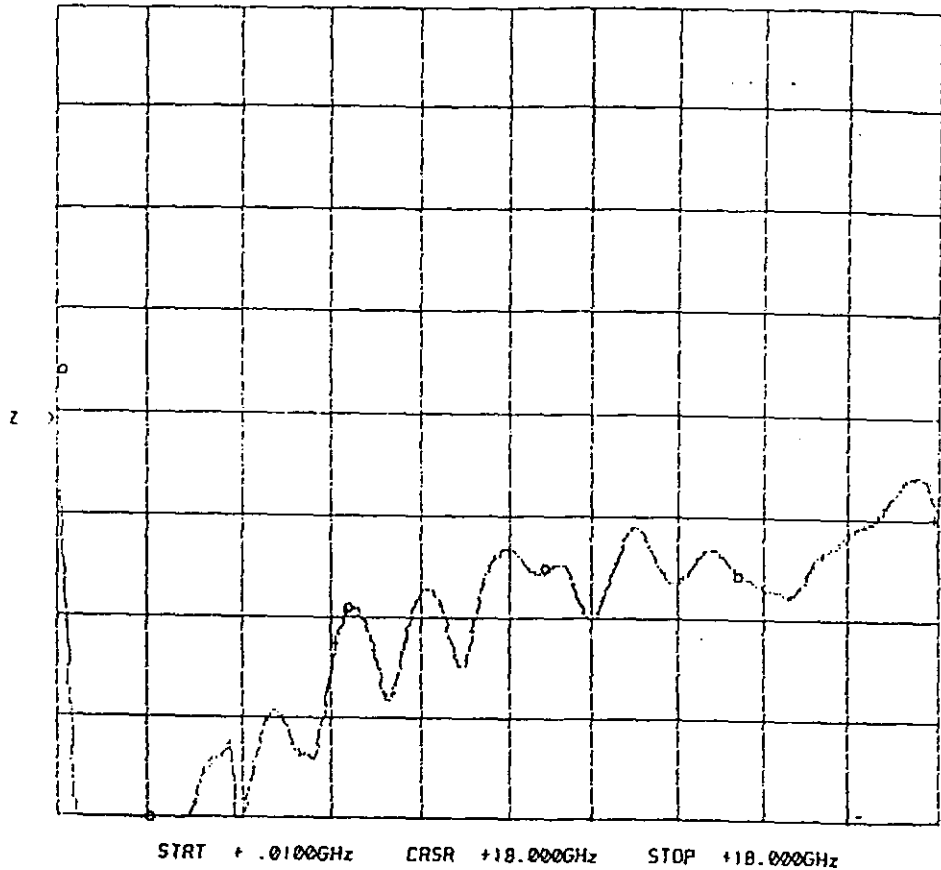


SERIAL NUMBER
 TECHNICIAN

: 7MS60525
 : R. AFABLE

OFF-ARM TERMINATION
 J1-J8

CH2: B -n - 14.51 dB
 5.0 dB/ REF - 9.54 dB



<u>Markers</u>		
<u>No.</u>	<u>Frequency (Hz)</u>	<u>Chan. 2 (dB)</u>
1	1E+07	- 7.298
2	1.9889E+09	- 30.277
3	5.991674E+09	- 19.048
4	9.994452E+09	- 16.972
act	1.399723E+10	- 17.433

<u>Cursors</u>		
<u>No.</u>	<u>Frequency (Hz)</u>	<u>Chan. 2 (dB)</u>
1	1.8E+10	- 14.527

JUNE 1, 1998

SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



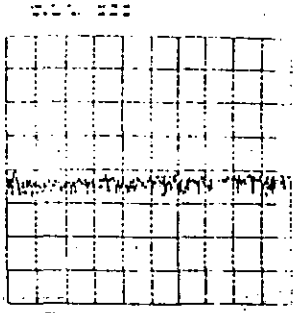
SERIAL NUMBER
TECHNICIAN

: 7MS60525
: R. AFABLE

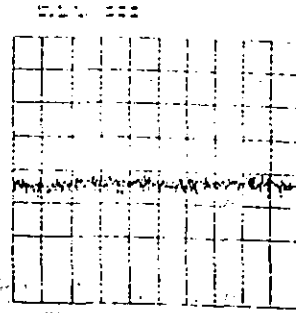
ISOLATION

AS MEASURED ON A NETWORK ANALYSER

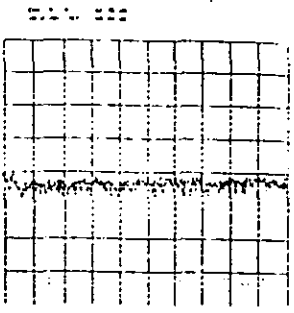
J1-J2



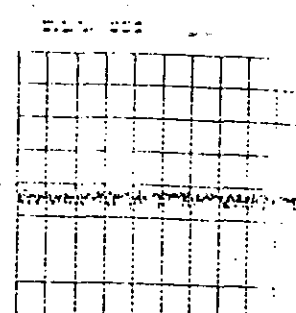
J1-J3



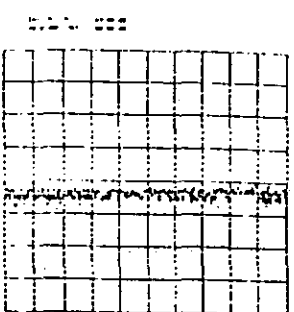
J1-J4



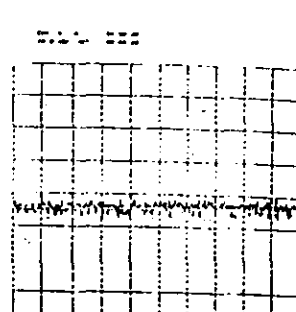
J1-J5



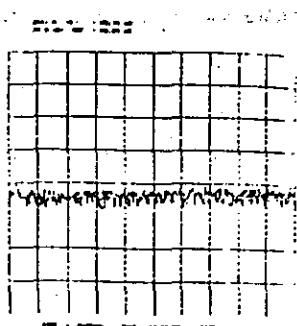
J1-J6



J1-J7



J1-J8



JUNE 1, 1998

PAGE 24

SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



SERIAL NUMBER
TECHNICIAN

: 7MS60525
: R. AFABLE

ISOLATION
ISOLATION AS MEASURED ON A SPECTRUM ANALYSES

J1 (COMMON ARM) TO:

	J2	J3	J4	J5	J6	J7	J8
20 MHz	78 dB	71 dB	98 dB	98 dB	96 dB	98 dB	82 dB
50 MHz	68 dB	68 dB	83 dB	78 dB	87 dB	98 dB	74 dB
500 MHz	64 dB	63 dB	66 dB	66 dB	76 dB	78 dB	66 dB
2.0 GHz	91 dB	94 dB	98 dB	98 dB	98 dB	98 dB	94 dB
4.0 GHz	92 dB	92 dB	94 dB	94 dB	94 dB	92 dB	90 dB
6.0 GHz	80 dB	88 dB	90 dB	95 dB	94 dB	96 dB	95 dB
8.0 GHz	74 dB	88 dB	88 dB	86 dB	84 dB	88 dB	88 dB
10.0 GHz	79 dB	87 dB	84 dB	89 dB	89 dB	88 dB	84 dB
12.0 GHz	74 dB	76 dB	83 dB	86 dB	85 dB	81 dB	82 dB
14.0 GHz	80 dB	80 dB	80 dB	84 dB	80 dB	85 dB	76 dB
16.0 GHz	79 dB	72 dB	76 dB	72 dB	78 dB	75 dB	76 dB
18.0 GHz	74 dB	76 dB	76 dB	76 dB	76 dB	76 dB	78 dB

JUNE 1, 1998

SUMMARY TEST DATA

SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



SERIAL NUMBER

: 7MS60525

TECHNICIAN

: R. AFABLE

SWITCHING SPEED

TYPICAL FOR ALL ARMS

"RISE/FALL" TIME: 10%RF TO 90%RF & 90%RF TO 10%RF

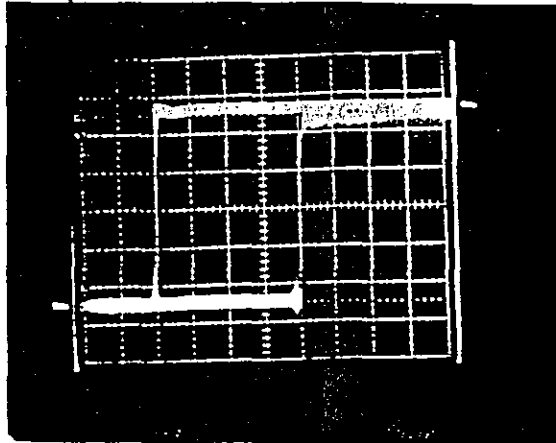
"ON/OFF" TIME: 50%TTL TO 90%RF OR 10%RF

"ON" 80nS, "RISE" 5nS

HORIZONTAL SCALE:
20nS/DIVISION

20nS/div. SWN-1170-7DT-0048

VERTICAL SCALE:
5mV/DIVISION



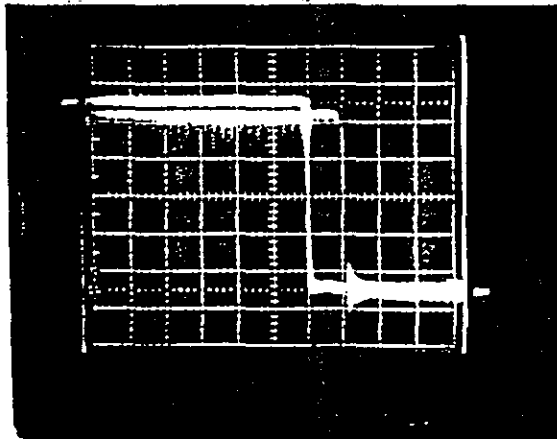
5mV/div. (VERTICAL SCALE)

"OFF" 25nS, "FALL" 10nS

HORIZONTAL SCALE:
20nS/DIVISION

20nS/div. SWN-1170-7DT-0048

VERTICAL SCALE:
5mV/DIVISION



5mV/div. (VERTICAL SCALE)

JUNE 1, 1998

SUMMARY TEST DATA
SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



SERIAL NUMBER
TECHNICIAN

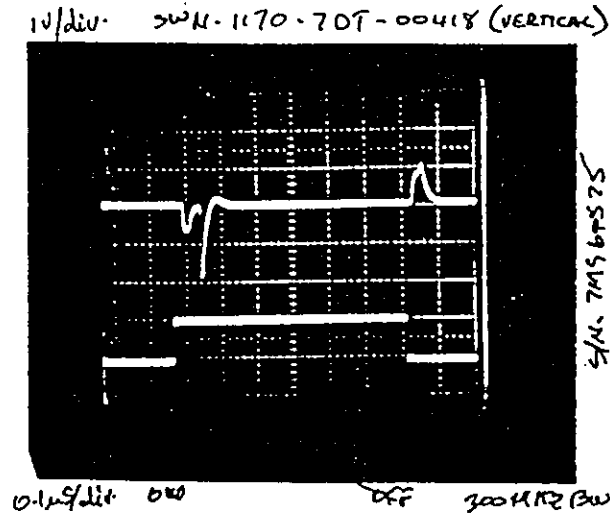
: 7MS60525
: R. AFABLE

VIDEO TRANSIENTS
TYPICAL FOR ALL ARMS

AS MEASURED IN A
300MHz BANDWIDTH

HORIZONTAL SCALE:
0.1μs/DIVISION

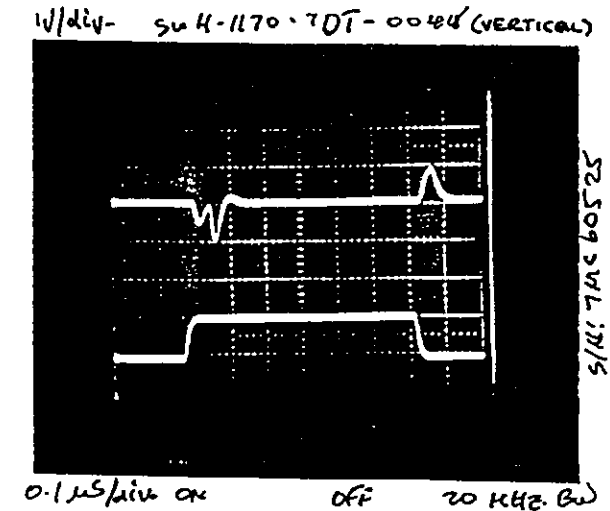
VERTICAL SCALE:
1.0 V/DIVISION



AS MEASURED IN A
20MHz BANDWIDTH

HORIZONTAL SCALE:
0.1μs/DIVISION

VERTICAL SCALE:
1.0 V/DIVISION



JUNE 1, 1998