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# PIN DIODE & SOLID STATE SWITCHES (LATEST DEVELOPMENT)

### SECTION

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### **PRODUCT DESCRIPTIONS**

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:

**RADIAL MULTI-THROW, SPNT** 

REFLECTIVE/ABSORPTIVE: (N = 3, 4, 5, 6 & 7, <u>SWN</u> SERIES)

3.0

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>

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>

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### SECTION

4.0 RADIAL MULTI-THROW, SPNT **REFLECTIVE/ABSORPTIVE:** N = 3, 4, 5, 6, 7 & 8, SWN (1<sup>1</sup>/<sub>4</sub>" DIA)AND MSR (1 1/4" DIA) SERIES

### **PRODUCT DESCRIPTIONS**

DATA SHEETS ON 0.5 TO 18.0 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 (11/2"DIA) AND MSR (1 1/2" DIA) SERIES, September 10, 1997

5.0 **REFLECTIVE/ABSORPTIVE:** (N = 3, 4, 5, 6, 7, 8, 9, 10, 16 & 32,MSN & MSNC (COMPACT) SERIES)

RECTANGULAR MULTI-THROW, SPNT 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, RECTANGULAR, REFLECTIVE AND ABSORPTIVE MULTI-THROW SOLID-STATE SWITCHES (SP3T, SP4T, SP5T, SP6T, SP7T, SP8T, SP10T, SP12T, SP16T, & SP32T), MSN AND MSNC (COMPACT) SERIES, <u>August 15, 1997</u>

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

### SECTION

6.0 SWN & SW SERIES: (10 MHz TO 20 GHz)

## **PRODUCT DESCRIPTIONS**

- 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: • SPST - REFLECTIVE
 (10 MHz TO 20 GHz) NEW PRODUCT DEVELOPMENTS AUGUST 10, 1993
 • 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

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### SECTION

### **PRODUCT DESCRIPTIONS**

- 7.0 PIN DIODE & SOLID STATE SWITCHES: • SP7T - REFLECTIVE (10 MHz TO 20 GHz) **NEW PRODUCT DEVELOPMENTS** AUGUST 10, 1993 (CONTINUED)
- - SP7T NON-REFLECTIVE/ABSORPTIVE
  - SP8T NON-REFLECTIVE/ABSORPTIVE (ALSO AVAILABLE REFLECTIVE)
  - TRANSFER SWITCHES

8.0 **SWITCHED FILTER BANKS:** 

**SP8T PIN DIODE SWITCH:** 

9.0

ALL ABOVE AMC RECTANGULAR

SWITCHES CAN BE USED FOR CUSTOM

**DESIGNED SWITCHED FILTER BANKS** 

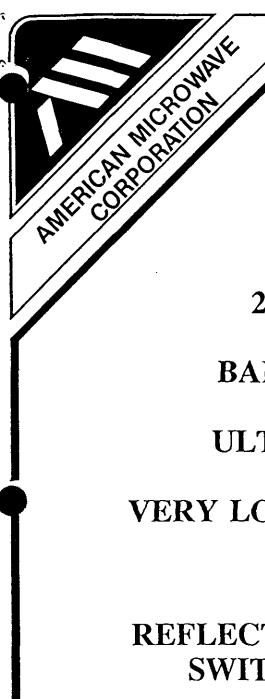
(PLEASE CONTACT FACTORY, TEL: 301-662-4700, FAX: 301-662-4938)

TEST DATA ON 10 MHz TO 2 Ghz(10MHz TO 18 GHz ALSO AVALABLE), LOW LOSS, HIGH ISOLATION, ABSORPTIVE & REFLECTIVE SP8T PIN DIODE SWITCHES,

May 29, 1998

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** June 1, 1998



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

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



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# **COMPARISON CHARTS**

## OF SEVEN NEW REFLECTIVE SPST PIN DIODE SWITCH/MODULATORS

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•	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-1DR-ECL-GAKO-LVT REFLECTIVE, 2.0 TO 18.0 GIL, LOW LOSS, LOW VIDEO TRANSIENT(L/C) 54S-ULTRA INGII SPEED, ECL LOGIC SEST PIN DIODE SWITCH
- SWN-AGRA-IDR-TTL-CAKI-LVT REFLECTIVE, 2.0 TO 18.0 GIL, LOW LOSS, LOW VIDEO TRANSFENT(1/C) 748-ULTRA HIGH SPEED,TTL LOGIC SPST PIN DIODE SWITCH
- SWN-AGKA-IDR-PTTL-GAK2-LVT REFTECTIVE, 2.0 TO 18.0 GHz, SINGLE SUPPLY, LOW LOSS, LOW VIDEO TRANSIENT(L/C), 10-S-ULTRA [IIGH SPEED, TTL LOGIC, SENT PIN DIODE SWITCH
- SWN-AGRA-IDR-ECL-GAK3-LVT
   RFFIFCTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(I/C)
   555-ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-ECL-GAK3P-LVT
   RETERCTIVE, 2.0 TO 18.0 GHz, LOW LOSS, LOW VIDEO TRANSIENT(L/C)
   SS-OLTRA RIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-TTL-GAX-LVT REFLECTIVE, 2.0 TO 18.0 GHz, LOW LOSS, IMS-ULTRA IIIGUI SPTED, LOW VIDEO TRANSIENTS(L/C) SPST PIN DIODE SWITCH
- SWN-AGRA-IDR-PTTL-GAX-LVT
   RETEXTIVE, 2.0 TO 18.0 GHL, SINGLE SUPPLY, 1/OW 1/X8S, 1/0W VIED TRANSIENTS(L/C), 10=S-ULTRA HIGH SIPPED SET 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	-	5	4	9	ω	10	12	14	16	18
SWN-AGRA-1DR-ECL-GAKO				0.56	0.51	0.53	0.56	0.88	0.69	66.0	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	1			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**

SOLATION VS FREQUENCY A COMPARISON OF SEVEN NEW SPST SWITCHES

FREQUENCY IN GHZ	0.5	0.8	-	2	4	e	ω	10	12	14	16	-1 8
SWN-AGRA-1DR-ECL-GAK0	50	54	છ	88	95	8	8	8	8	86	84	82
SWN-AGRA-1DR-TTL-GAK1	40	38	44	72	8	96	82	8	8	86	84	82
SWN-AGRA-1DR-PTTL-GAK2	50	52	00	86	94	94	92	8	8	88	84	82
SWN-AGRA-1DR-ECL-GAK3	50	51	58	86	94	96	92	8	6	86	80	82
SWN-AGRA-1DR-ECL-GAK3P	50	52	62	88	94	8	94	62	88	86	82	80
SWN-AGRA-1DR-TTL-GAX			2	94	8	8	88	78	80	78	72	2
SWN-AGRA-1DR-PTTL-GAX			76	g	88	8	86	76	72	78	72	2

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

FREQUENCY IS SHOWN-GHZ ISOLATION AS MEASURED IN dB



# **RETURN LOSS vs FREQUENCY**

RETURN LOSS vs FREQUENCY

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

\*\*NEW DESIGNS BY A, K, GORWARA\*\*

FREQUENCY IS SHOWN-GHZ RETURN LOSS MEASURED IN dB



# SWITCHING SPEED

PAGE: 6

SWITCHING SPEED

1.	<b>[</b>	· · · · · · · · · · · · · · · · · · ·				<u>~</u>		
	OFF	ß	2	З	ß	S	10	ω
SWITCHES	NO	5	7	10	Q	Ø	10	15
EN NEW SPST (	FALL	-	F	-	<b>*</b> -*	4-	N	5
COMPARISON OF SEVEN NEW SPST SWITCHES	RISE	-	-	-		-	N	3
A COMPAF	SWITCHING SPEED IN nS	SWN-AGRA-1DR-ECL-GAK0	SWN-AGRA-1DR-TTL-GAK1	SWN-AGRA-1DR-PTTL-GAK2	SWN-AGRA-1DR-ECL-GAK3	SWN-AGRA-1DR-ECL-GAK3P	SWN-AGRA-1DR-TTL-GAX	SWN-AGRA-1DR-PTTL-GAX

\*\* NEW DESIGNS BY A. K. GORWARA\*\* SWITCHING SPEED AS MESURED IN NANOSECONDS

**VIDEO TRANSIENTS** 

•



# 300 350 235 175 175 130 A COMPARISON OF SEVEN NEW SPST SWITCHES 100 275 135 80 5 15 2 20 2 ഗ ŝ SWN-AGRA-1DR-ECL-GAK3P SWN-AGRA-1DR-PTTL-GAK2 SWN-AGRA-1DR-ECL-GAK0 SWN-AGRA-1DR-ECL-GAK3 SWN-AGRA-1DR-TTL-GAK1 SWN-AGRA-1DR-PTTL-GAX SWN-AGRA-1DR-TTL-GAX **BANDWIDTH IN MHz**

# VIDEO TRANSIENTS

VIDEO TRANSIENTS MEASURED IN MILLIVOLTS PEAK-PEAK



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### SUMMARY TEST DATA COMPARISON CHARTS PAGE : 8

# **MECHANCIAL OUTLINES**

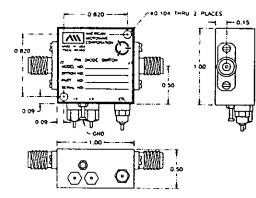
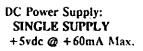


Figure 1. SWN-AGRA-1DR-TTL-GAK1-LVT SWN-AGRA-1DR-TTL-GAX-LVT

.

±5vdc @ ±60mA Max.

**DC Power Supply:** 



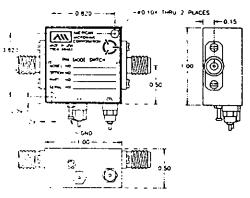


Figure 2. SWN-AGRA-1DR-PTTL-GAK2-LVT SWN-AGRA-1DR-PTTL-GAX-LVT

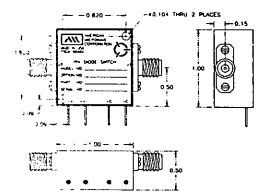


Figure 3. SWN-AGRA-1DR-ECL-GAK0-LVT SWN-AGRA-1DR-ECL-GAK3-LVT SWN-AGRA-1DR-ECL-GAK3P-LVT

DC Power Supply: ±5vdc @ ±80mA Max.



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**

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



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

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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 GILZ, LOW LOSS, LOW VIDEO TRANSIENTS(L/C), & ULTRA HIGH SPEED, ECL LOGIC SPST PIN DIODE SWITCH
- SWN-1TDR-ARG-LVT REFLECTIVE, 1.0 TO 18.0 GIL, VERY LOW VIDEO TRANSIENTS (L/C), 10aS-ULTRA HIGH SPEED, HIGH ISOLATION SPST PIN DIODE SWITCH
- SWN-0118-1DT-250
   ABSORPTIVE, 10 MILE TO 18 GHZ, LOW LOSS, STST PIN DIODE SWITCH
- SWN-WSP-1DR-118-HPM REFLECTIVE, 0.5 TO 18.0 GHz, MINIATURE, LOW LOSS SPST PIN DIODE SWITCH
- SWN-WSP-IDR-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 GIL, LOW VIDEO TRANSIENTS(R/C), VERY LOW LOSS, 5005-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, 8aS HIGH SPEED SPST PIN DIODE SWITCH
- SWN-AKG-1DR REFLECTIVE, 0.5 TO 18.0 G1(z, 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, O.S 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>KRA</u> - <u>1</u> <u>D</u> <u>R</u> - <u>FCL</u> - <u>12X</u> - <u>LVT</u> <u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u>
  - 1. SWitch
  - 2. <u>N</u>ew
  - 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** 



A COMPARISON OF SPST SWITCHES

FREQUENCY	0.1	0.2	0.3	0.5	0.8	-	2	4	Q	ø	9	12	14	16	18
SWS-0518-1DR-HM				-			1.2	1.5		2					2.8
SWN-RRA-1 DR-ECL-LVT	 	 	   	 		1.33	0.76	0.89	0.89	1.19	1.43	1.44	1.98	2.11	2.33
SWN-1TDR-ARG-LVT		   	   		     	•				1 4	1.2	1.6	1.77	2.2	1.97
SWN-01 18-1 DT-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	6C 0	0.51	0.6	0.89	1,3	-	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

# **INSERTION LOSS vs FREQUENCY**

SEPTEMBER 10, 1995

A REVIEW OF NEW DESIGNS BY A K, GORWARA

A ANS PREERION LOSS MEASUREMENT OF AD



A COMPARISON OF SPST SWITCHES

# **ISOLATION vs FREQUENCY**

			IS01	-ATIC	N NC	s FRI	ISOLATION vs FREQUENCY	NO.	~				ţ	1	
FREQUENCY	0.1	0.2	0.3	0.5	0.8	-	2	4	Q	8	10	12	4	16	18
SWS-0518-1 DR-HM				60			70			85	_	-			80
SWN-RRA-1DR-ECL-LVT	!	i 				00	70	72	74	82	88	84	80	80	80
SWN-11DR-ARG-LVT						53	64	96		<u>9</u> 8		68		82	68
SWN-0118-1DT-250	47			66			95	100	100	1 00		92			60
SWN-WSP-1DR-HPM				66		74				84		81			74
SWN-WSP-1DR-HPM-LVT				66		74				<b>B</b> 4		81			74
、SWN-118-1DR-HPX	72	68	64	62	64	68	84	06	06	82	74	80	80	80	70
SWN-0518-1DR-12X-LVT	48	43	42	44	54	61	78	90	06	90	06	85	84	80	80
SWN-0518-1DR-12X	46			53			84			98		92		•	84
SWN-AKG-1DR	65			85			104	104		102			102		6
SWN-AKG-1DR-12X	6	66	88	100	100	100	95	6	06	06	88	88	84	80	80
SWN-AKG-1DR-12X-LVT	95	100	100	100	100	1 00	95	06	06	06	90	86	84	80	80
SWN-AKG-1DT	48			67			96	104		104	103		104		00
SWN-AKG-1DT-12X	14	61	64	20	80	83	95	06	90	90	60	88	84	80	80
SWN-AKG-1DT-12X-LVT	40	38	40	46	54	60	76	06	6	90	88	84	BO	80	80
	-	-	: : 												

A REVIEW OF NEW DESIGNS BY A. K. GORWARA

> AND MEADUREMENTS OF ISOLATIOR IN 4th > ANS FREQUENCY IN GM2

**SEPTEMBER 10, 1995** 



A COMPARISON OF SPST SWITCHES

		Ê													
FREQUENCY	- -	0.2	0.3	0.5	0.8	-	~	4	9	8	0	12	14	16	18
SWS-0518-1DR-HM															9.54
SWN-RRA-1DR-ECL-LVT			 			8.87	13.86	15.79	30.24	16.9	15.4	22.76	15.86	27.62	16.71
SWN-1 TDR-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	20.44 24.93 12.77	12.77	15.94	17.4	19.16
SWN-0518-10R-12X				14.1		22.6		27.28		14,93		17.74			12.02
SWN-AKG-1DR													_		18.82
SWN-AKG-1DR-12X				17.63			16.31	16.24	15.11	27.24	23.01	16.01	24.01	24.01 26.18	18.44
SWN-AKG-1DR-12X-LVT				17.66			17.98	20.45	21.2	16.59	17.4	14.54	15.26	23.01	25.66
SWN-AKG-1DT															17.29
SWN-AKG-1DT-12X				16.94			17.72	30.69	24.25	19.53	12.56	17.86	25.14	12.26	21.15
SWN-AKG-1DT-12X-LVT			 	14.63			17.91	26.07	31.53	28.33	22.44	16.48	23.48	12.5	19.85

**SEPTEMBER 10, 1995** 

# **RETURN LOSS vs FREQUENCY**

A REVIEW OF NEW DESIGNS BY A. K. GORWARA

X AXIS MEASUREMENT OF RETURN LOSS IN dB Y AXIS FREQUENCY IN GH2



**PAGE : 7** 

	0 F F	50	თ	υ	40	20	55	35	45	10	10	10	35	10	10	25
SWITCHES	NO	50	7	9	60	40	60	40	25	10	20	12	25	20	15	35
A COMPARISON OF SPST SWITCHES SWITCHING SPEED	FALL	10	2	£	12	e	Ð	Ø	12	2	e	8	ß	С	e	2
COMPARISO swi	RISE	10	2	e	20	Q	6)	10	10	8	0	2	0	Ø	5	20
Ă	SWITCHING SPEED	SWS-0518-1DR-HM	SWN-RRA-1 DR-ECL-LVT	SWN-1TDR-ARG-LVT	SWN-0118-1DT-250	SWN-WSP-1DR-HPM	SWN-WSP-1DR-HPM-LVT	SWN-118-1DR-HPX-LVT	SWN-0518-1DR-12X-LVT	SWN-0518-1DR-12X	SWN-AKG-1DR	SWN-AKG-1DR-12X	SWN.AKG.1DR-12X-LVT	SWN-AKG-1DT	SWN-AKG-1DT-12X	SWN-AKG-1DT-12X-LVT

SEPTEMBER 10, 1995

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





A COMPARISON OF SPST SWITCHES **VIDEO TRANSIENTS** 

BANDWIDTH	50	100	300
SWS-0518-10R-HM	50		
SWN-RRA-10R-ECL-LVT	100		400
SWN-1 TDR-ARG-LVT			Ð
SWN-0118-1DT-250			1,400
SWN-WSP-1DR-HPM			600
SWN-WSP-10R-HPM-LVT			50
SWN-118-1DR-HPX-LVT	85	125	175
SWN-0518-1DR-12X-LVT			400
SWN-0518-1DR-12X			620
SWN-AKG-10R		<b>e</b>	*
SWN-AKG-10R-12X			1,800
SWN-AKG-1DR-12X-LVT	85		315
SWN-AKG-1DT			1,750
SWN-AKG-1DT-12X			2,150
SWN-AKG-1DT-12X-LVT	70		450

**SEPTEMBER 10, 1995** 

# A REVIEW OF NEW DESIGNS BY A, K. GORWARA X AXIS: MEASUREMENTS IN MILLIVOLTS(MY) PEAK TO PEAK Y AXIS: BANDWIDTH IN MHZ "NO DATA AVAILABLE ON AKG-1D OR 107"

# VIDEO TRANSIENTS

SUMMARY TEST DATA **COMPARISON CHARTS** PAGE:8





### MECHANCIAL OUTLINES

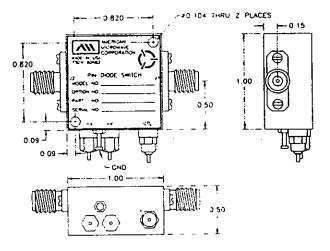


FIGURE 1. DC Power Supply : ±5vdc @ ±60mA Max.

- SWN-118-1DR-IIPX-LVT
  - SWN-0518-1DR-12X-LVT
  - SWN-0518-1DR-12X
  - SWN-AKG-1DR
  - SWN-AKG-1DR-12X
- SWN-A&G-IDR-12X-LVT
  - SWN-AKG-1DT
  - SWN-AKG-1DT-12X
- SWN-AKG-1DT-L2X-LVT
- SWN-0118-1DT-250

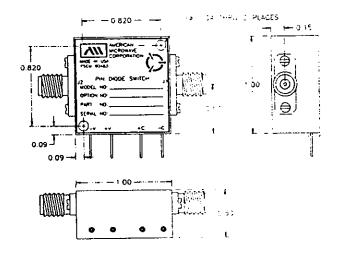


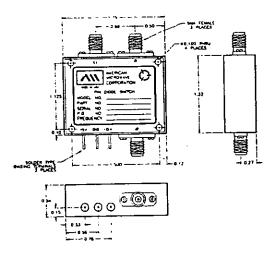
FIGURE 2. DC Power Sapply : ±5vdc @ ±80mA Max. • SWN-RRA-1DR-ECL-LVT

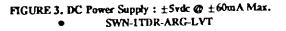
AUGUST 29, 1995



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# MECHANCIAL OUTLINES





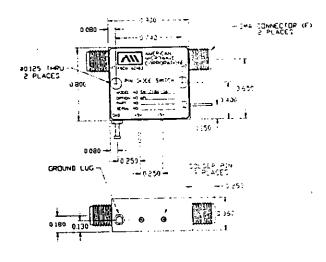
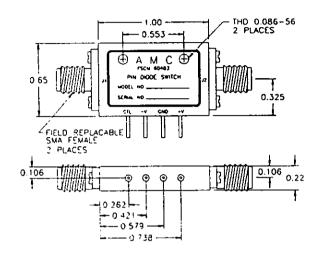


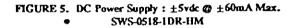
FIGURE 4. DC Power Supply : ±5vdc @ ±60mA Max. • SWN-WSP-1DR-118-IIPM

SWN-WSP-IDR-118-IIPM-LVT



# MECHANCIAL OUTLINES





AUGUST 29, 1995

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**TEST DATA** 

# ON

# MERCORPORATION I 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, AESORPTIVE, 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 GIL, 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



### NOTES:

- Performance of the SP5T, SWN-1170-5DR-HPM, is similar to that of the SWN-1170-6DR-HPM.
- Performance of the <u>High Speed Absorptive</u> 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



A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES

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# **INSERTION LOSS vs FREQUENCY**

3.28 2.04 2.45 2.84 2.93 18 2.76 2.06 2.04 2.79 2.89 . 16 2.45 1.95 1.74 14 1.95 1.67 1.91 1.98 2.01 42 1.76 1.34 1.7 5 **INSERTION LOSS vs FREQUENCY** 1.43 1.15 1.74 1.54 4.1 Ø 1.16 1.34 1.14 Ø 1.16 0.93 <u>1</u> 1.1 0.9 4 0.73 0.9 **6**.0 0.71 0.68 2 0.7 0.87 0.96 0.72 0.5 0.59 0.59 SWN-1182-7DR-12M-DEC SWN-1170-4DR-HPM SWN-1170-6DR-HPM SWN-1170-7DR-HPM SWN-1170-3DT-12X FREQUENCY

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



A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES

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# **ISOLATION vs FREQUENCY**

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



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# **RETURN LOSS vs FREQUENCY**

24.03 23.76 16.37 14.05 18.92 17.01 13.99 24.17 27.93 14.42 A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES 34.69 | 17.92 | 14.49 | 21.19 | 18.37 | 22.08 | 15.86 | 19.14 | 22.27 14.68 15.68 15.6 18 14.22 21.01 27.16 24.54 13.56 12.01 11.07 18.55 15.63 <del>1</del>6 4 17.1 11.7 <u>₽</u> ဓ 14.76 14.14 Ø œ. RETURN LOSS vs FREQUENCY 29.68 24.62 26.4 4 21.8 ¢, -0.8 15.16 22.93 20.01 26.24 13.1 0.5 0.3 0.2 0.1 SWN-1182-7DR-12M-DEC SWN-1170-4DR-HPM SWN-1170-6DR-HPM SWN-1170-7DR-HPM SWN-1170-3DT-12X FREQUENCY

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



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A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES SWITCHING SPEED	ØFF	10	35	- 20	30	33	
	NO	10	99 9	45	60	44	
	FALL	°.	4	G	4	4	
	RISE	5	4	Ø	4	N	
	SWITCHING SPEED	SWN-1170-3DT-12X	SWN-1170-4DR-HPM	SWN-1170-6DR-HPM	SWN-1170-7DR-HPM	SWN-1182-7DR-12M-DEC	

# SWITCHING SPEED

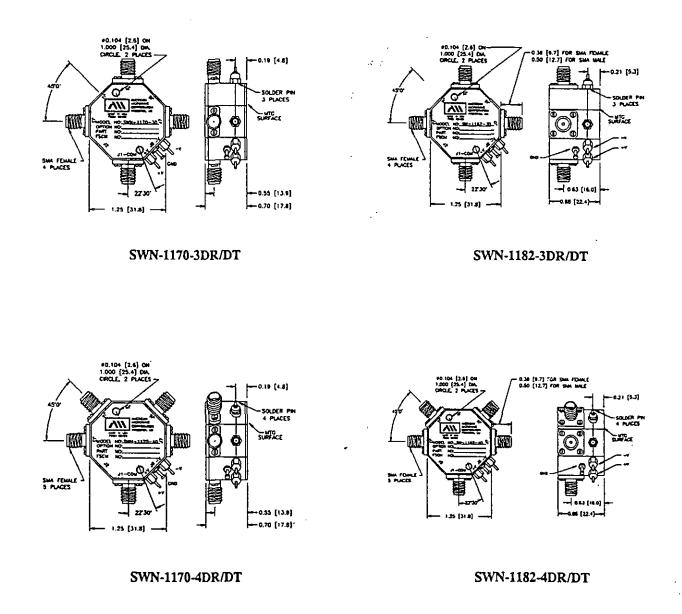
ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS SWITCHING SPEED AS MEASURED IN NANOSECONDS



### MECHANCIAL OUTLINES

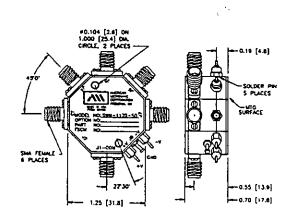
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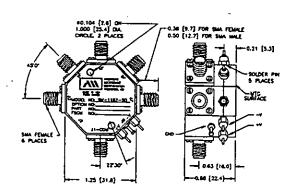
The SWN-1170 and SWN-1182 Series are Radial PIN Diode Switches which are virtually identical in mechanical outline. The Test Data shown in this report is indicative of either design as they may be used interchangably as requirements demand. The following illustrates the entire SWN-1170 & SWN-1182 series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





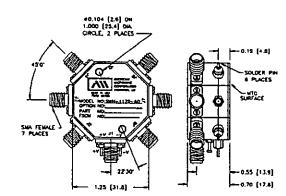
### **MECHANCIAL OUTLINES**





### SWN-1170-5DR/DT

### SWN-1182-5DR/DT



### +0.10+ [2.8] 00 1.000 [22-1] 00 0.50 [12.2] FOR SMA FDAME 0.50 [12.2] FOR SMA MALE 0.50 [12.2] FOR SMA MALE 0.50 [12.2] FOR SMA MALE 0.50 [0.2] [0.0] 0.50 [0.0] [0.0] [0.0] 0.50 [0.0] [0.0] [0.0] 0.50 [0.0] [0.0] [0.0] [0.0] [0.0] [0.0] [0.0] 0.50 [0.0]

### SWN-1170-6DR/DT

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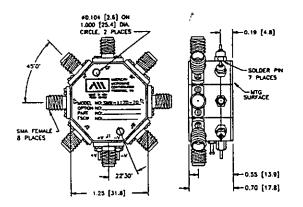
### SWN-1182-6DR/DT



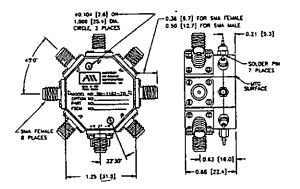
Sec. 1

### SUMMARY TEST DATA COMPARISON CHARTS PAGE : 10

### MECHANCIAL OUTLINES



SWN-1170-7DR/DT



SWN-1182-7DR/DT

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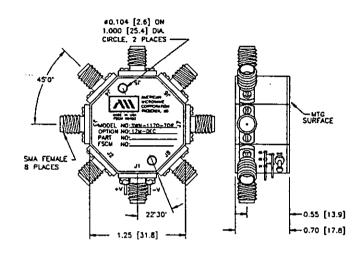
### SUMMARY TEST DATA COMPARISON CHARTS PAGE : 11

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### MECHANCIAL OUTLINES

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SWN-1170-7DR-12M-DEC

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DATA SHEETS

ON

AMERICANNOPATION 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 E-MAIL ADDRESS: AMCPMI@AOL.COM

JRH.

CK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938

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### PRODUCT DESCRIPTION

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

1.0	<u>5P3</u>	$1 = (1 \ 1/4" \ \text{Diameter x } 0.4" \ \text{Thickness}) \ \text{Reflective & Absorptive Switches} \ \dots \ \dots \ 1 \cdot 0$
	1.1	SWN-1140-3DR/DT-STANDARD with Independent Controls
	1.2	SWN-1140-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins 1-2
2.0	<u>SP3'</u>	$\Gamma = (1 \ 1/4"$ Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	2.1	SWN-1170-3DR/DT-STANDARD with Independent Controls
	2.2	SWN-1170-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins
3.0	<u>SP3'</u>	$\Gamma$ - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	3.1	SWN-1182-3DR/DT-STANDARD with Independent Controls
	3.2	SWN-1182-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins

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

4.0	<u>SP31</u>	C = (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	4.1	MSR-3DR/DT-04-STANDARD with Independent Controls
	4.2	MSR-3DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins 4-2
		<i>,</i>
5.0	<u>SP3</u>	C = (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	5.1	MSR-3DR/DT-07-STANDARD with Independent Controls
	5.2	MSR-3DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins



SECTION

#### PRODUCT DESCRIPTION

PAGE

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

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

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

9.0	<u>SP4T</u>	- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	9.1	MSR-4DR/DT-04-STANDARD with Independent Controls
	9.2	MSR-4DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins
10.0	0.0 SP4T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches	
	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



SECTION

#### PRODUCT DESCRIPTION

PAGE

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

11.0	<u>SP57</u>	<u>C - (1 1/4" Diameter x 0.4" Thickness) Reflective &amp; Absorptive Switches</u>
	11.1	SWN-1140-5DR/DT-STANDARD with Independent Controls
	11.2	SWN-1140-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins
12.0	<u>SP57</u>	'- (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	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>SP5</u> T	- (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	13.1	SWN-1182-5DR/DT-STANDARD with Independent Controls
	13.2	SWN-1182-5DR/D1-DEC-SP with 3 Bit Decoder and Solder Pins

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

14.0	<u>SP5T</u>	- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	14.1	MSR-5DR/DT-04-STANDARD with Independent Controls
	14.2	MSR-5DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins 14-2
15.0	<u>SP51</u>	- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	15.1	MSR-5DR/DT-07-STANDARD with Independent Controls
	15.2	MSR-5DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins 15-2

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

16.0	<u>SP67</u>	- (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches
	16.1	SWN-1140-6DR/DT-STANDARD with Independent Controls
	16.2	SWN-1140-6DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins
17.0	<u>SP67</u>	- (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	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>SP6</u> T	- (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	18.1	SWN-1182-6DR/DT-STANDARD with Independent Controls
	18.2	SWN-1182-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins

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

19.0	<u>SP6T</u>	- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches	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</u>	- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches	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



#### SECTION

#### PRODUCT DESCRIPTION

PAGE

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

21.0	SP7	<u>l' - (1 1/4" Diameter x 0.4" Thickness) Reflective &amp; Absorptive Switches</u>
	21.1	SWN-1140-7DR/DT-STANDARD with Independent Controls
	21.2	SWN-1140-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins
22.0	<u>SP71</u>	- (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	22.1	SWN-1170-7DR/DT-STANDARD with Independent Controls
	22.2	SWN-1170-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins 22-2
23.0	<u>SP71</u>	- (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	23.1	SWN-1182-7DR/DT-STANDARD with Independent Controls
	23.2	SWN-1182-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins

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

24.0	<u>SP71</u>	- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	24.1	MSR-7DR/DT-04-STANDARD with Independent Controls
	24.2	MSR-7DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins 24-2
25.0		<u>- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>



#### SECTION

#### PRODUCT DESCRIPTION

PAGE

### SP8T - MSR (1 1/2" DIA) SERIES

26.0	<u>SP81</u>	'- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	26.1	MSR-8DR/DT-04-STANDARD with Independent Controls
	26.2	MSR-8DR/DT-04-DEC-SP with 3 Bit Decoder and Solder Pins 26-2
27.0	<u>SP87</u>	- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	27.1	MSR-8DR/DT-07-STANDARD with Independent Controls
	27.2	MSR-8DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins 27-2



## SECTION PRODUCT DESCRIPTION PAGE 1.0 SP3T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches 1-0

1.1	SWN-1140-3DR/DT-STANDARD with Independent Controls	
1.2	SWN-1140-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	



			REVISIONS	· · ·	
SPECIFICATIONS:		ICHAE MEY.	OCOUNTRION		APPROVED
• FREQUENCY:			ORIGINAL RELEASE	8/12/97	
INSERTION LOSS: ····· · REFLECTIVE: 2.75db ABSORPTIVE: 3.75db					
• ISOLATION:	MDUNTING SURFACE	ØU.U89 IHR	U W/4-40 THD		
VSWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	P=PAINTED	LOCATED ON	ON MOUNTING SURFACE		
• SPEED:	0.40	0.020 SOLDER PIN 5 PLACES	/		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		X			
SURVIVAL POWER: I WATT CW, 10 WATTS PEAK 1 used					
CONTROL: ······· TTL LOGIC "O"=ON "1"=OFF			بصلا		
• POWER SUPPLY: +5V @ 150 mA MAX.	∖╓┵╼╾┵━╨┓	45*0'	h7/40		
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)	· V				
OPTIONS:	1 1	0.38		,—ø0.015 ×	0.100*
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			AMERICAN MICROWAVE CORPORATION PREDERICK, MO		F PIN
DEC-SP 2 BIT DECODER WITH SOLDER PIN			HADE IN USA FSCH 80483	/ Fantan	ACES
10M18 · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db At 10 MHz AND 0.5db At 18 GHz)	( · )) @   ·		ODEL NOSWN-1140-308/DI		
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		Section of the sectio			
118 · · · · · · · · 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			PART NO:	Li 🔨	
218 · · · · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 412 · · · · · · · 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)					$\mathbf{i}$
618	KLD	·^ // // //		VABLE SMA (F	
1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)	8	ľ.	J8/COLIN	4 PLACE	2S
100M20 · · · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db at 100 NHz AND \$.0db at 20 GHz)		GND . X	°0/		
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)	[[]		722.30		
801 ········	0.125 (GP)				
BO3 ····· REVERSE LOGIC "1"=ON "0"=OFF	0.127 (P)	9.1 0.5 ×			
BO4 DRIVERLESS, CURRENT CONTROLLED		Q. 10 Q. 55			
BO5······HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM WHEN APPLICABLE		$\sim$			
BOS HIGH POWER - SPECIFY CW POWER, PEAK POWER, PL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ILSE WIDTH,	$\mathbf{\mathbf{Y}}$	•		
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	STOMER				
BOB LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDWIDTH		NOTE:			
BOS LOW INSERTION LOSS VERSION			-WITH DRIVER, REFLECTIVE		
B10················Bigher isolation version B11···············0.70" Thick version			=WITH DRIVER, NON-REFLECTIVE/	BSORPTIVE	
B12					
ENVIRONMENTAL RATINGS:		CONTRACT HO.	AMERICAN MICRO	WAVE CORPOR	ATION
	ALL DIMENSIONS ARE IN INCHES			K, MARYLAND	• • • • • •
• TEMPERATURE:	TOLERANCES:	APTROVALS DATE	OUTLINE D	RAWING	
. HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020 X.XXX ±0.010	WYS 8/12/	swn-1140-3DR/	DT-STANDARI	:D
SHOCK:		ORCHART ALL A	REFLECTIVE OR NON-REL	LECTIVE/ABSO	)RPTIV
VIBRATION: MIL-STD-202F. METHOD 204D COND. B     ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		K. 13 Ale 11/7/		TATE SWITCH	
• TEMPERATURE CYCLE: ··· MIL-STD-202F, METHOD 1070 COND. A		ama A 1, 1	А 60483 1	00-4164-1	rt L
NOTE THE PROVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			JOLE N/S	(g · 1)	
HUTCH CALL IN CONTRACT TO STATE AND A STATE					01

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			REVISIONS		······································
PECIFICATIONS:		TONE NEY.	DESCRIPTION	3140	APPROVE
FREQUENCY:			ORIGINAL RELEASE	8/12/97	I .
INSERTION LOSS: · · · · · REFLECTIVE: 2.75db					
ABSORPTIVE: 3.7566	•				
9 ISOLATION:			RU W/4-40 THD		
VSWR: · · · · · · · · · · · · · · · · · · ·	GP=GOLD PLATEI	0.250 DEE	P ON MOUNTING SURFAC	E S -7	
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.	0.40	SOLDER PIN 4 PLACES	/		
POWER INPUT: ····· (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	0.075	· · · · · · · · · · · · · · · · · · ·			
SURVIVAL POWER: · · · · 1 WATT CW, 10 WATTS PEAK 1 usec		$\wedge$			
CONTROL:The LOGIC "O"=ON "1"=OFF					
POWER SUPPLY:					
-5V @ 75mA MAX.(RELECTIVE)	\[	45*0'	- 14/64		
100mA MAX.(ABSORPTNE/NON-REFLECTIVE)	V I				
PTIONS:		/ -+ 0.3B	AMERICAN S	× 0.015ھ	<b>0.100</b>
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			MICROWAVE		RF PI
DEC-SP 2 BIT DECODER WITH SOLDER PIN 10M18			HADE IN USA FISCH #0163 40	/ Emm	PLACES
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	$\overline{\mathbf{O}}$				
100M18 100 MHz TO 18 GHZ (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)			MODEL NO SWN-1140-3DR/DT		
118 I GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)		<u>1</u>	SERIAL NO	1 B	
218 · · · · · · · · · · · · · · · · · · ·			PART NO:		$\mathbf{i}$
412 ····································	L AL	$\lambda^{\circ} \mathbb{N}$			
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		$\sim N$		WABLE SMA	< <u>F</u> >
100M20	Q		JB/COMЙ	4 PLAC	-53
BY 1.5db AT 100 MHz AND 1.0db AT 20 CHz)	itearl V	GND SND			
220·······2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)					
1020					
BY 1.0db AT 2D GHz)					
BOT	0.125 (GP)	$\Delta \Delta \Delta = 1$	/22.30		
B02············-−15V POWER SUPPLIES B03··········· REVERSE LOGIC *1°=0N   °0°=0FF	0.127 (P)		1.25		
BOA DRIVERLESS, CURRENT CONTROLLED		0, Je 0, 54			
BOS ······ HIGH SPEED, TURNON/TURNOFF 25 nade MAXIMUM		9.5 9.5 S			
WHEN APPLICABLE BOB		$\setminus \vee$			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH		У			
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	STOMER				
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE			
BOS LOW INSERTION LOSS VERSION			 R=WITH DRIVER, REFLECTIVE		
BIO HIGHER ISOLATION VERSION			T=WITH DRIVER, ALFLECTIVE	ARCORPTINE	
B11		U	A THIN DRIVER, NUN-REFLECTIVE/		
		CONTRACT NO.			DATION
NVIRONMENTAL RATINCS:	ALL DIMENSIONS ARE IN INCHES		AMERICAN MICRO	K. MARYLAND	
TENPERATURE:55'C TO +85'C (OPERATING)	TOLERANCES:	APPROVALE DA			
-65°C TO +125°C (STORAGE) HUMIDITY:	X.XX ±0.020	DRAWN			_
SHOCK: MIL-STD-202F, METHOD 103B COND. B	X.XXX ±0.010	WY9 0/11	SWN-1140-3DR		
VIBRATION: MIL-STD-202F. METHC 204D COND. B		OHECKO ALLAL 11/2/	REFLECTIVE OR NON-REI		ORFIN
ALTITUDE:		asulo 11/7	SIZE FISCH HO. DWG HO.	ALL SWITCH	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A				00-4164-2	
				00-4104-2	

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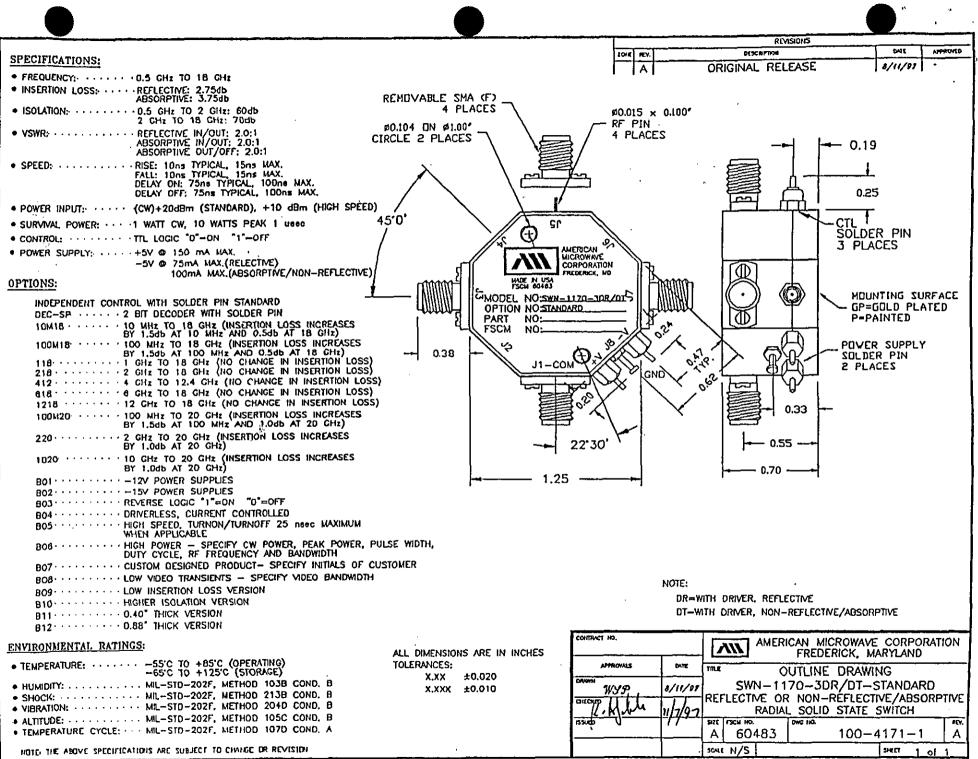
2.1	SWN-1170-3DR/DT-STANDARD with Independent Controls	2-1
2.2	SWN-1170-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins	2-2

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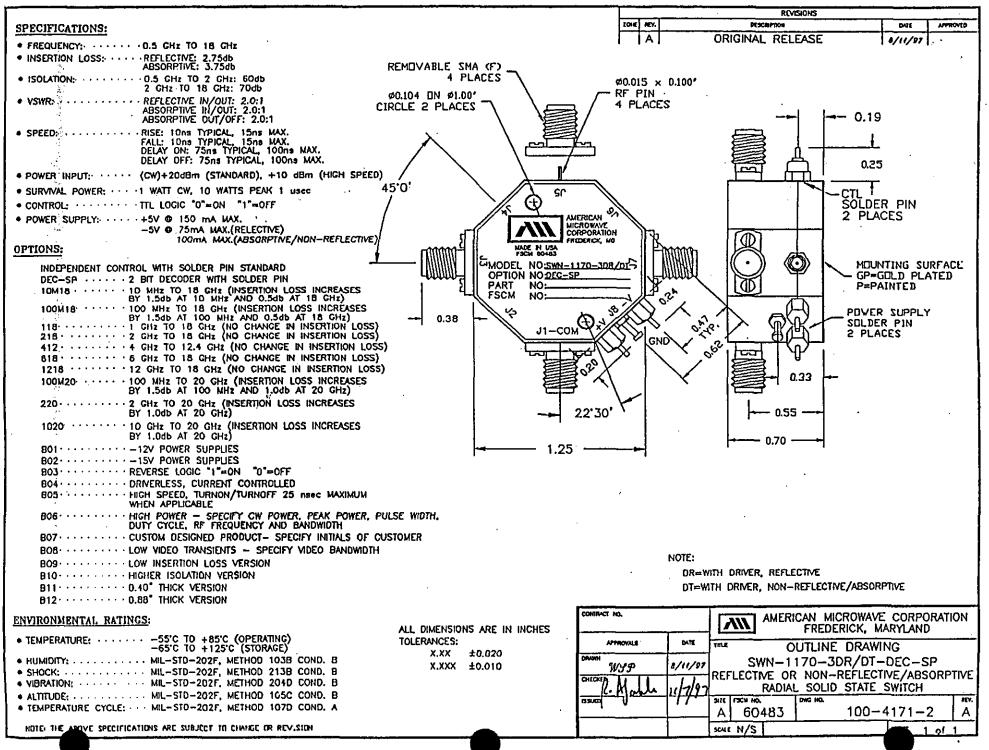
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### SECTION

#### PRODUCT DESCRIPTION

3.0	<u>SP37</u>	<b><u><b>I</b></u> - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</b>
	3.1	SWN-1182-3DR/DT-STANDARD with Independent Controls
	3.2	SWN-1182-3DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins

			REVISIONS		
SPECIFICATIONS:		ZONE NEV.	PESCRATION	1941	APPROVED
FREQUENCY: 0.5 GHz TO 18 GHz INSERTION LOSS: REFLECTIVE: 2.75db ABSORPTIVE: 3.75db			ORIGINAL RELEASE	8/11/97	-
SOLATION:					
2 CHz TO 18 GHz: 70db • VSWR: · · · · · REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1					
SPEC DISC 10- TYPICH 15- HAY JMA	ACES Ø0.104 ON CIRCLE, 2 P			0.21 ·	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED				R_	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used		4		0.25	
CONTROL:	45.0,			·····	
POWER SUPPLY: · · · +5V W ISO MA MAA				CTL	
-5V © 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)		ERICAN 0,38			
PTIONS:				3 PLACES	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		BERCH, ND			
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)	UWWW-2    OPTION NO:STANDA			MOUNTING	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz AND 0.5db AT 18 GHz)				- GP=GDLD P	
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)				P=PAINTED	
218 · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 412 · · · · 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS	s)	$\Theta $		POWER SUPPI	LY
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	J1-COM	GND		SOLDER PIN	
1218 · · · 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS 100M20 · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		$\exists \forall \forall x \land x \land$		2 PLACES	
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)			0.38	<u>-</u> •	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES					
BY 1.0db AT 2D GHz)		22.30,	0.63		
BO1 · · · · · - 12V POWER SUPPLIES BO2 · · · · · - 15V POWER SUPPLIES					
BOZ · · · · · · · · · · · · · · · · · · ·	1.25	<b>_</b> _	0.88		
BO4 · · · · · DRIVERLESS, CURRENT CONTROLLED	1.20	- I			
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE					
BOB · · · · · HIGH POWER - SPECIFY CW POWER, PEAK POWER, F	PULSE WIDTH,				
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF C	USTONER				
BOB · · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE			
809 · · · · · LOW INSERTION LOSS VERSION		NOTE		-	
B10··········BICHER ISOLATION VERSION B11·······0.40" THICK VERSION			R=WITH DRIVER, REFLECTIVE I=WITH DRIVER, NON-REFLECTIVE/	ABSORPTIVE	
B12 · · · · · 0.70" THICK VERSION		5			
NVIRONMENTAL RATINCS:		CONTRACT NO.	AMERICAN MICR	OWAVE CORPO	ORATIO
	ALL DIMENSIONS ARE IN INCHES			CK, MARYLANI	D
• TEMPERATURE:	TOLERANCES: X.XX ±0.020	APPROVALS DAT		RAWING	
HUMIDITY: MIL-STD-202F, METHOD 1038 COND. 8	X.XXX ±0.020	ORWAN WY 9 2/11,	/97 SWN-1182-3DR/	DT-STANDA	RD
SHOCK: MIL-STD-202F, METHOD 213B COND. B VIBRATION: MIL-STD-202F, METHOD 204D COND. B					
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		1/1/1/1/1/1/1/1/	97 RADIAL SOLID S	TALL SWITCH	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A				00-4181-	
NOTE: THE MOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	-	I	SCALE N/S		

**3-1** 

				• • • •
			REVISIONS	DATE APPROVED
SPECIFICATIONS:		ZOIE NEV.	ORIGINAL RELEASE	8/11/97 ·
FREQUENCY: D.5 GHz TO 18 GHz     INSERTION LOSS: REFLECTIVE: 2.75db     ABSORPTIVE: 3.75db			ORIGINAL RELEASE	
• ISOLATION: · · · · · O.5 GHz TO 2 CHz: 50db 2 CHz TO 18 GHz: 70db				
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1     SMA F				
• SPEED:				0.21 ] ]
OELAY OFF: 75ns TYPICAL, 100ns MAX.     OEWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	$\wedge$			I
				0.25
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used     CONTROL:				
CONTROL:     The LOGIC D = ON T = OFF     45     POWER SUPPLY:     +5V @ 150 mA MAX.     //				ד 🕇
-5V @ 75mA MAX (RELECTIVE)	$\sim 4$	0.38		SÖLDER PIN
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)		CROWAVE		2 PLACES
		IRPORATION		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP · · · · 2 BIT DECODER WITH SOLDER PIN	TATATAT			
10M18 · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	MODEL NO SWN-1			
BY 1,506 AT 10 MHz AND 0.506 AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES	S PART NO			MOUNTING SURFAC
BY 15db AT 100 MHz AND 0.5db AT 18 GHz1	4-1 FSCM NO	\$_2 <sup>h</sup>		- GP=GDLD_PLATED P=PAINTED
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)	J1-CON	$\Theta$	έΥ. Φ.Ж.Ι.	POWER SUPPLY
518 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)				SOLDER PIN 2 PLACES
1218 · · · · 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100M20 · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		<u>م</u> رام کر ا		- /
BY 1.5db AT 100 MHz AND 1.0db AT 20 CHz)		$\gamma_{3,9} X \mid X$		
220 · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			0.38	•
1020 · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		22'30'	0.63	
801 · · · · · - 12V POWER SUPPLIES	1			
B02 · · · · - 15V POWER SUPPLIES	1.05		0.88	
BO3 · · · · · · · REVERSE LOCIC "I"≕DN "D"≕OFF BO4 · · · · · · DRIVERLESS, CURRENT CONTROLLED	1.25			
BOS HICH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM				
WIEN APPLICABLE				
BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS	TOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDWIDTH		NOTE:		
809 · · · · · LOW INSERTION LOSS VERSION 810 · · · · · HICHER ISOLATION VERSION		0R	WITH DRIVER, REFLECTIVE	
B10		DT	WITH DRIVER, NON-REFLECTIVE	BSORPTIVE
B12 O.70" THICK VERSION			· · · · · · · · · · · · · · · · · · ·	
ENVIRONMENTAL RATINGS:		CONTRACT NO.		WAVE CORPORATION
• TENPERATURE: -55°C TO +85°C (OPERATING)	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS DATE		K, MARYLAND
-65°C TO +125°C (SIORAGE)	X.XX ±0.020	DRAWN		=
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B     SHOCK:	X.XXX ±0.010	Wyp 8/11/		
• VIBRATION: · · · · MIL-STD-202F, METHOD 204D COND. B		Outever 1	REFLECTIVE OR NON-REF	
A ATTITUDE MIL-STD-202F, METHOD 105C COND. B		-11- Al Jul - 11/7/9	SIZE FISCH NO. DWG NO.	AIE SWIICH
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		···· ·		00-4181-2 A
HOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHARGE OR REVISION			scalt N/S	



#### PRODUCT DESCRIPTION

SECTION

4.0	<u>SP37</u>	$\Gamma$ - (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches
	4.1	MSR-3DR/DT-04-STANDARD with Independent Controls
	4.2	MSR-3DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins

			REVISIONS	
PECIFICATIONS:		IOHR NEV.	ORIGINAL RELEASE	8/13/97
FREQUENCY: 0.5 GHz TO 18 GHz			URIGINAL RELEASE	1 0/10/00 1
INSERTION LOSS: REFLECTIVE: 2,75db ABSORPTIVE: 3,75db				
SOLATION:				
VSWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE DUT/OFF: 2.0:1				
SPEED:RISE: 10ns TYPICAL, 15ns WAX. FALL: 10ns TYPICAL, 15ns WAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	GP=GOLD PLATED	REMUVA) 90.015 × 0.100*	BLE SHA (F) 4 PLACES	
POWER INPUT: (CW)+2DdBm (STANDARD), +10 dBm (HIGH SPEED)	P=PAINTED	RF PIN- 4 PLACES	1	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used	0.125 (GP)			
CONTROL: TTL LOGIC "O"=ON "1"=OFF		-0.075	11/10/	
POWER SUPPLY: +5V @ 150 mA MAX.		80.00	MO08 B 1000	•
5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		40.00° TYP.		
			ADAL 153	
PTIONS:		1 L m		· `∖ 1
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	\ PT		AMERICAN	$\langle \cdot \rangle$
DEC-SP			AMERICAN MICROWAVE CORPORATION	\
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		· >	SOUD STATE SWITCH	L
100M18		1	$\Theta$ $\Theta$	#1.50' CIRCLE
118 I GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)			OPTION NOSTANDARD	POINT TO POINT
218 2 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)	、		SERIAL NO:	
412 4 GHZ TO 12.4 GHZ (NO CHANGE IN INSERTION LOSS) 618	′ <u>۱</u>	#0.020	PART NO	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	· · · · · · · · · · · · · · · · · · ·	SOLDER PIN		
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		5 PLACES		1
BY 1.5db AT 100 NHz AND 1.0db AT 20 GHz) 220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES			the try Line out the second se	
220 2 GHZ 10 20 GHZ (MASKHON LOSS MCKEASES BY 1.0db AT 20 GHZ)	lissiii	0.20 0.25 0.38		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		TTTP.		1
BY 1.0db AT 20 GHz)		i		\
BO1			0.55	N N
B02······ -15V POWER SUPPLIES B03····· REVERSE LOGIC "1"-ON "0"-OFF	<mark></mark> 0.40-→-		-0.66	$\uparrow \mathbf{N}$
BO4 DRIVERLESS, CURRENT CONTROLLED		•	40.089 THRU W/4-40 TH	
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM			0.250 DEEP ON MOUNTING SURFAC	E
WHEN APPLICABLE BOG HICH POWER - SPECIFY CW POWER, PEAK POWER, PL	ILSE WIDTH.		LOCATED ON \$1.00' CIRCL 2 PLACE	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				-
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	ISTOMER		<b>F</b> .	
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOT		
BO9 LOW INSERTION LOSS VERSION			DR∞WITH DRIVER, REFLECTME	
BIO······Higher Isolation Version B11······0.70° Thick Version		L	T=WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
		PART HO.		
NVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			WAVE CORPORATION
TENDERATURE	TOLERANCES:	APPROVALS		K, MARYLAND
-65°C 10 +125°C (STORAGE)	X.XX ±0.020		OUTLINE DE	
HUMIDITY:	X.XXX ±0.010	DRAWH WYP 8/1	s/97 MSR-3DR/DT-04	
SHOCK:			REFLECTIVE OR NON-REF	
A TITUDE:		CHECKLY. A oble 11/	197 SOLID STATE	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 CCND. A			зиле изски ию. — — — — — — — — — — — — — — — — — — —	00-4186-1
		1	·····	·······
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S	(SHEET 1 of 1

		ZOHE REV.	REVISIONS	2001	AFTROM
ECIFICATIONS:		A	ORIGINAL RELEASE		
REQUENCY:		1 101 .	URIGINAL RELEASE	8/13/97	-
NSERTION LOSS: ······REFLECTIVE: 2.75db ABSORPTIVE: 3.75db	4				
SOLATION:					
/SWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	•				
PEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	GP=GOLD PLATED	REMOVABLE SP \$0.015 x 0.100'			
OWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED		A PLACES	. `\		
URVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 USOO	0.125 (GP)	+ FERCES			
ONTROL: TTL LOCIC "O"-ON "1"-OFF		-0.075			
OWER SUPPLY:+5V @ 150 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		80.00 10.00 7YP.	80.00	N.	
NONS:				<u>\</u>	
		1 Km me		<u>`\</u>	
INDEPENDENT CONTROL WITH SOLDER PIH STANDARD DEC-SP			AMERICAN		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)			AMERICAN MICROWAVE CORPORATION		
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		SOL	ID STATE SWITCH	#1.50° CIRCLI	F
118 1 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)	2		EL NO MER-101/01-04	PDINT TO POI	ŇT
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 412			AL NO: ////	1	
818 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		00.020 PART	гно:		
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOS	s)	SOLDER PIN		ļ	
100M20 100 MHz TO 20 GHZ (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		4 PLACES	Crd +V.J4-V 0.0	i	
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		0.20 0.25 0.38		t	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)					
BO1			╌┤ <sup>╄┯</sup> ┦┝╌╌ <sub>╵┓</sub> ╸╹╴╵	<b>X</b>	
BO2	0.40	0.55-		\	
BO3 ········· REVERSE LOGIC *1"=DN "D"=OFF BO4 ······ DRIVERLESS, CURRENT CONTROLLED		<del>-</del> 0.66∙		λ.	
805		02	0.089 THRU V/4-40 THD 50 DEEP ON HOUNTING SURFACE		
WHEN APPLICABLE		0.6	LUCATED ON #1.00" CIRCLE		
BO8 HIGH POWER - SPECIFY CW POWER, PEAK POWER, I DUTY CYCLE, RF FREQUENCY - D BANDWIDTH	PULSE WIDTH.		2 PLACES		
BOT CICLE, IN PRECIDENCE SPECIFY INITIALS OF C	CUSTOMER				
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE:			
BOG LOW INSERTION LOSS VERSION		DR=	WITH DRIVER, REFLECTIVE		
B10 HIGHER ISOLATION VERSION		OT-	WITH DRIVER, NON-REFLECTIVE/	ABSORPTIVE	
811 ·········· 0.70" THICK VERSION					
TRANSFRITAL DATINGS	•	PART NO.	AMERICAN MICR	OWAVE CORPO	RATIO
<u>TRONMENTAL RATINGS:</u>	ALL DIMENSIONS ARE IN INCHES	J	- AMERICAN MICR	CK, MARYLAND	)
ENPERATURE:	TOLERANCES:	APPROVALS DATE		RAWING	
	X.XX ±0.020	DRAWN			C
11MIDITY:	X.XXX ±0.010	WYP 0/15/6	- OFFLECTAE OR NON-RE	FIFCTIVE /ARS	() NPDT
IUMIDITY: MIL-STD-202F, METHOD 103B COND. B SHOCK: MIL-STD-202F, METHOD 213B COND. B			SOLID STAT		SINE I
SHOCK:		//////////////////////////////////////		t SWHUT	
SHOCK:         MIL-STD-202F.         METHOD         213B         COND.         B           //BRATION:         MIL-STD-202F.         METHOD         204D         COND.         B           ALTITUDE:         MIL-STD-202F.         METHOD         105C         COND.         B		1/7/9	BIZE FSCH NO. DWG HO.		r
SHOCK:			BIZE FSCH NO. DWG HO.	100-4186-2	2
SHOCK:         MIL-STD-202F.         METHOD         213B         COND.         B           //BRATION:         MIL-STD-202F.         METHOD         204D         COND.         B           ALTITUDE:         MIL-STD-202F.         METHOD         105C         COND.         B			BIZE FSCH NO. DWG NO.		

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#### PRODUCT DESCRIPTION

5.0	<u>SP3'</u>	<u><b>T</b></u> - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	5.1	MSR-3DR/DT-07-STANDARD with Independent Controls
	5.2	MSR-3DR/DT-07-DEC-SP with 2 Bit Decoder and Solder Pins

		1 min 1 min 1	REVISIONS		
SPECIFICATIONS:				╺━╍──┤╯──┘┤╍╸	ATROVIC
FREQUENCY:		1 1 4 1	ORIGINAL RELEASE	8/13/97	•
INSERIION LOSS:					•
<ul> <li>ISOLATION:</li></ul>					
VSWR:					
ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1					
• SPEED: ······ RISE: 10ns TYPICAL, 15ns WAX. FALL: 10ns TYPICAL, 15ns WAX.					
FALL: 10n3 TYPICAL, 15n3 MAX. Delay ON: 75n3 Typical, 100n3 Max. Delay OFF: 75n3 Typical, 100n3 Max.	GP=GOLD PLATED	REMOVA \$0.015 × 0.100'	BLE SMA (F) 4 PLACES		
POWER INPUT: ······· (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED		RF PIN-			
SURVIVAL POWER: WATT CW. 10 WATTS PEAK 1 used		4 PLACES	Jamester to a		
• CONTROL: ····································	0.125 (GP) 0.127 (P)				
•		-0.125			
● POWER SUPPLY: ····· +5V ④ 150 mA MAX. -5V ④ 75mA WAX.(RELECTIVE)		80.00* 			
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		10.00 <sup>-</sup>		<u>\</u> .	
PTIONS:			Ellips May	`\	
<u>//</u>					
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		/ Mon s	A REAL PROPERTY		
DEC-SP 2 BIT DECODER WITH SOLDER PIN		I UIMEN	AMERICAN		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES			AMERICAN MICROWAVE CORPORATION		
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 NHz TO 18 GHz (INSERTION LOSS INCREASES		· 8//3	SOLID STATE SWITCH		
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)			A SINIE SWITCH		
118 1 GHz TO 18 GHz (NO CHANCE IN INSERTION LOSS)			MODEL NOWSE-SDE/DI-DZ	91.50° CIRCL	
218			OPTION HOSTANDARD	POINT TO PO: 1	INT
412			PART NO		
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS	s) ————	SOLDER PIN		i	
100M20 100 MHz TO 20 GHz (INSERTON LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	·,	S PLACES			
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.Ddb AT 20 GHz)		0.20 0.25 0.38			
1020		TT 1 TYP.		N N N N N N N N N N N N N N N N N N N	
801 ············-12V POWER SUPPLIES				\	
B02 ······ - 15V POWER SUPPLIES	0.70	<b> </b>	0.550.55	ì	
BO3 ······ REVERSE LOGIC "I"=ON "O"=OFF			-0.66	N N	
B04······ DRIVERLESS, CURRENT CONTROLLED B05····· High SPEED, TURNON/TURNOFF 25 nacc MAXIMUM			0.089 THRU W/4-40 T	<u>— А</u> пн	
WHEN APPLICABLE			0.250 DEEP ON MOUNTING SURFA	CE	
BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, F	PULSE WIDTH,		LOCATED ON \$1.00° CIRCI 2 PLACI		
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				L.\$	
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF C					
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	l	NOT	E:		
BOO LOW INSERTION LOSS VERSION		·	R=WITH DRIVER, REFLECTIVE		
B10 HIGHER ISOLATION VERSION			T-WITH DRIVER, NON-REFLECTIVE/	BSORPTIVE	
B11······ D,40" THICK VERSION		-			
NVIDONNUNTAL DATINGS.		PART NO.			
NVIRONMENTAL, RATINGS:	ALL DIMENSIONS ARE IN INCHES	I	AMERICAN MICRO	WAVE CORPORA	NON
TEMPERATURE:	TOLERANCES:	APPROVALS D			
-65°C TO +125°C (STORAGE)	X.XX ±0.020		I'''' OUTLINE DI		
• HUMIDITY: NIL-STD-202F, METHOD 103B COND. B • SHOCK: MIL-STD-202F, M5, HOD 213B COND. B	X.XXX ±0.010	Wyg a/1	MSR-3DR/DT-0	7-STANDARD	•
VIBRATION: MIL-STD-202F, MERHOD 213B COND, B				LECTIVE/ABSOR	(PTIV)
ALTITUDE:		C. Mobile 1/2	97 SOLID STATE		
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 103C COND. A		(14) (14) (14) (14)	are ison wor		10
The start with the start with and the start with the start of the star			A 60483 10	00-4192-1	A
HUTE TO CHANGE OR REVISION			SCALL N/S	1 of	1 1
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			RIVISIONS	
SPECIFICATIONS:		ZOHE NEV.		DATE
• FREQUENCY:			ORIGINAL RELEASE	8/13/97
INSERTION LOSS: REFLECTIVE: 2.75db				
ABSORPTIVE: 3.75db				
<ul> <li>ISOLATION:</li></ul>				
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: IDns TYPICAL, I5ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY DFF: 75ns TYPICAL, 100ns MAX.		Ø0.015 × 0.100*	SHA (F)	
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		A PLACES		
· SURVIVAL POWER WATT CW, 10 WATTS PEAK 1 USOD	1 0.125 (GP)		~ 1 1 ~ ~	
CONTROL:	0.127 (P)	· · · · · ·	11 bi	
• POWER SUPPLY:		B0.00*	50.00°	
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTINE/NON-REFLECTIVE)		TYP.		<b>`</b> •
OPTIONS:				
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		1 × mon of	all c	
DEC-SP 2 BIT DECODER WITH SOLDER PIN	\ 阕 ∎.  /	UMENT.	ANE RECAN INCROWINE CORPORATION	
10M18 10 MHZ TO 18 GHZ (INSERTION LOSS INCREASES BY 1.5db AT 10 MHZ AND 0.5db AT 18 GHZ)			CORPORATION	1
100018		2//1 =	SOLID STATE SWITCH	,i
BY 1 545 AT 100 NHz AND 0.545 AT 18 GHz)		71.44	HODEL HOLES-308/01-02	Ø1.50' CIRCLE
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218			OPTION HODEC-SP	PDINT TO POIN
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)			SERIAL NO:	
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		0.020 7 1 (( 🗸	PART NO:	i
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100420 100 MHz TO 20 GHz (INSERTION LOSS INCREASES				1
BY 1,5db AT 100 MHz AND 1.0db AT 20 CHz)			CIO +VJ4-V CIO	·
220 ······· 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		ET -		<u> </u>
1020		25 0.30 TYP.		
BY 1.0db AT 20 GHz)			CND CND	
BO1		0.5	+V	۱.
B02	{ <del>~</del> 0.70~{	1		λ.
B04 DRIVERLESS, CURRENT CONTROLLED		, ,	\$0.089 THRU W/4-40 THD	<u>ن</u>
BOS HICH SPEED, TURNON/TURNOFF 25 nsac MAXIMUM			0.250 DEEP ON MOUNTING SURFACE	
WHEN APPLICABLE BOSHIGH POWER - SPECIFY CW POWER, PEAK POWER, PU	LSE WIDTH,		LOCATED ON \$1.00" CIRCLE 2 PLACES	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				
807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU BO8LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	SIUMER	NO	re:	
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTA BOB				
BIQHIGHER ISOLATION VERSION			DR≖WITH DRIVER. REFLECTIVE DT—WITH DRIVER, NON-REFLECTIVE//	10000000000
B11 ···································			DI-HIII DAWER, NON-REFLECTIVE/	
	6	vil H0,	AMERICAN MICRO	
ENVIRONMENTAL RATINCS:	ALL DIMENSIONS ARE IN INCHES		AMERICAN MICKO	CWAVE CORPOR
• TEMPERATURE:	TOLERANCES:	APPROVALS		
• TEMPERATOR: -65°C TO +125°C (STORAGE) • HUMIDITY:		WMN		
A SUCCK MIL-SID-202F, METHOD 213B COND. B	X.XXX ±0.010		Lore come on view or	
VIBRATION: MIL-STD-202F, METHOD 204D COND. B	• • • • • • • • • • • • • • • • • • •	The here with	197 SOLID STATE	
ALTITUDE:	a:	10-14-14-		
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		1 I	A 60483 1	00-4192-2



#### SECTION

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#### PRODUCT DESCRIPTION

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

		ZONE RCV.	REVISIONS	
SPECIFICATIONS:			ORIGINAL RELEASE	8/12/97 .
FREQUENCY: D.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	MOUNTING SURFA	PF		
VSWR:	GP=GDLD PLAT P=PAINT	ED Ø0.089	THRU W/4-40 THD	
SPEED:	0.40	0.250 DEEP ON LOCATED ON 1.0 入	MOUNTING SURFACE O" CIRCLE, 2 PLACES	
POWER INPUT: (CW)+2DdBm (STANDARD), +10 dBm (HIGH SPEED)	0.075			^
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used				
CONTROL: TTL LOGIC "O"=ON "1"=OFF		45'0'	14/11	)) <sup>2</sup>
POWER SUPPLY: +5V O 200 mA MAX. -5V O 75mA MAX.(RELECTIVE)			$\mathcal{X}_{k} \qquad \bigcirc \mathcal{X}_{k} \qquad \bigcirc$	
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)		0.38	AMERICAN P	\$ / \$0.015 x 0.100'
PPTIONS:		)   sT(	CORPORATION	RF PIN
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			HADE IN USA	
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)			OPTION NO SWN-114D-4DR/DI	
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES		Section 2	SERIAL NO	. From
FY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)			PART NO:	
118 18 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			to a CFS STREEM	DVABLE SMA (F)
412 · · · · · · · · · · · · · · · · · · ·	) 🛛 🕍 sour	e0.020 ER PIN	JB/COMM	5 PLACES
618 8 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)		PLACES	Los f	
100M20 · · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		GND	入 7 1 2 1 2 1	
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 CHz TO 20 CHz (INSERTION LOSS INCREASES	0.125 (GP)		/22+30	
BY 1.0db AT 20 GHz)	-+   +- 0.127 (P)			1
BO1 · · · · · - 12V POWER SUPPLIES BO2 · · · · · - 15V POWER SUPPLIES		0, 10, 0, 5, F		
BO3 · · · · REVERSE LOGIC "1"=ON "0"=DFF		در شرک	/ .	
BO4 DRIVERLESS. CURRENT CONTROLLED BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM		$\sim$		
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE				
BOG · · · · · HICH POWER - SPECIFY CW POWER, PEAK POWER, P DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ULSE WIDTH,			
BO7 · · · · · CUSTON DESIGNED PRODUCT - SPECIFY INITIALS OF CI	JSTOMER			
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE		
BOS				
B10 · · · · · HIGHER ISOLATION VERSION			l≖with DRIVER, REFLECTIVE =WITH DRIVER, NON-REFLECTIVE/	
811 · · · · · · 0.70" THICK VERSION 812 · · · · · 0.88" THICK VERSION		0,	-ANA DAVER, NOR-REFLECTIVE/	ABSUAFINE
		CONTINUET NO.		
<u>NVIRONMENTAL BATINGS</u> :	ALL DIMENSIONS ARE IN INCHES			DWAVE CORPORATIO CK, MARYLAND
TENPERATURE:	TOLERANCES:	APPROVALE DATI		
HUMIDITY: NIL-STD-202F, METHOD 103B COND. B	X.XX ±0.02D	DRANTH		
A SUCK:	X.XXX ±0.010	1Vyp 8/12	-PEFLECTIVE OR NON-RE	
A VIBRATION: MIL-STD-202F. METHOD 204D COND. 8		Creence Afaile 11/2/	RADIAL SOLID S	
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		asuro 1	man frice was price was	
			<u> </u>	00-4163-1
HOTE THE ADDVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	·		SCALE N/S	\$100 1 of 1

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		J	REVISIONS	
PECIFICATIONS:		2014C REV.	DESCRIPTION	DATE APPRO
FREQUENCY:			ORIGINAL RELEASE	8/18/97
INSERTION LOSS: · · · REFLECTIVE: 3.0db				
ABSORPTIVE: 3.75db				
ISOLATION: · · · · · 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db		<b>→</b>		
VSWR: · · · · · · · · REFLECTIVE IN/OUT: 2.0:1	MOUNTING SURFAC			
ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	P=PAINTE	<sup>0</sup> ø0.089 T⊦	IRU W/4-40 THD	
SPEED: RISE: 10ns TYPICAL, 15ns MAX.		0.250 DEEP ON M	OUNTING SURFACE	
FALL: 10n3 TYPICAL, 15n3 MAX. Delay on: 75n3 Typical, 100n3 Max. Delay off: 75n3 Typical, 100n3 Max.	0.40	LOCATED ON 1.00"	CIRCLE, 2 PLACES	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEE	o) \ 0.075	$\wedge$		
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used				
CONTROL: · · · · · TTL LOGIC "O"=ON "I"=OFF		1 AMDr		8
		45*0′	2 14/Et	Ϋ́Υ
POWER SUPPLY: +5V O 200 mA MAX. -5V O 75mA MAX.(RELECTIVE)				
100mA MAX. (ABSORPTIVE / NON-REFLECTIVE		/ - 0.38	AMERICAN TA	/¢0.015 × 0.100°
PTIONS:			MICROWAVE CORPORATION	
			FALLER FALLER IN CALLER IN	5 PLACES
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP · · · · 2 BIT DECODER WITH SOLDER PIN			FICH 40463	I Fananh
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	((·))@		ODEL NO:SWN=1140-4DR/DI	· I F MANAN I
이 문화 1.5db AT 10 MHz AND 0.5db AT 18 GHz)			PTION NODEC-SP	1 Hammin
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES			ART NO:	
BY 1.5db AT 100 MHz AND 0.5db AT 1B GHz) 118 · · · · · · · · · · · · · · · · · ·				
218 · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS		.020		ABLE SMA (F)
412 · · · · · 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS	SS) ( ) ( ) SOLDER	PIN	Ja/com	5 PLACES
618				
1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOS 100M20 100 MHz TO 20 CHz (INSERTION LOSS INCREASES		C (OND)		•
BY 1.5db AT 100 MHz AND J.Odb AT 20 GHz)				
220. 2 GHz TO 20 GHz (INSERTION LOSS INCREASES				
EY 1.0db AT 20 GHz)			722*30	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	0.125 (GP)			
BY 1.0db AT 20 GHz) B01 12V POWER SUPPLIES	0.127 (P)			
802 · · · · 15V POWER SUPPLIES		0,30,0,5,4		
BO3 REVERSE LOGIC 1 NON O' OFF	,	°°,°€,		
BO4 · · · · · DRIVERLESS, CURRENT CONTROLLED				
BOS····· HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE		Y		
BOS HIGH POWER - SPECIFY CW POWER, PEAK POWER, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	PULSE WIDTH,			
807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF	CUSTOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDED BANDWIDTH				
BO9 · · · · LOW INSERTION LOSS VERSION	•	NOTE	:	
B10·····HIGHER ISOLATION VERSION		DF	L-WITH DRIVER, REFLECTIVE	
B11 · · · · · · 0.70" THICK VERSION			WITH DRIVER, NON-REFLECTIVE	ABSORPTIVE
B12 · · · · O.88" THICK VERSION				
VIRONMENTAL_RATINGS:		CHITMCT HO.	AMERICAN MICRO	OWAVE CORPORATIO
TENPERATURE:	ALL DIMENSIONS ARE IN INCHES	}		CK, MARYLAND
-65'C TO +125'C (STORAGE)	TOLERANCES:	APPROVALE BAT		RAWING
HUMIDITY: MIL-STO-202F, METHOD 1038 COND. 8	X.XX ±0.020	ORVERN	0000 1100 100	
SHOCK: MIL-STD-202F, METHOD 2138 COND. 8	X.XXX ±0.010	1VYP 0/12/	REFLECTIVE OR NON-RE	
VIBRATION: MIL-STD-202F, METHOD 204D COND. 8		""""""""""""""""""""""""""""""""""""""	RADIAL SOLID S	
ALTITUDE: MIL-STD-202F, METHOD 105C CONC. B			SIL ISCH HO. ONG HO.	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D CONE. A				00-4163-2
NOTE: THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S	short jof 1
			and the second	

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#### PRODUCT DESCRIPTION

#### PAGE

7.0	<u>SP47</u>	<b>[</b> - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches	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

PECIFICATIONS:			2014	NEV.	DESCRIPTION	300	APPRO
				A	ORIGINAL RELEASE	8/12/97	1
FREQUENCY: + + + 0.5 GHz TO 18 GHz			•••			1 - , - , - , - ,	•
INSERTION LOSS: REFLECTIVE: 3.0db						•	
ABSORPTIVE: 3.75db	,		40.015				
ISOLATION: •••••0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db			Ø0.015 × 0.100				
VSWR: REFLECTIVE IN/OUT: 2.0:1			RF PI		REMOVABLE SMA (F	·)	
ABSORPTIVE IN/OUT: 2.0:1				· /	5 PLACES	-	
ABSORPTIVE OUT/OFF: 2.0:1		Ø0.104. O	N Ø1.DO				
SPEED: RISE: 10ns TYPICAL, 15ns MAX.	2	CIRCLE, 2	PLACES				
FALL: IONS TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX.				1.20		0.19	
DELAY OFF: 75ns TYPICAL, 100ns MAX.		<b>~</b>				0.10	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPE		MTT	$\langle \rangle$				
	45'0'	11111257				Ľ	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 uses			、 《 ~ ~	1 hr		DER_PIN	
CONTROL: • • • • • TTL LOGIC "O"=ON "1"=OFF	1	$\mathcal{Y} \ll \mathcal{Q}$		$\mathbf{N}^{\mathbf{i}}$		PLACES	
POWER SUPPLY: +5V @ 200 mA MAX.			AMERICAN MICROWAVE CORPORATION				
-5V Ø 75mA MAX.(RELECTIVE)	հ Ն-		CORPORATION	<u>ل</u> ر		MOUNTING SU	URFAC
100mA MAX. (ABSORPTIVE/NON-REFLECTIV		WADE IN USA	FREDERICK, HO	Kanna		GP=GOLD PL	
TIONS:		HADE IN USA				P=PAINTED	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	100000 I	MODEL NOSWN	-1170-408/01	I I MAANA			
DEC-SP · · · · 2 BIT DECODER WITH SOLDER PIN	-uuuu-	OPTION NO STAN	IDARU	Funner			
10M18 10 MHz TO 18 CHz (INSERTION LOSS INCREASES	4	L FSCM NO	J			•	
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES				OT			
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	0.38	// <sup>(2)</sup>	~~``X	メノトノ		WER SUPPLY	
118		0-1L			8· / \ \\ \K / \	LDER PIN PLACES	
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOS				GND		FLACES	
412 · · · · · · · · · · · · · · · · · · ·			ᢇᢑᠣᡝ∖ᡐ╳	X X			
518 5 CHz TO 18 CHz (NO CHANGE IN INSERTION LOS 1218 12 CHz TO 18 GHz (NO CHANGE IN INSERTION LO			3020X				
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES			3°~~~		0.33		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)			∋`				
220 · · · · · · 2 CHz TO 20 CHz (INSERTION LOSS INCREASES							
BY 1.0db AT 2D GHz)			22*30' `	}	0.55		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		,					
BY 1.0db AT 20 GHz)			~				
BO1 · · · · · - 12V POWER SUPPLIES		<b></b> 1.2		1			
BO2·······T5V POWER SUPPLIES BO3······ REVERSE LOGIC "I"≖ON "O"=OFF							
BO4 DRIVERLESS, CURRENT CONTROLLED							
BOS HIGH SPEED, TURNON/TURNOFF 25 nace MAXIMUM			•		,		
WHEN APPLICABLE							
BOS HIGH POWER - SPECIFY CW POWER, PEAK POWER.	PULSE WIDTH,						
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	CUSTOVED						
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF BO8 CONTRANSIENTS - SPECIFY VIDEO BANDWID							
BOS LOW INSERTION LOSS VERSION	163			NOTE:			
BIG · · · · · HIGHER ISOLATION VERSION			· · ·	08=1	WITH DRIVER, REFLECTIVE		
B11 OLAO" THICK VERSION					TH DRIVER, NON-REFLECTIVE/A	ASO RETIVE	
B12 · · · · 0.88" THICK VERSION				01=4	ATT DRIVER, ROM-REFECCIVE/A		
			CONTINCT NO.				
<u>VIRONMENTAL_RATINGS</u> :			COMPACT NO.		AMERICAN MICRO		
TEMPERATURE:		S ARE IN INCHES			FREDERICI	<, MARYLAND	<u> </u>
-65°C 10 +125°C (STORAGE)	TOLERANCES:		APTROVALS	DATE	OUTLINE DR	RAWING	
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX		DRAWN				RD
SHOCK: MIL-STD-202F, METHOD 2138 COND, B	X.XXX	±0.010	WYP,	8/12/97	REFLECTIVE OR NON-REF		
VIBRATION: MIL-STD-202F. METHOD 204D COND. B			CHECKID	<u></u> , <u></u> ,,			
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B			L.Mor	<u> 1/7/9</u> 1	SIZE FICH NO. ONG NO.	ALE SHILL	——,
TEMPERATURE CYCLE: . MIL-STD-2027, METHOD 107D COND. A			lumin A			0-4172-	1
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CONFIGE OR REVISION					<u>]</u>	-4172- 	
					SCALE N/S		

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		ZOIIC IICM	REVISIONS	DUTE APPROVE
PECIFICATIONS:			ORIGINAL RELEASE	8/12/97
FREQUENCY: · · · · 0.5 GHz TO 18 CHz		1 101		( •/ •/ •/ •
INSERTION LOSS: · · · · REFLECTIVE: 3.0db ABSORPTIVE: 3.75db				
• ISOLATION: 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db		Ø0.015 × 0.100'		
VSWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	Ø0.104 ON	S PLACES	REMOVABLE SMA (F	-) -)
SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	CIRCLE, 2			0.19
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	/ Mm n			-
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK I used 4	5'0'			DLDER PIN
CONTROL: TTL LOGIC "0"=ON "1"=OFF	$' \qquad \forall / / ( \mathbf{T}^{-1})$	$\mathbb{X}$		DLDER PIN PLACES
POWER SUPPLY: +5V O 200 mA MAX.	۲ <u>۳</u>	WERICAN		
-5V 0 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		AKROWANE CORPORATION TREDERICH, ND		MOUNTING SURFACE GP=GOLD PLATED
PTIONS:	INTER SOUTH			P=PAINTED
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	OPTION NO DEC			
10M18 · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	PART NO:	I A ~		
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)				
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.54b AT 100 MHz AND 0.54b AT 18 GHz)				WER SUPPLY
118 1 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)	J1-C0	M Y X K K K K K K K K K K K K K K K K K K		PLACES
218 · · · · 2 CHIZ TO 18 CHIZ (NO CHANGE IN INSERTION LOSS) 412 · · · · · 4 CHIZ TO 12.4 CHIZ (NO CHANGE IN INSERTION LOSS)	\ <del>````</del> T			
618 ····································				
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		<b>1</b> 020	0.33	
100M20 · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)				
220 · · · · · 2 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)		22'30'	0.55	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			0.70	
BO1 - 12V POWER SUPPLIES	1.25		i	
BO2 - 15V POWER SUPPLIES		·		
BO3 REVERSE LOGIC "1"=ON "0"=OFF				
BO4 DRIVERLESS, CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM				
WHEN APPLICABLE				
BOS HIGH POWER - SPECIFY CW POWER. PEAK POWER. PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	LSE WIDTH,			
BOT CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS	STOMER			
BO8- LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	· · · · · · · · · · · · · · · · · · ·			
BO9 LOW INSERTION LOSS VERSION		NOTE:		
B10 HIGHER ISOLATION VERSION			WITH DRIVER, REFLECTIVE	
B11 0.40" THICK VERSION		DT=	WITH DRIVER, NON-REFLECTIVE/AS	BSORPTIVE
B12				
NVIRONMENTAL_RATINGS:	ALL DIMENSIONS ARE IN INCHES	СОНТЯЛСТ НО,		WAVE CORPORATION
TEMPERATURE:	TOLERANCES:	APPROVALE DATE		
-65°C TO +125°C (STORAGE) HUMIDITY: MIL-STD~202F, METHOD 103B COND. B	X.XX ±0.020	ORANN		
SHOCK: SHOCK: SHOCK SHOLL STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WYP 8/12/	REFLECTIVE OR NON-REFL	
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		OTHE Malle wild	RADIAL SOLID STA	
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		L. Ajoke 11/7/	32E 13CH HO. DHE HO.	
A STREAM AND STOLED AND STOLED AFTHON 1070 COND A				
TEMPERATURE CICLE: MIL-SID-202F, METHOD 107D COND. A		[	A 60483 10	0-4172-2



#### SECTION

#### PRODUCT DESCRIPTION

#### PAGE

8.0	<u>SP4</u>	<u>[- (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
,	8.2	SWN-1182-4DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins

		20HE REV.	REVISIONS	DATE APPROVED
SPECIFICATIONS:			ORIGINAL RELEASE	8/11/97
• FREQUENCY:		1 101		
INSERTION LOSS: ····· REFLECTIVE: J.Odb	Ø0.104 OI	N #1.00		
ABSORPTIVE: 3.75db     ISOLATION:	CIRCLE, 2			
2 GHz TO 18 GHz: 70db		FLACES	h	<del>→</del> 0.21
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1				
	5'0'	. Charles		- CTL
DELAY OFF: 75ns TYPICAL, 100ns MAX.		WEBROWN SS		SOLDER PIN
POWER INPUT: · · · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)				4 PLACES
• SURVIVAL POWER: · · · · 1 WATT CW, 10 WATTS PEAK 1 uses		REDERICK, NO ROMANTI-		
• CONTROL:				
• POWER SUPPLY: +5V @ 200 mA MAX	UUUUU OPTION NOSIAN			MOUNTING SURFACE
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)	PART NO:			GP=GOLD PLATED
DPTIONS:	THE FSCM NO:	02		P=PAINTED
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD SMA	FEMALE J			-POVER SUPPLY
DEC-SP 2 BIT DECODER WITH SOLDER PIN 5 PL		OM		SOLDER PIN
10M18 10 MHz TO 18 CHz (INSERTION LOSS INCREASES				2 PLACES
BY 1.5db AT 10 MHz AVD 0.5db AT 18 GHz) 100M18 100 MHz 10 18 GHz (INSERTION LOSS INCREASES				
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	0,38	3°°X   X		·.
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218		≦ `\ _	0.38	-
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)			0.63	
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		22'30'	[ 0.83]	
1218		1	0.88	
BY 1.5db AT 100 MHz AND (.0db AT 20 CHz)	<u> </u> → 1.2	5	1 0.00	
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)				
BO1 12V POWER SUPPLIES				
BOZ 15V POWER SUPPLIES			· .	
B03····· REVERSE LOCIC "1"-ON "0"-OFF B04···· DRIVERLESS, CURRENT CONTROLLED			-	
805 ····· HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUM WHEN APPLICABLE				
B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOM				
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE:		
BO9 LOW INSERTION LOSS VERSION			WITH DRIVER, REFLECTIVE	
B10······ HIGHER ISOLATION VERSION			WITH DRIVER, REFLECTIVE	ARSORPTIVE
811/·····0.40" THICK VERSION 812·····0.70" THICK VERSION		-10		
		CONTRACT NO.	T	OWAVE CORPORATION
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			CK, MARYLAND
• TEMPERATURE:	TOLERANCES:	APPROVALE DATE	UTLINE	
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020	DRAWM BULL OF		
SHOCK MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	Wyp 8/11/9		
• VIBRATION:		0110/10 Al all 11/7/9.	RADIAL SOLID	
• ALTITUDE:		nupa		REV.
				100-4182-1 A
HOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		I I	SCALE N/S	34ET 1 of 1

	<u> </u>				
SPECIFICATIONS:			101E R.V.	REVISIONS	DATE
• FREQUENCY: · · · · · · · D.5 CHz TO 18 CHz			A	ORIGINAL RELEASE	8/11/97
INSERTION LOSS: · · · · · REFLECTIVE: 3.0db					1.4.9.1
ABSORPTIVE: 3.75db		Ø0.104 ON	ø1.00		
ISOLATION: · · · · · · · · 0.5 GHz TO 2 GHz: 50db     2 GHz TO 18 GHz: 70db	Х	CIRCLE, 2 PI			
VSWR: · · · · · · · · REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1					0.21
• SPEED:	45'0'		- CLOR		1
DELAY OFF: 75ns TYPICAL, 100ns MAX.			ERICAN 99/15		
POWER INPUT: (CW)+20d8m (STANDARD), +10 d8m (HIGH SPEI     SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec	"/ "- ("				SOLDER PIN 2 PLACES
• CONTROL:	Funning	MADE IN USA FECH 60483	DERICK HO		1
• POWER SUPPLY: +5V @ 200 mA WAX.	[ <u>]</u> []	MODEL NOSWN-11		· ( ( o ))   O	
-SV @ 75mA WAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIV		OPTION NO DEC-SP PART NO:	line -		MOUNTING SU
OPTIONS:		FSCM NO			- CP≈GOLD PL/ P=PAINTED
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD SN	A FEMALE	14	ਸ਼.°‰\X ∕		
DEC-SP	PLACES	JI-COM			POVER SUPPL
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	:		ZVX KVV		2 PLACES
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 18 · · · · · · 1 GHz T0 18 GHz (NO CHANGE IN INSERTION LOS	s)	0.38	62°X   🗸		
218 · · · · · · · · · · · · · · · · Z GHz TO 18 GHz (NO CHANGE IN INSERTION LOS	s) i	⊥_==	$\sim$	0.38	<b> </b>
412			22.30.	L	
1218 ······ 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOS 100M20 ····· 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		1 2		· · · · · · · · · · · · · · · · · · ·	
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	· · · · · · · · · · · · · · · · · · ·	1.25		····· 0.88	┙
220 ···································	. •		· •	•	٠
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES					
BY 1.0db AT 20 GHz) BO1 ······ -12V POWER SUPPLIES	• •			,	
802 ······	:				
B04 · · · · · · · DRNERLESS, CURRENT CONTROLLED				- ,	
B05·····HICH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM					
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER,	PULSE WIDTH,				
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07······ CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF	CUSTOMER				
808 ····· LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDT			ION	IE:	
B09························BIGHER ISOLATION LOSS VERSION				DR=WITH DRIVER, REFLECTIVE	
B11 0.40" THICK VERSION	,		ł	DT-WITH DRIVER, NON-REFLECT	NE/ABSORPTIVE
B12·······0.70° THICK VERSION		ľ	CONTRACT NO.		
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS AR				ICROWAVE CORPOR ERICK, MARYLAND
• TEMPERATURE:	TOLERANCES:	· [	APPROVALS		DRAWING
HUMIDITY:	X.XXX ±0.0		Wyp	SWN-1182-4	DR/DT-DEC-SP
• VIBRATION: ····· MIL-STD-202F, METHOD 204D COND, B	,				
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		le la constante de la constante	K.Mora III	7/97 RADIAL SOLID	STATE SWITCH
• TEMPERATURE CYCLE: · · · MIL-STD-202F, METHOD 107D COND. A				A 60483	100-4182-2

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#### PRODUCT DESCRIPTION

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9.0	<u>SP4</u>	<b>[</b> - (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches 9-0
	9.1	MSR-4DR/DT-04-STANDARD with Independent Controls
	9.2	MSR-4DR/DT-04-DEC-SP with 2 Bit Decoder and Solder Pins

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		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RCVISIONS	<del></del>
SPECIFICATIONS:		20HE NEV.		DATE APPROV
• FREQUENCY: ········. 0.5 GHz TO 18 GHz		1   4	ORIGINAL RELEASE	8/13/97
INSERTION LOSS: REFLECTIVE: 3.0db ABSORPTIVE: 3.75db		,		
• ISOLATION:				
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	· · ·			
• SPEED:	GP=GDLD PLATED	REMOVABL	LE SMA (F) 5 PLACES	
• POWER INPLIT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	P=PAINTED	RF PIN-	、 . <b>`</b> `	
• SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used	L125 (GP)	5 PLACES	in the second se	
+ CONTROL: TTL LOGIC "0"=ON "1"=OFF		-0.075		
POWER SUPPLY: +5V		80.00° 40.00° TYP.	B0.00	
OPTIONS:				
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		1 - Man s	EVER ER MIN	$\overline{\mathbf{A}}$
DEC-SP 2 BIT DECODER WITH SOLDER PIN		; <i>UHSI</i> //.	ANT AMERICAN	
10M 18 10 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 CHz)		L. SITA	AMERICAN MICROWANE No sens	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		······	SOUD STATE SWITCH	
118 1 CHz TO 18 CHz (NO CHANCE IN INSERTION LOSS)			MODEL NOWSE-402/01-04	91.50° CIRCLE
218	、 I I		OPTION NO-STANDARD	POINT TO POINT 
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	, I I	050.00		ļ
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	│	SOLDER PIN		
100M20 ······· 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz AND 1.0db AT 20 GHz)		6 PLACES		
220 ···································	1	1		·
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.046 AT 20 GHz)		0.20 0.25 0.38		
BO112V POWER SUPPLIES				$\backslash$
802 ····································		o.	550.55	1
BO3 ······ REVERSE LOGIC "1"=ON "0"=OFF	<u> </u> 0.40		0.66	V,
BO4······DRIVERLESS, CURRENT CONTROLLED BO5······HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM			#0.089 THRU V/4-40 TH	
WHEN APPLICABLE			0.250 DEEP ON HOUNTING SURFAC	
BOB ······ HICH POWER - SPECIFY CW POWER, PEAK POWER, PL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	JLSE WIDTH.		2 PLACE	
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	ISTOMER			
808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE:		
BOS LOW INSERTION LOSS VERSION		OR	=WITH DRIVER, REFLECTIVE	
B10 HIGHER ISOLATION VERSION			-WITH DRIVER, NON-REFLECTIVE/AL	BSORPTIVE
B11······ 0.70" THICK VERSION				
ENVIRONMENTAL RATINGS:		PART HG.	AMERICAN MICRON	WAVE CORPORATION
• TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES	·····		, MARYLAND
• TEMPERATURE:	TOLERANCES:	APPROVALS DATE	UTLINE DR	AWING
. HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020 X.XXX ±0.010	WAY \$ 8/13/		
• SHOCK: MIL-STD-202F, METHOD 213B COND. B	VIVVU TAILI	·····	REFLECTIVE OR NON-REFL	FCTIVE /ARSORPTIN
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		K.M.Lu 11/1/9	7 SOLID STATE	SWITCH
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B     TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A			SIZE FICH HO. DWG HO.	
		[	A 6048310	0-4187-1 4
HOTE TURNING SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S	1 of 1

INSERTION LOSS.						•
PERCENT LINE         PERCENT CONTROL         PERCENT CONTR				A REAL PROPERTY AND ADDRESS OF THE OWNER OWNER		
IPECQUECT	SPECIFICATIONS:		┠╌┈╍╂╍╍╍╂╍╍	and the second	┈┈╌┼╌╸────╂╸	ATROLO
IDALADON         0 & 6 & 601 TO 2 & DHE SGAD           SPARD         Charter of the Source of the Sourc	FREQUENCY:			, URIGINAL RELEASE		
VSMs.         PROTECTIVE MY/DUE 26:11           ASSEMPTIC SUPPORT 1:50:14         ASSEMPTIC MY/DUE 26:15           SPEED         PROVINE MUSC.           SPEED         PROVINE MUSC.           FOURT AND/EXC.         MAXIE DOW MY/DUE 20:15           SUPPORT AND/EXC.         MAXIE DOW MY/DUE 20:15           SUPPORT AND/EXC.         COM 4000 MAXIE SMA (10:15 MK)           SUPPORT AND/EXC.         COM 4000 MK (10:15 MK)           SUPPORT AND/EXC.         SUPPORT AND/EXC.               SUPPORT AND/EXC.         SUPPOR	• ISOLATION:	•				
Province	VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1					
POWER SUPPLY:	DELAY ON: 75n+ TYPICAL, 100n+ MAX.	GP=GOLD PLATED	\$0.015 × 0.100"		-	
CONTROL	POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)			1 months		
CUMINUS	SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 USOC					
Provest Supprise         State Transmission           Provise         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)           Photoma Aux/(Rescentor)         2 Bit Docoder With StateAdd         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)           B00-5-27         2 Bit Docoder With StateAdd         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)         100 mm Aux/(Rescentor)           100/16         100 mm Aux/(Rescentor)           100/16         100 mm Aux/(Rescentor)	CONTROL: TTL LOGIC "D"-ON "1"-OFF	(0.127 (P)				
HiddPENDENT CONTROL WITH SOLDER PMI STANDARD         BICS_SP       21 BIT DECODER PMI STANDARD         BICS_SP       21 BIT DECODER PMI STANDARD         BIT DECODER PMI STANDARD       20 TISS INCREASES         DOULD       10 TISS INCREASES         DOULD       10 TISS INCREASES         DIOLID       10 TISS INCREASES         DIOLID       10 TISS INCREASES         DIOLID       11 CIRCLE         CIRCLE       41 Strate S	-5V @ 75mA MAX.(RELECTIVE)		40.00			
DEC=sp:         2 BT DECODER WITH SOLDER PIN           IOM 16         0 With SOLDER PIN           IOM 16         10 With SOLDER PIN           III         10 With TO 18 GH: (NO CHANGE IN INSERTION LOSS)           III         10 With TO 20 GH: (NSERTION LOSS INCREASES           III         10 With TO 20 GH: (NSERTION LOSS INCREASES           III         20 GH: INSERTION LOSS INCREASES           III         10 With TO 20 GH: (NSERTION LOSS INCREASES           III         10 HIT TO 20 GH: (NSERTION LOSS INCREASES           III         10 GH: IO 20 GH: (NSERTION LOSS INCREASES           III         10 GH: IO 20 GH: (NSERTION LOSS INCREASES           III         10 GH: IO 20 GH: (NSERTION LOSS INCREASES           III         10 GH: IO 20 GH: (NSERTION LOSS INCREASES           <	PTIONS:					
BY 1.50b AT 10 MHZ AND 0.53b AT 10 GHz 255         100M18       GP 1.54b AT 100 MHZ AND 0.54b AT 10 GHz 1055         210       101 HZ 100 MHZ AND 0.54b AT 10 GHZ 1055         211       101 HZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         212       4 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         213       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         214       100 HHZ AD 20 GHZ (NO CHANGE NI NESTRION LOSS)         218       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         218       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         219       2 GHZ 102 GHZ (NO CHANGE NI NESTRION LOSS)         210       100 HHZ AD 2 GHZ (NESTRON LOSS INCREASES BY 1.04b AT 20 GHZ)         201       - 102 FORKER SUPPLIES         202       - 104 FORKER SUPPLIES         203       - 102 FORKER SUPPLIES         204       - 102 FORKER SUPPLIES         205       - 102 FORKER SUPPLIES         206       - 102 FORKER SUPPLIES         203       - 102 FORKER SUPPLIES         204       - 102 FORKER SUPPLIES         205       - 102 FORKER SUPPLIES         206       - 102 FORKER SUPPLIES         201 CHINE SUPPLIES       - 102 FORKER SUPPLIES         202 CHINE SUPPLIES       - 102 FORKER SUPPLICS         203			1 - 1000-51	ELE COMMUNICATION OF THE OWNER		
BY 1.50b AT 10 MHZ AND 0.53b AT 10 GHz 255         100M18       GP 1.54b AT 100 MHZ AND 0.54b AT 10 GHz 1055         210       101 HZ 100 MHZ AND 0.54b AT 10 GHZ 1055         211       101 HZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         212       4 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         213       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         214       100 HHZ AD 20 GHZ (NO CHANGE NI NESTRION LOSS)         218       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         218       12 GHZ 101 B GHZ (NO CHANGE NI NESTRION LOSS)         219       2 GHZ 102 GHZ (NO CHANGE NI NESTRION LOSS)         210       100 HHZ AD 2 GHZ (NESTRON LOSS INCREASES BY 1.04b AT 20 GHZ)         201       - 102 FORKER SUPPLIES         202       - 104 FORKER SUPPLIES         203       - 102 FORKER SUPPLIES         204       - 102 FORKER SUPPLIES         205       - 102 FORKER SUPPLIES         206       - 102 FORKER SUPPLIES         203       - 102 FORKER SUPPLIES         204       - 102 FORKER SUPPLIES         205       - 102 FORKER SUPPLIES         206       - 102 FORKER SUPPLIES         201 CHINE SUPPLIES       - 102 FORKER SUPPLIES         202 CHINE SUPPLIES       - 102 FORKER SUPPLICS         203		\ <b>B</b> N		MILEROWAYE		
BY 1.54b AT 100 MHz AND 0.34b AT 18 OFF)       Start 20 OFF)         110       1 of 11 a 0 Hz AND 0.34b AT 18 OFF)         111       1 of 12 a 0 Hz AND 0.1445E IN INSERTION LOSS)         111       2 of 12 a 0 Hz AND 0.1445E IN INSERTION LOSS)         112       12 a 0 Hz TO 12 a 0 Hz (NO CHANGE IN INSERTION LOSS)         112       12 a 0 Hz TO 20 a 0 Hz (NO CHANGE IN INSERTION LOSS)         112       12 a 0 Hz TO 20 a 0 Hz (NO CHANGE IN INSERTION LOSS)         1100       BY 1.36b AT 100 HHz AND 1.06b AT 20 CHA)         1100       10 o Hz TO 20 CHZ (INSERTION LOSS INCREASES         1100       BY 1.06b AT 20 CHA)         100       Hz TO 20 CHZ (INSERTION LOSS INCREASES         100       HZ TO 20	BY 1.566 AT 10 MHZ AND 0.566 AT 18 GHZ)		· _ · _ · _ · _ · _ · ]			
218       2 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         112       4 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         118       6 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         1218       12 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         1218       12 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         1218       12 GH: TO 18 GH: (NO CHANCE IN INSERTION LOSS)         1218       120 MH: TO 20 GH: (NSERTION LOSS INCREASES BY 1.504 A1 20 GH:)         1200       10 GH: TO 20 GH: (INSERTION LOSS INCREASES BY 1.504 A1 20 GH:)         100       10 GH: TO 20 GH: (INSERTION LOSS INCREASES BY 1.504 A1 20 GH:)         100       -12V POWER SUPPLIES	. BY 1.545 AT 100 NHz AND 0.545 AT 18 CHz)			· \ <b>I</b> (A)		
412       6 Bit 10 18 GHz 10 18 GHz (NO CHARGE IN INSERTION LOSS)         1218       12 GHz 10 18 GHz (NO CHARGE IN INSERTION LOSS)         1218       12 GHz 10 18 GHz (NO CHARGE IN INSERTION LOSS)         1218       12 GHz 10 3 GHz (NSERTION LOSS)         1218       12 GHz 10 3 GHz (NSERTION LOSS)         1200       10 GHz 10 20 GHz (INSERTION LOSS)         1218       12 GHz 10 20 GHz (INSERTION LOSS)         1220       10 GHz 10 20 GHz	218					
1218       12 GH: 10 18 GH: (NO CHANGE IN INSERTION LOSS)         100H20       100 HH: 0 20 GH: (NSERTION LOSS INCREASES         220       2 GH: 10 20 GH: (NSERTION LOSS INCREASES         210 GH: 10 20 GH: 10 20 GH: (NSERTION LOSS INCREASES         1020       10 GH: 10 20 GH: (NSERTION LOSS INCREASES         1020       10 GH: 10 20 GH: (NSERTION LOSS INCREASES         1020       10 GH: 10 20 GH: (NSERTION LOSS INCREASES         1020       10 GH: 10 20 GH: (NSERTION LOSS INCREASES         1020       10 GH: 10 20 GH: (NSERTION LOSS INCREASES         1021       10 70 GH: 10 20	618		00000			
1200       2 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1200       2 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES)         1020       10 GHZ TO 20 GHZ (INSERTION LOSS INSERTION LOSS	1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	<b>-</b>	SOLDER PIN			
$\begin{array}{c} \text{BY 1.0db AI 20 CH2} \\ \text{BY 1.0db AI 20 CH2} \\ \text{1020} & \text{O} \text{CH} \text{I} \text{O} \text{20 CH} \text{(} \text{I} \text{SERTION LOSS INCREASES} \\ \text{BY 1.0db AI 20 CH2} \\ \text{BO1} & -12V \text{POWER SUPPLIES} \\ \text{BO2} & -12V \text{POWER SUPPLIES} \\ \text{BO3} & \text{REVERSE LOGIC 'I'-ON '0'-OFF} \\ \text{BO4} & \text{OWTRELESS. CUGRENT CONTROLLED} \\ \text{BO5} & \text{HCH SPEED, TURNON/TURNOFF 25 nasc MX0MUM} \\ \text{WHEN APPLICABLE} \\ \text{BO6} & \text{HCH POWER} - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, \\ \text{DUTY CYCLE, RF FREQUENCY AND BANDWIDTH \\ \text{BO7} & \text{CUSTOM DESIGNED PRODUCT - SPECIFY VINTALS OF CUSTOMER \\ \text{BO6} & \text{LOW VIDEO TRANSIENTS - SPECIFY INTALS OF CUSTOMER \\ \text{BO6} & \text{LOW VIDEO TRANSIENTS - SPECIFY INTALS OF CUSTOMER \\ \text{BO7} & \text{CUSTOM DESIGNED PRODUCT - SPECIFY VINTALS OF CUSTOMER \\ \text{BO8} & \text{LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH \\ \text{BO7} & \text{CUSTOM DESIGNED RESIGN \\ \text{B10} & \text{HOHRER, NON-REFLECTIVE AND BANDWIDTH \\ \text{BO7} & \text{CUSTOM DESIGNED PRODUCT - SPECIFY INTALS OF CUSTOMER \\ \text{B10} & \text{LOW VIDEO TRANSIENTS - SPECIFY INTALS OF CUSTOMER \\ \text{B10} & \text{CONT STRICK CONTROL AND SUBJENTS - SPECIFY INTALS OF CUSTOMER \\ \text{B10} & \text{CONT STRICK CONTROL AND SUBJENTS - SPECIFY INTALS OF CUSTOMER \\ \text{B11} & \text{O} \text{O} \text{O} \text{TISCRITION LOSS VERSION \\ \text{B11} & \text{O} \text{O} \text{O} \text{TISCRITION LOSS VERSION \\ \text{B11} & \text{O} \text{O} \text{O} \text{TISCRITION } \\ \text{-SSC TO +4SSC (OPERATION) \\ -SSC TO +4SSC (OPERATION) \\ -SSC TO +4SSC (STORGE) \\ \text{NUMIDITY: } \text{MILS STD-202F, METHOD 013B COND. B \\ X.XX ± 0.020 \\ X.XX ± 0.010 \\ \text{SUDOK: } \text{MILS STD-202F, METHOD 234B COND. B \\ X.XX ± 0.020 \\ X.XX ± 0.020 \\ X.XX ± 0.010 \\ \text{SUDOK: } \text{MILS STD-202F, METHOD 103B COND. B \\ X.XX ± 0.020 \\ X.XX ± 0.020 \\ X.XX ± 0.010 \\ \text{SUCH STATE SWITCH \\ \text{MILS TD-202F, METHOD 103C COND. A \\ \\ \text{SUDMER MULSTD-202F, METHOD 103C COND. B \\ TEMPERATURE CYCLE: MILSTD-202F, METHOD 103C COND. B \\ \text{SUDOK } \text{MILSTD-202F, METHOD 103C COND. B \\ \text{SUDOK } $	BY 1.5db AT 1DO NHE AND '1.0db AT 20 GHE)					
$\begin{array}{c} 1020 & \cdots & 10 \text{ GHz} 10 20 \text{ GHz} (\text{INSERTION LOSS INCREASES} \\ \text{B} 1 & \cdots & 12V \text{ POWER SUPPLIES} \\ \text{B} 01 & \cdots & 12V \text{ POWER SUPPLIES} \\ \text{B} 02 & \cdots & 12V \text{ POWER SUPPLIES} \\ \text{B} 03 & \cdots & \text{REVERSE LOGIC '1'-ON '0'-OFF} \\ \text{B} 04 & \cdots & \text{DRIVENESS, CURRENT CONTROLLED} \\ \text{B} 05 & \cdots & \text{URINON/TURNON/TURNON/TURNON/TORNOT 25 neec WAXIMULA} \\ \text{WHEN APPLICABLE} \\ \text{B} 05 & \cdots & \text{URINON/TURNON/TURNON/TORNOT 25 neec WAXIMULA} \\ \text{WHEN APPLICABLE} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER} \\ \text{B} 05 & \cdots & \text{USTOM DESIGNED NUCS STRICH STOLES:} \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE: } & -55°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE } & -50°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE } & -50°C \text{ TO } +85°C (OPERATING) \\ \text{TEMPERATURE } & -50°C \text{ TO } +85°C $	220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.045 AT 20 GHz)		0.20 0.35 0.20		ł	
$\begin{array}{c} \text{BY 1.006 AT 20 GHz} \\ \text{BO1} & -12V \text{ POWER SUPPLIES} \\ \text{BO2} & -15V \text{ POWER SUPPLIES} \\ \text{BO3} & \text{REVERSE LOGIC '1'-ON '0'-OFF} \\ \text{BO4} & -0.40 & -0.55$			ТҮР.			
B02	BY 1.0db AT 2D CHz)		<u> </u>		١	
B03       REVERSE LOG.T FUNCTION FOR CONTROLLED         B04       PRIVENESS, CURRENT CONTROLLED         B05       HIGH SPEED, TURNON/TURNOTF 25 nsec MAXIMUM         WHEN APPLICABLE       0.250 DEEP ON HOUNTING SURFACE         B05       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 VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         B01       D,70° THICK VERSION         B11       D,70° THICK VERSION         B11       D,70° THICK VERSION         B11       SCI TO +85°C (OPERATING)         TEMPERATURE:       -S5°C TO +85°C (OPERATING)         TEMPERATURE:       -S5°C TO +85°C (OPERATING)         SHOCK:       MIL_STD-202F, METHOD 103B COND. B         SHOCK:       MIL_STD-202F, METHOD 103B COND. B         VIDERATION:       MIL_STD-202F, METHOD 103B COND. B         SHOCK:       MIL_STD-202F, METHOD				0.55 0.55	1	
B05       HICH SPEED, TURNON/TURNORT 25 hase WXXMJM         B05       WHEN APPLICABLE         B05       HICH APPLICABLE         B05       HICH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH         B07       CUSTOM DESIGNED PRODUCT - SPECIFY VIDEO BANDWIDTH         B08       LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         B09       LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         B09       LOW INSERTION LOSS VERSION         B10       HIGHER ISOLATION VERSION         B11       D.70° THICK VERSION         NYTIEONMEENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES         TEMPERATURE:       -55°C TO +85°C (OPERATING)         TEMPERATURE:       -55°C TO +85°C (STORAGE)         NULLDITY:       MIL-STD-202F, METHOD 103B COND. B         NUMIDITY:       MIL-STD-202F, METHOD 213B COND. B         NUMERATION:       MIL-STD-202F, METHOD 213B COND. B         NUMERATION:       MIL-STD-202F, METHOD 105C COND. B         NUMERATION:       MIL-STD-202F, METHOD 105C COND. B         NUMERATION:       MIL-STD-202F, METHOD 105C COND. A		J0.40	<del>-</del>	-0.66	N N	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTHB07CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMERB08LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTHB09LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTHB09LOW INSERTION LOSS VERSIONB10HIGHER ISOLATION VERSIONB11D.70° THICK VERSIONB11D.70° THICK VERSIONNVIRONMENTAL RATINGS:ALL DIMENSIONS ARE IN INCHESTEMPERATURE:-65°C TO +125°C (STORAGE)NUMIC-STD-202F, METHOD 103B COND. BSHOCK:MIL-STD-202F, METHOD 103B COND. BVIBRATION:MIL-STD-202F, METHOD 103B COND. BALTITUDE:MIL-STD-202F, METHOD 105C COND. BALTITUDE:MIL-STD-202F, METHOD 105C COND. BALTITUDE:MIL-STD-202F, METHOD 107D COND. A	BOS HIGH SPEED, TURNON/TURNOFF 25 neec MAXIMUM WHEN APPLICABLE			0.250 DEEP ON HOUNTING SURFACE	Ē	
B07	BOGHIGH POWER - SPECIFY CW POWER, PEAK POWER, PU DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	LSE WIDTH,		2 PLACES	2	
BO3       LOW INSERTION LOSS VERSION B10       DR=WITH DRIVER, REFLECTIVE DT=WITH DRIVER, REFLECTIVE AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND         NUMIDITY:	BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER				
B10       HIGHER ISOLATION VERSION B11       DT-WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE         B11       D,70" THICK VERSION         NVIRONMENTAL RATINGS:       -S5°C T0 + 85°C (OPERATING) -65°C T0 + 125°C (STORAGE)       ALL DIMENSIONS ARE IN INCHES TOLERANCES:         NUMIDITY:       MIL-STD-202F, METHOD 103B COND. B SHOCK:       ALL DIMENSIONS ARE IN INCHES TOLERANCES:         VIBRATION:       MIL-STD-202F, METHOD 241B COND. B NIL-STD-202F, METHOD 105C COND. B ALTITUDE:       X.XX ±0.020 X.XX ±0.010         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. B ALTITUDE:       MIL-STD-202F, METHOD 105C COND. A						
B11	BIO HIGHER ISOLATION VERSION				/ABSORPTIVE	
NYIRONMENTAL RATINGS:       -SS*C TO +85*C (OPERATING) -65*C TO +125*C (STORAGE)       ALL DIMENSIONS ARE IN INCHES TOLERANCES:         HUMIDITY:       -65*C TO +125*C (STORAGE)       X.XX ±0.020         SHOCK:       MIL-STD-202F, METHOD 103B COND. B SHOCK:       X.XX ±0.020         MIL-STD-202F, METHOD 213B COND. B VIBRATION:       X.XX ±0.010         ALL DIMENSIONS ARE IN INCHES TOLERANCES:       MIL-STD-202F, METHOD 213B COND. B VIBRATION:         MIL-STD-202F, METHOD 204D COND. B VIBRATION:       X.XX ±0.010         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. B VIBRATION:       X.XX ±0.010         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. A       B				· · · · · · · · · · · · · · · · · · ·		
TEMPERATURE:       -SS'C TO +85'C (OPERATING) -65'C TO +125'C (STORAGE)       TOLERANCES: X.XX ±0.020         HUMIDITY:       MIL-STD-202F, METHOD 103B COND. B       X.XX ±0.020         SHOCK:       MIL-STD-202F, METHOD 213B COND. B       X.XX ±0.010         VIBRATION:       MIL-STD-202F, METHOD 105C COND. B       X.XX ±0.010         ALTITUDE:       MIL-STD-202F, METHOD 107D COND. A       B	NVIRONMENTAL RATINGS:		PART NO.			RATION
-65 C 10 +125 C (Storkde)       X.XX ±0.020         HUMIDITY:       MIL-STD-202F, METHOD 103B COND. B         SHOCK:       MIL-STD-202F, METHOD 1213B 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	TEMPERATURE:		APPROVALE			
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		X.XX ±0.020	DRAMN	OUILINE		
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	NUCK	X.XXX ±0.010		DEFIECTIVE OF NON-PI		
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A	WIRRATION:		K. Mable	11/7/97 SOLID STAT		
	• ALTITUDE:		in alian		100-4187-2	
	NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S		



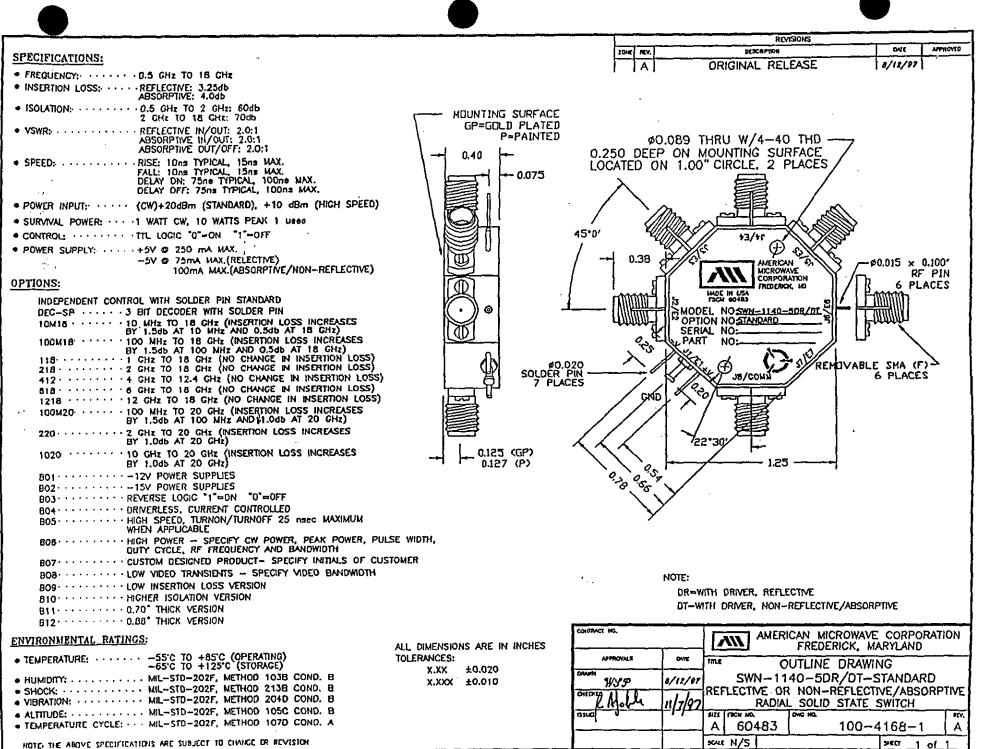
#### PRODUCT DESCRIPTION

#### PAGE

10.0	<u>SP47</u>	<u>[- (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

			,	
		<u> </u>	REVISIONS	
SPECIFICATIONS:		ZOIE NEV.	DESCRIPTION	
			ORIGINAL RELEASE	8/13/97
FREQUENCY:				
ABSORPTIVE: 3.75db				
• ISOLATION:				
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1				
• SPEED:			E SHA (F)	
DELAY OFF: 75ns TYPICAL, 100ns MAX.	CP=GOLD PLATED	0.015 × 0.100" RF PIN-		
POWER INPUT: ······· (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	N. State Sta	5 PLACES	1	
• SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 uses	0.125 (GP)			
• CONTROL: TTL LOGIC "O"=ON "1"=OFF	(0.127 (P)	-0.125		~
POWER SUPPLY: +5V @ 200 mA MAX.     SV @ 250 mA MAX (PCLECTED)		B0.00*	1 1 1 1 80.0	<b>N</b>
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)		TYP.		$\mathbf{X}$
OPTIONS:	\ <b>D</b>  -			— <del>/</del> t
		1 Man St.	The second and	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP ········2 BIT DECODER WITH SOLDER PIN		i UMEN		
101/18			FER BOAL	71
BY 1,506 AT 10 MHZ AND 0.500 AT 18 GHZ		······································	SOUD STATE SWITCH	
BY 15db AT 100 MHz AND 0.5db AT 18 GHz			MODEL NOMER-1DE/01-02	91,50" CIRCLE POINT TO POINT
118			OPTION NO <u>standard</u>	
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)	)   ·	050.04	PART NO	
518 6 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS) 1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)		SOLDER PIN		1
100420 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		6 PLACES		i
BY 1.506 AT 100 MHz AND 1.006 AT 20 CHz) 220 2 CHz TO 20 CHz (INSERTION LOSS INCREASES				<u> </u>
BY 1.0db AT 20 GHz)		0.20 0.25 0.38		
1020 ···································		<u>т</u> 1 Тур.	CND CND	Ň
BO1		L	+v/ = v	N. Contraction of the second s
BO2 15V POWER SUPPLIES	0.70			$\mathbf{N}$
803 REVERSE LOGIC "1"#DN "0"#OFF 804 DRNERLESS, CURRENT CONTROLLED				un Ì
BOS			0.250 DEEP ON MOUNTING SURFAC	CE
WHEN APPLICABLE			LOCATED ON \$1.00" CIRCI 2 PLACE	
BOB				
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	ISTOMER	NOTE	•	
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH			 R=WITH DRIVER, REFLECTIVE	
BOS LOW INSERTION LOSS VERSION BIG			-WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
B11		-		
		PART HO,	AMERICAN MICRO	WAVE CORPORATION
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES	·]	FREDERIC	K, MARYLAND
• TENPERATURE:	TOLERANCES: X.XX ±0.020	APPROVALS DA		RAWING
A HUMDITY	X.XXX ±0.010	WYP 8/15	/97 MSR-4DR/DT-0	7–STANDARD
• SHOCK:		<i></i>	- DEFLECTAR OD NON DEF	LECTIVE/ABSORPTIVE
VIBRATION:		anter Mich 11/21	97 SOLID STATE	میں میں 20 میں
• TENPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A				00-4193-1 A
NOTE: THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SOUL N/S	≫«ст 1 of 1
NOTE) THE ADIVE SPECIFICATIONS ARE SUBJECT TO COMPLETE OF REVENUE		- <u>In a second and a second and a second a sec</u>		

SPECIFICATIONS:		IONE NEY.	REVISIONS DESCRIPTION	DALE	ATTRO
		A	ORIGINAL RELEASE		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
FREQUENCY:D.5 GHz TO 18 GHz			UNUMAL NELEADE	8/13/97	
INSERTION LOSS: REFLECTIVE: 3.0db ABSORPTIVE: 3.75db					
ISOLATION: ····································					
VSWR: ······ REFLECTNE 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.	GP=GOLD PLATED	REMOVABLE S	MA (F)		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HICH SPE		RF PIN 🔨	. ``		
SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 uses		5 PLACES			
CONTROL: TTL LOGIC "0"-ON "1"-OFF	\ 0.125 (GP) \ 0.127 (P)	and the second sec			
POWER SUPPLY:		80.00 40.00 TYP,	B).00.		
PTIONS:				<u> </u>	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		- 1000-5	ALL C REMAIN	λ [	
DEC-SP 2 BIT DECODER WITH SOLDER PIN 1DM18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES				À Ì	
BY 1.5db AT 10 MHz AND 0.5db AT 18 CHz) 100M18 100 NHz TO 18 CHz (INSERTION LOSS INCREASES		51115	ID STATE SWITCH		
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		7644	$(-+)^{}$	#1.50" CIRCLE	•
118			EL NOSAER-ADR/DT-07	POINT TO POIN	
412		<b>N</b> 111 <b>I</b>			
6 B18 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOS	55) (25	0.020 PAR	т но: ј ///		
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LC	SS) SOLDER	PIN			
100M20 100 MHz TO 2D GHz (INSENTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		ICES	CID 14 JS -47 DO		
220 ······ 2 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)				·	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)					
BO112V POAT.R SUPPLIES		<b>L</b> +V			
BO2 15V POWER SUPPLIES	[ <del></del> 0,70				
B03 ······ REVERSE LOGIC TT=ON TOT=OFF	1	0.66	0.66	\	
BO4 DRIVERLESS, CURRENT CONTROLLED			#0.089 THRU W/4-40 THD-	7	
B05 ······ HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM		. 0.2	50 DEEP ON MOUNTING SURFACE		
BOS	, PULSE WIDTH,		LOCATED DN Ø1.00' CIRCLE 2 PLACES		
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF	CUSTOMER				
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWID		NOTE:			
BO9 LOW INSERTION LOSS VERSION		DR=	WITH DRIVER, REFLECTIVE		
B10 ······ HIGHER ISOLATION VERSION			WITH DRIVER. NON-REFLECTIVE/A	BSORPTIVE	
B11 0.40" THICK VERSION		01			
VIRONMENTAL RATINGS:	2/41	140,	AMERICAN MICRO	WAVE CORPOR	ATIO
	ALL DIMENSIONS ARE IN INCHES	······		( MARYLAND	- 11 V
TENPERATURE:	TOLERANCES:	APPROVALS DATE			<u> </u>
HUMIDITY:	X.XX ±0.020	N 1		CAWING	
SHOCK:	. X.XXX ±0.010	"Wyp 0/13/6	/ MSR-4DR/DT-0	/-DEC-SP	
VIBRATION: MIL-STD-202F, METHOD 204D COND. B	<b>O</b> HO		REFLECTIVE OR NON-REFL		RPTIV
ALTITUDE: MIL-STO-202F, METHOD 105C COND. B		Kingon 1/1/9	SOLID STATE	SWITCH	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A	1500			0-4193-2	
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION					
		<u> </u>	SCALE N/S	<u>. 1</u>	<u></u>





# SECTION PRODUCT DESCRIPTION PAGE 11.0 SP5T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches 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



			REVISIONS	
SPECIFICATIONS:		ZOHE NEV.	DESCRIPTION	DATE APPROVED
			ORIGINAL RELEASE	8/12/97
FREQUENCY: · · · · · · · · 0.5 GHz TO 18 GHz     INSERTION LOSS: · · · · · REFLECTNE: 3.25db				
ABSORPTIVE: 4.0db				
• ISOLATION:				
VSWR: REFLECTNE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	MOUNTING SURFACE GP=GOLD PLATED P=PAINTED	-0.00		
• SPEED: RISE: 10ns TYPICAL, 15ns WAX, FALL: 10ns TYPICAL, 15ns WAX, DELAY ON: 75ns TYPICAL, 100ns WAX, DELAY OFF: 75ns TYPICAL, 100ns MAX.	0.40	0.250 DEEP 0	9 THRU W/4-40 THD	7
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HICH SPEED)		$\boldsymbol{\lambda}$		
• SURVIVAL POWER: ····· 1 WATT CW, 10 WATTS PEAK 1 usec				
• CONTROL: ········TTL LOGIC "0"-ON "1"-OFF				N
POWER SUPPLY: +5V @ 250 mA MAX.		45'0'		<b></b>
-5V @ 75mA WAX.(RELECTIVE) 100mA WAX.(ABSORPTIVE/NON-REFLECTIVE)				-
OPTIONS:		/ - 0.38	AMERICAN S.	\$0.015 x 0.100"
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			CORPORATION REDEPICK, NO	6 PLACES
10418	$\overline{\mathbf{O}}$		MODEL NOSWN-1140-50R/DI	•   ! AMM///
BY 1.546 AT 10 MHz AND 0.546 AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES			OPTION NO DEC-SP	Fumin
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz]			SERIAL NO:	
118		0,00	PART NO:	-
412 ····································		.020 \		VABLE SMA (F)
BIR · · · · · · · · · · · · · · · · · · ·		PIN	JB/COMM	6 PLACES
1218 12 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS) 100M20 100 MHZ TO 20 GHZ (INSERTION LOSS INCREASES		/ / L X		
BY 1.5db AT 100 MHz AND 1,0db AT 20 GHz)		SND .	Y. M.	
2202 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			·/ 🛱 🛛 🛛	
1020			722.30	
B01 12V POWER SUPPLIES	$\rightarrow$ $\rightarrow$ $0.125 (GP) (0.127 (P))$		1.25	
B02	0.127 (F)	0,2,0,5,4		
B03······ REVERSE LOGIC "1"≕ON "0"≕OFF B04····· DRIVERLESS, CURRENT CONTROLLED		Q. J. Q. 55		
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE				
BO5 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUI DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	SE WIDTH,	Y		
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS	STOMER			
808 ·······Low video transients - specify video bandwidth		NOT	E:	
BO9 LOW INSERTION LOSS VERSION			REWITH DRIVER. REFLECTIVE	
BIO HIGHER ISOLATION VERSION			T-WITH DRIVER, NON-REFLECTIVE/A	ABSORPTIVE
B11				
		CONTRACT NO.		WAVE CORPORATION
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			K, MARYLAND
• TEMPERATURE:	TOLERANCES: X.XX ±0.020		TTE TITLE DI	
+ HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XXX ±0.01D	Wyg 8/1.	swn-1140-5DR	/DT-DEC-SP
SHOCK: MIL-STD-202F, METHOD 213B COND. 8     VIBRATION: MIL-STD-202F, METHOD 204D COND. 8			REFLECTIVE OR NON-REF	
VIBRATION: MIL-STD-2027, METHOD 2040 COND. B     ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		C. Male 4/7	197 RADIAL SOLID ST	
• ALTITUDE: MIL-STD-2027, METHOD 1030 COND. A		asual 4	A 60483 DWC HO.	
A IFMPERATURE CICLE, MIL-SID-2021, METHOD TOTO COND			[A] 60483	00-4168-2   A



#### SECTION

#### PRODUCT DESCRIPTION

12.0	<u>SP57</u>	- (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches	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

		·	REVISIONS	APPROVED
PECIFICATIONS		ZOHE REV.	PESCAPHON	
FREQUENCY:			ORIGINAL RELEASE	8/12/97
INSERTION LOSS: · · · · · REFLECTIVE: 3.25db				
ABSORPTIVE: 4.0db				
ISOLATION: · · · · · · · · · D.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db		REMOVABLE SI	1A (F)	
VSWR:		6 PLACES		
ABSORPTIVE IN/OUT: 2.0:1 ØD.104	ON ¢1.00	Ø0.015 × 0.100*		
ABSORPTIVE OUT/OFF: 2.0:1 CIRCLE, SPEED: · · · · · · · · · · · · RISE: 10ns TYPICAL, 15ns MAX,	2 PLACES	RF PIN		.19
FALL: 10ns TYPICAL 15ns MAX.		6 PLACES		
DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.		Jan.		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)			0.25	
SURVIVAL POWER: · · · · 1 WATT CW. 10 WATTS PEAK 1 uses				
CONTROL:	5'0'	, and the first state of the second state of t		
POWER SUPPLY:			Г СТ-ст	7
-5V @ 75mA MAX.(RELECTIVE)		AMERICAN		NIDER PIN
PTIONS: 100ma MAX. (AUSORPTIVE/NON-REFLECTIVE)				PLACES
	HOLE IN USA	FREDERICK, NO		MOUNTING SURFACE
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII			GP=GOLD PLATED
DEC-SP · · · · · · 3 BIT DECODER WITH SOLDER PIN 10M18 · · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	UNUL OPTION NO STA			P=PAINTED
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO:	L¥ .>		
100M18 · · · · · · 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	FSCM NO:			WER SUPPLY
118 1 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)	0.38 ×	$\sim$		ILDER PIN
218 · · · · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	. J1-C	OM TXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	いや オー 一株八部 トー	PLACES
412 ········· 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) 618 ········ 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	) \ <del>`````</del>	E CND		
1218 ···································				
100M20 100 NHz TO 20 CHz (INSERTION LOSS INCREASES		∃&°X   ∖∕		
			0.33 -	
220 ·········2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1,0db AT 20 GHz)				
1020 · · · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		22*30' `	0.55	
BY 1.0db AT 21 GHz)				
BO1 ······ - 12V POWER SUPPLIES	1.2		0.70	
B02····································	1~ 1.2	-1		
BO4 DRIVERLESS, CURRENT CONTROLLED				
BO5 HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM				
WIEN APPLICABLE BOO	II SE WIDTH			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				
BO7 ····· CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	ISTOMER			
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE		
BO9 LOW INSERTION LOSS VERSION			R=WITH DRIVER, REFLECTIVE	
B10HIGHER ISOLATION VERSION			=WITH DRIVER, NON-REFLECTIVE/AI	BSORPTIVE
811		Ų.	the second s	
		CONTRACT NO.	AMERICAN MICRO	WAVE CORPORATION
NVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			K, MARYLAND
TEMPERATURE:55'C TO +85'C (OPERATING)	TOLERANCES:	APTROVALS DAT		
-65°C 10 +125°C (STORAGE)	X.XX ±0.020	DRivel		
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B SHOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WYP 0/12,	SWN-1170-5DR/	
VIBRATION		CHICKED AL 11/7	REFLECTIVE OR NON-REF	ATE SWITCH
ALTITUDE		asset if the inf of	SIZE FISCH NO. DWG NO.	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A				00-4173-1 A
A FULL FLAM FULL A A A A A A A A A A A A A A A A A A				
TTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE ON REVISION			SCALE N/S	SIRET 1 of 1

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PECIFICATIONS:		ZOIAE NEV.	DESCRIPTION	DVIE	ANTROV
		· A	ORIGINAL RELEASE	8/12/97	
FREQUENCY:				•/ ••/ •/	1
ISOLATION:		REMOVABLE SM	A (F)		
	ON Ø1.00 2 PLACES	6 PLACES Ø0.015 × 0.100*			•
SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY DN: 75ns TYPICAL, 100ns MAX. DELAY DF: 75ns TYPICAL, 100ns MAX.		6 PLACES		).19	
POWER INPUT: ····· (CW)+20dBm (STANDARD), +10 dBm (HICH SPEED)			0.25	•	
SURVIVAL POWER: · · · · 1 WATT CW, 10 WATTS PEAK 1 USOO	45'0' <i>UMPS</i>				
CONTROL: TTL LOGIC "0"-ON "1"-OFF " POWER SUPPLY: +5V @ 250 mA NAX.		er ///////			
-SV @ 75mA MAX.(RELECTIVE)		AMERICAN SA		il Dlder pin	
TIONS: 100mA MAX (ABSORPTIVE/NON-REFLECTIVE)		CORPORATION 31-3		PLACES	•
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP				MOUNTING SU	
10M18 · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	OPTION NOT	EG-SP		P=PAINTED	
DY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 · · · · · 100 MHz TO 18 GHz (INSERTION LOSS INCREASES		BBB_BB_			
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118	0.38 42			JWER SUPPLY	
218 ········ 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 412 ······· 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)	, J1	-COM		PLACES	
618	′   🔚				
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)			0.33		
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	1 5		0.33		
BY 1.0db AT 20 GHz) 1020 10 GHz TO 20 GHz (INSERTION LCSS INCREASES BY 1.0db AT 20 GHz)	~	22.30, 4	0.55		
B01 ······ -12V POWER SUPPLIES			0.70		
BO2 15V POWER SUPPLIES	· · · · · · · · · · · · · · · · · · ·	.25	1. 0.70 -1		
BO3······ REVERSE LOGIC "1"=DN "0"=OFF BO4····· DRIVERLESS, CURRENT CONTROLLED					
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM					
WHEN APPLICABLE BOB · · · · · · · · HIGH POWER - SPECIFY CW POWER, PEAK POWER, PL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ULSE WIDTH,				
B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	JSTOMER				
BO8 ····· LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE:		•	
B09····· LOW INSERTION LOSS VERSION B10····· Higher Isolation Version					
811······0.40" THICK VERSION			=WITH DRIVER. REFLECTIVE -WITH DRIVER, NON-REFLECTIVE/A	RSORPTIVE	
B12 ······ 0.88" THICK VERSION		51	anti Briter, non-aci ccomey?		
<u>VIRONMENTAI. RATINGS:</u>		CONTRACT NO,	AMERICAN MICRO	WAVE CORPOR	RATIC
TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS DATE		K, MARYLAND	
-65°C TO +125°C (STORAGE) HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B	X.XX ±0.020	DRAWN			_
SHOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WS9 0/12/	REFLECTIVE OR NON-RE		
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		anter Alle n/2/0			UKU
ALTITUDE: ••••••••••••••• MIL-STD-202F, METHOD 1050 COND. B TEMPERATURE CYCLE: •••• MIL-STD-202F, METHOD 1070 COND. A		<u>прис 1. Арали 1. 17/2</u>	SIZE I SCH NO.		
THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		<b>Ⅰ</b>	A 60483 11	<u>00-4173-2</u>	2 <u> </u> 011

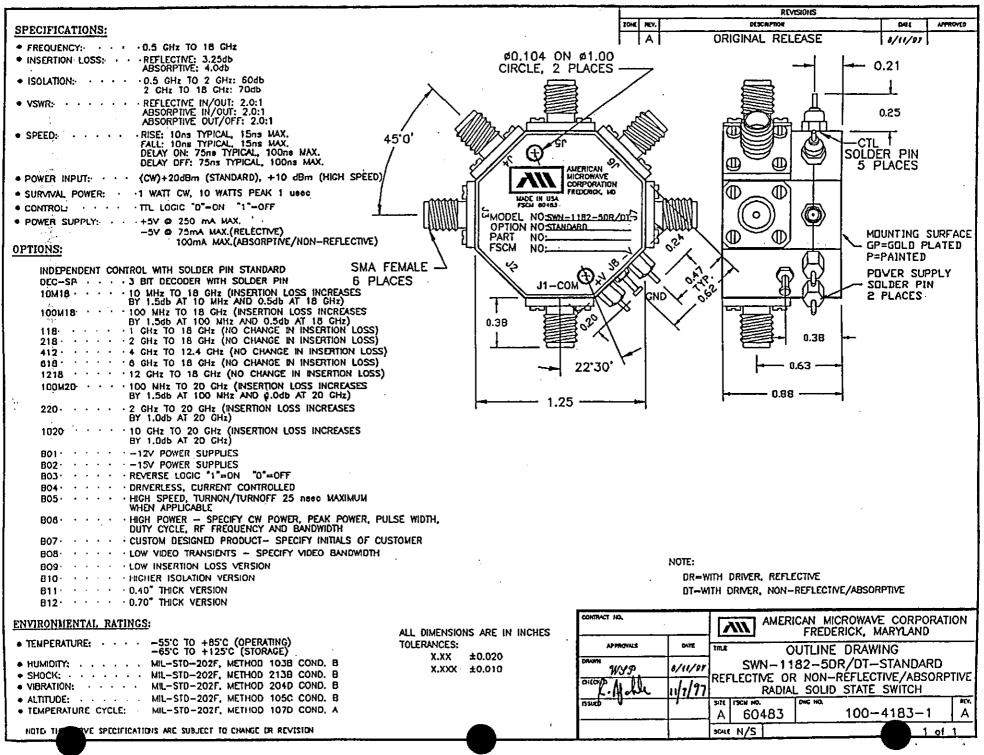


## SECTION

#### PRODUCT DESCRIPTION

#### PAGE

13.0	<u>SP51</u>	- (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	13.1	SWN-1182-5DR/DT-STANDARD with Independent Controls
	13.2	SWN-1182-5DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins



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			REVISIONS	
SPECIFICATIONS:	•	10HE	DESCRIPTION	DADE AND THE
• FREQUENCY: 0.5 CHz TO 18 CHz	`		GINAL RELEASE	8/11/97
• INSERTION LOSS: REFLECTIVE: J.25db	Ø0.104 ON Ø	.00	1	
ABSORPTIVE: 4.0db	CIRCLE, 2 PLA	CES		<b>→</b> → 0.21
• ISOLATION: 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db				4
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1				
ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1				0.25
· SPEED:	AND			
FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX.	45°0'	IL Br		-CTL I SOLDER PIN
DELAY OFF: 75ns TYPICAL, 100ns MAX.			』───────	3 PLACES
• POWER INPUT: · · · (CW)+20dBm (STANDARD), +10 dBm (HICH SI	PEED	#AVE 💟 🗀		
• SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 Leoc		IRATION		
CONTROL: TTL LOCIC "0"-ON "1"-OFF	MADE N USA			
POWER SUPPLY: +5V @ 250 mA MAX.	-I UNIN OPTION NO DEC-SP	=5DR/DI-5		
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLEC	TIVE) PART NO		D D	
OPTIONS:	4-1 FSCM NO:			- GP=GOLD PLATED P=PAINTED
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD S	MA FEMALE	<u>, */// / //////////////////////////////</u>	N ABI	POWER SUPPLY
DEC-SP · · · · 3 BIT DECODER WITH SOLDER PIN 6	PLACES J1-COM		· TR	SOLDER PIN
10M18 · · · 10 HHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	· · · · · · · · · · · · · · · · · · ·	KND V 162		2 PLACES
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASE		s\>>   \ / ["		
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 · · · · · · · · · · · · · · · · · ·	oss) 0.38	$X \mid Y \mid$		,
218 · · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION L	.0SS)		0.38	
412 · · · · · · · · · · · · · · · · · · ·			0.63	
1218 · · · · · 12 GHz TO 18 GHz (NO CHANGE IN INSERTION	LOSS)	'30'`	1 1	
100M20 · · · 100 MHz TO 2D GHz (INSERTION LOSS INCREASE BY 1.546 AT 100 NHz AND 1.046 AT 20 GHz)			0.88	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	<b> −</b> −−−−− 1.25 −	······••··		
BY 1.0db AT 20 GHz)	-			
1020 · · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	>			
BO1 12V POWER SUPPLIES				,
BO2 15V POWER SUPPLIES				
BO3······REVERSE LOGIC "1"=ON "O"≕OFF BO4·····ORNERLESS, CURRENT CONTROLLED				
BOS HIGH SPEED, TURNON/TURNOFF 25 need MAXIMU	м			
WHEN APPLICABLE BOA · · · · · HIGH POWER - SPECIFY CW POWER, PEAK POWE	ER. PULSE WIDTH.			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS				
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDW BOG LOW INSERTION LOSS VERSION		NOTE:		
BO9 CONTRACTOR LOW INSERTION LOSS VERSION		DR=WITH D	RIVER, REFLECTIVE	
B11 · · · · · · · · · · · · · · · · · ·		O HTM-TO	RIVER, NON-REFLECTIVE	E/ABSORPTIVE
812 · · · · · 0.70" THICK VERSION	-		·	
ENVIRONMENTAL RATINGS:		NTRACT NO.	AMERICAN MICH	ROWAVE CORPORATION
TEMPERATURE	ALL DIMENSIONS ARE IN INCHES			RICK, MARYLAND
-65°C 10 +125°C (STOKAGE)	Y YY ±0.020		OUTLINE	
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B     SHOCK:	X.XXX ±0.010	U/VP 8/11/97	SWN-1182-5D	
■ VIRRATION: MIL-STD-202F, METHOD 204D COND, B	2	"P.M. uhlon REF	LECTIVE OR NON~R RADIAL SOLID	EFLECTIVE/ABSORPTIVE
ALTTLIDE MIL-STD-202F, METHOD 105C COND. B		<u>k</u>	RADIAL SULID	STATE SWITCH
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		A	60483	100-4183-2 A
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	Letter and the second sec	scut	N/S	3)#ET 1 of 1
UNIT: NE NOTAE IN CONTENT OF LANDER, IN CONTENT			<u> </u>	



#### SECTION

#### PRODUCT DESCRIPTION

14.0	SP5T - (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches				
	14.1	MSR-5DR/DT-04-STANDARD with Independent Controls	14-1		
	14.2	MSR-5DR/DT-04-DFC-SP with 3 Bit Decoder and Solder Pins	14-2		

				REVISIONS	
PECIFICAT		ZONC RE	·	DESCRIPTION	APTROVED
		A	ORIGI	NAL RELEASE	8/15/57
FREQUENCY:					
ISOLATION:					
VSWR: ····· REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE DUT/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.			EMOVABLE SMA (F) 6 PLACES	7	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED	) P=PAINTED	RI		. \	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used	Ĩ,	6 PL	ACES		
CONTROL:	0.125 (GP) 0.127 (P)				
POWER SUPPLY:		B0.00	.000 YP,	e0.00	
PTIONS:					<del>)`1</del>
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP	Ì 🖉		AN AN AN	ERICAN	
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		7 K./ ""		RPORATION	<u>}</u>
100M18 100 MHz TO 18 CHz (INSERTION LOSS INCREASES			3/1// 4	те switch	
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			MODEL HOME	R-HOR/DI-04	91.50" CIRCLE
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			OPRON NOST	NIDSRO \ \   }	POINT TO POINT I
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS		//////////////////////////////////////	SERIAL NO:	—— N//	
518		SULDER PIN	PART NO:		
100M20 ·········· 100 MHz TO 20 GHz (NO CHANGE IN INSERTION LOSS) BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	,	7 PLACES			
220 ·······2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) B					ł
1020 ········· 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			GND 提		L.
BO1 12V POWER SUPPLIES			+v-/ 4	-"}v	V,
BO2 15V POWER SUPPLIES		.40+		0.55	\
BO3······ REVERSE LOGIC "1"-ON "0"-OFF BO4····· DRIVERLESS, CURRENT CONTROLLED			<b> +−−−−</b> 0.66 <b>−−−−+</b>	I	Ň
BOS			0.250 DEE	Ø0.089 THRU V/4-40 TH P on mounting surface DCATED on ø1.00° circle	
BO5 ······ HIGH POWER - SPECIFY CW POWER, PEAK POWER, P DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	•		L	2 PLACES	
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF C	USTOMER				
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH			NOTE:		
BO9 LOW INSERTION LOSS VERSION B10				ER, REFLECTIVE	
B1t			DT=WITH DRM	ER, NON-REFLECTIVE/AB	BSORPTIVE
		PART NO.	<u> </u>		
VIRONMENTAL RATINCS:	ALL DIMENSIONS ARE IN INCHI				VAVE CORPORATION
TEMPERATURE:	TOLERANCES:	APPROVALS			, MARYLAND
-65°C TO +125°C (STORAGE)	X.XX ±0.020			OUTLINE DR	
HUMIDITY:	X.XXX ±0.010	ORNAN WYP	8/13/97	MSR-5DR/DT-04	-STANDARD
VIBRATION;		OILCY & AT	REFLEC	CTIVE OR NON-REFL	ECTIVE/ABSORPTIVE
ALTITUDE:		K-14 4-4	_11/1/97	SOLID STATE	SWITCH
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		(5500)			0 4100 1 A
INTE THE ADDIVE SDEDIERATIONS ARE SUBJECT TO CHANGE OF PERVICTION			[	· · · · · · · · · · · · · · · · · · ·	0-4188-1 A
IDTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	·····		SCALE N	'S	SHEET 1 of 1

			REVISIONS		
SPECIFICATIONS:		LONE NEV.			APPROVE
• FREQUENCY:			ORIGINAL RELEASE	8/13/97	
INSERTION LOSS: REFLECTIVE: 3.25db ABSORPTIVE: 4.0db					
• ISOLATION:					
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.	C MOUNTING SURFACE GP=GOLD PLATED C P=PAINTED	REMOVABLE SI 0.015 × 0.100'	HA (F)		
POWER INPUT: · · · · · · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		RF PIN —	.``\		
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used		6 PLACES			
CONTROL:	\0.125 (GP) \0.127 (P)	-0.075			
• POWER SUPPLY: ····· +5V @ 250 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		80.00 40.00 TYP.	80.00°		
OPTIONS:	\ EH			- <del>\_</del>	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP			AMERICAN		
10M18 ········ 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)			ANERICAN HICROWAYE HARDSCORPORTION		
100M18		$(\mathbf{A}^{+})^{\dagger}$	ID STATE SWITCH	#1.50' CIRCLE	
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			ION NO 000-5P	POINT TO POIN 1	NT
412 ······ 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS				ļ	
818		BOLDER PIN	AD	Í	
100M20 100 NHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz AND 1.0db AT 20 CHz)		5 PLACES	Cia 1V J6-V BD		
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		0.20 0.25 0.38		<u></u>	
1020 1D GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)					
BO1 12V POWER SUPPLIES	·				
B02············	0.40	0.66		۱.	
804 ······ DRIVERLESS, CURRENT CONTROLLED			#0.089 THRU W/4-40 THD-	<u>``</u>	
BOS ······ HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM WHEN APPLICABLE		0.2	250 DEEP ON MOUNTING SURFACE		
BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PI	ULSE WIDTH,		LOCATED ON #1.00" CIRCLE 2 PLACES		
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH					
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	JSTOMER	NOTE:			
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BOG LOW INSERTION LOSS VERSION					
810····································			WITH DRIVER, REFLECTIVE	00000000	
B11 ···································		01-	WITH DRIVER, NON-REFLECTIVE/A	2011-11/5	
•••		PART HO,			
NVIRONMENTAL_RATINGS:	ALL DIMENSIONS ADE IN DICUES			WAVE CORPO K, MARYLAND	
• TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS DATE			
-65°C TO +125°C (STORAGE)	X.XX ±0.020				_
HUMIDITY:	X.XXX ±0.010	DRUMN WY9 0/13/1	MSR-5DR/DT-0	04-DEC-SP	2
SHOCK: NIL-STD-202F, METHOD 213B COND. B     VIBRATION: MIL-STD-202F, METHOD 204D COND. B		onotion [ ]	- REFLECTIVE OR NON-REF	LECTIVE/ABS	ORPTI
ALTITUDE:		1.14 Jul 1/74	3SOLID_STATE	SWITCH	
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 100C COND. A		11		00-4188-2	2
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			sour N/S	אנד <u>1</u>	
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14-2

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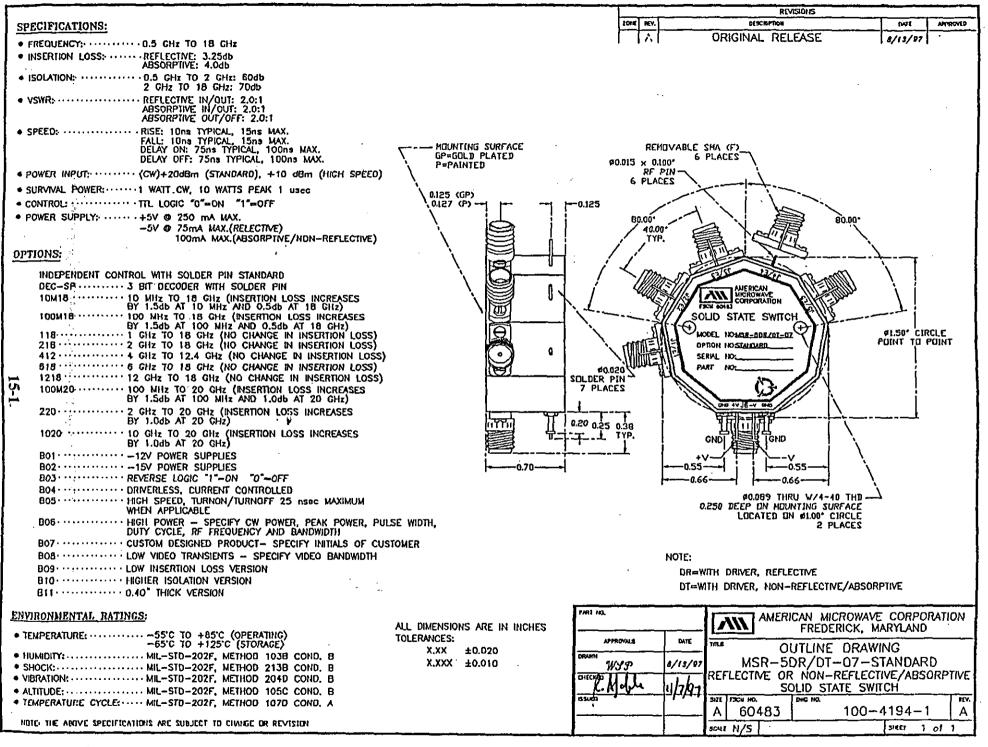


# SECTION

#### PRODUCT DESCRIPTION

#### PAGE

15.0	SP5T - (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches					
	15.1	MSR-5DR/DT-07-STANDARD with Independent Controls				
	15.2	MSR-5DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins				





				REVISIO	015	
			LOIE NEV.	OCICRETION	070	APPROVED
SPECIFICATIONS:				ORIGINAL RELEA	SE   8/13/	97
• FREQUENCY: ········ 0.5 GHz TO 18 GHz						
<ul> <li>INSERTION LOSS: ······ REFLECTIVE: 3.25db ABSORPTIVE: 4.0db</li> </ul>						
• ISOLATION:						
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.	HOUNTING SURFACE		REMOVAĐLE	SHA (F)		
DELAY DN: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	GP=GOLD PLATED	Ø0.0	15 x 0.100"	5 PLACES		
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	P=PAINTED		RE PIN			
			6 PLACES			
SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 USOO	0.125 (GP) 0.127 (P)	-+   +-0.125			· _	
			80.00		80.00*	
POWER SUPPLY:		i I	/ 40,00*			
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)			TYP.		ì	
OPTIONS:	\ H		1		·	
		<u> </u>	< man me		1 1000	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			UMATERIN	AVERICAN		
DEC-SP		₩\ /		AMERICAN HIEROWAYE CORPORATION	المعالمة	
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		1 ×	· {\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SOLID STATE SWITCH		
100M18	<u>}</u>	-1		MODEL NO MER-SDR /01-02	1.50° CI	RCLE
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 1181 GHz TO 18 GHz (NO CHANCE IN INSERTION LOSS)			- HILE INTER	OPTION NOOPCEST	#1.50" CI PDINT TO	POINT
218			Milette	SERIAL HOL	ll l	
ALA		40.02	Strume Still	PART HO:		
1218		SOLDER PIN		∖ ö <i>∖/∥</i>	Y I	
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1,5db AT 100 MHz AND 1,0db AT 20 GHz)		I J FLACE	'   \	CID +V J6-V DD	i A	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	\	╾╓┲┲┦═┸╼╼╼┲╌╴	<b>T</b>	575 - 15		
BY 1.0db AT 20 GHz)	in the	0.20 0.25 0		INCIN	$+ \lambda$	
1020 ························· 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		W-j-t-1	YP.	GND		
BO112V POWER SUPPLIES		·	ь <u>і</u>	+v/ 11 \v		
BO2 15V POWER SUPPLIES	0.70		0.5			
BO3 REVERSE LOGIC "1"=ON "0"=OFF			l	.66		
804DRIVERLESS, CURRENT CONTROLLED 805				0.250 DEEP ON HOUNTING		
WI IEN APPLICABLE				LOCATED DN #1.0	Of CIRCLE	
BOB	SE WIDTH,				2 PLACES	
BOT CICLE, AF PACEDERCH AND BOUNDING	TOMER					
808 LOW VIDEO TRANSIENTS - SPECIFY MOEO BANOWIDTH			NO	re:	·	
BOS LOW INSERTION LOSS VERSION				DR=WITH DRIVER, REFLECT	IME	
B10 HIGHER ISOLATION VERSION				DT-WITH DRIVER, NON-RE	FLECTIVE/ABSORPTIVE	
B11 D. 4D" THICK VERSION						
ENVIRONMENTAL, RATINGS:		PART HO.		AMERIC/	AN MICROWAVE COP	PORATION
	ALL DIMENSIONS ARE IN IN		1	b	FREDERICK, MARYLA	ND
• TEMPERATURE:	TOLERANCES: X.XX ±0.020		PROVALS ·	TILE OUT	ILINE DRAWING	
A HUMDITY MIL-STO-202F, METHOD 103B COND, B	X.XXX ±0.020	DRAWN	WYP 0/	3/07 MSR-50	R/DT-07-DEC-	-SP
+ SHOCK			<u></u>		NÓN-REFLECTIVE/A	BSORPTIVE
VIBRATION:		OHECHO	Afable 11		ID STATE SWITCH	
ALTITUDE:MIL-STD-202F, METHOD 105C COND. B TEMPERATURE CYCLE:MIL-STD-202F, METHOD 107D COND. A		5500	7		юна. 100 4104	2 A
-		'	{	<u>A 60483 [</u>	100-4194	
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		1		SCALE N/S		1 of 1



#### SECTION

#### PRODUCT DESCRIPTION

16.0	<u>SP6</u>	T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches
	16.1	SWN-1140-6DR/DT-STANDARD with Independent Controls
	16.2	SWN-1140-6DR/DT-DEC-SP with 2 Bit Decoder and Solder Pins

			REVISIONS	
SPECIFICATIONS: • FREQUENCY: 0.5 GHz TO 18 GHz • INSERTION LOSS: REFLECTIVE: 3.54b		CORE NOV.	ORIGINAL RELEASE	041 APPROVED 8/11/97
ABSORPTIVE: 4.25db • ISOLATION: • • • • 0.5 CHz TO 2 CHz: 60db 2 CHz TO 18 CHz: 70db	- MOUNTING SURFACE			
VSWR:		Ø0.(	089 THRU W/4-40 THD - ON MOUNTING SURFACE	7
• SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.		LOCATED ON	1.00" CIRCLE, 2 PLACES	/
POWER INPLIT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)				122
• SURVIVAL POWER: · · 1 WATT CW, 10 WATTS PEAK 1 used		· · ·	fillen an	
CONTROL: TTL LOGIC "B"=ON "1"=OFF		45*0′	14/Et	
<ul> <li>POWER SUPPLY: ++5V @ 300 mA MAX. ( -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)</li> </ul>		0.38		
OPTIONS:	I T	/ । ज्ञ	CORPORATION	י זרו י
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) 218 · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	© © REM	UVABLE SMA (F) 7 PLACES #0.015 x 0.100'-	MODEL NO.SMN-1140-60R DOPTION NO.STANDARD SERIAL NO. PART NO.	
412 · · · · + 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)	0.20			
220 · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db at 20 GHz)		ľ		6 - 8 PLACES
1020 · · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			22*30' - 0.81 -	
BO1 · · · · · - 12V POWER SUPPLIES BO2 · · · · · - 15V POWER SUPPLIES				
BO3 REVERSE LOGIC "1"=ON "0"=OFF			<b>→</b> 1.25	
B04 · · · · DRIVERLESS, CURRENT CONTROLLED B05 · · · · HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE				
BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	SE WIDTH,			
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS	TOMER			
BO8······LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO9······LOW INSERTION LOSS VERSION		NOTE:		
BIO + + + + HIGHER ISOLATION VERSION		OR	WITH DRIVER, REFLECTIVE	
B11 · · · · · D.70" THICK VERSION		דס	WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
		connect in		
<u>ENVIRONMENTAL RATINGS</u> :	ALL DIMENSIONS ARE IN INCHES	CONTRACT NO.	AMERICAN MICRO	WAVE CORPORATION
• TEMPERATURE: -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE)	TOLERANCES:	APPROVALS DATE		K, MARYLAND
HUMIDITY:	X.XX ±0.020 X.XXX ±0.010	онични ЖУД а/12/ Сисския. Арали 11/7/	SWN-1140-6DR/I	DT-STANDARD LECTIVE/AØSORPTIVE
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B     TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		15100 11/1	SIZE FISCH NO. DWG NO.	0-4169-1 A
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			304 N/S	3×67 1 of 1

			REVISIONS	
SPECIFICATIONS:		ZONE PEV.	DESCRIPTION	DATE APPROVED
• FREQUENCY: 0.5 CHz TO 18 CHz			ORIGINAL RELEASE	6/15/94
INSERTION LOSS: REFLECTIVE: 3.5db			·.	
ABSORPTIVE: 4.25db				
ISOLATION:     O.5 GHz TO 2 GHz: E0db     Z GHz TO 18 GHz: 70db				
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	GP=GOLD PLATED	ø0.(	289 THRU W/4-40 THD	7
SPEED:     RISE: 10ns TYPICAL, 15ns MAX.     FALL: 10ns TYPICAL, 15ns MAX.     DELAY ON: 75ns TYPICAL, 100ns MAX.     DELAY OFF: 75ns TYPICAL, 100ns MAX.		LOCATED ON	ON MOUNTING SURFACE 1.00" CIRCLE, 2 PLACES	/ 、
• POWER INPUT: · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)				· ~
• SURVIVAL POWER: • • 1 WATT CW, 10 WATTS PEAK 1 usec			XADA AN IN	I llbr.
• CONTROL: ••••••••••••••••••••••••••••••••••••		45'0'	UKALT STREET	
•		40 0	40 43/41	
<ul> <li>POWER SUPPLY: +5V ● 300 mA MAX. '.</li> <li>-5V ● 75mA MAX.(RELECTIVE)</li> </ul>		/-+  0.38		
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		PLACES	AMERICAN	*// B
OPTIONS:		/	I I CORPORATION	እጉ
		Same 1	MADE IN USA	50000
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	$(\cdot)$		L HAOC IN USA FSCH 60463	
DEC-SP · · · · 3 BIT DECODER WITH SOLDER PIN 10M18 · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES			THOMEL NO SWN-1140-60R	
BY 1.5db AT 10 MHz AND 0.5db AT 1B GHz)			SERIAL NO	
100M18 100 NHz TO 18 GHz (INSERTION LOSS INCREASES		MOVABLE SMA (F)	PART NO	
BY 1.5db AT 100 NHz AND 0.5db AT 18 GHz)		7 FEACES	A A	<b>√//</b> ₿
118 · · · · · 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218 · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		¢0.015 × 0.100°-	No a Cra	I SI
412 · · · · · · · · · · · · · · · · · · ·		RF PIN		ABn :
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		7 PLACES		<b></b>
1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)		<sup>0</sup> 0.25		-48//
100M20 · · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		- 0,23		SOLDER PIN
BY 1.5db AT 100 MHz AND \$.0db AT 20 GHz)		<u> </u>		
220 · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		1		
1020 · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	0.125 (0	-01	0.71 -	
BY 1.0db AT 20 GHz)			0.81 -	
BO1	0.127		/ 22•30/ +	
BO2·····				
BOJ REVERSE LOGIC "1"=ON "0"=OFF	· · ·		1.25	
BO4 · · · · · DRIVERLESS, CURRENT CONTROLLED				
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM				
WHEN APPLICABLE				
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER, PL DUTY CYCLE, RF FREQUENCY AND BANOWIDTH				
807 · · · · CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER			
BO8 · · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOTE	•	
BO9 · · · · LOW INSERTION LOSS VERSION		•		
BIO HIGHER ISOLATION VERSION			R=WITH DRIVER, REFLECTIVE	
B11 · · · · · · 0.70° THICK VERSION		TO	WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
B12 · · · · · 0.88" THICK VERSION				
ENVIRONMENTAL RATINCS:		CONTRACT NO.	AMERICAN MICRO	WAVE CORPORATION
	ALL DIMENSIONS ARE IN INCHES			K, MARYLAND
• TENPERATURE:	TOLERANCES:	APPROVALE DAT		
• HUMIDITY: • • • MIL-STD-202F, METHOD 1038 COND. B	X.XX ±0.020	DRVINN		
• HUMIDITY · · · · · · MIL-STD-202F, METHOD 103B COND. B	X.XXX ±0.010	W39 1/0/	SWN-1140-6DR/	DI-DEC-SP
• VIBRATION: MIL-STD-202F, METHOD 204D COND. B		OVICE I I I I	REFLECTIVE OR NON-REF	
• ALTITUDE: MIL-STD-2027, METHOD 105C COND. B		1. Mahle 11/1/	RADIAL SOLID ST	
• ALTITUDE: MIL-STD-202F, METHOD 103C COND. A		niuci V	SIZE FICH NO. DHG NO.	16V.
- The figure around the first method targ and the			A 60483 10	0-4169-2 A
HOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	·	1	SCALE N/S	1 of 1



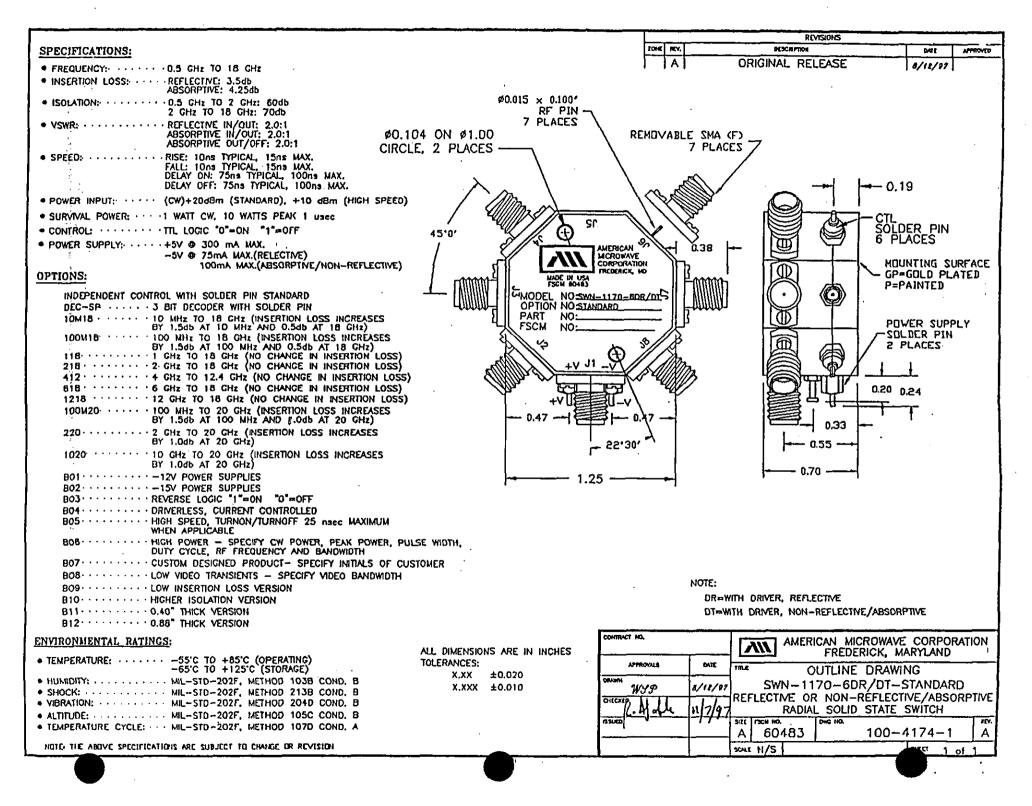


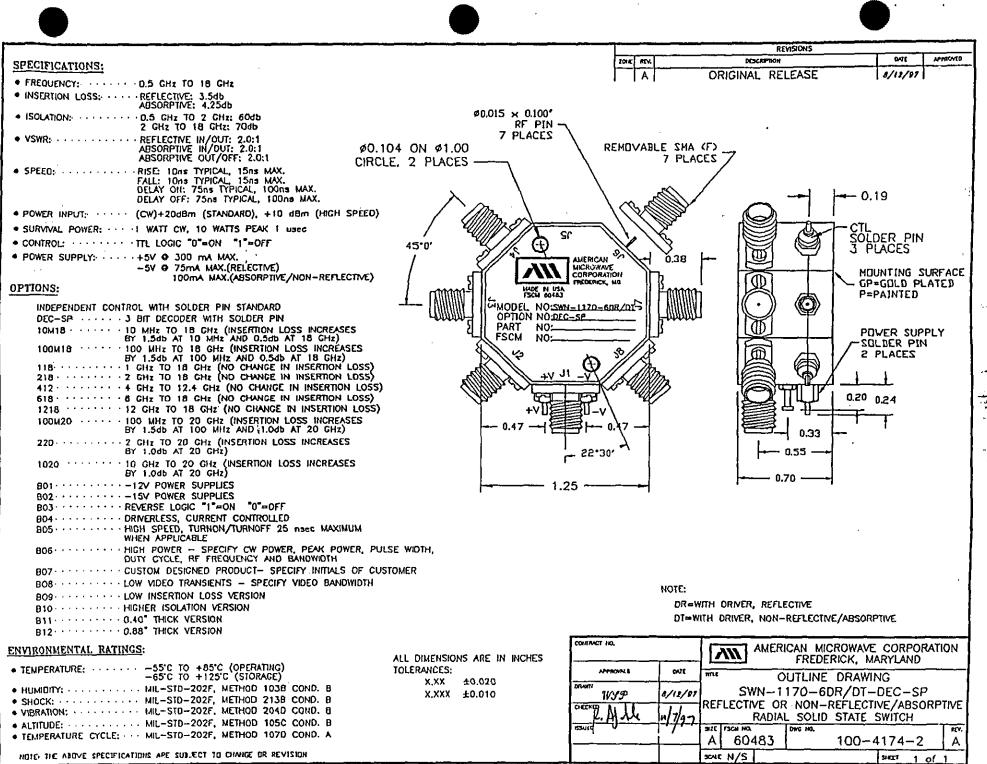
#### PRODUCT DESCRIPTION

PAGE

17.0	<u>SP61</u>	'- (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches	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 <b>-2</b>

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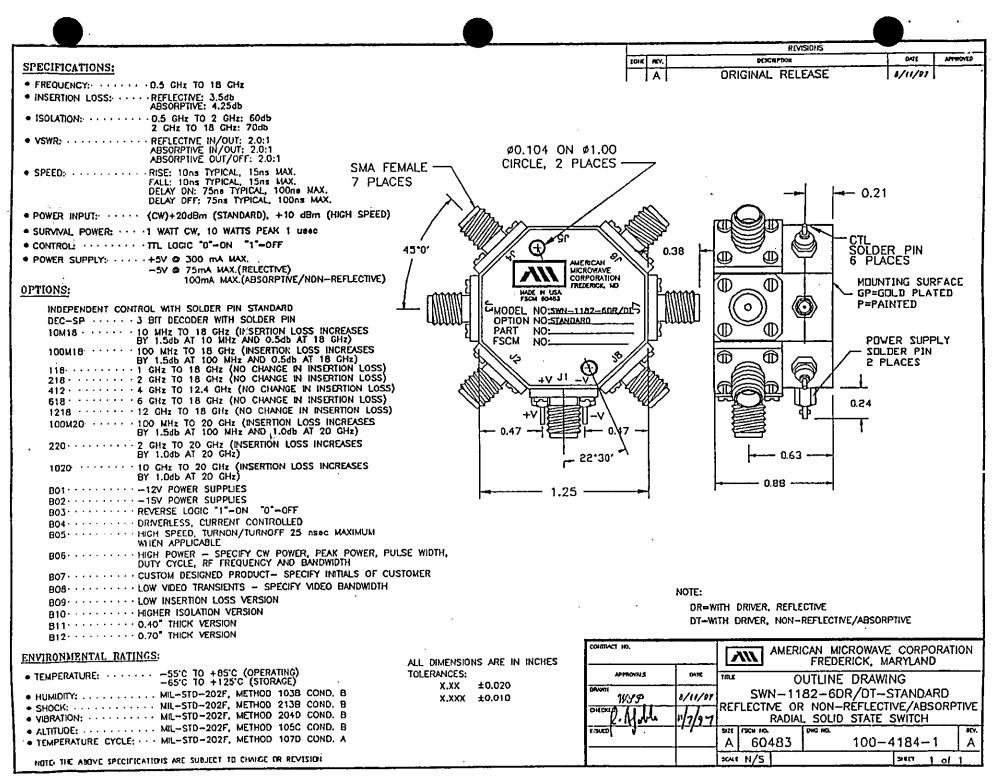


#### SECTION

#### PRODUCT DESCRIPTION

18.0	<u>SP61</u>	<u>C - (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches</u>
	18.1	SWN-1182-6DR/DT-STANDARD with Independent Controls
	18.2	SWN-1182-6DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins

. . <del>-</del>



		and and i	REVISIONS	
SPECIFICATIONS:		ZONE REV.	DISCRIPTION	DATE APPROV
+ FREQUENCY:			ORIGINAL RELEASE	8/11/97
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		ON Ø1.00		
		2 PLACES	<b></b> _	- 0.21
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEEL			$\frown$	
. SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 USOC	( ()))			
• CONTROL: ····································				ודי
	45*0'	0.38		SÖLDER PIN
POWER SUPPLY: ···· +5V @ 300 mA MAX. -5V @ 75mA MAX.(RELECTIVE)		MANERICAN		3 PLACES
100mA MAX.(ABSORPTINE/NON-REFLECTIVE				
OPTIONS:		TREDERICK NO     {		MOUNTING SURFAC
				GP=GOLD PLATED
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		N-1182-60R/01	((o)) (O)	P=PAINTED
DEC-SP ····· 3 BIT DECODER WITH SOLDER PIN	UNINU OPTION NODE	<u>c-se</u>   WWW		
10M18 · · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO:	<u>  </u>		
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES	FSCM NO:	K		POWER SUPPLY
BY 1.5db AT 100 MHz AND 0.5db AT 18 CHz)	e la	~ \$/\$		- SOLDER PIN
118 GHz TO 18 GHZ (NO CHANGE IN INSERTION LOSS		$\Theta // \Delta$		2 PLACES
218 · · · · · · · · · · · · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS				1
412 · · · · · · · · 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS 618 · · · · · · · · 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS				
1218				).24
100M20 ······ 100 NHz TO 20 GHz (INSERTION LOSS INCREASES	**   +v  E	皂  -v\ 「		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	0.47			1
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	···· · · ·	+		
BY 1.0db AT 20 GHz)	]	22.30	0.63	
1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES		r= 12 00		
BY 1.0db AT 20 GHz)				
BO1 12V POWER SUPPLIES	1.	.25	0.88	
B02······· - 15V POWER SUPPLIES B03····· REVERSE LOGIC 11-0N 10-0FF	1	1		
BO4·····DRIVERLESS, CURRENT CONTROLLED				
BOS				
WHEN APPLICABLE				
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER,	PULSE WIDTH,			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	•			
BO7 · · · · · · · CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF				
808 ····· LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDWDT	1	NOTE:		
BO9 · · · · · · LOW INSERTION LOSS VERSION				
B10 HIGHER ISOLATION VERSION			WITH DRIVER. REFLECTIVE	
B11 0.40 THICK VERSION		, DT-	WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
B12······0.70" THICK VERSION				
ENVIRONMENTAL RATINGS:		CONTRACT NO.	AMERICAN MICRO	WAVE CORPORATIO
······································	ALL DIMENSIONS ARE IN INCHES			K, MARYLAND
• TEMPERATURE:SS'C TO +85'C (OPERATING)	TOLERANCES:	APPROVALS DATE.		
-65°C TO +125°C (STORAGE)	X.XX ±0.020	DRAWN		
HUMIDITY: MIL-STD-202F, METHOD 1038 COND. 8     SHOCK; MIL-STD-202F, METHOD 2138 COND. 8	X.XXX ±0.010	Wyp 8/11/1	SWN-1182-6DR/	DT-DEC-SP
• VIBRATION: ········ MIL-STD-202F, METHOD 2030 COND. B		OICYD II AT	-REFLECTME OR NON-REF	
• ALTITUDE: ML-STD-202F, METHOD 105C COND. B		K.M.L. 11/9	7RADIAL SOLID ST	ATE SWITCH
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 105C COND. A		1	SIZE JON NO. DWG NO.	
The second second to the story wellig to the second s			_ A  60483	00-4184-2
NOTE: THE MODE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SOLE N/S	1 of 1
	—	r i i i i i i i i i i i i i i i i i i i		



#### PRODUCT DESCRIPTION

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19.0	<u>SP67</u>	- (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches	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

.

ECIFICATIONS:		ZONE NEV.	PESCRPTON	DATE APPRO
REQUENCY:			ORIGINAL RELEASE	8/13/97
NSERTION LOSS: REFLECTIVE: 3.5db ABSORPTIVE: 4.25db				
SOLATION:				
SWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1				
PEED:RISE: 10ns TYPICAL, 13ns WAX. FALL: 10ns TYPICAL, 15ns WAX. DELAY ON: 75ns TYPICAL, 100ns WAX. DELAY OFF: 75ns TYPICAL, 100ns WAX.	GP=GDLD PLATED	Rено Ф0.015 x 0.10	VABLE SHA (F)	
OWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED	P=PAINTED	RF PI	N	
URVIVAL POWER: 1 WATT CW. 10 WATTS PEAK 1 uses	N N	7 PLACE	- fater 2	
ONTROL:	0.125 (GP) 0.127 (P)	-0.075		
OWER SUPPLY: +5V @ 300 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		BD.00* 40.00* TYP.	80.00	
IONS:				
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP			ANERICAN	
10M18 ········10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		1 "	AMERICAN MICROWAVE CORPORTION	
100M18		·····	SOLID STATE SWITCH	PI.50 CIRCLE
118 I GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS) 218 2 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)			DIPTION NOSTALDARD	POINT TO POINT
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS			SERIAL HOL	W I
618 6 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS) 1218 12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS		COLDER PIN	PART HOL	μ 
1218 THE LOSS INCREASES 100M20 THE TO 20 GHZ (INSERTION LOSS INCREASES BY 1.364 AT 100 MHZ AND 1.064 AT 20 GHZ)	"   [	B PLACES		
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		0.20 0.25 0.38		<u> </u>
1020 ··········· 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		T-L TYP.	CND	N N
BO1 12V POWER SUPPLIES			+v-/ +-v	V
BO2·············	D.40	[		$\mathbf{X}$
804 ······ DRIVERLESS, CURRENT CONTROLLED		r-		- \
BO5 HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM			#0.089 THRU W/4-40 TH 0.250 DEEP ON MOUNTING SURFACE LOCATED ON #1.00° CIRCLI	E
BOB	ULSE WIDTH,		2 PLACES	
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF C	USTOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY MDEO BANOMDTH		4	IOTE:	
BO9 LOW INSERTION LOSS VERSION		•	DR=WITH DRIVER, REFLECTIVE	
B10 HIGHER ISOLATION VERSION			DT=WITH DRIVER, NON-REFLECTIVE/AE	BSORPTIVE
B11 0.70" THICK VERSION		<u> </u>		
RONMENTAL RATINGS:		FART HO,	AMERICAN MICROY	VAVE CORPORATIO
NPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS	FREDERICK	K, MARYLAND
-65°C TO +125°C (STORAGE) JMIDITY:MIL-STO-202F, METHOD 1038 COND. B	X.XX ±0.020	OBANDI	OUTLINE DR	
10CK:	X.XXX ±0.010	WY9 6	MSR-6DR/DT-04	
BRATION:			REFLECTIVE OR NON-REFL	
TITUDE: MIL-STD-202F, METHOD 105C COND. B		<u>[[. 14 J. 2 ]]</u>	1/1/17 SOLID STATE	
MPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		asura		0-4189-1
TE THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			304K N/S	1 of 1

					•
			REVISIONS	070	APPROVED
SPECIFICATIONS:			ORIGINAL RELEASE	8/13/97	┨
FREQUENCY:		1 101			•
• ISOLATION:					
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1					
<ul> <li>SPEED:</li></ul>	GP=GOLD PLATED	Ø0,015 × 0.100°	SMA (F) 7 PLACES		
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		7 PLACES			
· SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 Used	0.125 (GP)				
• CONTROL: TTL LOCIC "0"-ON "1"-OFF	(0.127 (P)	0.075			
<ul> <li>POWER SUPPLY:</li></ul>		B0.00*	80.00		
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		TYP.		``	
OPTIONS:					
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	\ QT		AMERICAN		
DEC-SP			UICROWAVE		
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		L J//4.	SOLID STATE SWITCH	j	
100M18		\	(+)+15	#1.50" CIRCL	<b>r</b>
118 I GHZ TO 18 GHZ (NO CHANCE IN INSERTION LOSS)		Fellles	NODEL NO SER-ADR/TIT-DA	POINT TO PO	มีกา
218			SERIAL NO		
818		00.020	PART NO:	İ	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		S PLACES			
100M2D 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		1	CIG +V J/-V CIG	1	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.Ddb AT 20 GHz)	ل <del>ت برجيا</del> ارتجاب ال 1	<sup>20</sup> 0.25 0.38		<u></u>	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	9	T TYP.	GND		
BO1		0.5			
B02······ −15V POWER SUPPLIES B03····· REVERSE LOGIC "1"≓DN "0"≔OFF			.66	N.	
BO3 DRIVERLESS, CURRENT CONTROLLED		• •	#0.089 THRU W/4-40 THD-	Ĺ	
BOS HIGH SPEED, TURNON/TURNOFF 25 nacc MAXIMUM WHEN APPLICABLE			0.250 DEEP ON MOUNTING SURFACE LOCATED ON #1.00" CIRCLE		
BOG HICH POWER - SPECIFY CW POWER, PEAK POWER, PU DUTY CYCLE, RF FREQUENCY AND BANDWITH			2 PLACES		
B07 CUSTOM DESIGNED PRODUCT – SPECIFY INITIALS OF CU 808 LOW VIDEO TRANSIENTS – SPECIFY VIDEO BANDWIDTH	SIUMER	NO.	TE:		
BOB LOW INSERTION LOSS VERSION			DR=WITH DRIVER, REFLECTIVE		
B10			DT-WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE	
B11 0.70" THICK VERSION					
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES	PART NO.	AMERICAN MICRO	WAVE CORPO	
• TEMPERATURE:	TOLERANCES:	APPROVALS			
. HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020	DRAVINI SUCCESTION A	MSR-6DR/DT-0		P
• SHOCK:	x.xxx ±0.010	CHICKD A D	REFLECTIVE OR NON-REF		
• VIBRATION: MIL-STD-202F, METHOD 2040 COND. B		[Ingda m/	1/91 SOLID STATE		
ALTITUDE:		15500	SIZE FSCH HOL DHG HOL	04180 4	0 A
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			A 60483 10	00-4189-2   SHEFT	
NULE THE ADUVE SPECIFICATIONS ARE SUBJECT TO CAMPUS OF REALSTON	<u></u>	╺╍┠╼╍╍╌╍╶╌╌╌			01 1



#### SECTION

#### PRODUCT DESCRIPTION

PAGE

20.0	<u>SP61</u>	- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches
	20.1	MSR-6DR/DT-07-STANDARD with Independent Controls
	20.2	MSR-6DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins

				REVISIONS	
		104		REVENUES DESCRIPTION	DATE APPROVED
SPECIFICATIONS:				ORIGINAL RELEASE	8/15/97
FREQUENCY:			•		
INSERTION LOSS: REFLECTINE: 3.5db     ABSORPTIVE: 4.25db					
• ISOLATION:					
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT; 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1					
<ul> <li>SPEED:</li></ul>	HOUNTING SURFACE GP=GDLD PLATED > P=PAINTED	₽0.015 ×	0.100*	SHA (F) PLACES	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HICH SPEED)		Ri 7 Pi		, i	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used	(0.125 (GP)		للمر المحاص	<	
• CONTROL:		0.125	د 🔨	i la i	
POWER SUPPLY: +5V @ 300 mA MAX. '		80.00		80.00	
-5V © 75mA WAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)			1.00° YP.		
PTIONS:			J.		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			mast	Else like Rooth	$\sum_{i=1}^{n}$
DEC-SP 3 BIT DECODER WITH SOLDER PIN		i 44	#SUI. N		ìi
10M18 10 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 CHz)			SIIS	HELL CORPORATION	
100M18	`\ <b>\</b>	\	HL S	DUD STATE SWITCH	
BY 1.5db AT 100 MH2 AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		· \		ODEL NOWER-SELECT-02	#1.50" CIRCLE
218 2 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)			-211.5	PRIN NOSTANOARD	
412 4 GHz TO 12.4 GHZ (NO CHANGE IN INSERTION LOSS) 618		0.020	2 INN 1	ART NO	U I
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		SOUDER PIN	91		
100H20 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		B PLACES	<i>.</i>		ł
220 2 CHz TO 20 CHZ (INSERTION LOSS INCREASES	<u> </u>				
BY 1.046 AT 20 GHZ		0.20 0.25 0.38	İ		
1020 ·········· 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		TTP.	ļ		
BO1		,,	+		<b>N</b>
B0215V POWER SUPPLIES	<b> ≁───</b> 0.70 <del>───</del> ┤		0.55		1 I
BO3 REVERSE LOGIC "1"-ON "0"-OFF			¦+0.€	6	l.
BO4 DRIVERLESS, CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE			I	0.089 THRU V/4-40 THD D.250 DEEP ON MOUNTING SURFACE	
BOS HIGH POWER - SPECIEY CW POWER, PEAK POWER, PU	LSE WIDTH,			LOCATED DN \$100' CIRCLE 2 PLACES	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	STOVER				
B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	STOMER		NOTE:		
BO3 LOW INSERTION LOSS VERSION				WITH DRIVER, REFLECTIVE	
BIQ HIGHER ISOLATION VERSION				MTH DRIVER, NON-REFLECTIVE/AB	SORPTIME
B11 0.40" THICK VERSION					
NVIRONMENTAL RATINGS:		PART NO.		AMERICAN MICROW	
	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS	ONTE		MARYLAND
TEMPERATURE:	X.XX ±0.020	DRAMH		UUILINE DR	
HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B     SHOCK: NIL-STD-202F, NETHOD 2138 COND. B	X.XXX ±0.010	WYP	8/13/07		
• SHOCK:		OHECK AF	Jah-	REFLECTIVE OR NON-REFL	
ANTITUDE:		K. Mul	4 <i> 1 </i> 97	SOLID STATE S	SWITCH
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		<u> </u>			0-4195-1 A
HOTE THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION				SCALE N/S	

				REVISION	the second second second second second second second second second second second second second second second s	
PECIFICATIONS:			IDIE NEV.	ORIGINAL RELEAS	041	APPROVED
FREQUENCY:			1 101	URIGINAL RELEA	5E   #/13/97	I
INSERTION LOSS: REFLECINE: 3.5db						
ABSORPTIVE: 4.25db ISOLATION:						
2 CHz TO 18 CHz: 70db						
VSWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1						
SPEED:RISE: 10n3 TYPICAL, 15n3 MAX. FALL: 10n3 TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY DFF: 75ns TYPICAL, 100ns MAX.		0.0æ	REMOVABLE	SHA (F)		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HICH SPEED)			7 PLACES			
SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 UGOD	0.125 (GP)			X III		
CONTROL: ····································	10.127 (P)	0.125		116		
POWER SUPPLY:			80.00	い N 一 間	80.00	
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)			Т <u>т</u> р. 1	記って自	N. Contraction of the second sec	
TIONS:	ì P-		1		<u> </u>	
	\ PAL	/ ~	< man me		1 i m	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		nJ /	UMEST I	ANTERICAN		
IOM 18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES		" \\ /		AND HICROWAVE CORPORATION	Tellun	
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES		\	·	SOLID STATE SWITCH	Lan	
BY 1.5db AT 100 NHz AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	Q		ALLE	1000 HOUSE-BOR 00-02	1.50° CIRCI	
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			TTTTE HE	OPTION HOTE-SP		1101
412 4 CHz TO 12.4 CHz (NO CHANGE IN INSERTION LOSS) 618				PART NO		
1218		#0.020 SOLDER PIN		N N.//	4	
100M20 1DO NHZ TO 20 CH2 (INSERTION LOSS INCREASES BY 1.5db AT 100 NHZ AND 1.0db AT 20 CH2)		5 PLACES			k i	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	ļ		<b>-</b>			
BY 1.066 AT 20 GHz)	11711	1 0.20 0.25 0.	38	HOH		
1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)			YP.			
BO112V POWER SUPPLIES		·	£ [		$\downarrow$ $\chi$	
BO2 15V POWER SUPPLIES	0.7	0	0.5	5		
BO3·······REVERSE LOGIC "1"=DN "0"=OFF BO4······ DRIVERLESS, CURRENT CONTROLLED			J+0	.66	-1 \	
BOS HICH SPEED, TURNON/TURNOFF 25 need MAXIMUM				0.089 THRU W/4	SURFACE	
WHEN APPLICABLE BOB	ILSE WIOTH.			LUCATED ON \$1.00		
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				-		
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	DIOWER		NO.	ſE:		
BOS LOW VIDEO (PONSIENTS - SPECIFI VIDEO BANDWIDTA				DR=WITH DRIVER, REFLECTI	VE	
B10 HIGHER ISOLATION VERSION				DT-WITH DRIVER, NON-REF		
B11			•			
VIRONMENTAL RATINGS:		PM1 H0.		AMERICA	N MICROWAVE CORP	ORATION
TENPERATURE:	ALL DIMENSIONS ARE IN				REDERICK, MARYLAN	D .
-65'C TO +125'C (STORAGE)	TOLERANCES: . X.XX ±0.020		PPROVALS 0		LINE DRAWING	
HUMIDITY:	X.XXX ±0.010	DRAWN	WYP 0/1	s/or MSR-6DI	R/DT-07-DEC-S	
SHOCK:		ONCHER	<u>, , , , , , , , , , , , , , , , , , , </u>	REFLECTIVE OR N	IÓN-REFLECTIVE/AB	SORPTIVE
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		<u></u>	1000 m/1		STATE SWITCH	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		<u> </u>		A 60483	100-4195-	2 A
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION				SCALE N/S	200	1 of 1

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## SECTION

#### PRODUCT DESCRIPTION

21.0	<u>SP7</u>	T - (1 1/4" Diameter x 0.4" Thickness) Reflective & Absorptive Switches
	21.1	SWN-1140-7DR/DT-STANDARD with Independent Controls
	21.2	SWN-1140-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins

DELECT       FALL: 10:ns TYPICAL, 15:ns MAX. DELXY DVF: 75:ns TYPICAL, 10:0ns MAX. DELXY DVF: 75:ns TYPICAL, 10:0ns MAX.         • POWER INPUT:       • (CW)+20.dEm (STANDARD), +10 dBm (HIGH SPEED)         • SURVNAL POWER:       • 1 WATT CW, 10 WATTS PEAK 1 usec         • CONTROL:       • 0:00 *********************************	Ø0.089 TH 50 DEEP ON M ATED ON 1.00" 5'0" 0.38 	HRU W/4-40 THD ORIGINAL RELEASE HRU W/4-40 THD OUNTING SURFACE "CIRCLE, 2 PLACES "CIRCLE, 2 PLACES HIGHORY & CORPORATION HIGHORY & CORPORATION FREERICAN & CORPORATION MICROMAYE CORPORATION FREERICAN & CORPORATION FREERICAN & CORPORATION FREERICAN & CORPORATION FREERICAN & CORPORATION PART NO: PART NO: PART NO: COND ++V JB CORPORATION SERIAL NO: PART NO: CORPORATION COND ++V JB CORPORATION COND ++V JB CORPORATION CONTROL CONTON CONTROL CONTON CONTROL CONTON CONTROL CONTON CONTO	el contra anti- el contra anti
<ul> <li>INSERTION LOSS:</li></ul>	Ø0.089 TH 50 DEEP ON M ATED ON 1.00 5.0 0.38 MA (F) LACES 0.100 F PIN	HRU W/4-40 THD OUINTING SURFACE "CIRCLE, 2 PLACES "CIRCLE, 2 PLACES "AMERICAN "CORPORATION FREERICAN MICROWAVE CORPORATION FREERICAN MICROWAVE CORPORATION FREERICAN MICROWAVE CONTONING STANDARD SERIAL NO: PART NO: CIRCLE VUSA SERIAL NO: PART NO: CIRCLE VUSA SERIAL NO: PART NO: CIRCLE VUSA SERIAL S	
ABSORPTIVE: 4.23db         ISQUATION:      0.3 CH: TO 2 CH: 50db         2 CH: TO 16 CH: 70db         9 YSWR:	50 DEEP ON M ATED ON 1.00" 5*0" 0.38 	AMERICAN TOCHNING SURFACE CIRCLE, 2 PLACES H3/hr H3/hr H3/hr H3/hr H3/hr H3/hr H1/hr CORPORATION FREEBACK, ND STANDEL, NO. SMODEL, NO.SMN-1140-20R/ht STANDARD SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORA	
2 CH2 TO 18 CH2: 70db         9 YSWR:       ABSORPTIVE (M/OUT: 2.0:1 ABSORPTIVE (M/OUT: 2.0:1 CD-PAINTED         9 SPEED:       PISE: IONS TYPICAL, ISMS MAX, FELX: ION: 75mS TYPICAL, 100m MAX, DELXY OFF: 75mS MAX, (RELECTIVE)         9 OWER INPUT:       -1 WATT CW, 10 WATTS PEAK 1 usec         • CONTROL:       -1 TH LOGIC '0'=ON "1"=OFF         • POWER SUPPLY:       -4 SV Ø J5m A MAX. (RELECTIVE)         100mA MAX.(RELECTIVE)       100mA MAX.(RELECTIVE)         100mA MAX.(RELECTIVE)       100mA MAX.(RELECTIVE)         100mA MAX.(RESERTION LOSS INCREASES BY 1.5db AT 100 MH2 AND 0.5db AT 18 GH2)         118       -1 CH3 TO 18 GH2 (NO CHANGE IN INSERTION LOSS)         218       -2 GH2 TO 18 GH2 (NO CHANGE IN INSERTION LOSS)         100M20       -100 MH2 AND Q1 ADA AT 20 GH2)         1000M2       -100 GH1 TO 20 GH2 (INSERTION LOSS INCREASES BY 1.5db AT 100 GH12 AND Q1 ADA AT 20 GH2)         100M20       -100 GH2 (INSERTION LOSS INCREASES BY 1.5db AT 20 GH2)         10000       -100 GH2 (INSERTION LOSS INCREASES BY 1.5db AT 20 GH2)         10000       -100 GH2 (INSERTION LOSS INCREASES BY 1.5	50 DEEP ON M ATED ON 1.00" 5*0" 0.38 	AMERICAN TOCHNING SURFACE CIRCLE, 2 PLACES H3/hr H3/hr H3/hr H3/hr H3/hr H3/hr H1/hr CORPORATION FREEBACK, ND STANDEL, NO. SMODEL, NO.SMN-1140-20R/ht STANDARD SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORA	
• VSNRC         · VEXPLCTIVE IN/OUT: 20:1 ABSORPTIVE DU//OFF: 20:1 DELX DX: 75:ns TYPICAL, 15:ns MAX. DELXY DY: 75:ns TYPICAL, 10:ns MAX. -5V 0 35:0 mA MAX. -5V 0 35:0 mA MAX. -5V 0 75:mA MAX.(RELECTIVE) 10:0mA MAX.(RESCRIPTIVE/NDN-REFLECTIVE) 10:0mA MAX.(RESCRIPTIVE/NDN-REFLECTIVE) 10:0mA MAX.(RESCRIPTIVE/NDN-REFLECTIVE) 10:0mA MAX.(RESCRIPTIVE/NDN-REFLECTIVE) 10:0mA MAX.(RESCRIPTIVE/NDN-REFLECTIVE) 10:0mA MAX.(RESCRIPTINE LOSS INCREASES BY 1:0db AT 10:0 MH; AND 0.5db AT 18 GH; 11:8 · · · 1 GH; TO 18 GH; (NO CHANGE IN INSERTION LOSS) 21:8 · · · 2 GH; TO 18 GH; (NO CHANGE IN INSERTION LOSS) 21:0 · · · 10:0 MH; TO 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0db AT 20 GH; (INSERTION LOSS INCREASES BY 1:0	50 DEEP ON M ATED ON 1.00" 5*0" 0.38 	AMERICAN TOCHNING SURFACE CIRCLE, 2 PLACES H3/hr H3/hr H3/hr H3/hr H3/hr H3/hr H1/hr CORPORATION FREEBACK, ND STANDEL, NO. SMODEL, NO.SMN-1140-20R/ht STANDARD SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. PART NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORATION FREEBACK, ND SERIAL NO. CORPORATION CORPORA	
FALL: 1003 TYPICAL, 1503 MAX, DELAY OFF: 7503 TYPICAL, 1000ns MAX. DELAY OFF: 7503 TYPICAL, 1000ns MAX. DELAY OFF: 7503 TYPICAL, 1000ns MAX.       -0.075         POWER INPUT:	ATED ON 1.00"	CIRCLE, 2 PLACES	
<ul> <li>SURVIVAL POWER: -1 WATT CW, 10 WATTS PEAK 1 usec</li> <li>CONTROL:</li></ul>	0.38 MA (F) LACES 0.100 F PIN	AMERICAN AMERICAN MICROMATE CORPORATION FREERICK, ND SERIAL NO: PART NO: THE BACK, ND SERIAL NO: PART NO: CND CND CND CND CND CND CND CND	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec CONTROL: 11 LOGIC "0"=ON "1"=OFF POWER SUPPLY: +5V @ 350 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(RESORPTIVE/NDN-REFLECTIVE) 100mA MAX.(RESORPTIVE/NDN LOSS) INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 101 B GHz (NO CHANGE IN INSERTION LOSS) 412 4 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 12V POWER SUPPLIES BO1 12V POWER SUPPLIES BO2 15V POWER SUPPLIES BO3 REVERSE COIC 1'ON "0"-OFF B04 DRIVERLESS, CURRENT CONTROLLED B05 HGII SPEED. TURINON/TURNOFF 25 naec MAXIMUM WHIN APPLICABLE	0.38 MA (F) LACES 0.100 F PIN	AMERICAN AMERICAN MICROMATE CORPORATION FREERICK, ND SERIAL NO: PART NO: THE BACK, ND SERIAL NO: PART NO: CND CND CND CND CND CND CND CND	
CONTROL: ···· TTL LOGIC "0"=ON "1"=OFF POWER SUPPLY: ···+5V © 350 mA MAX. -SV © 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTINE/NDN-REFLECTIVE) PTIONS: INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP ··· 3 BIT DECODER WITH SOLDER PIN 10M18 ··· 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 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) 412 ··· ·· 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) 412 ··· ·· 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) 118 ··· ·· 10 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHX AND 0.5db AT 20 GHz) 100M20 ··· 100 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 20 GHz) 1000 HDZ ··· ·· 12V POWER SUPPLIES BO1 ··· ·· -12V POWER SUPPLIES BO2 ··· ·· HIGH SPECD, TURNOFT ZS nace MAXIMUM WHEN APPLICABLE	0.38 MA (F) LACES 0.100 F PIN	AMERICAN AMERICAN MICROMATE CORPORATION FREERICK, ND SERIAL NO: PART NO: THE BACK, ND SERIAL NO: PART NO: CND CND CND CND CND CND CND CND	
POWER SUPPLY: · · +5V @ 350 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE) PTIONS: 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 100 MHz AND 0.5db AT 18 GHz) 10DM18 · · 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 (INSERTION LOSS INCREASES A12 · · · 4 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218 · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218 · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 · · · 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 · · · 2 GHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 01.0db AT 20 GHz) 220 · · · 2 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 100M20 · · 100 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) B01 · · · -12V POWER SUPPLIES B02 · · · -15V POWER SUPPLIES B03 · · · HIGH SPEED. TURINON/TURNOFT 25 nacc MAXIMUM WHEN APPLICABLE	0.38 MA (F) LACES 0.100 F PIN	AMERICAN AMERICAN MICROMATE CORPORATION FREERICK, ND SERIAL NO: PART NO: THE BACK, ND SERIAL NO: PART NO: CND CND CND CND CND CND CND CND	
PTIONS:         INDEPENDENT CONTROL WITH SOLDER PIN STANDARD         DEC-SP       3 BIT DECODER WITH SOLDER PIN         10M18       10 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         10DM18       100 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         118       1 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         218       2 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         412       4 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         618       6 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         1218       12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         100M20       100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 11.0db AT 20 CHz)         100M20       100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       2 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       10 GHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         B01       - 12V POWER SUPPLIES         B03       - 100 Fiz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         B01       - 12V POWER SUPPLIES         B03       - 100 Fiz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         B04       - 100 Fiz Figure CONTROLLED         B05       - HIGH SPEED, TURNON/TURNOFT 25 nace MAXIMUM WHEN	MA (F) I	MICROWAVE CORPORATION FREE NUSA FREE NUSA FREE NUSA FREE NOS OPTION NO STANDARD SERIAL NO: PART NO: PART NO: CND H H H H H H H H H H H H H H H H H H H	
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)         1DDM18       100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         118       10 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         412       4 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         11218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         11218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         11218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         11218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1000420       100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)         1000420       10 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)         1020       10 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)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         1020       10 GHz TO 20 GHz         1020       10 GHz TO 20 GHZ	MA (F) LACES 0.100 F PIN	MODEL NOSWAL-1140-ZDR/DT OPTION NOSTANDARD SERIAL NOS PART NOS PART NOS GND GND GND GND GND GND GND GND GND GND	
DEC-SP J 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) 10DM18 1 GM1z TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100M20 100 MHz AND 10.06 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) 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) BO1 TSV POWER SUPPLIES BO3 REVERSE LOGIC 1"-ON TO"-OFF BO4 DRIVERLESS, CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF Z5 nsec MAXIMUM WHEN APPLICABLE	MA (F) LACES 0.100 F PIN	MODEL NOSWAL-1140-ZDR/DT OPTION NOSTANDARD SERIAL NOS PART NOS PART NOS GND GND GND GND GND GND GND GND GND GND	
100 M12       100 M12 10 18 CH2 (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 CH2)         1100 M18       100 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 CH2)         118       1 CH2 TO 18 CH2 (INSERTION LOSS)         218       2 CHz TO 18 CH2 (IN CHANGE IN INSERTION LOSS)         412       4 GHz TO 18 CH2 (NO CHANGE IN INSERTION LOSS)         412       4 GHz TO 18 CH2 (NO CHANGE IN INSERTION LOSS)         412       6 CH2 TO 18 CH2 (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20       100 MHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND U.0db AT 20 CHz)         220       2 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       10 CH2 TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       10 CH2 TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       -12V POWER SUPPLIES         1021       -12V POWER SUPPLIES         1022       -15V POWER SUPPLIES         1033       -15V POWER SUPPLIES         1034       -15V POWER SUPPLIES         1035       -15V POWER SUPPLIES         1035       -15V POWER SUPPLIES         1035       -15V POWER SUPPLIES         1035       -16K SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WH	MA (F) LACES 0.100 F PIN	PART NO: PART NO: PART NO: PART NO: THE PART NO: PART NO: PA	
100M18       100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)       REMDVABLE SI BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         118       1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)       90.015 x         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)       90.015 x         618       6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)       90.015 x         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)       90.015 x         100M20       100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 01.0db AT 20 GHz)       90.025 mcreases         220       2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)       90.025 mcreases         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)       90.012 mcreases         1020	0.100 -	SERIAL NO: PART NO: +V JBV GND GND GND 	
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 NHz 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) 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	0.100 -	PART NO: 	
113	0.100		
<ul> <li>412 · · · · · 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)</li> <li>6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)</li> <li>12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)</li> <li>100M20 · · 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)</li> <li>220 · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)</li> <li>1020 · · · · · · · · · · · · · · · · · ·</li></ul>	SFPIN _d®®		
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)         1020			
100M20 100M20 100 NHz TO 20 GHZ (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz AND 1.0db AT 20 GHZ) 220 1020 1020 10 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) 1020 10 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) 1020 10 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) 1020 10 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) 1020 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ) 10 GHZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHZ (INSERTION LOSS INCREASES BY 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			
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) 1020 · · · 10 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) 1020 · · · · · 0 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 · · · · · 0.125 (GP) 0.127 (P) 1020 · · · · · · · · · · · · · · · · · ·			
1020 · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) - 0.125 (GP) B01 · · ·12V POWER SUPPLIES B02 · · ·15V POWER SUPPLIES B03 · · · · REVERSE LOGIC "I"-ON "D"-OFF B04 · · · DRIVERLESS, CURRENT CONTROLLED B05 · · · · HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE			
BY 1.0db AT 20 GHz) BO1 $\cdot \cdot \cdot \cdot -12V$ POWER SUPPLIES BO2 $\cdot \cdot \cdot -15V$ POWER SUPPLIES BO3 $\cdot \cdot \cdot \cdot REVERSE LOGIC "I"-ON "0"-OFF BO4 \cdot \cdot \cdot \cdot DRIVERLESS, CURRENT CONTROLLED BO5 \cdot \cdot \cdot \cdot HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE$		A 0.81	-
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		A 22+20/	
BO3 · · · · REVERSE LOGIC "1"-ON "D"-OFF BO4 · · · · DRIVERLESS, CURRENT CONTROLLED BO5 · · · · High Speed, Turnon/Turnoff 25 nsec Maximum When Applicable			
B04 · · · · DRIVERLESS, CURRENT CONTROLLED B05 · · · · HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE			1
805 HIGH SPEED. TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE		• 1.25	
BOB · · · · HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH			
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDWIDTH			
BO9 LOW INSERTION LOSS VERSION	NOTE:		
B10 · · · · · HIGHER ISOLATION VERSION		I DRIVER, REFLECTIVE	
811 · · · · · 0.70° THICK VERSION	DT=WITH	I DRIVER, NON-REFLECTIVE/ABSO	DRPTIVE
NVIROMENTAL_RATINGS:	1	AMERICAN MICROWAY	VE CORPORATI
TEMPERATURE:			
-65°C TO +125°C (STORAGE) X XX ±0.020		OUTLINE DIVAN	
HUMIDITY:         MIL-STD-202F, METHOD 103B COND, B         MIL-STD-202F, METHOD 213B COND, B         MIL-STD-202F, METHOD 213B COND, B	p 8/12/97	SWN-1140-7DR/DT-	-STANDARD
VIBRATION: MIL-STD-202F, METHOD 2040 COND, B	- <b>T 1</b> - <b>T</b> - <b>1</b> - <b>1</b> - <b>1</b> RE	EFLECTIVE OR NON-RÉFLEC	
ALTITUDE: MIL-STD-202F, METHOD 105C CONO. B	et 11/7/97	RADIAL SOLID STATE	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	A		-4170-1
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			

SPECUTION TONS <ul> <li> <li> <li> <li> <li></li></li></li></li></li></ul>					•	•
Display         Display <t< th=""><th></th><th></th><th>ZOVEL ROAL</th><th></th><th>0476</th><th>APPROVED</th></t<>			ZOVEL ROAL		0476	APPROVED
Inscription, Local PLATED     Supervised and set to 18 of the determined of the			<u>}</u>			
<ul> <li>4 500-100e 0.5 CH1 0 2 CH1 000  2 CH1 000 2 CH1 000 2 CH1 000 2 CH1 0000 2 CH1 000 2 CH1</li></ul>	• INSERTION LOSS: · · · · REFLECTIVE: 3.75db		, , , , ,			
VSWD	ISOLATION: O.S GHz TO 2 GHz; 60db					
INDEP MARK       INTERCENT CONTROL       INTERCENT CONTROL       INTERCENT CONTROL         INDEP MARK       INTERCENT CONTROL       INTERCENT CONTROL       INTERCENT CONTROL         INDEP MARK       INTERCENT CONTROL       INTERCENT CONTROL       INTERCENT         INDEP MARK       INTERCENT CONTROL       INTERCENT       INTERCENT         INDEP MARK       INTERCENT       INTERCENT       INTERCENT       INTERCENT         INDEP MARK       INTERCENT       INTERCENT       INTERCENT       INTERCENT         INDEP MARK       INTERCENT       INTERCENT       INTERCENT	VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1	P=PAINTED	0.250 DEEP ON	MOUNTING SURFACE /		
e Over INPUT:         - (Coly-addem) (STMADAD). + 10 dem (NBM SPEED)           e Over INPUT:         - (Coly-addem) (STMADAD). + 10 dem (NBM SPEED)           e Ower Suppry:         - + + + + + + + + + + + + + + + + + + +	FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX.	0.075	LOCATED ON 1.0	00" CIRCLE, 2 PLACES		
• UIWAUL POWER:         • WATT OV. 10 WATTS FEAK 1 usec           • OUTROL         • TH. LOOC 0*-OF           • POWER SUPPLY:         - + SV Ø 303 PA MX.           • POWER SUPPLY:         - + SV Ø 303 PA MX.           • DOWARD         IDONA MX.(RECINC)           • DOWARD         DOC-SP           • DOWARD         IDONA MX.(RECINC)           • DOWARD         DOC-SP           • DOWARD         IDONA MX.(RECINC)           • DOWARD         IDONA MX.(RECINC)           • DOWARD         DOC-SP           • DOWARD         IDONA MX.(RECINC)           • DOWARD         DOC-SP           • DOWARD         DOCESP           • DOWARD         <					- <b>M</b>	
<ul> <li>CONTROL</li></ul>			7			
• POWER SUPPLY:			45°0′ ¥4	7/10		
Diff         Comma Hawk (AdSOMPTINE/NON-REFLECTIVE)           INDERVIOUNT CONTROL WITH SOLDER PIN STANDARD           DOC-Spr.         3 Bit Tocoper With SolDer PIN STANDARD           DOC-Spr.         3 Bit Tocoper With SolDer PIN STANDARD           INDIA         10 Mits TO 18 OHL (INSERTION LOSS INCREASES           BY 1536 XT 10 Mits AND 10 OHL AND EN INSERTION LOSS)           118						
DPTIONS:         Control with Solder PM           NREPENDENT CONTROL WITH SOLDER PM         School With Solder PM           D0C-SP         3 BIT PECCOCING           1000 H0         D1 256 AT 10 MM VAND 0.350 AT 16 0H)           1000 H0         D1 256 AT 10 MM VAND 0.350 AT 18 0H)           1000 H0         D1 256 AT 10 MM VAND 0.350 AT 18 0H)           1000 H0         D1 256 AT 10 MM VAND 0.350 AT 18 0H)           121         D1 18 0H (NO CHANGE IN INSERTION LOSS)           128         D1 00 H2 TO 10 OH, MAND 0.350 M REPORT LOSS)           128         D1 0 H2 TO 10 OH, MAND 0.350 M REPORT LOSS)           128         D1 0 H2 TO 20 OH (INSERTION LOSS)           128         D1 0 H2 TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 122 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 122 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 122 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 122 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 122 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0 H2 TO 20 OH (INSERTION LOSS) INCREASES         D1 125 OH TO 20 OH (INSERTION LOSS) INCREASES           001 0			0.38	AMERICAN SA	· [] 3	
INDEPEndent Control         WILL SOLDR PM STANDAD           D0C-SP         10 </td <td></td> <td></td> <td>// (</td> <td>CORPORATION</td> <td>)]_ľ</td> <td></td>			// (	CORPORATION	)]_ľ	
00C-SR	· · · · · · · · · · · · · · · · · · ·		Pannan	LADE IN USA	. Il Panana	1
Instruction         Image: Transmit and the set of the		(( · )) ©		MODEL NO:SWN-1140-708/	표월   MMM	
100.444 TO 18 GH4 (INSERTION LOSS INCREASES         118       2 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       2 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       2 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       12 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       12 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       12 GH4 TO 18 GH4 (NO CHANGE IN INSERTION LOSS)         128       120 GH4 (INSERTION LOSS)         1210       120 GH4 (INSERTION LOSS)         1210       120 GH4 (INSERTION LOSS) INCREASES         120 GH4 TO 20 GH4 (INSERTION LOSS) INCREASES       0.125 (GP)         121 O C H4 (INSERTION LOSS INCREASES       0.125 (GP)         122 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS INCREASES       0.127 (P)         120 O C H4 (INSERTION LOSS I	10M18 · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES		···· \· 🛛 🗸			l l
118       97 L265 AT 800 LMR AND 0256 AT 105 UNIT 055)         128       2 OH 10 18 GH; (NO CHANGE IN INSERTION L055)         128       12 OH 10 18 GH; (NO CHANGE IN INSERTION L055)         128       12 OH 10 18 GH; (NO CHANGE IN INSERTION L055)         128       12 OH 10 0 HH; 10 20 OH; (INSETTION L055)         1216       12 OH 10 0 HH; AND 1046 AT 20 BH;         220       2 OH 10 0 HH; AND 1046 AT 20 BH;         220       2 OH 10 20 CH; (INSETTION L055)         100420       10 OH 10 20 CH; (INSETTION L055)         1020       10 OH 10 20 CH; (INSETTION L055)         1020       10 OH 10 20 CH; (INSETTION L055)         1020       -157 COWRT SUPPLIS         1020       -157 COWRT SUPPLIS         0021       -157 CO 1457 C (OPERATING)	100M18 · · · · 100 MHz TO 18 GHz (INSERTION LOSS INCREASES					
218 2 CHE TO 18 CHE (NO CHANCE IN INSERTION LOSS) 412	BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)				18	
16.       16.       16.       10.       1	218 · · · · · · 2 GHz TO 18 GHz (NO CHANCE IN INSERTION LOSS)			$\mathcal{K} \mathcal{K} \mathcal{D} $	m.	
010       10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					AllKITTS	
$100 \mu M = TO 20 GHt (INSERTION LOSS INCREASES BY LOG AT 20 GHt; (INSERTION LOSS INCREASES BY LOG AT 20 GHt; (INSERTION LOSS INCREASES BO = -12V POWER SUPPLIES BO = -12V$		0.20 0.25				
$\begin{array}{c} 1.305 \ All to U MIR XAD (LOB AL 20 UR2) \\ 220 & 2.64k7 \ 70.055 \ INCREASES \\ BY 1.006 \ AT 20 GHz \\ 10.06k \ T 20 \ GHz \\ 10.06k \ T 20 \ GHz \\ 10.06k \ T 20 \ GHz \\ 10.06k \ T 20 \ GHz \\ 10.06k \ T 20 \ GHz \\ 10.05 \ HGH \ FORE LOSS \ INCREASES \\ BO1 & -12V \ POWRE SUPPLIES \\ BO2 & -15V \ POWRE SUPPLIES \\ BO3 & -15V \ POWRE SUPPLIES \\ BO4 & DRIVELSS, \ GURRENT CONTROLED \\ BO5 & -16V \ POWRE \ SUPPLIES \\ BO4 & -00k \ Step \ To To \ To^* \ OTF \ FREQUENCY \ AND BANDMOTH \\ BO5 & -16V \ MECh \ FREQUENCY \ AND BANDMOTH \\ BO5 & -16V \ MOKET \ FREQUENCY \ AND AND \ AND \ FREEDERING \ AND \ $						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	220 · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES			0.46	5 9140	
B01       -12V POWER SUPPLIES         B02       -13V POWER SUPPLIES         B03       -15V POWER SUPPLIES         B04       -000 PORTERLESS, CURRENT CONTROLLED         B05       -000 PORT, PERSONATION CONTROLLED         B05       -000 PORT, PERSONATION CONTROLLED         B06       -000 PORT, PERSONATION CONTROLLED         B07       -000 PORT, PERSONATION DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER         B08       -000 MORE THRANSIENTS - SPECIFY INITIALS OF CUSTOMER         B09       -000 MORE THRANSIENTS - SPECIFY INITIALS OF CUSTOMER         B09       -000 MORE THRANSIENTS - SPECIFY INITIALS OF CUSTOMER         B10       -000 MORE THRANSIENTS - SPECIFY INITIALS OF CUSTOMER         B11       -000 MORE THRANSIENTS - SPECIFY INITIALS OF CUSTOMER         B12       -0.088 THICK VERSION         B12       -0.088 THICK VERSION         SNUTRONTY:	1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES	0.125 (GP)				
B0215V POWER SUPPLIES1.25B03	-	0.127 (P)		23.30,		
B03       REVERSE LOGIC 11-ON 10*-OPF         B04       ORIVERLESS, CURRENT CONTROLLED         B05       HICH SPEED, TURNON/TURNOFF 25 nsoc MAXIMUM         WHEN APPLICABLE       B06         B06       HICH SPEED, TURNON/TURNOFF 25 nsoc MAXIMUM         WHEN APPLICABLE       B06         B06       HICH POWER, PSECIFY CW POWER, PLAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH         B07       CUSTOM DESIGNED PRODUCT - SPECIFY WIDED BANDWIDTH         B03       LOW WDED TRANSIENTS - SPECIFY WIDED BANDWIDTH         B03       LOW WDES TRANSIENTS - SPECIFY VIDED BANDWIDTH         B03       LOW WDES TRANSIENTS - SPECIFY WIDED BANDWIDTH         B03       OUT HICK VERSION         B11       0.70° THICK VERSION         B12       0.86° THICK VERSION         SNUTRONNEENTAL, RATINGS:       ALL DIMENSIONS ARE IN INCHES         MUMIDITY:       MIL-STD-202F, METHOD 103B COND. B         X.XX       ±0.020         YBRANON:       MIL-STD-202F, METHOD 103B COND. B         ALTITUDE:       MIL-STD-202F, METHOD 103C COND. B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND. B         ALTITUDE:       MIL-STD-202				1 25		
B05·····Hith SPEED, TURKON/TURKNOFF 25 nase MAXIMUM WHEN APPLICABLE         B06·····Hith POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH         B07·····Custom DESIGNED PRODUCT - SPECIFY VIDEO BANDWIDTH         B08······LOW INSERTION LOSS VERSION         B10······HICHE ISOLATION VERSION         B11···································				1.23		
WHEN APPLICABLE B06· · · · HIGH POWER – SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07· · · CLISTOM DESIGNED PRODUCT – SPECIFY INITIALS OF CUSTOMER B08· · · LOW INDERTION LDSS VERSION B10· · · HIGHER ISOLATION VERSION B10· · · HIGHER ISOLATION VERSION B12· · · · 0.88° THICK VERSION B12· · · · 0.68° THICK VERSION SINVIRONMENTAL, RATINGS: • TEMPERATURE:55°C TO + 85°C (OPERATING) -65°C TO +125°C (STORAGE) · HUMIDITY: · · · MIL-STD-202F, METHOD 103B COND, B · VIBRATION: · · · MIL-STD-202F, METHOD 103B COND, B ALL DIMENSIONS ARE IN INCHES · VIBRATION: · · · MIL-STD-202F, METHOD 103B COND, B ALTITUDE: · · · · MIL-STD-202F, METHOD 105C COND, B ALTITUDE: · · · · MIL-STD-202F, METHOD 105C COND, B ALTITUDE: · · · · · MIL-STD-202F, METHOD 105C COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 105C COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A · TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND, A	BO4 · · · · · DRIVERLESS, CURRENT CONTROLLED	·		•		
B06High Power - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTHB07CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMERB08LOW MDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTHB09LOW INSERTION LOSS VERSIONB10Highler Isolation VersionB110.70° THICK VERSIONB120.88° THICK VERSIONB120.88° THICK VERSIONSNVTRONMENTAL, RATINGS:ALL DIMENSIONS ARE IN INCHES TOLERANCES: - 65°C TO + 125°C (STORAGE)• TEMPERATURE:-55°C TO + 85°C (OPERATING) -65°C TO + 125°C (STORAGE)• TEMPERATURE:-55°C TO + 85°C (OPERATING) -65°C TO + 125°C (STORAGE)• NUMIDITY:MIL-STD-202F, METHOD 103B COND. B SHOCK:• NUL-STD-202F, METHOD 13B COND. B VIBRATION:X.XX $\pm 0.010$ • ALTITUDE:MIL-STD-202F, METHOD 105C COND. B • TEMPERATURE CYCLE:• ALTITUDE:MIL-STD-202F, METHOD 105C COND. B • TEMPERATURE CYCLE:• ALTITUDE:MIL-STD-202F, METHOD 105C COND. B • TEMPERATURE CYCLE:• MIL-STD-202F, METHOD 105C COND. A• THE METHORING CAN ED 200 • TEMPERATURE CYCLE:• MIL-STD-202F, METHOD 105C COND. B • TEMPERATURE CYCLE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:• ALTITUDE:	BOSA A A AND					
BOB       LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         BOB       LOW INSERTION LOSS VERSION         B10       LOW INSERTION LOSS VERSION         B10       HICHER ISOLATION VERSION         B11       0.70" THICK VERSION         B12       0.88" THICK VERSION         B12       -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)       ALL DIMENSIONS ARE IN INCHES         • TEMPERATURE:       -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 105C COND, B         • ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         • TEMPERATURE CYCLE:       MIL-STD-202F, METHOD 105C COND, B         • ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         • TEMPERATURE CYCLE:       MIL-STD-202F, METHOD 105C COND, B	BOG HICH POWER - SPECIFY CW POWER, PEAK POWER, PU	JLSE WIDTH,				
NOTE:NOTE:B09LOW INSERTION LDSS VERSIONB10HIGHER ISOLATION VERSIONB11 $0.70^{\circ}$ THICK VERSIONB12 $0.86^{\circ}$ THICK VERSIONB12 $0.86^{\circ}$ THICK VERSIONCNVIRONMENTAL RATINGS:All DIMENSIONS ARE IN INCHES TOLERANCES: $-65^{\circ}$ C TO +85'C (OPERATING) $-65^{\circ}$ C TO +125'C (STORAGE)HUMIDITY: $-55^{\circ}$ C TO +85'C (OPERATING) $-65^{\circ}$ C TO +125'C (STORAGE)HUMIDITY: $-55^{\circ}$ C TO +85'C (STORAGE)HUMIDITY:MIL-STD-202F, METHOD 103B COND, B VIBRATION:VIBRATION:MIL-STD-202F, METHOD 213B COND, B VIBRATION:VIBRATION:MIL-STD-202F, METHOD 105C COND, B TEMPERATURE:VIBRATION:MIL-STD-202F, METHOD 105C COND, B VIBRATION 4TO AND ETT -202F, METHOD 105C COND, B TEMPERATURE:VIBRATION:MIL-STD-202F, METHOD 105C COND, B TEMPERATURE CYCLE:MIL-STD-202F, METHOD 105C COND, AMIL-STD-202F, METHOD 105C COND, A		ISTOMER				
B03       INDERTION LOSS VERSION         B10       HIGHER ISOLATION VERSION         B11       0.70°         B12       0.88°         THICK VERSION         B12       0.88°         FEMPERATURE:       -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         SHOCK:       MIL-STD-202F, METHOD 2040 COND, B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND, B         ALTITUDE:       MIL-STD-202F, METHOD 105C COND, A			NOTE:			
B11 OT THICK VERSION B12 OZB THICK VERSION CNVIRONMENTAL RATINGS: • TEMPERATURE:				WITH DRNER, REFLECTIVE	•	
B12 0.88 THICK VERSION ENVIRONMENTAL RATINGS: • TEMPERATURE:				•	ABSORPTIVE	
ENVIRONMENTAL, RATINGS:         • TEMPERATURE:       -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE)         • HUMIDITY:       -65°C TO +125°C (STORAGE)         • HUMIDITY:       MIL-STD-202F, METHOD 103B COND, B         • NIL-STD-202F, METHOD 213B COND, B         • VIBRATION:       MIL-STD-202F, METHOD 204D COND, B         • ALL DIMENSIONS ARE IN INCHES         • VIBRATION:       MIL-STD-202F, METHOD 204D COND, B         • ALTITUDE:       MIL-STD-202F, METHOD 105C COND, A         • TEMPERATURE CYCLE:       MIL-STD-202F, METHOD 107D COHD, A						
• TEMPERATURE: $-55^{\circ}$ C TO +85^{\circ}C (OPERATING) $-65^{\circ}$ C TO +125^{\circ}C (STORAGE) TOLERANCES: $-65^{\circ}$ C TO +125^{\circ}C (STORAGE) TOLERANCES: $-65^{\circ}$ C TO +125^{\circ}C (STORAGE) $X.XX \pm 0.020$ • HUMIDITY: $MIL-STD-202F$ , METHOD 103B COND, B $X.XXX \pm 0.010$ • VIBRATION: $MIL-STD-202F$ , METHOD 105C COND, B $X.XXX \pm 0.010$ • ALTITUDE: $MIL-STD-202F$ , METHOD 105C COND, B $MIL-STD-202F$ , METHOD 105C COND, B $MIL-STD-202F$ , METHOD 105C COND, A $MIL-STD-202F$ , METHOD 107D COND, A $MIL-STD-202F$	NVIRONMENTAL RATINGS:		ONTINCT NO.			
$\begin{array}{c c c c c c c c c c c c c c c c c c 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 • ALTITUDE: MIL-STD-202F, METHOD 107D COND. A • TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	-65°C TO +125°C (STORAGE)	X XX +0.020				
SHOCK: MIL-SID-202F, METHOD 1050 COND. B     ALTITUDE: MIL-SID-202F, METHOD 105C COND. B     ALTITUDE: MIL-SID-202F, METHOD 107D COND. A     TEMPERATURE CYCLE: MIL-SID-202F, METHOD 107D COND. A	• HUMIDITY:					
• ALTITUDE: MIL-STD-202F, METHOD 105C COND. B • TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A A 60483 100-4170-2 A	■ SHOLN: MIL-STD-202F, METHOD 213B COND. B	5	HEEKIG I I I I I I I I I I	REFLECTIVE OR NON-REF		ORPTIVE
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COHD. A	ALTITUDE: MIL-STD-202F, METHOD 105C COND. B			Z KAUIAL SOLID S	IAIL SWITCH	
	• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A				00-4170-2	
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE ON REVISION	NOTE: THE ADDVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	ļ		SCALE N/S		



#### SECTION

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#### PRODUCT DESCRIPTION

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22.0	SP7T - (1 1/4" Diameter x 0.7" Thickness) Reflective and Absorptive Switches				
	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	
SPECIFICATIONS:		ZONE REV.	DESCRIPTION	DATE APPROVED
			ORIGINAL RELEASE	8/12/97
FREQUENCY: 0.5 GHz TO 18 GHz     INSERTION LOSS: REFLECTIVE: 3.754b				
ABSORPTIVE: 4.25db				
• ISOLATION: D.5 CHz TO 2 CHz: 60db 2 GHz TO 18 GHz: 70db	¢0.015 × 0.100' RF PIN -			
	8 PLACES \ 04 ON Ø1.00 E. 2 PLACES	REMOVABLE SMA 8 PLAC		<b>⊷</b> 0.19
SPEED:     RISE: 10ns TYPICAL, 15ns MAX.     FALL: 10ns TYPICAL, 15ns MAX.     DELAY ON: 75ns TYPICAL, 100ns MAX.     DELAY OFF: 75ns TYPICAL, 100ns MAX.	$\overline{\mathbf{X}}$			
POWER INPUT: (CW)+2DdBm (STANDARD), +10 dBm (HIGH SPEED)				
• SURVIVAL POWER:	45'0'	( / / / )».		CTL SOLDER PIN
CONTROL: TTL LOGIC "O"=ON "1"=OFF				7 PLACES
POWER SUPPLY: +5V 0 350 mA MAX.		AMERICAN 8 0.38		7 TENOLO
-5Y O 75mA MAX.(RELECTIVE) 100mA NAX.(ABSORPTIVE/NON-REFLECTIVE)				MOUNTING SURFACE
OPTIONS:		FREDERICK, MD		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	MODEL NOSWA			P=PAINTED
DEC-SP · · · · 3 BIT DECODER WITH SOLDER PIN	OPTION NO STAN			
10M18 · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO	II K		POWER SUPPLY
100118 100 MHZ TO 18 GHZ (INSERTION LOSS INCREASES	FSCM NOL			2 PLACES
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	\$\\\$	`````````````````````````````````````		
218 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	IL VI / Mar.	-8///1802		1 1
412 · · · · · · · · · · · · · · · · · · ·		<u>─</u> ₭₿₩₿₩₿		I
818 · · · · · · · · · · · · · · · · · ·				0.20 0.24
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES	+**	<b>⊒</b> u-v∖		
BY 1.5db AT 100 MHz AND,11.0db AT 20 GHz) 220 · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	- 0.47	<u>∃</u> r- 0,%/1	0.33 -	-
BY 1.0db AT 20 GHz)		20170		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		22.30'		
BY 1.0db AT 20 GHz)			0.70	
801 · · · · · · · · · · · · · · · · · · ·	1.2	5	1 000 1	
BO3 REVERSE LOGIC "1"=ON "0"=OFF				
BO4 DRIVERLESS, CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM				
WHEN APPLICABLE BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER, P DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ULSE WIDTH,			
807. · · · · CUSTON DESIGNED PRODUCT- SPECIFY INITIALS OF C	USTOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDED BANDWIDTH		UOTE.		
BO9 LOW INSERTION LOSS VERSION		NOTE:		
B10 HIGHER ISOLATION VERSION			=WITH DRIVER, REFLECTIVE ■WITH DRIVER, NON-REFLECTIV	
B11 · · · · · 0.40" TI∄CK VERSION B12 · · · · 0.88" THICK VERSION			-mail priver, NON-REFLECTIV	
		CONTRACT NO.		
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			ROWAVE CORPORATION RICK, MARYLAND
• TEMPERATURE:	TOLERANCES:	APTROVALE DATE		DRAWING
-65°C TO +125°C (STORAGE) • HUMIDITY:	X.XX ±0.020	DRWITE		R/DT-STANDARD
A SHOCK MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WY9 8/12/	REFLECTIVE OR NON-	REFLECTIVE/ABSORPTIVE
• VIBRATION: MIL-STD-202F, METHOD 204D COND. B		CHERRE AJelle 11/7/5	RADIAL SOLID	STATE SWITCH
A ALTITUDE: MIL-STO-202E, METHOD 105C COND. B				REV
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A			A60483	<u>100-4175-1 A</u>
NOTO THE ADDVE SPECIFICATIONS ARE SUBJECT TO CHANCE OR REVISION	,		SCALE N/S	3HEET 1.0/1

Differentiation Loss:         - REGUENCY:         0.5 GHz TO 18 GHz           * INSERTION LOSS:         - REGUENCY:         - 2 GHz TO 18 GHz           * SUBTION LOSS:         - REGUENCY:         - 2 GHz TO 18 GHz           * SUBTION LOSS:         - REGUENCY:         - 2 GHz TO 18 GHz           * VSWR:         - REGUENCY:         - 0.5 GHz TO 18 GHz           * VSWR:         - REGUENCY:         - 0.5 GHz TO 18 GHz           * VSWR:         - REGUENCY:         - 0.5 GHz TO 18 GHz           * VSWR:         - REGUENCY:         - 0.5 GHz TO 18 GHz           * VSWR:         - REGUENCY:         - 0.5 GHz TO 18 GHz           * SPEED:         - RESC:         - 0.5 GHz TO:           * FFIL:         - 0.5 GHz TO:         - 0.5 GHz           * FFIL:         - 0.5 GHz         - 0.5 GHz           * SURMAL POWCEN:         - 1.5 GHz         - 0.5 GHz           * 00HER SUPPLY:         - + 0.5 GHz         - 0.5 GHz           * 00HER SUPPLY:         - + 0.5 GHz         - 0.5 GHz           * 00HER SUPPLY:         - + 0.6 GHz         - 0.5 GHz           * 100Hz         - 0.6 GHz         - 0.6 GHz         - 0.6 GHz           * 100Hz         - 1.6 GHz         - 0.6 GHz         - 0.6 GHz           * 100Hz	A OF	RIGINAL RELEASE	DATE AI
PREUDENCY:			A 41 A 400
ABSORPTINE: 4.25db       #0015 x 0.100'         ISOLATION:       0.5 CHL TO 2 CHL: 50 db       #0015 x 0.100'         YSWR:       REFLECTINE IN/QUIT: 20:1       #00.104 ON #1.00         ABSORPTINE OUT/OFF 2.0:1       #00.104 ON #1.00       B         SPEED:       RISE: 10m TYPICAL, 15m MAX, FEED:       #00.104 ON #1.00       B         SPEED:       RISE: 10m TYPICAL, 15m MAX, FEED:       #00.105 MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, DELVY OFF, 75m TYPICAL, 100ms MAX, -5V Ø 350 mA MAX. -5V Ø 350 mA MAX.       450'       #100         POWER SUPPLY:       +40 90 350 mA MAX. -5V Ø 350 mA MAX.       -5V Ø 350 mA MAX.       50'         HIDEPENDENT COMTROL WITH SOLDER PIN STANDARD 100/118 '''''''''''''''''''''''''''''''''''		NUMAL RELEASE	6/12/97
2 CH: T0 18 CH:: 70db       RF PIN         VSWR:			
VSWR:       ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 CIRCLE: 2 PLACES       8 PLACES         PREED:       FALL: IONS TYPECAL, ISNE MAX, DELAY OFF: 75% TYPECAL, IONS MAX, DELAY OFF: 75% TYPECAL, IONS MAX, DELAY OFF: 75% TYPECAL, IONS MAX, DELAY OFF: 75% TYPECAL, IONS MAX, -SV Ø 75% MAX.(RECETTE) IONS:       450°         POWER SUPPLY:       -15V Ø 350 MA MAX. -SV Ø 75% MAX.(RECETTE) IONS:       1000 MAX (ABSORPTIVE/NON-REFLECTIVE) IONMA MAX.(RECETTE) IONMA DEC TO 10 MH: AND CLOSS INCREASES IOMIA       450°         IMDEPENDENT CONTROL WITH SOLDER PIN STANDARD DECC-SP       100 MH: AND CLASS INCREASES IOMIA       450°         IMDEPENDENT CONTROL WITH SOLDER PIN STANDARD DECC-SP       100 MH: AND CLASS INCREASES IOMIA       450°         IDMIA       100 MH: ATO 10 GH: NO CHANGE N INSERTION LOSS) 100MIB       100 MH: ADO CLASS INCREASES BY 1.054 AT 20 CHL)       100 CHANGE N INSERTION LOSS) 1218       12 CH: TO 2 CHL (INSERTION LOSS INCREASES BY 1.054 AT 20 CHL)       100 CHANGE N INSERTION LOSS) BY 1.054 AT 20 CHL)       100 CHANGE N INSERTION LOSS INCREASES BY 1.054 AT 20 CHL)       11.25         B03       -15V POWER SUPPLIES B03       ENCENTERION LOSS INCREASES BY 1.054 AT 20 CHL)       10.257 OFF       11.25         B04       -100 VOWER SUPPLIES B03       ENCENTERIO			
STELDU TY TY TY FUELL 1031 TYPICAL 10011 MAX. DELAY DFT: 7511 DFT: DOWER SUPPLY:	BLE SMA (F) _ 8 PLACES _	7	
SURMAL POWER:	-		<del>-</del> 0.19
CONTROL:			$C_{\rm eff}$
CONTROL:	Br.		-CTL
POWER SUPPLY:	11		SOLDER PIN
DUB         DUB <td>1 0.38 1-</td> <td></td> <td>3 PLACES</td>	1 0.38 1-		3 PLACES
TIONS:         INDEPENDENT CONTROL WITH SOLDER PIN STANDARD         DEC-SP       3 BIT DECODER WITH SOLDER PIN         10M18       10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 MHz AND 0.56b AT 18 GHz)         100M18       100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 MHz AND 0.56b AT 18 GHz)         118       1 GHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 MHz AND 0.56b AT 18 GHz)         118       1 GHz TO 18 GHz (NO CHANGE N INSERTION LOSS)         1218       1 GHz TO 18 GHz (NO CHANGE N INSERTION LOSS)         1218       1 GHz TO 18 GHz (NO CHANGE N INSERTION LOSS)         1218       1 CHz TO 18 GHz (NO CHANGE N INSERTION LOSS)         1218       1 CO 12 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 HHz AND U.06b AT 20 GHz)         1000020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 GHz)         1000020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.56b AT 100 CHZ)         1020       12V POWER SUPPLIES         1020       12V POWER SUPPLIES         1020       100 CHZ TO 20 GHZ			MOUNTING SURF
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD         DEC-SP       3 BIT DECODER WITH SOLDER PIN         10M18       10 MH2 TO 18 GH2 (INSERTION LOSS INCREASES BY 1.5db AT 100 MH2 AND 0.5db AT 18 GH2)         100M18       10 MH2 TO 18 GH2 (INSERTION LOSS INCREASES BY 1.5db AT 100 MH2 AND 0.5db AT 18 GH2)         118       1 GH2 TO 18 GH2 (INSERTION LOSS) INCREASES BY 1.5db AT 100 MH2 AND 0.5db AT 18 GH2)         118       1 GH2 TO 18 GH2 (INC CHANGE N INSERTION LOSS)         218       2 GH2 TO 18 GH2 (INC CHANGE N INSERTION LOSS)         118       1 GH2 TO 18 GH2 (INC CHANGE N INSERTION LOSS)         1216       12 CH2 TO 18 GH2 (INC CHANGE N INSERTION LOSS)         1218       12 CH2 TO 18 GH2 (INC CHANGE N INSERTION LOSS)         100402       BT 1.5db AT 100 MH2 AND (ILOSS INCREASES BY 1.0db AT 20 GH2)         100402       GH1 TO 20 CH2 (INSERTION LOSS INCREASES BY 1.0db AT 20 GH2)         1020       10 CH2 TO 20 GH2 (INSERTION LOSS INCREASES BY 1.0db AT 20 GH2)         1020       10 CH2 TO 20 GH2 (INSERTION LOSS INCREASES BY 1.0db AT 20 GH2)         1020       10 CH2 TO 20 GH2 (INSERTION LOSS INCREASES BY 1.0db AT 20 GH2)         1020       10 CH2 TO 20 GH2 (INSERTION LOSS INCREASES BY 1.0db AT 20 GH2)         1020       1120 GH2 TO 20 GH2         1020       1120 GH2 TO 20 GH2         1020       1120 GH2 TO 20 GH2         1020 GH2	R I		
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 10 MHz AND 0.5db AT 18 GHz)         118        1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz TO 12 GHz (INSERTION LOSS)         118        1 GHz (NO CHANGE IN INSERTION LOSS)         118        1 GHz TO 12 GHz (INSERTION LOSS)         1218        1 GD GHz AND (ILOSS INCREASES GF 1.000 MHz AND (ILOSS INCREASES GF 1.004 AT 20 GHz)         1020            1020            1020            1020             1020             1020       .	li Fimmin		P=PAINTED
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	I E ANNINY I		
100M18       100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.3db AT 18 GHz)         118       1       1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       4 GHz TO 18 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)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 10 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         100020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         1020       -         1020       -         10.0db AT 20 GHz)         801       -         802       -         1030       -         803       -         804       -         805       -         806       -         807       -         808       -         808       -         809 <td>R</td> <td></td> <td>POWER SUPPLY</td>	R		POWER SUPPLY
1181 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)2182 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)1124 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)1186 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)121810 GHz TO 20 GHz (INSERTION LOSS)121810 GHz TO 20 GHz (INSERTION LOSS)100M2D100 MHZ AND (I.Odb AT 20 GHz)2202 GHz TO 20 GHz (INSERTION LOSS INCREASESBY 1.0db AT 20 GHz)102010 GHz TO 20 GHz (INSERTION LOSS INCREASESBY 1.0db AT 20 GHz)1020102010201020102010201020102010201020102010201020102010201020102010201020 <t< td=""><td>Ϋ́</td><td></td><td>-SOLDER PIN 2 PLACES</td></t<>	Ϋ́		-SOLDER PIN 2 PLACES
218 $\cdot$ 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)412 $\cdot$ $\cdot$ 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)118 $\cdot$ $\cdot$ 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)1218 $\cdot$ 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)100M2D $\cdot$ 10 ON HIZ TO 2D GHz (INSERTION LOSS INCREASESBY LOBD AT 20 OCH(INSERTION LOSS INCREASESBY LOBD AT 20 GHz(INSERTION LOSS INCREASESBY LOBD AT 20 GHz (INSERTION LOSS INCREASESBY LOBD AT 20 GHz(INSERTION LOSS INCREASESBY LOBD AT 20 GHz(INSERTION LOSS INCREASESB01 $-$ T2V POWER SUPPLIESB02 $-$ B03 $-$ B04 $-$ DRIVERLESS, CURRENT CONTROLLEDB05 $-$ B06 $-$ HICH POWER $-$ SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTHB07 $-$ B08 $-$ B08 $-$ CUSTOM DESCINED PRODUCTB09 $-$ LOW INSERTION LOSS VERSIONB11 $-$ B12 $ -$ B12 $                    -$	Å		/ E FLACES
$412 \cdot \cdot \cdot \cdot 4$ GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) $618 \cdot \cdot \cdot 6$ GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) $1218 \cdot \cdot \cdot 12$ GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) $100 \text{ MHz}$ TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND $\mu$ 1.0db AT 20 GHz) $220 \cdot \cdot \cdot 2$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot \cdot 106 \text{ GHz}$ TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot \cdot 106 \text{ MHz}$ TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $801 \cdot \cdot - 12v$ POWER SUPPLIES B02 · · - 15V POWER SUPPLIES B03 · · · REVERSE LOGIC '1"ON "0"=OFF $804 \cdot \cdot - 100  CREENS, CURRENT CONTROLLEDDUTY CYCLE, RF FREQUENCY AND BANDWIDTH806 \cdot - + \text{High POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH,DUTY CYCLE, RF FREQUENCY AND BANDWIDTH807 \cdot - \cdot \text{CUSTOM DESIGNED PRODUCT- SPECIFY INTIALS OF CUSTOMERB03 · · · LOW INDERTION LOSS SERIONB11 · · · · 0.40° THICK VERSIONB11 · · · · 0.40° THICK VERSIONB12 · · · · 0.88° THICK VERSIONB11 · · · · 0.408° THICK VERSIONB12 · · · · 0.88° THICK VERSIONB12 · · · · · 0.88° THICK VERSIONB12 · · · · · 0.88° THICK VERSIONB12 · · · · $	<b>2</b> -	BBI	
1218       12 CHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)         100M2D       100 MHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         220       2 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         1020       10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0db AT 20 CHz)         801       -12V POWER SUPPLIES B02         802       -15V FOWER SUPPLIES B03         803       -15V FOWER SUPPLIES B03         804       DRIVERLESS, CURRENT CONTROLLED B05         805       -15V FOWER SUPPLIES B04         806       -16CH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07         808       -10W INSERTION LOSS VERSION B10         810       -10W INSERTION LOSS VERSION B11         811       -10W INSERTION LOSS VERSION B11         811       -10W INSERTION VERSION B12         70       -11CK VERSION B12         71       -55'C TO +85'C (OPERATING) -65'C TO +125'C (STORAGE)         71       -55'C TO +85'C (OPERATING) -65'C TO +125'C (STORAGE) <td>XIIIa</td> <td></td> <td></td>	XIIIa		
$100M20$ $100 \text{ MHz}$ TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND (1.0db AT 20 GHz) $220 \cdot \cdot \cdot 2$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot 10$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot 10$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot 10$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $1020 \cdot \cdot 10$ GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) $801 \cdot \cdot -12V$ 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 $806 \cdot - HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH,DUTY CYCLE, RF FREQUENCY AND BANDWIDTHB07 · · · CUSTOM DESIGNED PRODUCT - SPECIFY INTIALS OF CUSTOMERB08 · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTHB09 · · · LOW INSERTION LOSS VERSIONB10 · · · HIGHER ISOLATION VERSIONB11 · · · · 0.40" THICK VERSIONB12 · · · · 0.88" THICK VERSIONAMINOTITY · · · · · · · · · · · · · · · · · · ·$			0.20 0.24
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) 80112V POWER SUPPLIES 80215V POWER SUPPLIES 803 REVERSE LOGIC "I"=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 INITIALS OF CUSTOMER 808 LOW VIDEO TRANSIENTS - SPECIFY INITIALS OF CUSTOMER 808 LOW INSERTION LOSS VERSION 810 HIGHER ISOLATION VERSION 811 0.40° THICK VERSION 812 0.80° THICK VERSION 813	r		
BY 1.0db AT 20 GHz) 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 22°30' 22°30' 22°30' 22°30' 1.25 22°30' 22°30' 22°30' 22°30' 22°30' 1.25 22°30' 1.25 1.2	-{		
1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY LOdb AT 20 GHz)        22"30"         801       -12V POWER SUPPLIES B02       -15V POWER SUPPLIES B03       -15V POWER SUPPLIES       1.25         804       -15V POWER SUPPLIES B05       -15V POWER SUPPLIES B05       1.25        1.25         804        DRIVERLESS, CURRENT CONTROLLED B05        1.25          806        HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE        1.25         806         22"30"       1.25         806         1.25         807         22"30"         808        1.25	·		-
BY 1.0db AT 20 GHz) BO1 · · · -12V POWER SUPPLIES BO2 · · · -15V POWER SUPPLIES BO3 · · · REVERSE LOGIC '1"=ON "0"=OFF BO4 · · · DRVERLESS, CURRENT CONTROLLED BO5 · · · HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE BO6 · · · HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH BO7 · · · CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER BO8 · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO9 · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO9 · · · LOW INSERTION LOSS VERSION B10 · · · HIGHER ISOLATION VERSION B11 · · · · 0.40" THICK VERSION B12 · · · · 0.88" THICK VERSION B12 · · · · 0.88" THICK VERSION PIROPRATURE:55'C TO +85'C (OPERATING) -65'C TO +125'C (STORAGE) X.XX ±0.020		- 0.55	
B02·····       -15V POWER SUPPLIES       1.25         B03····       REVERSE LOGIC "1"=ON "0"=OFF         B04····       DRNERLESS, CURRENT CONTROLLED         B05····       HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM         WHICN APPLICABLE       WHICN 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 WIDEO BANDWIDTH         B09····       LOW INSERTION LOSS VERSION         B10····       HIGHER ISOLATION VERSION         B11····       0.40° THICK VERSION         B12·····       0.88° THICK VERSION         MIL-       S10-75°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE)         MILDITY:       -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE)         MIL-SID-2027E       METHOD 10.98 COND, B			
B03·····       REVERSE LOGIC "1"=ON "0"=OFF         B04·····       DRIVERLESS, CURRENT CONTROLLED         B05·····       HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM         WHEN APPLICABLE       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         B08·····       LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         B08·····       LOW INSERTION LOSS VERSION         B01·····       HIGHER ISOLATION VERSION         B11······       0.40° THICK VERSION         B12·····       0.88° THICK VERSION         VIRONMENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES         TEMPERATURE:       -55'C TO +85'C (OPERATING)         -65'C TO +125'C (STORAGE)       X.XX ±0.020	1	0.70	
B04·····       DRNERLESS, CURRENT CONTROLLED         B05·····       HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM         WHEN APPLICABLE       HIGH POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH         B06····       HIGH POWER, PSECIFY 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         810····       HIGHER ISOLATION VERSION         B11····       0.808° THICK VERSION         B12·····       0.808° THICK VERSION         VIRONMENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES         TEMPERATURE:       -55°C TO + 85°C (OPERATING)         -65°C TO + 125°C (STORAGE)       X.XX ±0.020	7		
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         810·       HIGHER ISOLATION VERSION         811·       0.40° THICK VERSION         B12·       0.88° THICK VERSION         VIRONMENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES TOLERANCES: -65°C TO +125°C (STORAGE)         VINDITY:       MIL-STD-202F. METHOD 10.38 COND, B			
B08·       HICH 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 VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         B09·       LOW INSERTION LOSS VERSION         B10·       HIGHER ISOLATION VERSION         B11·       0.40° THICK VERSION         B12·       0.88° THICK VERSION         All DIMENTAL RATINGS:         YENPERATURE:       -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE)         YENPERATURE:       -55°C TO +25°C (STORAGE)         YENPERATURE:       -55°C TO +25°C (METHOD) 10.98 COND, B			
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 B12 0.88° THICK VERSION //RONMENTAL RATINGS: EMPERATURE: -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE) HIL-STO-202F METHOD 10.9 COND. B ALL DIMENSIONS ARE IN INCHES TOLERANCES: X.XX ±0.020			
BO8- / · · · LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH         BO9- · · · LOW INSERTION LOSS VERSION         B10- · · · HIGHER ISOLATION VERSION         B11- · · · · 0.40" THICK VERSION         B12- · · · · 0.88" THICK VERSION         MIL DIMENTAL RATINGS:         ENPERATURE: · · · -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)         ALL DIMENSIONS ARE IN INCHES         TOLERANCES: -65°C TO +125°C (STORAGE)         X.XX ±0.020			
BO9·····LOW INSERTION LOSS VERSION         B10·····       HIGHER ISOLATION VERSION         B11·····       0.40° THICK VERSION         B12·····       0.88° THICK VERSION         MIL-       0.88° THICK VERSION         ALL DIMENSIONS ARE IN INCHES         ENPERATURE:       -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)       X.XX ±0.020			
B10·····       HIGHER ISOLATION VERSION         B11·····       0.40° THICK VERSION         B12·····       0.88° THICK VERSION         /IRONHENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES         ENPERATURE:       -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)       X.XX ±0.020         HUMIDITY:       MIL =510-202F, METHOD 10.5B, COND, B	NOTE:		
B11       0.40° THICK VERSION         B12       0.88° THICK VERSION         /IRONMENTAL RATINGS:       ALL DIMENSIONS ARE IN INCHES         ENPERATURE:       -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)       TOLERANCES:         Attaches       XXX ±0.020			
B12 0.88" THICK VERSION <u>AIRONMENTAL RATINGS</u> : TENPERATURE: -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE) HIMIDITY:		DRIVER, REFLECTIVE	
VIRONMENTAL RATINCS: TEMPERATURE: -55°C TO +85°C (OPERATING) -65°C TO +125°C (STORAGE) HIMOUTY:	Ul=#AIIH	DRIVER, NON-REFLECTIV	
ALL DIMENSIONS ARE IN INCHES         EMPERATURE:       -55°C TO +85°C (OPERATING)         -65°C TO +125°C (STORAGE)       TOLERANCES;         ALL DIMENSIONS ARE IN INCHES         -65°C TO +125°C (STORAGE)         ALL DIMENSIONS ARE IN INCHES         -65°C TO +125°C (STORAGE)         X.XX ±0.020			ROWAVE CORPORAT
TEMPERATURE:         -55°C         TOLERATING)         TOLERANCES;         Attrovida           -65°C         TOLERANCES;         XXX         ±0.020         Divini	[4		RICK, MARYLAND
HIMDITY:			
		OUTLINE	DRAWING
SHOCK:	8/12/97		R/DT-DEC-SP
VIBRATION: MIL-STD-202F, METHOD 204D COND. B	1/1/97 REI	FLECTIVE OR NON-F RADIAL SOLID	
ALTITUDE: MIL-STD-202F, METHOL 105C COND. B		TSCILIO	JARE SHIVE
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	A		100-4175-2
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			



### SECTION

#### PRODUCT DESCRIPTION

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PAGE

23.0	<u>SP71</u>	- (1 1/4" Diameter x 0.88" Thickness) Reflective and Absorptive Switches
	23.1	SWN-1182-7DR/DT-STANDARD with Independent Controls
	23.2	SWN-1182-7DR/DT-DEC-SP with 3 Bit Decoder and Solder Pins

SPECIFICATIONS:		LOIS NEV.	REVISIONS	DATE ATTR
• FREQUENCY: · · · · · · 0.5 GHz TO 18 GHz			ORIGINAL RELEASE	8/11/97
INSERTION LOSS: · · · · · REFLECTIVE: 3.75db		1 1 1 1 1		1 0/11/07 1
ABSORPTIVE: 4.25db				
ISOLATION: · · · · · · · · · · · · · · · · · · ·				
VSWR: ····································				
ABSORPTIVE IN/OUT: 2.0:1	40 40 4 01	44.00		
ABSORPTIVE OUT/OFF: 2.0:1	MA FEMALE OLIOL 5 2			0.21
				0.2.1
FALL: 10ns TYPICAL, 15ns MAX. 8 DELAY ON: 75ns TYPICAL, 100ns MAX.	PLACES	а /		1
DELAY OFF: 75ns TYPICAL, 100ns MAX.		3 /		<u></u> [
POWER INPUT: · · · · · (CW)+20dBm (STANDARD), +10 dBm (HICH SP				0.28
SURVIVAL POWER: · · · · 1 WATT CW, 10 WATTS PEAK 1 used				0,20
CONTROL: ········TIL LOGIC "0"=0N "1"=0FF	45'0'			
December 2017				Τ'
POWER SUPPLY: ++5V @ 350 mA MAX.		0.38		OLDER_PIN
-5V @ 75mA WAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECT				PLACES
· · ·		CORPORATION		
PTIONS:	HADE IN USA	Panan		MOUNTING SURFAC
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD				GP=GOLD PLATED P=FAINTED
DEC-SP · · · · · · 3 BIT DECODER WITH SOLDER PIN	UNUL OPTION NO STAN			PARALLED
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	PART NO:			<b></b>
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASE	FSCM NO:	// <sup>_</sup>		POWER SUPPLY
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	2 2 2	N N N		- SOLDER PIN
118 I GHZ TO 18 GHZ (NO CHANGE IN INSERTION LC	iss) (azi	$(\mathbf{x}) = \mathbf{x} + \mathbf{x}$		2 PLACES
218 · · · · · · 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LC		-7 // 6 ///202-		1
412 ······ 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION 1				
6 GHz TO 18 GHz (NO CHANGE IN INSERTION LC 1218 · · · · · · · · 12 GHz TO 18 GHz (NO CHANGE IN INSERTION L				0.24
100M20 ····· 100 MHz TO 20 GHz (INSERTION LOSS INCREASE		3U-v∖ [		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	- 0.47 1			
220 · · · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	· · · · · · · · · · · · · · · · · · ·			
BY 1.0db AT 20 GHz)		22.30'	0,63	
1020 · · · · · · · 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1,0db AT 20 GHz)		22.00	1	
BO1 12V POWER SUPPLIES		_ ľ	• 0.88	
BO2 15V POWER SUPPLIES	1.25	>		
BO3 REVERSE LOGIC 1 -ON "O"-OFF				
BO4 ····· DRNERLESS, CURRENT CONTROLLED				
B05 · · · · · · · HIGH SPEED, TURNON/TURNOFF 25 nzec MAXIMUI WHEN APPLICABLE	4			
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWE	R. PULSE WIDTH.			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS O	F CUSTOMER			
808 ····· LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWI	DTH	NOTE:		
BO9 LOW INSERTION LOSS VERSION		–		
BIO				
B11 ······ 0.40" THICK VERSION		01-	-WITH DRIVER, NON-REFLECTIVE/AE	PORFINE
B12·····0.70° THICK VERSION		[	· · · · · · · · · · · · · · · · · · ·	· · · ·
NUTRANNENTAL DATINGS		CONTRACT NO.	AMERICAN MICROY	
<u>VVIRONMENTAL RATINCS</u> :	ALL DIMENSIONS ARE IN INCHES	I		MARYLAND
TEMPERATURE:	TOLERANCES:	APPROVALS DATE	TTTLE OUTLINE DR	AWING
-65'C TO +125'C (STORAGE)	X.XX ±0.020			
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B SHOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WYP 8/11/	REFLECTIVE OR NON-REFL	
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		on the plate		
ALTITUDE:		1. Mark 11/7/9	SIZE FSCH HO. ONG HO.	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A				0-4185-1
NOTO THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	-	1	···· }	
THE PARTY AND A CONTENTION AND SAUTOR IN CLANNE DA KEATZIN		1	S/N INCE	. I ol. 1

23-1



#### PRODUCT DESCRIPTION

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24.0	<u>SP71</u>	SP7T - (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches				
	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			

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			REVISIONS		
PECIFICATIONS:		ZOHE NEV.	DESCRIPTION	0470	APPROVE
PREQUENCY: 0.5 GHz TO 18 GHz INSERTION LOSS: REFLECTIVE: 3.75db ABSORPTIVE: 4.25db			ORIGINAL RELEASE	8/11/97	I
ISOLATION:					
VSWR:	Ø0.104 ON	ø1.00			
ABSORPTIVE OUT/OFF: 2.0:1 SMA	FEMALE CIRCLE, 2 F			0.21	
SPEED: RISE: 10ns TYPICAL, 15ns MAX. 8 PL FALL: 10ns TYPICAL, 15ns MAX. 8 PL DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OF: 75ns TYPICAL, 100ns MAX.	ACES				
POWER INPUT: ····· (CW)+20dBm (STANDARD). +10 dBm (HIGH SPEED					
SURVIVAL POWER: · · · 1 WATT CW, 10 WATTS PEAK 1 usec					
CONTROL: ······· TIL LOGIC "0"=ON "1"=OFF	45'0'				
POWER SUPPLY: +5V @ 350 mA MAX.		0.38		LDER_PIN	
-SV @ 75mA MAX.(RELECTIVE)				PLACES	
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)					
PTIONS:	MADE N USA	-mm		DUNTING SU P=GOLD PL/	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	MININ   GMODEL NO SWA-	182-208/015		=PAINTED	
DEC-SP 3 BIT DECODER WITH SOLDER PIN		e			
10M18 · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	FSCM NO	JJ		POVER SU	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	A A	\$		2 PLACES	N
118		$\oplus //M_{n}$		2 FLACES	
218				<u></u>	
618				0.24	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS	» +v	ĨŪ−v\ ľ			
100M20 100 MHz TO 20 CHZ (INSERTION LOSS INCREASES BY 1.5db at 100 MHz AND 1.0db at 20 GHz)	0.47	\$   0,¥7		ł	
220 2 CHz TO 20 CHz (INSERTION LOSS INCREASES	· ·				
BY 1.0db AT 20 GHz) 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		22'30' `	0.63		
BO1	1.25		0.88+		
BO2	1.25	1			
BO3 ····· REVERSE LOGIC "1"=ON "0"=OFF					
BO4····· DRIVERLESS, CURRENT CONTROLLED BO5····· HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE					
BOS	•				
BO7 ······ CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF C					
BO8LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO9LOW INSERTION LOSS VERSION		NOTE	:		
B10 ····· HIGHER ISOLATION VERSION			WITH DRIVER, REFLECTIVE		
811 D.40" THICK VERSION		DT	=WITH DRIVER, NON-REFLECTIVE/AB	SORPTIVE	
B12·····0.70° THICK VERSION	•			· ·	·····
		CONTRACT NO.		AVE CORPO	RATION
NVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APTROVALS DATE		, MARYLAND	
- TEMPERATURE:	X.XX ±0.020	084901			-
HUMIDITY: MIL-STD-202F, METHOD 103B COND, B	X.XXX ±0.010	Wyp 1/11/	SWN-1182-70R/	DI - DEC - S	
SHOCK: NIL-STD-202F, NETHOD 213B COND, B		OHEAP. Alate u/7	REFLECTIVE OR NON-REFL		077-110
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		and 14 04 14 11/1	SIZE FICH NO. DWG NO.		, n
TEMPERATURE CYCLE: ··· MIL-STD-202F, METHOD 107D COND. A			A 60483 10	0-4185-2	2 /

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		TONE NEV.	procision	ONTE	APPROVED
PECIFICATIONS:			ORIGINAL RELEASE	8/13/97	
FREQUENCY:		• • •			
INSERTION LOSS:REFLECTNE: 3.75db ABSORPTIVE: 4.25db					
• ISOLATION:					
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.	GP=GOLD PLATED	Ø0.015 × 0.100'	BLE SHA (F) B PLACES		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		RF PIN B PLACES	L		
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 uses	0.125 (GP)	0 F LAGA			
CONTROL:		-0.075	i i la i		
POWER SUPPLY:		80.00	1 BO.00"		
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		40.00* TYP.		N.	
PTIONS:					
		1 - 1000-51	ETTE EEE ROOM	$\lambda$	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP		i UMEN		ìì	
			FICH HOHAL		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		\ {///	SOLID STATE SWITCH	·	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		115	WODEL NOWSE-ZOR /DI-01	#1.50" CIRCI	LE
118 1 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)	Ð	HILLETTON /	OPTION NOSTANDARD	PDINT TO PO	<b>JINT</b>
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			SERVIL NO.	//	
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)		60.020 HULLET	PART NO YE HOLE	V :	
518		OLDER PIN			
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES		9 PLACES			
BY 1.5db AT 100 MHz AND 1.0db AT 20 CHz)			A THE THE AND		
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES			₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	<u></u>	
BY 1.0db AT 20 GHz)					
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		╇╍┺╵╠╸			
BY 1.Ddb AT 2D GHz) B01······ - 12V POWER SUPPLIES	<del></del>		+v_/1=1 \v	V.	
BO2	1 1		0.55	Ì	
BO3 REVERSE LOGIC "1"=DN "D"=OFF	<del>~</del> −0.40− <del>•</del>		-0.66	V.	
804 DRIVERLESS, CURRENT CONTROLLED			#0.089 THRU V/4-40 TH		
BO5 HIGH SPEED, TURNON/TURNOFF 25 neec MAXIMUM			0.250 DEEP DN MOUNTING SURFACE		
WHEN APPLICABLE BOB			LOCATED ON ØJ.00° CIRCLE 2 PLACES		
BOB HIGH POWER - SPECIFI CH FOMEN, FEAR FOMEN, FO				-	
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER		_		
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		NOT	E:		
BOS LOW INSERTION LOSS VERSION		· C	DR=WITH DRIVER, REFLECTIVE		
BIO HIGHER ISOLATION VERSION		ſ	DT≕WITH DRIVER, NON-REFLECTIVE/AE	SORPTIVE	
BIT 0.70" THICK VERSION					
NURRANNING DATE 1200.		FART HOL	AMERICAN MICROY	AVE CORPOR	ATION
NVIRONMENTAL RATINCS:	ALL DIMENSIONS ARE IN INCHES	J		MARYLAND	
TEMPERATURE	TOLERANCES:	APPROVALS D		AWING	
-65°C 10 +125°C (STORAGE)	X.XX ±0.020	DRAIN			
HUMIDITY:	X.XXX ±0.010	WY9 1/1			
■ SHOCK:		CHECKER MILL	REFLECTIVE OR NON-REFL		XP1IVE
ALTITUDE		5340 (. 18 July 11)	SOLID STATE		THEN
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		I		0-4190-1	A
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHARGE OR REVISION		<b>Ⅰ</b>	A 0040310		
			ISCALE N / N	SHEET 1 C	57 1

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			REVISIONS	
ECIFICATIONS:		ZOIK NEV.	DESCRIPTION	DATE AM
FREQUENCY:D.5 GHz TO 18 GHz			ORIGINAL RELEASE	8/13/97
NSERTION LOSS:REFLECTIVE: 3.75db ABSORPTIVE: 4.25db				
ISOLATION:				
/SWR: 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 DF: 75ns TYPICAL, 100ns MAX.	C MOUNTING SURFACE GP≈GDLD PLATED	REMOVABLE 60.015 × 0.100'	SMA (F) PLACES	
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEE	D) P=PAINTED	RF PIN -		
URVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 Used		0 PLACES		
CONTROL:	(92) (CEN (CEN )	0.075		
POWER SUPPLY:		80.00	80.00	
-SV @ 75mA MAX. (RELECTIVE) 100mA MAX. (ABSORPTIVE/NON-REFLECTIVE		40.00 TYP.		
TIONS:				· <del>/ - 1</del>
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		1 Tanser	H CR att	$-\lambda$
DEC-SP		i USUL	AMERICAN MICROWAVE CORPORATION	
10M18 ······ 10 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 CHz)				
100M18		\	DUD STATE SWITCH	
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS			DOGL NOMER-ZOR/DIT-OS	#1.50' CIRCLE
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS			PTION NOTICE SE	POINT TO POINT
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS		11111112-111		ļ
618		AC 020 2		i
100M20 100 MHz TO 20 GHZ (INSERTION LOSS INCREASES		5 PLACES		ļ
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)			00 +V 18 -V 00	1
220 2 CHz TO 20 GHz (INSERTION LOSS INCREASES				:
BY 1.0db AT 2D CHz)		20 0.25 0.38 BE.0 25.0 05		
1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		FL TYP.		
BO1····································	<del>23</del> _  _	_		
BO2 ···········		0.5		
BO3 ······ REVERSE LOGIC "1"=DN "0"=OFF	<b> ~</b> −−0.40 <b>−−</b> -{	0.0	6 0.66	<i>V</i>
B04 ······ DRIVERLESS, CURRENT CONTROLLED		•	#0.089 THRU W/4-40 THD-	1
BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUM			0.250 DEEP ON MOUNTING SURFACE	
WHEN APPLICABLE BOB	DUI SE WIDTH		LOCATED DN #1.00" CIRCLE 2 PLACES	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH			E renças	
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF	CUSTOMER			
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	1	NOT	:	
809 ······ LOW INSERTION LOSS VERSION		D	R=WITH DRIVER, REFLECTIVE	
BIO HIGHER ISOLATION VERSION		٥	T-WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE
Bit D.70" THICK VERSION				
TRONMENTAL RATINGS:		PART HO.	AMERICAN MICRO	WAVE CORPORAT
	ALL DIMENSIONS ARE IN INCHES			K. MARYLAND
ENPERATURE:	TOLERANCES:	APPROVALS		
-65°C 10 +125°C (510KAGE) IUMIDITY: MIL-STD-202F, METHOB 1038 COND, 8	X.XX ±0.020		OUTLINE DE	
HOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	Wy9 0/13	/or MSR-7DR/DT-0	4-DEC-SP
IBRATION:		CHICOLOGIA	REFLECTIVE OR NON-REF	
LTITUDE: MIL-STD-202F, METHOD 105C COND. B		l.M.dry_ N/7	SOLID STATE	SWITCH
EMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	· · · · · ·	ns(00 1)	SIZE FSCH HO. DNG HO.	0-4100-0
		<b></b>	╶┈┠┉┵┶┈╌┯┈╍╶└╺──╼╼╼	0-4190-2
DTC WEARAND OT TOLLET TO CHARGE OR REVISION			SCALE 1:1	To 1 of

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#### PRODUCT DESCRIPTION

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25.0	<u>SP71</u>	<u>- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>	
	25.1	MSR-7DR-/DT-07-STANDARD with Independent Controls	
	25.2	MSR-7DR-/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins	

· · · · · · · · · · · · · · · · · · ·			REVISIONS	
SPECIFICATIONS:		ZOFK REY.	BISCRATION DATE	APPROVED
		A	ORIGINAL RELEASE 8/13/97	
• FREQUENCY:		1 17		
<ul> <li>INSERTION LOSS: REFLECTIVE: 3.75db ABSORPTIVE: 4.25db</li> </ul>				
• ISOLATION:				
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,	MOUNTING SURFACE	RE	IDVABLE SHA (F)	
DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	CP=GOLD PLATED	\$0.015 × 0.		
POWER INPUT: (CW)+2DdBm (STANDARO), +10 dBm (HIGH SPEED)	P=PAINTED	RF	PIN	
• SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 used		B PLA	ES James	
• CONTROL:	(9) <del>2</del> 51.0 ( 	0.125		
POWER SUPPLY:		B0.00	80.00	
-5V @ 75mA MAX.(RELECTIVE)		40.0		
100mA MAX.(ABSORPTIVE/NDN-REFLECTIVE)		TY,		
OPTIONS:		H //		
		$1/\sqrt{m}$		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD				
DEC-SP				
10M18 ········ 10 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.506 AT 10 MHz AND 0.506 AT 18 GHz)				
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)			SOLID STATE SWITCH	
118 1 GHZ TO 18 GHZ (NO CHANGE IN INSERTION LOSS)	Q		MODEL NONSH-TOR/OT-OT	LE
218 ······ 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	0			11111
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)		NUME	PART NO.	
618		SULDER PIN		
100M20 100 MHz TO 20 GHz (INSENTION LOSS INCREASES		2 PLACES		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)			00 11 JS-11 00	
220 2 GHZ TO 20 GHZ (INSERTION LOSS INCREASES				
BY 1.0db AT 20 GHz) 1020 ···································		0.20 0.25 0.38		
BY 1.0db AT 20 GHz)				
BOI 12V POWER SUPPLIES		╸╸╪╾╾╴╴╶╾╾╸╸┉╌╀╸ ╽		
BO2 15V POWER SUPPLIES				
BO3 ······ REVERSE LOGIC 11=DN "D"=OFF				
804······ DRIVERLESS, CURRENT CONTROLLED 805······ HIGH SPEED, TURNON/TURNOFF 25 n300 WAXIMUM			40.089 THRU V/4-40 THD	
WHEN APPLICABLE			0.250 DEEP ON MOUNTING SURFACE LOCATED ON \$1.00° CIRCLE	
BOS HIGH POWER - SPECIFY CW POWER, PEAK POWER, PU	LSE WIDTH,		2 PLACES	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07······ CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	STOLLER			
808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		<b>.</b> • •	NOTE:	
BOS LOW INSERTION LOSS VERSION		· · ·	DR=WITH DRIVER, REFLECTIVE	
BIO HIGHER ISOLATION VERSION			DT=WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE	
B11 0.40" THICK VERSION			CT WIT DURAN NOT TELECHIELADSON HVE	
THURDANIENTAL DATINGS.		PART NO.		17/011
ENVIRONMENTAL_RATINGS:	ALL DIMENSIONS ARE IN INCHES		AMERICAN MICROWAVE CORPORA FREDERICK, MARYLAND	NUIN
• TEMPERATURE:		APPROVALS	MIT TREDERION, MURTURE	
-65°C TO +125°C (STORAGE)	X.XX ±0.020	DRAWN	OUTLINE DRAWING	
HUMIDITY:MIL-STD-202F, METHOD 103B COND. B     SHOCK:MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	<i>₩</i> У₽	6/15/97 MSR-7DR/DT-07-STANDARD	
• VIBRATION: MIL-STU-202F, METHOD 215B COND. B		OLEGAED A	REFLECTIVE OR NON-REFLECTIVE/ABSOR	RPTIVE
• ALTITUDE:		Kimon	1/197 SOLID STATE SWITCH	
• TEMPERATURE CYCLE: MIL-STD-202' METHOD 107D COND. A		1354,00	Size FSCH NO. DWG NO.	MEV.
-			<u>A 60483 100-4196-1</u>	A
NOTE: THE ADOVE SPECIFICATIONS ARE SUBJECT ID CHANGE OR REVISION		l	sour N/S	11

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						a c
					REVISIONS	DATE APPROVED
SPECIFICATIONS:				LOIE NEY.	ORIGINAL RELEASE	8/13/97
FREQUENCY:						10,10,11
• ISOLATION:						
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1						
<ul> <li>SPEED:</li></ul>	GP=GOLD /		90.0	REMOVABL	E SHA (F) B PLACES	
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		J		RF PIN	$\sim$ $1$	
SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 used	0.125 (GP)			o runces		
• CONTROL: ········ TTL LOGIC "0"-ON "1"-OFF	0.127 (P) -	ri  i	+-0.125		i la i	
POWER SUPPLY: +5V @ 350 mA WAX. -5V @ 75mA WAX. (RELECTIVE) 100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)	$\langle \rangle$			80.00° 40.00° TYP.		00.
PTIONS:	N N					
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	1		/ `	~\ <i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	ALLEDROUP THE T	
DEC-SP	\ \				ALLERICAN MICROWAVE CORPORATION	× \
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 ········· 100 MHz TO 18 GHz (INSERTION LOSS INCREASES	١		·	412	SOLID STATE SWITCH	
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		9	Ň.	Alle	MODEL NO MER ZDR/DT-0Z	#1.50" CIRCLE
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	•		1/		OPTION NO DEC-SP	MD I
412	2		\$0.020		PART NO	uu i
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	)		SOLDER PIN			
100M20 100 MHz TO 20 GHz (INSEITION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)			5 PLACES		CH0 +V 10-V CH0	Ì
220 ······ 2 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			0.20 0.25 0.3			t
1020 ······· 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)		P-1	╶┲┈┶╶╹╽	P,		
BO1				-		N.
B02·············		0.70			0.66 0.66	$\mathbf{N}$
BO3 DRIVERLESS. CURRENT CONTROLLED				, .	#0.089 THRU W/4-40 T	нл <u>`</u>
B05 ······ HIGH SPEED, TURNON/TURNOFF 25 need WAXIMUM WHEN APPLICABLE					0.250 DEEP ON HOUNTING SURFA	CE
BO8 HICH POWER - SPECIFY CW POWER, PEAK POWER, PI DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ULSE WIDTH,				2 PLAC	
BOT CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	JSTOMER		٠,	NO	TE:	
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO3 LOW INSERTION LOSS VERSION					DR=WITH DRIVER, REFLECTIVE	
BIO HIGHER ISOLATION VERSION					DT-WITH DRIVER, NON-REFLECTIV	E/ABSORPTIVE
B11 ······ 0.40" THICK VERSION						<u>_</u>
ENVIRONMENTAL_RATINCS:		S ARE IN INCHES	PARE NO.			ROWAVE CORPORATION
• TEMPERATURE:	TOLERANCES:			ROVALS		RICK, MARYLAND
HUMIDITY:	X.XX X.XXX		DRAWN			-07-DEC-SP
SHOCK: NIL-STD-202F, METHOD 213B COND. B		~~	CHECKLO		- OFFICIENT OF NON C	REFLECTIVE/ABSORPTIVE
• VIBRATION: MIL-STD-202F, METHOD 204D COND. B • ALTITUDE: MIL-STD-202F, METHOD 105C COND. B			<u></u>	Halle 1/2	97 SOLID STA	
• ALTITUDE: MIL-SID-2027, METHOD 1030 COND. B			asup)	<u> </u>  ''	ыза госи но. А 60483	100-4196-2 A
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION					SOUL 1:1	<u>100-4196-2</u> Α ματι 1 of 1



#### SECTION

#### PRODUCT DESCRIPTION

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26.0	<u>SP87</u>	C - (1 1/2"" Diameter x 0.4"" Thickness) Reflective and Absorptive Switches	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

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				REVISIONS		
SPECIFICATIONS:		1014		DESCRIPTION	31%0	AMPROVED ,
• FREQUENCY:			A	ORIGINAL RELEASE	8/13/97	
INSERTION LOSS: ······ REFLECTIVE: 4.0db						
ABSORPTIVE: 4.5db						
• ISOLATION:						
VSWR: REFLECTIVE IN/QUT: 2.0:1     ABSORPTIVE IN/QUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1						
<ul> <li>SPEED:</li></ul>	GP=GOLD PLA	TED		SMA (F)		
DELAY OFF: 75ns TYPICAL, 100ns MAX.	P=PAINTED	#0.015	x 0.100' ' RF PIN-			
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	N. N. N. N. N. N. N. N. N. N. N. N. N. N	9	PLACES			
SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 used	0.125 (GP)					
	(0.127 (P)	-0.075	لمريد		•	ľ
POWER SUPPLY:		il ″	.00° 40.00°		<b>`</b>	
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)			TYP.		$\mathbf{X}$	1
OPTIONS:	$\sim$	IH //	-		<del>\</del> r	- 1
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			More stre	The second second		
DEC-SP 3 BIT DECODER WITH SOLDER PIN		31 / 4	()))))))))))))))))))))))))))))))))))))	ANERCAN MICROWAVE CORPORATION	· ∖ I	
10M18 ······· 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		Ĩ"\./	THE	PICH HOHAT		
100418	, IF			OLD STATE SWITCH		Į
BY 1.5db AT 100 MHz AND 0.5db AT 18 CHz) 118			ALLA	MODEL NOMAR-BORADI-ON TIME	#1.50° CIA	
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 412	2			OPTION NOSTANTARE		
618		00000	111 I I I I I I I I I I I I I I I I I I	SERVIL NO	Ш ļ	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)						
100H20 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1,5db AT 100 MHz AND 1.0db AT 20 GHz)	L. L. L. L. L. L. L. L. L. L. L. L. L. L	10 PLACES			i	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES						
BY 1.0db AT 20 GHz)		0.20 0.25 0.38	- NUP-	INDIAN VIEW		
1020 ···································				CND		
BO112V POWER SUPPLIES					V.	
B02····································	+	-0.40	0.5		\	
BO4 DRIVERLESS, CURRENT CONTROLLED	•		r0.		. `\	
B05HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUW WHEN APPLICABLE				0.250 DEEP ON MOUNTING SURFACE		1
BOB	SE WIDTH,			LUCATED DN Ø1.00' CIRCLE 2 PLACES		
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH BOZ CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS					-	ł
BO8 LOW VIDEO TRANSIENTS - SPECIFY MOEO BANDWIDTH	, ,		NOTE:			
BOS LOW INSERTION LOSS VERSION				WITH DRIVER, REFLECTIVE		
B10 ······ HIGHER ISOLATION VERSION				WITH DRIVER, NON-REFLECTIVE/AB	SORPTIVE	
811 ···································				· · · · · · · · · · · · · · · · · · ·		1
ENVIRONMENTAL RATINGS:		PART NO,		AMERICAN MICROY	AVE CORPO	RATION
• TEMPERATURE:	ALL DIMENSIONS ARE IN INC		·····	- FREDERICK	MARYLAND	
-65°C TO +125°C (STORAGE)	TOLERANCES: X.XX ±0.020	APPROVALE	DATE	OUTLINE DR	AWING	
HUMIDITY:	X.XXX ±0.010	DRAINN WYP	0/15/9	MSR-8DR/DT-04	-STANDAR	D
SHOCK:MIL-STD-202F, METHOD 213B COND. B     VIBRATION:MIL-STD-202F, METHOD 2040 COND. B		OHICKID A		- REFLECTME OR NON-REFL	ECTIVE/ABSC	DRPTIVE
ALTITUDE:		K. K. dela	<u>!!/?/</u> 97	SOLID STATE	SWITCH	
• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A					0-4191-1	ATV.
NOTE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION				SCALE N/S	9407 1	
	<u> </u>	t				<u>VI I</u>

CRECIPICA TIONS.	IONE ACY. DESCRIPTION DATE APPROVED
SPECIFICATIONS:	A ORIGINAL RELEASE 6/13/97
FREQUENCY:	
ABSORPTIVE: 4.5db	
• ISOLATION:	
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: 75ne TYPICAL, 100ne MAX, DELAY OFF: 75ns TYPICAL, 100ns MAX.	CP=COLD PLATED P0.015 × 0.000 9 PLACES
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED	RF PIN - V
· SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 uses	9 PLACES
CONTROL:	0.125 (GP) 0.127 (P)
• POWER SUPPLY:	80.00
-5V @ 75mA MAX. (RELECTIVE) 100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)	40.00
OPTIONS:	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP	
10M18	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	SOLID STATE SWITCH
118 1 GHz TO 18 CHz (NO CHANGE IN INSERTION LOSS)	HINT TO POINT TO POINT
218 ····································	
618	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS	SOLDER PIN
100M20 ······· 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz AND 1.0db AT 20 GHz)	5 PLACES
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	
1020 ···································	
BO112V POWER SUPPLIES	
BO215V POWER SUPPLIES	
BO3 ······ REVERSE LOGIC "1"=DN "0"=OFF BO4 ····· DRIVERLESS, CURRENT CONTROLLED	·
BO3 HICH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM	
WHEN APPLICABLE BOG	0.250 DEEP ON HOUNTING SURFACE LOCATED ON 0.00° CIRCLE 20LSE WIDTH. 2 PLACES
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07Custom designed product- specify initials of c	
BOST BOST BOST BOST BOST BOST BOST BOST	
BO9 LOW INSERTION LOSS VERSION	
B10HIGHER ISOLATION VERSION	DR=WITH DRIVER, REFLECTIVE
B11	DT-WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE
ENVIRONMENTAL RATINGS:	MINO. AMERICAN MICROWAVE CORPORATION
	ALL DIMENSIONS ARE IN INCHES
• TEMPERATURE:	TOLERANCES: APPROVING ONE THE OLITIAL DEALWING
HUMIDITY: MIL-STD-202F, METHOD 103B COND, B	MMM NCD ODD/DT 04 DCO CD
SHOCK: MIL-STD-202F, NETHOD 213B COND. B     MIL-STD-202F, NETHOD 204D COND. B	
VIBRATION:	Kill Lok 11/7/91 SOLID STATE SWITCH
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 105C COND. A	
	A 60483 100-4191-2 A
NOTE BOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	sout 1:1





#### PRODUCT DESCRIPTION

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27.0	<u>SP87</u>	<u>- (1 1/2" Diameter x 0.7" Thickness) Reflective and Absorptive Switches</u>
	27.1	MSR-8DR/DT-07-STANDARD with Independent Controls
	27.2	MSR-8DR/DT-07-DEC-SP with 3 Bit Decoder and Solder Pins



COCCUPICATIONS,	·	2016 RCV.	REVISIONS		APPROVL
SPECIFICATIONS:			ORIGINAL RELEASE	0.456	ATTRON()
• FREQUENCY: D.5 GHz TO 18 GHz		1 101	UNUNAL NELEASE	8/13/97	
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.	C	REMOVABLE \$0.015 × 0.100'	SMA (F) 9 PLACES		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HICH SPEEI		RF PIN			•
SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 used		9 PLACES	×		
CONTROL: TTL LOGIC "O"=ON "1"=OFF	0.125 (GP) 0.127 (P)	H-0.125			
POWER SUPPLY: ······ +5V ● 400 mA MAX. −5V ● 75mA MAX.(RELECTIVE)		80.00*	80.00		
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		TYP. S	Alina Acha	<u>`</u>	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD				<u>/</u>	
DEC-SP	` (Q)	1 Namester	The second	<u>\</u>	
10M18 ········· 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		j USSIII.		i ì i	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES			FICH HOLES CORPORATION	7	
BY 1.5db AT 100 NHZ AND 0.5db AT 18 GHz) 118			OUD STATE SWITCH		
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS			MODEL NOWSE-BEE/DI-OZ	41.50° CIRC	CLE
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS	S)		OPTION NOSTANDARD		UINI
618			PART HOL	¥ !	
1218	" <u>ছ</u>	SOLDER PIN	30		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		10 PLACES		1	
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)					
1020		0.20 0.25 0.38		L	
BY 1.0db AT 20 GHz)		TT TYP.			
BO112V POWER SUPPLIES				1	
B02······· -15V POWER SUPPLIES B03······ REVERSE LOGIC 11"=0N "0"=0FF	<u> </u>			Y.	
BOATTER REVERSE COCICITIE ON THE BOAT	1 0.70		66	1	
BO5 HICH SPEED, TURNON/TURNOFF 25 need MAXIMUM		• •	#0.089 THRU V/4-40 TH	<b>,</b> `\	
WHEN APPLICABLE B08 ······ High Power - Specify CW Power, Peak Power, I	PULSE WIDTH.		0.250 DEEP ON MOUNTING SURFACE LOCATED DN #1.00' CIRCLE	3	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH			2 PLACE		
807 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF ( 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDT					
BOS LOW VIDEO IRANSIENTS - SPECIFY VIDEO BANDWIDIF BOS LOW INSERTION LOSS VERSION		NOTE:			
B10			WITH DRIVER, REFLECTIVE		
B11 0.40" THICK VERSION			WITH DRIVER, NON-REFLECTIVE/AE	SORPTIVE	
		······			
NVIRONMENTAL RATINGS:		PARE HO,	AMERICAN MICRON	VAVE CORPOR	ioitas
TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:			MARYLAND	
-65'C TO +125'C (STORAGE)	X.XX ±0.020	APPROVALS DATE	OUTLINE DF	AWING	-
HUMIDITY:	X.XXX ±0.010	Wyg . 8/13/5			0
• SHOCK: MIL-STD-202F, METHOD 213B COND. B • VIBRATION: MIL-STD-202F, METHOD 204D COND. B		OUCKELL I	-REFLECTIVE OR NON-REFL	ECTIVE/ABSO	
ALTITUDE:		K. March 1/19	7 SOLID STATE		
TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A		asta	SIZE FISCH NO. DWG NO.	A 4447	
		}	A 60483 10	0-4197-1	/
NOTE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		<b>j</b> J	SCALE N/S	31417 1	of 1

			TONE REY.	REVISIONS peacements		APPRO
SPECIFICATIONS:			A	ORIGINAL RELEAS	······	┦╼╼───
FREQUENCY:			1 174	••••••••••••••••••••••••••••••••••••••	•••	•
• ISOLATION:						
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.	MOUNTING SURFACE	đ	REMOVABLE	SMA (F)		
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	Y P=PAINTED		RF PIN 9 PLACES			
. SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 used	( 0.125 (GP)			X-II-		
• CONTROL: TTL LOGIC "D"-ON "1"-OFF	0.127 (P) (		المريد المريد		00.000	
POWER SUPPLY:+5V @ 400 mA MAX. -5V @ 75mA WAX.(RELECTIVE)			B0.00*		80.00*	
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE) OPTIONS:			ΤΥΡ.		ì	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		$\neg \neg$ /	Lm. E		~~~~	
DEC-SP 3 BIT DECODER WITH SOLDER PIN			~\ <i>\\\\</i>	AVERICAN		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	`\ <b>E</b>	<b>₩</b> ./	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	AMERICAN MICROWAVE FICH 40441 CORPORATION		
100M18		`\		OUD STATE SWITCH	&	
118 1 GHz TO 18 GHz (NO CHANCE IN INSERTION LOSS) 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	Q		- Aller	MODEL NO MER-BOR /DT-07	B #1.50" CIRCL	.E INT
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) B18 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	$\bigcirc$			OPTION NO JEG-SE		
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		#0.02	202 Line Lill	PART NO:		
100M20 ········ 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND \$1.0db AT 20 GHz)	jāj	SOLDER PI				
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)				00 +V J9 -V 00		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		10.20 0.25			. \	
BY 1.0db AT 20 GHz) BO1 ·········		T-1-1-1	TYP,	GND		
BO2 15V POWER SUPPLIES		·				
BO3 ······ REVERSE LOGIC "1"=DN "0"=OFF BO4 ····· DRIVERLESS, CURRENT CONTROLLED	1 0.70	l l	D	.660.66		
BOS HIGH SPEED, TURNON/TURNOFF 25 nscc WAXIMUM WHEN APPLICABLE				0.250 DEEP ON KOUNTING S		
BOB HICH POWER - SPECIFY CW POWER, PEAK POWER, PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	SE WIDTH,			LUCATED ON \$1.00"		
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS	STOMER			۷.	r Eneça	
BO8LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH			NOT	Έ:		
BD9Low insertion loss version B10Higher isolation version				DR-WITH DRIVER, REFLECTION	E	
B11 0,40* THICK VERSION			I	DT-WITH DRIVER, NON-REFL	ECTIVE/ABSORPTIVE	
5.11550.110MP41 D4TINCC.		PART 6	40.		MICROWAVE CORPO	RATIC
ENVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN 1	NCHES		FR	EDERICK, MARYLAND	
• TEMPERATURE:	TOLERANCES: X.XX ±0.020	DRugmi			INE DRAWING	
HUMIDITY:MIL-STD-202F, METHOD 103B COND. B     SHOCK:MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010		WYP 0/1	s/or MSR-8DR	/DT-07-DEC-SI N-REFLECTIVE/ABS	P ABAT
♦ VIBRATION:		OHLO	"MJM III		STATE SWITCH	UKP I
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B     TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		चेव्व		A 60483		
A (Phile sector and the sector s			I		י בה / דור 1/ בייני בו ו	2

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DATA SHEETS

ON

AMERICANNOPATION 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

DRH WP BG

WEB PAGE: HTTP://WWW.AMWAVE.COM E-MAIL ADDRESS: AMCPMI@AOL.COM

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1.0	<u>SP</u>	3T - (Single Pole Three Throw), Reflective and Absorptive Switches	1-0
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2.0	<u>SP4</u>	T - (Single Pole Four Throw), Reflective and Absorptive Switches	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
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3.0	<u>SP5</u>	5T - (Single Pole Five Throw), Reflective and Absorptive Switches	3-0
	3.1	MSN-5DR/DT-05-STANDARD with Independent Controls	3-1
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	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>SP6</u>	6T - (Single Pole Six Throw), Reflective and Absorptive Switches	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
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	4.4	MSN-6DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	. 4-4

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SECTIO	DN	PRODUCT DESCRIPTION	PAGE
5.0	<u>SP7T</u>	' - (Single Pole Seven Throw), Reflective and Absorptive Switches	. 5-0
	. <b>5.1</b> .	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
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	5.4	MSN-7DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	. 5-4
6.0	<u>SP8T</u>	- (Single Pole Eight Throw), Reflective and Absorptive Switches	. 6-0
	6.1	MSN-8DR/DT-05-STANDARD with Independent Controls	. 6-1
·	<b>6.2</b> <sup>•</sup>	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.
	6.4	MSN-8DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls	. 6-4
7.0	<u>SP10'</u>	T - (Single Pole Ten Throw), Reflective and Absorptive Switches	. 7-0
	7.1	MSN-10DR/DT-05-STANDARD with Independent Controls	<b>. 7-1</b> .
	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>SP12'</u>	<u>T - (Single Pole Twelve Throw), Reflective and Absorptive Switches</u>	8-0
	<b>8.1</b> :	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

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#### SECTION

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#### PRODUCT DESCRIPTION

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#### PAGE

9.0	<u>SP12</u>	<u> T - COMPACT DESIGN, (Single Pole Twelve Throw),</u>
	Reflec	etive and Absorptive Switches
	9.1	MSNC-12DR/DT-05-STANDARD with Independent Controls
	9.2	MSNC-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins
	9.3	MSNC-121/R/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector
	9.4	MSNC-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls 9-4
10.0	<u>SP16'</u>	T - (Single Pole Sixteen Throw), Reflective and Absorptive Switches
	10.1	MSN-16DR/DT-05-STANDARD with Independent Controls
	10.2	MSN-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins
	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>SP16'</u> <u>Reflec</u>	T - COMPACT DESIGN. (Single Pole Sixteen Throw). ctive and Absorptive Switches
	11.1	MSNC-16DR/DT-05-STANDARD with Independent Controls
	11.2	MSNC-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins 11-2
<i>م</i> ر, ۲۰۰	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>SP32'</u>	T - (Single Pole Thirty-Two Throw), Reflective and Absorptive Switches
	12.1	MSN-32DR/DT-05-STANDARD with Independent Controls
	12.2	MSN-32DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins
	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



#### SECTION

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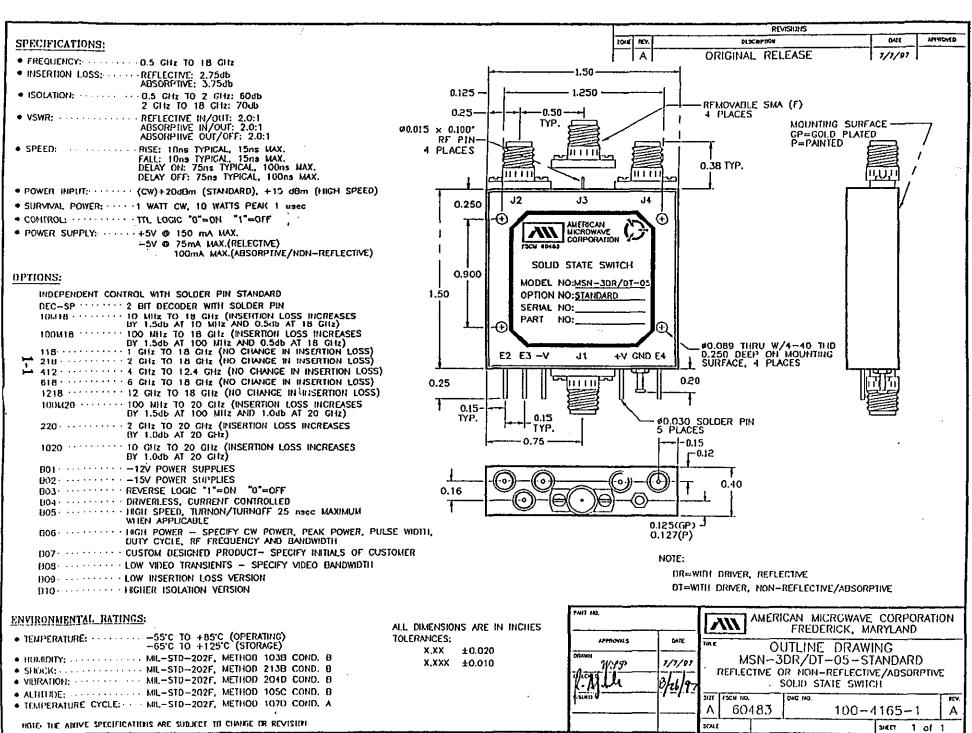
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#### PRODUCT DESCRIPTION

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#### PAGE

1.0	<u>SP31</u>	<u>'- (Single Pole Three Throw), Reflective and Absorptive Switches</u>
	1.1	MSN-3DR/DT-05-STANDARD with Independent Controls
	1.2	MSN-3DR/DT-05-DEC-SP with 2 Bit Decoder and Solder Pins



	· · · · · · · · · · · · · · · · · · ·	······································		REVISIONS		
PECIFICATIONS:			IDIE REV.	DESCRIPTION	0.01	ATTRON
FREQUENCY	-			ORIGINAL RELEASE	7/7/97	1
NSERTION LOSS: REFLECTIVE: 2.75db	· •	1.50				
• ISOLATION:	0.125	1.250	0	REMOVABLE SMA (F)	·	
VSWR: REFLECTIVE IN/QUT: 2.0:1	0.25	0.50		4 PLACES		
ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE DUT/OFF: 2.0:1	Ø0.015 × 0.100° RF PIN	↓ <sup>™₽.</sup>		GP==GOL()		7
SPEED: RISE: 10ns TYPICAL, 15ns MAX.	4 PLACES			P=PAINTEC		
FALL: 10ng TYPICAL, 15ng MAX. DELAY DH: 75ng TYPICAL, 100ng MAX. DELAY DF: 75ng TYPICAL, 100ng MAX.				0.38 TYP.		/
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	· · · · · · · · · · · · · · · · · · ·			k		1
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used	0.250	J2 J3	J4			
CONTROL:				-	i ľ	
POWER SUPPLY:		AMERIC MICROY				
-5V @ 75mA KAX.(RELECTIVE)		FICH BUIES	RATION 7			
100inA MAX. (ABSORPTINE/NON-REFLECTIVE)						
	0.900	SOUD STATE	SWITCH			
PTIONS:	0.300	MODEL NO:MSN	-3DR/DT-05			
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	1.50	OPTION NO: DEC	-SP			
DEC-SP 2 BIT DECODER WITH SOLDER PIN	} } <b>}</b>	SERIAL NO:				
10M18 ······ 10 Kiliz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)		-+	( <del>.</del> )			
100M18 100 MILE TO 18 GHZ (INSERTION LOSS INCREASES				_	1 1	
BY 1.5db AT 100 Miltz AND 0.5db AT 18 GHz) HIB	1 1	E1 E2 -V J1	+V GND	0.089 THRU W/4-40 THD 0.250 DEEP ON MOUNTING		
1 218	<u>i</u> i	E1 E2 -V J1	TV GNU	SURFACE. 4 PLACES		
412	0.25		᠃᠃ᡀᢂᡊ	0.20		
1218	0.25		실    쓰			
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES	0.15		3 1	. 1	°	
BY 1:5db AT 100 NIIIZ AND 1.0db AT 20 GHz) 220 · · · · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	TYP.		4 PL	O SOLDER PIN		
BY 1.0db AT 20 GHz) 1020 ···································	ŀ	• 0.75	• •	-0.15		
BY 1.0db AT 20 GHz)	_	· ·		L <sub>0.15</sub>		
BO1 ····································						
BO3 REVERSE LOGIC "1"=ON "O"=OFF	0.16			T 0.40		
BO4 DRIVERLESS, CURRENT CONTROLLED		—(⊙)–(⊖( · )	))⊜)—(⊙)—-[-	t-		
105 HIGH SPEED, TURNON/TURNOFF 25 Marc MAXIMUM	' L					
BOG	LSE WIDTH,		0.125(0 0.127(			
007 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER					
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWDTH			NOTE:			
BO9 LOW INSERTION LOSS VERSION			、 DR=	WITH DRIVER, REFLECTIVE		
BIO HIGHER ISOLATION VERSION			DT=	WITH DRIVER, NON-REFLECTIVE/A	BSORPTIVE	
YIRONMENTAL RATINGS:		PARE HO.	· · · · · · · · · · · · · · · · · · ·	AMERICAN MICRO	WAVE CORPO	ORATIO
TEMPERATURE:	ALL DIMENSIONS ARE I				K, MARYLANI	D
-65°C TO +125°C (STORAGE)	TOLERANCES:		APPROVALS DATE	ME OUTLINE D	RAWING	
HUMIDITY: MIL-STD-202F, THOD 1038 COND, B	X,XX ±0.020 X.XXX ±0.010	DRAMI	W:19 7/7/9		D5-DEC-SF	כ
SHOCK:	3130A IV.UIU	OI IKTO	<u> </u>	- REFLECTIVE OR NON-REF.	LECTIVE/ABSO	
VIBRATION: MIL-STD-202F, METHOD 204D COND. B ALTITUDE:		1.12.1	Mable 8/26/9	SOLID STATE	SWITCH	
TEMPERATURE "LE: MIL-STD-202F, METHOD 1070 COND. A			-1	SIZE F3CH NO. DWG NO.	00 4405-	
				<u> </u>	00-416	
HOTE THE A CIFICATIONS ARE SUBJECT TO CLARGE OR REVISION	• •		I	SCALE	5148	

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#### PRODUCT DESCRIPTION

2.0	<u>SP4T</u>	- (Single Pole Four Throw), Reflective and Absorptive Switches	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

2-0

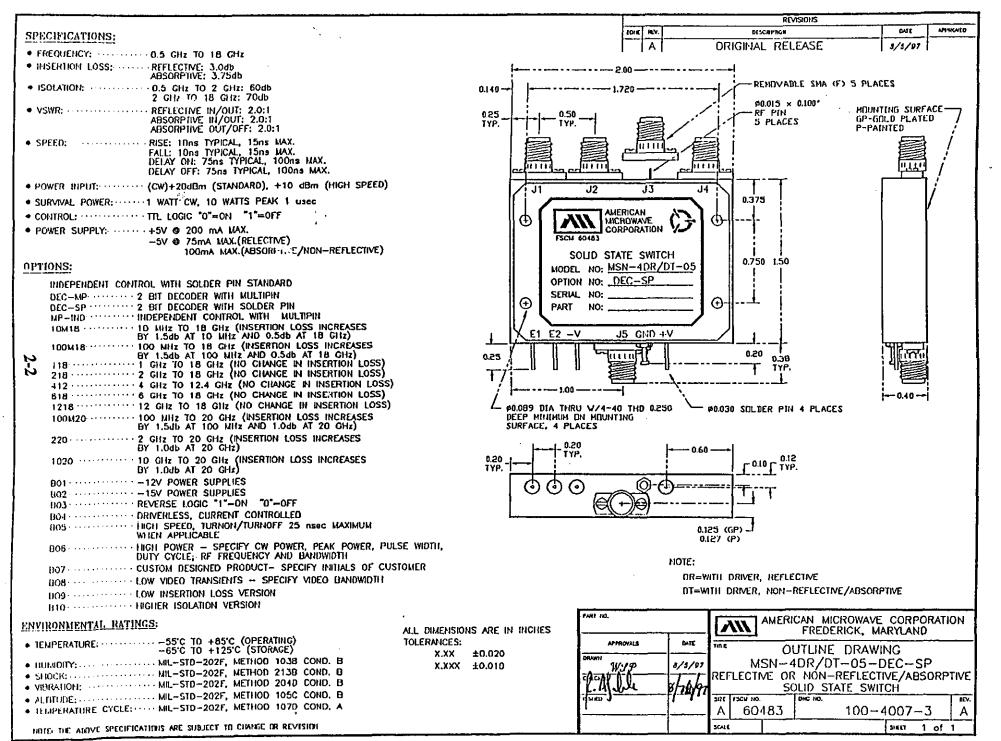
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PECIFICATIONS:	ZOVE NEV. DISCREPTION DATE APPROVED
	A ORIGINAL RELEASE 8/5/07
FREQUENCY:	
ABSORPTIVE: 3.75db	
ISOLATION: 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db	0,140 1.720 1.720
VSWR: REFLECINE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	0.25 TYP
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: WATT CW, 10 WATTS PEAK 1 USOD	
CONTROL:	ECORPORATION
TIONS:	SOLID STATE SWITCH 0.750 1.50
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	MODEL NO: <u>MSN-4DR/DT-05</u> 0.750 1.50 OPTION NO: <u>STANDARD</u>
DEC-MP	SERIAL NO:
DEC-SP 2 BIT DECODER WITH SOLDER PIN	
NP-IND INDEPENDENT CONTROL WITH MULTIPIN	
BY 1.5Jb AT 10 MHz AND 0.5db AT 18 GHz) 100M18	$\frac{1}{1} \times \frac{1}{1} = \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} = \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} \times \frac{1}{1} = \frac{1}{1} \times \frac{1}$
BY 1,5db AT 100 MHz AND 0,5db AT 18 GHz)	
118	
412	
018	j== 0.40 ==j
100M20 100 MIIZ TO 20 GHZ (INSERTION LOSS INCREASES	C 00.030 DEA THRU W/4-40 THE 0.230 C 00.030 SOLDER PIN 6 PLACES
BY 1.5db AT 100 NIIZ AND 1.0db AT 20 CHz)	SURFACE, 4 PLACES
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.046 AT 20 GHz)	1
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	0.20
BY 1.0db AT 2D GHz) BO1+	TYP, TYP,
BO2	│ŮŮŨ <sub>──</sub> ₽Ů℗℗℡ <u>⊤</u> ¬т
UOJ······ REVERSE LOGIC "1"=ON "0"=OFF	
BO4 DRIVERLESS, CHRRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nooc MAXIMUM	
WIEN APPLICABLE	0.125 (GP) J 0.127 (P)
BOO	LSE WIDIN,
BOT CICLE, IN TRECOENCY AND BANDWIDTH BOT CLUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER NOTE:
808 LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDMDTH	DR=WITH DRIVER, REFLECTIVE
809 ······ Low Insertion Loss Version 810 ····· tilcher Isolation Version	DT-WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE
YIRONMENTAL RATINGS:	MIT NO. AMERICAN MICROWAVE CORPORATION
IEMPERATURE: -55'C TO +85'C (OPERATING)	ALL DIMENSIONS ARE IN INCHES TOLERANCES:
-65°C TO +125°C (STORAGE) IUNIDITY:	XXX ±0.020 UTLINE DRAWING
SHOCK:	X.XXX ±0.010 WY97 4/5/97 MSN-4DR/DI-05-STANDARD
VIBRATION: MIL-STD-202F, METHOD 204D COND. B	REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B	
TEMPERATURE CYCLE: NIL-STD-202F, METHOD 107D COND. A	A 60483 100-4007-1 A
TTE THE ADIV	Start Just 1

.







			REVISIONS	
PECIFICATIONS:		1014 NCV.	DESCRIPTION	DALE APPROVED
FREQUENCY;			ORIGINAL RELEASE	3/5/97
INSERTION LOSS: REFLECTIVE: 3.0db ABSORPTIVE: 3.75db	<u></u>			
ISOLATION:	0.140 [			S PLACES
VSWR: REFLECTIVE IN/OUT: 2.0:1			P0.015 x 0,100*	
ABSORPTIVE TIL/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	0.25 TYP		S PLACES	GP-GOLD PLATED
SPEED:				P-PAINTED
FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ne TYPICAL, 100ne MAX.				
DELAY DFF: 75ns TYPICAL, 100ns MAX.				· · · · ·
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	J1 J2	J3		/
SURVIVAL POWER WATT CW, 10 WATTS PEAK 1 USO			0.375	
CONTROL:		ALIERICAN MICROWAVE	[	
-5V Ø 75mA MAX. (RELECTIVE)	FSCM 60483	CORPORATION		
100mA MAX. (ABSORPTIVE/HON-REFLECTIVE)	SOUD	STATE SWITCH		
TIONS:	MODEL NO	: MSN-4DR/DT-05	0.750 1.50	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-NP ········2 BIT DECODER WITH MULTIPIN		>: _DEC-MP		
DEC-SP 2 BIT DECODER WITH SOLDER PIN	Derial NC		⊕- <u> </u> ⊥ j	
MP-HID INDEPENDENT CONTROL WITH MULTIPIN 101/18				
HY 1.546 AT 10 KHz AND 0.546 AT 18 CHz)	J6	J5		
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 1181 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 2182 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		~~~		
218 ····································			0.38 TYP.	
412	/100		·	
1218				j0.40 j
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	- 00.089 DIA THRU W/ DEEP HINIHUH DN ME	4-40 THD 0.250 Junting		
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	SURFACE, 4 PLACES	•••		
BY 1.0db AT 20 GHz)				PIH OUT TAKE
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.046 AT 20 GHz)		9 PIN HICRO D HULTIPIN CONNECTOR		CHA DA ELASTIDA
B0112V POWER SUPPLIES	020			
802····································				<u>N/C</u>
004 ······ ORNERLESS, CURRENT CONTROLLED				<u>H/G</u>
B05 HIGH SPEED, TURNON/TURNOFF 25 nood WAXIMUN		IN 9 0.	125 (GP) -	
BO8 HIGH POWER - SPECIFY CW POWER, 'PEAK POWER, PULSE	WIDTH,		427 (P)	
DUTY CYCLE, RF FREQUENCY AND DANDWIDTH D07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTON	IFD	NOTE:		
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		. DR=1	NITII DRIVER, REFLECTIVE	
BO9 LOW INSERTION LOSS VERSION			ITII DRIVER, NON-REFLECTIVE/	ABSORPTIVE
BIO HICHER ISOLATION VERSION	<b>F</b>		·	
<u>IRONMENTAL RATINGS:</u>	L DIMENSIONS ARE IN INCHES	NU.		OWAVE CORPORATION
	LERANCES:	APPROVALS DATE		CK, MARYLAND
UNIDITY: MIL-STD-202F, METHOD 1038 COND. B	X.XX ±0.020		ME OUTLINE D	
HOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	W:19 0/3/91	MSN-4DR/DT- REFLECTIVE OR NON-RE	
BRATION:	i L.	M.bu 8/2491	SOLID STATE	
EMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND, A	कालक	7-1-1	SIZE ISCH HO. DWG HO.	REV.
THE AD THE AD THE SUBJECT TO CHARGE OF REVISION	<u> </u>		A 60483 1	00-4007-2

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SPECIFICATIONS:	· · · · · · · · · · · · · · · · · · ·	REVISIONS EDIE REV. OLISCEPTION	QATE ANYROVED
• FREQUENCY:		A ORIGINAL RELEASE	8/5/97
INSERTION LOSS: REFLECTIVE: 3.0db	La	200	
ABSORPTIVE: 3.75db • ISOLATION:	0.140		A (F) 5 PLACES
VSWR: REFLECTIVE IN/QUT: 2.0:1     ABSORPTIVE IN/QUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	0.25 TYP	0.015 × 0.100* RF PIN 5 PLACES	MOUNTING SURFACE GP-GOLD PLATED P-PAINTED
• SPEED:			
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED			/ / <sup></sup>
• SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used		J3 J4 0.375	
• CONTROL: TTL LOGIC "0"=DN "1"=OFF • POWER SUPPLY: +5V @ 200 mA MAX. -5V @ 75mA MAX.(RELECTIVE)			
100mA MAX. (ABSORPTINE/NDN-REFLECTIVE)		STATE SWITCH	
OPTIONS:		0.750 1.50 0.750 1.50	
INDEPENDENT CONTROL, WITH SOLDER PIN STANDARD DEC-MP	⊕ OPTION NO SERIAL NO PART NO		
BY         1.5db         AT         10         MIIZ         AND         0.5db         AT         18         GHZ           1004 HB         1000 MIIZ         TO         18         GHZ         (INSERTION         LOSS         INCREASES           BY         1.5db         AT         100 MIIZ         AND         0.5db         AT         18         GHZ           118	) SS}		
1218			j <del>+−</del> 0,40 - <del></del> j
. BY 1.0db AT 20 GHz) 1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		9 PIN MICRO D	
RY 1.0db AT 20 GHz) Dot ····································	-l <u></u>	MULTIPIN CONNECTOR	PH NO. FUEDIDH_
BO2 ····································	050		
BO3 REVERSE LOGIC "1"-ON "0"-OFF		€(+)))	······································
DO4DRIVERLESS, CURRENT CONTROLLED BO5	0.37 F	9 0,125 (GP)	
BOG		0.127 (P) NOIE:	
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF C B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		DR=WITH DRIVER, REFLECTIVE	
809 LOW INSERTION LOSS VERSION 810	•	DT=WITH DRIVER, NON-REFLEC	CTIVE/ABSORPTIVE
ENVIRONMENTAL RATINGS:	PAIT		MICROWAVE CORPORATION
	ALL DIMENSIONS ARE IN INCHES		DERICK, MARYLAND
TEMPERATURE:	TOLERANCES: X.XX ±0.020 X.XXX ±0.010	MSN-4DR/ REFLECTIVE OR NON MLLL S/2697 SOLID	IE DRAWING DT-05-MP-IND I-REFLECTIVE/ABSORPTIVE STATE SWITCH
• TEMPERATURE CYCLE: MIL-STO-202F, METHOD 1070 COND. A	i raĝina	A 60483	
NOTE THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			
	······································		SURET 1 of 1

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6			REVISIONS		
SPECIFICATIONS:		201# HEV.	DE SCRIPTION	DATE	APTROV
• FREQUENCY: D.5 GIIZ TO 18 GHz	. •	I IAI	ORIGINAL RELEASE	7/21/97	1 *
INSERTION LOSS: REFLECTIVE: 3.0db     ABSORPTIVE: 3.75db					:
• ISOLATION:		** . · ·			
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	[***********				
<ul> <li>SPEED:RISE: IONS TYPICAL, ISNS MAX. FALL: IONS TYPICAL, ISNS MAX. DELAY ON: 75NS TYPICAL, IONS MAX. DELAY OFF: 75NS TYPICAL, IOONS MAX.</li> </ul>	0.22 TYP	15	REHOVABLE SHA (F) 5 PL		
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)					۳/
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec			P-PAINTED		/
CONTROL	r III III				/
POWER SUPPLY: +5V @ 200 mA WAX.		J3 J4 J5			
-5V @ 75mA WAX.(RELECTIVE)	, <sup>32</sup>		az50	1 1	
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)	(±) r	AMERICANI AT	(+)		
prtions:					
		I NAM			
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		SOLID STATE SWITCH	0.900		
DEC-SP 2 BIT DECODER WITH SOLDER PIN	MODEL.	NO: MSNC-40R/DT-045	1.50		
10M18 ······ 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.50b AT 10 MHz AND 0.50b AT 18 GHz)	OPDON	NO: STANDARI.			
100118	PART	NO:			
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	SERIAL	NO:	⊕ [I		
№ 218 ···································	1 E1 E2	-V J1 +V E3	EAL		
618	Loo have been at the second second second second second second second second second second second second second				
1218	0.25 TYP.		020	TIM	
100M20 100 MHZ TO 20 GHZ (INSERTION LOSS INCREASES					
BY 1.5db AT 100 MIIZ AND 1.0db AT 20 GHz) 220 2 GIIZ TO 20 GHz (INSERTION LOSS INCREASES	q?j		I THRU 4 PLACES		
BY 1.0db AT 20 GHz) 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	<u>→</u> -0.9	۶۵ها الم	1.030 SALDER PIN 6 PLACES		
BY 1.0db AT 20 GHz)					
801	0.16 -0.43-+ TYP.	0.90	· — •		
BO3 REVERSE LOGIC "1"=ON "0"=OFF	TYP. TTP.				
BO4 DRIVERLESS, CURRENT CONTROLLED	0.275 GY	CND CND	0.10 · ·		
BO5	TYP		0.40		
WHEN APPLICABLE BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUI		0 60 00	0		
DUTY CYCLE, RE FREQUENCY AND BANDWIDTH	TYP				
107 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS	STOMER	NOTE:			
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH					
BO9 LOW INSERTION LOSS VERSION			-WITH DRIVER, REFLECTIVE	000010 ==	
810 ······ Iligher Isolation Version		וע	WITH DRIVER, NON-REFLECTIVE/AD	SURFINE	
NUIDANIAPATATATATA		PART NO.			
NYIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES			(, MARYLAND	
TEMPERATURE:	TOLERANCES:	APPROVALS DATE			
-65°C 10 +125°C (STORAGE) HUMIDITY:	X.XX ±0.020	DRAWN	- OUTLINE DR		
SHOCK:	X.XXX ±0.010	RRA & WYP 1/21/		5-STANDAR	₹D
WBRATION: MIL-STD-202F, METHOD 201D COND. B		K.Malle B/21/			REIIM
ALTIFUDE: MIL-STD-202F, METHOD 105C COND. B		631KD	SIZE 73CH 10, DWC 10,		
TEMPERATURE CYCLE: MIL-STO-202F, METHOD 107D COND. A				0-3989	
HILLE THE AD CIFICATIONS ARE SUBJECT TO COMISE OR REVISION			مرجعه معرف المحمد مع مع مع مع مع مع مع مع مع مع مع مع مع		

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			R(VISIOHS	EVAL APPROVED
SPECIFICATIONS:		2014 PEV,		
• FREQUENCY:			ORIGINAL RELEASE	7/21/07
INSERTION LOSS: REFLECTIVE: 3.0db ABSORPTIVE: 3.75db				
• ISOLATION: ········· 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db				
VSWR: ···· ·········· REFLECTNE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ADSORPTIVE OUT/OFF: 2.0:1			••	
SPEED:	0.22 TYP		PRENOVABLE SMA (F) 5 PLACE	FACE
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)			5 PLACES GP-GOLD PLAT	
SURVIVAL POWER: 1 WATT CW. 10 WATTS PEAK 1 used				篇 /
CONTROL: TTL LOGIC "D"=ON "1"=OFF	╡ <sub>┲</sub> <u>╃</u> ╿╵╵ <u></u> ┟╝┑		<u>-144</u> xj	مالين الله ا
POWER SUPPLY:		JJ J4 J5		
-5V 0 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)	()		0.250	
10410NS-		MI ACROWAVE COMPORATION		
PTIONS:				
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-SP ·········· 2 BIT DECODER WITH SOLDER PIN		SOLID STATE SWITCH	0.900 1.50	
TOM 18		NO: DEC-SP		
BY 1.5db AT 10 Milz AND 0.5db AT 18 GHz) 100M18	PART	NO:		
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)		NO:	⊕I !	
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 2 18				
412 4 GHz TO 12.4 CHz (NO CHANGE IN INSERTION LOSS)	E1 E2	-V J1 +V		
618	0.25		020	
1218		·"  []		
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)	1	01.10 ×	4 THRU '4 PLACES	8
220 ···································		» `	0.030 SOLDER PIN 4 PLACES	
1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	. <b>.</b> .		NUCO SULPEN FIN A FENGES	1
BO1	0.160.43	0.90		
802	TYP.			
104 DRIVERLESS. CURRENT CONTROLLED	0.275		aia	1
805	TYP.		0.40	
WHEN APPLICABLE BOG				
DUTY CYCLE, RF FREQUENCY AND DANDWIDTH	TYP,			
107 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS	STOMER	NOTE	:	ł
108LOW VIDEO TRANSIENTS - SPECIFY VIDEO DANDWD111		ם	R=WITH DRIVER, REFLECTIVE	
BO9LOW INSERTION LOSS VERSION H10		D	F=WITH DRIVER, NON-REFLECTIVE/ABSC	ORPTIVE
NVIRONMENTAL RATINGS:		PART NO.	AMERICAN MICROWA	
	ALL DIMENSIONS ARE IN INCHES		FREDERICK,	
• TEMPERATURE:	TOLERANCES:	APPROVALS	UTLINE DRAM	WING
HUMIDITY	X.XX ±0.020 X.XXX ±0.010	R.R.S & 14:19 7/21		
SUNCKELLED MIL-STD-202F, METHOD 2138 COND. B				
VIBIATION:		R. Mable B/26	91 SOLID STATE SV	
ALTHUDE:		()	SIZE FISCH NO. DWG NO.	- 3080 2 A
		[	يجهج محدد والمستحد والمحمد والمحدوم والمحرج المحامد المحاد	-3989-2 A
HOLE THE ADDVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE M/S	swer 1 of 1

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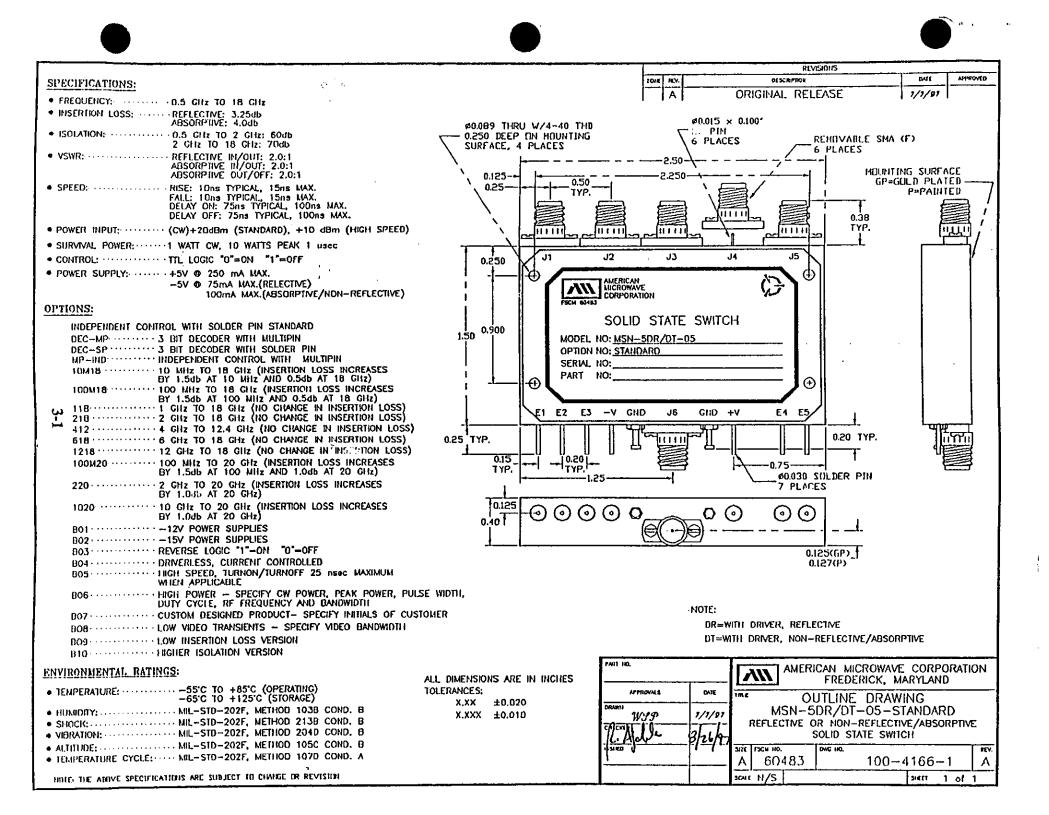
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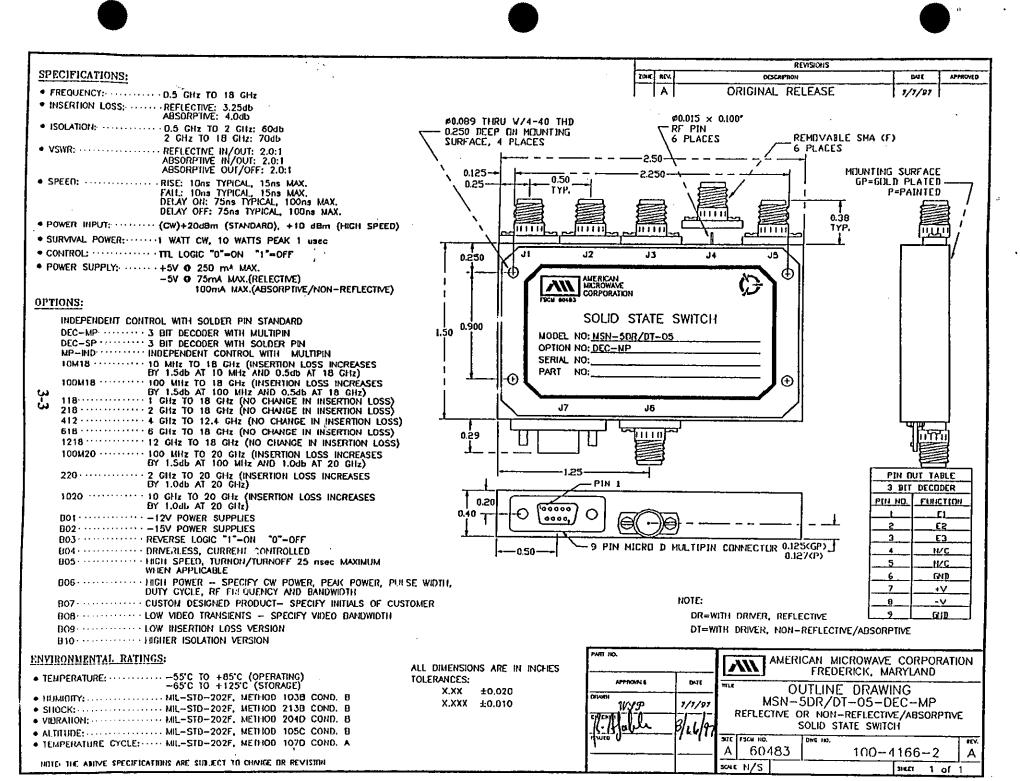
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#### PRODUCT DESCRIPTION

<b>3.0</b> :	<u>SP5T</u>	- (Single Pole Five Throw), Reflective and Absorptive Switches	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-5DP/DT-05-MP-IND with MIII TIPIN Connector and Independent Controls	3_4



	RIVISIONS
SPECIFICATIONS:	I DHE HEV. DESCRIPTICH DATE APPROVED
• FREQUENCY: 0.5 GHz TO 18 GHz	A ORIGINAL RELEASE 1/1/97
INSERTION LOSS: REFLECTIVE: 3.25db     ABSORPTIVE: 4.0db	
ABSUMPTIVE: 4,000     ADSUMPTIVE: 4,000     O.5 GHz TO 2 GHz; 60db     Z GHz TO 18 GHz; 70db	$ \begin{array}{c} eq:state-$
VSWR: ····· REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	0.125
• SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	0.25
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 USED	
CONTROL:	0.250 J1 J2 J3 J4 J5
POWER SUPPLY:	
PTIONS:	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD         DEC-MP       3 BIT DECODER WITH MULTIPIN         DEC-SP       3 BIT DECODER WITH SOLDER PIN         MP-INO       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       10 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)         1218       1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20       100 HHz 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)         1020       10 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)         1020       10 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)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         103       -12V POWER SUPPLIES IO	SOLID STATE SWITCH MODEL NO: $\underline{MSN-SDR/DT-O5}$ OPTION NO: $\underline{DEC-SP}$ SERIAL NO: PART NO: E1 E2 E3 -V GND J6 GND +V 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 SOLID STATE SWITCH 0.20 TYP. 0.20 TYP. 0
WHEN APPLICABLE	
BOB       HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUI DUTY CYCLE, RF FREQUENCY AND BANDWIDTH         BO7       CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS         BOB       LOW VIDEO TRANSIENTS - SPECIFY MDEO BANDWIDTH         BO9       LOW INSERTION LOSS VERSION         B10       HIGHER ISOLATION VERSION	N01C-
NVIRONMENTAL RATINGS:	MAT IN. AMERICAN MICROWAVE CORPORATION
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         ALTIFUDE:       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.XX ±0.010 APPROVALS DATE DATE DATE DATE DATE DATE DATE DATE THE OUTLINE DRAWING MSN-5DR/DT-05-DEC-SP REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SOLID STATE SWITCH DATE DA
	A 60483 100-4166-7 A
HOTE THE A FICATIONS ARE SUBJECT TO CHARGE DR REVISION	scart N/S Section 1



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SPECIFICATIONS:		ZOHE NEV.	REVISIONS	DATE APPRO
• FREQUENCY:		A	ORIGINAL RELEASE	7/7/97
INSERTION LOSS: ·······REFLECTIVE: 3.256b				
ABSORPTIVE: 4.0db	Ø0.089 THRU W/4~40 THD	Ø0.015 ×	0.100*	
• ISOLATION:	0.250 DEEP ON HOUNTING SURFACE, 4 PLACES	RF PIN 6 PLACES	:⊡™DVABLE S	MA (F)
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	0.125	2.50-\	6 PLACES	NTING SURFACE
SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY OH: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.				P=GOLD PLATED
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEEI			TYP.	
SURVIVAL POWER: WATT CW, 10 WATTS PEAK 1 uses				
CONTROL:	0.250 J1 J	2 J3 J4	J5	
POWER SUPPLY: ······ +5V @ 250 mA MAX -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NDN~REFLECTIVE)		MERICAN		
PTIONS:	F3CH 40403	ORPORATION	12	
		SOLID STATE SWITCH		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP ····································				
DEC-SP	MODEL NO.	: <u>MSN-5DR/D1-05</u>	1	
NP-IND INDEPENDENT CONTROL WITH MULTIPIN	OPTION NO SERIAL NO		[ ]]	
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO		1 ((	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES			J 🕀 🛛	
BY 1.5db AT 100 Milz AND 0.5db AT 18 GHz)		مر بر المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع ا		
L 118	J7	J6		
412 ······ 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOS	s)			╘╼╼┈╌┦
618				165776
1218				
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES By 1.0db At 20 GHz)				PIN OUT TABLE
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	0.20			PIN NO. FUNCTION
BY 1.0db AT 20 GHz) 801······ -12V POWER SUPPLIES	n/n 1-0 1'00000 / /			L EI
B02 ····································		´ ) (⊖(( ·−))⊖) - ·−-		2 53
B03 REVERSE LOGIC "1"-ON "0"-OFF				<u>3</u> <u>E</u> 3
BO4 DRIVERLESS, CURRENT CONTROLLED	0.50	9 PIN MICRO D MULTIPIN	CONNECTOR 0.125(GP)_] 0.127(P)	<u>4</u> E4
005 HIGH SPEED, TURNON/TURNOFF 25 DEC MAXIMUM WIEN APPLICABLE				<u> </u>
BOG IIGH POWER - SPECIFY CW POWER, PEAK POWER, I	PULSE WIDTH.		•	<u>6</u> GHD
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH				+V
DO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF C	USTOMER	NOTE:		<u>-8</u> <u>-v</u>
BOB			ITH DRIVER, REFLECTIVE	9 <u>Gub</u>
DO9 LOW INSERTION LOSS VERSION D10 Higher isolation version		DT=W	ITH DRMER, NON-REFLECTIVE	NOSORPTIVE
<u> VIRONMENTAL RATINGS</u> :		PART NO.	AMERICAN MICRO	WAVE CORPORATIO
TEMPERATURE	ALL DIMENSIONS ARE IN INCIDES	<u> </u>		K, MARYLAND
-65°C 10 +125°C (STORAGE)	TOLERANCES:	APPROVALS DATE	ME OUTLINE D	RAWING
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020	DRAWH	MSN-5DR/DT-	
SHOCK: HIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	Wyp 1/1/8)	REFLECTIVE OR NON-REF	
VIBIRATION: MIL-STD-202F, METHOD 204D COND. B		Kindel Rilla	SOLID STATE	
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A			SIZE FSCH HO. DNG HO.	
TEMPERATURE CYCLET MIL-STU-2027, METHOD 107D COND. A		·		00-4166-4
HOTE THE ARRY METCATIONS ARE SUBJECT TO CHARGE OR REVISION			SCALE N/S	sicci 1
		here a second second second second second second second second second second second second second second second		





#### PRODUCT DESCRIPTION

#### PAGE

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



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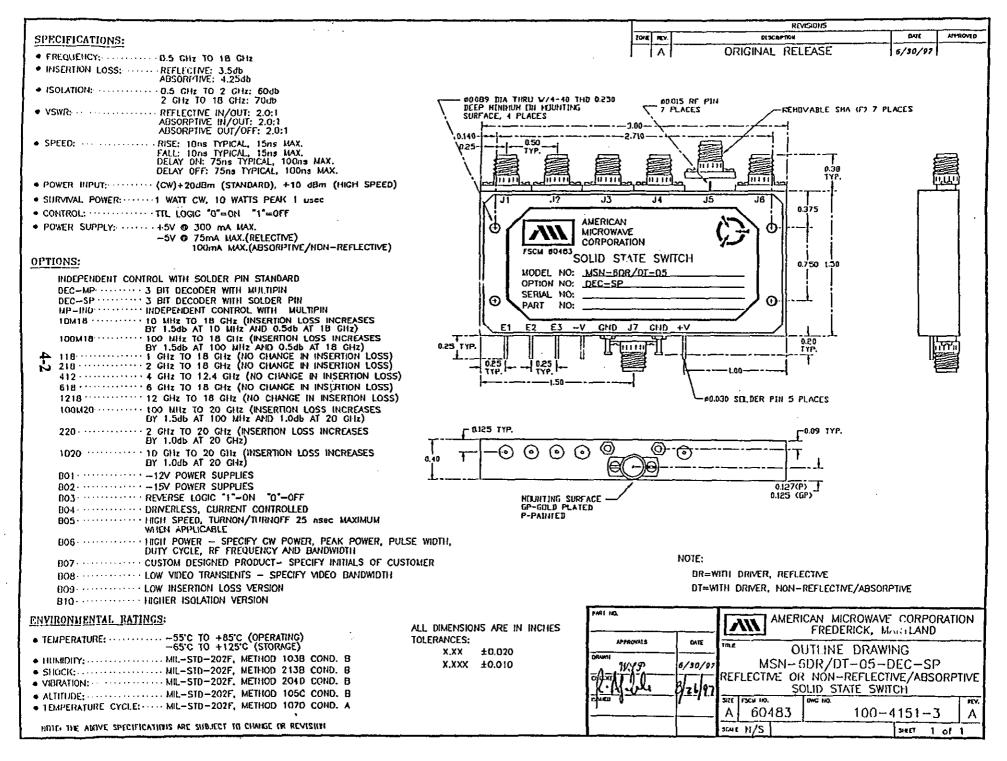
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SPECIFICATIONS:		ZOIK REV.	DESCRIPTION	DATE APPROVED
• FREQUENCY:			ORIGINAL RELEASE	6/30/07
INSERTION LOSS: REFLECTIVE: 3.5db     ABSORPTIVE: 4.25db /	· · · ·			
• ISOLATION:	60.009 DIA THRU W/4-40 THD	0.250 40.015 RF	RIM	
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	DEEP HINIHUH CH HOUITING SURFACE, 4 PLACES	7 PLACES	REHOVABLE SHA (F)	7 PLACES
• SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ne TYPICAL, 100ne MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.				0.40
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)				<u> </u>
. SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 LOOC	JI J2	J3 J4	JS JB	
• CONTROL: TTL LOGIC "0"-ON "1"-OFF			0.373	
• POWER SUPPLY: +5V @ 300 mA MAX.		IERICAN CROWAVE		
-5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPINE/NON-REFLECTIVE)		RPORATION		
OPTIONS:	FSCM 60483 SOL	ID STATE SWITCH	0.750 1.50	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		SN-6DR/DT-05		
DEC-MP	OPTION NO: .SI	TANDARD		
DEC-SP 3 BIT DECODER WITH SOLDER PIN	ERIAL NO:		── <b>─〉</b> ⊖∥·ŀ	
MP-IND				
10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	<u>E1 E2 E3 -V</u>	GND J7 GND +V	<u>E4 E5 E6                                     </u>	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)			0.20 0.25 TYP, TYP	<b>There</b>
118 118 118 118 118 118 118 GHz (NO CHANGE IN INSERTION LOSS) 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119 218 119				4
412 :				8
618	· · · · · · · · · · · · · · · · · · ·			~
1218				CES
100H20				· ·
220 ······ 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	C 0.25 TYP.			•
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		©		
BY 1.0db AT 20 GHz) BO1········		(€(( ·-))⊖)		
B02····································	·F_ o o F		0.127 (P)	
803 ······ REVERSE LOCIC "1"=0N "0"=OFF	HOUNTING SURFAC		0.125 (GP)	,
BO4 DRNERLESS, CURHENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM	GP-GOLD PLATED P-PAINTED		:	:
WHEN APPLICABLE BOOL HIGH POWER - SPECIFY CW POWER, PEAK POWER, PU	ilse width,			
DIJTY CYCLE, RF FREQUENCY AND BANDWIDTH B07CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CU	STOLIER	NOTE	:	
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDMOTH		DI	R=WITH DRIVER. REFLECTIVE	
BO9 LOW INSERTION LOSS VERSION			-WITH DRIVER, NON-REFLECTIVE/	OSORPTIVE
BIQ HIGHER ISOLATION VERSION	-		· · · · · · · · · · · · · · · · · · ·	
ENVIRONMENTAL BATINGS:		PART NO.		WAVE CORPORATION
• TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS DAT		K, MARYLAND
-65°C TO +125°C (STORAGE) • HUMIDITY:	X.XX ±0.020	DRAWN	OUILINE D	
• SHOCK:	X.XXX ±0.010	WY9 6/30,	MSN-6DR/DT-0	
• VIBRATION: ······ MIL-STD-202F, METHOD 204D COND. B		Park Ru Ru	REFLECTIVE OR NON-REF	
ALTITUDE:		Kinfolde B/21	SULIU STATE	
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A				00-415 A



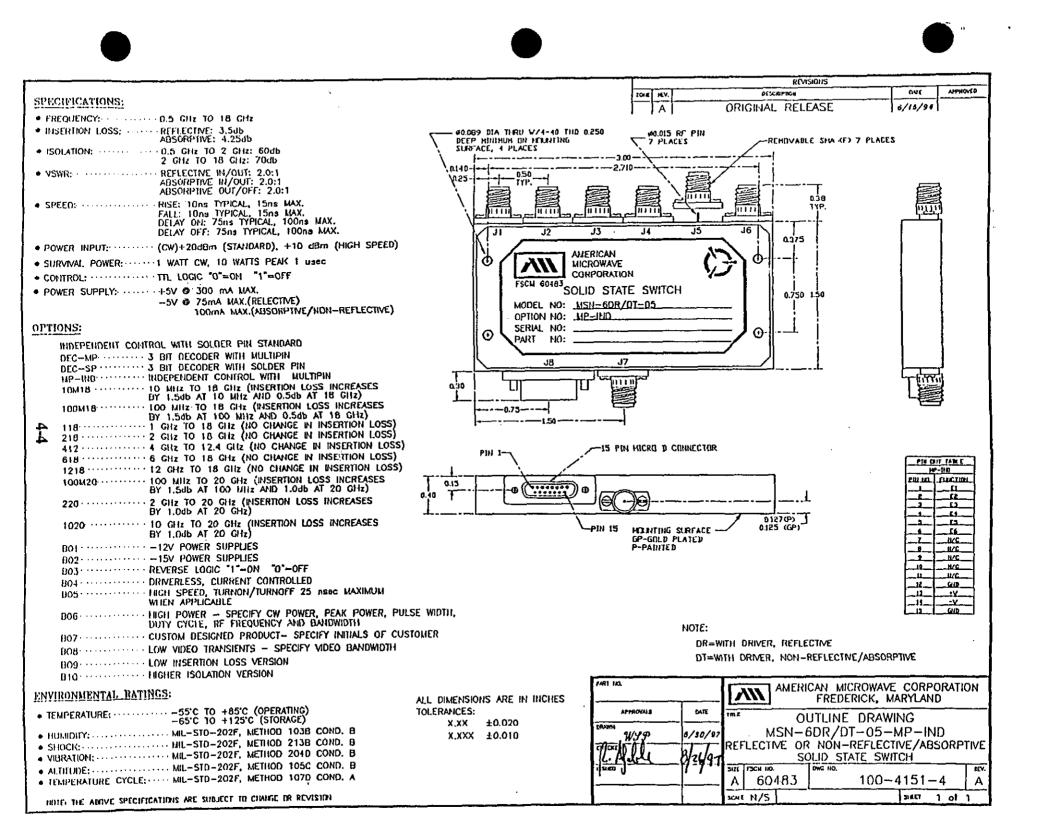




			REVISIONS	
SPECIFICATIONS:		ZORE NEV.	DESCRIPTION	DATE APPR
FREQUENCY:			ORIGINAL RELEASE	6/30/97
• ISOLATION:				•
• VSWR:	DEEP MINIHUA DN HOUN SURFACE, 4 PLACES			7 PLACES
• SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY OW: 75ns TYPICAL, 100ns MAX.	(0.140			
DELAY OFF: 75ns TYPICAL, 100ns MAX,			0.30 TYP.	
POWER INPUT:	Y And And And And And And And And And And			
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used		J3J4	J5 J6 0.375	
• CONTROL:		AMERICAN		
POWER SUPPLY: +5V @ 300 mA MAX. -5V @ 75mA MAX.(RELFCTIVE)		MICROWAVE		í . I
100mA MAX. (ABSOKPTIVE/NDN-REFLECTIVE				
PTIONS:		SOLID STATE SWITCH	0.750 1.50	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	II I MODEL I	NO: <u>MSN_60R/0T_05</u> NO: <u>DEC-MP</u>	1 11 1 1	1
DEC-MP	O SERIAL			
DEC-SP	PART I	10:		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES				
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18	······································		l	
BY 1.5db AT 100 MH2 AND 0.5db AT 18 GHz)			· · ·	T
118				니는
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LO				
B18				PIN DUT TABLE
100H20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5Jb AT 100 MHz AND 1.0db AT 20 GHz)	-1 MIG	-IS PIN HICRO D CON	NECTOR	BIT DECEDER
220 ······ 2 GHz TO 2D GHz (INSERTION ) LOSS INCREASES BY 1.0db AT 20 GHz)		<u></u>	······································	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)	0.40 1		l	
BO1 12V POWER SUPPLIES	, dan a		0.127(P)	N/C
BO2······ATSV POWER SUPPLIES BO3······REVERSE LOGIC "1"ON "0"-OFF		PIN 15 MOUNTING SU	RFACE 0.125 (GP)	<u> </u>
UO4 ······ DRIVERLESS, CURRENT CONTROLLED		P-PAINTED		<u></u>
805 HIGH SPEED, TURNON/TURNOFF 25 NEED MAXIMUM				_13
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER,	PULSE WIDTH,			
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH DO7CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF	CUSTONED	NOTE:		
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDT			WITH DRIVER, REFLECTIVE	
BO9 LOW INSERTION LOSS VERSION			WITH DRIVER, NON-REFLECTIVE/AE	ISORPTIVE
B10 HIGHER ISOLATION VERSION				
NVIRONMENTAL RATINGS:		PART HQ.	AMERICAN MICROY	WAVE CORPORATIO
TENPERATURE:	ALL DIMENSIONS ARE IN INCHES	]	- FREDERICK	K, MARYLAND
-65'C TO +125'C (STORAGE)	TOLERANCES: X.XX ±0.020	APPROVALS DATE	OUTLINE DR	RAWING
HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B	X.XXX ±0.010	DRAWN 94.19 6/30/	LIGH ADD /DT A	
SHOCK: MIL-STD-202F, METHOD 213B COND. B VIURATION: MIL-STD-202F, METHOD 204D COND. B			- REFLECTIVE OR NÓN-REFL	LECTIVE/ABSORPT
ALTIFLIDE:	·	1. Mehr Khil	SOLID STATE	SWITCH
ICHPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		1 1 1	A 60483 10	0-4151-2
HURG THE ADDIVENTION THEORY THE SUBJECT TO CHANGE OR REVISION		[		

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#### **PRODUCT DESCRIPTION**

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

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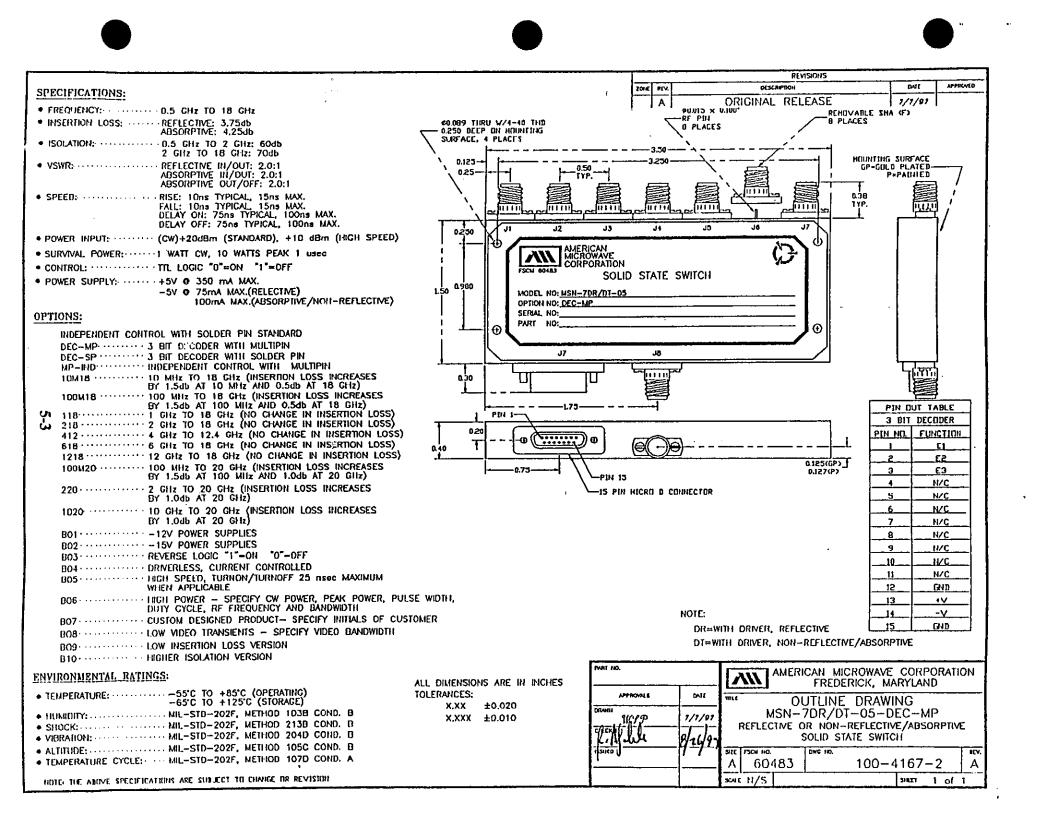
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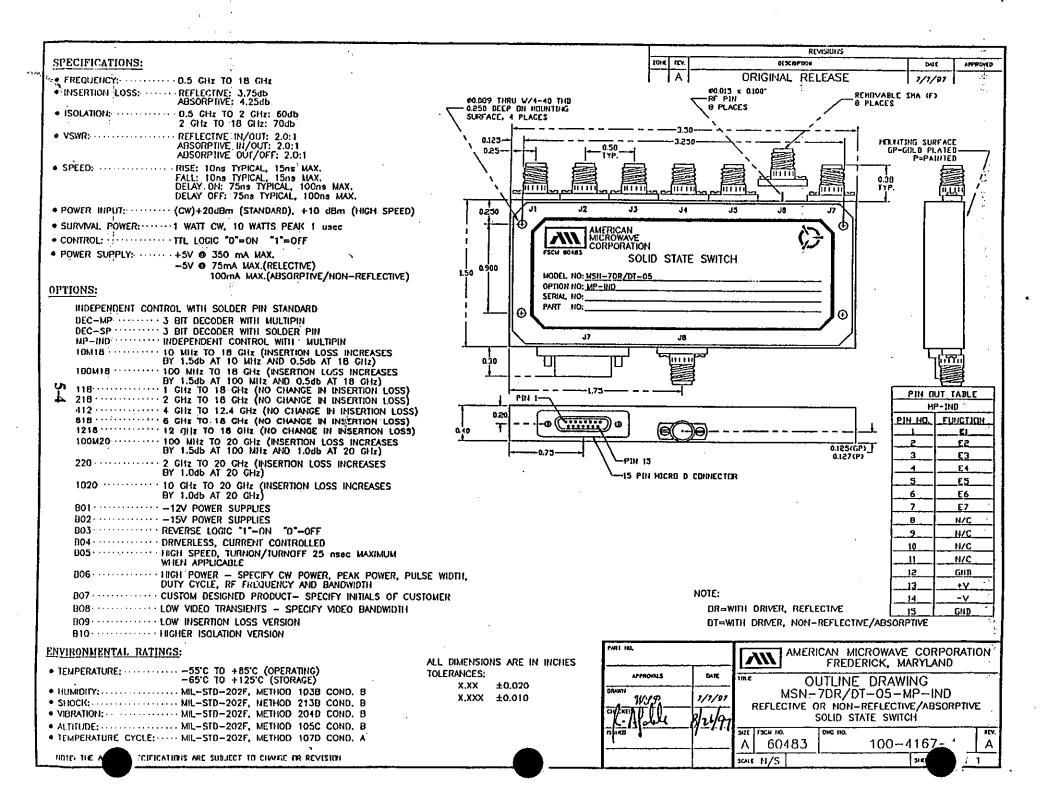
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SPECIFICATIONS:			REVISIONS		
		ZDR# HEV,	DESCRIPTION		AFTHONE
FREQUENCY:			ORIGINAL RELEASE	7/7/97	
ABSORPTIVE: 4.257b • ISOLATION:					
VSWR: REFLECTIVE IN/QUT: 2.0:1     ABSORPTIVE IN/QUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	40.089 TIRU W/4-40 THD	<del>~~~</del> £F_1	3 × 0.000" REHITVAT ACES B PLACE	R.E. SHA (F)	
<ul> <li>SPEED:</li></ul>	SURFACE, 4 PLACES			LNITING SURFACE	
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		Түр,		SP=GULD PLATED P=PAINTED	7
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used					- /-
• CONTROL: TTL LOGIC "0"=ON "1"=OFF		~~~~~~~~~~~~			1
POWER SUPPLY: +5V @ 350 mA MAX.				/ / <sup>בב</sup> יי	/
-5V © 75mA WAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NDN+REFLECTIVE)	0.250	JL 2L	J5 J6 J7	/	1
PTIONS:		IERICAN CROWAVE	A> €		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	1504 60463 CC	DRPORATION	4 <b>7</b>		
DEC-MP		SOLID STATE SWITC	ж 🔰		
DEC-SP	1.50 0.900 MODEL NO: MS				
MP-IND	OPTION NO: <u>STA</u> SERIAL NO:		I		
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO:				
100M18			•		
T' 118	E1 E2 E3 E4	-V GND Ja (	SND +V E5 E6 E7		
218	,qYT 25.0			لى الم	
618					
1218			PO.030 STILDER PIN		
220 2 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			00 000		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.00b AT 20 GHz)	040				
BO1 12V POWER SUPPLIES			0.125(GP) _ 0.127(P)		
B02······ 15V POWER SUPPLIES B03····· REVERSE LOGIC "1"-ON "0"-OFF			0.127(17)		
B04 · · · · · · · · · · · · DRVERLESS, CURRENT CONTROLLED					
BOS HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMUM					
WHEN APPLICABLE BOGHIGH POWER - SPECIFY CW POWER, PEAK POWER, PUL DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	SE WIDTH,				
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS	TOMER	NOTE:			
BO8 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		DR=	WITH DRIVER, REFLECTIVE		
DO9 LOW INSERTION LOSS VERSION		0T=	WITH DRIVER, NON-REFLECTIVE/ABS	ORPTIVE	
B10······IIGHER ISOLATION VERSION		r <del></del>			
NYIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES	P#11 NO.	AMERICAN MICROW	AVE CORPORATION	101
TEMPERATURE:	TOLERANCES:	APPROVALS DATE	- FREDERICK,	MARYLAND	
-65'C TO +125'C (STORAGE) HUMIDITY;	X.XX ±0.020	DRUWN DATE	OUTLINE DRA	AWING	
SHOCK: MIL-STD-202F, METHOD 213B COND, B	X.XXX ±0.010	WY9 1/1/9	MSN-7DR/DT-05-	-STANDARD	
VIBRAHON: MIL-STD-202F. METHOD 204D COND. B		PON I I DI	REFLECTIVE OR NON-REFLE		Æ/
ALTHUDE: MIL-SID-202F, METHOD 105C COND. B TEMPERATURE CYCLE: MIL-SID-202F, METHOD 107D COND. A		K. Ajulie 9/26/9	T SOLID STATE SI		<b></b>
TEMPERATURE CICLE MIL-STO-2027, METHOD 10/D COND. A		<u> '</u>		)-4167-1	
HIDE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S		1

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PECIFICATIONS:		2048 REV.	REVISIONS	DUE APPROVED
• FREQUENCY:			ORIGINAL RELEASE	3/1/97
INSERTION LOSS:		• •	the second	
ADSORPTIVE: 4.25db ISOLATION: 0.5 GHz TO 2 GHz: 60db	·			,
2 GHz TO 18 GHz: 70db				· · ·
VSWR:	40.089 THRU V/4-40 THD	-RF P1		SHA (F)
SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX.	SURFACE, 4 PLACES	0 PLA	GES B PLACES	
DELAY DN: 75na TYPICAL, 100na MAX. DELAY OFF: 75na TYPICAL, 100na MAX.	0.185		ион нон	TING SURFACE
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	V.23-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			GOLD PLATED
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used				
CONTROL:		$\rightarrow \sim \square \square \rightarrow \sim \square$		;
-5V @ 75mA MAX.(RELECTIVE)	0.250 J1 J2 J3	J4 J	15 J8 J7	
100mA MAX.(ABSORPINE/HON-REFLECTIVE) PTIONS:	AMERICAN MICROWAYE CORPORATION			
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	FSCH 60483		い い し し し し し し し し し し し し し し し し し し	
DEC-MP	0.900 SOL	ID STATE SWITCH	H . I	
DEC-SP	1.50 MODEL NO: <u>MSN-70R/DT-0</u> OPTION NO: <u>DEC-SP</u>	5	I II	
10M18 ······ 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10/MHz AND 0.5db AT 18 GHz)	PART NO:			
100M18 100 MHz TO 18 CHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 CHz)	·			
A 118	E1 E2 E3 -V Q10	JB GI	10 +V	
412	) 025 TYP.	لي رجينتيني	050	
BIB			··	
100M20	1 179, 1 179, 1 1.75	·	40000 SOLDER PIN 5 PLACES	
220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			20	ĺ
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.006 AT 20 GHz)	0.40	609		
BO1			0.125(GP) j 0.127(P)	
BO2 ····································			VAL / CO /	ļ
BO4 ORNERLESS, CURRENT CONTROLLED				
105 HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM WIEN APPLICABLE				ļ
DOG				
807 CIISTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU	STOMER	NOTE:		
BO3 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH BO3 LOW INSERTION LOSS VERSION			WITH DRIVER, REFLECTIVE WITH DRIVER, NON-REFLECTIVE/ABS(	
BIO	<u> </u>		WHAT DRIVER, HUN-REFLECHVE/ABS	
YIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCLIES		AMERICAN MICROWA	
TEMPERATURE:	TOLERANCES:	ROVALS DATE		
HUMIDITY: MIL-SID-202F, METHOD 103B COND. B	X.XX ±0.020			
SHOCK:	ALAA EU.UIU	(yg) 1/1/81	- REFLECTIVE OR NON-REFLEC	TIVE/ABSORPTIVE
ALTITUDE:	L.Z.A	ble B/26/9	SOLID STATE SW	
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A	Dife U	/_''		-416 <del>2</del> A
IDIE: THE FICATIONS ARE SUBJECT TO CHANGE DR REVISION			SCALE N/S	







# SECTION PRODUCT DESCRIPTION PAGE 6.0 SP8T - (Single Pole Eight Throw), Reflective and Absorptive Switches 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



			REVISIONS		
PECIFICATIONS:		ZONE REV.		140	APPROVED
FREQUENCY;			ORIGINAL RELEASE	3/13/97	
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 DUT/OFF: 2.0:1		10 THD 4230			
SPEED:	DEEP HINISHUH DIN HOLM     SURFACE, 4 PLACES     Immediate	. (HG 	40 015 × 0100* KF PUI 9 PLACES		•
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	1 023	0.50		ENDVABLE SHA	ιon .
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used					, <b></b>
CONTROL:				0.38	
POWER SUPPLY: +5V @ 400 mA MAX, -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)					
TIONS:		AMERICAN		5	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		MICROWAVE	( <u>}</u> )•		,
DEC-MP:	FSCH 6	CORPORATION	witch		
DEC-SP		NO: LASN_BDR-05	1.75	0 1.30	] 1
10M18 10 MIIZ TO 18 GIZ (INSERTION LOSS INCREASES BY 1.5db AT 10 MIZ AND 0.5db AT 18 GIZ)	II _ 1 SERIAL	NO: STANDARD	I I		] [
100118 100 NHZ TO 18 GHZ (INSERTION LOSS INCREASES	O PART				
BY 1.546 AT 100 Mitz AND 0.546 AT 18 CH2 1181 Gliz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 2182 Gliz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	E1 E2	E3 E4 GND -V J9	+V GND E5 1.6 E7 E8		
- 218	023 020 TYP, TYP,				Treat
618				1	<b>'</b>
1218	-•ָวูรู-	1		••••	• <b>لـــــ</b>
BY 1.5db AT 100 MITZ AND 1.0db AT 20 GHz)			/e0.030	SOLDER PIN 10	PLACES
220 2 GIIZ TO 20 GIIZ (INSERTION LOSS INCREASES BY 1.04b AT 20 GHZ)	[	── - ── £∧!⊎ ──- e ╼╾╸ e ╼╾ ●			
1020 10 CHz TO 20 CHz (INSERTION LOSS INCREASES BY 1.0Jb AT 20 CHz)		1			1
BO1 12V POWER SUPPLIES	ALE TYP.				
BO2············ −15V POWER SUPPLIES BO3······ REVERSE LOGIC "1"=DN "0"=OFF	·····	0 000	000000	0.40	
804 ········· DRMERLESS, CURRENT CONTROLLED	<b>├├</b>				:
805 HIGH SPEED, TURNON/TURNOFF 25 need MAXIMUM	- 025		NO SURFACE	(GP)	÷.
BOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE			D PLATED 0.127	ውን	•
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTO	NER	NOTE	•		14
808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH		0	R=WITH DRIVER, REFLECTIVE		
809 LOW INSERTION LOSS VERSION	*	D	-WITH DRIVER, NON-REFLECTIVE/ABSC	RPTIVE	
B10······Higher Isolation Version					
<u>YIRONMENTAL_RATINGS</u> :	LL DIMENSIONS ARE IN INCHES	PART NO.	AMERICAN MICROWA		
TEMPERATURE: · · · · · · · · · · · · · · · · · · ·	OLERANCES:	APPROVALS DAY			
-65°C TO +125°C (STORAGE) HUMIDITY:MIL-STO-202F, METHOD 1038 COND. B	X.XX ±0.020	DRAWNI	OUTLINE DRA		
SHOCK: MIL-STD-202F, METHOD 213B COND, 8	X.XXX ±0.010	R.R.A. & 1199 1/13	/97 MSN-8DR/DT-05-		(U ARDTIVE
VIBRATION: MIL-STD-202F, METHOD 204D COND. B		marker bla	91 SOLID STATE SV		
ALTITUDE:MIL-STD-202F, METHOD 105C COND. B TEMPERATURE CYCLE:MIL-STD-202F, METHOD 107D COND. A		resure of the second of the	SIZE FSCH HO. A DWD HO.		REV.
1			A 60483 100	<u>-3938-</u> 1	<u>A</u>
ATTENTIE AND CIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		1	SCALE	SIETT 🥒	1

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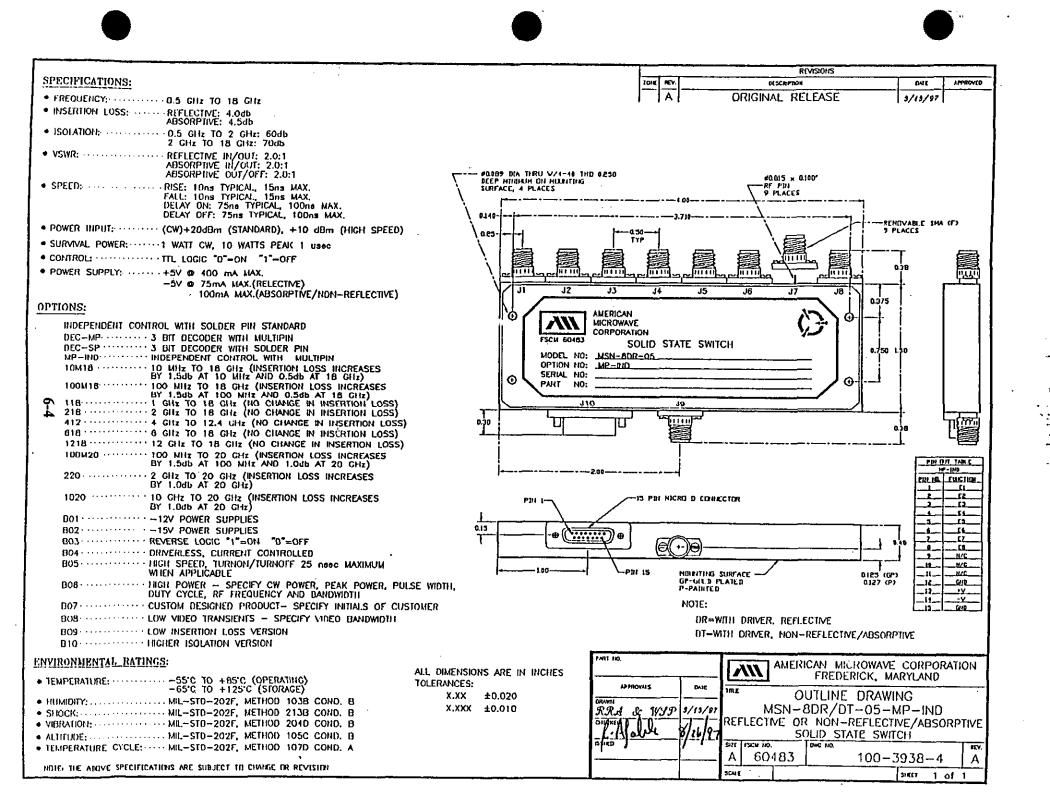
				REVISIONS		·····
SPECIFICATIONS:			LOIE MEY.	DLSCRPTON	DATE	ANNIO
• FREQUENCY:				ORIGINAL RELEASE	3/13/97	· I
INSERTION LOSS: REFLECTIVE: 4.0db     ABSORFTIVE: 4.5db						
• ISOLATION: · · · · · · · · · 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db						
VSWR: ····· REFLECTNE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1		TIRU V/4-40 THD 0230 IN DN HELITTING	G	¢ひかち × ぬ160" 、		
• SPEED: ······ RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ONI: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.	SURFACE, 4	PLACES				4 (7)
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	\ aes				9 PLACES	
SURVIVAL POWER:1 WATT CW, 10 WATTS PEAK 1 used		3 53 5				
CONTROL: TTL LOGIC "O"-ON "1"-OFF					019	
<ul> <li>POWER SUPPLY:</li></ul>						
100mA MAX. (ABSORPTIVE/NON-REFLECTIVE)	IC 13		3 14	<u></u>	0.375	
PTIONS:	6		RICAN ROWAVE	いてい		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		COR	PORATION	ا مربا		
DEC-MP		FSCH 60483	SOLID STAT	E SWITCH	0.750 L30	
MP-IND INDEPENDENT CONTROL WITH MULTPIN	]]	MODEL ND: MSI OPTION NO: DEC				
10M18 10 MILE TO 18 GILE (INSERTION LOSS INCREASES BY 1.5db AT 10 MILE AND 0.5db AT 18 GILE)	Θ	SERIAL NO:			<b>}_ </b> ł	
100M18 100 MILZ TO 18 GHZ (INSERTION LOSS INCREASES						
I 118 I GHZ TO IB GHZ (NO CHANGE IN INSERTION LUSS)		<u>1 E2 E3</u>	<u> </u>	+V GND	∠	
218	TYP. TYP.	JUU	U    ~~[]]		aļa	
HT8 8 GHz TO 1B GHz (NO CHANGE IN INSERTION LOSS)	· · · [	163	🦉	₹,		
1218		-035-  TYP- 		LODGE SOLDER PIN 5 PLACES		
220		<b>-</b>				
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)						
BO1 12V POWER SUPPLIES	ale TYP.	~ ~ ~				
H02····································	<u> </u>	0-0-0-		<u> </u>	0.40	
BO4 DRIVERLESS, CURRENT CONTROLLED			(er(+-	))))		
105 HIGH SPEED, TURNON/TURNOFF 25 NOOC MAXIMUM WIEN APPLICABLE			6	DUNITING SURFACE	1 0.125 (GP) 0.127 (P)	
DOG	SE WIDTH,		`	-PAINTED		
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUS	STOMER					
BOS LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH				DR=WITH DRIVER, REFLECTIVE DT=WITH DRIVER, NON-REFLECTIVE		
BO9 LOW INSERTION LOSS VERSION B10 HIGHER ISOLATION VERSION				DI-WITT DRIVER, HOIT-REFECCIO		
NVIRONMENTAL RATINGS:	ALL DIMENSIONS ARE I	1	1 140.		CROWAVE CORPORTE	
• TEMPERATURE:	TOLERANCES:		APPROVALS		DRAWING	
A MELEDITY MIL-STD-202F, METHOD 103B COND. B	X.XX ±0.020 X.XXX ±0.010	Bru R.	RA & WYP	s/is/or MSN-8DR/D	T-05-DEC-S	
SINDCK:			PTAT I.		REFLECTIVE/AB	
A ALTILIDE		_ <u>f</u>	- Block	21 97 SOLID ST	ATE SWITCH	
ALTITUDE: ALL-STD-202F, METHOD 1070 COND. A     TEMPERATURE CYCLE:			~~ •	A 60483	100-3938-	
HUTE THE ADOVE SPECIFICATIONS ARE SUBJECT TO CHARGE OR REVISION				scut		1 of 1

	REVISIONS	·····
SPECIFICATIONS:		APPROVED
• FREQUENCY:	A ORIGINAL RELEASE 3/13/97	1 3
INSERTION LOSS: ····· REFLECTIVE: 4.0db     ABSORDING: 4.54b		,1 '
ABSORPTIVE: 4.5db • ISOLATION: ········	·	
2 GHz TO 18 GHz; 50db		
VSWR: REFLECTIVE IN/OUT: 2.0:1		
ABSORPTIVE III/OUT: 2.0:1		
ABSORPTIVE OUT/OFF: 2.0:1		
SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX.	SURFACE, 4 PLACES	
DELAY DN: 75ns TYPICAL, 100ns MAX.		
DELAY OFF: 75ns TYPICAL, 100ns MAX.	\$140	
POWER INPLIT: ······ (CW)+20dBm (STANDARD), +10 dBm (HICH		
SURVIVAL POWER WATT CW, 10 WATTS PEAK 1 uses		
CONTROL:		
POWER SUPPLY:		
-5V @ 75mA MAX.(RELECTIVE)		
100mA MAX. (ABSORPTIVE/NON-REFL	CTIVE) J1 J2 J3 J4 J5 J6 J7 J8 0375	
PTIONS:	AMERICAN	
INDEPENDENT CONTROL WITH SOLDED DIN STANDARD		1 1
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP		1 1
DEC-SP	SOLID STATE SWITCH	
MP-IND INDEPENDENT CONTROL WITH MULTIPIN	MODEL NO: USN-BOR-05	1 1
10M18 10 Milz TO 18 GHz (INSERTION LOSS INCREA:	I A SERIAL NOV	1
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz 100M18		1 1
P BY 1 5db AT 100 MHz AND 0 5db AT 18 CHz		
118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION 218		
412		
B18		
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTIO		-9
100M20 100 MHz TO 20 CHz (INSERTION LOSS INCRE	NSES	
BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz		TANE
220 2 GHz TO 20 GHz (INSERTION LOSS INCREAS	S	
BY 1.0db AT 20 GHz)		<b></b> 1 ***
1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREAS BY 1.0db AT 20 GHz)		E2
B01 ····································		H/C -
B02 15V POWER SUPPLIES		N/C
B03 ······ REVERSE LOGIC "1"=ON "D"=OFF		N/C
B04 DRIVERLESS, CURRENT CONTROLLED		<u>H/G</u>
BOS HIGH SPEED, TURNON/TURNUFF 25 need WAXI		H/s
WHEN APPLICABLE DOB HIGH POWER - SPECIFY CW POWER, PEAK PO	GP-501.8 PLATED 0.127 (P)	<u>H/C</u>
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	1	- •Y
BO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIAL	OF CUSTOMER NOTE:	- <u>-</u> Y
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BAN		
BO9 LOW INSERTION LOSS VERSION	DT-WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE	•
B10 ····································		
		DAT: OF
<u>IVIRONMENTAL RATINGS</u> :	AMERICAN MICKUWAVE CORPU	
TEMPERATURE:		) de
-65°C 10 +125°C (STORAGE)	TAX +0.020 OUTLINE DRAWING	
HUMIDITY: MIL-STO-202F, METHOD 103B COND, B		P S
SHOCK:	X.XXX ±0.010 RRd & Wyp \$/19/97 MSN-80R/DI-05-DEU-MI	
VIBRATION: MIL-STD-202F, METHOD 204D COND, B	16. Maria Rh6/97 SOLID STATE SWITCH	
ALTITUDE:	ISUE ISUE OF THE STATE STATE STATE STATE	AEV,
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	A 60483 100-393	A
HOTE THE AD ECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		
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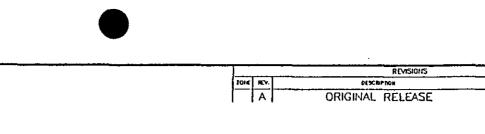
# SECTION 7.0 <u>SP10T - (Single Pole Ten Thro</u>

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### PRODUCT DESCRIPTION

### PAGE

)	<u>SP107</u>	- (Single Pole Ten Throw), Reflective and Absorptive Switches	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



	FREQUENCY:	
•	NSERTION LOSS: REFLECTIVE: 4.5db ABSORPTIVE: 5.0db	
•	SOLATION:	
• `	/SWR: ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1	
• 5	PEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns IYPICAL, 100ns MAX. DELAY OF: 75ns TYPICAL, 100ns MAX.	Q140-
• P	OWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	0.38
• 5	URVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 uses	TYP, or III in sa
• c	ONTROL:	0.375
	OWER SUPPLY:	
<u>0P1</u>	<u>'IONS:</u>	0.750
	INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	
	DEC-MP	<u> </u>
1	DEC-SP	I I DE
1	101418	0.23
1	BY 1.546 AT 10 MHz AND 0.546 AT 18 GHz)	╵╨╩╴╍┲╡═╾╫╶╴╢
12	100M18 100 MIIZ TO 18 GHZ (HISERTION LOSS INCREASES BY 1.5db AT 100 MIIZ AND 0.5db AT 18 GHz) 118 JULY TO 18 GHZ (NO CHANGE IN INSERTION LOSS)	020 ] 025 TYP TYP.
	218	
	6 CHz TO 18 CHz (NO CHANCE IN INSERTION LOSS)	
1	1218 12 OHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	
	1001120 ······· 100 MIIz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MIIz AND 1.0db AT 20 GHz)	0-0
	220 ···································	
	1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	
	BO1	
1	BO2	
	BO3 ······ REVERSE LOGIC "1"-ON "0"-OFF BO4 ····· DRIVERLESS, CURRENT CONTROLLED	
	BOS HIGH SPEED, TURNON/TURNOFF 25 ASBC MAXIMUM WIEN APPLICABLE	
	BOG	lse width,
ł	BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS	STOMER
1	BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	
1	BO9 LOW INSERTION LOSS VERSION	
Į	BIO HIGHER ISOLATION VERSION	
ENV	IRONMENTAL RATINGS:	ALL DIMENSIONS
F . 77	$\Box = 0$	744 5544 655

SPECIFICATIONS:

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a. -

TOLERANCES: X.XX

X.XXX

	500 	60.013 × 0.100' RF PIN 11 PLACES 11 PLACES 11 PLACES 11 PLACES 11 PLACES 11 PLACES 11 PLACES 11 PLACES	ر— ر		
D-O-O-O-O-O-	9 @ <del>()9</del>	0-0-0-0	-0-0-0	Г <sup>0183</sup> түр. [[ ]]	
		01E: DR≔WITH DRIVER DT≕WITH DRIVER,	. REFLECTIVE NON-REFLECTIVE	:/ADSORPTIVE	
DNS ARE IN INCHES ±0.020 ±0.010	PAIL INC. APPROVALS DRAWES CACKED IV: Y SP CACKED IV CACKED IV C	2497 SIZE TSCU HO	OUTLINE N-10DR/DT- VE OR NON-R SOLID STA	DRAWING -05-STAN EFLECTIVE/A TE SWITCH 100-4107	DARD BSORPTIVE
· · ···	┺╼╍╸╺┉╶╻╴╻	I <sup>3AII</sup>	L	SULET	1 of 1

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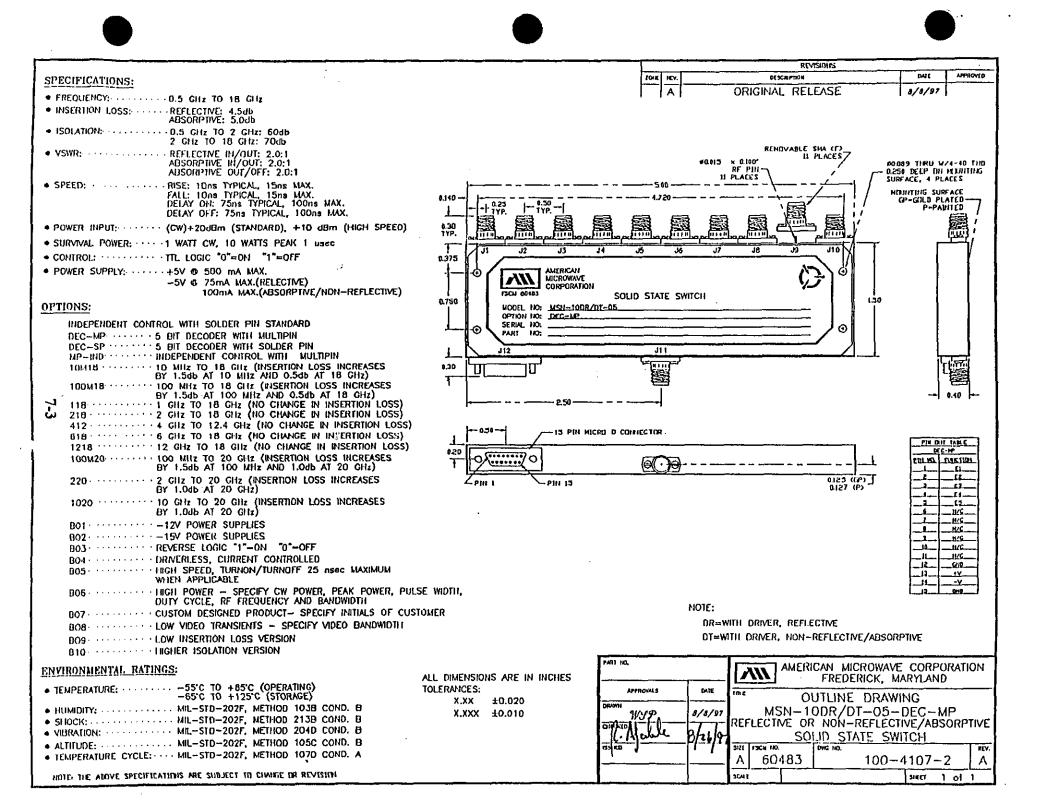
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HOLE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

. HUMIDITY: ...... MIL-STD-202F, METHOD 1038 COND, B

	······································	REVISIONS	
SPECIFICATIONS:		ZOHE NEV. DESCRIPTION	DALE ANTROVED
FREQUENCY:		A ORIGINAL RELEASE	8/8/97
• ISOLATION:			
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1		" REHOVALLE SHA (F) #0.013 × 0.100 JI PLACES NF PIN →	40.089 TIRU V/4-40 TIID
• SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 100ns MAX. DELAY OFF: 75ns TYPICAL, 100ns MAX.			D250 DEEP (N) HOUNTING SIRFACE, 4 PLACES HOUNTING SURFACE GP-GOLD PLATED P-PAINTED
POWER INPUT: · · · · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)		<b>财 动 动 动 动 动 动</b>	
. SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 0000			
• CONTROL: ······· TTL LOGIC "0"-ON "1"-OFF			
POWER SUPPLY:+5V © 500 mA MAX. -5V © 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)	AMERICAN HIGROWAYE CORPORATION		
OPTIONS:	0.750 HODEL HO: JISH-1008/01-01	D STATE SWITCH	1.50
100       Hitz Ho Hitz AND 0.5db AT 18 GHz)         100       Hitz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 Mitz AND 0.5db AT 18 GHz)         118       100 Mitz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 Mitz 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)         618       0 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)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20       100 Mitz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 Mitz AND 1.0db AT 20 GHz)         200       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)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         801       -12V POWER SUPPLIES         802       -12V POWER SUPPLIES         803       REVERSE LOGIC "1"=DN "0"=0FF         804       DRIVERLESS, CURRENT CONTROLLED         805       INGH SPEED, TURNON/TURNOFF 25 neoc MAXIMUM WIEN APPLICABLE         806       HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSI DUTY CYCLE, RF FREQUERICY AND BANDWIDTH         8		111     +V     CHO       111     +V     CHO       CR     PHH       PHH     PHH       CR     PHH       CR     PHH       CR     PHH       CR     PHH       CR     PHH	Солез түр. [] ]
808 Low video transients - Specify video Bandwidth 809 Low insertion loss version 810		DR=WITH DRIVER, REFLECTIVE DT—WITH DRIVER, NON-REFLECTIV	/E/ABSORPTIVE
ENVIRONMENTAL, RATINGS:		I NNN LAMERICAN MI	CROWAVE CORPORATION
• TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS	RICK, MARYLAND DRAWING
HUMIDITY:	X.XXX ±0.010	Wy9 a/a/or MSN-10DR/D	T-05-DEC-SP REFLECTIVE/ABSORPTIVE ATE_SWITCH



DECIPICATIONE.		Jour wy	REVISIONS	DUT!
PECIFICATIONS:		LOLE NEY.		DAVE APPRO
FREQUENCY: ····································			ORIGINAL RELEASE	8/8/97
NISERTION LOSS: REFLECTIVE: 4.5db ABSORPTIVE: 5.0db			÷	
ISOLATION:	2			
VSWR: REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1		•0	REHOVABLE SHA (F) 1013 × 0.100" 11 PLACES	60.089 THRU V/4-40 
SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ne TYPICAL, 100ne MAX. DELAY OFF: 75ns TYPICAL, 100ne MAX.				SURFACE. 4 PLACES MULHITING SURFACE GP-GULD PLATED- PAPAINIED
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEE				
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used				
CONTROL:	0.375 J <sup>1</sup> J <sup>2</sup> J <sup>3</sup>	J4 J5 J6	<u>J7 J8 J9</u> J10	
POWER SUPPLY: +5V @ 500 mA MAX. -5V @ 75mA MAX.(RELECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE		ve		
PTIONS:	0.750 MODEL NO: MSH-11	108/01-01		1.50
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP				
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	مع المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة	a little	8	
BY 1.5db AT 10 kHz AND 0.5db AT 18 GHz) 100M18 ······ 100 MHz TO 18 GHz (INSERTION LOSS INCREASES				<b>1</b>
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	5)			- 0.48
412	s) + 15 PI	HICRO & CONNECTOR		PH DIT TAPLE
100M20 ······ 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 NHz A/D 1.0db AT 20 GHz)		e <del>()e</del>		
220 · · · · · · · 2 GIIZ TO 20 GHZ (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	ZPIN 1 PIN 15		0.123 (GP) 0.127 (P)	
1020 ······ 10 CHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)			· ·	<u> </u>
BO1				
802 ······ -15V POWER SUPPLIES 803 ····· REVERSE LOGIC "1"=DN "D"=OFF		ن. ۲		
U04 DRNERLESS, CURRENT CONTROLLED		•		10E10
B05		•		11 <u>N/S</u> 12 <u>GHD</u> 13 <del>_</del> Y
BOO HIGH POWER - SPECIFY CW POWER, PEAK POWER, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	PULSE WIDTH,			11 <u>Y</u>
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANOWDT		NOTE	: R=WITH DRIVER. REFLECTIVE	
BO9 ILW INSERTION LOSS VERSION B10			-WITH DRIVER, NON-REFLECTIVE	BSORPTIVE
VIRONMENTAL RATINGS:		PART HO.	AMERICAN MICRO	WAVE CORPORATIO
TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES TOLERANCES:	APPROVALS CAT	FREDERIC	K, MARYLAND
-65°C TO +125°C (STORAGE)	X.XX ±0.020	ORAWI		
IUMIDITY: MIL-STD-202F, METHOD 103B COND. B SHOCK: MIL-STD-202F, METHOD 213B COND. B	X.XXX ±0.010	WY9 8/8/	MSN-10DR/DT-	05-MP-IND
VIBRATION:			- REFLECTIVE OR NON-REI	
ALTITUDE:		K. H - Vie 1/21/	97SOLID_STATE	SWITCH
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D CONS A		istora A	SIZE FSCH NO. DWC NO.	00-4107-4
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THE AND THE AND THE ATTOMS ARE SUBJECT TO CHANGE OR REVISION			SCALE	514

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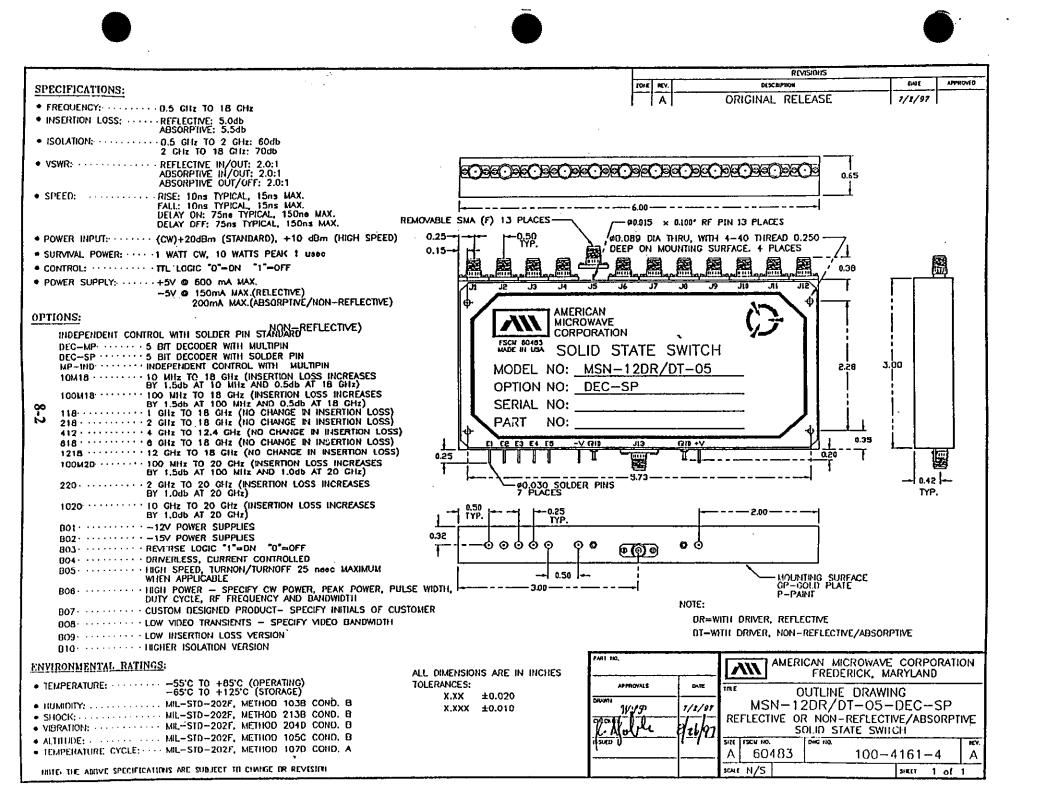


# SECTION PRODUCT DESCRIPTION PAGE 8.0 SP12T - (Single Pole Twelve Throw), Reflective and Absorptive Switches 8-0 8.1 MSN-12DR/DT-05-STANDARD with Independent Controls 8-1 8.2 MSN-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins 8-2 8.3 MSN-12DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector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

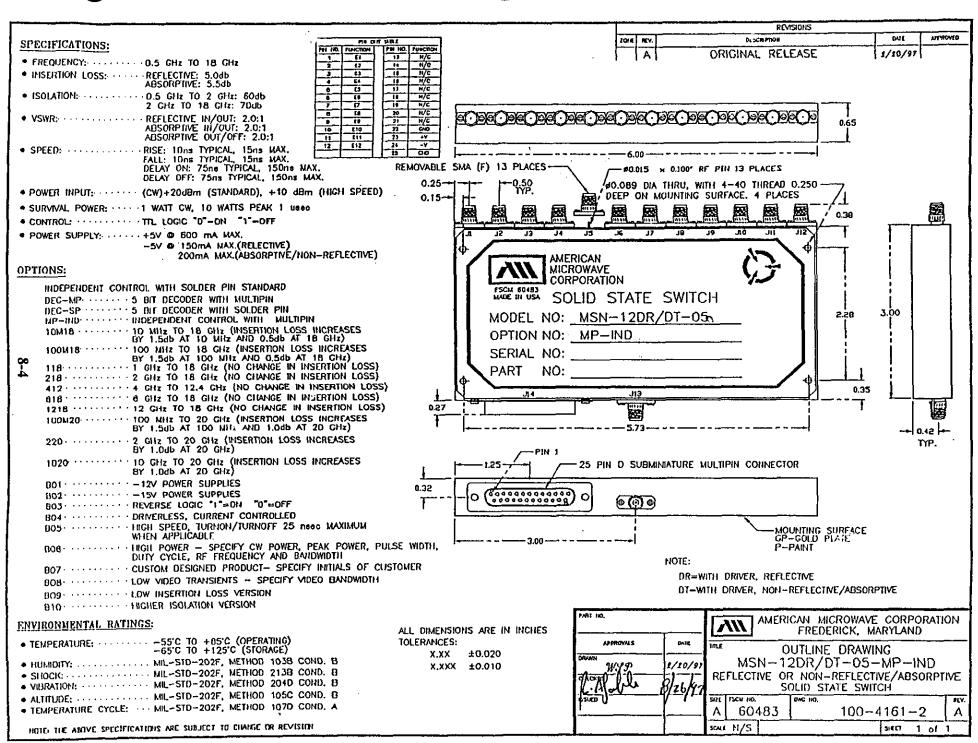
8.4 MSN-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls ...... 8-4



		:
SPECIFICATIONS:	REVISIONS LOIC AV. DESCRIPTION	DATE APPROVED
• FREQUENCY: ······ 0.5 GHz TO 18 GHz	A ORIGINAL RELEASE	7/2/97
INSERTION LOSS: REFLECTIVE: 5.0db ABSORPTIVE: 5.5db		
• ISOLATION: · · · · · · · · · · · 0.5 GHz TO 2 GHz: 60db 2 GHz TO 18 GHz: 70db		
• VSWR:		· · · · ·
SPEED: RISE: 10ns TYPICAL, 15ns MAX.	EMOVABLE SMA (F) 13 PLACES	
DELAY ON: 75ng TYPICAL, 150ng MAX. DELAY OFF: 75ng Typical, 150ng Max.	0.25-1-1-1- 1-0.50	
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	0.15 H- IIF. GRI DEEP ON MOUNTING SURFACE, 4 PLACES	
SURVIVAL POWER: · · · · · 1 WATT CW, 10 WATTS PEAK 1 used CONTROL: · · · · · · · · · · · · · · · · · · ·		
POWER SUPPLY:	1 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u>	
-5V © 150mA NAX.(RELECTIVE) 200mA MAX.(ABSORPTIVE/NON-REFI ECTIVE)	AMERICAN MICROWAVE	
PTIONS:	TSCH AMAN CORPORATION	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP:	SOLID STATE SWITCH	
DEC-SP · · · · · · · 5 BIT DECODER WITH SOLDER PIN	MODEL NO: MSN-12DR/DT-05 2.20 3.	00
MP-IND INDEPENDENT CONTROL WITH MULTIPIN 10M18	OPTION NO: STANDARD	
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES	SERIAL NO:	
NO BY 1.506 AT 100 MHZ AND 0.506 AT 18 GHZ)	PART NO:	
218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)		
412		
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 MILE AND 1.0db AT 20 GHz)	0.030 SOLDER PINS	0.42 TYP.
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)		1
B01	$\varphi \varphi $	
803 ········· REVERSE LOGIC "1"=ON "0"=OFF 804 ······ DRNERLESS, CURRENT CONTROLLED		1
UOS HIGH SPEED, TURNON/TURNOFF 25 nooc MAXIMUM WIEN APPLICABLE	MOUNTING SURFACE GP-COLD PLAIE P-PAINT	
B08 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PU DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	LSE WIDTH,	ľ
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CU B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWDTH	STONER DR=WITH DRIVER, REFLECTIVE	
809 LOW INSERTION LOSS VERSION	DT-WITH DRIVER, NON-REFLECTIVE/ABSOR	PTIVE
010 ···································		
NYIRONMENTAL RATINGS:	ALL DIMENSIONS ARE IN INCHES	
TEMPERATURE:	TOLERANCES:	
HUMIDITY:	X.XXX ±0.010 00000 11/2/97 MSN-12DR/DT-05-5	STANDARD
VIBRATION: MIL-STD-202F, METHOD 201D COND. B	L. ALUE 72497 REFLECTIVE OR NON-REFLECT	
ALTITUDE:	ASUED V SIZE [TSCM HO, ] DWG HO,	REV.
HOTE, THE ARE SUBJECT TO CHANGE OR REVISION	A 60483 100-4	<u>4161–1 A</u>



	<u> </u>	I	REVISIONS	
SPECIFICATIONS:		ZOHE NEV.	DESCRIPTION	DATE APPROVED
• FREQUENCY: 0.5 GHz TO 18 GHz			ORIGINAL RELEASE	7/2/97
INSERTION LOSS: REFLECTIVE: 5.0db			•	PIN OUT TABLE
ABSORPTIVE: 5.5db • ISOLATION:				PIN NO. FUNCTION
• ISOLATION:				
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1	<u>@@3@@3@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@</u>		00000000000	2 E2 3 E3 0.65 4 E4
• SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY: ON: 75ns TYPICAL, 150ns MAX. DELAY: OFF: 75ns TYPICAL, 150ns MAX. REMOVAE	LE SMA (F) 13 PLACES			5 E5 6 GND 7 +V
POWER INPUT: · · · · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED) 0.1			WITH 4-40 THREAD 0,250 -	
• SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 uses 0.1	5- h	EP ON MOUNTING	SURFACE. 4 PLACES	
• CONTROL: TTL LOGIC "0"=ON "1"=OFF				0.38
• POWER SUPPLY: ·····+5V @ 600 mA WAX.		26 17 19	Sit IIt OIL EL	
-5V 0 150mA MAX.(RELECTIVE) 200mA MAX.(ABSORPTNE/NDN-REFLECTIVE)				
·	AMERICAN		<b>\^</b> _\"["	
OPTIONS:	MICROWAVE		C ∻ )∥	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	ESCH 60483		7-7	
DEC-MP ······· 5 Bit decoder with Multipin Dec-sp ······ 5 Bit decoder with solder Pin	WADE IN USA SOLID S	TATE SWIT	CH 🚺	
NP-IND INDEPENDENT CONTROL WITH MULTIPIN	MODEL NO: MSN-			2,28 3.00
10/118				
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	OPTION NO:	MP		
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	SERIAL NO:	Sec. 4		
218 ····································	PART NO:			
412 ····································				
618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	J14	่งเว		0.35
1218 12 CHz TO 18 GIIZ (NO CHANGE IN INSERTION LOSS)	27		,	
100M20 ······· 100 NHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 III'r AND 1.0db AT 20 GHz)		62	i	
220 ···································	PIN 1	— 3,73 — —		0.42   TYP.
1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	. /	D SUBMINIATURE	NULTIPIN CONNECTOR	
BOI	_ <u> </u>			
B02 ······ -15V POWER SUPPLIES 0.33		<u> </u>		
B03 ······ REVERSE LOGIC "1"-ON "0"-OFF			1	
DO4 ····· DRIVERLESS, CURRENT CONTROLLED BO5 ····· HIGH SPEED, TURNON/TURNOFF 25 DBBC MAXIMUM				
WIEN APPLICABLE		į		URFACE
BOG HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH DUTY CYCLE, RF FREQUENCY AND BANDWIDTH DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	, <u> </u> 3.00		GP-GOLD P P-PAINT	LATE
DO7 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER				
108 Low video transfents - specify video bandwidth			WITH DRIVER, REFLECTIVE	
DO9 LOW INSERTION LOSS VERSION		N1=/	MTH DRIVER, NON-REFLECT	AFLAR2OKLINE
B10 HIGHER ISOLATION VERSION	FARE 30.			
NYIRONMENTAL RATINGS:				CROWAVE CORPORATION
TEMPERATURE: -55°C TO +85°C (OPERATING) TOLERAM		IOVALS DATE		ERICK, MARYLAND
• HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	XX ±0.020 XXX ±0.010	1/2/97		DT-05-DEC-MP
• SHOCK:		1-1-1-1-		REFLECTIVE/ABSORPTIVE
• VIBRATION: MIL-STD-202F, METHOD 201D COND. B	17. Al.	We phile		ATE SWITCH
ALTITUDE:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		SIZE FOCH HO. DWG HO.	
TENTERATURA CONTRACTOR MIL-STU-ZUZY, METRUD TUTU COND. A		<u> </u>	A 60483	100-416
HITCH THE A LIFECATIONS ARE SUBJECT TO CHARGE OR REVISION			SCALE N/S	3HC6 1





### SECTION

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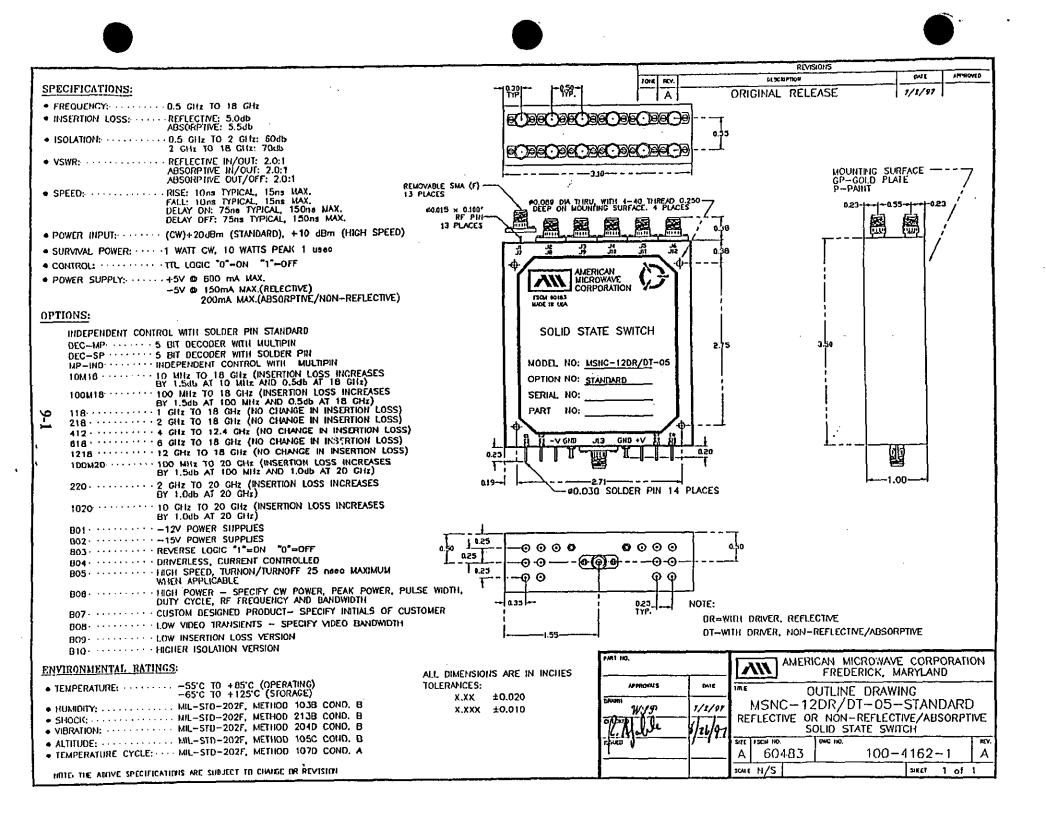
### PRODUCT DESCRIPTION

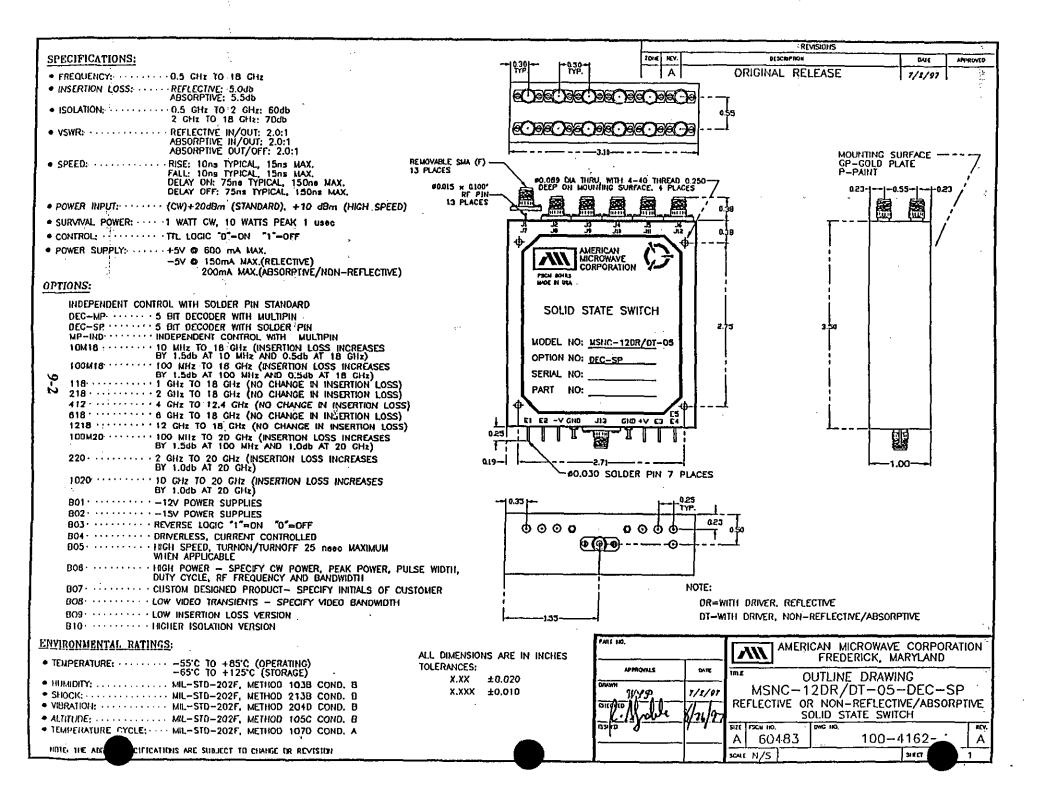
9.0		T - COMPACT DESIGN, (Single Pole Twelve Throw),
	Refle	ctive and Absorptive Switches
	9.1	MSNC-12DR/DT-05-STANDARD with Independent Controls
	9:2 <sup>,</sup>	MSNC-12DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins
	9.3	MSNC-12DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN Connector
	9.4	MSNC-12DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls 9-4

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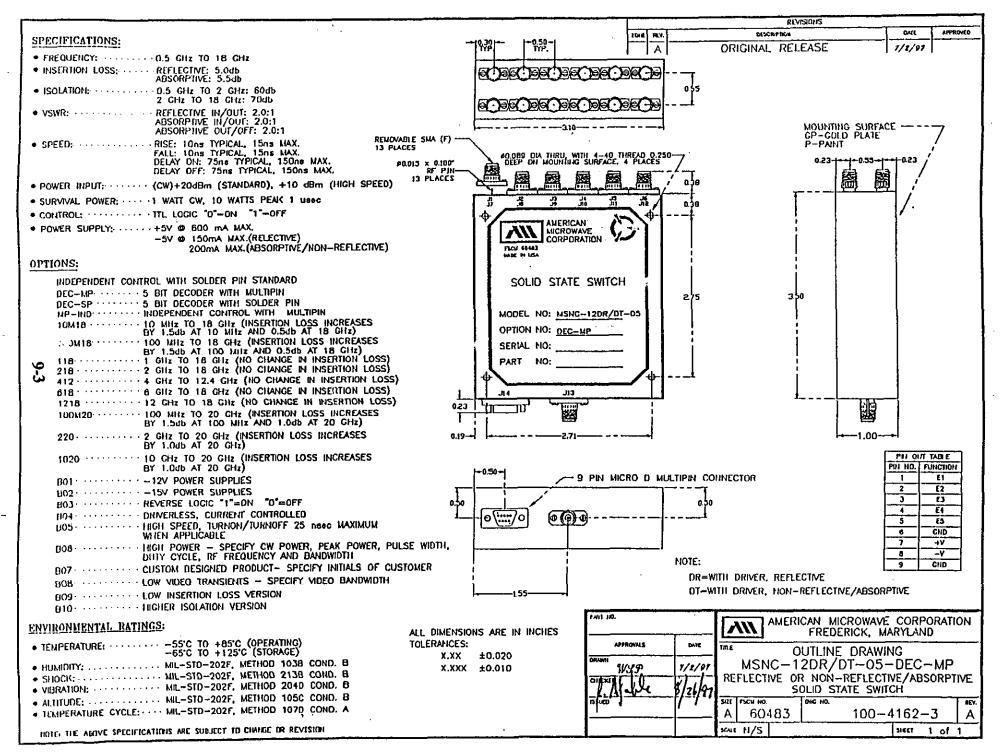
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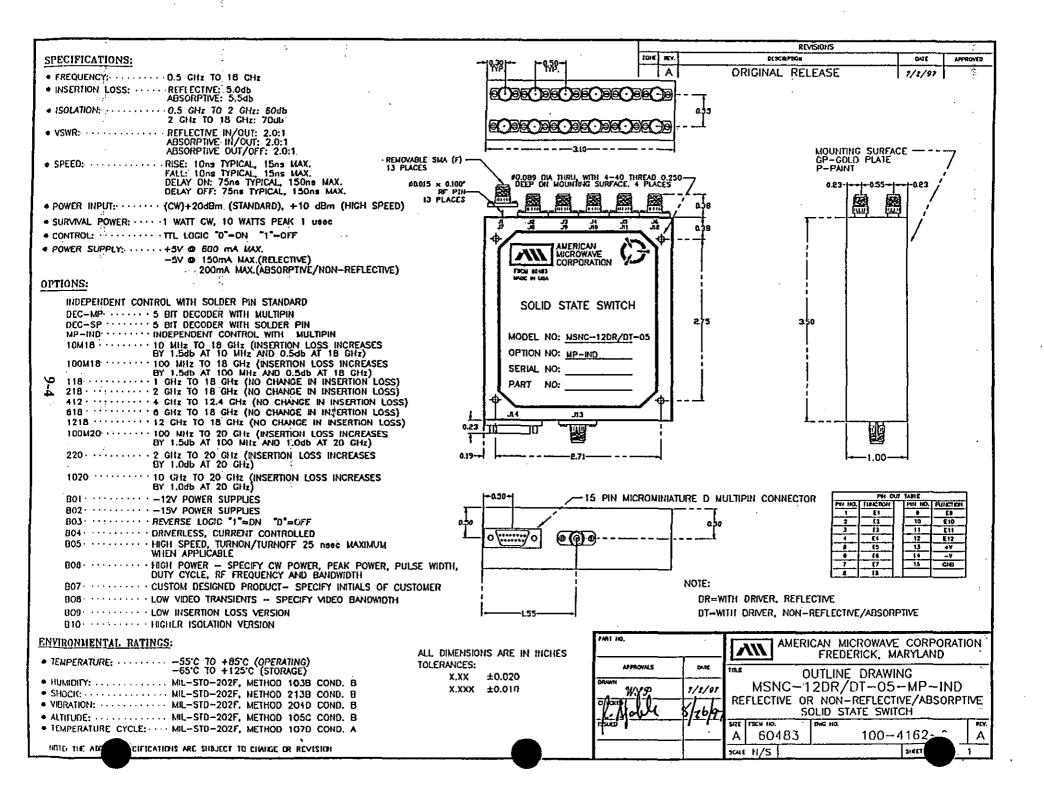












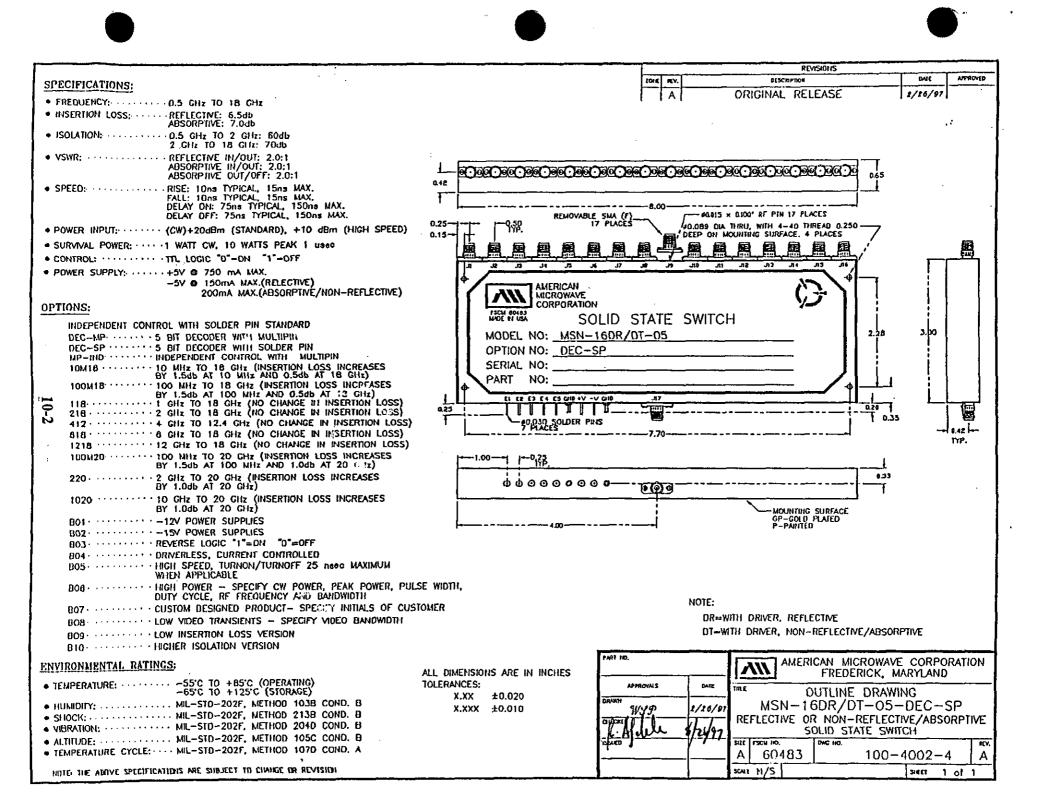


# SECTION PRODUCT DESCRIPTION PAGE 10.0 SP16T - (Single Pole Sixteen Throw), Reflective and Absorptive Switches 10-0 10.1 MSN-16DR/DT-05-STANDARD with Independent Controls 10-1 10.2 MSN-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins 10-2 10.3 MSN-16DR/DT-05-DEC-MP with 5 Bit Decoder and MULTIPIN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

10.4 MSN-16DR/DT-05-MP-IND with MULTIPIN Connector and Independent Controls ..... 10-4

			·····	REVISIONS		ia:
SPECIFICATIONS:		1044		DISCRIPTION	DAT(	APPROVE
• FREQUENCY:			AI	ORIGINAL RELEASE	2/20/97	
INSERTION LOSS:				•		1
ISOLATION: · · · · · · · 0.5 GHz TO 2 GHz; 60db     2 GHz TO 18 GHz; 70db	•	• *				
VSWR: REFLECTIVE IN/OUT: 2.0:1						5. 
ABSORPTIVE 'IN/OUT: 2.0:1		Vi Concerto				
ABSORPTIVE OUT/OFF: 2.0;1	0360360360360360			as ass		j.
SPEED: RISE: 10ns TYPICAL, 15ns MAX.     FALL: 10ns TYPICAL, 15ns MAX.	·					
DELAY DN: 75ne TYPICAL, 150ne NAX.	· · · · · · · · · · · · · · · · · · ·	8.00		•		:
DELAY OFF: 75ns TYPICAL, 150ns MAX.	REMOVABLE S	MA (r) PLACES	F- #0.015 :	CLION RF PIN 17 PLACES		:
• POWER INPUT: ······ (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED) 0.15→		-	(40.089 DA	THRU, WITH 4-40 THREAD 0.250		
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used						63 <sup>1</sup>
• CONTROL: CONTROL COGIC TOT-ON TIT-OFF					<b></b>	
· POWER SUPPLY: ····· +5V @ 750 mA MAX.	1 Je Ja J4 J6 J6	3L 7L	.10 .11 .11	4r. cit. 1r. cit. sn.		
-5V 'O 150mA MAX.(RELECTIVE)	AMERICAN					
200mA WAX.(ABSORPTIVE/NON-REFLECTIVE)		,				4 7
<u>OPTIONS:</u>	FSGI 40(83 WOF IN USA					
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	JVL		e switci	- ·	11	
DEC-MP	MODEL NO: MSN-16	DR/DT-05		2.28	3.00	
DEC-SP ······· 5 BIT DECODER WITH SOLDER PIN NP-IND ······ INDEPENDENT CONTROL WITH MULTIPIN	OPTION NO: STANDAR	20				
10M18 10 MILZ TO 18 GILZ (INSERTION LOSS INCREASES	SERIAL NO:					. (
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	PART NO:					
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)	I ←	<u> </u>				]
🔚 118 ·········· 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	L) C2 E3 E4 E5 E6 C7 E0	V Grib	G10 + V E9 1	EIN EIN EIS EIS EIS EIS		}
			<sup>┷</sup> <sup>µ</sup> -₩Ң-			圖
412 412 4 CHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS) 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)			L L	-0.030 SOLDER PINS   10.35	1	1
1218		7.70				0.42   TYP.
100M20 100 NHz TO 20 GHz (INSERTION LOSS INCREASES	1.00		•	0.25		
BY 1.5db AT 100 MHz AND 1.0db AT 20 CHz)			······			
220 · · · · · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	00000000	0	- 000	00000000000000000000000000000000000000	•	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		ঁ তিটা	9			
BY 1.0db AT 20 GHz)	]			- HOUNTING SURFACE -		
B01		<b>i</b>		GP-COLD PLATED		
BO2·········· −15V POWER SUPPLIES BO3········ REVERSE LOGIC "I"=ON "Q"=OFF		•			· · · ·	
004 ······ DRVERLESS, CURRENT CONTROLLED	· · · · ·					
B05						
WHEN APPLICABLE	•			·		
DOB HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDT DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	ห,					
B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER			NOTE:			
BOB				VITH DRIVER, REFLECTIVE		
809 ····································				1711 DRIVER, NON-REFLECTIVE/ABSOF	PTIVE	
BIO HICHER ISOLATION VERSION			U1 - 1	the econicy work here conicy wood		
ENVIRONMENTAL RATINGS:	11 I I I I I I I I I I I I I I I I I I	ART NO.				DATIO
Ail Di	MENSIONS ARE IN INCHES			AMERICAN MICROWAV		
• TEMPERATURE: · · · · · · · · · · · · · · · · · · ·		APPROVALS	DATE			
-03'G IU +175'C 15IURAGE)	X.XX +0.020			TITLE OUTLINE DRAW		
THUMBUTT THE THE THE MILTAID WALK METRUT TO AN USING IN	X.XXX ±0.010	WAP.	2/20/91	MSN-16DR/DT-05-		
• VIBRATION:	17	militical for the		REFLECTIVE OR NON-REFLEC	TIVE/ABSO	
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B	l.	Killow	<u>- \$/21/97</u>	SOLID STATE SWI	ITCH	<u> </u>
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A		# 0 V	=  /~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	SIZE FSCH HO. DWG HO.	1000	1
THE ATT CIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		<u> </u>	<u>  ~</u>	A 60483 100-	-4002	
UNITE THE COMPANY FOR THE PROPERTY OF THE PROPERTY			1	SCALE N/S	SIC	1

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		2014	NEV.	·· REVISIONS		3
SPECIFICATIONS:			A	ORIGINAL RELEASE		APPROVID
• FREQUENCY:		4		ORIGINAL RELEASE	1/25/97	
INSERTION LOSS: REFLECTNE: 0.5db     ABSORPTIVE: 7.0db				·		
+ ISOLATION: 0.5 GHz TO 2 GHz: 60db	<b>,</b> •					
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			0000000			
• SPEED: RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX.	T	·				
DELAY ON: 75ns TYPICAL, 150ns MAX.	· · · · · · · · · · · · · · · · · · ·					
DELAY OFF: 75ns TYPICAL, 150ns MAX.		PLACES		i x 0.100" RF PIN 17 PLACES A THRU, WITH 4-40 THREAD 0.250		
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED).			DEEP ON	MOUNTING SURFACE. 4 PLACES		
SURVIVAL POWER: ····· 1 WATT CW, 10 WATTS PEAK 1 usec     CONTROL: ······· TTL LOGIC "0"=0N "1"=OFF			╧╬╸ॖॖॖॖॖॖॖॖॖॖॖॖॖ			
POWER SUPPLY: ······+5V @ 750 mA MAX.	<u>. e. ht ci st k</u>	4 J7 J1	ال قال قال	an <u>cit bit cit sit i</u>		
-SV @ 150mA MAX.(RELECTIVE)	AMERICAN			×~ <b>\</b> +	i	
200mA MAX. (ABSORPTIVE/NON-REFLECTIVE)	MICROWAVE			C≯`\	ĺ	
OPTIONS:	EXCLAMAS					1 1
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD			TE SWITC		j.	
DEC-MP	MODEL NO: MSN-				, 3.òo	
MP-IND INDEPENDENT CONTROL WITH MULTIPIN	OPTION NO: DEC-	<u>MP</u>				
10M18 · · · · · · 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)	SERIAL NO:			J i		
100M18	PART NO:	······				ł
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 9 118		د				
W 218	<sup>627</sup>				f 0.35	
412	· · · · · · · · · · · · · · · · · · ·			```````````````````````````````````````		0.42
1218				· · · · · · · · · · · · · · · · · · ·		TYP.
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)		9 PIN D S	UBMIHIATURE MU	LTIPIN CONNECTOR	<u>.</u>	i i
220 · · · · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	ြ ြီးးးး)ဝါ-		· · · · · · · · · · · · · · · · · · ·		and the second s	
1020		60			PIN OUT	
BY 1.0db AT 20 GHz)				MOUNTING SURFACE	1	E1 4
BO1				GP~GOLD PLATED P-PAINTED	2	E2 -
B02······················B5V POWER SUPPLIES B03····································				·5	3	EJ
804 ······ DRIVERLESS, CURRENT CONTROLLED					4	<u> </u>
805 HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUM WHEN APPLICABLE					5	E5 GND
B05 ······ HIGH POWER - SPECIFY CW POWER, PEAK POWER, PUL	SE WIDTH,				7	+V
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH			NOTE:		8	-v
BO7 CUSTOM DESIGNED PRODUCT SPECIFY INITIALS OF CUS BO8 LOW VIDEO TRANSIENTS SPECIFY VIDEO BANDWIDTH	NUMER			VITH DRIVER, REFLECTIVE	9	GND
BO9 LOW INSERTION LOSS VERSION				11H DRIVER, NON-REFLECTIVE/ABS	ORPTIVE	
BIQ						
ENVIRONMENTAL RATINGS:	-	PART HO.		AMERICAN MICROWA	VE CORPO	RATION
• TENPERATURE; · · · · · · · · -55'C TO +85'C (OPERATING)	ALL DIMENSIONS ARE IN INCHES			AMERICAN MICROWA		
-65'C TO +125'C (STURAGE)	TOLERANCES: X.XX ±0.020	APPROVALS	DATE	TIME OUTLINE DRAM	WING	
HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B     SUCCESS	X.XXX ±0.010	WYP	2/25/97			/P :
SHOCK:	<b>-</b>			REFLECTIVE OR NON-REFLE	CTIVE/ABSC	
ALTITUDE: MIL-STD-202F, METHOD 105C COND. B		K.Mar	4/rula	SOLID STATE SV	WITCH	· · · ·
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	· ·	ciance 1	· / / ~	ыле Госы но. рис но. А 60483 100	-4002	ΠEV.
HOTE THE ACTICATIONS ARE SUBJECT TO CHANGE OR REVISION					400 sie	ĻĻ
				SCALE N/S	3111	<u> </u>

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SPECIFICATIONS;			REVISIONS	
		ZOHE NEV.		DATE APPROVED
FREQUENCY:			ORIGINAL RELEASE	2/20/97
• ISOLATION:				
VSWR: ····· REFLECTIVE IN/OUT: 2.0:1 ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1				Ŧ
SPEED: ····· RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 150ns MAX. DELAY OFF: 75ns TYPICAL, 150ns MAX.			0,	65 . 1
POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	0.25jj j0,50 17 P	PLACES /PO.OAB C	NA THRU, WITH 4-40 THREAD 0.250	7
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 4500			MOUNTING SURFACE, 4 PLACES	/ 
CONTROL:				
POWER SUPPLY: ·····+5V @ 750 mA MAX. -5V @ 150mA MAX.(RELECTIVE) 200mA MAX.(ABSORPTIVE/NON-REFLECTIVE)		J7 J8 J9 J18 .		
PTIONS:	AMERICAN MICROWAVE CORPORATION		C テ )	
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       100 MHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       6 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)         128       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20       10 MHz TO 2D GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)         200       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       HIGH APPELCABLE         806       HIGH POWER	SOLI MODEL NO: <u>MSN-16</u> OPTION NO: <u>MP-IND</u> SERIAL NO: <u>PART NO:</u> 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	25 PIN D SUBAINIATURE MU		0.35 0.35 
807 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUS 808 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH	DIUMEIC	NOTE:	12	
BO3 ······ LOW INSERTION LOSS VERSION				
B10 HIGHER ISOLATION VERSION		-10	MTH DRIVER, NON-REFLECTIVE/ABS	SORPTIVE
VIRONMENTAL RATINGS:		1 149.	AMERICAN MICROW	
TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES	APPROVALS DATE	FREDERICK,	MARYLAND
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	X.XX ±0.020 X.XXX ±0.010	WY9 2/20/9.	REFLECTIVE OR NON-REFLE	05-MP-IND
TEMPERATURE CYCLE: MIL-SID-202F, METHOD 105C COND. B		14- will \$/11/07	SULID STATE S	WIICH REV.
	<b>1</b> (		A 60483 100	



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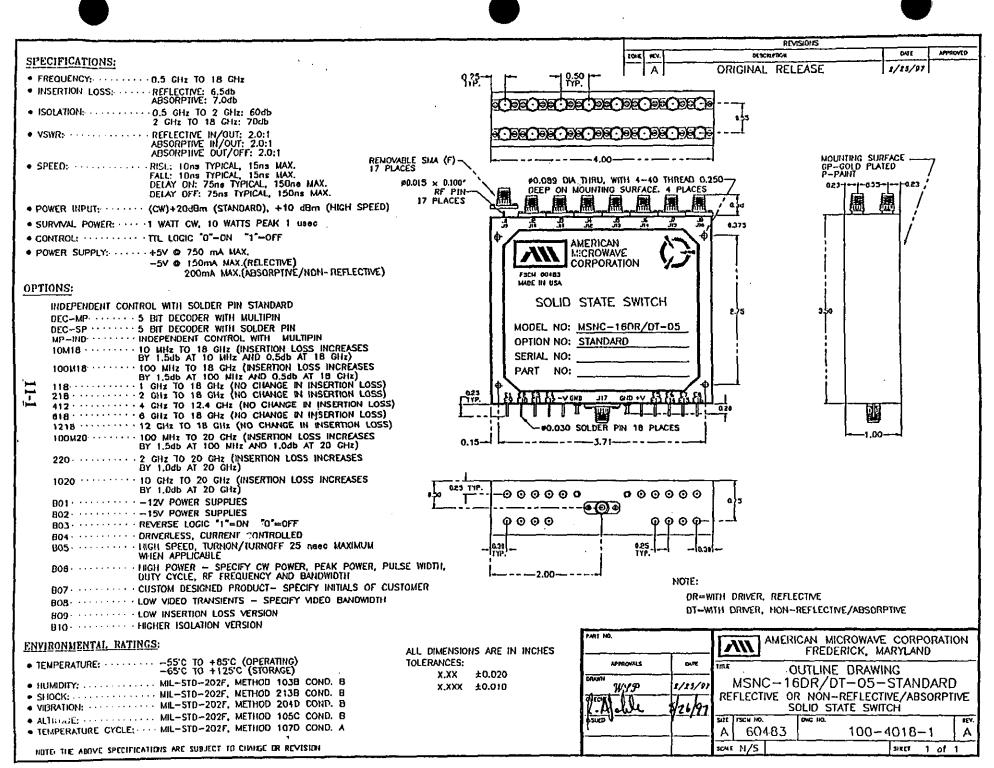
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#### PRODUCT DESCRIPTION

11.0		<u><b>T - COMPACT DESIGN, (Single Pole Sixteen Throw).</b></u> <u>tive and Absorptive Switches</u>
	11.1	MSNC-16DR/DT-05-STANDARD with Independent Controls
	11.2	MSNC-16DR/DT-05-DEC-SP with 5 Bit Decoder and Solder Pins
	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

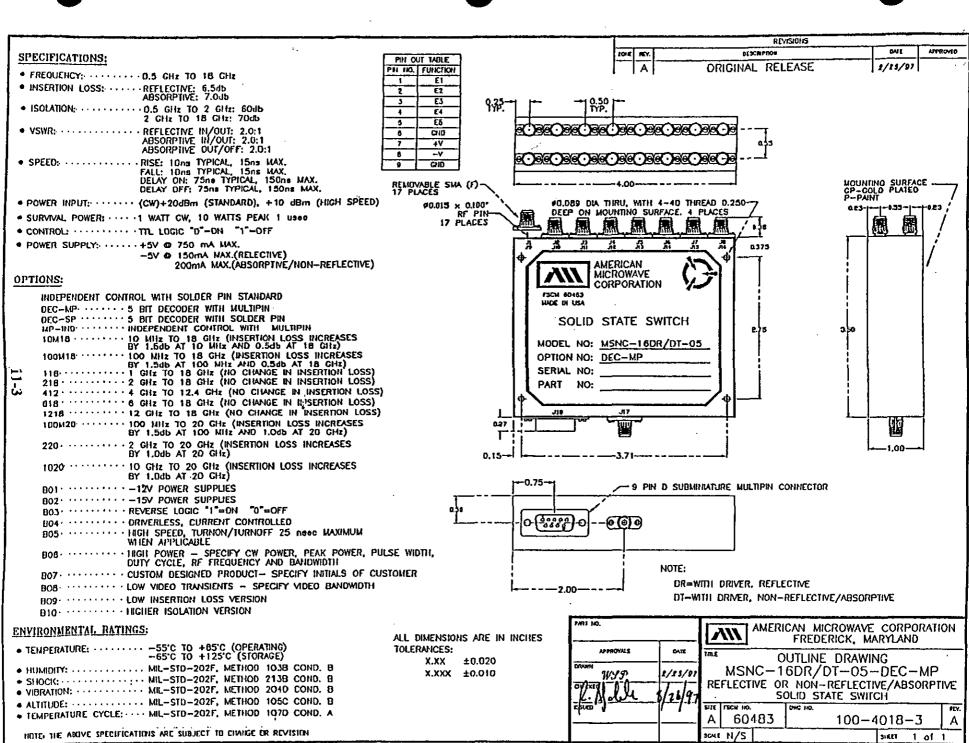
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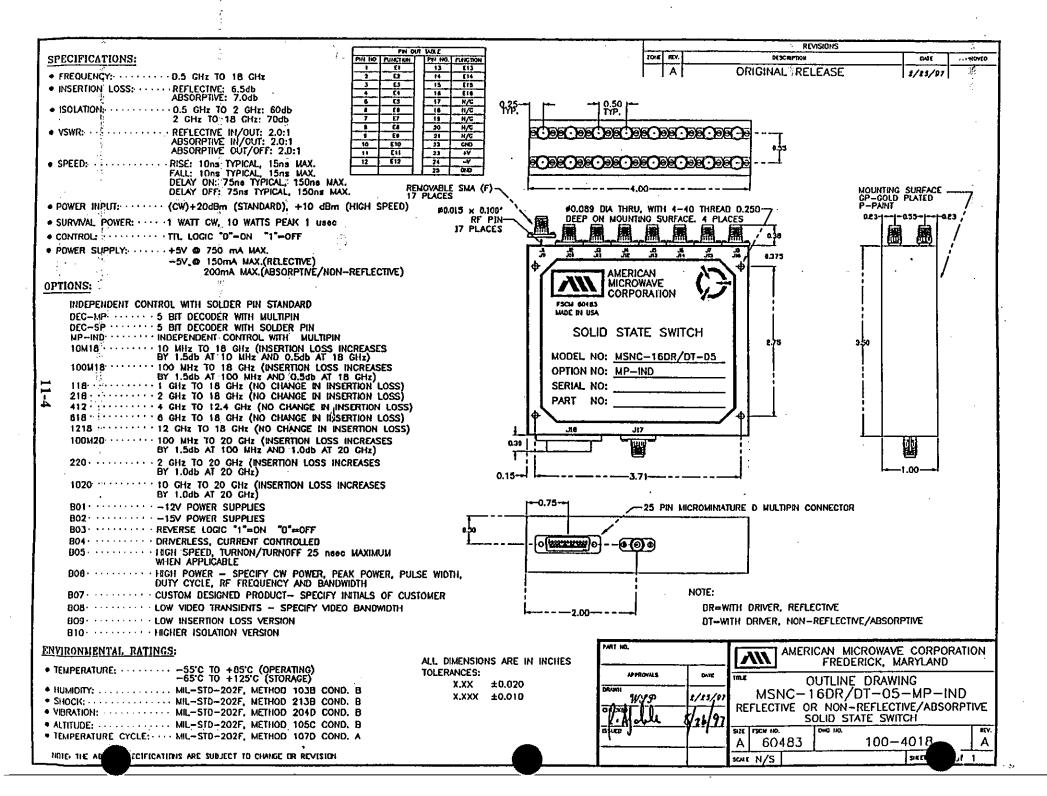
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				RE 1657.	REVISIONS		
SPECIFICATIONS:			<u></u>	┈┠╼┈╼╿━━╼╼╼╼╼			APROVED
• FREQUENCY:				[A]	ORIGINAL RELEASE	2/25/97	
INSERTION LOSS: ABSORPTIVE: 6.54b     ABSORPTIVE: 7.04b		_	· · ·				
ISOLATION: 0.5 GHz TO 2 GHz: 60db     2 GHz TO 18 GHz: 70db	9.3 YA	·	0.50 TYP.		_		- 1 (
VSWR: REFLECTIVE IN/OUT: 2.0:1     ABSORPTIVE IN/OUT: 2.0:1     ABSORPTIVE OUT/OFF: 2.0:1		POPECREC	2609603	<u>60990990</u>	2 a55		
• SPEED:RISE: 10ns TYPICAL, 15ns MAX. FALL: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ne TYPICAL, 150ne MAX. DELAY OFF: 75ns TYPICAL, 150ns MAX. REM 17	OVABLE SHA (F)	C	200000 			UNTING SURFACE	
• POWER INPUT: · · · · · · · (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)	40.015 × 0.100"	. di 080 (		4-40 THREAD O	950	-GOLD PLATED	
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 USED	RF PIN-	DEEP ON	I MOUNTING SU	RFACE, 4 PLACES	5 0.	23 <del>  • •   • 0.53 •   • •   •</del> 0.23 /	
CONTROL: TTL LOGIC "0"-ON "1"-OFF	17 PLACES				1 1 1	豳 豳   /	
POWER SUPPLY			<u></u>				
-5V @ 150mA MAX.(RELECTIVE)		السيقيم في		<u>, , , , ,</u> ,,	0.373		
200mA MAX. (ABSORPTIVE/NON-REFLECTIVE)		<sup>⊕</sup> ∕	AMERICAN	1 sent	₽ <b> </b> [		ľ
PTIONS:			MICROWAVE	- C 원		( ľ	Í.
			I CORPORATIO	N Y			1
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP:		FSCN 60163 MADE IN USA	, <b>'</b>				·
DEC-SP		11	· ·				
MP-IND INDEPENDENT CONTROL WITH MULTIPIN		SOLI	D STATE S	WITCH	1 1		
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	•				273 350		
BY 1.5db AT 10 MIIz AND 0.5db AT 18 GHz)			: <u>MSNC-16</u>	R/DT-05	1 1		
100M18		OPTION NO	): <u>DEC-SP</u>				· ·
118 THE INTERTION LOSS		SERIAL NO	):	1			
218	<i>۱</i>	PART NO	);				
618	,	ф <b>Х</b>	•••••	/			ļ
1218	-0.6		D				
100M20 1DO MILE TO 20 GHZ (INSERTION LOSS INCREASES	- <u>1</u> 1			0/0 +V E+ E5	h-li, ł.		
BY 1.5db AT 100 NHz AND 1.0db AT 20 GHz) 220 · · · · · · · 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	J		SOLDER PIN	#			
BY 1.0db AT 20 GHz) 1020 ······ 10 GHz TO 20 GHz (INSERTION LOSS INCREASES	0,15					l1.00l	
BY 1.0db AT 20 GHz)	•						
801		-1000 I-			•		
802 ····································	7				1 1 025		
803······REVERSE LOGIC "1"=DN "0"=OFF 804······DRIVERLESS, CURRENT CONTROLLED	a \$0	00000		•••••			
BO5	<u> </u>				1 '		
WIEN APPLICABLE		1			1		- I
806 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PL	LSE WIDTH.			···	_] ·		
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	-	1		NOTC.			
807 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CL	STOMER	i		NOTE:			
BOB LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH					ITH DRIVER, REFLECTIVE		
B09····································				07 <b>-</b> W	ITH DRIVER, NON-REFLECTION	VE/ABSORPTIVE	ł
			PART NO.	******	·		
<u>NVIRONMENTAL RATINGS</u> :	ALL DIMENSIONS	ARE IN INCHES	1			CROWAVE CORPO	
TEMPERATURE:	TOLERANCES:		APPROVAL			RICK, MARYLAND	
-65'C 10 +125'C (STORAGE)	X.XX ±0	0.020		S DATE		DRAWING	3
HUMIDITY: MIL-STD-202F, METHOD 1038 COND, B	X.XXX ±0		DRAMN	2/23/91			SP 💈
VIBRATION: MIL-STD-202F, METHOD 2138 COND. B			01001 1 1 1		REFLECTIVE OR NON-		
ALTITUDE:			K.M.L.	h \$hygy		ATE SWITCH	···· ···
TEMPERATURE CYCLE: MIL-STO-202F, METHOD 1050 COND. A			12400	/ <u></u>	SIZE FSCM NO. DWG NO.		HEV.
			ļ <u> </u>		A 60483	100-4018	À
NOTE: THE AD CONTICATIONS ARE SUBJECT TO CHANGE OR REVISION					SCALE N/S	SITC	
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	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	

	· - · · · · · · · · · · · · · · · · · ·		REVISIONS		7
SPECIFICATIONS:		LOHE NEV.	OESCRIPTION	DATE	APTINOVE
• FREQUENCY:			ORIGINAL RELEASE	5/10/97	
INSERTION LOSS: ····· REFLECTIVE: 7.0db					
ABSORPTIVE: 7.5db		· .			
ISOLATION:					
VSWR:					
• SPEED:					
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)					
SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 useo	HORE CROCKED RECEICED				
• CONTROL:			LOO		
• POWER SUPPLY:+5V @ 1.75 A MAX.					
-5V @ 200mA NAX. (RELECTIVE)				C	053-4
250mA MAX.(ABSORPINE/NON-REFLECTIVE)	REMOVABLE SMA (F) 33 PLACES-	- #0.013 H	0.000" RT PDI 33 PLACES NIRU WITH 4-40 THREAD 0.250 DEEP- ON MOUNTHID SURFACE 4 PLACES		0.53
OPTIONS:			ON MOUNTING SURFACE & PLACES 7	내는데	<b>.</b>
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD	A A & A A	8 8 8 8	M M M M	דין ד	· 2
DEC-MP	AMERICAN		×		
MP~IND INDEPENDENT CONTROL WITH MULTIPIN	MICROWAVE		C & 21		· ·
10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES	CORPORATION				•
BY 1.5db AT, 10 MHz AND 0.5db AT 18 GHz)		STATE SWITC			:
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 1B GHz)		STATE SWILL			· · ·
118	MODEL NO: _MSN-32DF	/DT-05	2.72	3.50	
218 WELL 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	OPTION NO: STANDARD				
412 4 GHz TO 12.4 CHz (NO CHANGE IN INSERTION LOSS)	SERIAL NO:			i i	
618		······································	······································	i l	
1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)	PART NO:		JI I		•
100H2D			·····	1	
220 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES	L	يو دار	12 101 101 102 112 112 112 10 10 10		
BY 1.0db AT 20 GHz)				1	
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)	0.16	•	1020 JUNER PINS	- 0.5	1299 10 1
BO1 12V POWER SUPPLIES	0.50-1      0.25 TYP.		0.25 T/P		
BO2		· · ·	0.00		
803 ····· REVERSE LOGIC "1"=ON "0"=OFF	-{@@@@@@@@@@	କ୍ରିଲିକ ବ	00000000{		
804 DRNERLESS, CURRENT CONTROLLED	r	ලො	0000000		
BOB	IDTH,		MOUNTING SURFACE OP-GOLD PLATED P-PAINTED		
BO7 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOME	3	NOTE:			
808 ···································		DR	=WITH DRIVER, REFLECTIVE		
809 ····································			-WITH DRIVER, NON-REFLECTIVE/ABS	SORPTIVE	
B10 ········· HIGHER ISOLATION VERSION					
NVIRONMENTAL RATINGS:	PART I	0.	AMERICAN MICROW	AVE CORPOR	ZATIO
ALL	DIMENSIONS ARE IN INCHES			MARYLAND	VIIVI
TEMPERATURE:	RANCES:	APPROVALS DATE			
-65°C 10 +125°C (SIORAGE)	X XX +0.020				
NUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XXX ±0.010	Wyg 3/20/	MSN-32DR/DT-05	5-STANDAI	RD
SHOCK: NIL-STD-202F, NETHOD 213B COND. B		///-//	- REFLECTIVE OR NON-REFL		
VIBRATION: MIL-STO-202F, METHOD 204D COND, B		Alde 4/26/	SOLID STATE S		
ALTITUDE: MIL-ST0-202F, METHOD 105C COND. B TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	540	<u> ~~</u> /7.	SIZE FSCN NO. DWG NO.		
TEMPERATURE GIGLESTIT MILTSIDTZUZI, METRUU TUJU GUNU, A			A 60483 100	0-4059_	, í,
HOLE THE A PECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALE N/S		1.1
			and N/D	(	21 . I

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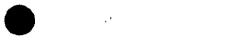






			REVISIONS	
SPECIFICATIONS:		TOUR REV.	DESCRIPTION	DATE APPROVED
FREQUENCY:			ORIGINAL RELEASE	6/20/97
ABSORPTIVE: 7,5db • ISOLATION:				
2 GHz TO 18 GHz: 70db • VSWR: · · · · · · · · REFLECTIVE IN/QUT: 2.0:1				
ABSORPTIVE IN/OUT: 2.0:1 ABSORPTIVE OUT/OFF: 2.0:1				
• SPEED:				
• POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SI	PEED)		000000000000000000000000000000000000000	
• SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 used			LOO	
CONTROL: ····································	ECORCORCORCORCORCORCORCORCORCORCORCORCORC			
• POWER SUPPLY: +5V @ 1.75 A MAX.	1			-1 F-630
5V @ 200mA MAX.(RELECTIVE) 250mA MAX.(ABSORPTIVE/NDN-REFLEC	TIVE) REMOVABLE SHA (7) 33 PLACES	B.00 - +0.01:	A 0.100" RF PHI 33 PLACES	053 022
<u>OPTIONS:</u>				自己
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD				יד ואפייאלו
DEC-MP				
DEC-SP ········ 5 BIT DECODER WITH SOLDER PIN MP-IND ······ INDEPENDENT CONTROL WITH MULTIPIN	AMERICAN		ርን ነ	<b>i</b>
TOWTH				
BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz) 100M18 ······ 100 MHz TO 18 GHz (INSERTION LOSS INCREASI		STATE SW	ИТСН	i
		/01-05	272	3,50
BY 1.5db At 100 Milz AND 0.5db At 18 GHz 118		/0. 00	[] ]	
412 ····································	LOSS) SERIAL NO.	<u> </u>		
618 ····································				
100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREAS			·····	
BY 1.5db AT 100 NHz AND 1.0db AT 20 GHz)	D RE C) EL CL DO -V -V OID	tst.	A10	
220 ···································				T 22
1020	S 0.15-			
BY 1.0db AT 20 GHz) BO1 ········	0.50		-	
BO2	0.30			
BO3 REVERSE LOGIC "1"-ON "O"-OFF	<u>+000000000000000000000000000000000000</u>	<b>E@</b>		
BO4 DRIVERLESS, CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec MAXIMU	3	Ī	{	
WHEN APPLICABLE ROB			MOLANTING SURFACE CP-COLD PLATED	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	······································	I NO	r-PANARD	
807 Custom designed product- specify initials 808 Low video transients - specify video bandy	MDTH		DR=WITH DRIVER, REFLECTIVE	
BOB			DT=WITH DRIVER, NON~REFLECTIVE/ABS	SORPTIVE
BIO		·		
ENVIRONMENTAL_RATINGS:	PART NO.		AMERICAN MICROW	
• TEMPERATURE:	ALL DIMENSIONS ARE IN INCHES			, MARYLAND
-65°C 10 +125°C (SIURAGE)	Y YY ±0.030	LENROVALS	OUTLINE DRA	
HUMIDITY: MIL-STD-202F, METHOD 103B COND. B	X.XXX ±0.010	WIP 5/	20/97 MSN-32DR/DT-0	
SHOCK:	CV/Exc	1 60. 11	REFLECTIVE OR NON-REFL	
ALTITUDE MIL-STD-202F, METHOD 105C COND, B		Marine 1/2	1/97 NUT (ISCH NO. (ONG HA.	
• TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A	interest of the second second second second second second second second second second second second second	<u> </u>		0-4059-4 A
HITE THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION			SCALL N/S	SHEET 1 OF 1
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO COMPLET IN REVISION				

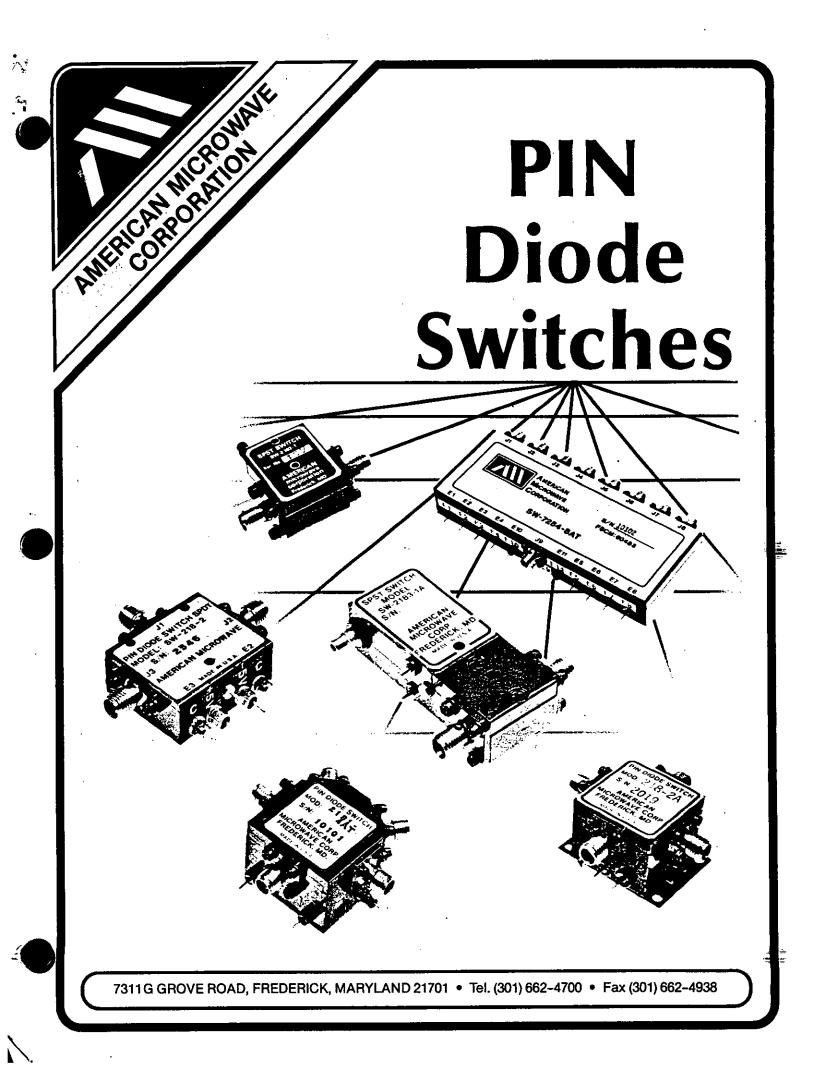
SPECIFICATIONS: <ul> <li>             • FREQUENCY:</li></ul>		
Preductive:       0.3 Unit 10 13 Unit 2013         INSERTION:       DS CH1 10 2 CH2 B0db         ISOUNTON:       2 CH2 10 18 CH2 70db         2 CH2 10 18 CH2 70db       2 CH2 10 18 CH2 70db         VSWR:       REFLECTNE IN/OUT: 2.0:1         ABSORPTINE UN/OUT: 2.0:1       ABSORPTINE UN/OUT: 2.0:1         ABSORPTINE UN/OUT: 2.0:1       ABSORPTINE UN/OUT: 2.0:1         ABSORPTINE UN/OUT: 2.0:1       ABSORPTINE UN/OUT: 2.0:1         SPEED:       REL TONS TPRCAL, 15ns MAX.         DELAY DF7 F5ns TYPICAL, 15ns MAX.       BELAY OF7 F5ns TYPICAL, 15ns MAX.         SURVAUL POWER:       WATT CP, IO WATTS PERAL 1 Usec         * CONTROL:       ************************************		
ABSORPTIVE:         7.54b           ISOLATION:         0.5 GHt TO 2 GHt; 50db           2 GHz TO 18 GHz; 70db         2 GHz TO 18 GHz; 70db           VSWR:         PETECTNE IN/OUT; 2.0:1           ABSORPTIVE UN/OUT; 2.0:1         ABSORPTIVE UN/OUT; 2.0:1           ABSORPTIVE UN/OUT; 2.0:1         ABSORPTIVE UN/OUT; 2.0:1           FALL: IONS TYPICAL, 150n MAX.         DELAY ON; 75ns TYPICAL, 150n MAX.           DELAY OV; 75ns TYPICAL, 150n MAX.         DELAY OV; 75ns TYPICAL, 150n MAX.           POWER INPUT:         (GW) 40dbm (STANARD), +10 dBm (HICH SPEED)           • SURNVAL, POWER:         -1 WAT CW, 10 WATTS PEAK 1 usec           • CONTROL         -5 W # 200m MAX.(ABSORPTIVE/NON-REFLECTIVE)           250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         -5 W # 200m MAX.(ABSORPTIVE/NON-REFLECTIVE)           250mA MAX.(ABSORPTIVE/NON LOSS INCREASES         -5 W # 100 MHz TO 18 GHz (MO CHANGE MI NSERTION LOSS)           100M1F         TO 20 GHz (MO CHANGE MI NSERTION LOSS)           2118         12 GHz TO 18 GHz (MO CHANGE MI NSERTION LOSS)           1218         12 GHz TO 18 GHz (MO CHANGE MI NSERTION LOSS)           1218         12 GHz TO 12 GHz (MO CHANGE MI NSERTION LOSS)           1218         12 GHz TO 12 GHz (MSERTION LOSS INCREASES           1218         12 GHz TO 12 GHz (MSERTION LOSS INCREASES           1200         10 GHz		350
ISOLATION:		350
2 CH: 10 18 CH: 70db           VSWR:         REFLECTIVE IN/OUT: 2.0:1 ADSORPTIVE IN/OUT: 2.0:1 ADSORPTIVE IN/OUT: 2.0:1 ADSORPTIVE OUT/OFF: 2.0:1           SPEED:         RISE: 10ns TMPICAL, 15ns MAX. DELAY DN: 75ns TYPICAL; 150ns MAX. DELAY DN: 75ns TYPICAL; 150ns MAX. DELAY DN: 75ns TYPICAL; 150ns MAX.           * POWER INPUT:         (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)           * SURVAL POWER:         1 WAT CW, 10 WATTS PEAK 1 usec           * CONTROL:         TL L0GIC TO*=ON *1*=OFF           * POWER SUPPLY:         +5V 0 1.75 A MAX. -5V 0 200mA MAX.(RELECTIVE) 250mA MAX.(RELECTIVE)           DTIONS:         INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DCC-MP         S BIT DECODER WITH MULTIPIN DCC-SP         S BIT DECODER WITH MULTIPIN DCC-SP         S BIT DECODER WITH MULTIPIN DCC SUPPLY:         SOLID STATE SWI MODEL NO:         MARIECAN SOLID STATE SWI MODEL NO:           INDEPENDENT CONTROL WITH TO 18 GHz (NSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         SOLID STATE SWI MODEL NO:         MARIECAN SOLID STATE SWI MODEL NO:           100 MIP         100 MHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100 M20         SOL CH2 (NSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.0db AT 20 GHz)           218         128 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 100 M20         CH2 CH2 (NSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         MARIELS           901         -12V POWER SUPPLIES D02         CH2 CH2 CH2 (MSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         CH2 CH2 CH2 CH2		350
• VSWR:         REFLECTIVE (W/QUT; 2.0:1 ABSORPTIVE UN/QUT; 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. DELXY OW; 75:n TYPICAL, 150:n MAX. - SV 02:00:m (TINDARD), +10 dBm (HIGH SPEED)           • POWER INPUT:         · · · · · · · · · · · · · · · · · · ·		350
ABSORPTIVE COUT/OFF: 2.0:1         SPEED:       FISE: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 150ns MAX.         • POWER INPUT:       (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)         • SURVVAL POWER:       WATI CW, 10 WATIS PEAK 1 usec         • CONTROL:       • TTL LOGIC '0"=ON "1"=OFF         • OPVER SUPPLY:       -55 W 0.200m MAX.(RELECTIVE) 250mA MAX.(RESCRIVE/NON-REFLECTIVE)         DPTTIONS:       INDEPENDENT CONTROL WITH SOLDER PIN STANDARD         DEC-MP       5 BIT DECODER WITH MULTIPIN NPE-IND         DEC-MP       5 BIT DECODER WITH MULTIPIN POCE-MP         DEC-MP       5 BIT DECODER WITH MULTIPIN NPE-IND         DEC-MP       5 BIT DECODER WITH MULTIPIN POMER SUPPLY:         DEC-MP       BIT 150 AIR AND 0.5db AT 18 GHz)         100M IP       TO MIZ TO 20 GHz (MISERTION LOSS)         100M IP       TO HIZ TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       128         1218       120 GHz (DI 50 GHz (MISERTION LOSS) INCREASES BY 1.0db AT 20 GHz (MISERTION LOSS)         1000 MIZ TO 20 GHz (MISERTION LOSS)         1000 MIZ TO 20 GHz (MISERTION LOSS)         1000 MIZ TO 20 GHz (MISERTION LOSS) INCREASES BY 1.0db AT 20 GHz (MISERTION LOSS) INCREASES BY 1.0db AT 20		350
ABSORPTIVE OUT/OFF: 2.0:1         SPEED:       FISE: 10ns TYPICAL, 15ns MAX. DELAY ON: 75ns TYPICAL, 150ns MAX.         • POWER INPUT:       (GW)+20dBm (STANDARD). +10 dBm (HIGH SPEED)         • SURVYAL POWER:       WATT CW, 10 WATTS PEAK 1 usec         • CONTROL:       • TTL LOGIC '0"=ON "1"=OFF         • OP VER:       - 5 W 0 200ma MAX.(RELECTIVE) 250ma MAX.(RELECTIVE)         250ma MAX.(ABSORPTIVE/NON-REFLECTIVE)       - 5 BIT DECODER WITH MULTIPIN DECMP         00***********************************		350
FALL: 10ns TYPICAL, 150ns MAX. DELAY DY: 75ns TYPICAL, 150ns MAX. DECAY DF: 75ns TYPICAL, 150ns MAX. DECAY DF: 75ns TYPICAL, 150ns MAX. DECAY DY:		350
DELAY DF; 75n 5TYPICAL, 150ns MAX.            • POWER INPUT:		350
DELAY DF; 75n 5TYPICAL, 150ns MAX.            • POWER INPUT:		350
SURVAUL POWER:       10 WATTS PEAK 1 usec         SURVAUL POWER:       11 WATTS PEAK 1 usec         CONTROL:       TTL LOGIC "0"=ON "1"=OFF         POWER:       SUPPLY:         -5V 0 200mA MAX.(RELECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         250mA MAX.(ABSORPTIVE/NON-REFLECTIVE)         DEC-MP         5 BIT DECODER WITH MULTIPIN         DEC-SP       5 BIT DECODER WITH MULTIPIN         MDEPENDENT CONTROL WITH MULTIPIN         IDDMIB       100 HIz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         B1 150b AHZ 100 HIX AND 0.50b AT 18 GHz)         118       100 HIZ TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       112 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.50b AT 20 GHz)         1200       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.00b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.00b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.00b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.00b AT 20 GHz)	A GIOD BY PIN 33 PLACES DRINU WITH 4-40 TIRELO 0.250 DEEP ON MUNITING SURFACE 1 PLACES A A AI 35 20 44 TCH 2.72 0.40	350
<ul> <li>SURVIVAL POWER:</li></ul>		350
• CONTROL: ••••••••••••••••••••••••••••••••••••		350
-5V © 200mA MAX.(RELECTIVE) 250mA MAX.(RELECTIVE) 250mA MAX.(RELECTIVE) 250mA MAX.(RELECTIVE) 250mA MAX.(RESORPTIVE/NDN-REFLECTIVE) DPTIONS: INDEPENDENT CONTROL WITH MULTIPIN DEC-MP		350
$\begin{array}{c} -5V \bullet 200\text{mA MAX}(\text{RELECTIVE}) \\ 250\text{mA MAX}(\text{RESORPTIVE/NDN-REFLECTIVE}) \\ 250\text{mA MAX}(\text{RESORPTIVE/NDN-REFLECTIVE}) \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ $		350
250mA MAX.(ABSORPTIVE/NON-REFLECTIVE) OPTIONS: INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP	2.72	350
DPTIONS: INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MP 5 BIT DECODER WITH MULTIPIN DEC-SP 5 BIT DECODER WITH MULTIPIN MP-HID MIDEPENDENT CONTROL WITH MULTIPIN IOMIB 10 MIZ TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 100 MIB 100 MHz TO 18 GHz (INSERTION LOSS) 118 11 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 2 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) BO1 2 - 12V POWER SUPPLIES D03 REVERSE LOGIC 1"-ON "0"-OFF BO4 DRIVENTIESS CURRENT CONTROLLED BO5 HIGH SPEED, TURNON/TURNOFF 25 nsac MAXIMUM WHEN APPLICABLE	2.72	
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD DEC-MPDEC-MP5 BIT DECODER WITH MULTIPIN INDEPENDENT CONTROL WITH MULTIPIN INDEPENDENT CONTROL WITH MULTIPIN INDEPENDENT CONTROL WITH MULTIPIN IDM 18'SOLID STATE SWIMP-IIDINDEPENDENT CONTROL WITH MULTIPIN IDM 18'NODEL NO:MSN-320R/DT-05 OPTION NO:DOM 18'10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)MODEL NO:MSN-320R/DT-05 OPTION NO: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 18 GHz (NO CHANGE IN INSERTION LOSS)1218'12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)1218'12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)100M20'100 MHz AND 1.0db AT 20 GHz)220'2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)220'2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)1020'2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)1020'-100 Hit z NO 20 GHz)1020'-100 Hz AND 1.0db AT 20 GHz)1020'-100 Hz INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)1031'-12V POWER SUPPLIES BO2'1031'-12V POWER SUPPLIES BO3'104'-12V POWER SUPPLIES BO3'105'-15V POWER SUPPLIES BO3'106'-10V POWER SUPPLIES BO3'107'-10K PPLUCABLE	2.72	0.30
Inderention Contrict with Solution with Statudo         DEC-MP       5 Bit DECODER With Wullipin         DEC-SP       5 Bit DECODER With Wullipin         MP-HID       INDEPENDENT CONTROL WITH MULLIPIN         IOM18       10 MHz TO 18 Ghz (INSERTION LOSS INCREASES         BY 1.5db AT 100 MHz AND 0.5db AT 18 Gliz)         100M18       100 MHz TO 18 Ghz (INO CHANGE IN INSERTION LOSS)         218       2 GHz TO 18 GHz (INO CHANGE IN INSERTION LOSS)         118       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20       100 MHz AND 1.04 DAT 20 GHz (INSERTION LOSS)         100M20       100 MHz AND 1.04 DAT 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.04b AT 20 GHz)	2.72	
DEC-SP       5 BIT DECODER WITH SOLDER PIN         MP-IND       INDEPENDENT CONTROL WITH MULTIPIN         IOM18       10 Mitz TO 18 GHz (INSERTION LOSS INCREASES         BY 1.5db AT 10 Mitz AND 0.5db AT 18 GHz)         118       1 GHz (N) SERTION LOSS INCREASES         BY 1.5db AT 10 Mitz AND 0.5db AT 18 GHz)         118       1 GHz (N) SERTION LOSS INCREASES         BY 1.5db AT 10 Mitz AND 0.5db AT 18 GHz)         118       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         100 M12       0 GHz (NO CHANGE IN INSERTION LOSS)         100 M20       100 GHz TO 20 GHz (INSERTION LOSS INCREASES         BY 1.5db AT 100 MHz AND 1.6db AT 20 GHz)         100 M12       0 CHz (INSERTION LOSS INCREASES         BY 1.5db AT 100 MHz AND 1.6db AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES         BY 1.6db AT 20 GHz)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES         BY 1.6db AT 20 GHz)         BO1       -12V POWER SUPPLIES         BO2       -15V POWER SUPPLIES         BO3       REVERSE LOGIC 1"-ON "0"-OFF         BO4       DRIVEL APPLUCABLE	2.72	
MP-IND       INDEPENDENT CONTROL WITH MULTIPIN         10M18,	2.72	0.30
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 (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)         118       1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         118       6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1218       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)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         1020	a40	0.30
BY 1.5db AI 100 MHz AND 0.5db AT 18 GHz)         100 MHz         BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)         118         118         2 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         6 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         6 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         1218         12 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         6 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         1218         12 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS)         100M20         100 MHz T0 20 GHz (INSERTION LOSS INCREASES         BY 1.0db AT 20 GHz)         1020         10 GHz T0 20 GHz (INSERTION LOSS INCREASES         BY 1.0db AT 20 GHz)         1020         10 GHz T0 20 GHz (INSERTION LOSS INCREASES         BY 1.0db AT 20 GHz)         1020         10 GHz T0 20 GHz (INSERTION LOSS INCREASES         BY 1.0db AT 20 GHz)         1020         10 GHz T0 20 GHz (INSERTION LOSS INCREASES         BY 1.0db AT 20 GHz)         1020         1030         104 GHz T0 20 GHz         1052         1053         1054         1055		-+ 0.50 }
BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz) 118 1 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 218 2 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 412 4 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 1218 12 GHz T0 18 GHz (NO CHANGE IN INSERTION LOSS) 100M20 100 MHz AND 1.0db AT 20 GHz) 220 2 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020 10 GHz T0 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) 1020		-+ 0.50 }
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 18 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)         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         902       -15V POWER SUPPLIES         903       REVERSE LOGIC "I"-ON "0"-OFF         904       DRIVERLESS, CURRENT CONTROLLED         905       HIGH SPEED, TURNON/TURNOFF 25 nsac MAXIMUM WHEN APPLICABLE		-4 a 30 i
218       2 GHz TO 18 GHz (HO 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)         1218       12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)         1200       100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 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 BO3         802       -15V POWER SUPPLIES BO3         803       REVERSE LOGIC "I"-ON "0"-OFF BO4         804       DRIVERLESS, CURRENT CONTROLLED BO5         805       THEN SPELOTURNON/TURNOFF 25 DISBC MAXIMUM WHEN APPLICABLE		-+ 0.50 }
618       6 Gitz TO 18 Gitz (NO CHANGE IN INSERTION LOSS)         1218       12 Gitz TO 18 Gitz (NO CHANGE IN INSERTION LOSS)         100W20       100 Mitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.5db AT 100 Mitz AND 1.0db AT 20 Gitz)         220       2 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.5db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1020       10 Gitz TO 20 Gitz (INSERTION LOSS INCREASES BY 1.0db AT 20 Gitz)         1030       REVERSE LOGIC "I"=ON "0"=OFF         1030       DRIVERLESS, CURRENT CONTROLLED B05       DRIVERLESS, CURRENT CONTROLLED B05         1031       DRIVERLESS, CURRENT CONTROLLED HIGH SPECIABLE       AXIMUM WHEN APPLICABLE		-+ 0.50 }
12 18       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)         1020       10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)         801       -12V POWER SUPPLIES B02         802       -15V POWER SUPPLIES B03         804       DRIVERLESS, CURRENT CONTROLLED B05         804       DRIVERLESS, CURRENT CONTROLLED HIGH SPEED, TURNON/TURNOFF 25 NSBC MAXIMUM WHEN APPLICABLE		-+ a 50 1
100 M20       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 B02         802       -15V POWER SUPPLIES B03         803       REVERSE LOGIC "I"-ON "0"-OFF B04         804       DRIVERLESS, CURRENT CONTROLLED B05         805       HIGH SPEED, TURNON/TURNOFF 25 NSBC MAXIMUM WHEN APPLICABLE	MULTIPIN CONNECTOR	-4 a 30 i
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)         B01	MULTIPIN CONNECTOR	-4 a 30 i
220 ···································	MULTIPIN CONNECTOR	
BY 1.0db AT 20 GHz) 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz) B01	MULTIPIN COHNECTOR	
BY 1.0db AT 20 GHz)       I         B01      12V POWER SUPPLIES         B02      15V POWER SUPPLIES         B03      15V POWER SUPPLIES         B04       DRIVERLESS, CURRENT CONTROLLED         B05       High SPEED, TURNON/TURNOFF 25 nsac MAXIMUM WHEN APPLICABLE		
BO1		PIN OUT TABLE
B01	· · · · · · · · · · · · · · · · · · ·	PIN NO. FUNCTION
003 ······· REVERSE LOGIC "1"-ON "0"-OFF 804 ······ DRNERLESS, CURRENT CONTROLLED 805 ······ HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUM WHEN APPLICABLE		2 E2 1
804 ····· DRIVERLESS, CURRENT CONTROLLED 805 ····· High Speed, TURNON/TURNOFF 25 nsec MAXIMUM WHEN APPLICABLE		3 63 7
BO5HIGH SPEED, TURNON/TURNOFF 25 Inside MAXIMUM	CP-GOLD PLATED	4 64
WHEN APPLICABLE	P-PANIED	5 E5 ·
		8 H/C
		7 +V
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH	F.	
BUT COSTOM DESIGNED PRODUCT~ SPECIFY INITIALS OF COSTOMER	-	
	DR=WITH DRIVER, REFLECTIVE	· · · · · ·
	T=WITH DRIVER, NON-REFLECTIVE/AB	SORPTIVE
B1Q ·········HIGHER ISOLATION VERSION		
WIRONMENTAL RATINGS:	AMERICAN MICROW	AVE CORPORATION
ALL DIMENSIONS ARE IN INCHES	AMERICAN MICROW FREDERICK	, MARYLAND
TEMPERATURE:		
-65'C TO +125'C (STORAGE) XXX ±0.020		
HUMIDITY:	0/97 MSN-32DR/DT-0	
	REFLECTIVE OR NON-REFL	
ALTITUDE:	97 SOLID STATE S	SWITCH
TEMPERATURE CYCLE: MIL-STD-202F, METHOD 105C COND. A	SIZE FECH NO. DWG NO.	
HIDE THE PECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION	A 6048310	0-40 <u>5</u> 2 7





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	REVISIONS	
PHI OUT TAK		IE APPROVED
SPECIFICATIONS:	113 25 E25 A ORIGINAL RELEASE 5/20	/97
		1
	15 <u>27</u> <u>£27</u> 16 <u>28</u> <u>£28</u>	ł
	17 29 E29	
2 CHz TO 18 CHz: 70db 6 [6 18 [18	18 30 E30	ł
	$\frac{19}{20}$ $\frac{31}{52}$ $\frac{131}{52}$	
	20 32 CHD	
• SPEED:	22 <u>34 4V</u>	
FALL: 10ns TYPICAL, 15ns MAX. 11 E11 23 C	23 <u>35 -V</u> 24 <u>36 GND</u>	
DELAY ON: /Dne IVPICAL, 150ne MAX. 12 E12 24 E2 DELAY DFF: 75ms TYPICAL, 150ne MAX.	37 N/C	1
POWER INPUT:		
• SURVIVAL POWER: ····· 1 WATT CW, 10 WATTS PEAK 1 used		
	1.00	1
• POWER SUPPLY:+5V @ 1.75 A MAX.	Be()3e()3e()ae()ae()ae()ae()ae()ae()ae()ae()ae()a	-1 520
-5V @ 200mA MAX (RELECTIVE)	······································	
	OWABLE SIAA (F) 33 PLACES 600 FRADS × 0100 KF PIN 33 PLACES 0.059 DIRU WITH 4-40 TIREAD 0.250 DEEP-7 0.23	
<u>OPTIONS:</u>		
INDEPENDENT CONTROL WITH SOLDER PIN STANDARD		
DEC-MP		
HP-IND INDEPENDENT CONTROL WITH MULTIPIN	AMERICAN ANCROWAVE	
100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES	SOLID STATE SWITCH	
BY 1.5db AT 100 Mitz AND 0.5db AT 18 CHz)		
218	ODEL NO: <u>MSN-320R/DI-O5</u>	
412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)		
A DATE AND A DATE	ERIAL NO:	
LIGOWTO CONTRACTOR OF CONTRACT OF THE CONTRACT.	ART NO:	
BY 1.506 AT 100 MHz AND 1.006 AT 20 CHz) 220		
BY 1.0db AT 20 GHz) 0.29 1		
1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES		
BO1	-2.00	
BO2 ····································		
BOJ REVERSE LOGIC "1"=ON "0"=OFF 0.50		
BO4 DRIVERLESS, CURRENT CONTROLLED		l
BO5 HIGH SPEED, TURNON/TURNOFF 25 nsec WAXIMUM WHEN APPLICABLE		
DOAL WATCH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH,	MOUNTING SURFACE	
DUTY CYCLE, RF FREQUENCY AND BANDWIDTH B07		1
BOB	DR=WITH DRIVER. REFLECTIVE	<b>I</b>
809 LOW INSERTION LOSS VERSION	DT-WITH DRIVER, NON-REFLECTIVE/ABSORPTIVE	ļ
BIO HICHER ISOLATION VERSION		
CNUTRONICAL DATINCS:	ARE IN INCHES	
	literature and the second second second second second second second second second second second second second s	
• TEMPERATURE:	011LINE DRAWING	
MI -SID-202F, METHOD 1038 COND. B	$M_{\rm M}$ $M_{M$	
I SUBOR UND MILESTD-202F, METHOD 2138 COND. 8	REFLECTIVE OR NON-REFLECTIVE/	ABSORPTIVE
SHOCK: MIL-STD-202F, METHOD 201D COND. B     VIBRATION: MIL-STD-202F, METHOD 105C COND. B     ALTITUDE: MIL-STD-202F, METHOD 105C COND. B	SOLID STATE SWITCH	HEV.
ALTITUDE:	A 60483 100-405	
		T 1 of 1
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION		





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. Suites

RAYMOND L. SICOTTE Chairman



ASH K. GORWARA President and CEO



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# **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 warranties 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**

AMERICAN MICTOWAVE

- 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

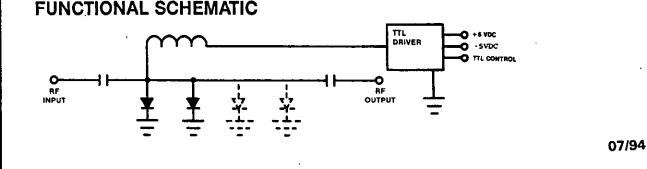
# DESCRIPTION

The series SWN-218 switches are broadband, high speed, low loss SPST switches with integral drivers. They are powered by  $\pm 5$  and -5 volt supplies and are available powered by  $\pm 15$  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 μA 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



Cont'd.
SPECIFICATIONS,

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			FRE	FREQUENCY (GHz)	CY (GI	Hz)		RISE/FALL • TIME	POWER CAP	POWER HANDLING CAPABILITY	S P	POWER	
MODEL NO	CHARACTERISTICS	0.5 to 1.0	1.0 2.0	4.0 4.0	8.0 to 0	8.0 to 12.4	12.4 to 18.0	ON-to-OFF and OFF-to-ON	AVG (WATTS)	Peak 1 μsec, max, pw (WATTS)		+5 VDC	-5 VDC
SWN-2182-1A	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	30 1.0 1.3	40 1.0 1.3	45 1.0 1.4	45 1.1 1.6	45 1.6 1.9	45 2.0 1.9	10 ns	2	10		100 M A	45 MA
SWN-2183-1A	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	40 1.0 1.4	60 1.0 1.4	70 1.1 1.4	70 1.4 1.6	70 1.8 1.9	70 2.3 1.9	10	7	10		100 100	45 MA
SWN-2184-1A	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	45 1.0 1.4	70 1.0 1.4	85 1.2 1.4	85 1.5 1.6	85 2.0 1.9	80 2.5 1.9	10	2	10		100 A M	45 A A

90% RF	
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ss are 10% to 9	Ľ.
as are	to 10% RF.
II times	6 to 1
•Rise/Fa	and 90% t

F		
*TTL Delay is 60 nsec, Max from 50% T		
from		turm-on.
, Max	5	or tun
nsec	im-off	E E
is 60	fort	o 10%
Delay	% RF	50% TTL to 10% RF for
Ē	to 90	50%

# **ENVIRONMENTAL RATINGS**

8882225	
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 107D Temp Cycling MIL-STD-202F, METHOD 107D	

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# **AVAILABLE OPTIONS**

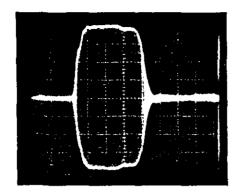
	Option No.	Description
Ę		
	001	Two SMA Male RF Connectors
	002	One SMA Male and One SMA Female RF Connector
	003	SMC Control Connector (Solder Type is Standard)
	004	± 15 Volt Power Supply Requirement (±5 Volt is Standard)
	005	50 Ohm Control Impedance
	006	Cannon Multipin MDM9SSP
	007	Inverted Logic
25° C	008	Extended Frequency to 100 MHz
<u>n</u>	010	50 ns, Maximum Switching Speed (5 watts cw, maximum)
	012	2 ns, Maximum Switching Speed (100 mw, cw maximum)
<u>ר</u> בינ	013	-12 VDC Power Supply Requirement (+5V, -5V is Standard)
	103	Integral Video Filters (2-18 GHz Frequency Band) Insertion loss
2		Increase of 0.75 Db maximum
	H	High Speed Version - 20 nsec. Delay
	III AT	Off Arm Termination
	-	

.

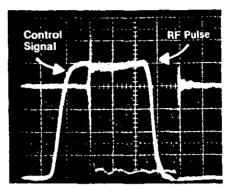
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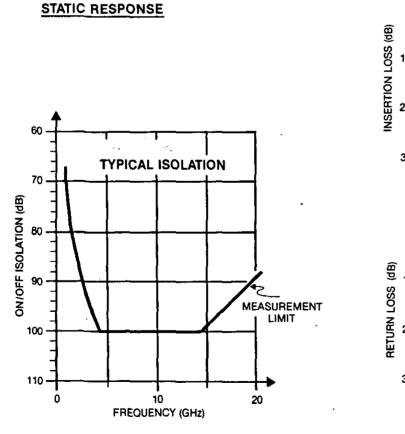
# **TYPICAL PERFORMANCE (SWN-2184-1A)** PULSE CHARACTERISTICS

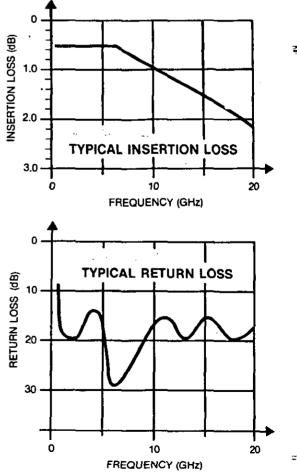


TYPICAL 15 ns Pulse Modulated Signal at 2.3 GHz (5 ns/Division) SWN-2184-1A, Option 012, 103, HS



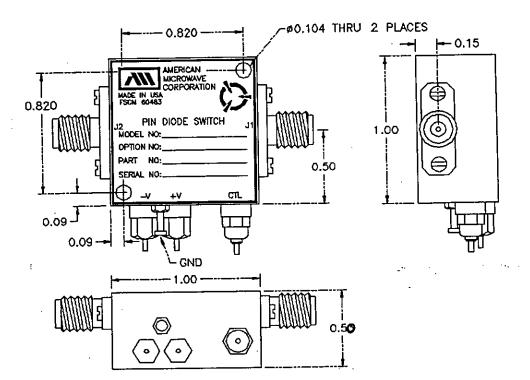
**TYPICAL** 40 ns Pulse Modulated Signal at 7 GHz with Control **Pulse Super-imposed** (10 ns/Division) SWN-2184-1A, Option 012, 103, HS





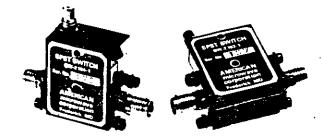
<u>....</u>

# MECHANICAL DATA



LOGIC	TABLE
LOGIC	RF
0	QFF
1	ON

# SERIES SW-218 WIDEBAND SPST PIN DIODE SWITCHES



# FEATURES

• 0.3 to 18 GHz Frequency Range

AMERICAN MICTON 2101

- Low Insertion Loss
- Up to 85 dB Isolation
- High Speed 10 nsec
- Small Size
- Light Weight
- Rugged Chip and Microstrip Construction

# **SPECIFICATIONS**

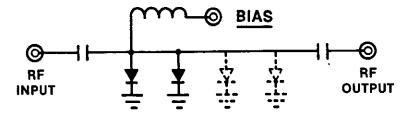
- Temperature Operating: – 65°C to + 85°C Non-operating: – 65°C to + 125°C
- Humidity, Shock, Etc. Per MIL–STD 202 F

# 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

# SPECIFICATIONS

		FREQUENCY (GHz)			SWITCHING SPEED	POWER HANDLING CAPABILITY		BIAS REQUIREMENTS				
MODEL NO.	CHARACTERISTICS	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	ON-to-OFF and OFF-to-ON	AVG (WATTS)	Peak 1 µsec, max, pw (WATTS)	Rated Insertion Loss	Rated Isolation
SW-2182-1	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	30 1.0 1.3	40 1.0 1.3	45 1.0 1.4	45 1.1 1.6	45 1.6 1.9	45 2.0 1.9	10 ns	2	10	- 10v	+ 35ma
SW-2183-1	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	40 1.0 1.4	60 1.0 1.4	70 1.1 1.4	70 1.4 1.6	70 1.8 1.9	70 2.3 1.9	10	2	10	- 10v	+ 35ma
SW-2184-1	Min Isolation (dB) Max Ins Loss (dB) Max VSWR (ON Pos)	45 1.0 1.4	70 1.0 1.4	85 1.2 1.4	85 1.5 1.6	85 2.0 1.9	80 2.5 1.9	10	2	10	- 10v	+ 35ma

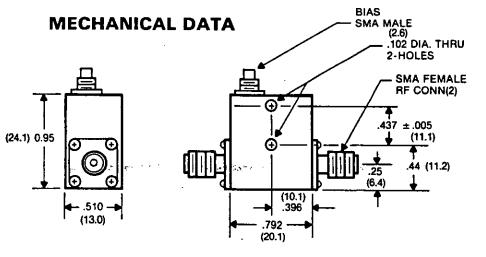
# **AVAILABLE OPTIONS**

# **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-Operati	ng 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 Cyclin	g MIL-STD-202F, METHOD 107D						



DIMENSIONS: INCHES (MILLIMETERS)

# SPST SWITCH 0.3 - 18 GHz NON - REFLECTIVE WITH INTEGRAL DRIVER SWN-2183-1AT

# **FEATURES**

AMERICAN MICTONAVE

- 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

# **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 <sup>.</sup>	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 (1µ SEC MAX PULSE WIDTH)

# ENVIRONMENTAL RATINGS

APERATURE - 65° C to 110° C
G TEMPERATURE - 65° C to 125° C
MIL-STD-202F, METHOD 103B
MIL-STD-202F, METHOD 213B
MIL-STD-202F, METHOD 204D
MIL-STD-202F, METHOD 105C
MIL-STD-202F, METHOD 107D

### POWER REQUIREMENTS

+5V ± 2%, 90 mA -5V ± 5%, 75 mA

# CONTROL CHARACTERISTICS

CTL INPUT - 1 UNIT LOAD

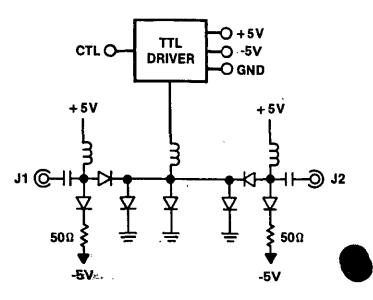
- 0 SWITCH "ON"
- 1 SWITCH "OFF"

# AVAILABLE OPTIONS

**Option No. Description** 

- 001Two SMA Male RF Connectors002One 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

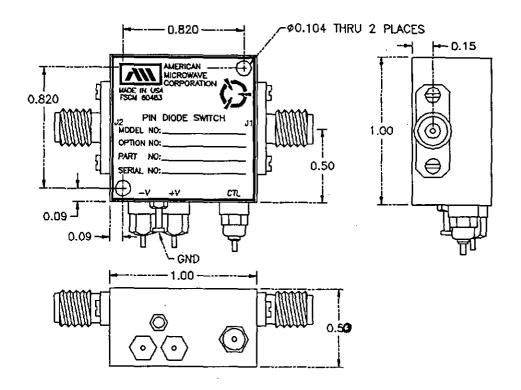


TABLE
RF
0N
OFF

10

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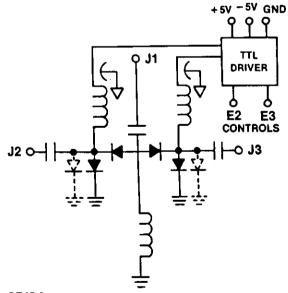
# BROADBAND PIN SWITCH SPDT WITH INTEGRAL DRIVER SWN-218-2A 0.3 To 18 GHz

# **FEATURES**

AMERICAN MICTON &

- 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



# 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.

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### STANDARD UNIT

FREQUENCY (GHz)	0.3	2.0	4.0	8.0	<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	، <b>1.5</b>	1.5	2.0	2.0	2.0

NOTES:

1. Switching Speeds are:

10%-90% RF and 90%-10% RF

# HUMIDITY, SHOCK, ETC., PER MIL-STD 202C

### **OPTIONS:**

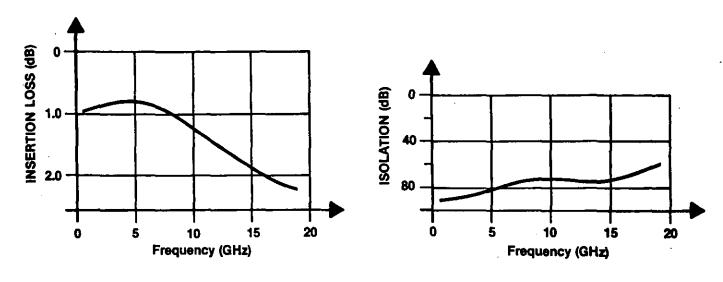
001	35 dB MIN ISOLATION
002	INDEPENDENT CONTROLS
003	SMA MALE CONNECTORS
004	+ 15 VOLT SUPPLY
005	REVERSE LOGIC
006	- 15 VOLT SUPPLY
007	10 NS, MAX SWITCHING SPEED
800	<b>EXTEND FREQUENCY TO 100 MHz</b>
000	OD NO MAN DELAN

- 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

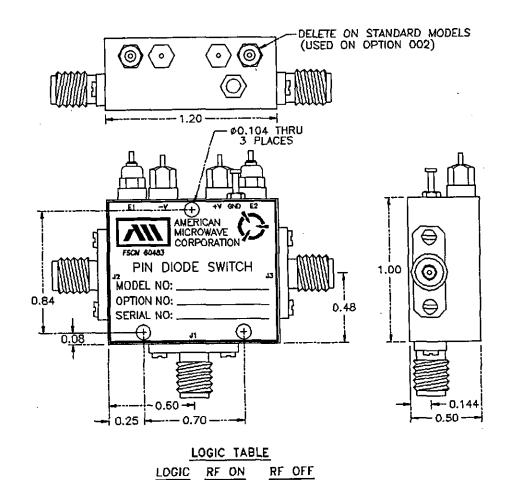
# ENVIRONMENTAL RATINGS

Operating Temperature – 65° C to 110° C							
Non Operat	ing 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 Cyclir	g MIL-STD-202F, METHOD 107D						

**TYPICAL PERFORMANCE** 



MECHANICAL DATA



J1-J3

J1-J2

J1-J2

J1-J3

0

1

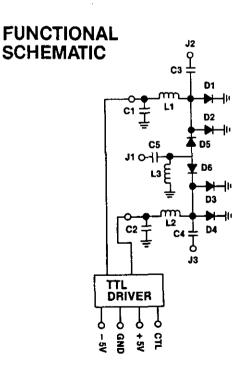
# MINIATURE SP2T SWITCH 3 - 18 GHz WITH INTEGRAL DRIVER SWN-2181-2A

# **FEATURES**

- 0.3 to 18 GHz Frequency Band
- 55 dB, Minimum Isolation

AMERICAN MICTOMANE

- High Speed 10 ns Optional
- Integral TTL Driver



# 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 SPDT 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

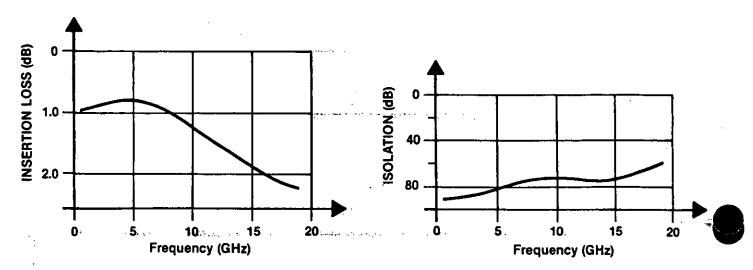
FREQUENCY (GHz)	0.3	2.0	4.0	8.0	<u>12.0</u>	<u>18.0</u>
MAX. INSERTION LOSS (dB)	1.2	1.2	1.1	1.0	1.8	3.0
MIN. ISOLATION (dB)	85	80	75	70	65	55
MAX. VSWR	1.7	1.5	1.5	1.9	2.0	2.0

# HUMIDITY, SHOCK, ETC. PER MIL-STD 202C

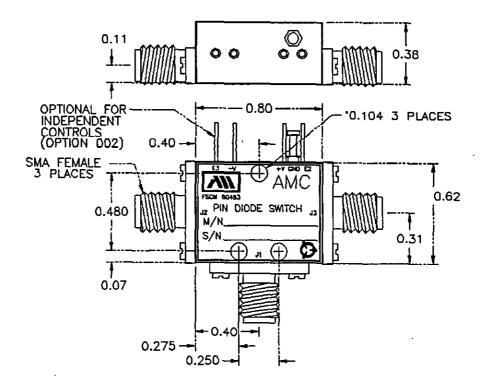
# **OPTIONS:**

- 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



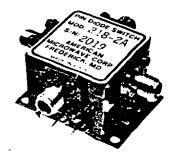
# MECHANICAL DATA



LOGIC TABLE								
LOGIC	RF ON	RF OFF						
0	J1-J2	J1-J3						
1	J1-J3	J1-J2						

16





# **FEATURES**

• 10 MHz to 18 GHz

AMERICAN MICTOWAVE

- 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

# **SPECIFICATIONS**

MODEL NUMBER	SWITCH TYPE	FREQUENCY RANGE (GHz)	MAXIMUM INSERTION LOSS (dB)	MINIMUM ISOLATION (dB)	MAXIMUM VSWR
SW-2040-3A	SP3T	24	1.6	45	1.5
-SW-4080-3A	SP3T.	<b>4–8</b>	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: (

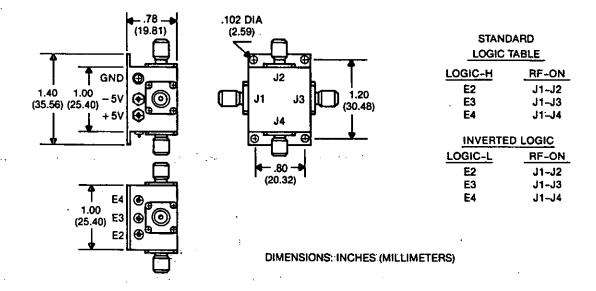
12

- 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

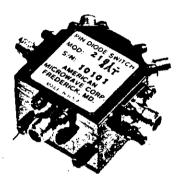
# ENVIRONMENTAL RATINGS

<b>Operating Ter</b>	mperature – 65° C to 110° C
Non-Operatin	g 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







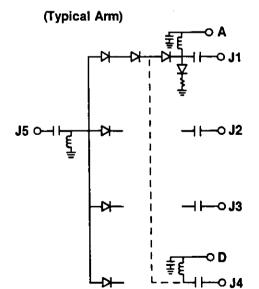
# FEATURES

• Integral TTL Driver

AMERICAN MICTOM 2100

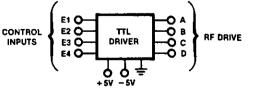
- Rugged Microstrip Construction
- Reverse Polarity Protection on + 5V and 5V Lines
- Off-Arm Terminations

# **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 reflection less performance when arm is switched "on" or "off". Integral TTL Driver is "unit load" TTL compatible, one control per arm.



10/89

# SPECIFICATIONS

	FREQUENCY (GHz)						
CHARACTERISTICS	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			
				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"

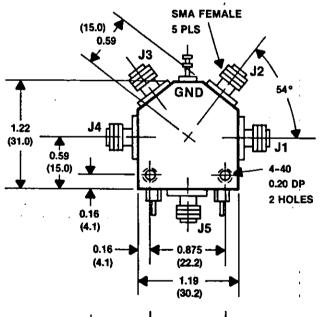
4 individual controls. Logic "1" - RF On; Logic "0" - RF Off Power Requirements: + 5V @ 200 mA, Max.

- 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

# ENVIRONMENTAL RATINGS

<b>Operating Ter</b>	nperature – 65° C to 110° C
	g 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
<b>Temp Cycling</b>	MIL-STD-202F, METHOD 107D

# **MECHANICAL DATA**



0.27 (6.9)

0.20

(5.1)

0.69

(17.5)

0.90

(22.9)



CONTROL SOLDER PIN 4 PLS

0.20 (5.1)

DIMENSIONS: INCHES (MILLIMETERS)

0.60 (15.2)

**(•** 

- 5V

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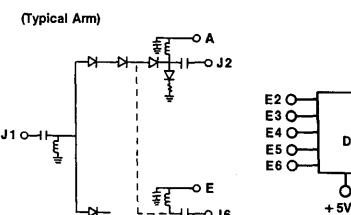
# **FEATURES**

Integral TTL Driver

AMERICAN Microwave

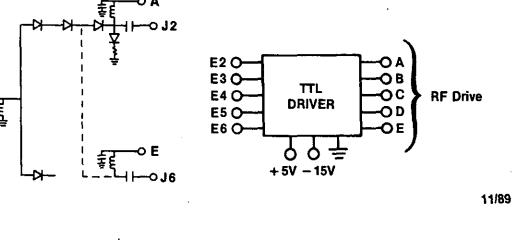
- Rugged Microstrip Construction
- Reverse Polarity Protection on +5V and -15V Lines
- Available with Off-Arm Terminations

# FUNCTIONAL SCHEMATIC



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.

DESCRIPTION



# SPECIFICATIONS

	FREQUENCY (GHz)						
CHARACTERISTICS	.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		
MÁX. VSWR (Off) (Option 011)	1.8	1.8	1.8	1.8	2.0		

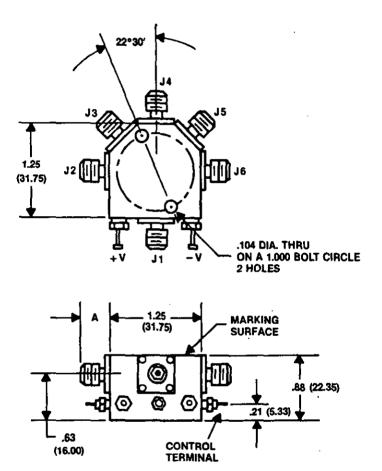
Switching Speed: (10% to 90% RF) 50 ns, Max. (90% to 10% RF) 50 ns, Max. RF Power: + 20 dBm, Max. Control: TTL compatible, one "unit load" 5 individual controls. Control Logic: Logic "1" (-0.3 to +0.7V) Port On Logic "0" (+2.0 to +5.0V) Port Off Power Requirements: +5 VDC @ 250 mA, Max. - 15 VDC @ 100 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° CNon-Operating Temperature- 65° C to 125° CHumidityMIL-STD-202F, METHOD 103BShockMIL-STD-202F, METHOD 213BVibrationMIL-STD-202F, METHOD 204DAltitudeMIL-STD-202F, METHOD 105CTemp Cycling MIL-STD-202F, METHOD 107D

# **MECHANICAL DATA**



DIMENSIONS: INCHES (MILLIMETERS)

\_\_\_\_\_

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

AMERICAN MICTOWAVE

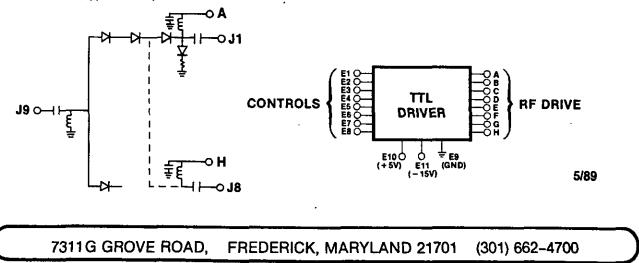
- 300% Overload for up to 2 Minutes
- Off-Arm Terminations

# **FUNCTIONAL SCHEMATIC**

(Typical Arm)

# 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.



# SPECIFICATIONS.

		FREQUENCY (GHz)						
MODEL	CHARACTERISTICS	.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	-	- 1	-	-		
SW-2181-8AT	MAX. INS LOSS (dB)	<b>–</b>	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		
		ł				:		

**ENVIRONMENTAL RATINGS** 

Humidity

Vibration

Altitude

Shock

Operating Temperature - 65° C to 110° C

Temp Cycling MIL-STD-202F, METHOD 107D

Non-Operating Temperature - 65° C to 125° C

MIL-STD-202F, METHOD 103B

MIL-STD-202F, METHOD 213B

MIL-STD-202F, METHOD 204D

MIL-STD-202F, METHOD 105C

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

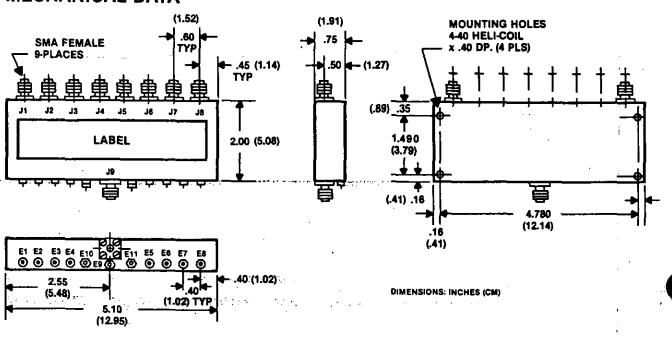
**Options: 001 RF Male Connectors** 

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)



# **MECHANICAL DATA**

25

# 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 multipole 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, 20 GHz 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.

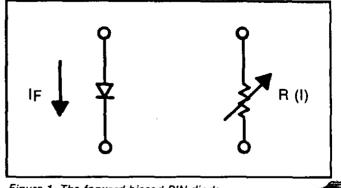


Figure 1. The forward biased PIN diode.

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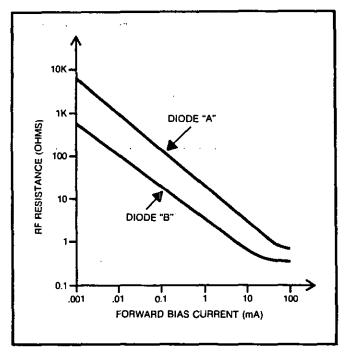


Figure 2. RF resistance vs. forward bias current.

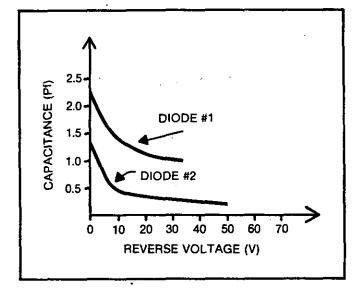


Figure 3. PIN diode capacitance vs. voltage.

### **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.

- a) Conductor or transmission line loss within the switch itself due to the presence of microstrip, coaxial line, or waveguide inter-connecting lines.
- b) Resistance losses due to finite resistance of series con-

27.

c) VSWR losses due to mismatch of components within the switch or at the terminals of the switch. VSWR losses 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.)

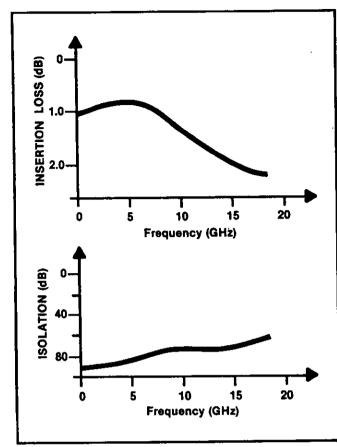
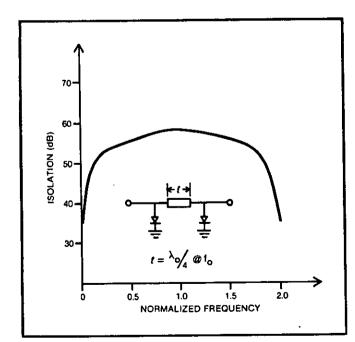
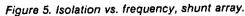


Figure 4.





		FREQUENCY (GHz)					
MODEL NO.	CHARACTERISTICS	0.3 to 1.0	1.0 to 2.0	2.0 10 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	1.8	2.3
	Max VSWR (ON Pos)	1.4	1.4	1.4	1.6	1.9	1.9
SW-2164-1A	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	1.6	1.9	1.9

Figure 6.

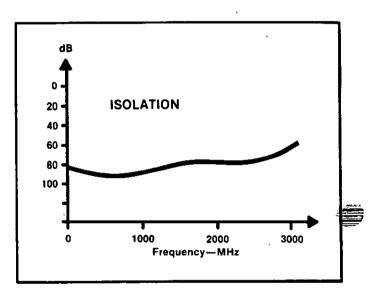
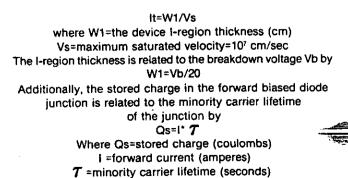


Figure 7.

### VII. SWITCHING SPEED

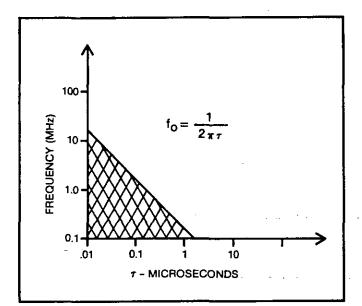
Switching speed of a PIN diode switch is generally defined as the time for the RF to traverse 10% to 90% levels. Other definitions, such as the time from 1 dB to 60 dB levels, are occasionally employed for high isolation requirements. The switching speed is generally controlled by two factors, the time 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



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 Vb diodes which results in slower transition times and slower switching times.



100

BULK BREAKDOWN VOLTAGE (V)

Figure 8. Minimum lifetime vs. frequency.

10

0.1

.01

10

FRANSIT TIME (nS)

**VIII. POWER HANDLING** 

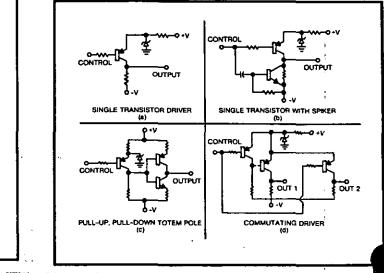
The power handling capability of PIN diode switches is controlled by three parameters. First is the upper operating temperature of the device. Second is the breakdown voltage and third the charge storage capability of the device. For silicon PIN diodes, best reliability is achieved by keeping junction 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 Transitor-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.



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Figure 9. Transit time vs. bulk breakdown voltage. Figure 10: TTL driver circuits.

1000

29



"Unit load" drivers are highly desireable 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.

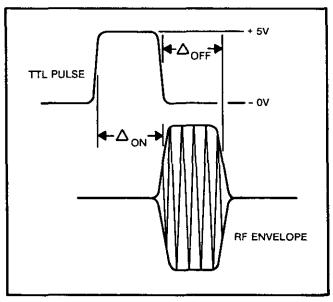


Figure 11. Driver delay equalized.

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 where 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.

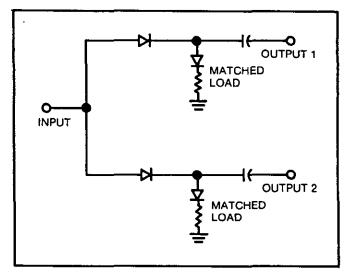


Figure 12. Off arm terminations.

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 end of 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

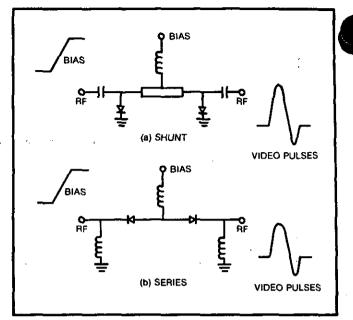
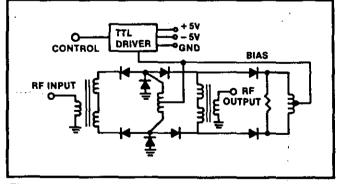


Figure 13. PIN switch equivalent circuits.

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.





## **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.



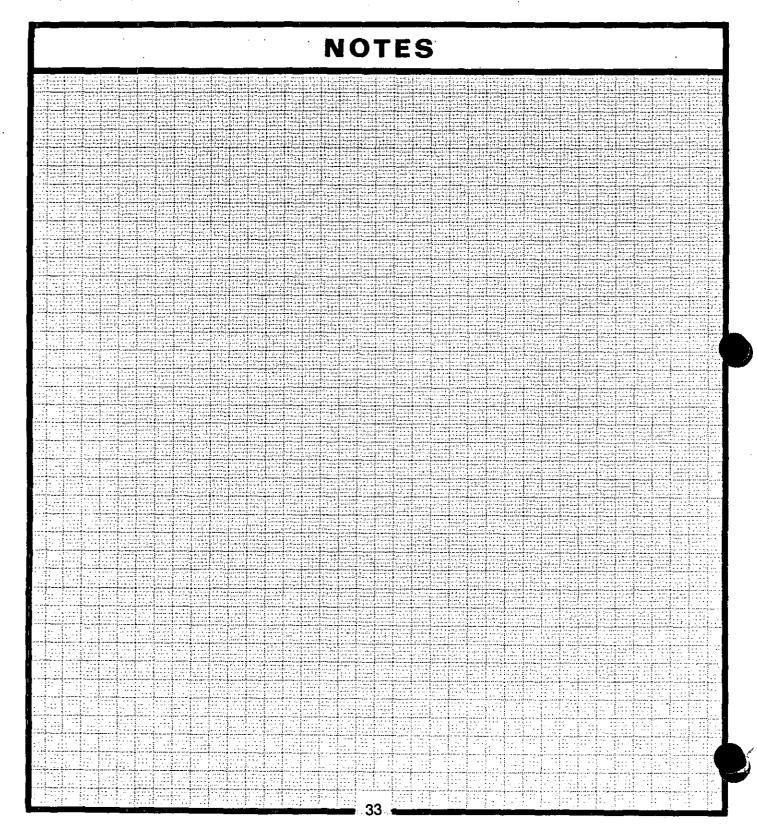
# AMERICAN MICROWAVE CORPORATION

# SWITCH SPECIFICATIONS DATA SHEET

CUS	STOMER:		MODEL: OPT.:
1.0	CONFIGURATION:	10.0	CONNECTORS:
2.0	FREQUENCY BAND (GHZ):		10.1) RF: SMA N BNC TNC 10.2) POWER: MULTI-PIN SOLDER PIN
3.0	INSERTION LOSS:		10.2) CONTROL: SOLDER PIN SMC SMA
	3.1) MAXIMUM: 3.2) VARIATION:	11.0	
4.0	ISOLATION:		11.1 3rd ORDER dBm @dBM input power
	4.1) MINIMUM: 4.2) TYPICAL:		11.2 2nd ORDER dBm @dBm input power
5.0	SWITCHING SPEED:		VIDEO TRANSIENTS:
	5.1) 50% TTL TO 90% RF 5.2) 50% TTL TO 10% RF	•.	MV, MAX
	5.3) 10% RF TO 90% RF 5.4) 90% RF TO 10% RF	13.0	PHASE TRACKING:
6.0	VSWR:		DEGREES MAXIMUM DEVIATION
	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	Figure	15
		-	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.



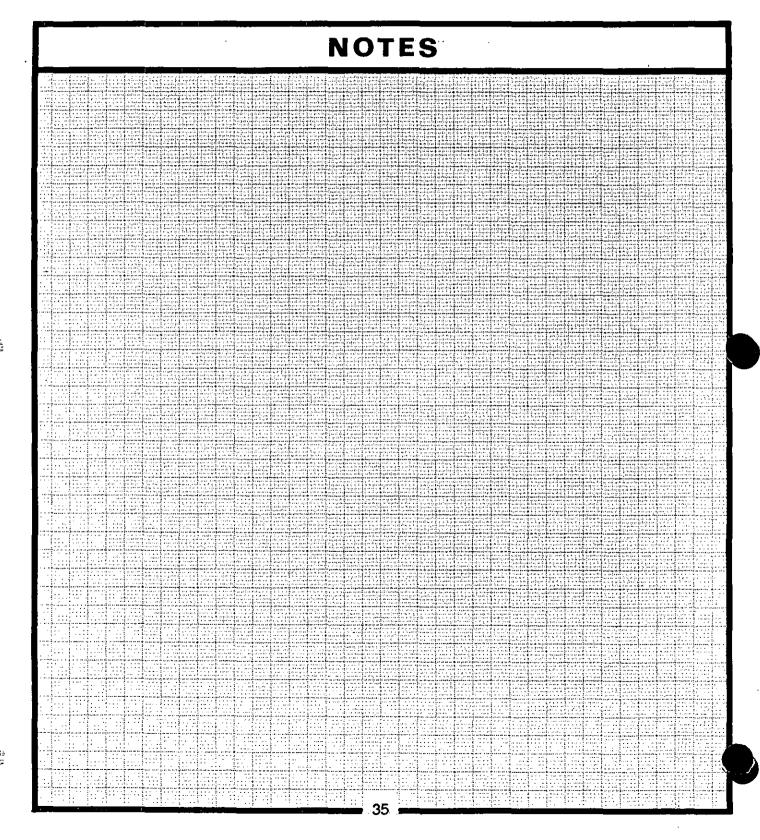


# SWITCH SPECIFICATIONS DATA SHEET

CUS	TOMER:		MODEL: OPT.:
1.0	CONFIGURATION:	10.0	CONNECTORS:
2.0	FREQUENCY BAND (GHZ):		10.1) RF: SMA N BNC TNC
3.0	INSERTION LOSS:		10.2) POWER: MULTI-PIN SOLDER PIN 10.3) CONTROL: SOLDER PIN SMC SMA
	3.1) MAXIMUM: 3.2) VARIATION:	11.0	INTERCEPT POINT:
4.0	ISOLATION:		11.1 3rd ORDER dBm @dBM input power
	4.1) MINIMUM: 4.2) TYPICAL:		11.2 2nd ORDER dBm @dBm input power
5.0	SWITCHING SPEED:	12.0	VIDEO TRANSIENTS:
	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	13.0	MV, MAX
6.0	S.4) 50 % RF 10 10 % RF		DEGREES MAXIMUM DEVIATION
	<ul><li>6.1) INPUT</li><li>6.2) OUTPUT (ON)</li><li>6.3) OUTPUT (OFF)</li></ul>		
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	Figure	
	7311-G GROVE R	OAD, 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.
- R. H. Cauerly and G. Hiller, "Distortion in PIN Diode Control Circuits," IEEE Transactions on Microwave Theory and Techniques, MMT-35, p492.





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# INTERCORPORTING PIN-DIODE

# **SWITCHES**

NEW

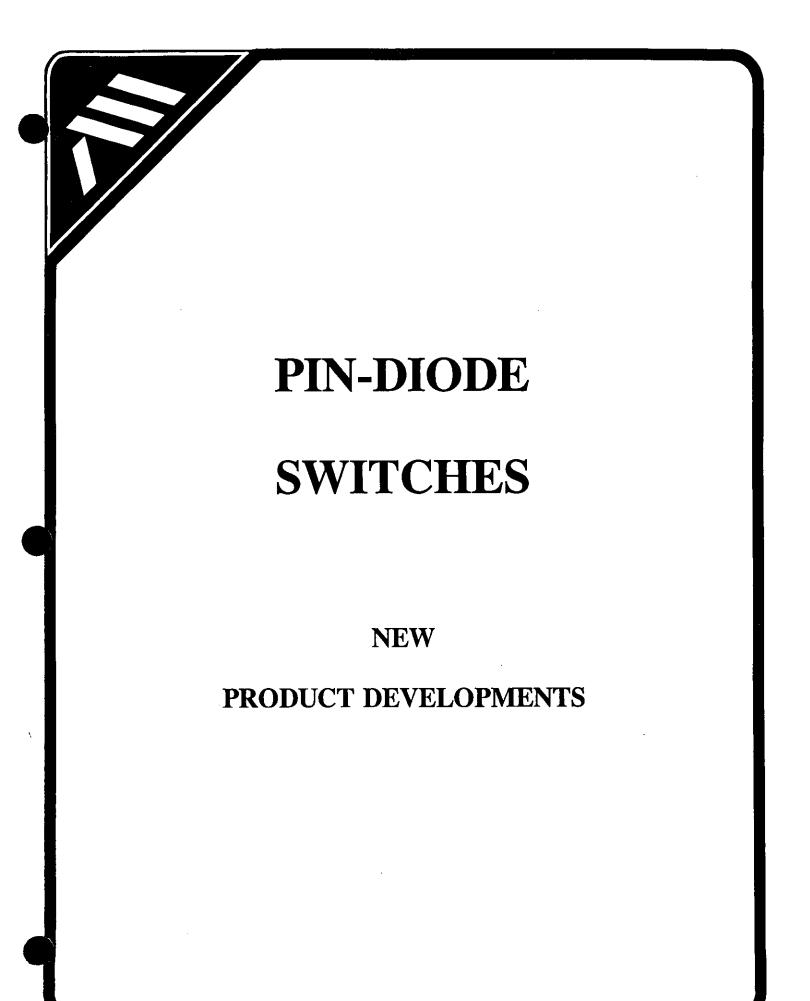
# **PRODUCT DEVELOPMENTS**

# $\mathbf{AT}$

# AMERICAN MICROWAVE CORPORATION

AUGUST 10, 1993.

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





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	• 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
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# DESCRIPTION

AMC MODEL SWM-DC20-1D IS A REFLECTIVE GdAs MMIC SPST SWITCH/MODULATOR WITH INTEGRAL TIL 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
- SWITCHING TIME

RISE	(10%	RF	то	90%	RF)		ns	MAXIMUM
FALL	(90%	RF	TŌ	10%	RF	) · · · · · · · · 10	ns	MAXIMUM
ON	(50%	TTL	TO	90%	RF)	) · · · · · · 10 . · · · · · · 20	ns	MAXIMUM
OFF	(50%	TTL	то	10%	RF)		ns	MAXIMUM

- RF POWER RATINGS (IDB COMP.)
   0.5-20 GHz
   0.05 GHz
   +18 dBm TYPICAL

- CONNECTORS

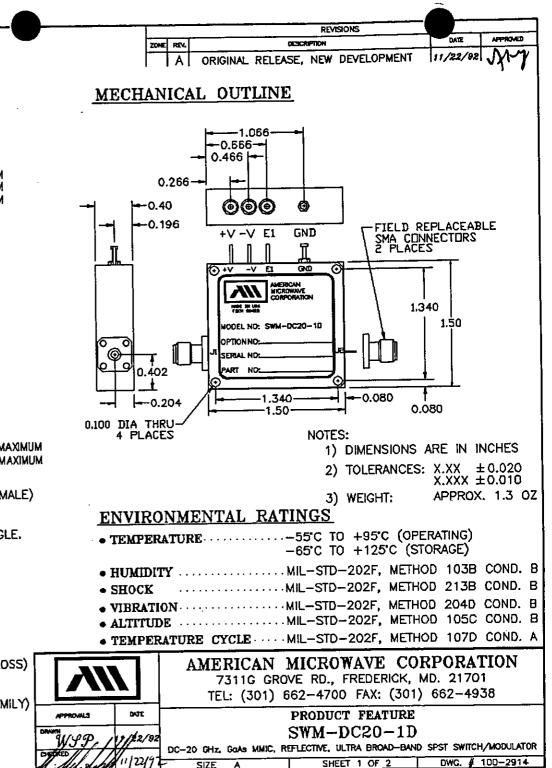
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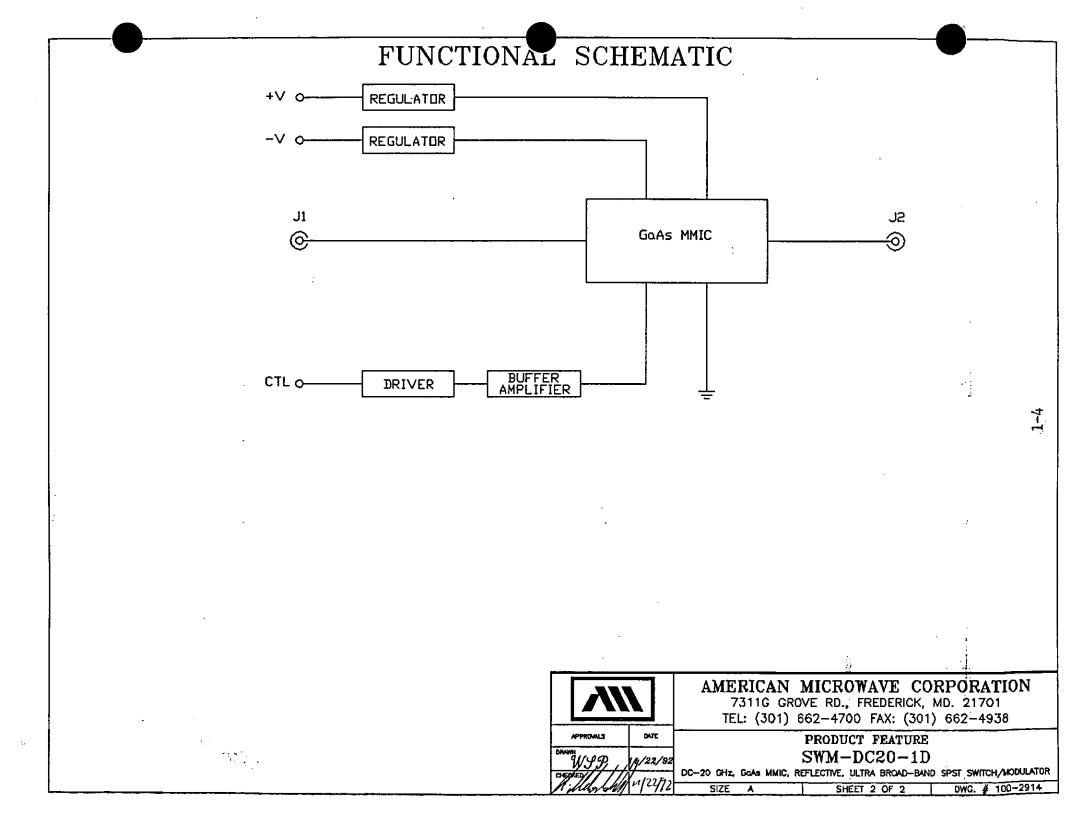
RP	INPUT/OUTPUT	D REPLACEABLE SMA (FEMALE)
PC	WER	DER PIN
- NZ	NTROL SOL TE: RF CONNECTORS CAN BE PLACED	SIDE BY SIDE OR IN ANGLE.
(Ĉ	ONSULT FACTORY FOR AVAILABLE MECH	HANICAL OPTIONS)

• SIZE ······ 1.50" x 1.50" x 0.40"

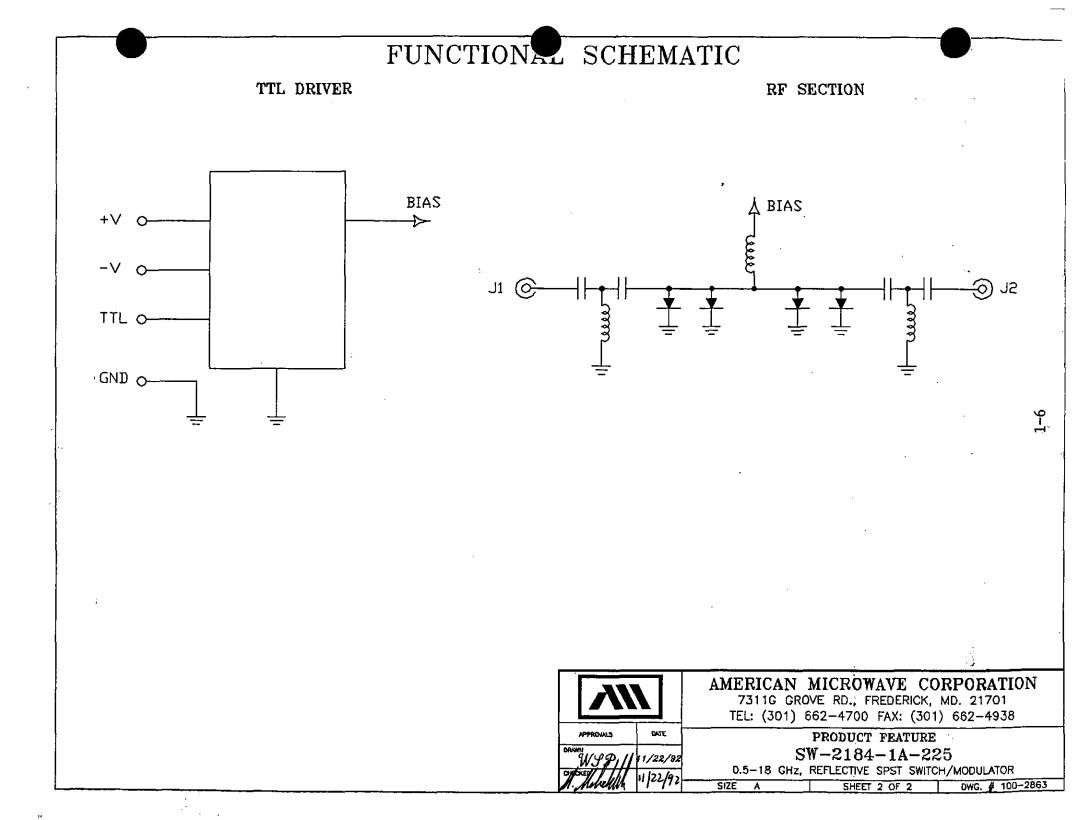
# AVAILABLE OPTIONS

	A01
	A02100 B CONTROL IMPEDANCE
	A03HERMETIC SEALING (MIL-STD-883)
	ADA
	A04 INVERSE CONTROL LOGIC (LOGIC "O" = INSERTION LOS
•	A06 SINGLE ENDED ECL CONTROL LOGIC
	ADT
	A07 DIFFERENTIAL TTL CONTROL LOGIC(R2-422 LOGIC FAMIL
	A09HIGH ISOLATION (CONSULT FACTORY)
	AUG
	ATU SMA FEMALE CONTROL CONNECTOR
	A11
	A12





CONTROL     TTL COMPATIBLE, UNITY LOAD LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION			
$\frac{12502ATP TILDN}{12000} = 12002 to 2000 to $			
MODULATOR/SWITCH WITH INTERAL TIL DRIVER, AND SULT IN INVERTOUR           OUTPUT OUTPUT HUSENNED FOR ALL DESIGNED FOR ALL DESIGNED FOR WILE BAOK MICH SPEED AND UM MISTORTION RP-LINKED, DIA'S COMMUNICATIONS.           SPECIFICATIONS           OFFICIENTS           OFFICIENTS           OLSCIENT           OLSCIENT           OLSCIENT           OLSCIENT           OLSCIENT           OLSCIENT           OUTPUT           OUTPUT           OWNER SUPPLY		· · · · · · · · · · · · · · · · · · ·	ZONE KEV. DESCRIPTION
• REQUENCY PANGE       0.5-1 GHz MINMUM         • INSERTION LOSS       0.5-1 GHz 12 GB MAXMUM         1-2       GHZ 12 GB MAXMUM         2-4       GHZ 12 GB MAXMUM         2-5       GHZ 12 GB MAXMUM         2-4       GHZ 12 GB MAXMUM         2-5       GHZ 12 GB MAXMUM         2-6       GHZ 15 GB MAXMUM         2-7       GHZ 12 GB MAXMUM         2-8       GHZ 20 GB MINUM         2-9       GHZ 20 GB MINUM         0-10       GHZ 20 GB MINUM	MODULATOR/SWITCH WITH INTEGRAL TTL OUTPUT VIDEO FILTER. DESIGNED FOR	DRIVER, AND BUILT IN INPUT/ WIDE BAND, HIGH SPEED AND	
• INEQUENCIANCE         • O.S-1 G KL, 10. dB MAXMUM           - 2 GKz, 12. dB MAXMUM           - 4 GKz, 12. dB MAXMUM           - 4 GKz, 12. dB MAXMUM           - 4 GKz, 12. dB MAXMUM           - 8 GKz, 28 dB MAXMUM           - 16 GKz, 28 dB MAXMUM           - 2 GKz, 15.1 MAXMUM           - 2 GKz, 15.1 MAXMUM           - 4 GKz, 20 dB MAXMUM           - 8 GKz, 28 dB MAXMUM           - 8 GKz, 80 dB MINUM           - 8 GKz, 1.81 MAXMUM           - 9 OVER F TO 100 R FF)         10 ns MAXMUM           - 10 GC TT TO 100 R FF)         20 ns MAXMUM           - 10 GC TT TO 100 R FF)         20 ns MAXMUM           - 10 GC TT TO 100 R FF)         20 ns MAXMUM           - 10 CC TT T C 100 R FF)         20 ns MAXMUM           - 10 CC TT T = SOLUTON         30 WEGKT T TO 100 R FF)           - 10 CC TT T = SOLUTON         - 10 T COMATBLE, UNITY LOAD           LOG	SPECIFICATIONS		<b>⊢</b> − 0.792 − <b>→  </b>
<ul> <li>INSERTION LOSS</li> <li>INSERTION LOSS (C) (CIGGIC "O" ISOLATION)</li> <li>INSERTION LOSS (C) (CIGGIC "O" ISOLATION)<td></td><td>0.5-18 GHz MINIMUM</td><td> 0.630</td></li></ul>		0.5-18 GHz MINIMUM	0.630
• ISOLATION	• INSERTION LOSS · · · · · · · · · · · · ·	1-2 GHz, 1.2 dB MAXIMUM 2-4 GHz, 1.5 dB MAXIMUM 4-8 GHz, 2.0 dB MAXIMUM	
4-8       GHz, 1.5:1       MAXIMUM         8-18       GHz, 1.5:1       MAXIMUM         8-18       GHz, 1.5:1       MAXIMUM         8-18       GHz, 1.5:1       MAXIMUM         9-2000       SWTCHING TIME       0057         8-18       GHz, 1.5:1       MAXIMUM         9-2000       SWTCHING TIME       0057         9-2000       GOX RF TO 90% RF)       10 ns MAXIMUM         0 FF (50% TIL TO 90% RF)       20 ns MAXIMUM         0 FF (50% TIL TO 10% RF)       20 ns MAXIMUM         0 FF (50% TIL TO 10% RF)       20 ns MAXIMUM         0 FIN-BAND VIDEO TRANSIENTS       SDORV P-P ACROSS 50.0 IMPEDANCE         NO HIZ BANDWIDTH.       20 HIZ BANDWIDTH.         • CONTROL       TIL COMPATIBLE, UNITY LOAD         LOGIC T'' = INSERTION LOSS       LOGIC T'' = INSERTION LOSS         LOGIC T'' = INSERTION LOSS       SOLDER PIN         CONTROL       SOLDER PIN         CONTROL       SOLDER PIN         CONTROL       SOLDER PIN         SIZE       1.0'' x 0.87'' x 0.37''         A01       SOL CONTROL IMPEDANCE         A02       1000 CONTROL IMPEDANCE         A03       FWERDED FREQUENCY TO 100 MHZ         A04       SWERTHINE		1-2 GHz, 70 dB MINIMUM 2-8 GHz, 85 dB MINIMUM 8-18 GHz, 80 dB MINIMUM	0 0 0 0 0 00098 THRU
<ul> <li>NEP DWER KAIINGS: THE CALL MAXIMUM, TOW PLACE (1 µ 3, TW)</li> <li>SWITE (102 RF TO 102 RF) 10 ns MAXIMUM ON (503 TTL TO 902 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM OFF (503 TTL TO 903 RF) 20 ns MAXIMUM IN 20 MHZ BANDWIDTH.</li> <li>CONTROL TTL COMPATIBLE, UNITY LOAD LOGIC "1" = INSERTION LOSS LOGIC /li></ul>		4—8 GHz, 1.8:1 MAXIMUM 8—18 GHz, 1.9:1 MAXIMUM	
RISE FALL (907, RF TO 107, RF)10 ns ns MAXIMUM OFF (503, TTL TO 907, RF)10 ns ns MAXIMUM OFF (503, TTL TO 107, RF)10 ns ns MAXIMUM OFF (503, TTL TO 107, RF)10 ns ns MAXIMUM OFF (503, TTL TO 107, RF)10 ns maximum MAXIMUM OFF (503, TTL TO 107, RF)20 ns maximum MAXIMUM OFF (500, TTL TO 107, RF)20 ns MAXIMUM MAXIMUM DECONTROL20 ns MAXIMUM MAXIMUM DECONTROLNOTES: (1) DIMENSIONS ARE IN INCHES [MILLIMETERS (2) TOLERANCES: X.X $\pm 0.220$ (2) TOLERANCES: X.X $\pm 0.220$ (3) WEIGHT:NOTES: (2) TOLERANCES: X.X $\pm 0.220$ (3) WEIGHT:• CONTROL• TTL COMPATIBLE, UNITY LOAD LOGIC "0" = INSERTION LOSS UDGIC "1" = ISOLATION CONTROL• STAR FEMALE (2) TOLERANCES: X.X $\pm 0.220$ (3) WEIGHT:• OTES: (2) TOLERANCES: X.X $\pm 0.220$ (3) WEIGHT:• CONNECTORS RF INPUT/OUTPUT-• SMA (FEMALE) POWER SOLDER PIN (2) ONTROL IMPEDANCE A01• SMA (FEMALE) • SUDER PIN • SIZE• OTEMPERATURE• SIZE• 1.10" x 0.87" x 0.37"• HUMIDITY• MIL-STD-202F, METHOD 204D COND. E • SHOCK• A01• 50 ADTROL IMPEDANCE A02• OTTEOL IMPEDANCE • TEMPERATURE• MIL-STD-202F, METHOD 103D COND. E • SHOCK• A01• 50 ADTROL IMPEDANCE A02• OTTEOL IMPEDANCE • TIMPENATURE <td></td> <td>2W CW MAXIMUM, 10W PEAK (1 <math>\mu</math>S,</td> <td></td>		2W CW MAXIMUM, 10W PEAK (1 $\mu$ S,	
IN 20 MHz BANDWIDTH. IN 20 MHz BANDWIDTH. CONTROL CONTROL CONTROL CONTROL CONTROL CONNECTORS RF INPUT/OUTPUT CONTROL CO	RISE         (10%         RF         TO         90%         RF           FALL         (90%         RF         TO         10%         RF           ON         (50%         TTL         TO         90%         RF           ON         (50%         TTL         TO         90%         RF           OFF         (50%         TTL         TO         90%         RF	10 ns MAXIMUM 2D ns MAXIMUM 20 ns MAXIMUM	
$\begin{array}{c} \text{CONTROL} \\ \begin{array}{c} \text{LOGIC "0" = INSERTION LOSS} \\ \text{LOGIC "1" = ISOLATION} \\ \text{CORE SUPPLY} \\ \text{CONTROL $\pm 57 \oplus 50 \text{ mA MAXIMUM} \\ -12VDC $\pm 50 \text{ mA MAXIMUM} \\ -12VDC $\pm 57 \oplus 50 \text{ mA MAXIMUM} \\ -12VDC $\pm 57 \oplus 50 \text{ mA MAXIMUM} \\ -12VDC $\pm 50 \text{ mA MAXIMUM} \\ -100 \text{ mA MAXIMUM} \\ -200 \text{ mA MAXIMUM} \\ -2$	IN-BAND VIDEO TRANSIENTS		1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
$-12VDC \pm 5\% \textcircled{0} 5 \text{ mA MAXIMUM}$ $-12VDC \pm 5\% \textcircled{0} 5 \text{ mA maximum}$ $-5\% \textcircled{0} 5 \text{ ma ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-5\% \textcircled{0} 5 \text{ ma maximum}$ $-110\% \textcircled{0} 10\% \textcircled$	• CONTROL • • • • • • • • • • • • • • • • • • •	LOGIC "0" = INSERTION LOSS	X.XXX ±0.010
<ul> <li>CONNECTORS RF INPUT/OUTPUT··································</li></ul>	POWER SUPPLY.	+5VDC ±5% @ 50 mA MAXIMUM -12VDC ±5% @ 5 mA MAXIMUM	
• SIZE	RF INPUT/OUTPUT	SOLDER PIN	-65°C TO +125°C (STORAGE) • HUMIDITY
AVAILABLE OPTIONS       Allinger Control impedance         A01       50Ω CONTROL IMPEDANCE         A02       100Ω CONTROL IMPEDANCE         A03       INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)         A04       EXTENDED FREQUENCY TO 100 MHz         A05       SWATTS CW MAXIMUM         A06       2ns RISE/FALL TIME         A07       SINGLE ENDED ECL DRIVER (10ns ON/OFF TIME)         A09       BALANCED ECL DRIVER (10ns ON/OFF TIME)			
AVAILABLE       OT TIONS         A01       50Ω CONTROL IMPEDANCE         A02       100Ω CONTROL IMPEDANCE         A03       INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)         A04       EXTENDED FREQUENCY TO 100 MHz         A05       5 WATTS CW MAXINUM         A06       2ns RISE/FALL TIME         A07       SINGLE ENDED ECL DRIVER (10ns ON/OFF TIME)         A09       BALANCED ECL DRIVER (10ns ON/OFF TIME) <b>TEMPERATURE CYCLE</b> MIL-STD-202F, METHOD 107D COND. A <b>MERICAN MICROWAVE CORPORATION</b> 7311G GROVE RD., FREDERICK, MD. 21701         TEL: (301) 662-4700 FAX: (301) 662-4938			
A02 1000 CONTROL IMPEDANCE A03 INVERSE CONTROL LOGIC (LOGIC "O" 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)			• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A
A06 2ns RISE/FALL TIME A07 SINGLE ENDED ECL DRIVER (10ns ON/OFF TIME) A09 BALANCED ECL DRIVER (10ns ON/OFF TIME) A09 0.5-18 GHz, REFLECTIVE SPST SWITCH/MODULATOR	A02 1000 CONTROL IMP A03 INVERSE CONTROL I A04 EXTENDED FREQUEN	EDANCE OGIC (LOGIC "D" ISOLATION) CY TO 100 MHz	7311G GROVE RD., FREDERICK, MD. 21701
A07 SINGLE ENDED ECL DRIVER (10ns ON/OFF TIME) A09 BALANCED ECL DRIVER (10ns ON/OFF TIME) BALANCED ECL DRIVER (10ns ON/OFF TIME) CHEAR OF TIME 0.5-18 GHz, REFLECTIVE SPST SWITCH/MODULATOR	A06 2ns RISE/FALL TIME		FRODUCT FERIORE
A10	A07 · · · · · · · · SINGLE ENDED ECL A09 · · · · · · · · · · · · BALANCED ECL DRN	DRIVER (10ns ON/OFF TIME)	0.5-18 GHz, REFLECTIVE SPST SWITCH/MODULATOR

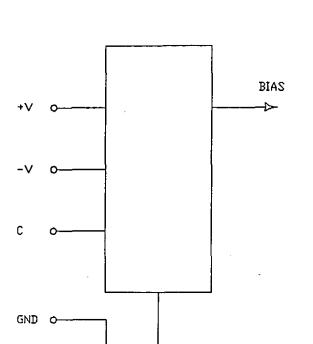


	REVISIONS
DESCRIPTION	ZONE REV. DESCRIPTION DATE AP
AMC MODEL SW-2187-1DS IS A REFLECTIVE SPST SWITCH/MODU INTEGRAL ECL DRIVER, DESIGNED TO MAINTAIN A VERY HIGH ISOL IN BAND VIDEO TRANSIENT SIGNALS AND FAST SWITCHING RESPONS	
	MECHANICAL OUTLINE
<u>SPECIFICATIONS</u>	
FREQUENCY RANGE · · · · · · · · · · · · · · · · 0.7-18 GHz MINIMUM	
<ul> <li>INSERTION LOSS</li> <li>MAXI</li> <li>MAXI</li> </ul>	
• ISOLATION	
• VSWR (ON) 1.9:1 MAXIMUM	1.113 [28.27]
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>	
OFF (50% TTL TO 10% RF) 50 ns MAXIMUM	1.970 [50.04] CND [02.6]
$\bullet$ RF POWER RATINGS $\cdots$ 2W CW, 10 W PEAK (1 $\mu$	
• CONTROL SINGLE ENDED ECL LOGIC LOGIC "0" (-1.75V)= ISOL LOGIC "1" (-0.9V)= INSEF	
• IN BAND VIDEO POWER/TRANSIENTS $\cdots \leq -70$ dBm @ 0.5 GHz T 20 mV (P-P) IN 100 MH:	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
POWER SUPPLY	AXIMUM SMA FEMALE –
<ul> <li>CONNECTORS RF INPUT/OUTPUT······SMA (FEMALE) POWER ······SOLDER PIN CONTROL ·····SMC (MALE)</li> </ul>	NOTES: 1. DIMENSIONS ARE IN INCHES [MILLIME] 2. TOLERANCES: X.XX ±0.020
• SIZE 0.792" x 1.97" x 0.56"	X.XXX ±0.010 3. WEIGHT: APPROX. 1.3 OZ
AVAILABLE OPTIONS	ENVIRONMENTAL RATINGS
A01 ····································	• TEMPERATURE
A02 1000 CONTROL IMPEDANCE	$-65^{\circ}$ C TO $\pm 125^{\circ}$ C (STORACE)
A03 ······ INVERSE CONTROL LOGIC (LOGIC "0" INSERTION	HUMIDITYMIL-STD-202F, METHOD 103B CON
A09 ······BALANCED ECL LOGIC	• SHOCK
A10	• VIBRATION ····································
A14J1 SMA MALE, J2 SMA FEMALE	• ALTITUDE
A15TWO SMA MALE CONNECTORS	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D CON
A16 ······SOLDER PIN CONTROL TERMINAL	
A18 ·······CANNON MULTIPIN MDM9SSP	AMERICAN MICROWAVE CORPORATIO
A19STANDARD TTL CONTROL LOGIC	7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938
(LOGIC"O" = INSERTION LOSS)	
	$\frac{1}{8}$
	1 WJ 9 1730/33 0.7-18 GHz. REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AN
	FAST SPST PULSE MODULATOR/SWITCH

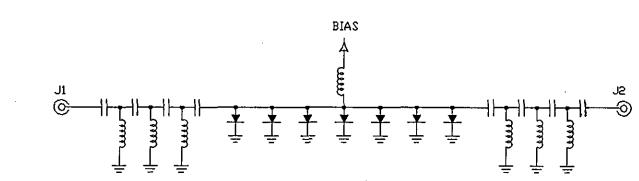
FUNCTIONAL SCHEMATIC

ECL DRIVER

RF SECTION



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		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938
APPROVALS	DATE	PRODUCT FEATURE
CRAWNI WSP CHECKED	7/30/93	SW-2187-1DS 0.7-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND FAST SPST PULSE MODULATOR/SWITCH

SHEET 2 OF 2

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SIZE

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DWG. # 100-2856

# DESCRIPTION

AMC MODEL SWS-2184-1D IS A REFLECTIVE BROAD BAND SPST SWITCH MODULE WITH INTEGRAL TTL DRIVER PACKAGED IN A LOW PROFILE, HERMETICALLY SEALED HOUSING.

# **SPECIFICATIONS**

1-9

● FREQUENCY RANGE ····································
<ul> <li>INSERTION LOSS</li> <li>1- 2 GHz 1.0 dB MAXIMUM</li> <li>2- 4 GHz 1.2 dB MAXIMUM</li> <li>4- 8 GHz 1.4 dB MAXIMUM</li> <li>8-12 GHz 1.9 dB MAXIMUM</li> <li>12-18 GHz 2.4 dB MAXIMUM</li> </ul>
 ● ISOLATION ····································
<ul> <li>VSWR (ON)</li> <li>RF POWER RATING</li> <li>RF POWER RATING</li> <li>2W CW, 10W PEAK (1 µS PW)</li> </ul>
<ul> <li>SWITCHING TIME</li> <li>RISE (10% RF TO 90% RF)</li></ul>
♦ CONTROL ······ TTL COMPATIBLE, UNITY LOAD LOGIC "O" = INSERTION LOSS LOGIC "1" = ISOLATION
● POWER SUPPLY
CONNECTORS     RF INPUT/OUTPUT······FIELD REPLACEABLE SMA (FEMALE)     POWER ··········SOLDER PIN     CONTROL ·······SOLDER PIN
● SIZE······ 1.00" x 0.65" x 0.112"
AVAILABLE OPTIONS
A01

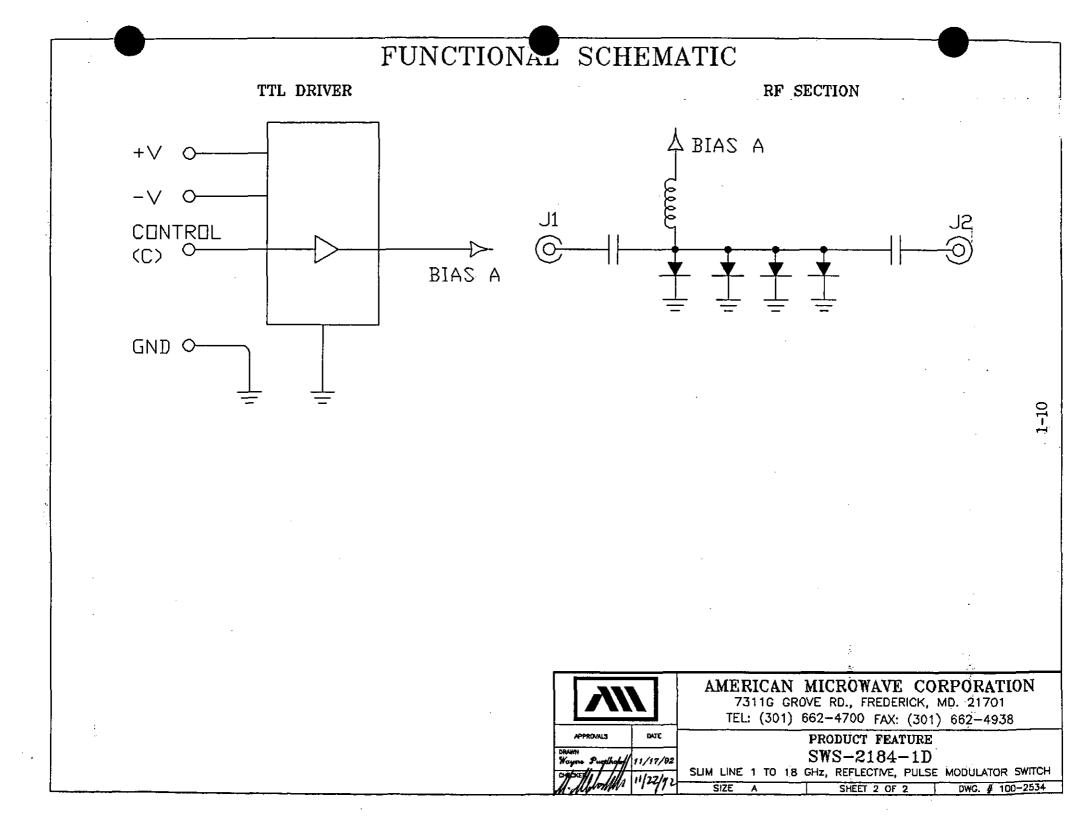
A04 ..... EXTENDED FREQUENCY RANGE TO 100 MHz

A08 .....SINGLE ENDED ECL (10 nS ON/OFF TIME) A09 .....BALANCED ECL DRIVER (10 nS ON/OFF TIME)

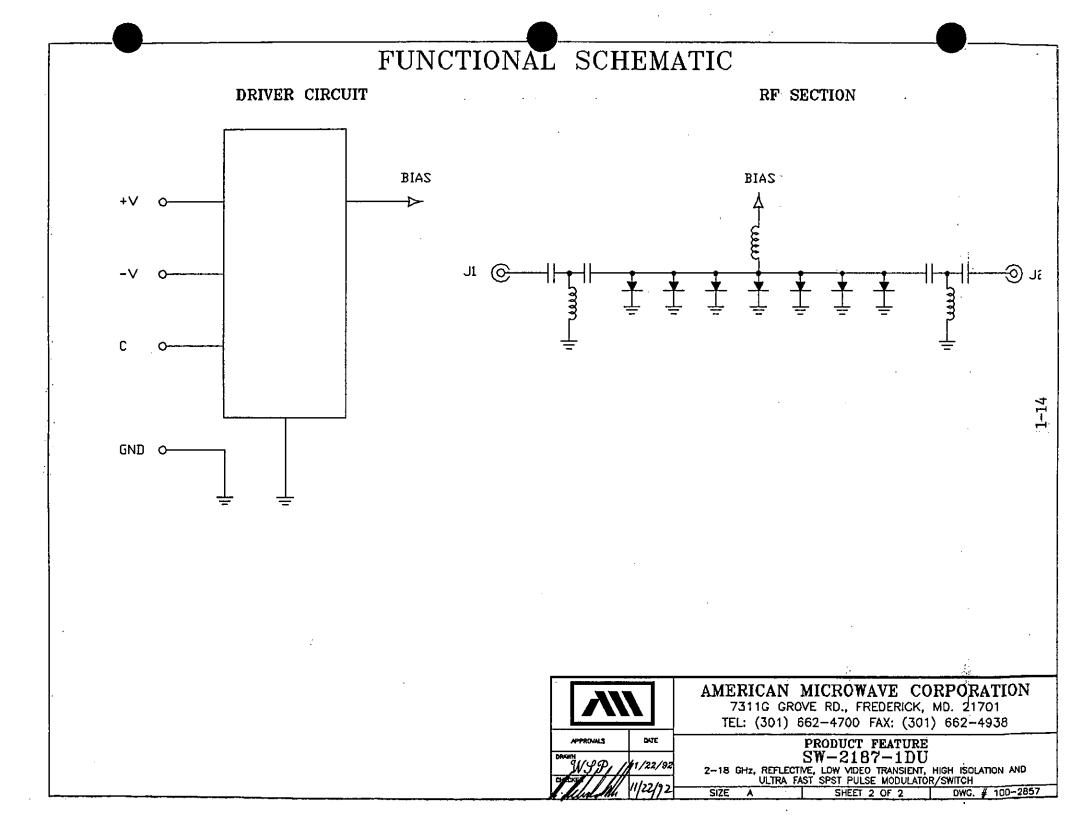
(ADDITIONAL 0.5 dB EXCESS LOSS, 2-18 GHz)

A10 .....- 15 VOLT POWER SUPPLY

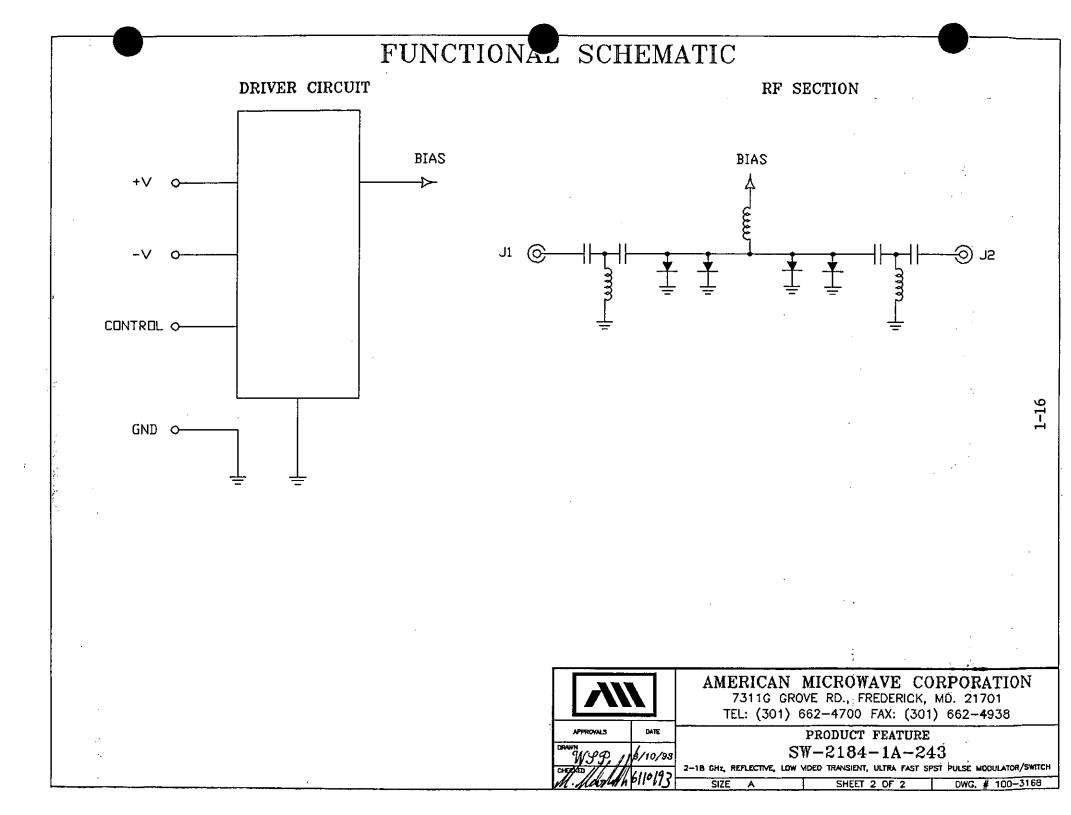
MECHANICAL OUTLINE	
MECHANICAL OUTLINE	7
	/ I
	1
	ᆈᄃ
THD 0.086-56 - 1.00 - SMA FEMALE 2 PL	LS.
0.018 DIA X 0.250	
HF, 7 FLACLS	
<b> </b> ← 0.738 →	
0.579	
0.22 0.262 - CMOUNTING SURFACE	
NOTES:	
1) DIMENSIONS ARE IN INCH	ES
2) TOLERANCES: X.XX $\pm 0.0$ X.XXX $\pm 0.0$	20
3) WEIGHT: APPROX. 0.	
ENVIRONMENTAL RATINGS	. 02
• TEMPERATURE · · · · · · · · · · · · 55°C TO +95°C (OPERATING) -65°C TO +125°C (STORAGE)	
• HUMIDITY	ID. B
• SHOCK MIL-STD-202F, METHOD 213B CON	
• VIBRATION	
• ALTITUDE	
• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D CON	ID. A
AMERICAN MICROWAVE CORPORATION	N
7311G GROVE RD., FREDERICK, MD. 21701	
TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS DATE PRODUCT FEATURE	<u> </u>
ANNIN Puglipung (11/17/02 SWS-2184-1D	
SUM LINE 1 TO 18 GHz, REFLECTIVE, PULSE MODULATOR SW	
	2534



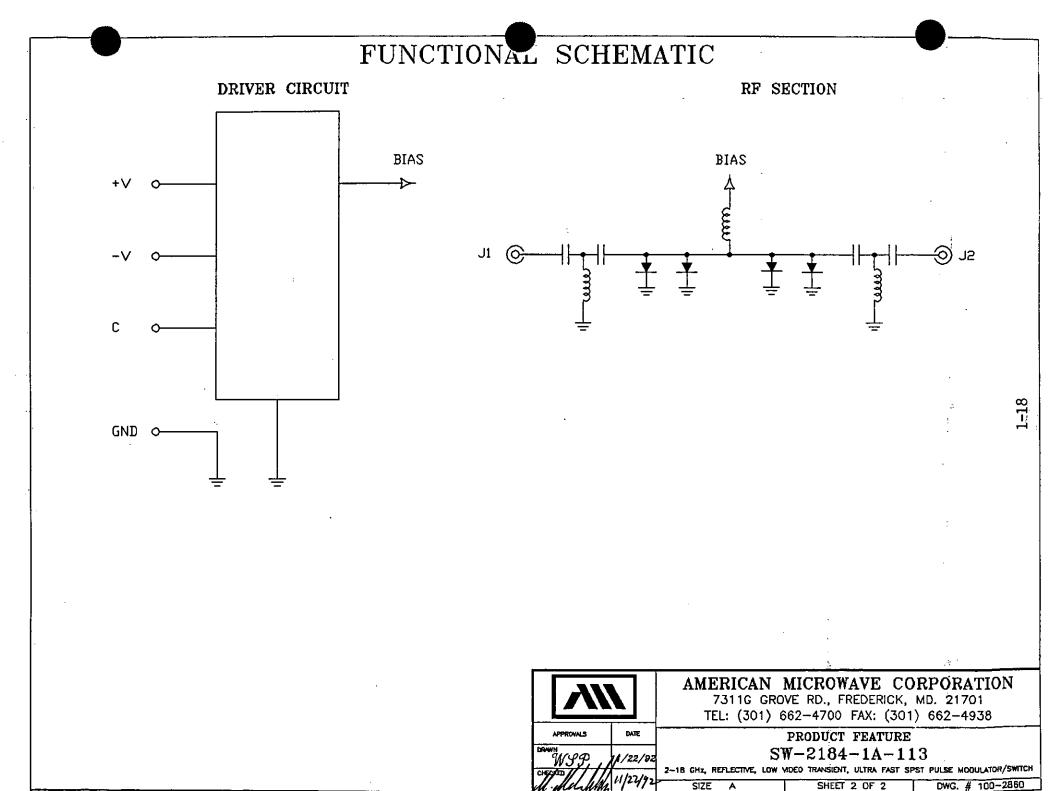
DESCRIPTION	
AMC MODEL SW-2187-1DU IS A REFLECTIVE SPST SWITCH/MODULATOR WITH	A ORIGINAL RELEASE, NEW DEVELOPMENT 11/22/82
INTEGRAL FOL DRIVER DESIGNED TO MAINTAIN A VERY HIGH ISOLATION, LOW	
IN-BAND VIDEO IRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE	MECHANICAL OUTLINE
TIME.	CONTROL-
CDECIFICATIONS	0.56 [14.22] SMC MALE
• FREQUENCY RANGE 2-18 GHz MINIMUM	
<ul> <li>INSERTION LOSS</li> <li>INSERTION LOSS<td>0.930 [23.62]</td></li></ul>	0.930 [23.62]
8-18 GHz, 4.5 dB MAXIMUM	1.113 [28.27] ANERICAN
	1.113 L28.27J AMERCAN MICROWAVE -V +V 1 1.550 [39.37]
ISOLATION · · · · · · · · · · · · · · · · · · ·	
◆ VSWR (ON) · · · · · · · · · · · · · · · · · · ·	
4—8 GHz, 1.9:1 MAXIMUM 8—18 GHz, 2.0:1 MAXIMUM	7 [50.04] GND [Ø2.6]
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	0,25 [6,35]
OFF (50% TTL TO 10% RF) 20 nS MAXIMUM	
RF POWER RATINGS     · · · · · · · · · · · · · · · · ·	-+ - 0.53 [13.46] / -+ - 0.792 [20.12]
CONTROL     CONTROL     SINGLE ENDED ECL LOGIC	SMA FEMALE –/ 2 PLACES
LOGIC "O" $(-1.75V)$ = ISOLATION	2 FLACES
LOGIC "1" (-0.9V)= INSERTION LOSS	NOTES:
• IN-BAND VIDEO POWER/TRANSIENTS · · ≤ -70 dBm @ 2 GHz TO 18 GHz, OR	1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
50mV P-P IN 100 MHz BANDWIDTH	2) TOLERANCES: $X_{XX} \pm 0.020$
POWER SUPPLY	2) TOLERANCES: X.XX $\pm 0.020$ X.XXX $\pm 0.010$
$-5VDC \pm 5\%$ a 50 mA MAXIMUM	3) WEIGHT: APPROX. 1.3 OZ
• CONNECTORS	
RF INPUT/OUTPUT	ENVIRONMENTAL RATINGS
POWER SOLDÈR PIN CONTROL	• TEMPERATURE -55°C TO +95°C (OPERATING)
• SIZE	-65°C TO +125°C (STORAGE)
• SIZE · · · · · · · · · · · · · · · · · · ·	• HUMIDITY MIL-STD-202F, METHOD 103B COND.
	• SHOCK · · · · · · · · · MIL-STD-202F, METHOD 213B COND. I
AVAILABLE OPTIONS	• VIBRATION MIL-STD-202F, METHOD 204D COND. E
A01	• ALTITUDE · · · · · · MIL-STD-202F, METHOD 105C COND. I
A02 1009 CONTROL IMPEDANCE	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND.
A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)	AMERICAN MICROWAVE CORPORATION
A09 BALANCED ECL LOGIC (SOLDER PINS)	7311G GROVE RD., FREDERICK, MD. 21701
A10 ± 9VDC TO ± 18VDC SUPPLY POWER A14 · · · · · J1 SMA MALE, J2 SMA FEMALE	TEL: (301) 662-4700 FAX: (301) 662-4938
A14	
A16 SOLDER PIN CONTROL TERMINAL	PRODUCT FEATURE SW-2187-1DU
A17 SMA FEMALE CONTROL TERMINAL	2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, HIGH ISOLATION AND
A18 CANNON MULTIPIN MDM9SSP	ULTRA FAST SPST PULSE MODULATOR/SWITCH
y dua	SIZE A SHEET 1 OF 2 DWG. # 100-2857

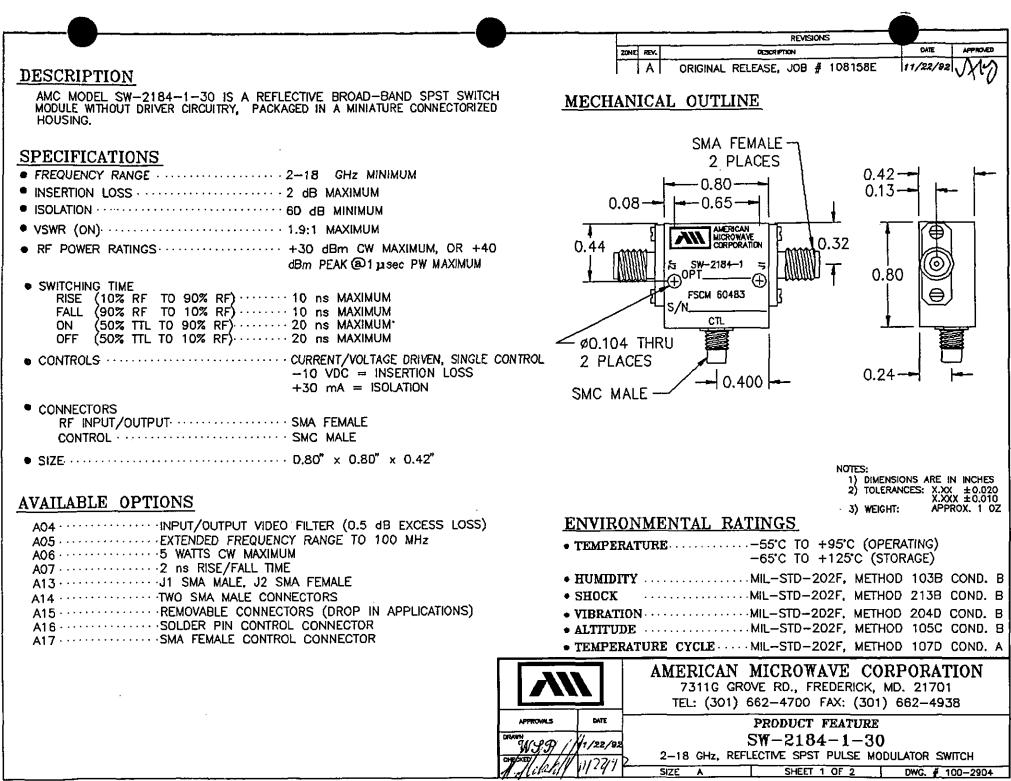


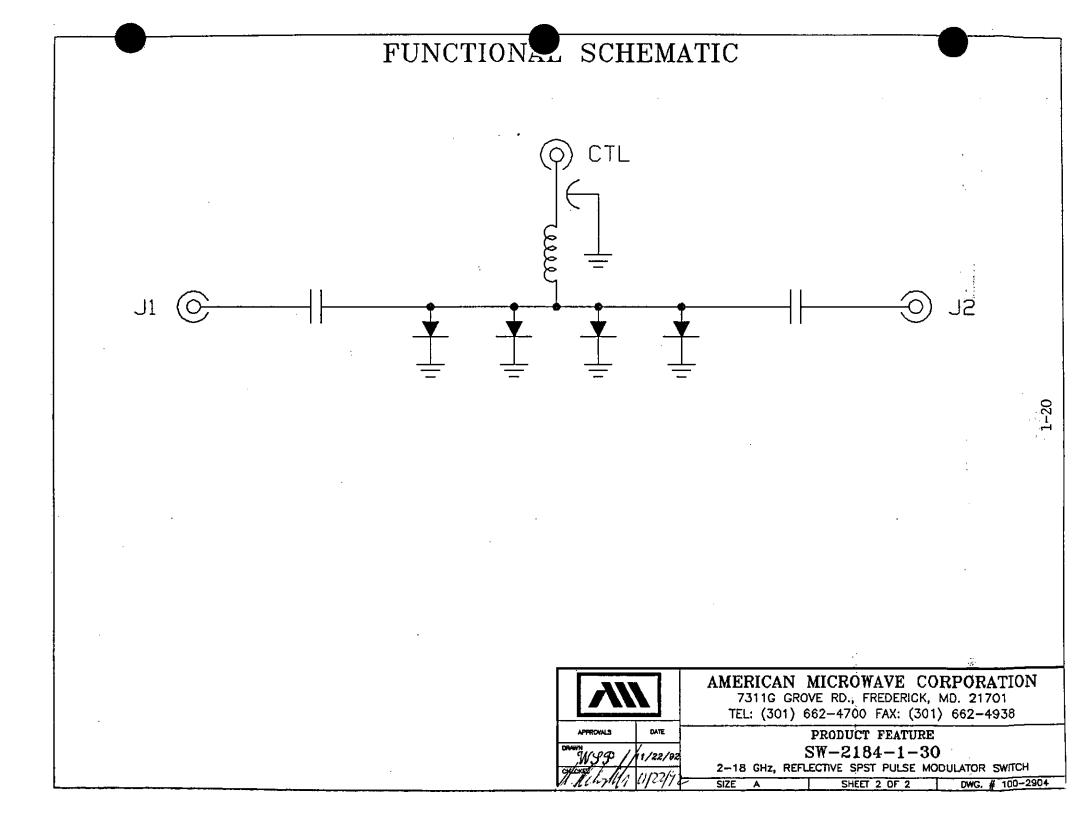
DESCRIPTION	REVISIONS DATE APPROVED
	A ORIGINAL RELEASE, JOB # 211282 8/19/93 MM
AMC MODEL SW-2184-1A-243 IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, DESIGNED TO MAINTAIN VERY LOW IN-BAND	
VIDEO TRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE TIME.	MECHANICAL OUTLINE
	CONTROL 0.560 [14.22] SMA FEMALE
• FREQUENCY RANGE	
INSERTION LOSS     VICE ANGLE     VICE ANGLE	0.930 [23.62]
ISOLATION ······     BO dB MINIMUM	СТ. 1.113 [28.27] Амерісан
• VSWR (ON)	
• SWITCHING TIME	
RISE (10% RF TO 90% RF) ······2 ns MAXIMUM FALL (90% RF TO 10% RF) ·····2 ns MAXIMUM	1.970 [50.04] GND [#2.6]
ON (5D% ITL TO 90% RF)······ 10 ns MAXIMUM	(D.102 THRU 3 PLACES UNIT OF BUILD
OFF (50% TTL TO 10% RF)·······10 ns MAXIMUM	
• RF POWER RATINGS 2W CW MAXIMUM, 10W PEAK (1 µs pw) MAXIMUM	
CONTROL     STANDARD TTL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
LOGIC "O" = INSERTION LOSS	
LOGIC "1" = ISOLATION	SMA FEMALE/ 2 PLACES
◆ IN-BAND VIDEO POWER/TRANSIENTS ····· 50mV P-P IN 20 MHz BANDWIDTH	
POWER SUPPLY	NOTES: 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
$-15$ VDC $\pm 5\%$ (a) 45 mA MAXIMUM	2) TOLERANCES: X.XX ± 0.020
<ul> <li>CONNECTORS RF INPUT/OUTPUT······SMA (FEMALE)</li> </ul>	X.XXX ±0.010 3) WEIGHT: APPROX. 1.3 OZ
POWER ····································	
• SIZE	ENVIRONMENTAL RATINGS
	• TEMPERATURE
AVAILABLE OPTIONS	• HUMIDITY
A01····································	• SHOCK MIL-STD-202F, METHOD 213B COND. B • VIBRATION MIL-STD-202F, METHOD 204D COND. B
A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)	• ALTITUDE
A09 ·······BALANCED ECL LOGIC (SOLDER PIN CONTROLS) A10 ·········±9VDC TO ±18VDC SUPPLY POWER	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A
A14 ······J1 SMA MALE, J2 SMA FEMALE	AMERICAN MICROWAVE CORPORATION
A15······TWO SMA MALE CONNECTORS A16······SOLDER PIN CONTROL TERMINAL	7311G GROVE RD., FREDERICK, MD. 21701
A17 ······SMA MALE CONTROL TERMINAL	TEL: (301) 662-4700 FAX: (301) 662-4938
240······2ns RISE/FALL TIME	WO J / H
	SIZE A SHEET 1 OF 2 DWG. # 100-3168

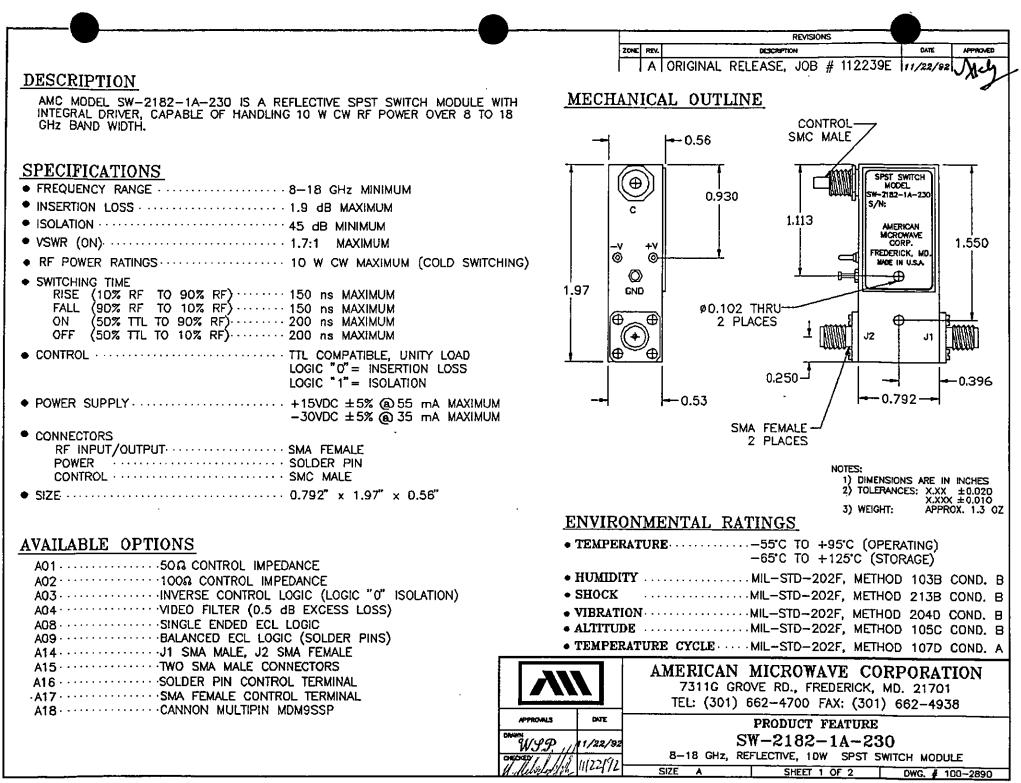


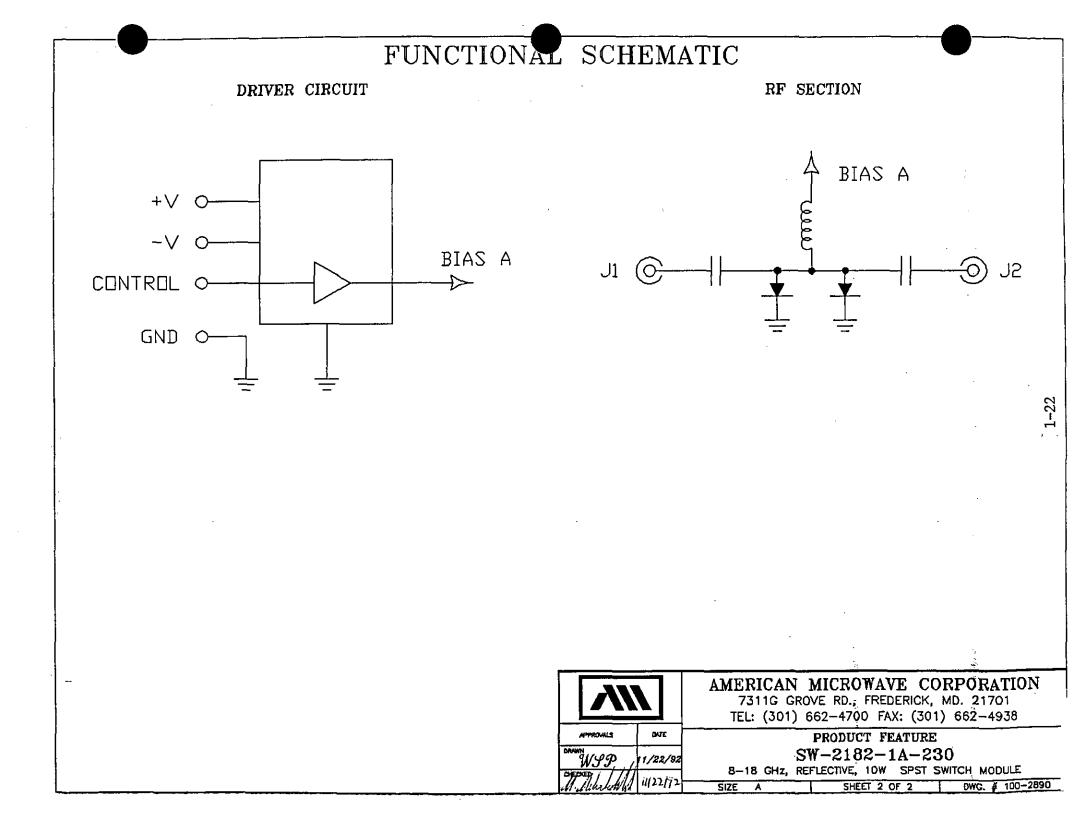
DESCRIPTION	REVISIONS
DESCRIPTION	
AMC MODEL SW-2184-1A-113 IS A REFLECTIVE SPST SWITCH/MODULATOR WITH INTEGRAL ECL DRIVER, DESIGNED TO MAINTAIN VERY LOW IN-BAND VIDEO TRANSIENT SIGNALS, AND ULTRA FAST SWITCHING RESPONSE TIME.	A ORIGINAL RELEASE, JOB # 112249 11/22/02
SPECIFICATIONS	CONTROL
FREQUENCY RANGE     GHZ MINIMUM	
<ul> <li>INSERTION LOSS</li> <li>12-12 GHz, 2.5 dB MAXIMUM</li> <li>12-18 GHz, 3.1 dB MAXIMUM</li> </ul>	0.930 [23.62]
ISOLATION	C 1.113 [28.27]
• VSWR (ON)	-v +v 1.550 [39.37
• 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	Ø0.102 THRU
OFF (50% TTL TO 10% RF)	
• RF POWER RATINGS	
10W PEAK (1 jis pw) MAXIMUM	
CONTROL SINGLE ENDED ECL LOGIC,	
500 CONTROL IMPEDANCE	0.530 [13.46] /    0.792 [20.
LOGIC "0" $(-1.75V)$ = ISOLATION LOGIC "1" $(-0.9V)$ = INSERTION LOSS	SMA FEMALE -/
■ IN-BAND VIDEO POWER/TRANSIENTS ···· 50mV P-P IN 20 MHz BANDWIDTH	2 PLACES
	NOTES:
POWER SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     SUPPLY     HAXIMUM     HAXIMUM     SUPPLY     HAXIMUM     HAXI	1) DIMENSIONS ARE IN INCHES [MILLIMETER
-5VDC ±5% @ 80 mA MAXIMUM	2) TOLERANCES: X.XX $\pm 0.020$ X.XXX $\pm 0.010$
<ul> <li>CONNECTORS RF INPUT/OUTPUT······SMA (FEMALE)</li> </ul>	3) WEIGHT: APPROX. 1.3 OZ
POWER	·
CONTROL · · · · · · · · · · · · · · · · · · ·	ENVIRONMENTAL RATINGS
• SIZE 0.792" x 1.97" x 0.56"	• TEMPERATURE
AVAILABLE OPTIONS	• HUMIDITY
A02 ····································	• SHOCK
A03 ························NVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)	VIBRATION     MIL-STD-202F, METHOD 204D COND.     MIL-STD-202F, METHOD 204D COND.
A09 ···········BALANCED ECL LOGIC (SOLDER PIN CONTROLS)	ALTITUDEMIL-STD-202F, METHOD 105C COND.     TEMPERATURE CYCLEMIL-STD-202F, METHOD 107D COND.
A10 ····································	
A15 ······TWO SMA MALE CONNECTORS	AMERICAN MICROWAVE CORPORATION
A16 ······SOLDER PIN CONTROL TERMINAL	7311G GROVE RD., FREDERICK, MD. 21701
A17 ······SMA MALE CONTROL TERMINAL	TEL: (301) 662–4700 FAX: (301) 662-4938
A19 ····································	
240·····2ns RISE/FALL TIME	$P_{p_{1/22/92}} = SW - 2184 - 1A - 113$
	1/22/72 2-18 GHz, REFLECTIVE, LOW VIDEO TRANSIENT, ULTRA FAST SPST PULSE MODULATOR/SWI SIZE A SHEET 1 OF 2 DWG. # 100-286













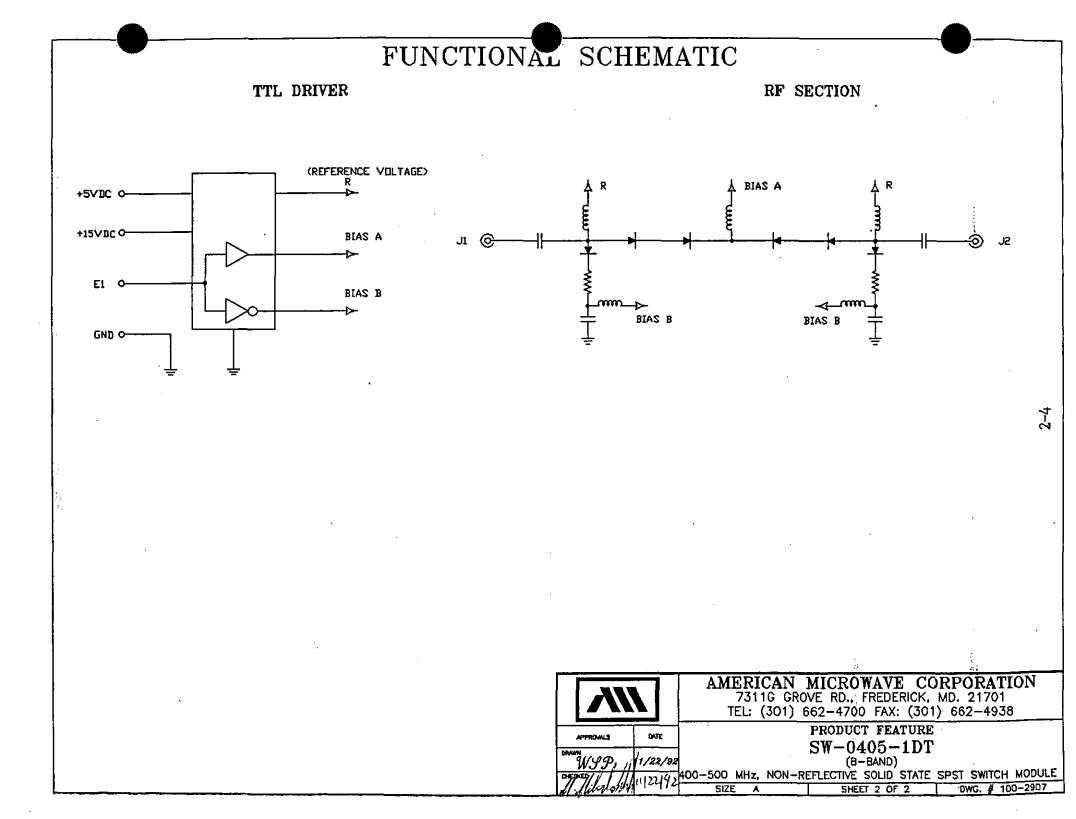
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	• 2-18 GHz	10 nsec, 80 dB TTL DRIVER, MINIATURE SWITCH/MODULATOR, AMC MODEL: SW-2184-1AT-231	2-17

.

DESCRIPTION	ZONEL REX. DESCRIPTION	
AMC MODEL SW-D405-1DT IS A REFLECTIVE SPST SWITCH		DATE APPROVED
INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILIT SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.	APPLICATIONS	
SPECIFICATIONS	- SMA FEMALE	
• FREQUENCY RANGE 400-500 MHz M		
INSERTION LOSS		6
INSERTION LOSS VARIATION		
AND ENVIRONMENT		
<ul> <li>ISOLATION</li></ul>	+5V SOLID STATE SE	ROWAVE 0.836
• RF POWER		PST SWITCH -0405-10T J2
SWITCHING TIME     RISE (10% RF TO 90% RF) ·······40 ns MAXIMUN		048
FALL (90% RF TO 10% RF)		
ON (50% TTL TO 90% RF)	Ø0.140 THRU	······
• SETTLING TIME	4 PLACES	0.177
ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 115 MAXIMUM	NOTES:	
• VOLTAGE TRANSIENTS 1 Vpp MAXIMUM		IMENSIONS ARE IN INCHES OLERANCES: X.XX ±0.020 X.XXX ±0.010
CONTROLS     CONTROLS     STANDARD TTL C		IFIGHT APPROX 3 DZ
SINGLE CONTROL	*/ m	ATERIALS PROCESS AND PARTS O: MIL-T-19500,MIL-M-38510
LOGIC "0"= INSE LOGIC "1"= ISOL	ATION LOSS CENVIRONMENTAL RATINGS 5) R	LASS B, MIL-F-18870 JANTX YPE, ER COMPONENTS
HARMONIC DISTORTION PRODUCTS	• TEMPERATURE ····································	YPE, ER COMPONENTS EQUIREMENT MIL-STD-454 5 AND 9),MIL-F-18870
SPURIOUS SIGNALS/SPECTRAL PURITY     AN AN AND AND AND AND AND AND AND AN	-55°C TO +70°C (STORAGÉ) TPUT SIGNAL LEVEL • HUMIDITY	
(AM/PN SIDEBANDS IN OPERATING BAND) 100 d8 BELOW THE 0 • RF LEAKAGE	SHOCK MIL-S-901 GRADE A. CLASS T TR 1	11
RADIATIVE	• VIBRATION:	INUSOIDAL 25 Hz TO 2000 Hz
1 FOOT DISTANCE CONDUCTIVE		(ESS)
RADIATION SUSCEPTIBILITY···································	• TEMPERATURE CYCLES 10 CYCLES 1/2 HOUR SOAK MULTE	. −55°C TO +85°C
-20 dBm/SQUARE FO	<ul> <li>VIBRATION</li> <li>VIBRATION</li> <li>VIBRATION</li> <li>VIBRATION</li> <li>VIBRATION</li> <li>VIBRATION</li> </ul>	S
● CONDUCTED SUSCEPTIBILITY ····································		CONDITION B,
● CONDUCTED SUSCEPTIBILITY (INTERMODULATION)····· ≥ -85 dBm FOR -20	$dBm_RF \qquad \bullet ESS_(NEXT_HIGHER_ASSEMBLY)$	
INTERFERENCE LEVEL		10 +55°C. 111TES PER AVIS AT +55°C/-55°C
POWER SUPPLY +5VDC ±5% @ +15VDC ±5% @	BO ma Maximum	
(OVER VOLTAGE F	ROTECTED) AMERICAN MICROWAVE	CORPORATION
CONNECTORS     RF INPUT/OUTPUT·······SMA FEMALE	7311G GROVE RD., FREDERI TEL: (301) 662–4700 FAX:	(301) 662-4938
POWER	APPROVALS DATE PRODUCT FEAT	
CONTROL	SW-0405-1	
- SIZE	0.675" $\frac{W}{2} \frac{P}{2} \frac{1}{2} \frac{1}{2} \frac{400-500}{500}  MHz, NON-REFLECTIVE SOLID STSIZE A SHEET 1.05.2$	TATE SEST SWITCH MODULE
	I Alihardanda III. 172 SIZE A SHEET 1 OF 2	DWG. # 100-2907

. 2-3



# DESCRIPTION

AMC MODEL SWM-6000-1DT IS AN ABSORPTIVE GaAs MMIC SPST SWITCH/MODULATOR WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

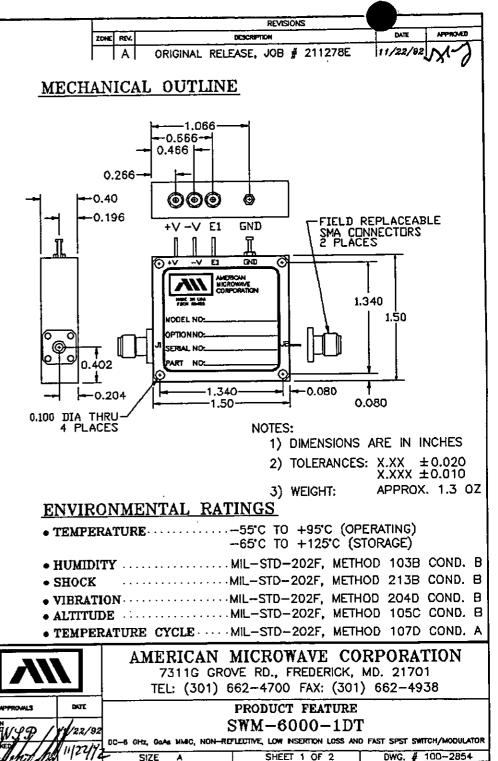
# SPECIFICATIONS

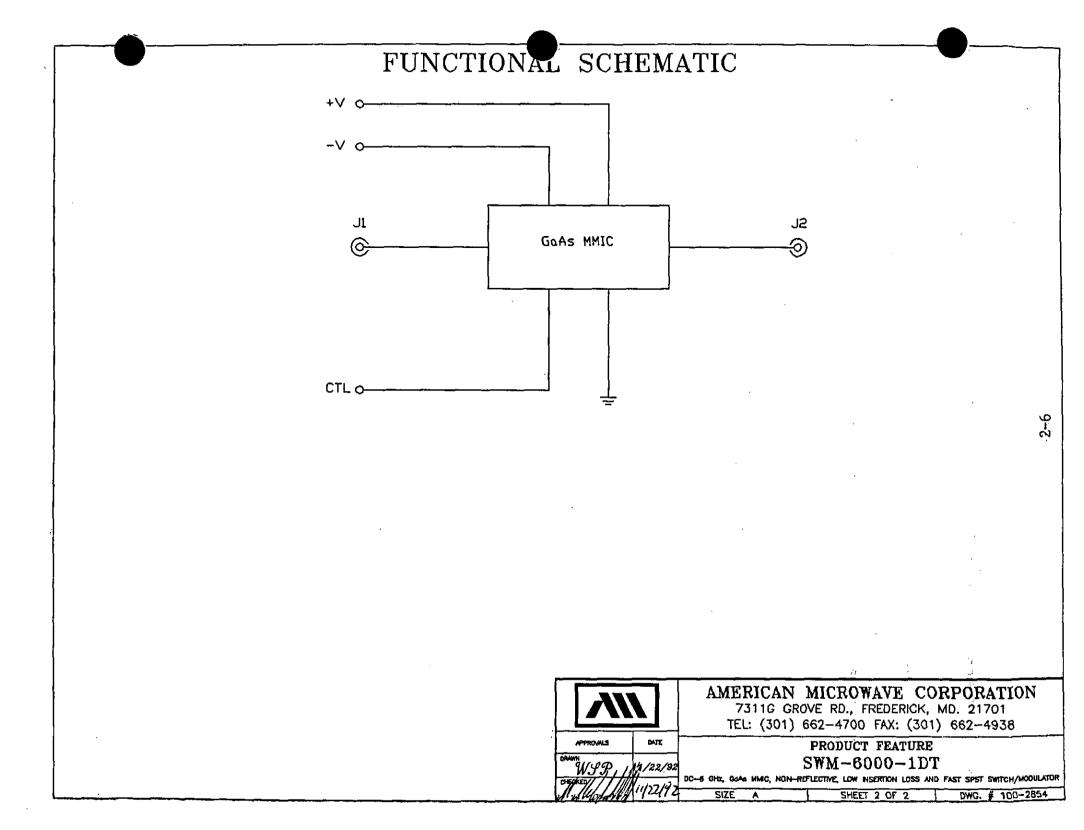
2-5

<ul> <li>FREQUENCY RANGE</li> <li>INSERTION LOSS</li> <li>DC-1 GHz, 1.2 dB MAXIMUM</li> <li>1-2 GHz, 1.4 dB MAXIMUM</li> <li>2-4 GHz, 1.9 dB MAXIMUM</li> <li>4-6 GHz, 2.5 dB MAXIMUM</li> </ul>
4-6 GHz, 2.5 dB MAXIMUM ● ISOLATION ····································
• 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
RF POWER RATINGS (IDB COMP.)     D.5-6 GHz     O.001 GHz     CONTROL     CONTROL
● POWER SUPPLY ···································
CONNECTORS     RF INPUT/OUTPUT     SOLDER PIN     CONTROL     ONTROL     ONTE: RF CONNECTORS CAN BE PLACED SIDE BY SIDE OR IN ANGLE.     (CONSULT FACTORY FOR AVAILABLE MECHANICAL OPTIONS)
• SIZE
AVAILABLE OPTIONS
A01
A03HERMETIC SEALING (MIL-STD-883) A04±9V TO ±18V SUPPLY
A04
A07 BALANCED ECL CONTROL LOGIC A08 DIFFERENTIAL TIL CONTROL LOGIC(R2-422 LOGIC FAMILY)
A09. HIGH ISOLATION (CONSULT FACTORY)

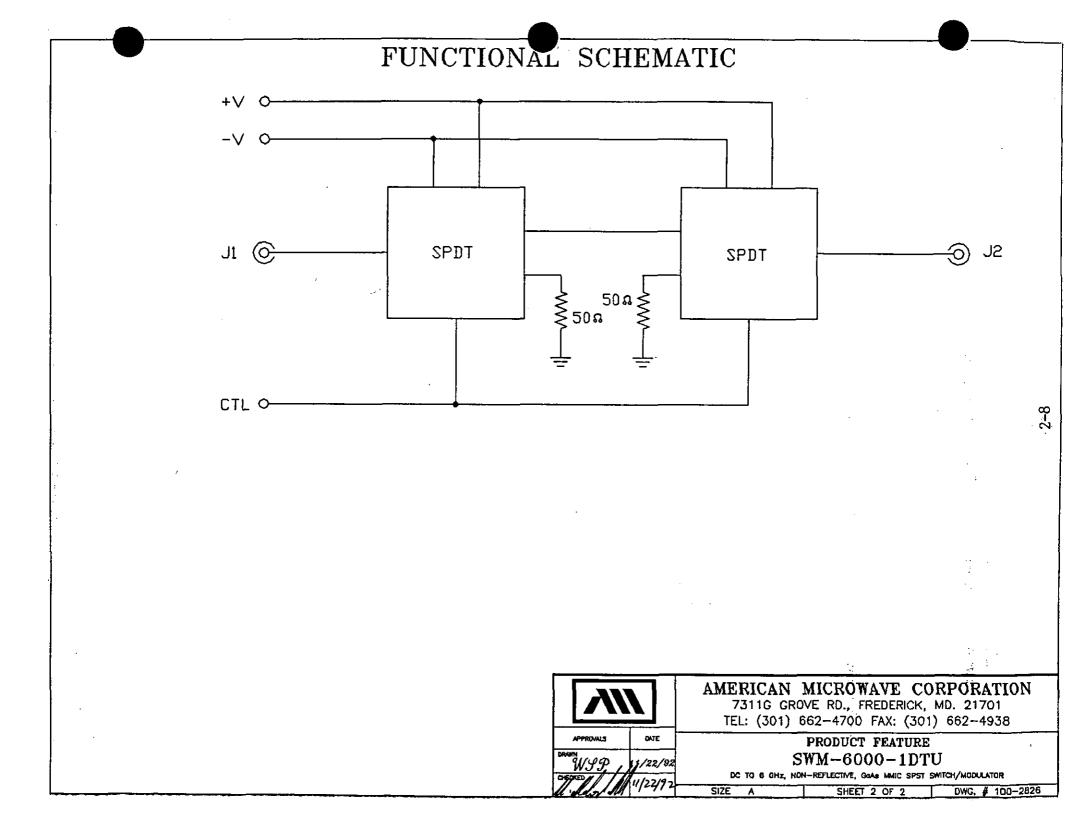
A10 ..... SMC MALE CONTROL CONNECTOR

A11.....SMA FEMALE CONTROL CONNECTOR





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.	REVISIONS       ZONE REV.     DATE     APPROVED       A     ORIGINAL RELEASE, JOB # 10465E     11/22/92       MECHANICAL OUTLINE       C
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	0.100 0.80 0.80
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>	$\begin{array}{c c} & & & & \\ \hline \\ \hline$
<ul> <li>VOLTAGE TRANSIENTS</li></ul>	2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010 3) WEIGHT: APPROX. 2.5 0 ENVIRONMENTAL RATINGS • TEMPERATURE
A13DIFFERENTIAL TTL LOGIC CONTROLS	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. / AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 PRODUCT FEATURE SWM-6000-1DTU DC TO 6 DHZ, NON-REFLECTIVE, GOAS MAIL SPST SWITCH/MODULATOR SIZE A SHEET 1 OF 2 DWG. # 100-2826



AMC MODEL SW-2183-1AT-250 IS AN ABSORPTIVE ULTRA BROAD BAND (10 MHz-18 GHz) SPST SWITCH MODULE WITH INTEGRAL TTL DRIVER.

#### **SPECIFICATIONS**

FALL	90%	RF	TO	10%	RF 15 RF	nS	MAXIMUM	
ON (	(50%	CTL	TO	90%	RF) 80	nS	MAXIMUM	
OFF (	(50%)	CTL	то	10%	RF) 40	nS	MAXIMUM	
	-							

$\bullet \text{ CONTROL}$	
	LOGIC "O" = INSERTION LOSS
	LOGIC "1" = ISOLATION

#### RF POWER RATINGS :

AANNEATARA

2-9

OPERATING	•••••••	+20dBm	CW	MAX	KIMU	М		
SURVIVAL	• • • • • • • • • • • • • • • • • • • •	+27dBM	CW	OR	10	W	(1µS,	P₩)

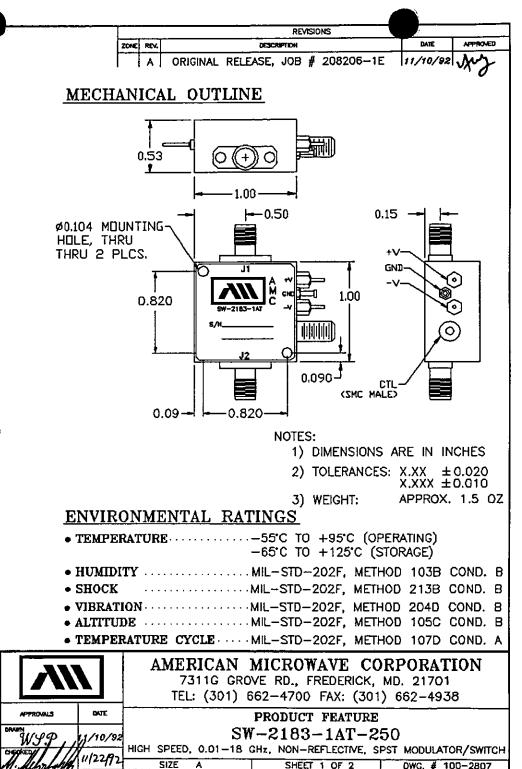
POWER SUPPLY				
	-12VDC	±5% @ 75	mΑ	MAXIMUM

CONNECTORS	
RF INPUT/OUTPUT SMA F	EMALE
POWER SOLDE	
CONTROL · · · · · · · · · · · · · · · · · · ·	MALE;

• SIZE ...... 1.00" x 1.00" x 0.53"

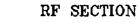
#### AVAILABLE OPTIONS

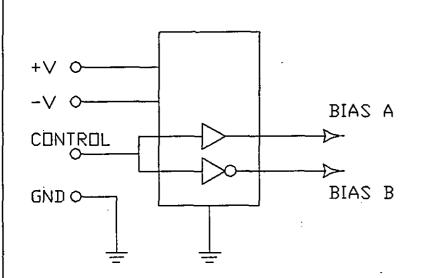
A01 ······ 50 & CONTROL IMPEDANCE
A02 ······ 1000 CONTROL IMPEDANCE
A03 INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)
A13 ······+12 TO +15 VOLTS SUPPLY
A14J1 SMA MALE, J2 SMA FEMALE
A15 ······ J1, J2 SMA MALE
A17 ····· -15 VOLTS SUPPLY
A18 ······ SOLDER TYPE CONTROL TERMINAL

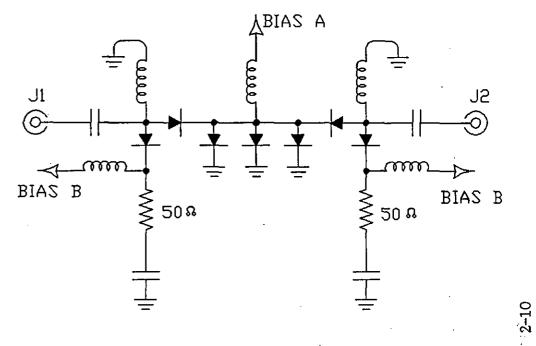


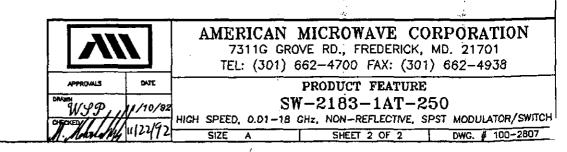
FUNCTIONAL SCHEMATIC

TTL DRIVER

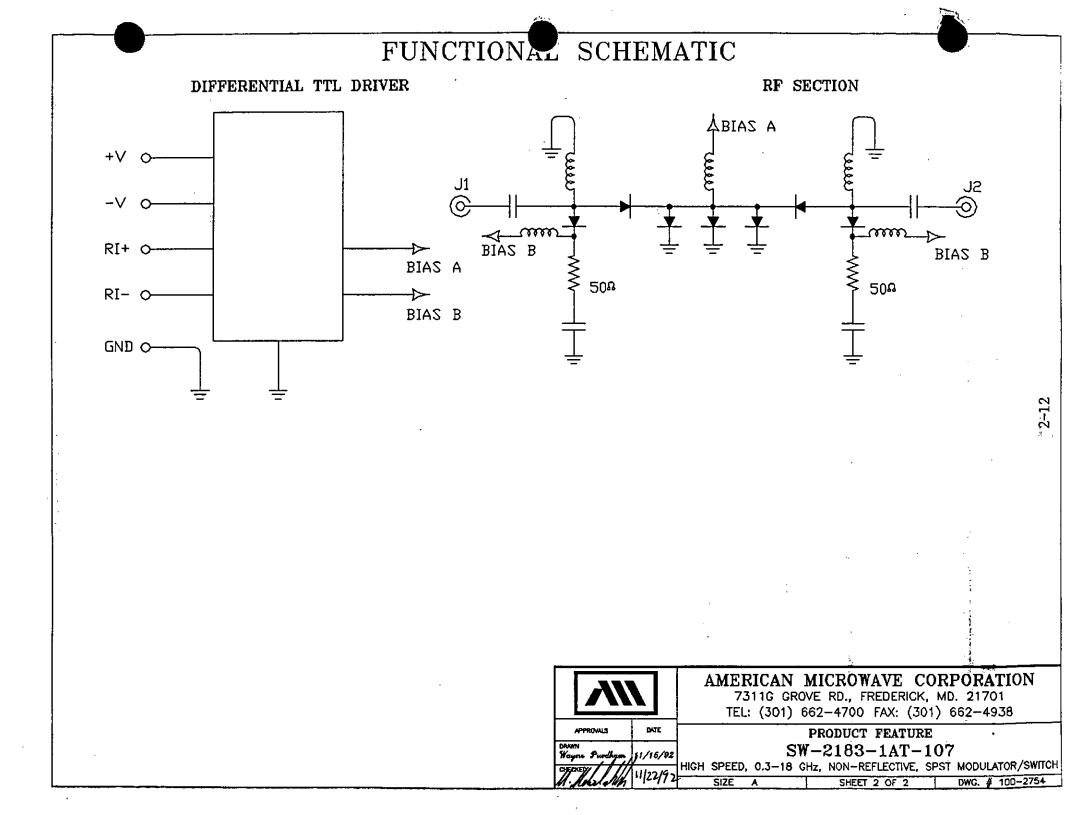








#### REVISIONS DATE APPROVED DESCRIPTION DESCRIPTION ZONE REV. 11/15/92 100 A ORIGINAL RELEASE, JOB # 210273 AMC MODEL SW-2183-1AT-107 IS AN ABSORPTIVE BROAD BAND SPST SWITCH MODULE WITH INTEGRAL DRIVER AND DIFFERENTIAL MECHANICAL OUTLINE LINE RECEIVER INTERFACE CAPABILITY FOR APPLICATIONS WHERE CONTROL SIGNALS ARE CARRIED BY LONG AND NOISY TRANSMISSION LINES. SPECIFICATIONS 0.53 FREQUENCY RANGE MINIMUM 1.00 0.150 **⊢**0.500 • ISOLATION ...... 0.3- 1.0 GHz 70 dB MINIMUM Ø0.104 MOUNTING 1.0-12.4 GHz 80 dB MINIMUM HOLE, THRU 12.4-18.0 GHz 70 dB MINIMUM THRU 2 PLCS. SWITCHING TIME RISE (10% RF TO 90% RF) ..... 10 nS MAXIMUM 0.820 FALL (90% RF TO 10% RF) ..... 10 nS MAXIMUM ON (50% CTL TO 90% RF) ..... 50 nS MAXIMUM 1.00 OFF (50% CTL TO 10% RF) ..... 50 nS MAXIMUM CONTROL C (RI+, RI-), COMPATIBLE TO ST506, ST412, L 0.090 ESPI, AND RS-422 LOGIC FAMILIES. (100Ω INPUT IMPEDANCE). 0.090 - - 0.820-• RF POWER RATINGS : NOTES: OPERATING ......+27 dBm CW, MAXIMUM LOGIC TABLE 1) DIMENSIONS ARE IN INCHES SURVIVAL .....+30 dBm CW. OR 10 W (1n S. PW) RF PATH RI+RI-2) TOLERANCES: X.XX $\pm 0.020$ н ON Н OFF L X.XXX ±0.010 $-5VDC \pm 5\%$ (a) 75 mA MAXIMUM APPROX. 1.5 OZ 3) WEIGHT: CONNECTORS ENVIRONMENTAL RATINGS RF INPUT/OUTPUT ..... SMA FEMALE • TEMPERATURE: .....-55°C TO +95°C (OPERATING) POWER SOLDER PIN -65°C TO +125°C (STORAGE) • HUMIDITY ..... MIL-STD-202F, METHOD 103B COND. B • SIZE ..... 1.00" x 1.00" x 0.53" .....MIL-STD-202F, METHOD 213B COND. B • SHOCK AVAILABLE OPTIONS • VIBRATION ...... MIL-STD-202F, METHOD 204D COND, B • ALTITUDE ...... MIL-STD-202F, METHOD 105C COND. B A03 ..... INVERSE LOGIC • TEMPERATURE CYCLE ..... MIL-STD-202F, METHOD 107D COND. A A07 ····· VIDEO FILTER (0.5 dB EXCESS LOSS, 2-18 GHz) AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 A14 ..... J1 SMA MALE, J2 SMA FEMALE TEL: (301) 662-4700 FAX: (301) 662-4938 A15 ······J1, J2 SMA MALE DATE APPROVALS PRODUCT FEATURE SW-2183-1AT-107 0.3 dB EXCESS LOSS) Wayne Purcha 11/15/92 HIGH SPEED, 0.3-18 GHz, NON-REFLECTIVE, SPST MODULATOR/SWITCH SIZE A SHEET 1 OF 2 DWG, # 100-2754



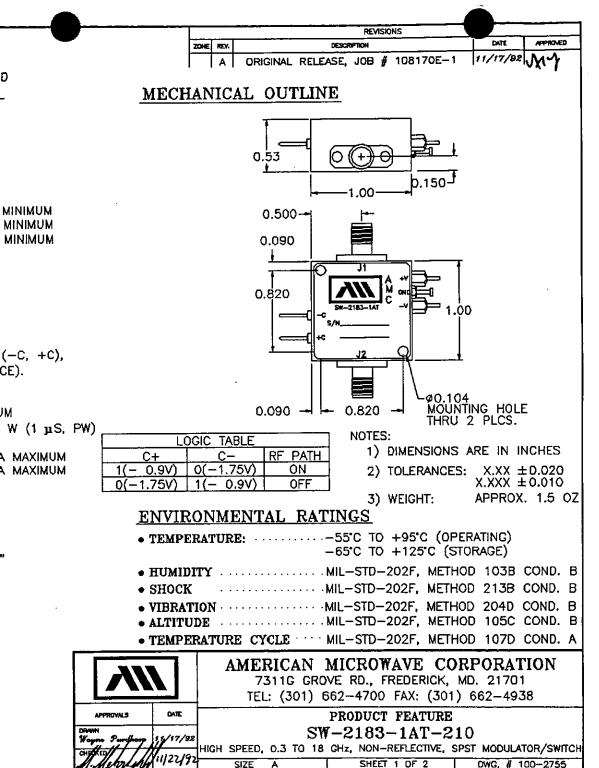
AMC MODEL SW-2183-1AT-210 IS AN ABSORPTIVE BROAD BAND SPST SWITCH MODULE WITH INTEGRAL DRIVER AND BALANCED ECL CONTROL CAPABILITY FOR HIGH SPEED APPLICATIONS.

#### SPECIFICATIONS

- 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
- (100 INPUT IMPEDANCE).
- RF POWER RATINGS
  - OPERATING .....+27 dBm CW, MAXIMUM
  - -5VDC ±5% (a) 75 mA MAXIMUM
  - CONNECTORS RF INPUT/OUTPUT. ..... SMA FEMALE POWER SOLDER PIN

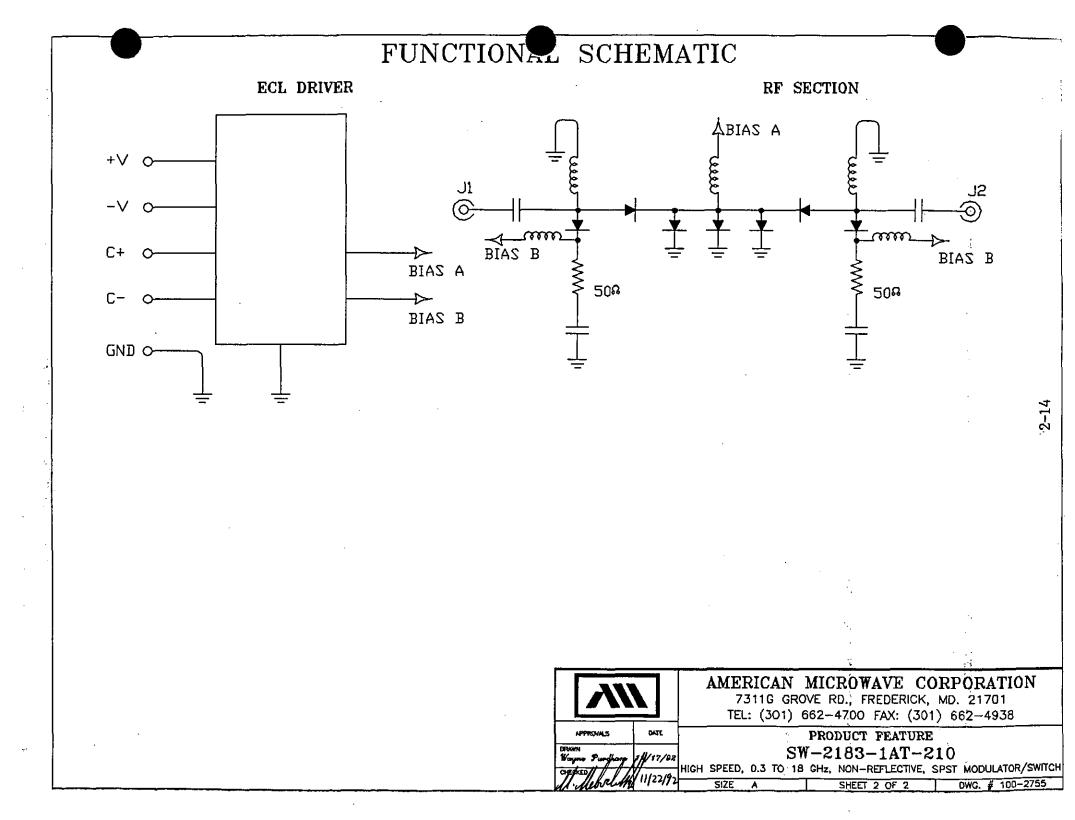
#### AVAILABLE OPTIONS

A03 . . . . . . . . . . . . . INVERSE LOGIC A07 ····· VIDEO FILTER (0.5 dB EXCESS LOSS, 2-18 GHz) A15 ······J1, J2 SMA MALE 0.3 dB EXCESS LOSS) A18 ..... EXTENDED FREQUENCY TO 10 MHz

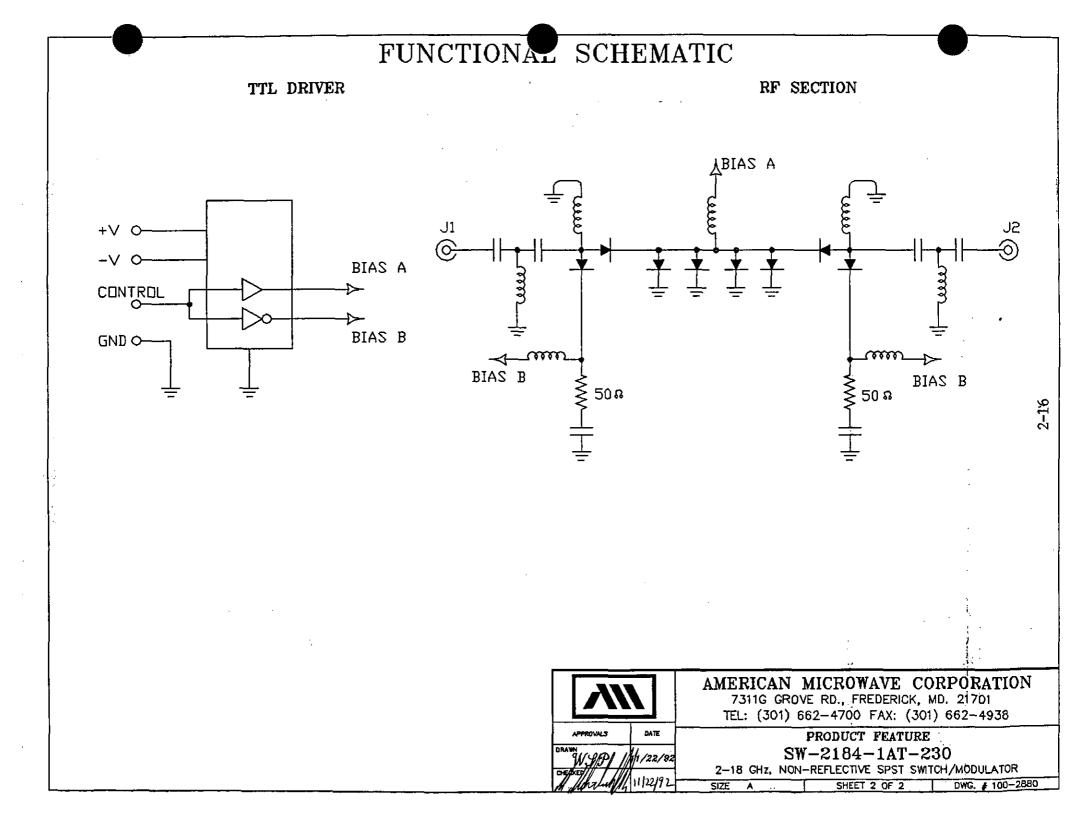


SIZE A

SHEET 1 DF 2



		REMISIONS		
-	ZONE REV.		DATE	APPROV
DESCRIPTION	A  O	RIGINAL RELEASE, JOB # 20250E-1	11/22/92	1120
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.	MECHANICAL			
SPECIFICATIONS	<b> →</b> 0,85 <b>→</b>	<b>→</b> 1.10		
● FREQUENCY RANGE ····································				
• INSERTION LOSS · · · · · · · · · · · · · · · · · ·				HUES
ISOLATION     SOLATION     SOLATION     SOLATION			j <del>- /</del>	•
• VSWR (ON/OFF)				
• SWITCHING TIME			/	
RISE (10% RF TO 90% RF)		TAI-2819-W2 DPTIDN <u>230</u>	h/ J2	1.16
FALL(90% RF TO 10% RF)10 nsec MAXIMUM ON (50% TTL TO 90% RF)50 nsec MAXIMUM			l µ Š	
OFF (50% TTL TO 10% RF) 50 nsec MAXIMUM	0.31		╽┝╼┖╌╜╶╻╴	
RF POWER RATINGS			<u>با</u>	
● IN-BAND VIDEO POWER/TRANSIENTS····-60 dBm MAXIMUM, OR 10 mV (P-P) IN 100 MHz BW	0.210		0.120	
• CONTROLS	MARKINGS THIS DRIVER SIDE CI		RU	
● POWER SUPPLY · · · · · · · · · · · · · · · · · · ·	2			
• CONNECTORS		NOTES:		
RF INPUT/OUTPUT······SMA FEMALE POWER ·······SOLDER PIN (EMI) CONTROL ··········SMC (MALE)		1) DIMENSI 2) TOLERA	XXXX	±0.02 ±0.01
● SIZE····································		3) WEIGHT:	APPRO	)X. 1.5
	ENVIRONMEN'	<u>FAL_RATINGS</u>		
	• TEMPERATURE			
AVAILABLE OPTIONS		-65°C TO +125°C (STOP	RAGE)	
A01 ····································		MIL-STD-202F, METHOD		
A02·······100Ω CONTROL IMPEDANCE A03······INVERSE CONTROL LOGIC (LOGIC *0" ISOLATION)		MIL-STD-202F, METHOD		
A13 ····································		MIL-STD-202F, METHOD		
A14JI SMA MALE, J2 SMA FEMALE CONNECTORS		MIL-STD-202F, METHOD		
A15 ······TWO SMA MALE CONNECTORS	• TEMPERATURE C	YCLE MIL-STD-202F, METHOD	107D CON	D. A
A18 ······SOLDER TYPE CONTROL TERMINAL 240 ····································	AME	RICAN MICROWAVE CO	RPORAT	ION
240 ····································		311G GROVE RD., FREDERICK, M		
		L: (301) 662-4700 FAX: (301	) 662-493	i8
	APPROVALS DATE	PRODUCT FEATURE		
ORAL	WJP 1 11/22/02	SW-2184-1AT-2		
	11/22/92 2-1 SITE	8 GHZ, NON-REFLECTIVE SPST SWIT	CH/MODULAT	TOR



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

- VSWR (ON/OFF) ..... 2.0:1 MAXIMUM

#### 

- IN-BAND VIDEO POWER/TRANSIENTS ···· -60 dBm MAXIMUM, OR 10 mV (P-P) IN 100 MHz BW

- CONNECTORS

2-17

RF INPUT/OUTPUT	SMA	FEMALE	
POWER	SOLD	ER PIN	(EMI)
CONTROL · · · · · · · · · · · · · · · · · · ·	SMC	(MALE)	
• SIZE	1.0"	x 10'	x 0.53"

#### AVAILABLE OPTIONS

- A01
   50Ω CONTROL IMPEDANCE

   A02
   100Ω CONTROL IMPEDANCE

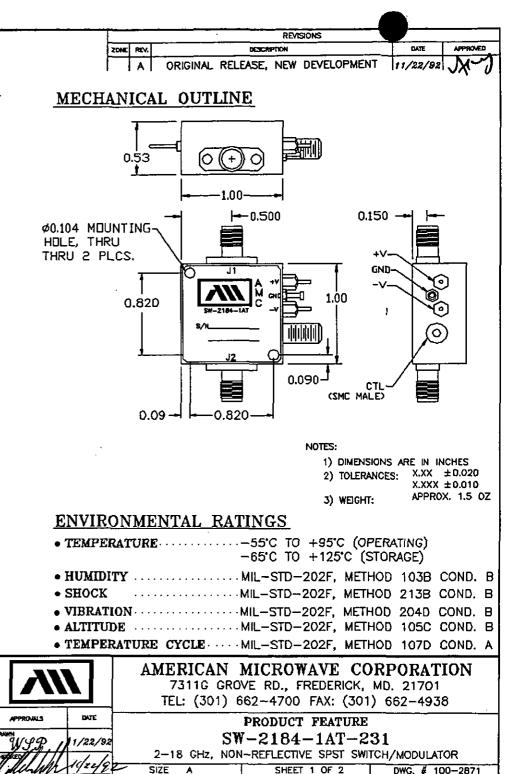
   A03
   INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)

   A13
   ±9 TO ±15 VOLTS SUPPLY

   A14
   J1 SMA MALE, J2 SMA FEMALE CONNECTORS

   A15
   TWO SMA MALE CONNECTORS

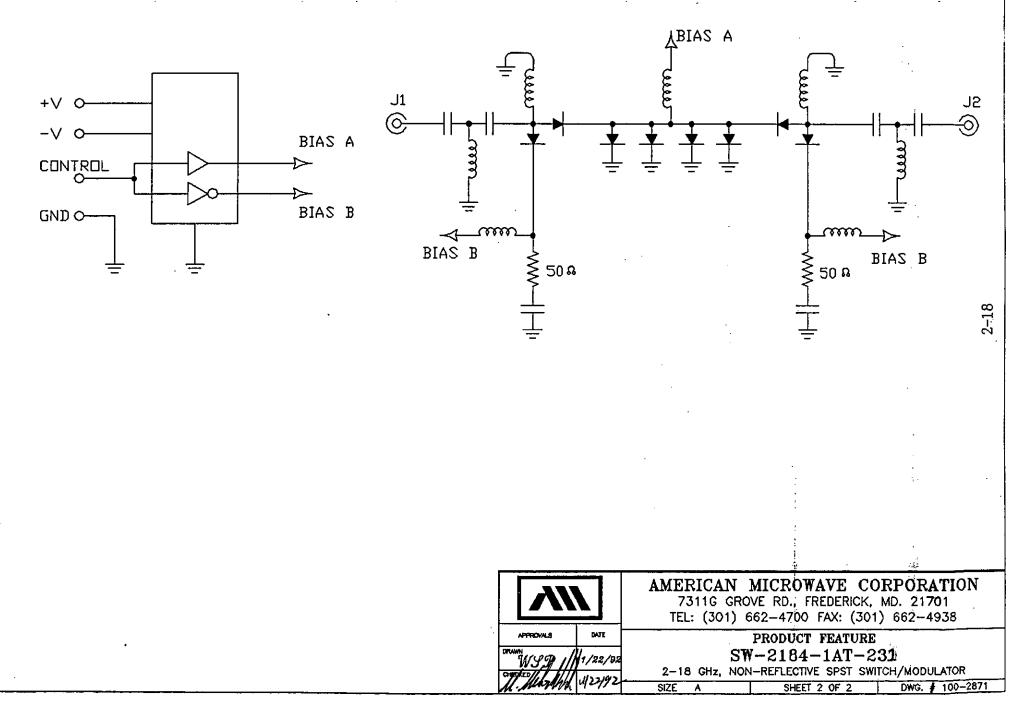
   A15
   CONDECTORS
- A18 ..... SOLDER TYPE CONTROL TERMINAL



FUNCTIONA SCHEMATIC

TTL DRIVER

RF SECTION





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	• 100-500 MHz	LOW NOISE SWITCH MODULE, AMC MODEL NO: SW-0105-2A	
	• 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
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,



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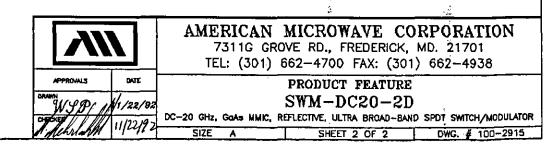
#### **PRODUCT DESCRIPTION** SECTION PAGES 3 SP2T, REFLECTIVE 3-3 • 2-18 GHz 2 WATT SWITCH, AMC MODEL NO: SW-2181-2A-113..... 3-31 0.3-20 GHz 10 nsec CURRENT CONTROLLED, MINIATURE SWITCH MODULE, AMC MODEL NO: SW-2181-2..... 3-33 0.5-20 GHz

4

.

			REVISIONS	DATE	APPROV
DESCRIPTION	-		RELEASE, NEW DEVELOPMEN		
AMC MODEL SWM-DC20-2D IS	A REFLECTIVE GOAS MMIC SPDT TTL DRIVER, DESIGNED FOR ULTRA , AND LOW DC POWER CONSUMPTION, SING.	MECHANICAL OUT		11 1 <i>1 11 1</i> 1	"JXI"
SPECIFICATIONS		0. 0,266	466		
• FREQUENCY RANGE			<b>666 6</b>		
INSERTION LOSS · · · · · · · · · · · · · · · · · ·	UC-10 GHz, 2.2 dB MAXIMUM 10-18 GHz, 2.8 dB MAXIMUM 18-20 GHz, 3.5 dB MAXIMUM			IELD REPLAC	CEABL
• ISOLATION				PLACES	-
• VSWR (ON)	·····2:1 MAXIMUM		AMERICAN MICROWAVE CORPORTION		
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF) ···· FALL (90% RF TO 10% RF) ···· ON (50% TTL TO 90% RF) ···· OFF (50% TTL TO 10% RF) ····</li> </ul>	·····10 ns MAXIMUM ·····20 ns MAXIMUM		PTS SHE AODEL NO: SWM-DC20-20 PTIONNO:U3 SERIAL NO:U3 PART NO:	1.340	1.50
• RF POWER RATINGS (IDB COMP.) 0.5-20 GHz 0.05 GHz	·····+25 dBm TYPICAL ·····+18 dBm TYPICAL			0.080	<u>_</u> t
CONTROL ·····	····· TTL COMPATIBLE, UNITY LOAD SINGLE CONTROL (TOGGLE) (SEE LOGIC TABLE)	Ø0.100 THRU	-0.750		
POWER SUPPLY		LOGIC TABLE	1) DIMENSION	IS ARE IN II	NCHE
• CONNECTORS		E1 J1-J2 J1-J3	2) TOLERANCI	ES: X.XX ± X.XXX ±	20.02
RF INPUT/OUTPUT	SOLDER BIN	1 ON OFF Q OFF ON	3) WEIGHT:		
CONTROL	····· SOLDER PIN	ENVIRONMENTAL			
(CONSULT FACTORY FOR AVAILAI		• TEMPERATURE · · · · · ·			
• SIZE	····· 1.50" x 1.50" x 0.40"	• HUMIDITY			
AVAILABLE OPTIONS			MIL-STD-202F, MET		
A01	. IMPEDANCE	• ALTITUDE	MIL-STD-202F, MET	THOD 105C	CON
A03HERMETIC SEA		• TEMPERATURE CYCLE			
A05 INVERSE CONTR	OL LOGIC (LOGIC "O"= J1-J2 PATH ON)		AN MICROWAVE CO GROVE RD., FREDERICK,		
A06SINGLE ENDED	CONTROL LOGIC		01) 662-4700 FAX: (30		
ADBDIFFERENTIAL TT ADDHIGH ISOLATION	L CONTROL LOGIC (RS-422 LOGIC FAMILY)	PROVALS DATE	PRODUCT FEATURI		
A1DSMC MALE CO	NTROL CONNECTOR	19P/ H1/22/82	SWM-DC20-21		
A11SMA FEMALE C A12OTHER POWER		DC-20 GHz, GaAs I	MMIC, REFLECTIVE, ULTRA BROAD-BA	ND SPDT SWITCH	

FUNCTIONAL SCHEMATIC REGULATOR +V 0--V 0-REGULATOR BUFFER AMPLIFIER CTL O-DRIVER GaAs MMIC JS () €U (⊙ 3-6 ල J1



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

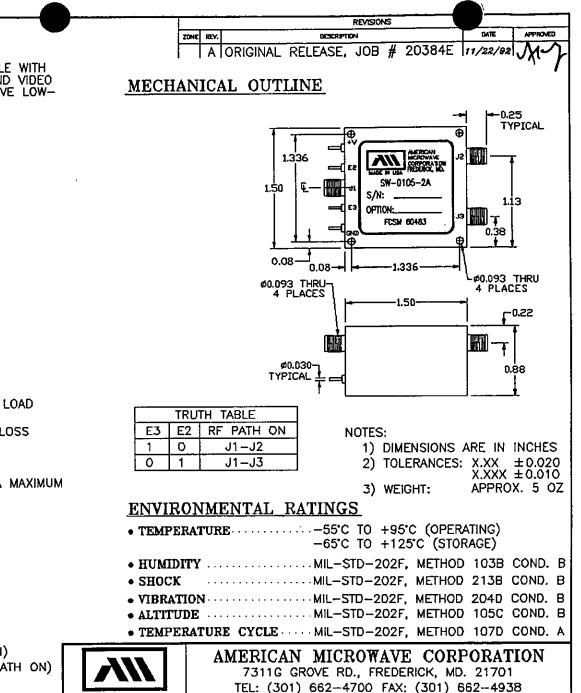
- PHASE BALANCE MAXIMUM

- SWITCHING TIME

RISE	(10%	RF	TO	90%	RF) · · · · · · · · · · · · · · · · · · ·	300	ns	MAXIMUM
FALL	(90%	RF	ΤŌ	10%	RF> · · · · · · ·	300	ns	MAXIMUM
ON	(50%	ΠL	TO	90%	RF)	500	ns	MAXIMUM
OFF	(50%	ΠL	то	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)
- CONNECTORS RF INPUT/OUTPUT······ SMA FEMALE POWER ····· SOLDER PIN CONTROL ····· SOLDER PIN

#### AVAILABLE OPTIONS



PRODUCT FEATURE

SW-0105-2A

100-500 MHz, LOW NOISE, REFLECTIVE SPDT SWITCH MODULE

SHEET 1 OF 2

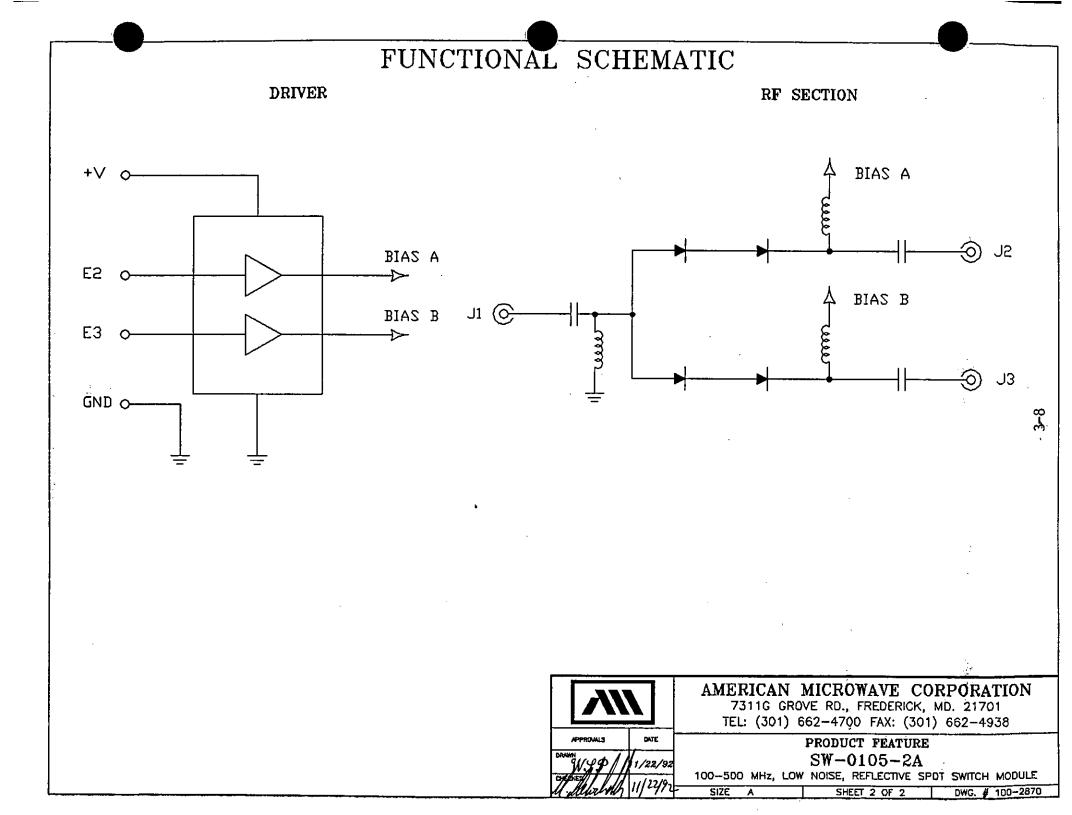
DWG. # 100-2870

DATE

22/92

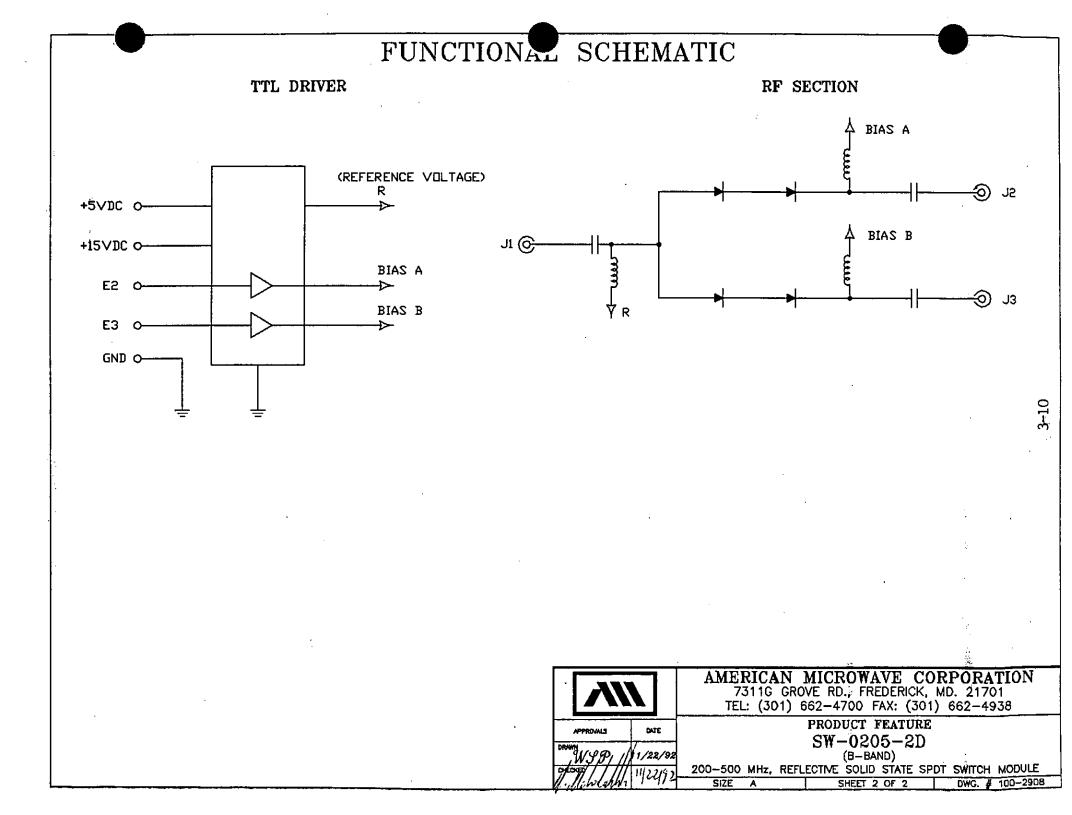
SIZE A

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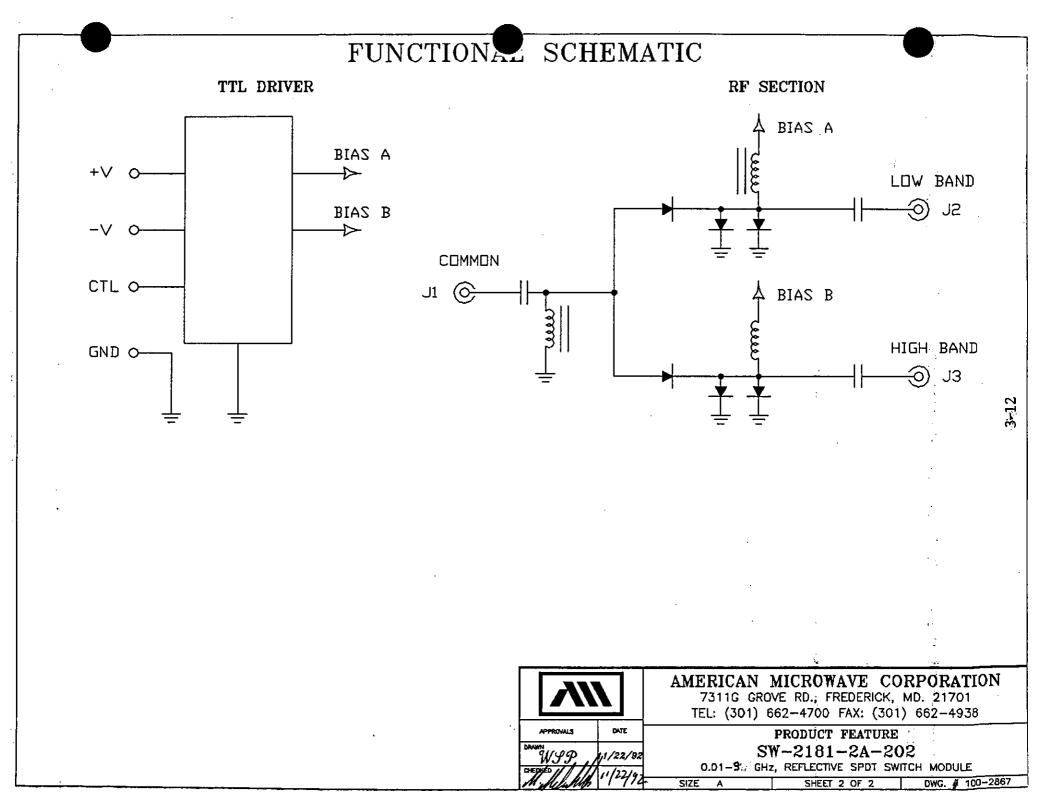


DESCRIPTION	REVISIONS ZONE REV. DESCRIPTION DATE APPRO-
	A ORIGINAL RELEASE, JOB # 10358-4E 11/22/82
AMC MODEL SW-0205-2D IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.	MECHANICAL OUTLINE
SPECIFICATIONS	SMA FEMALE-7
FREQUENCY RANGE     FREQUENCY RANGE     INSERTION LOSS     OSS     OSS	3 PLACES
● INSERTION LOSS BALANCE	
● INSERTION LOSS VARIATION OVER TEMPERATURE + ±0.1 dB MAXIMUM OVER OPERATING TEMPERATURE RANG	
INSERTION LOSS VARIATION OVER FREQUENCY ±0.1 db MAXIMUM     ISOLATION	
• VSWR (ON)	0.50 SOLID STATE SPOT SWITCH JI
RF POWER     HOWER     HOWER	
<ul> <li>SWITCHING TIME</li> <li>RISE (10% RF TO 90% RF) ········40 ns MAXIMUM</li> </ul>	
FALL (90% RF TO 10% RF) 40 ns MAXIMUM	
ON (50% TTL TO 90% RF)	Ø0.140 THRU
SETTLING TIME	4 PLACES NOTES:
ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 113 MAXIMUM OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.0 115 MAXIMUM	1) DIMENSIONS ARE IN INCHES 2) TOLERANCES: X.XX ±0.020
• VOLTAGE TRANSIENTS 1 Vpp MAXIMUM ACROSS 500 LOAD	TRUTH TABLE X.XXX ±0.010 F3   F2   RF PATH ON 3) WEIGHT: APPROX. 3 OZ
<ul> <li>CONTROLS</li> <li>CONTROLS</li> <li>2 INDIVIDUAL CONTROLS</li> <li>LOGIC "O" = INSERTION LOSS</li> </ul>	1         0         J1-J2         4) MATERIALS PROCESS AND PAR TO: MIL-T-19500,MIL-M-385           0         1         J1-J3         CLASS B, MIL-F-18870 JANT; TYPE, ER COMPONENTS
LOGIC "1" = ISOLATION (SEE TRUTH TABLE)	ENVIRONMENTAL RATINGS • TEMPERATURE ····································
HARMONIC DISTORTION PRODUCTS	-55°C TO +70°C (STORAGE)
<ul> <li>SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PM SIDEDANDS IN OPERATING BAND) ·········90 dB BELOW THE OUTPUT SIGNAL LEVEL</li> </ul>	HUMIDITYBIL-STD-202, METHOD 103, CONDITION B     SHOCKMIL-S-901 GRADE A, CLASS I DR II
◆ RF LEAKAGE	<ul> <li>MBRATION</li> <li>MIL-S-167, TYPE 1 MBRATION, 0.1G SINUSCIDAL 25 Hz TO 2000 Hz</li> </ul>
RADIATIVE	• MTEF
1 FOOT DISTANCE APPROXIMATELY CONDUCTIVE	• TEMPERATURE CYCLES 1/2 HOUR SDAK MINUTE -55°C TO +85°C
● RADIATION SUSCEPTIBILITY ····· ≥-76 dBm FOR RF INTERFERENCE FIELD OF	TEMPERATURE SHOCK
-20 dBm/SQUARE FOOT	BURN IN (OPERATING) · · · · · · MIL-STD-883 METHOD 1015.4 TEST CONDITION B,
● CONDUCTED SUSCEPTIBILITY ····································	● ESS (NEXT HIGHER ASSEMBLY)
◆ CONDUCTED SUSCEPTIBILITY (INTERMODULATION)·····≥-85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES	THÈRMAL
<ul> <li>POWER SUPPLY</li> <li>+5VDC ±5% @ 90 mA MAXIMUM +15VDC ±5% @ 40 mA MAXIMUM</li> </ul>	AMERICAN MICROWAVE CORPORATION
(OVER VOLTAGE PROTECTED)	7311G GROVE RD., FREDERICK, MD. 21701
CONNECTORS     RF INPUT/OUTPUT··································	TEL: (301) 662–4700 FAX: (301) 662–4938 PRODUCT FEATURE
POWER	SW-0205-2D
CONTROL	WJD, 1/22/82 (B-BAND)
◆ SIZE ······ 1.69" x 1.19" x 0.675"	ALL ALL ALL ALL ALL ALL ALL ALL ALL ALL

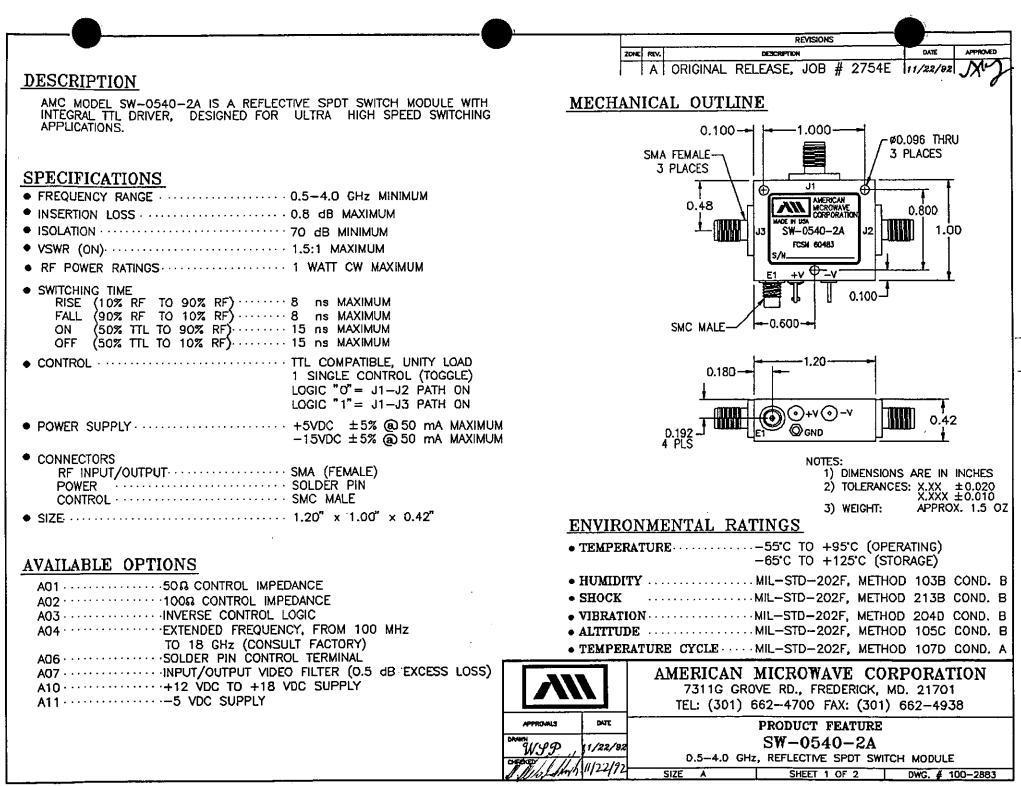
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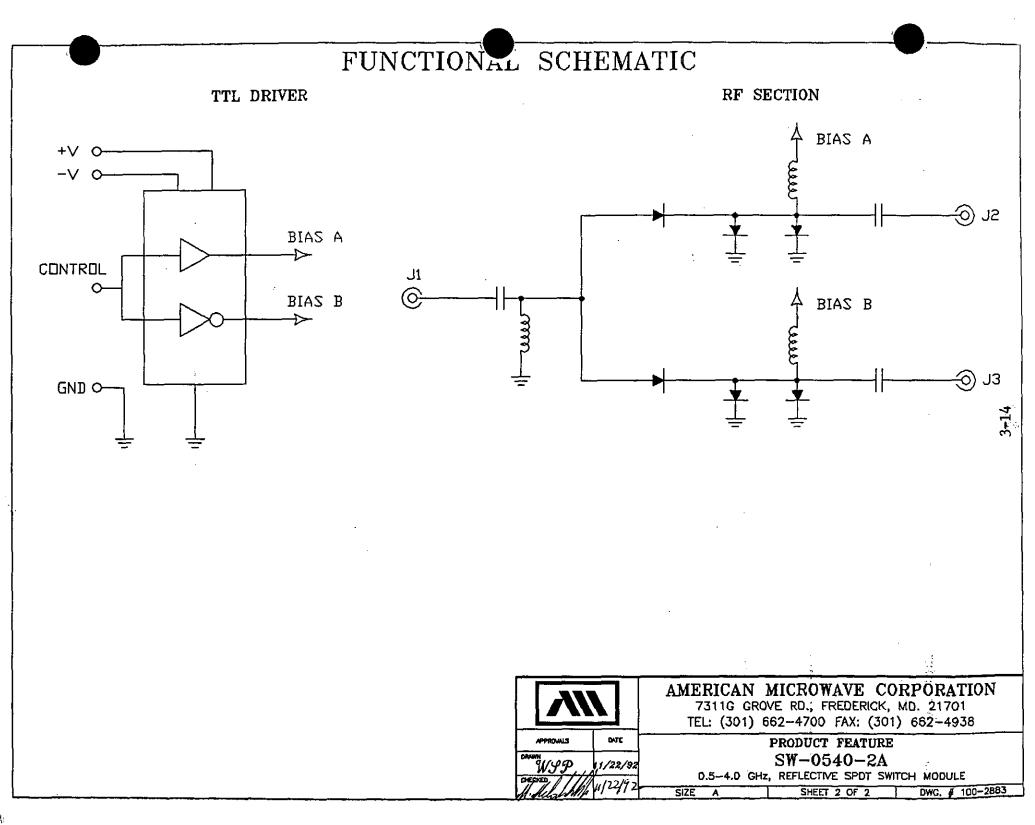
	REVISIONS
	ZONE REM. DESCRIPTION DATE APPROVED A ORIGINAL RELEASE, JOB # 2816E 11/22/92
DESCRIPTION AMC MODEL SW-2181-2A-202 IS A REFLECTIVE SPDT BAND-SELECT SWITCH	I TATURIGINAL RELEASE, JOB # 2010L 100, 2010A
WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE POSTAGE STAMP SIZE HOUSING, DESIGNED FOR ULTRA BROAD-BAND APPLICATIONS SUCH AS WIDE BAND SWEEP GENERATORS.	MECHANICAL OUTLINE PIN FUNCTIONS
SPECIFICATIONS	-V GND +V CTL SMA FEMALE
• FREQUENCY LOW-BAND (J1-J2)	
<ul> <li>INSERTION LOSS LOW-BAND</li> <li>HIGH-BAND</li> <li>2.4 dB MAXIMUM</li> </ul>	0.52 0.52 0.52 0.52 0.70 0.70 0.70
<ul> <li>ISOLATION LOW-BAND</li> <li>HIGH-BAND</li> <li>1-12</li> <li>GHz, 65 dB MINIMUM</li> <li>12-18</li> <li>GHz, 60 dB MINIMUM</li> <li>18-20</li> <li>GHz, 55 dB MINIMUM</li> </ul>	00.104 THRU- 3 PLACES 0.125
<ul> <li>VSWR (ON)</li> <li>LOW-BAND</li> <li>HIGH-BAND</li> <li>1.8:1 MAXIMUM</li> </ul>	
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>	0.12 NOTES: MOUNTING SURFACE 1) DIMENSIONS ARE IN INCHES
• CONTROL TTL COMPATIBLE, UNITY LOAD SINGLE CONTROL (TOGGLE) LOGIC "0" = J1-J2 PATH ON (LOW BAND) LOGIC "1" = J1-J3 PATH ON (HIGH BAND)	2) TOLERANCES: $X.XX \pm 0.020$ $X.XXX \pm 0.010$ TOLERANCES: $X.XX \pm 0.010$ TOLERANCES: $APPROX = 1.0.07$
RF POWER RATINGS     +27 dBm CW MAXIMUM	ENVIRONMENTAL RATINGS
● POWER SUPPLY	• TEMPERATURE
<ul> <li>CONNECTORS RF INPUT/OUTPUT······SMA (FEMALE) POWER ······SOLDER PIN CONTROL ······SOLDER PIN</li> <li>SIZE ·······SIZE ········SOLDER PIN</li> </ul>	<ul> <li>HUMIDITY</li></ul>
AVAILABLE OPTIONS	AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701
A02 ····································	TEL: (301) 662-4700 FAX: (301) 662-4938
A03INVERSE CONTROL LOGIC	
	D         N1/22/92         SW-2181-2A-202           0.01-3         GHz, REFLECTIVE SPDT SWITCH MODULE           V1/22/92         SIZE A         SHEET 1 OF 2
M. Marte	



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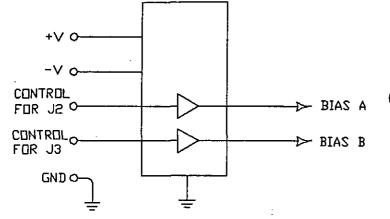
DESCRIPTION	REVISIONS ZONE REV. DESCRIPTION DATE APPROVED
AMC MODEL SW-4080-2D IS A REFLECTIVE, OCTAVE BAND SPDT SWITCH MODULE WITH HIGH SPEED AND HIGH POWER CAPABILITIES.	A ORIGINAL RELEASE, JOB # 204110 11/17/92 My
SPECIFICATIONS	MECHANICAL OUTLINE
<ul> <li>FREQUENCY RANGE</li> <li>INSERTION LOSS</li> <li>4-8 GHz 1.4 dB MAXIMUM</li> <li>3-9 GHz 2.3 dB MAXIMUM</li> </ul>	
• ISOLATION ····································	
• VSWR (ON) 4–8 GHz 1.5:1 MAXIMUM 3–9 GHz 2.2:1 MAXIMUM	1.84-0.120-
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>	CONTROL FOR J2 +V -V GND GND GND RF CONNECTOR SMA FEMALE 3 PLACES
RF POWER RATINGS	
2 INDÉPENDENT CONTROLS LOGIC "O"=INSERTION LOSS LOGIC "1"=ISOLATION	
● POWER SUPPLY · · · · · · · · · · · · · +5VDC ±5% @ 65 mA -12 TO -15VDC ±5%@ 2 mA	1.390 NOTES:
CONNECTORS     RF INPUT/OUTPUT·······SMA FEMALE     POWER ·········SOLDER PIN     CONTROL············SOLDER PIN	1) DIMENSIONS ARE IN INCHES 2) TOLERANCES: X.XX ±0.020 X.XXX ±0.01D 3) WEIGHT: APPROX. 1.2 C
● SIZE 1.84" × 0.86" × 0.38"	ENVIRONMENTAL RATINGS
AVAILABLE OPTIONS	• TEMPERATURE
A01 ······ 50 CONTROL IMPEDANCE	HUMIDITY MIL-STD-202F, METHOD 103B CON     SHOCK MIL-STD-202F, METHOD 213B CON
A02 ····································	VIBRATION MIL-STD-202F, METHOD 204D CONI ALITITUDE MIL-STD-202F, METHOD 105C CONI MIL-STD-202F, METHOD 105C CONI
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         J1 SIGN ATERN (0.5 dB EXCESS LOSS)	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 102D CON AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938
	APPROVAS PATE PRODUCT FEATURE N 9-00-4080-2D HIGH SPEED, REFLECTIVE, HIGH POWER, 3-9 GHZ SPDT SWITCH MODU

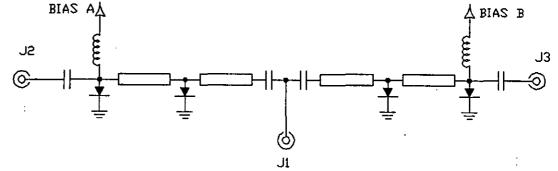
-**3-1**5

# FUNCTIONAL SCHEMATIC

TTL DRIVER

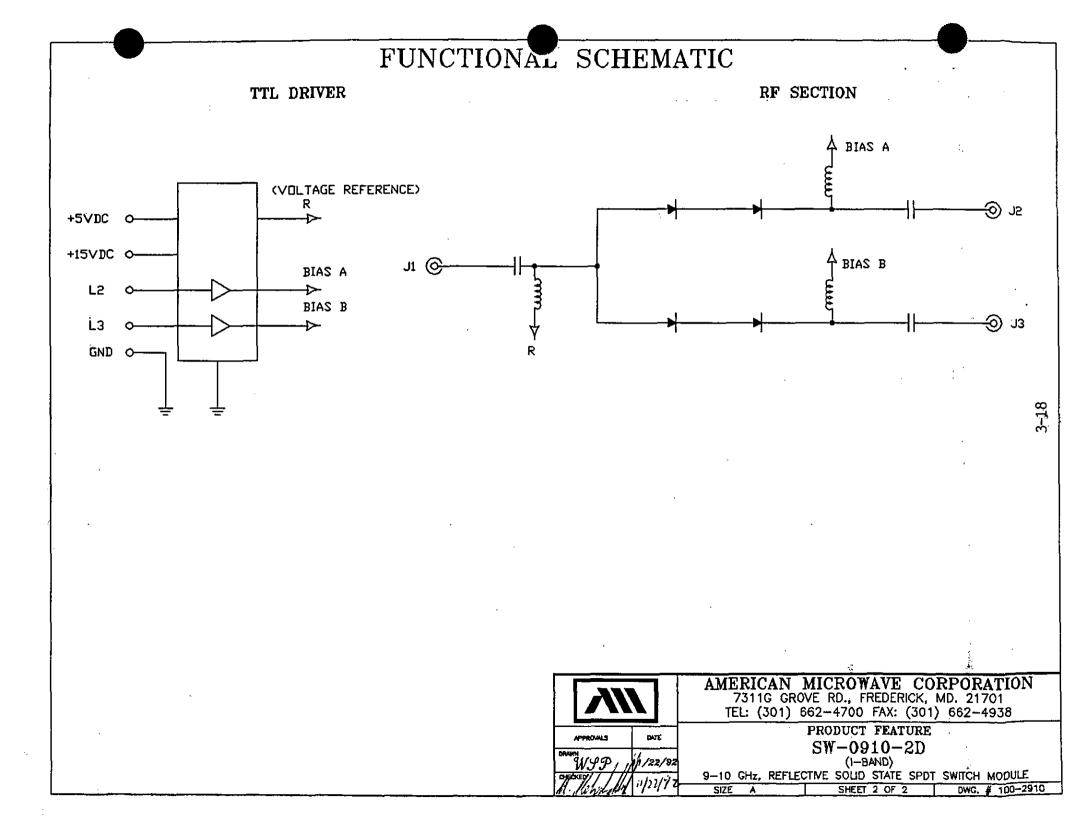
**RF SECTION** 

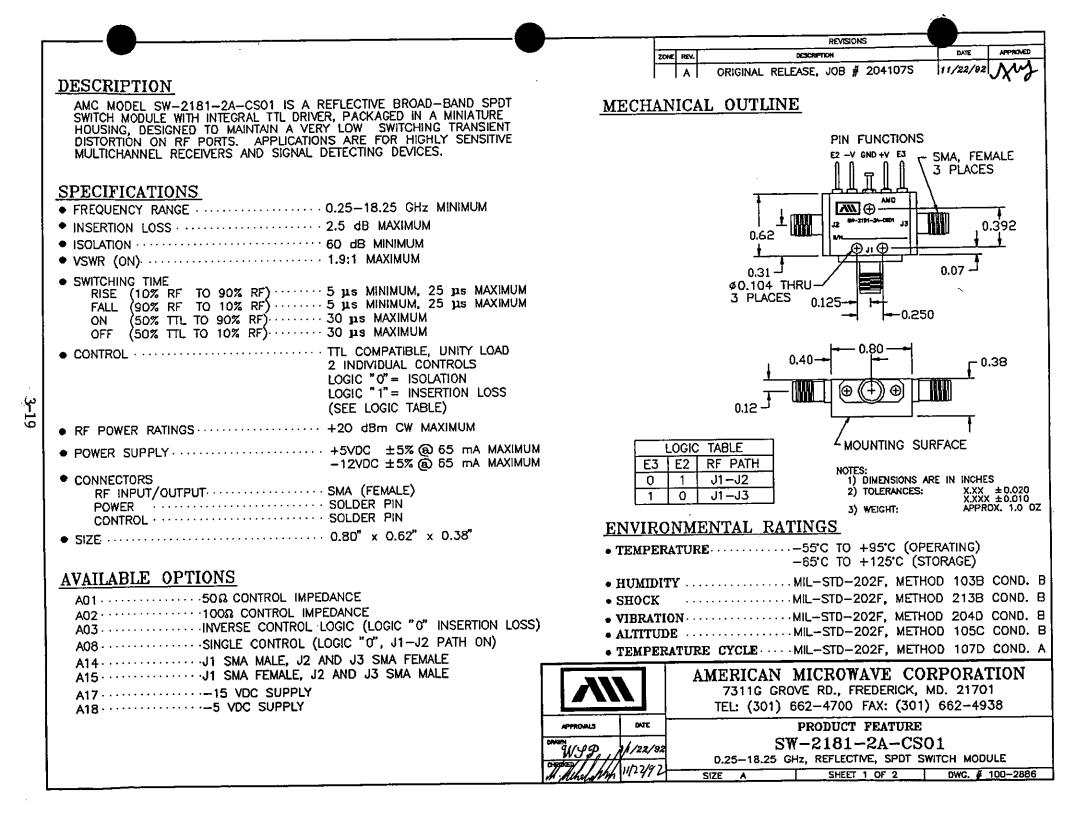


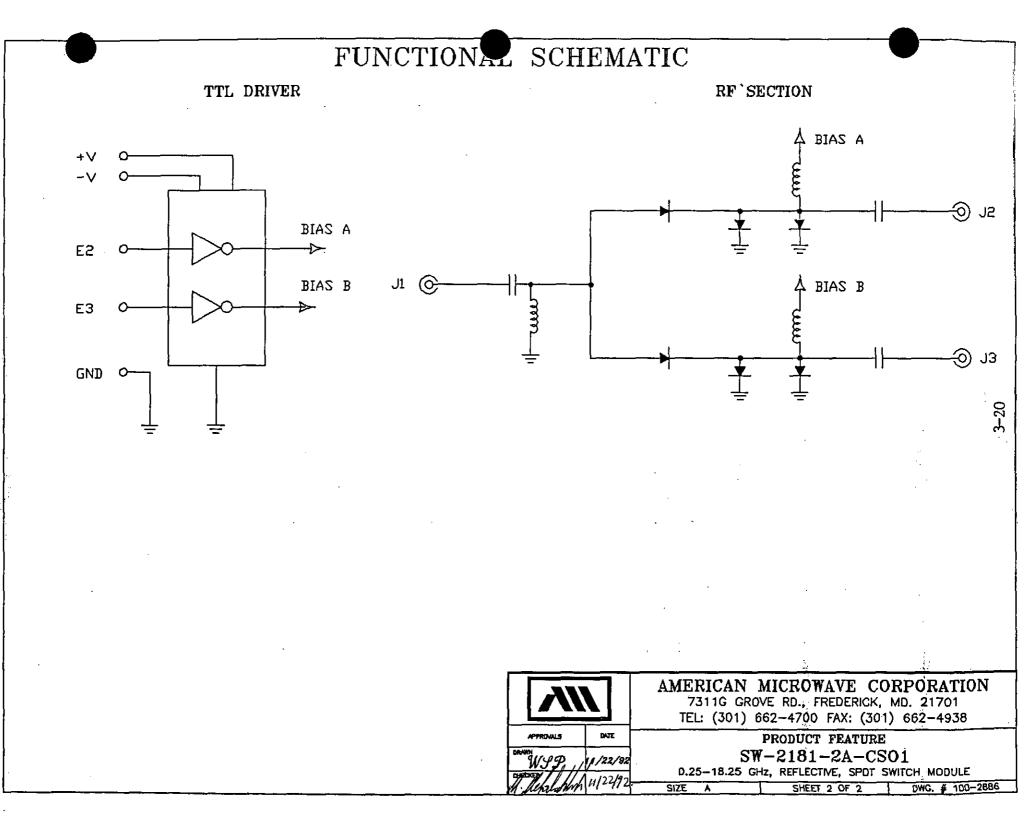


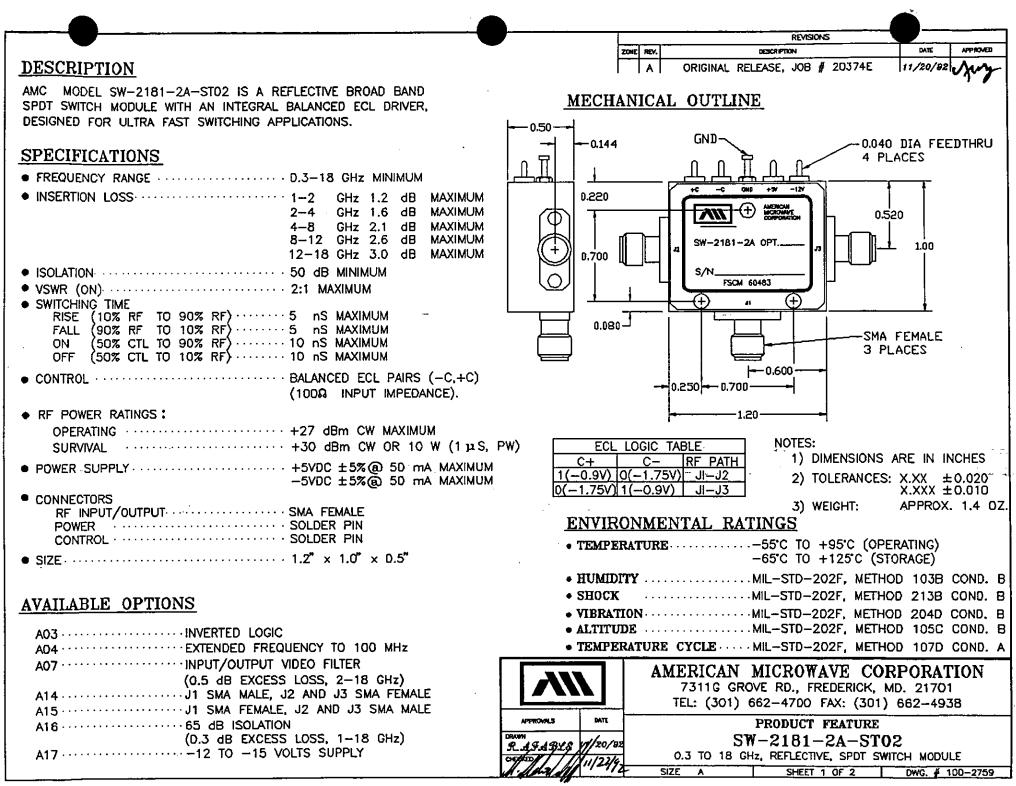
		<u>.                                    </u>	
<b>\\\\</b>	7311G GR(	MICROWAVE CO DVE RD., FREDERICK, 662-4700 FAX: (301	MD. 21701
APPRUVALS DATE	PRODUCT FEATURE		
Wayne Pupelgarpf 11/17/82	sw-4080-2D		
CHEXCH / /// UNDARD	HIGH SPEED, REFLECT	VE, HIGH POWER, 3-9 GH	IZ SPDT SWITCH MODULE
M. Mehrl Min 11/22/92	SIZE A	SHEET 2 OF 2	DWG. # 100-2520

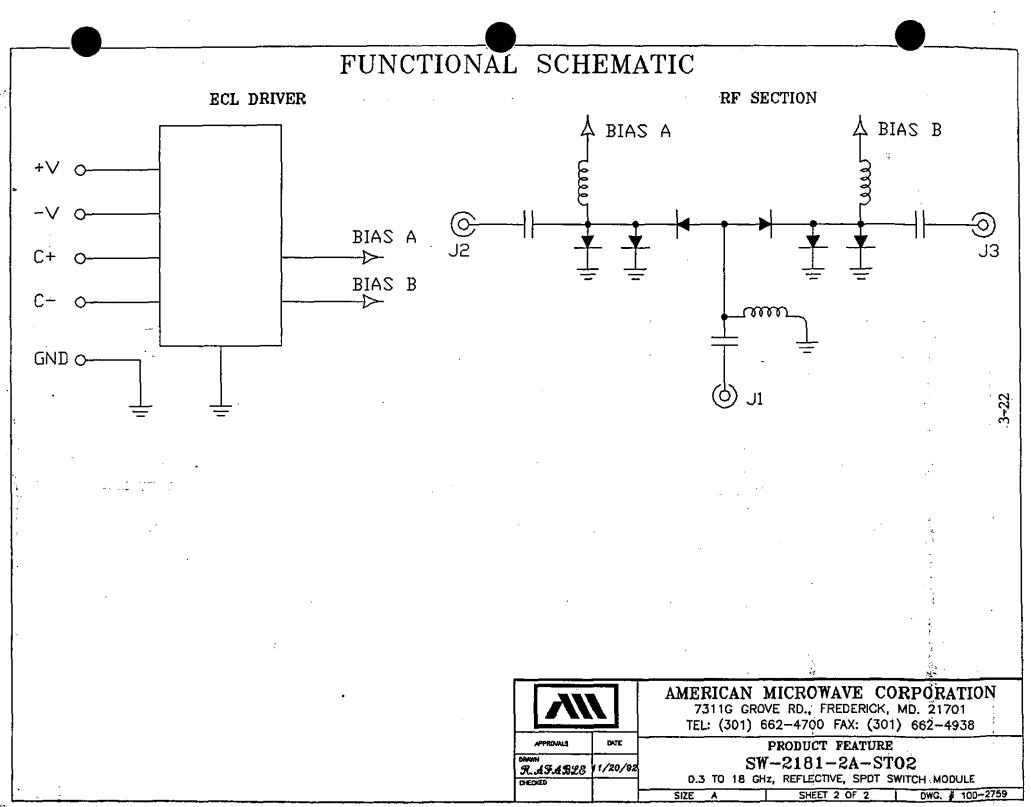
DESCIDENTION	REVISIONS DESCRIPTION DATE APPROVED
DESCRIPTION	A ORIGINAL RELEASE, JOB # 10358-2E 11/22/02
AMC MODEL SW-0910-2D IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS	T TAT ORIGINAL RELEASE, JOB # 10000-22 101720 021
SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND	
SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.	MECHANICAL OUTLINE
SPECIFICATIONS	
● FREQUENCY RANGE ····································	+0.605+1
• INSERTION LOSS	
INSERTION LOSS BALANCE	
INSERTION LOSS VARIATION OVER TEMPERATURE ±0.1 db MAXIMUM OVER OPERATING TEMPERA	
● INSERTION LOSS VARIATION OVER FREQUENCY ··· ±0.1 dB MAXIMUM	
• ISOLATION	IRUTH TABLE
• VSWR (ON)	L3 L2 RF PATH UN
RF POWER     WER     WITHING THAT	1 0 J1-J2 WWW MI NODEL NO: SW-0010-2D SERIAL NO:
● SWITCHING TIME RISE (10% RF TO 90% RF) ·········40 ns MAXIMUM	
FALL (90% RF TO 10% RF)	
ON (50% TTL TO 90% RF) 400 ns MAXIMUM	NOTES: 1) DIMENSIONS ARE IN INCHES
OFF (50% TTL TO 10% RF)	2) TOLERANCES: X.XX ±0.020
• SETTLING TIME	3) WEIGHT: APPROX. 3 0Z
ON (90% TO WITHIN ±0.25 dB OF INSERTION LOSS) 0.7 113 MAXIMUM OFF (10% TO MINIMUM ISOLATION REQUIREMENT) 1.2 113 MAXIMUM	4) MATERIALS PROCESS AND PARTS TO: MIL-T-19500,MIL-M-38510
• VOLTAGE TRANSIENTS ····································	
• CONTROLS ····································	5) REQUIREMENT MIL-F-18870 $T$
2 INDIVIDUAL CONTROLS	
LOGIC "O" = INSERTION LOSS	
	ENVIRONMENTAL RATINGS • TEMPERATURE ····································
(SEE TRUTH TABLE) ● HARMONIC DISTORTION PRODUCTS······50 dBc MINIMUM	● TEMPERATURE
<ul> <li>SPURIOUS SIGNALS/SPECTRAL PURITY</li> </ul>	• HUMIDITY MIL-STD-202, METHOD 103, CONDITION B
(AM/PM SIDEBANDS IN OPERATING BAND) ····································	• SHOCK · · · · · · · · · · · · · · · · · · ·
◆ RF LEAKAGE	MBRATION
RADIATIVE	• MTBF
1 FOOT DISTANCE APPROXIMATELY	ENVIRONMENTAL STRESS SCREENING (ESS)
CONDUCTIVE	• TEMPERATURE CYCLES 10 CYCLES, 1/2 HOUR SDAK MINUTE, -55°C TO +85°C • TEMPERATURE SHOCK
<ul> <li>■ RADIATION SUSCEPTIBILITY······&gt; ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm/SQUARE FOOT</li> </ul>	• VIBRATION · · · · · · · · · · · 10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS
CONDUCTED SUSCEPTIBILITY ························≥ −76 dBm FOR RF INTERFERENCE LEVEL	BURN IN (OPERATING)
● CONDUCTED SUSCEPTIBILITT ··································	160 HOURS @125°C JUNCTION TEMPERATURE (105°C AMBIENT) • ESS (NEXT HIGHER ASSEMBLY)
● CONDUCTED SUSCEPTIBILITY (INTERMODULATION)·····≥-85 dBm FOR -20 dBm RF	THERMAL
INTERFERENCE LEVEL ON DC POWER LINES	RANDOM VIBRATION
● POWER SUPPLY ···········+5VDC ±5% @ 90 mA MAXIMUM	
	AMERICAN MICROWAVE CORPORATION
CONNECTORS     (OVER VOLTAGE PROTECTED)	7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938
RF INPUT/OUTPUT······SMA FEMALE	PRODUCT FEATURE
POWER	
CONTROL	SW-0910-2D WJP ///1/22/92 (I-BAND)
● SIZE ······ 1.41" x 0.50"	9-10 GHz, REFLECTIVE SOLID STATE SPDT SWITCH MODULE
	SIZE A SHEET 1 OF 2 DWG. # 100-2910











÷.

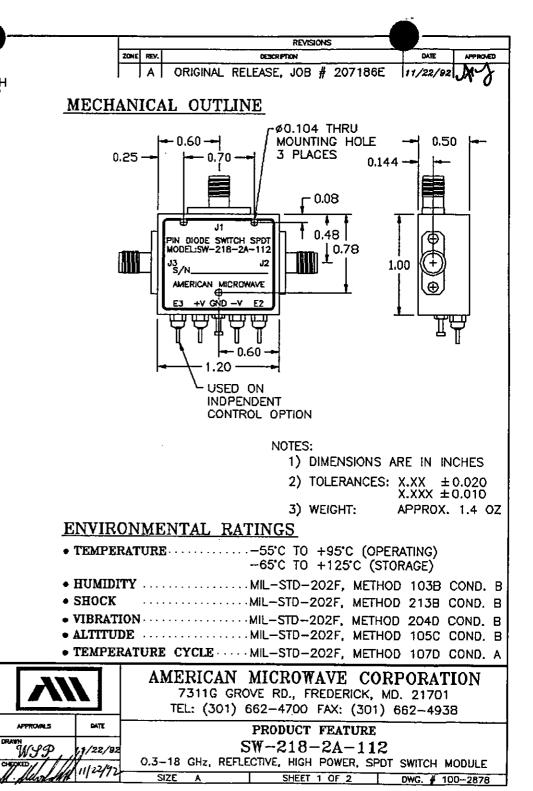
AMC MODEL SW-218-2A-112 IS A REFLECTIVE BROAD BAND SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED TO OPERATE AT +33 dBm CW SIGNAL.

#### SPECIFICATIONS

<u>BI BOILTCATIONS</u>
FREQUENCY RANGE
<ul> <li>INSERTION LOSS</li> <li>INSERTION LOSS</li> <li>0.3-4.0 GHz, 1.2 dB MAXIMUM</li> <li>4.0-8.0 GHz, 1.3 dB MAXIMUM</li> <li>8.0-12.0 GHz, 2.0 dB MAXIMUM</li> <li>12.0-18.0 GHz, 2.5 dB MAXIMUM</li> </ul>
• ISOLATION
• VSWR (ON) ······ 2:1 MAXIMUM
• SWITCHING TIME
RISE (10% RF TO 90% RF)
• RF POWER RATINGS
<ul> <li>CONTROL</li> <li>TTL COMPATIBLE, UNITY LOAD</li> <li>1 DEPENDANT CONTROL (TOGGLE)</li> <li>LOGIC "O" J1-J2 PATH ON</li> <li>LOGIC "1" J1-J3 PATH ON</li> </ul>
<ul> <li>POWER SUPPLY</li> <li>+5VDC ±5% @ 65 mA MAXIMUM</li> <li>-5VDC ±5% @ 50 mA MAXIMUM</li> </ul>
<ul> <li>CONNECTORS RF INPUT/OUTPUT······ SMA (FEMALE) POWER ······ SOLDER PIN (EMI) CONTROL ····· SOLDER PIN     </li> <li>SIZE····· 1.20" x 1.0" x 0.50"</li> </ul>
AVAILABLE OPTIONS
A01
A04

A15 .....J1 SMA FEMALE, J2 AND J3 SMA MALE

A17 ······±9 VDC TO ±18 VDC SUPPLY

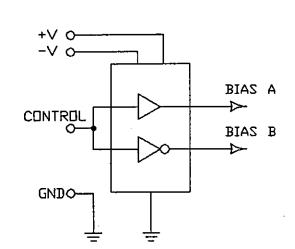


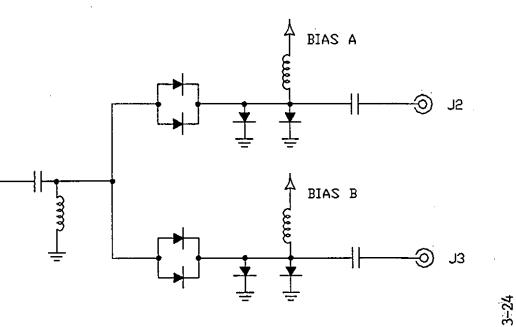
# FUNCTION SCHEMATIC

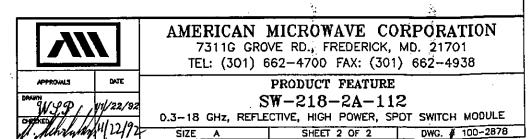
J1 💮

TTL DRIVER

RF SECTION







AMC MODEL SW-218-2 (2L) IS A REFLECTIVE BROAD-BAND SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

#### SPECIFICATIONS

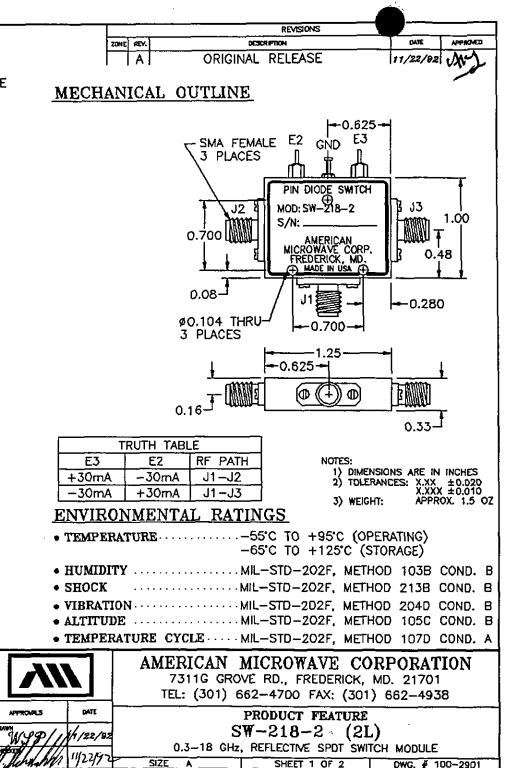
FREQUENCY RANGE     O.3-18 GHz MINIMUM
<ul> <li>INSERTION LOSS         <ul> <li>(-2)</li> <li>(-2)</li> <li>(-2L)</li> <li>(-2L)</li> </ul> </li> <li>AB MAXIMUM</li> </ul>
• ISOLATION
• VSWR (ON) ······ 2.3:1 MAXIMUM
RF POWER RATINGS     HAXIMUM     +27 dBm CW MAXIMUM
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>
<ul> <li>CONTROLS</li> <li>CURRENT CONTROLLED</li> <li>2 INDEPENDENT CONTROLS</li> <li>+30 mA = ISOLATION</li> <li>-30 mA = INSERTION LOS</li> <li>(SEE TRUTH TABLE)</li> </ul>

RF INPUT/OUTPUT······					
• SIZE	1.25"	х	1.00"	x	0.325"

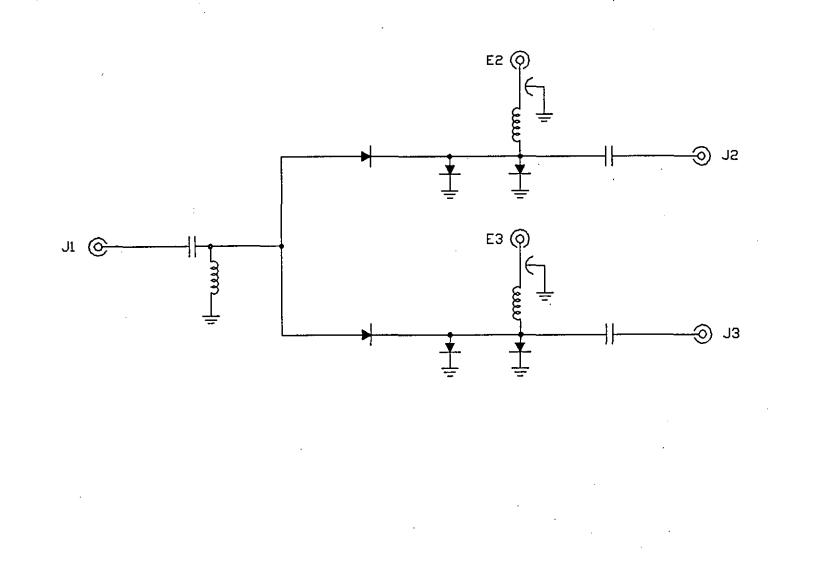
#### AVAILABLE OPTIONS

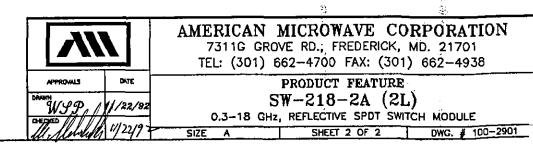
A04 · · · · · · · · · · · · INPUT/OUTPUT VIDEO FILTER (0.5 dE	EXCESS LOSS)
A05 ····· EXTENDED FREQUENCY RANGE TO 10	0 MHz
A13J1 SMA MALE, J2 AND J3 SMA FEMA	LE
A14J1 SMA FEMALE, J2 AND J3 SMA MA	LE

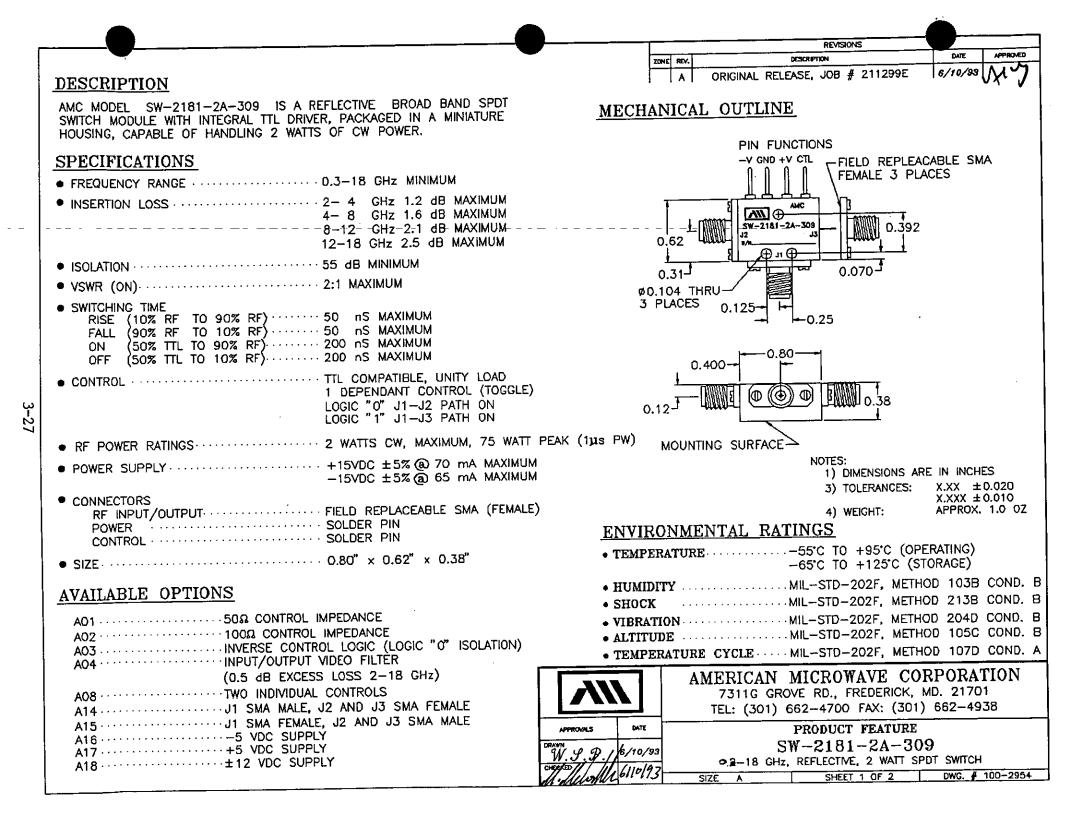
LOSS

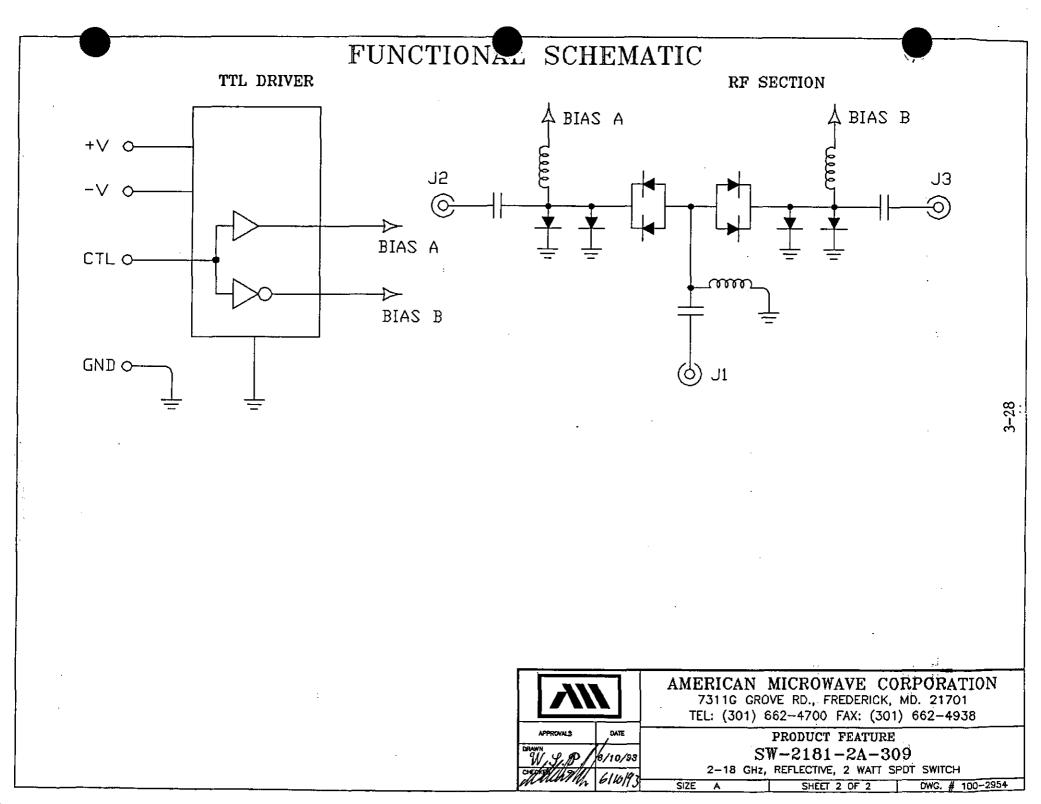


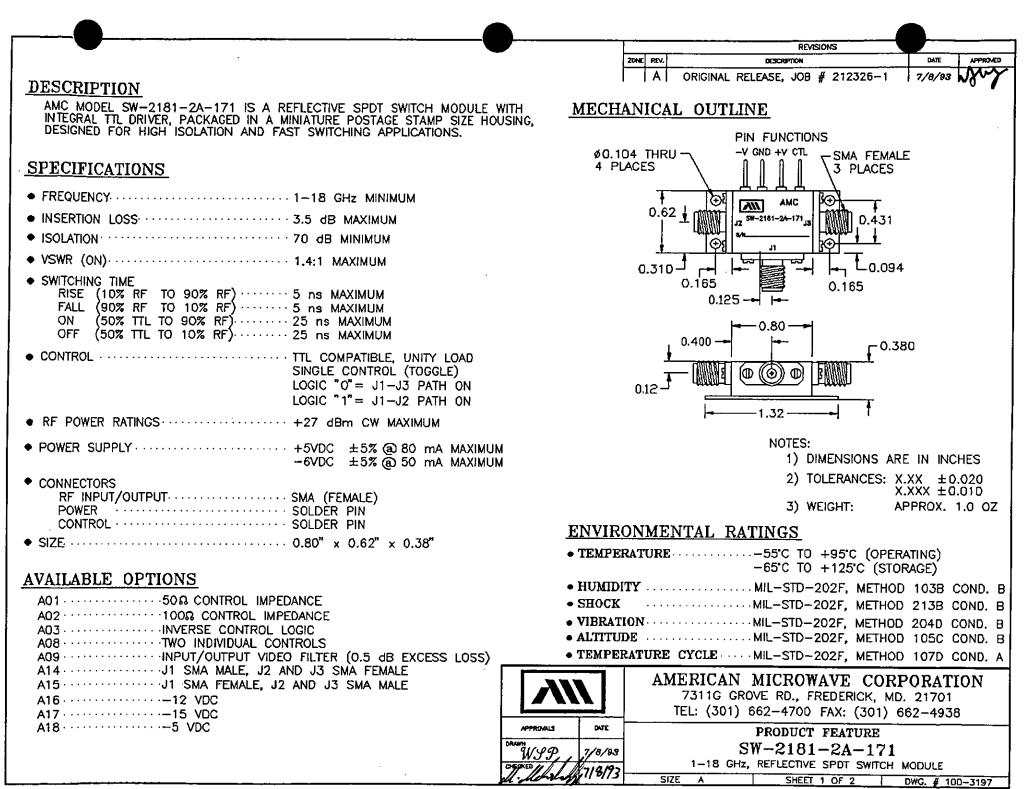
FUNCTION SCHEMATIC

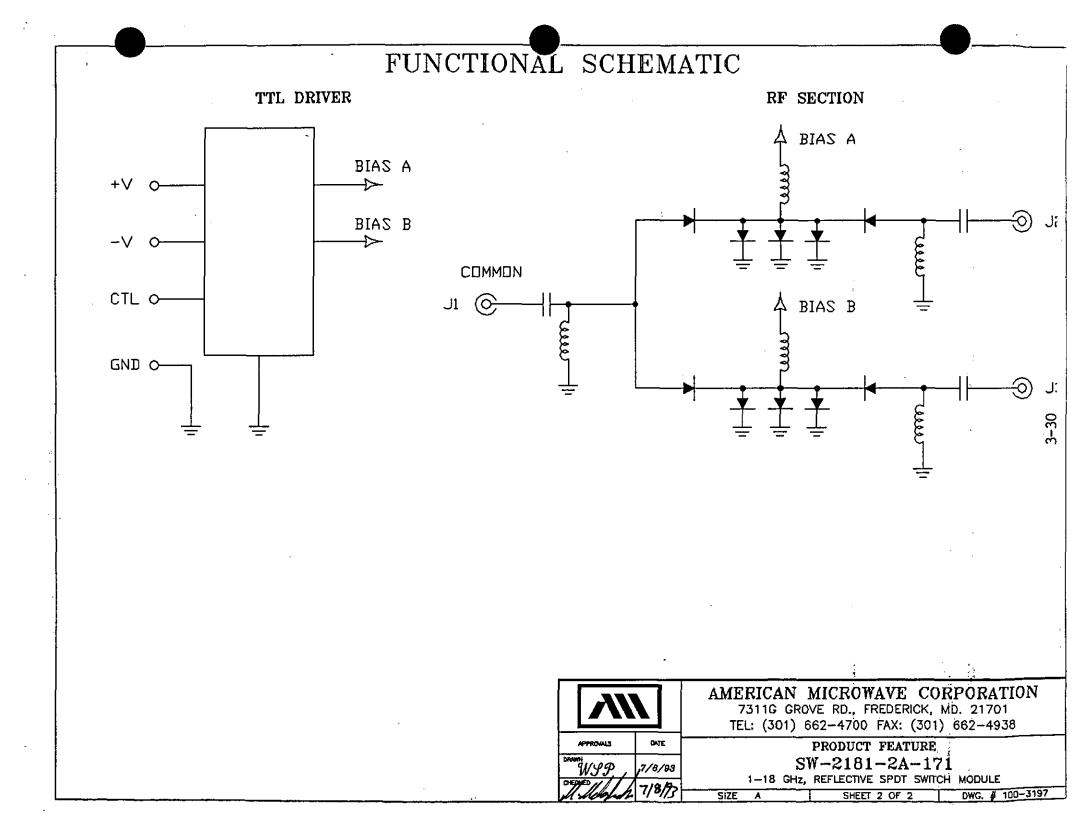












AMC MODEL SW-2181-2A-113 IS A REFLECTIVE BROAD BAND SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A MINIATURE HOUSING, CAPABLE OF HANDLING 2 WATTS OF CW POWER.

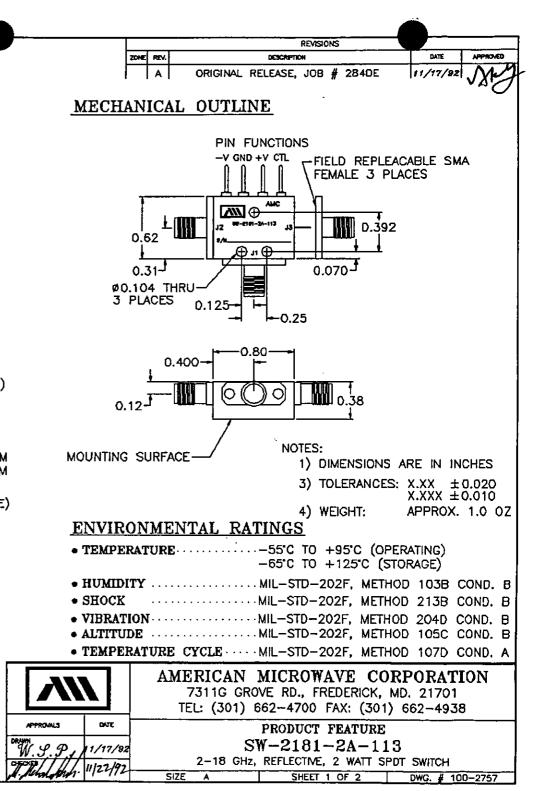
#### SPECIFICATIONS

<ul> <li>INSERTION LOSS</li> <li>2- 4 GHz 1.2 dB MAXIMUM</li> <li>4- 8 GHz 1.6 dB MAXIMUM</li> <li>8-12 GHz 2.1 dB MAXIMUM</li> <li>12-18 GHz 2.5 dB MAXIMUM</li> </ul>	
● ISOLATION · · · · · · · · · · · · · · · · · · ·	
• VSWR (ON)····································	
<ul> <li>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</li> <li>CONTROL</li></ul>	.E)
RF POWER RATINGS     CONTROL 2 WATTS CW, MAXIMUM	
<ul> <li>◆ POWER SUPPLY</li> <li>→ 5VDC ± 5% @ 65 mA MAXIMU</li> <li>→ 15VDC ± 5% @ 65 mA MAXIMU</li> </ul>	
CONNECTORS     RF INPUT/OUTPUT······· FIELD REPLACEABLE SMA (FEMAL     POWER ········ SOLDER PIN     CONTROL ······ SOLDER PIN	LE

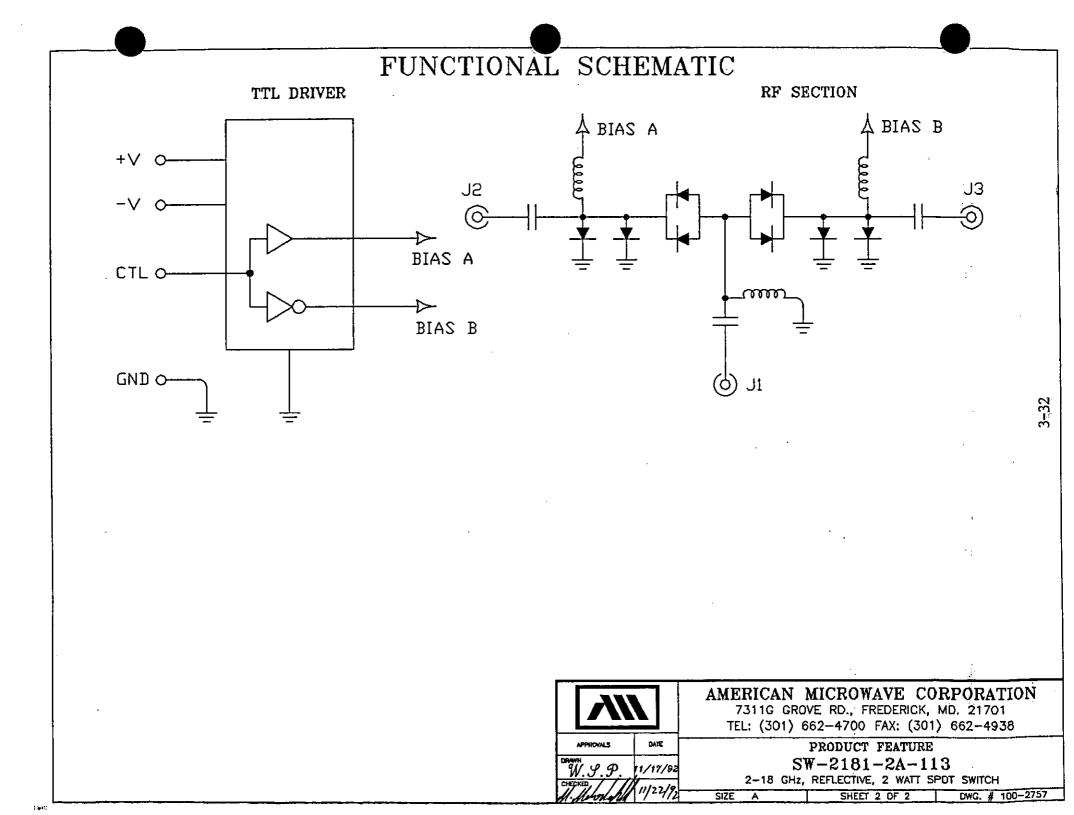
• SIZE ······ 0.80" x 0.62" x 0.38"

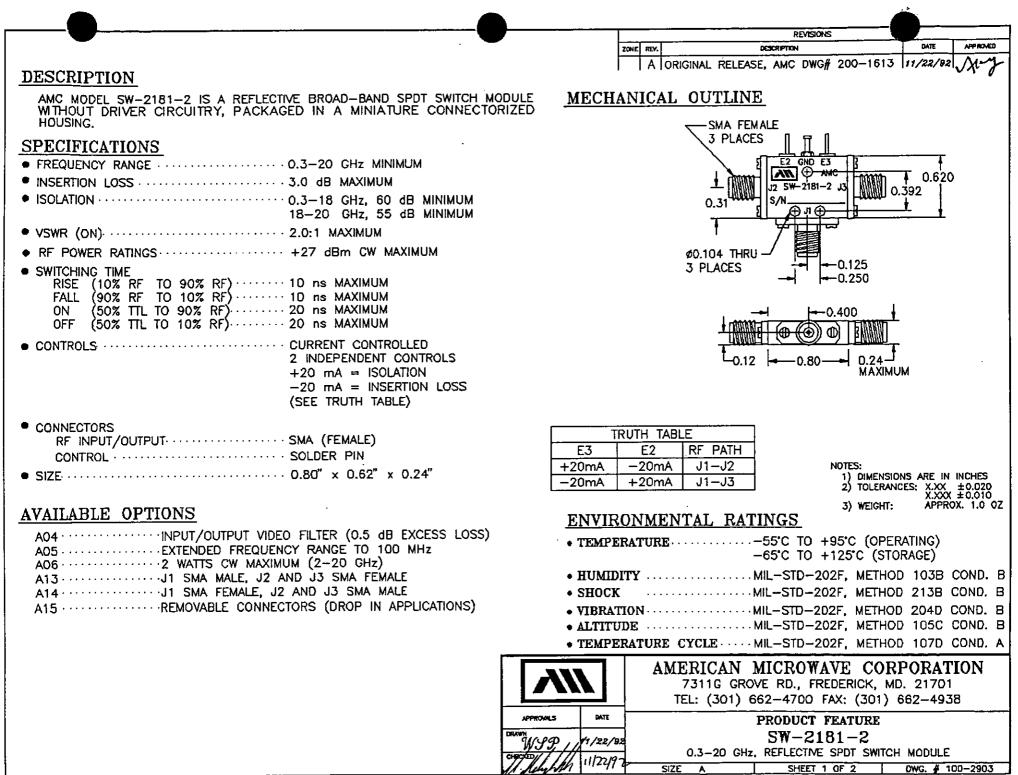
# AVAILABLE OPTIONS

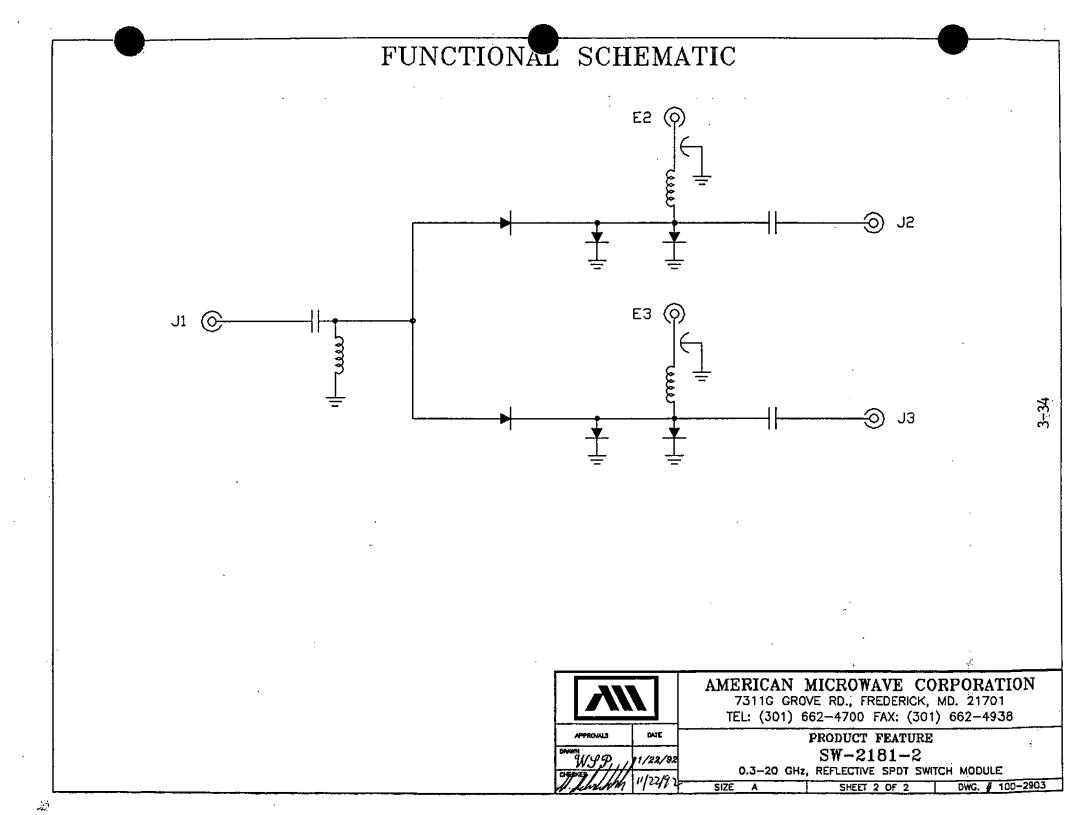
A01 ······ 50& CONTROL IMPEDANCE
A02 ······ 1000 CONTROL IMPEDANCE
A03 INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)
A04 ······ INPUT/OUTPUT VIDEO FILTÈR
(0.5 dB EXCESS LOSS 2-18 GHz)
A08 ······ TWO INDIVIDUAL CONTROLS
A14····· J1 SMA MALE, J2 AND J3 SMA FEMALE
A15······J1 SMA FEMALE, J2 AND J3 SMA MALE
A16·····A16·····
A17 ······ +15 VDC SUPPLY
A18······±12 VDC SUPPLY



<u>3</u>–31







AMC MODEL SW-2181-2A-305 IS A REFLECTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE HOUSING.

## SPECIFICATIONS

- • 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 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 2 INDEPENDENT CONTROLS LOGIC "O" = INSERTION LOSSLOGIC "1" = ISOLATION (SEE TRUTH TABLE) -15VDC ±5% (a) 50 mA MAXIMUM CONNECTORS RF INPUT/OUTPUT ..... SMA (FEMALE) POWER SOLDER PIN AVAILABLE OPTIONS A02 ·········1000 CONTROL IMPEDANCE AD3 ..... INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION) AN4 ......INPUT/OUTPUT VIDEO FILTER (0.5 dB EXCESS LOSS)
  - A05 SINGLÉ 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 A15 SINGLÉ CONTROL (LOGIC "0" = J1-J2 PATH ON)
- REVISIONS APPROVED DESCRIPTION DATE ZONE REV. 11/22/82 11/22/82 ORIGINAL RELEASE, JOB # 20118-1 MECHANICAL OUTLINE TRUTH TABLE TTL 3 TTL 2 RF PATH D J1--J2 0 925 1 J1-J3 0.630 -0.370-버 |~~ 0.150 0.075 -0.075 -Ð 0.325 0.455 ⊕. 1,500 841 #0.094 THRU-LSMA FEMALE 4 PLACES 3 PLACES 1 N N -00.040 Ø0.030-SOLDER PIN SOLDER PIN Ш 2 PLACES 2 PLACES 0.300 ----- 1.000 0.225 -0.135 \_- 0.150 .⊕ ⊕<del>-|լ</del>- $\odot$ 0.150 -0.375 ---NOTES: 0.500 1) DIMENSIONS ARE IN INCHES 0.625 2) TOLERANCES:  $X_X \pm 0.020$ --- 0.850 ---- $X_XXX \pm 0.010$ 3) WEIGHT: APPROX. 1.2 OZ ENVIRONMENTAL RATINGS -65°C TO +125°C (STORAGE) • HUMIDITY ...... MIL-STD-202F, METHOD 103B COND, B .....MIL-STD-202F, METHOD 213B COND. B • SHOCK • 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 DATE APPROVALS PRODUCT FEATURE SW-2181-2A-305 0.5-20 GHz, SPDT REFLECTIVE SWITCH MODULE

SIZE A

SHEET 1 OF 2

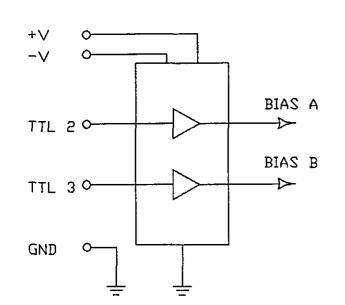
DWG, # 100-2864

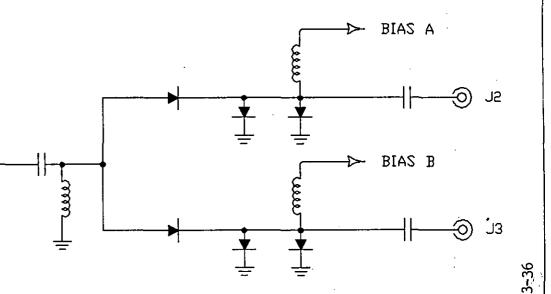
# FUNCTIONAL SCHEMATIC

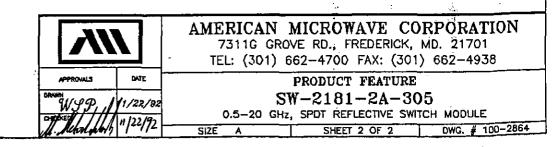
J1 ()

TTL DRIVER

**RF** SECTION









# TABLE OF CONTENTS

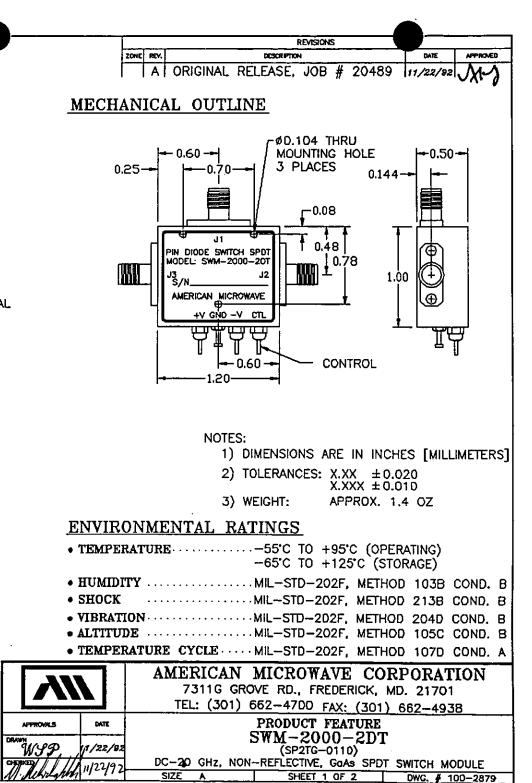
SECTION	1.	PRODUCT DESCRIPTION	PAGES
4	SP2T, NON-RI	EFLECTIVE/ABSORPTIVE	. 4-1
	• DC-2.0 GHz	GaAs MMIC, SWITCH MODULE, AMC MODEL NO: SWM-2000-2DT	4-3
	• DC-6 GHz	GaAs MMIC, LOW INSERTION LOSS, AND FAST SWITCH/MODULE, AMC MODEL NO: SWM-6000-2DT	4-5
	• 1-2 GHz	50 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-2AT-10	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

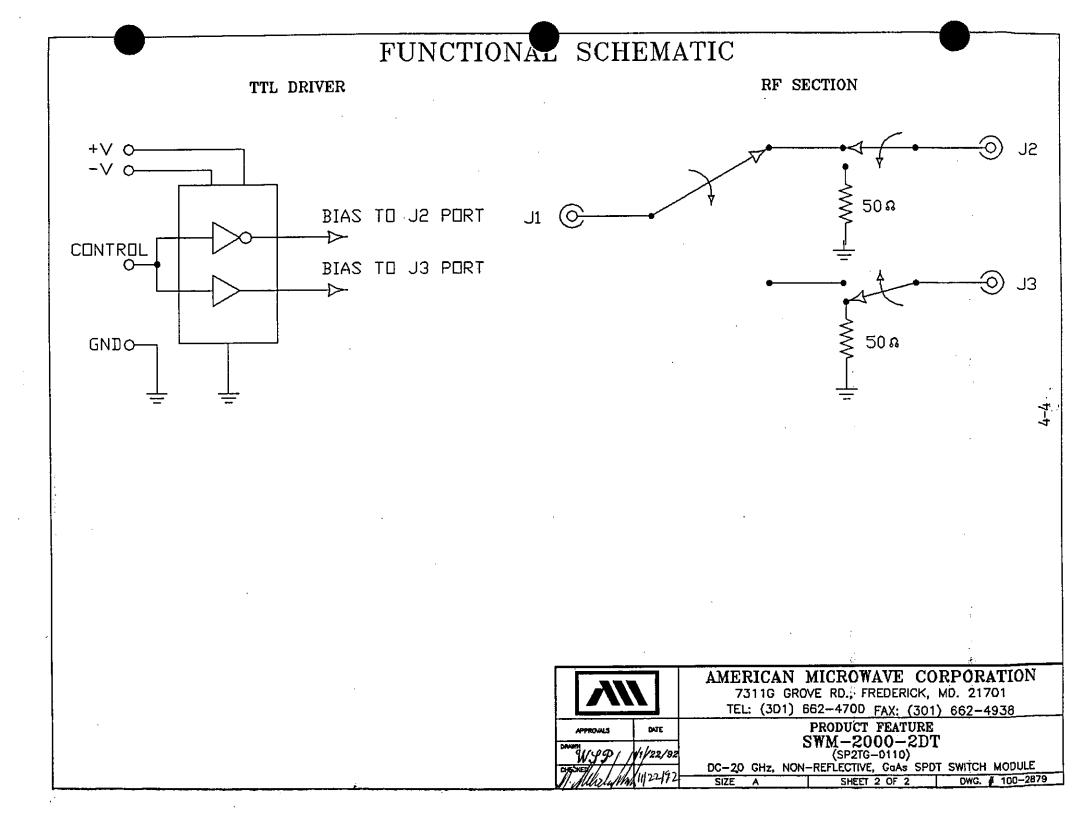
AMC MODEL SWM-2000-2DT IS AN ABSORPTIVE GOAS SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH SPEED, LOW POWER CONSUMPTION, AND BROAD-BAND SWITCHING APPLICATIONS.

#### SPECIFICATIONS

<u></u>
FREQUENCY RANGE     ······················DC-2.0 GHz MINIMUM
<ul> <li>INSERTION LOSS</li> /ul>
<ul> <li>ISOLATION</li> /ul>
<ul> <li>VSWR (ON/OFF)</li> <li>DC-1.0 GHz, 1.5:1 MAXIMUM</li> <li>1.0-2.0 GHz, 1.7:1 MAXIMUM</li> </ul>
<ul> <li>RF POWER RATINGS</li> <li>(1 dB COMPRESSION)</li> <li>1 MHz @+12 dBm TYPICAL</li> <li>0.5-2.0 GHz @+20 dBm TYPICAL</li> </ul>
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>
• CONTROL TTL COMPATIBLE, UNITY LOAD 1 INDIVIDUAL CONTROL (TOGGLE) LOGIC "O" = J1-J3 PATH ON LOGIC "1" = J1-J2 PATH ON
● POWER SUPPLY · · · · · · · · · · · · +5VDC ±5% ④ 5 mA MAXIMUM -5VDC ±5% ④ 10 mA MAXIMUM
<ul> <li>CONNECTORS RF INPUT/OUTPUT······ SMA (FEMALE) POWER ······ SOLDER PIN (EMI) CONTROL ······ SOLDER PIN</li> <li>SIZE ····· 1.20" x 1.00" x 0.50"</li> </ul>
AVAILABLE OPTIONS A01 ····································
A02 ····································

AD1 ······ 50 Q CONTROL IMPEDANCE
A02 ····································
A14J1 SMA MALE, J2 AND J3 SMA FEMALE
A15J1 SMA FEMALE, J2 AND J3 SMA MALE
A17 ·······±9 VDC TO ±18 VDC SUPPLY

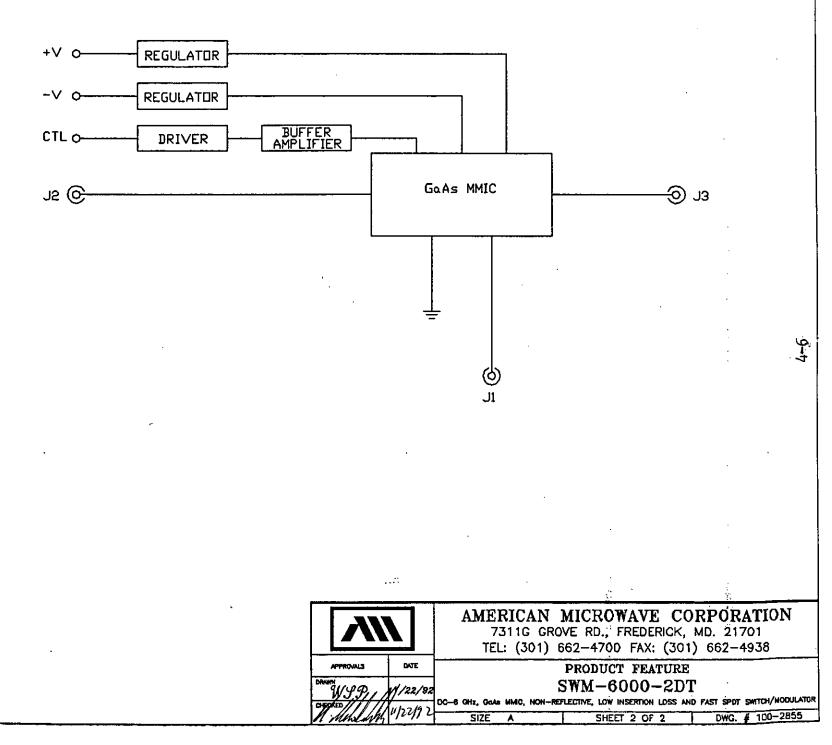




			REVISIONS		
DESCRIPTION	-	ZONE REV.	DESCRIPTION	DATE	APPROX
AMC MODEL SWM-6000-2DT IS AN ABS SWITCH/MODULATOR WITH INTEGRAL TTL LOW PROFILE HOUSING.	DRPTIVE GaAs MMIC SPDT DRIVER, PACKAGED IN A	A   OFICINAL REI	LEASE, JOB # 211278E (NEW DEVELOPME	NT)   <i>11/22/82</i>	JXV
SPECIFICATIONS			-0.666		
• FREQUENCY RANGE	DC-6.0 GHz	1	.466 -		
• INSERTION LOSS	DC0.5 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	0.266  	+V -V E1 GND \ CI	IELD REPLA	CEABL
• ISOLATION · · · · · · · · · · · · · · · · · · ·	DC-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			PLACES	Ī
• 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		MODEL NO: SWM-6000-207	1.340	 1.50
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF) FALL (90% RF TO 10% RF) ON (50% TTL TO 90% RF) OFF (50% TTL TO 10% RF)</li> </ul>	··10 ns MAXIMUM ··20 ns MAXIMUM				
VIDEO TRANSIENTS	· · 30 mV (P-P) MAXIMUM, 300 MHz BANDWIDTH.	-+   0.204 /		0.080	
RF POWER RATINGS (IDB COMP.)     0.5-6 GHz     0.001 GHz	+20 dBm TYPICAL +12 dBm TYPICAL	Ø0.100 THRU- 4 PLACES	-0.750-4 1.340		
CONTROL		LOGIC_TABLE	NOTES: 1) DIMENSION		
• POWER SUPPLY		E1 J1-J2 J1-J3 1 ON OFF 0 OFF ON	2) TOLERANCE 3) WEIGHT:	S: X.XX = X.XXX = APPROX	EO.01
	··FIELD REPLACEABLE SMA (FEMALE)	ENVIRONMENTAL			
POWER CONTROL NOTE: RF CONNECTORS CAN BE PI	SOLDER PIN			PERATING) STORAGE)	
(CONSULT FACTORY FOR AVAILABLE	MECHANICAL OPTIONS)	• HUMIDITY	MIL-STD-202F, MET	HOD 103B	CONE
• SIZE.	- 1.50" x 1.50" x 0.40"		MIL-STD-202F, MET		
AVAILABLE OPTIONS		• VIBRATION · · · · · · · · ·	MIL-STD-202F, MET MIL-STD-202F, MET	HOD 204D	CONE
AD1	IPEDANCE		S·····MIL-STD-202F, MET		
A04±5VDC POWER SL A05INVERSE CONTROL A06SINGLE ENDED EC A07BALANCED ECL CC	IPPLY LOGIC (LOGIC "0"= J1-J2 PATH ON)	7311	CAN MICROWAVE CO G GROVE RD., FREDERICK, 301) 662-4700 FAX: (30)	MD. 2170	1
A08DIFFERENTIAL TIL C	ONIROL LOGIC (RS-422 LOGIC FAMILT)	`	PRODUCT FEATURE	2	
A10SMC MALE CONTR A11SMA FEMALE CON	IROL CONNECTOR	AB// 11/22/92	SWM-6000-2D		
	PPLIES (CONSULT FACTORY)	11/22/92 OC-6 GHIZ, GOAS MMIC	, NON-REFLECTIVE, LOW INSERTION LOSS A	NU FAST SPOT SWI	ICT/NOC

FUNCTIONAL SCHEMATIC

27 F



AMC MODEL SW-2181-2AT-10 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL TTL DRIVER.

#### SPECIFICATIONS

- INSERTION LOSS ..... 1.5 dB MAXIMUM

- RF POWER RATINGS ..... 1 WATT CW MAXIMUM

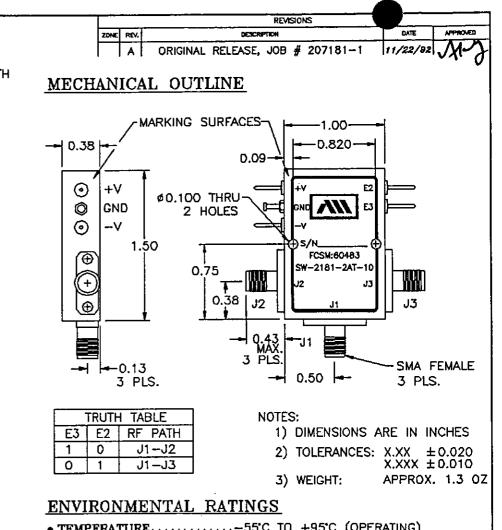
#### SWITCHING TIME

RISE (	(10%	RF	TO	90%	RF	•••••••	50	กร	MAXIMUM MAXIMUM
FALL (	(9D%)	RF	TO	10%	RF	••••••••••	50	ns	MAXIMUM
ON (	(50%	ΠL	TO	90%	RF)		150	лs	MAXIMUM
OFF (	(50%)	ΠL	TO	10%	RF)		150	ns	MAXIMUM

- CONTROL ...... TTL COMPATIBLE, UNITY LOAD 2 INDIVIDUAL CONTROLS LOGIC "O" = INSERTION LOSS LOGIC "1" = ISOLATION (SEE TRUTH TABLE)
- CONNECTORS RF INPUT/OUTPUT······ SMA (FEMALE) POWER CONTROL······ SOLDER PIN
   SIZE······ 1.0" x 1.50" x 0.38"

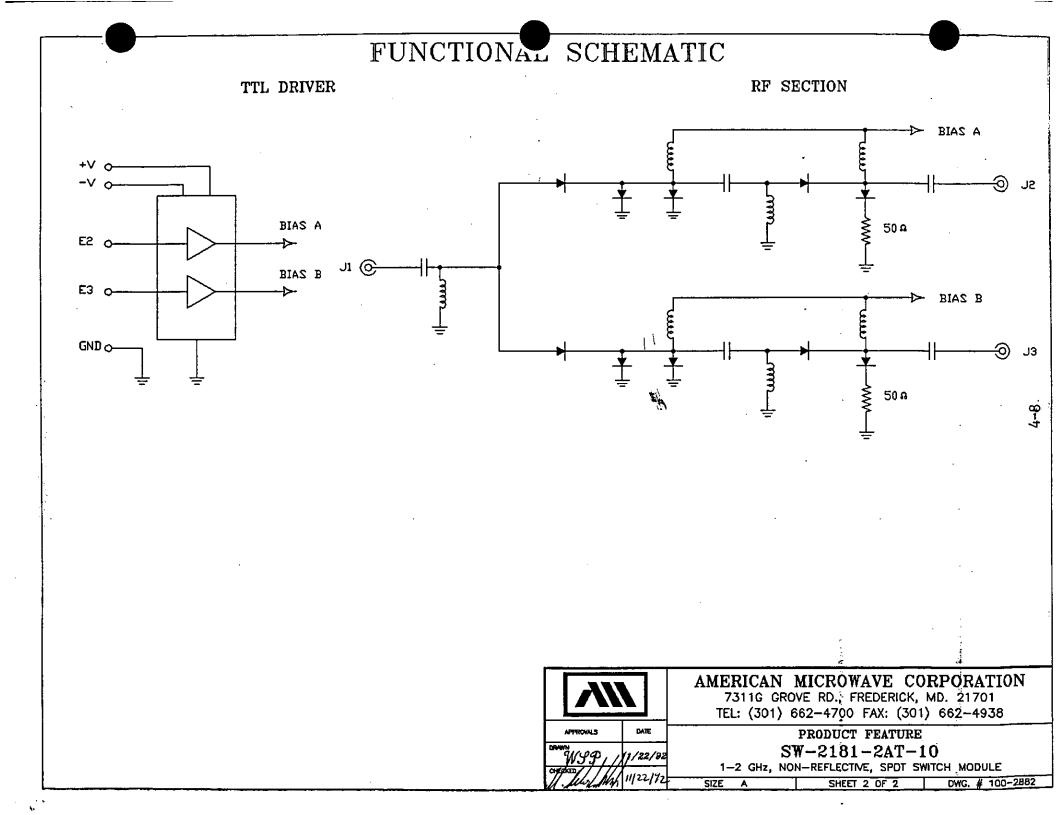
#### AVAILABLE OPTIONS

- A19 ..... EXTENDED FREQUENCY BAND (CONSULT FACTORY)



- 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	31KC	PRODUCT FEATURE								
WSP, /	1/22/92	SW-2181-2AT-10								
H. Allahm	"1414	SIZE A SHEET 1 OF 2 DWG. # 100-2882								

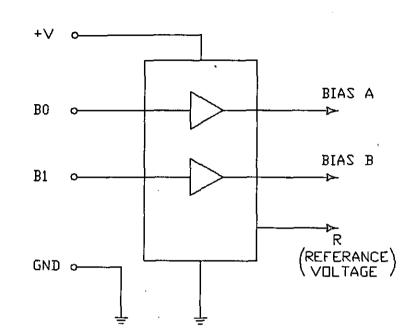


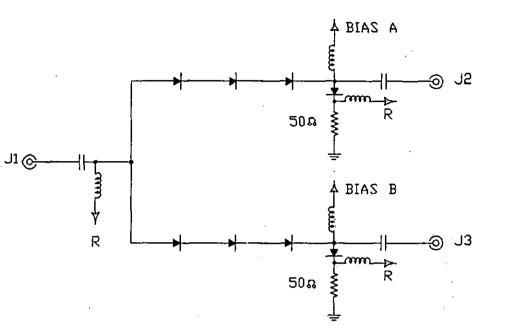
	REVISIONS	
		APPROVED
DESCRIPTION		2719
AMC MODEL SW-2181-2AT-B1072 & B2072 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.	MECHANICAL OUTLINE	MY
SPECIFICATIONS	Ø0.156 THRU- 4 PLACES	
FREQUENCY RANGE	0.130 1.375 0.50	<u> </u>
<ul> <li>INSERTION LOSS B1072</li> <li>B2072</li> <li>B2072</li> <li>B2072</li> <li>B2072</li> </ul>		
◆ ISOLATION		-1
B1072 B1072		
VSWR (ON/OFF) ···································		
• RF POWER RATINGS		1
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		ļ
	SMA FEMALE -3 UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	
CONTROLS	J FLACES	
(SEE TRUTH TABLE)	TRUTH TABLE	
▶ SUPPLY POWER · · · · · · · · · · · · +5VDC ±5% ⓐ 100 mA MAXIMUM	B1 B0 RF PATH NOTES:	
CONNECTORS	1 O J1-J2 2. TOLERANCES: X.XX	±0.020
RF INPUT/OUTPUT·······SMA FEMALE	0 1 J1-J3 3. WEIGHT: APPRO	±0.010 X. 2 <i>0</i> Z
CONTROL ····································	ENVIRONMENTAL RATINGS	
■ SIZE ····· 1.63" x 1.25" x 0.50"	• TEMPERATURE	
AVAILABLE OPTIONS	• HUMIDITY MIL-STD-202F, METHOD 103B CC	OND. B
A01 ····································	• SHOCKMIL-STD-202F, METHOD 213B CO	DND. B
A02····································	• VIBRATION MIL-STD-202F, METHOD 204D CO	
A04 ····································	• ALTITUDE	
A05······SINGLE CONTROL (LOGIC "0" J1-J2)	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D CC	JND. A
A06 EXTENDED FREQUENCY RANGE (CONSULT FACTORY) A13	AMERICAN MICROWAVE CORPORATIO 7311G GROVE RD., FREDERICK, MD. 21701	DN
A14J1 SMA FEMALE, J2-J3 SMA MALE A16+9 VDC TO +18 VDC SUPPLY	TEL: (301) 662-4700 FAX: (301) 662-4938	
	PROMUS DATE PRODUCT FEATURE	
DRAWN W.	SW = 2181 = 2AT = B1072 & B2072 $= 1 - 2  GHz,  NON-REFLECTIVE SPDT SWITCH MODULE$	

TTL DRIVER

FUNCTION SCHEMATIC

RF SECTION





4-10

DWC. # 100-3186

AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 PRODUCT FEATURE WYP 10/22/93 FOR 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

SIZE A

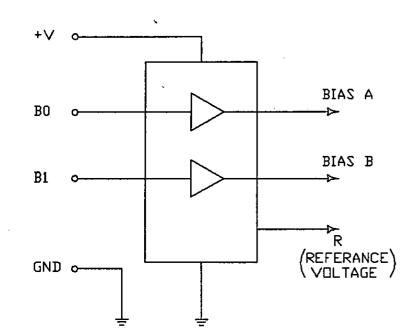
SHEET 2 OF 2

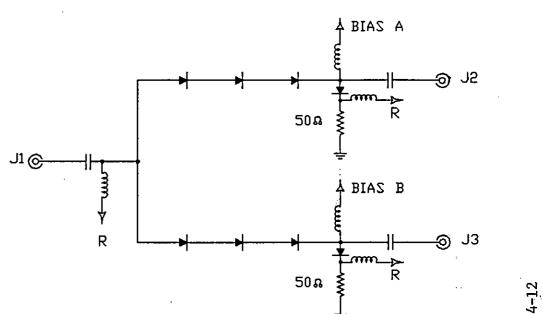
	REVISIONS
DESCRIPTION	A ORIGINAL RELEASE, JOB # 207177-1&2 11/22/92
AMC MODEL SW-2181-2AT-A1072 & A2072 IS AN ABSORPTIVE SPDT SWITCH MODULE WITH INTEGRAL DRIVER, DESIGNED TO OPERATE WITH A SINGLE POSITIVE SUPPLY VOLTAGE.	MECHANICAL OUTLINE
<u>SPECIFICATIONS</u>	Ø0.156 THRU 4 PLACES
• FREQUENCY RANGE ····································	
INSERTION LOSS	
A1072······A1072·····A1072·····A1072·····A1072·····A1072······A1072·········A1072····································	
A1072	
● VSWR (ON/OFF) ···································	
RF POWER RATINGS	
• 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) $\cdots 1 \mu s$ MAXIMUM	
OFF (50% TTL TO 10% RF) 1 ps MAXIMUM	SMA FEMALE J UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU
• CONTROLS TTL COMPATIBLE, UNITY LOAD 2 INDIVIDUAL CONTROLS LOGIC "O" = INSERTION LOSS LOGIC "1" = ISOLATION	3 PLACES1.630
(SEE TRUTH TABLE)	TRUTH TABLE
SUPPLY POWER	RI RO RE RATH
CONNECTORS	1  O  J1 - J2 1) DIMENSIONS ARE IN INCHE
RF INPUT/OUTPUT········SMA FEMALE	0 1 J1-J3 2) TOLERANCES: X.XX ±0.0 X.XXX ±0.0
POWER SOLDER PIN	ENVIRONMENTAL RATINGS
CONTROL	
■ SIZE 1.63" × 1.25" × 0.50"	• TEMPERATURE
AVAILABLE OPTIONS	• HUMIDITYMIL-STD-202F, METHOD 103B COND.
A01 ····································	• SHOCKMIL-STD-202F, METHOD 213B COND.
A02 ····································	• VIBRATION
A04 ····································	• ALTITUDE
A05 ·················SINGLE CONTROL (LOGIC *0" J1–J2)	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND.
A06 ········EXTENDED FREQUENCY RANGE (CONSULT FACTORY) A13 ·······J1 SMA MALE, J2-J3 SMA FEMALE	AMERICAN MICROWAVE CORPORATION
A14JI SMA FEMALE, J2-J3 SMA MALE	7311G GROVE RD., FREDERICK, MD. 21701
A16 ·····+9 VDC TO +18 VDC SUPPLY	TEL: (301) 662–4700 FAX: (301) 662–4938
DRAWN	
WS Sector W	2-4 CHZ NON-REFIECTIVE SPDT SWITCH NODILLE
II. Kuh	SIZE A

FUNCTIONAL SCHEMATIC

TTL DRIVER







			bi bi		
		7311G GR	MICROWAVE OVE RD., FREDER 662-4700 FAX:		
APPROVALS	DATE	· · · · · · · · · · · · · · · · · · ·	PRODUCT FEAT	URE	
DIVERN WGP 1/22/92 CHECKED /////			1-2AT-A107		
M. Mela L.M.	11/22/1/2	SIZE A	SHEET 2 OF 2	DWG. # 100-290	5

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# **SPECIFICATIONS**

AMC MODEL SW-2181-2AT-011 IS AN ABSORPTIVE SPDT BAND SWITCH MODULE WITH INTEGRAL TTL DRIVER.

### **SPECIFICATIONS**

•	FREQUENCY F	RANGE · · · · · ·		0.01-18	GHz	MININ	IUM	
•	INSERTION LO J1-J2 (LOW J1-J3 (HIGH			0.01-2.0	GHz GHz	2.0 3.0	dB dB	MAXIMUM MAXIMUM
•	ISOLATION	:						
	J1-J2 (LOW J1-J3 (HIGH	BAND) · · · · ·	· · · · · · · · · · · · · · · · · · ·	0.01-2.0	GHz	80	dB	MINIMUM
	J1–J3 (HIGH	BAND) · · · · ·		·2.0-18.0	GHz	60	dB	MINIMUM

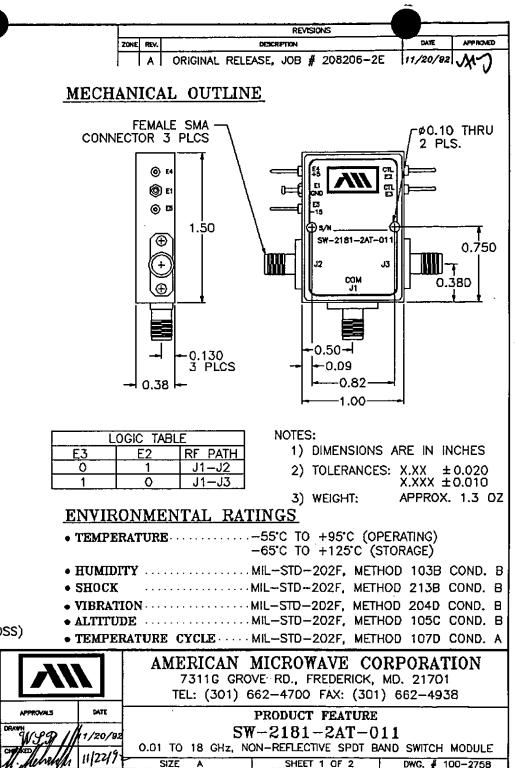
- VSWR (ON/OFF) : J1-J2 (LOW BAND) 0.01-2.0 GHz 1.3:1 MAXIMUM J1-J3 (HIGH BAND) 2.0-18.0 GHz 2:1 MAXIMUM
   SWITCHING TIME : RISE (10% RF TO 90% RF) 35 nS MAXIMUM
- CONTROL ..... TTL COMPATIBLE, UNITY LOAD 2 INDIVIDUAL CONTROLS LOGIC "0"= ISOLATION LOGIC "1"= INSERTION LOSS
- CONNECTORS

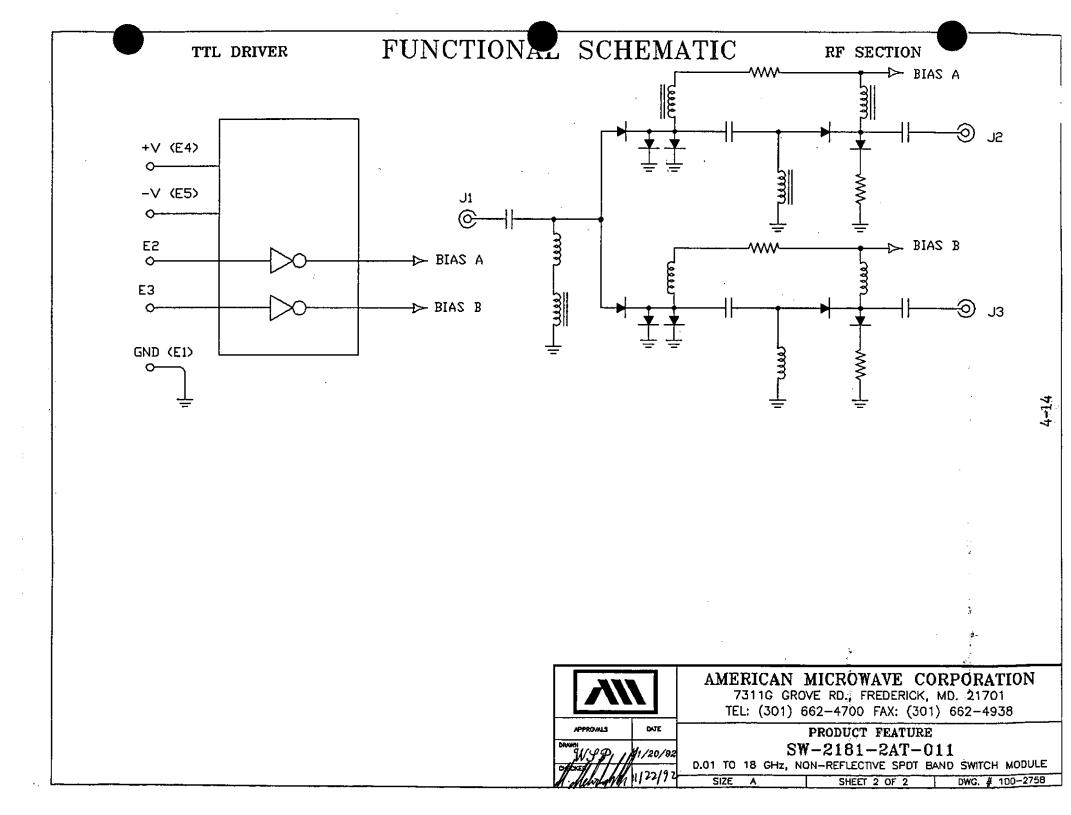
<del>4</del>-13

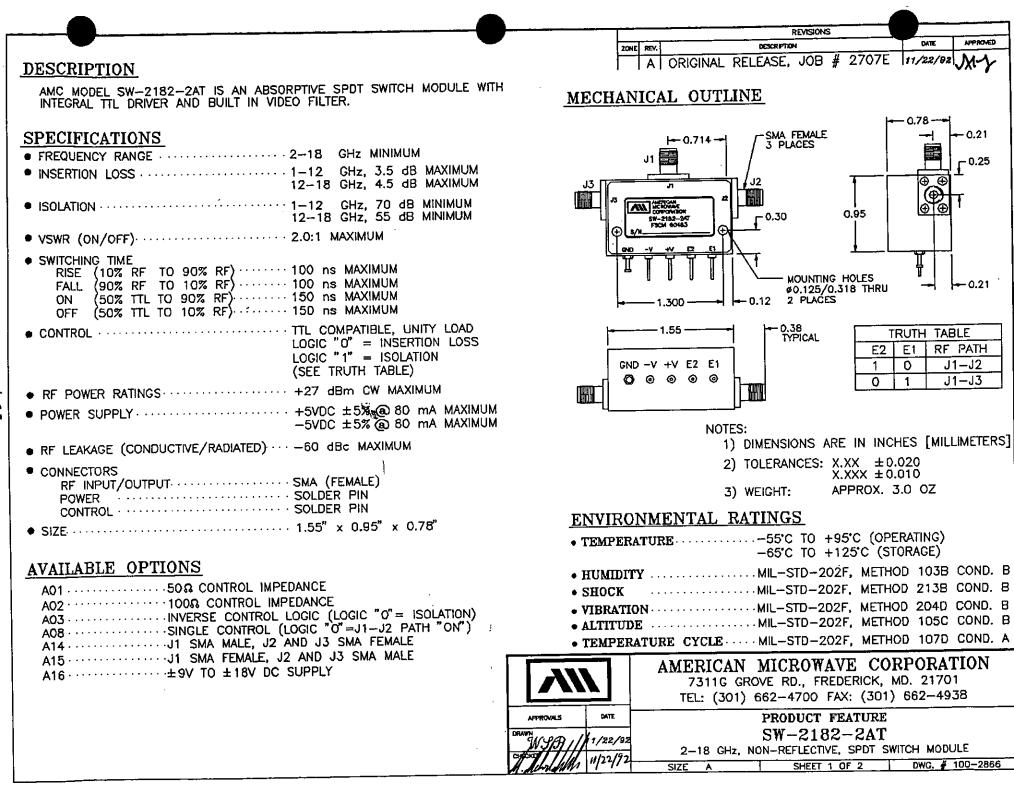
RF INPUT/OUTPUT······	······ SMA FEMALE
POWER	
CONTROL	······· SOLDER PIN
• SIZE	······ 1.00" x 1.50" x 0.38"

## AVAILABLE OPTIONS

A01	
A02 ······ 1000 CONTROL IMPEDANCE	
A03 INVERSE CONTROL LOGIC (LOGIC "O" INSERTION L	OSS)
A14J1 SMA MALE, J2 AND J3 SMA FEMALE	
A15 ····· J1 SMA FEMALE, J2 AND J3 SMA MALE	I <b>Г</b>
A16 ······A5VDC SUPPLY	
A17 ······ +12VDC TO +15VDC SUPPLY	L
A18 ······SINGLE CONTROL (TOGGLE)	
(LOGIC "0" = J1 - J3 PATH ON)	DRAWN
	9



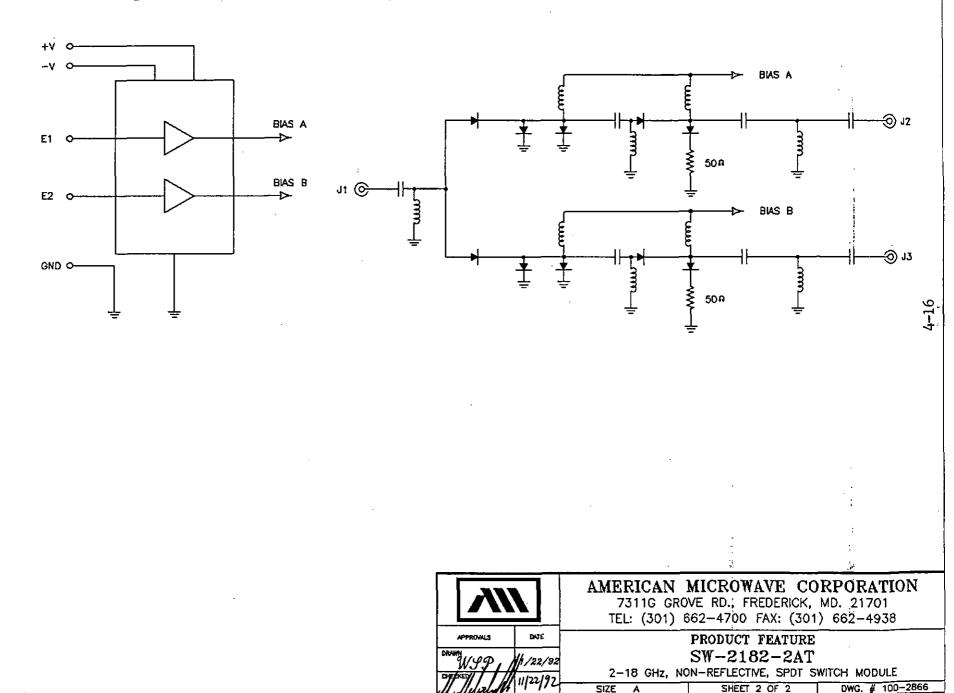




FUNCTIONAL SCHEMATIC

TTL DRIVER

RF SECTION



SIZE

A

SHEET 2 OF 2



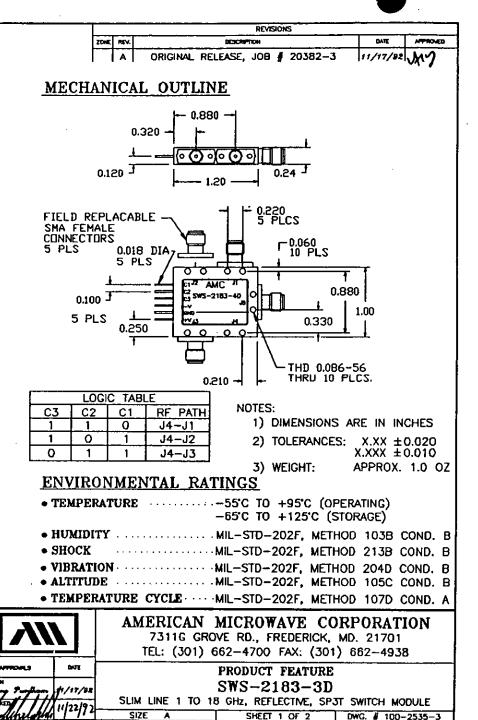
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SECTION	I	PRODUCT DESCRIPTION	PAGES
5	SP3T, REFLE	CTIVE	. 5-1
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	• 1.75-18 GHz	SWITCH MODULE, AMC MODEL NO: SW-2181-3 (3S)	5-5
	• 0.3-20 GHz	SWITCH MODULE, AMC MODEL NO: SW-2182-3	5-7

AMC MODEL SWS-2183-3D IS A REFLECTIVE BROAD BAND SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER IN A LOW PROFILE HERMETICALLY SEALED HOUSING.

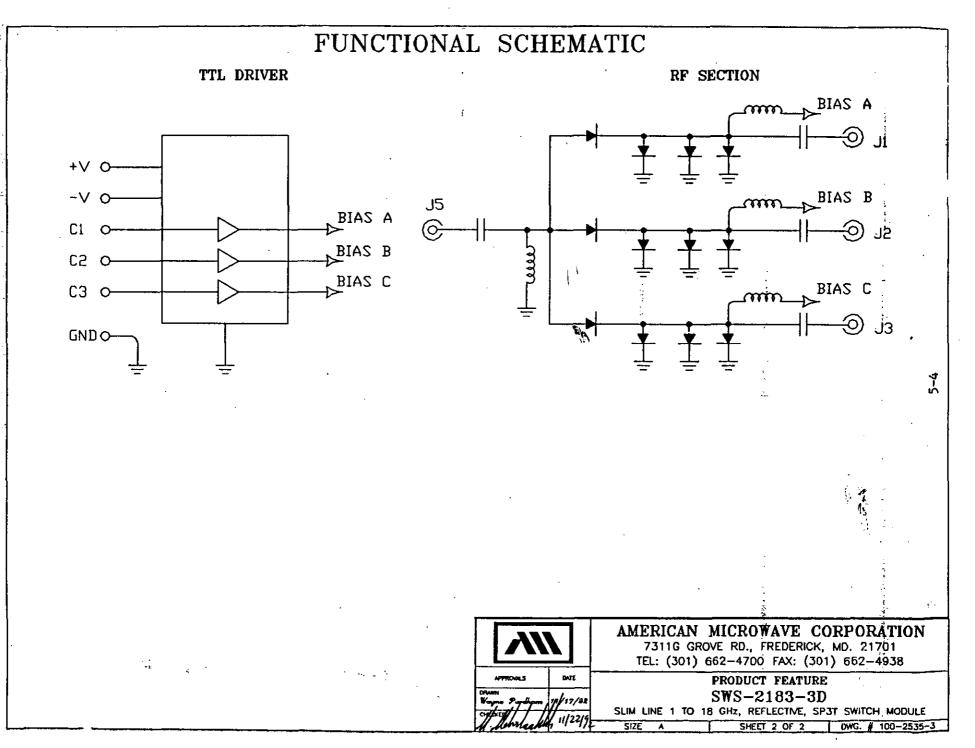
#### SPECIFICATIONS

• FREQUENCY RANGE 1-18 GHz MINIMUM	
<ul> <li>INSERTION LOSS</li> <li>1-2 GHz 1.2 dB MAXIMUM</li> <li>2-4 GHz 1.5 dB MAXIMUM</li> <li>4-8 GHz 2.0 dB MAXIMUM</li> <li>8-12 GHz 2.5 dB MAXIMUM</li> <li>12-18 GHz 3.0 dB MAXIMUM</li> </ul>	
ISOLATION	
• 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     OPPLY     OPPL	
CONNECTORS     RF INPUT/OUTPUT······ FIELD REPLACEABLE SMA (FEMALE)     POWER     CONTROL     SOLDER PIN	
• SIZE······ 1.20" x 1.00" x 0.24"	
AVAILABLE OPTIONS	
A01	[
A12	2





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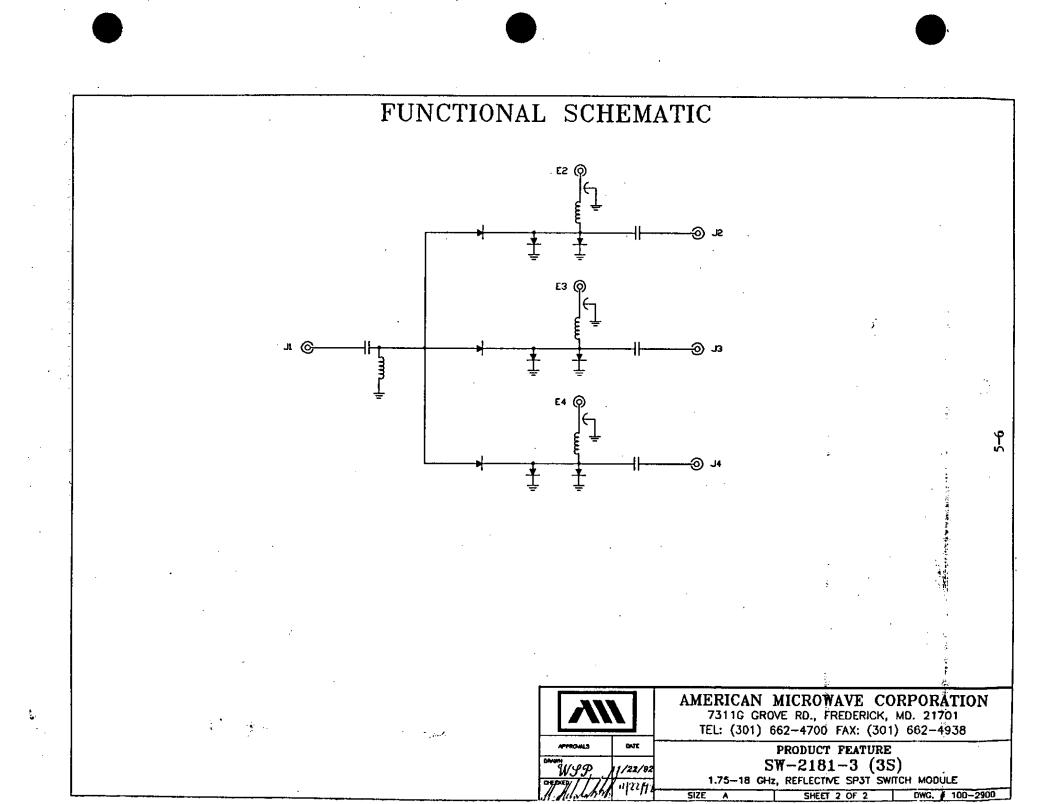
	REVISIONS
DESCRIPTION	ZONE         ARX.         DESCRIPTION         DATE         APPROVED           A         ORIGINAL RELEASE, AMC DWG# 200-1568 & 11/22/92         11/22/92         11/22/92         11/22/92
AMC MODEL SW-2181-3 (3S) IS A REFLECTIVE BROAD-BAND SWITCH MODUL WITHOUT DRIVER CIRCUITRY.	LE MECHANICAL OUTLINE SNA FEMALE7
SPECIFICATIONS • FREQUENCY RANGE	4 PLACES
(-3)	
<ul> <li>INSERTION LOSS         <ul> <li>(-3)</li> <li>(-3S)</li> /ul></li></ul>	
<ul> <li>ISOLATION</li> <li>(-3)</li> <li>(-3S)</li>     &lt;</ul>	
<ul> <li>VSWR (ON)</li></ul>	0.090 +0.104 THRU
<ul> <li>SWITCHING TIME</li> <li>RISE (10% RF TO 90% RF)</li></ul>	0.090
• CONTROLS	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
CONNECTORS RF INPUT/OUTPUT······SMA FEMALE CONTROL ·······SOLDER PIN	2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010 3) WEIGHT: APPROX. 2.0 OZ ENVIRONMENTAL RATINGS
• SIZE ······ 1.25" x 1.11" x 0.32"	• TEMPERATURE
AVAILABLE OPTIONS	• HUMIDITY MIL-STD-202F, METHOD 103B COND. B
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	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
	WYP         1/22/02         SW-2181-3 (3S)           1.75-18 GHz, REFLECTIVE SP3T SWITCH MODULE         1.75-18 GHz, REFLECTIVE SP3T SWITCH MODULE

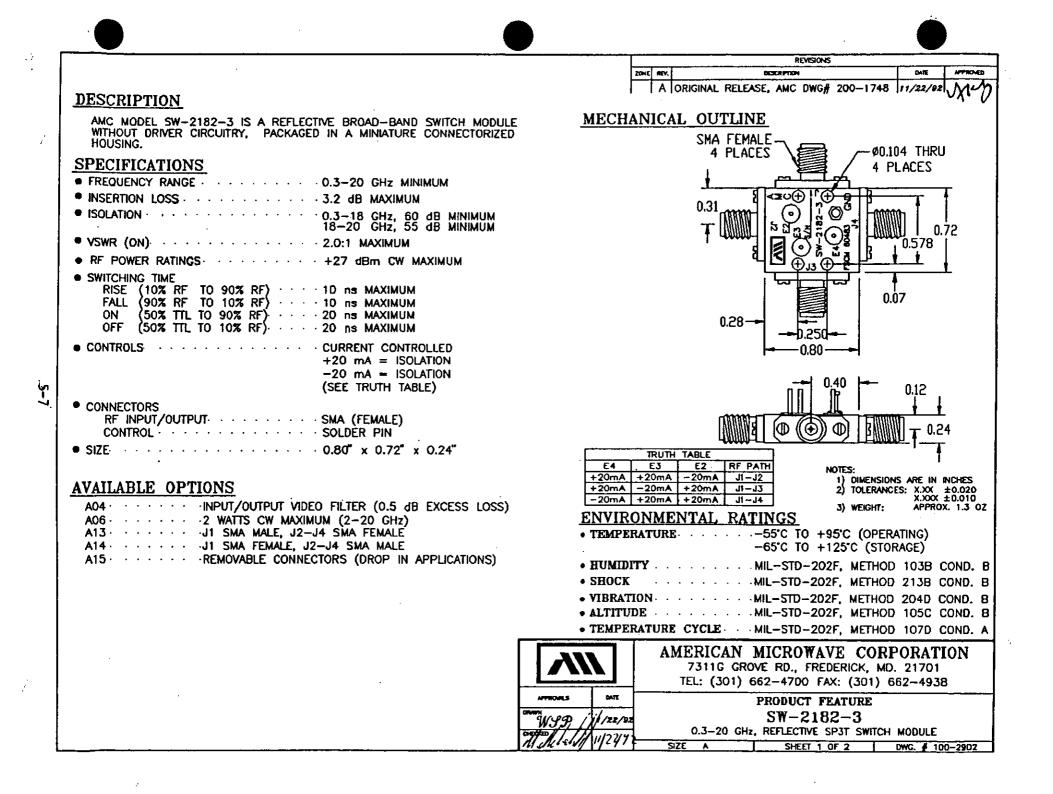
5-5

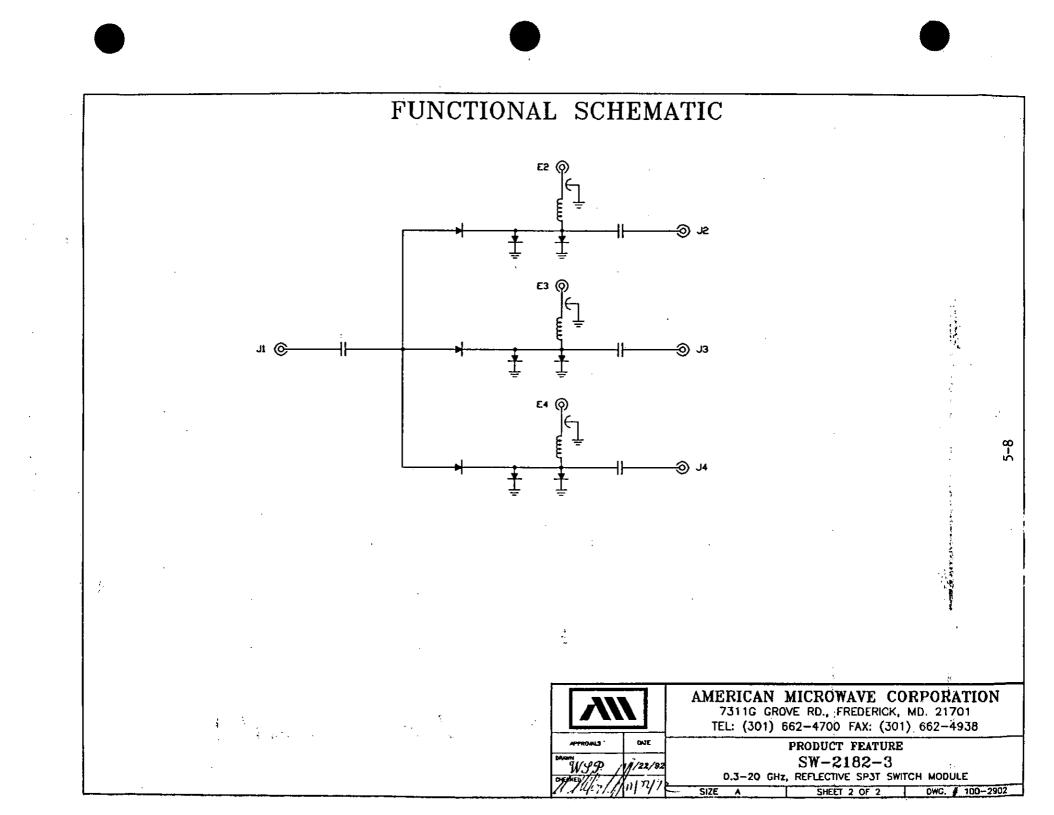
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	REVISIONS
DESCRIPTION AMC MODEL SW-1182-3D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE	A ORIGINAL RELEASE, JOB #30110E \$/8/95 A7
WITH INTEGRAL TTL DRIVER.	MECHANICAL OUTLINE
• FREQUENCY RANGE	#0,104 [2.8] DN
<ul> <li>FREQUENCY RANGE</li> <li>INSERTION LOSS</li> <li>1-4 GHz, 1.4 dB MAXIMUM</li> <li>4-8 GHz, 1.5 dB MAXIMUM</li> <li>8-12.4 GHz, 2.0 dB MAXIMUM</li> <li>12.4-18 GHz, 2.6 dB MAXIMUM</li> </ul>	1.000 [23.4] DIA CIRCLE, 2 PLACES 
• ISOLATION · · · · · · · · · · · · · · · · · · ·	
<ul> <li>VSWR (ON)</li> <li>RF POWER RATING</li> <li>RF POWER RATING</li> <li>WAXIMUM)</li> </ul>	
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF)</li></ul>	SMA FDMALE
<ul> <li>CONTROL</li> <li>CONTROL</li> <li>CONTROL</li> <li>TTL,LOW POWER SCHOTTKY, (UNITY LOAD) (SEE TRUTH TABLE) LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION</li> </ul>	
-12 TO -15VDC @ 50 MA MAXIMUM	TRUTH TABLE       NOTES:         7       E5       E3       RF       PATH       ON       1)       DIMENSIONS       ARE       IN       INCHES       [MILLIMETERS]         1       0       J1-J3       2)       TOLERANCES:       X-XX       + 0.020
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
● SIZE	• TEMPERATURE:
AVAILABLE OPTIONS	OPERATING65°C TO +110°C NON-OPERATING65°C TO +125°C
A01 ····································	• HUMIDITY
A04 EXTENDED FREQUENCY RANGE TO 100 MHz A07 MDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)	• VIBRATION
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	• 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
A13 +12 TO +18 VDC POWER SUPPLY	
DRAWH WS. Checked	P         3/6/95         SW-1182-3D           1.0-18 GHz, SP4T SWITCH MODULE
	SIZE A SHEET 1 OF 2 DWG, # 100-3674

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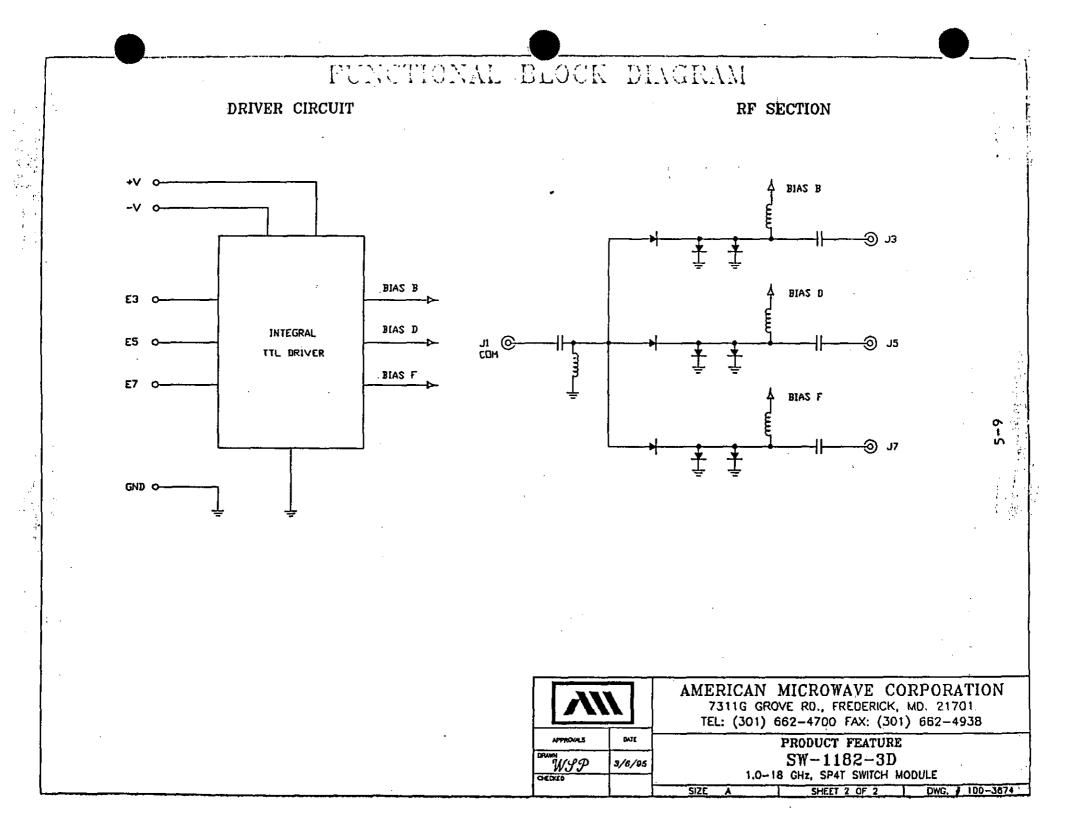
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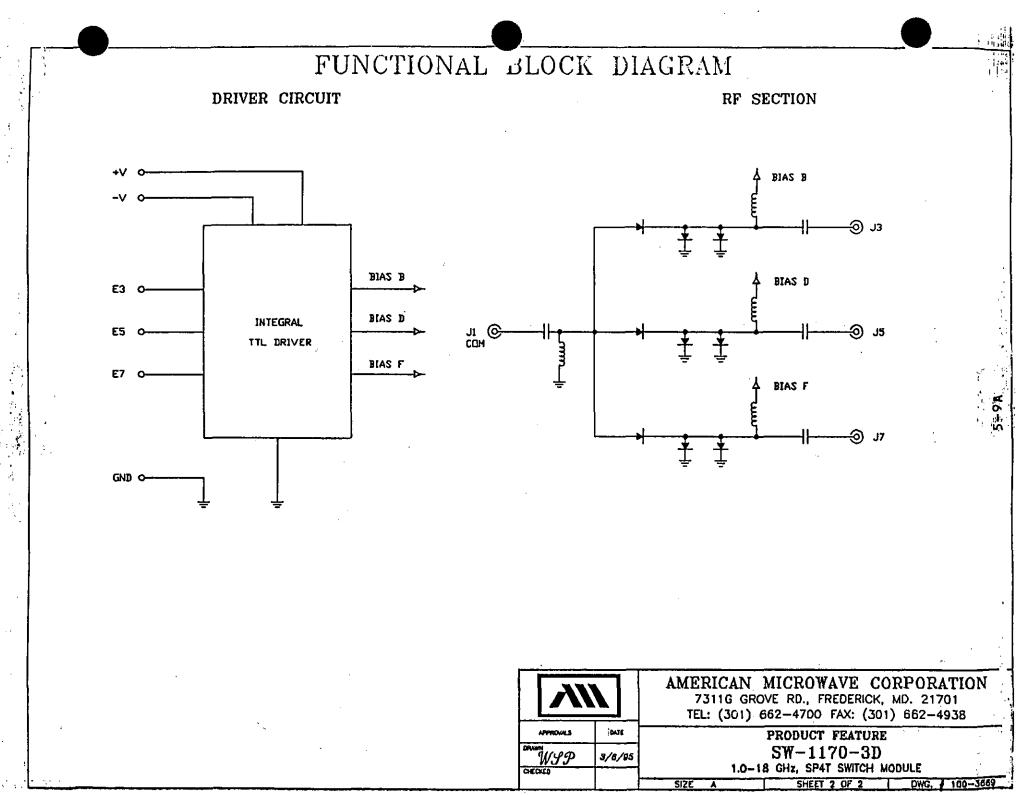
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DESCRIPTION		
	REFLECTIVE BROAD BAND SP4T SWITCH MO	
SPECIFICATIONS		MECHANICAL OUTLINE
• FREQUENCY RANGE		#0.104 [2.8] ON
INSERTION LOSS	1-4 GHz, 1.4 dB MAXIMUM 4-8 GHz, 1.5 dB MAXIMUM 8-12.4 GHz, 2.0 dB MAXIMUM 12.4-18 GHz, 2.6 dB MAXIMUM	1.000 [25.4] DA CIRCLE, 2 PLACES 4557
ISOLATION		
• VSWR (ON)		
RF POWER RATING	······ 1W CW, 75W PEAK (1µS, PW MAXIM	
<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF) FALL (90% RF TO 10% RF) ON (50% TTL TO 90% RF)</li> </ul>	······ 20 ns MAXIMUM	SMA FEMALE 4 PLACES 
	(SEE TRUTH TABLE) LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION	
• CONNECTORS	-12 TO -15VDC @50 mA MAXIMUM -12 TO -15VDC @50 mA MAXIMUM	TRUTH TABLENOTES:E7E5E3RFPATH ON1DIMENSIONS ARE IN INCHES [MILLIMETE10 $J1-J3$ 2)TOLERANCES: X.XX ± 0.02001 $J1-J7$ X.XXX ± 0.010
RF INPUT/OUTPUT POWER	SMA (FEMALE)	3) WEIGHT: APPROX. 2.0 OZ
CONTROL SIZE	OVEDER THI	ENVIRONMENTAL RATINGS
• SIZE	1.25" × 1.25" × 0.70"	• TEMPERATURE:
AVAILABLE OPTIONS		OPERATING
A04 ·······EXTENDED F	OL IMPEDANCE ITROL LOGIC (LOGIC "0" ISOLATION)	HUMIDITY
A08 ····································	ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND
A10SMA MALE R A11SMC MALE C A13	ON ALL PORTS (0.5 dB EXCESS LOSS) F CONNECTORS (0.4 dB EXCESS LOSS) ONTROL TERMINALS	AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701
A14		TEL: (301) 662-4700 FAX: (301) 662-4938
		PRODUCT FEATURE
•		$W_{\mathcal{G}} = 3/6/95$ SW-1170-3D 1.0-18 GHz, SP4T SWITCH MODULE



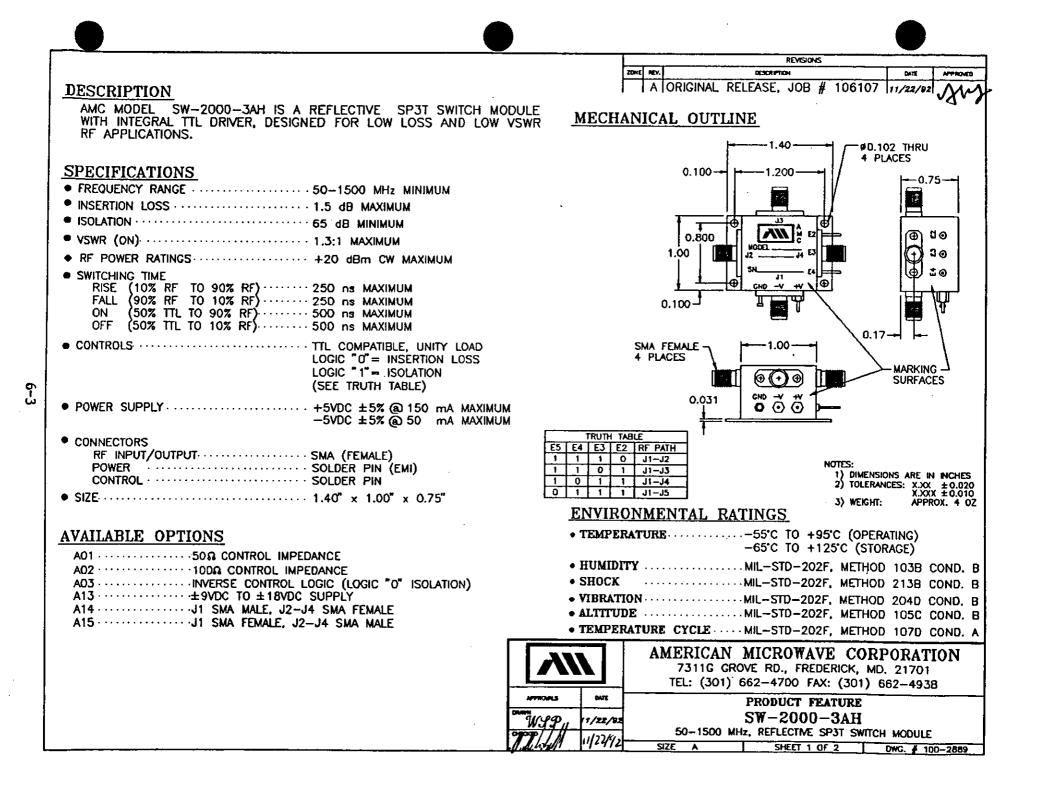
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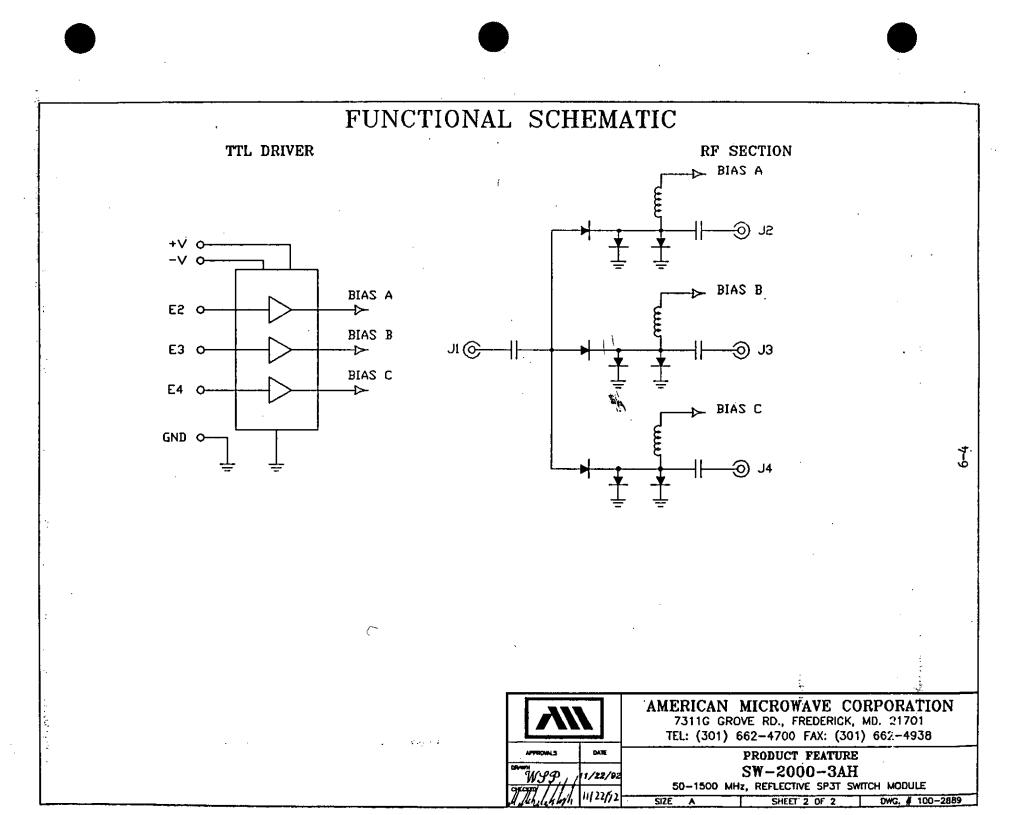


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	• 0.5-2.25 GHz	AMPLITUDE AND PHASE BALANCED SWITCH MODULE, AMC MODEL NO: SW-2250-3AT	6-5
	• 1-2 GHz	100 nsec SWITCH MODULE, AMC MODEL NO: SW-2181-3AT-10	6-7
	• 1-2 GHz	500 nsec SWITCH MODULE AMC MODEL NO: SW-2181-3AT-B3072	6-9
	• 2-4 GHz	SWITCH MODULE, 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





AMC MODEL SW-2250-JAT IS AN ABSORPTIVE SPJT SWITCH MODULE WITH INTEGRAL TTL DRIVER DESIGNED FOR LOW LOSS, LOW VSWR, AMPLITUDE AND PHASE BALANCED APPLICATIONS.

### SPECIFICATIONS

- SWITCHING TIME
   RISE (10% RF TO 90% RF)
   SO ns MAXIMUM
   FALL (90% RF TO 10% RF)
   SO ns MAXIMUM
   ON (50% TTL TO 90% RF)
   SO ns MAXIMUM
   OFF (50% TTL TO 10% RF)
- RF POWER RATINGS ..... +23 dBm CW MAXIMUM
- RF LEAKAGE (CONDUCTIVE/RADIATED) ··· 60 dBc MINIMUM

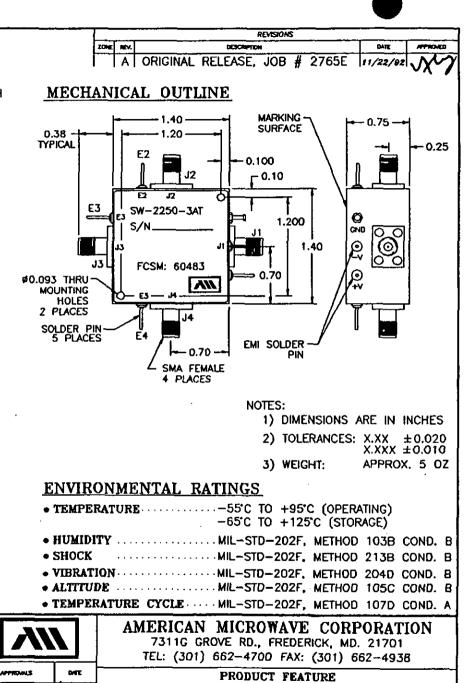
CONTROLS
 TTL COMPATIBLE, UNITY LOAD
 SINDMIDUAL CONTROLS
 LOGIC "0" = INSERTION LOSS
 LOGIC "1" = ISOLATION

#### CONNECTORS

RF INPUT/OUTPUT	SMA (FEMALE)
POWER	SOLDER PIN (EMI)
CONTROL	SOLDER PIN
	-

#### AVAILABLE OPTIONS

A01 ······ 509 CONTROL IMPEDANCE
A02 ······ 1000 CONTROL IMPEDANCE
A03INVERSE CONTROL LOGIC (LOGIC "0" ISOLATION)
A14J1 SMA MALE, J2-J4 SMA FEMALE
A15······J1 SMA FEMALE, J2-J4 SMA MALE
A16 ·······±9 TO ±18VDC POWER SUPPLY



SW-2250-3AT 0.5-2.25 GHz, AMPLITUDE AND PHASE BALANCED, NON-REFLECTIVE, SP3T SWITCH MODULE

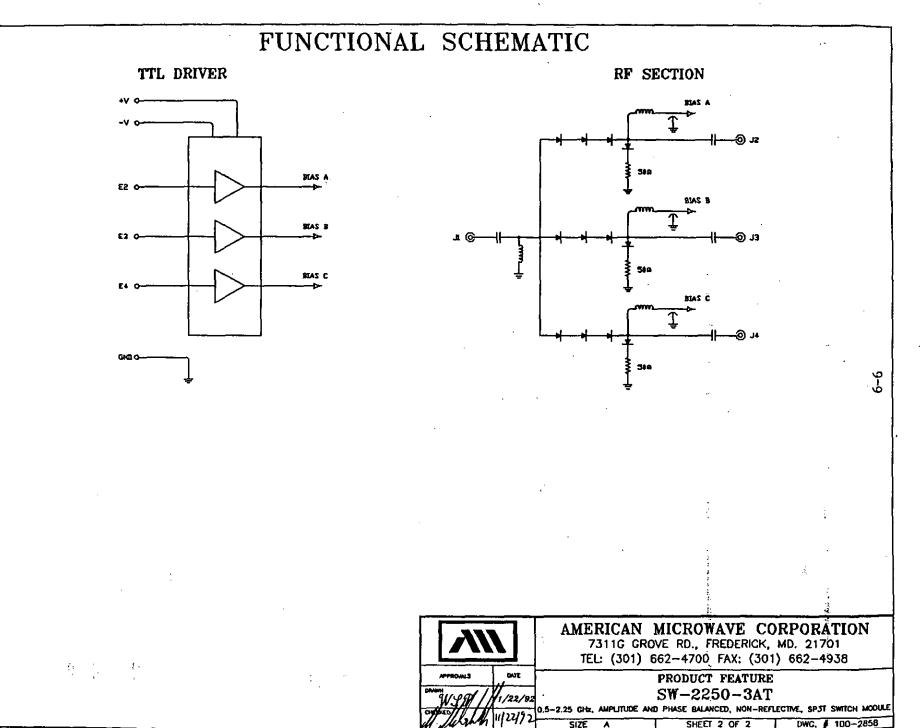
SHEET 1 OF 2

DWG. # 100-2858

SIZE A

6-5 5





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AMC MODEL SW-2181-3AT-10 IS AN ABSORPTIVE SP3T SWITCH MODULE WITH INTEGRAL TTL DRIVER.

### SPECIFICATIONS

- 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	n۹	MAXIMUM MAXIMUM
ON	(50%	TTL	TO	907	RF	<b>j</b> <i>.</i>	150	ns	MAXIMUM
OFF	(50%	ΠL	TO	107	RF	<b>)</b> <i></i>	150	ns	MAXIMUM

	• CONTROL	·· ··· · · · · · · · · · · · · ·
		3 INDIVIDUAL CONTROLS
		LOGIC "O" = INSERTION LOSS
·		LOGIC "1" = ISOLATION
		(SEE TRUTH TABLE)
	• POWER SUPPLY	+5VDC ±5% @ 130 mA MAXIMUM

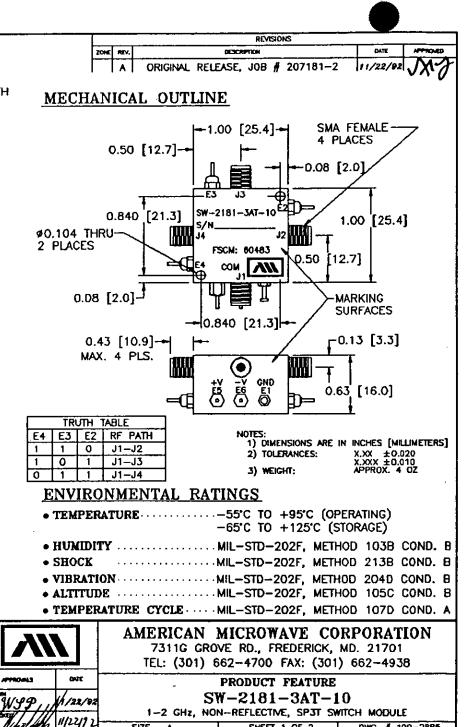
- $-15VDC \pm 5\%$  (a) 60 mA MAXIMUM
- CONNECTORS POWER SOLDER PIN

CONTROL	· · · · · · · · SOLDER F	NIN

• SIZE ..... 1.00" x 1.00" x 0.63"

#### **AVAILABLE OPTIONS**

A01 50 CONTROL IMPEDANCE
A02 ····································
A03 ······ INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)
A14J1 SMA MALE, J2-J4 SMA FEMALE
A15 · · · · · · · J1 SMA FEMALE, J2-J4 SMA MALE
A16 ······A5 VDC SUPPLY
A17 · · · · · · · · + 12 TO + 15 SUPPLY
A18 EXTENDED FREQUENCY BAND (CONSULT FACTORY)



SHEET 1 OF 2

DWG. # 100-2885

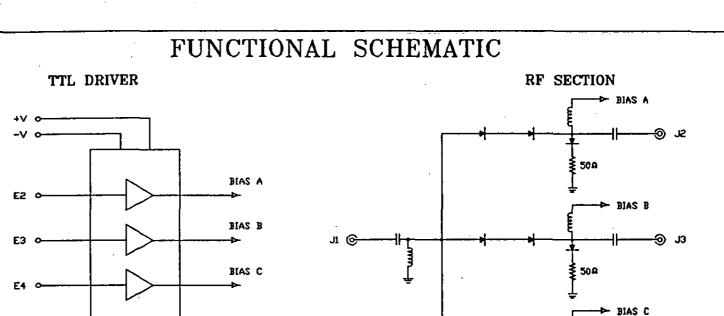
SIZE A

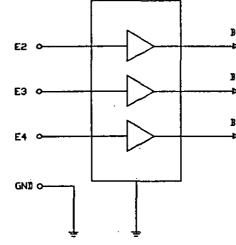
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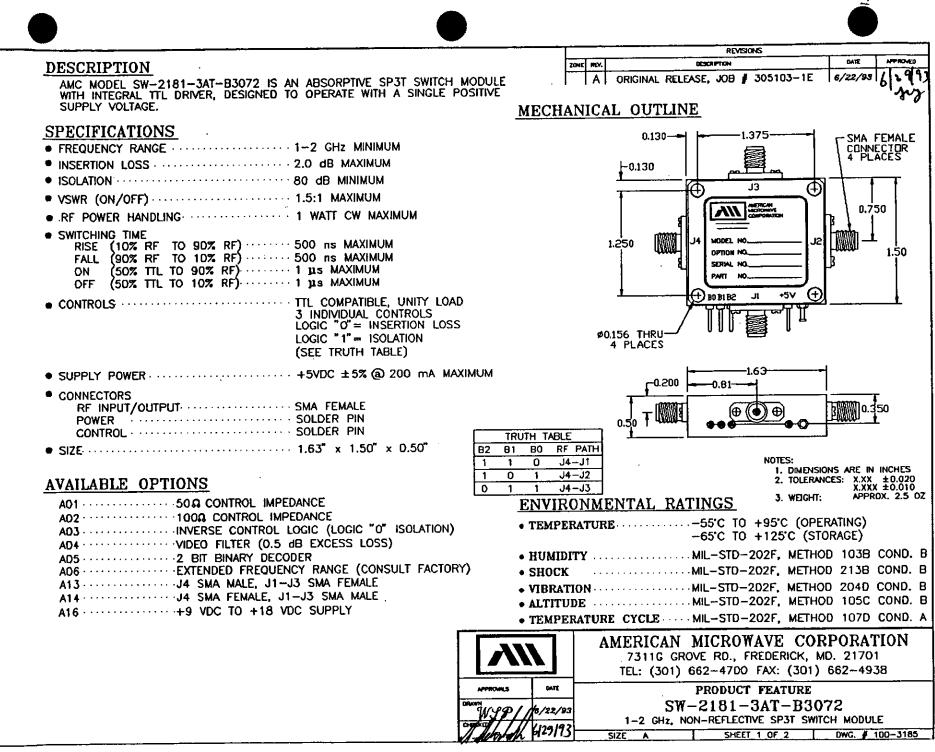


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-⊙ J4

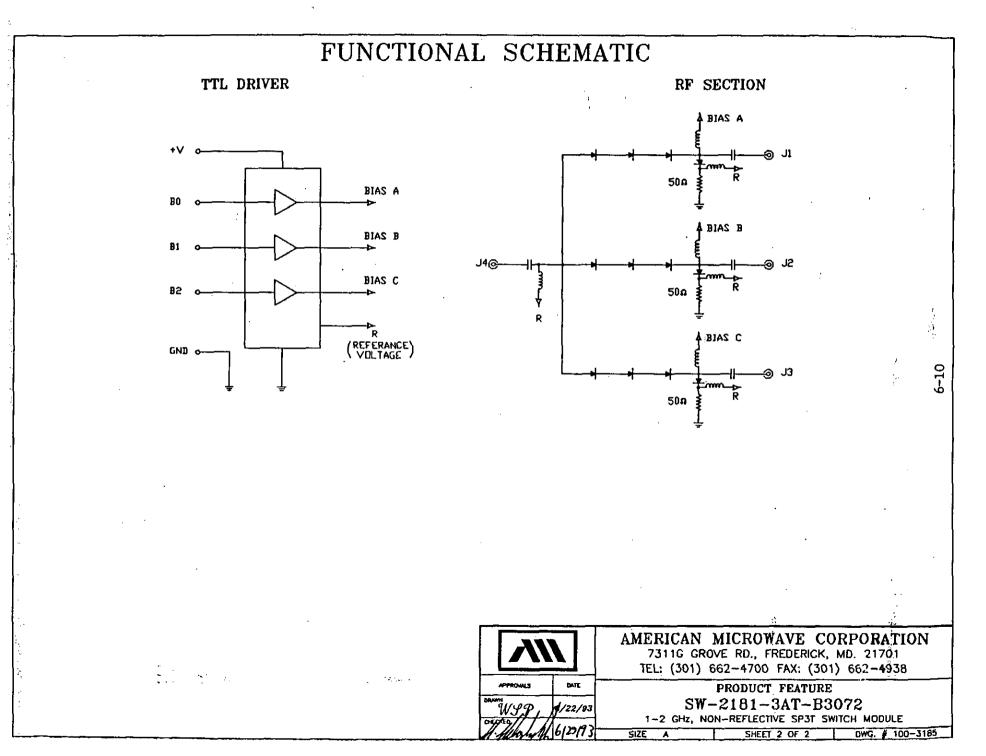


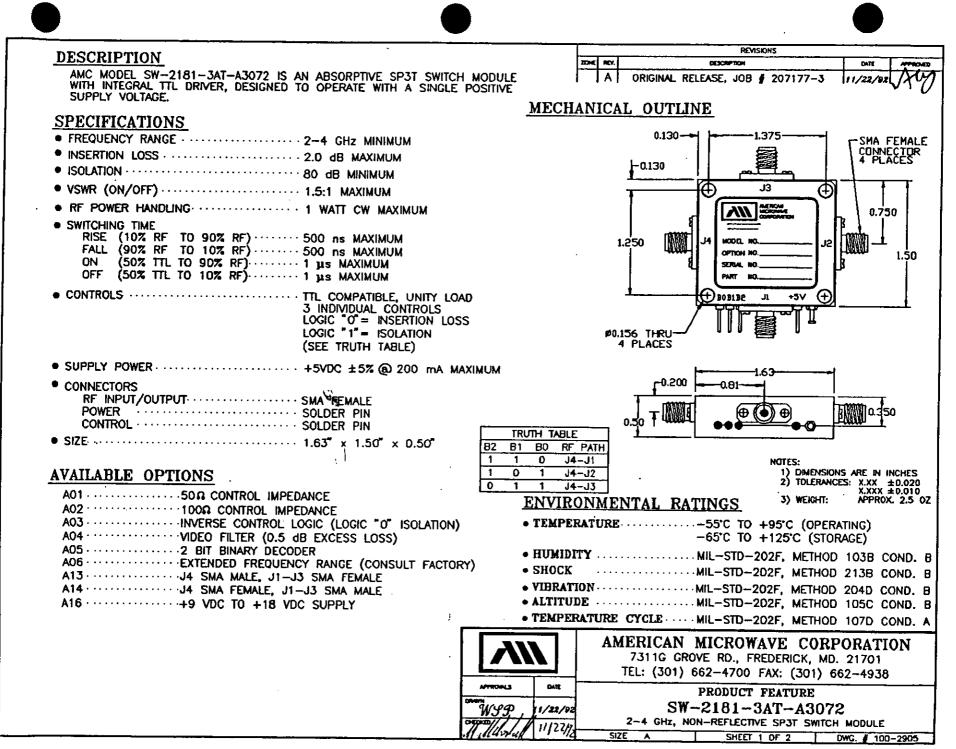
**₹ 50** ¤

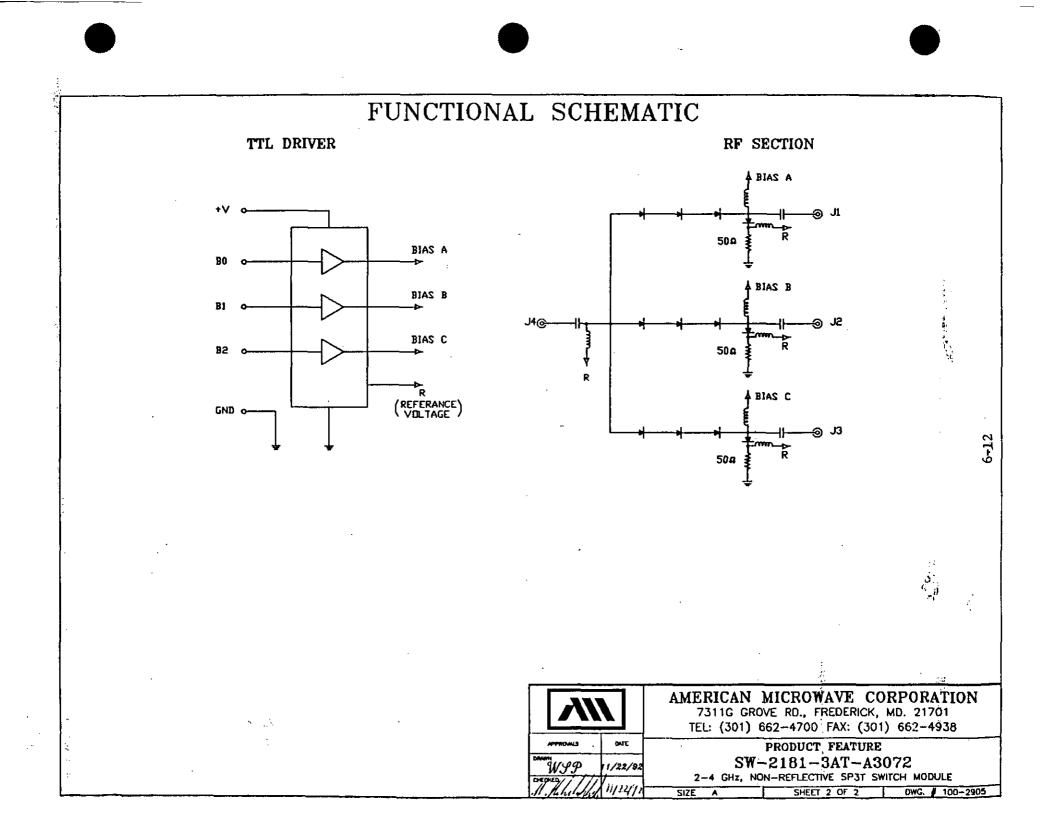


6-9





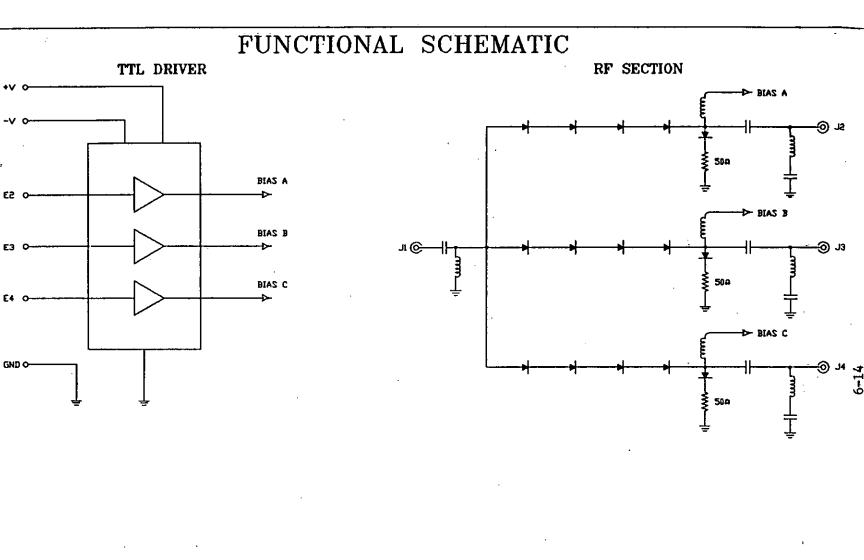




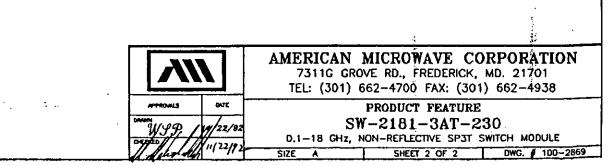
		REVISIONS
		ZONE REY. DESCRIPTION DATE APPRO
	SCRIPTION	🛛 🖌 🕹 🕹 🕹 🕹 🕹 🕹 🖌 🕹 🖌 🕹 🖌 🕹 🖌 A 🖉
	MC MODEL SW-2181-3AT IS AN ABSORPTIVE SP3T SWITCH MODULE WITH	
4	NTEGRAL TTL DRIVER DESIGNED FOR BROAD BAND AND LOW IN-BAND VIDEO TRANSIENT SIGNAL APPLICATIONS.	MECHANICAL OUTLINE
		→1.00 [25.4]→ → → 0.50 [12.7]
	ECIFICATIONS	SNA FFUALF
	REQUENCY RANGE	4 PLACES
	NSERTION LOSS · · · · · · · · · · · · · · · · · 4.0 dB MAXIMUM	
	SOLATION ·····	0.840 [21.3] Sw-2181-347 (2)=0 1.00 [25.4]
• v	SWR (ON/OFF)···································	
• S	WITCHING TIME	FSCMe 60463
	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	0.104 THRU- 2 PLACES
	OFF (50% TTL TO 10% RF) 150 ns MAXIMUM	2 PLACES -
• F	RF POWER RATINGS	-+0.840 [21.3] LABELING SURFACES
• 1	N BAND VIDEO POWER/TRANSIENTS ···· -60 dBm MAXIMUM	
• c	ONTROLS	4 PLACES O 4 PLACE
. 1	3 INDIVIDUAL CONTROLS	
<b>,</b>	, LOGIC " 1" - ISOLATION (SEE TRUTH TABLE)	
	· · ·	TRUTH TABLE
• •	0WER SUPPLY	E4         E3         E2         RF         PATH         ON         NOTES:           1         1         0         J1-J2         1) DIMENSIONS ARE IN INCHES [MILLIMETE
• •	ONNECTORS	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Ĭ	RF INPUT/OUTPUT··················SMA (FEMALE)	0 1 1 1 1 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0
	POWER SOLDER PIN (EMI)	0 1 1 1 31-34 3) WEIGHT: APPROX, 4.0 0Z
	CONTROL SOLDER PIN	ENVIRONMENTAL_RATINGS
• \$	IZE 1.0" × 1.0" × 0.63"	• TEMPERATURE
	·	-65°C TO +125°C (STORAGE)
A 17	AILABLE OPTIONS	• HUMIDITYMIL-STD-202F, METHOD 103B COND
		• SHOCKMIL-STD-202F, METHOD 213B COND
	01 ····································	• VIBRATION
A	03 ····································	• ALTITUDE
A	13······±9VDC TO ±18VDC SUPPLY	• TEMPERATURE CYCLE ····· MIL-STD-202F, METHOD 107D COND
	14JI SMA MALE, J2-J4 SMA FEMALE CONNECTORS	AMERICAN MICROWAVE CORPORATION
_ ^	14 ······J1 SMA FEMALE, J2-J4 SMA MALE CONNECTORS	7311G GROVE RD., FREDERICK, MD. 21701
	· · · · · · · · · · · · · · · · · · ·	TEL: (301) 662-4700 FAX: (301) 662-4938
		APRODUCT FEATURE
		WG9 /1/22/02 SW-2181-3AT-230
1		0.1-18 GHZ, NON-REFLECTIVE SP3T SWITCH MODULE

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SECTION		PRODUCT DESCRIPTION	PAGES
7	SP4T, REFLEO	CTIVE	7-1
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	• 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

AMC MODEL SWH-0811-4 IS A REFLECTIVE, ALL SHUNT SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, CAPABLE OF HANDLING 2KW PEAK POWER.

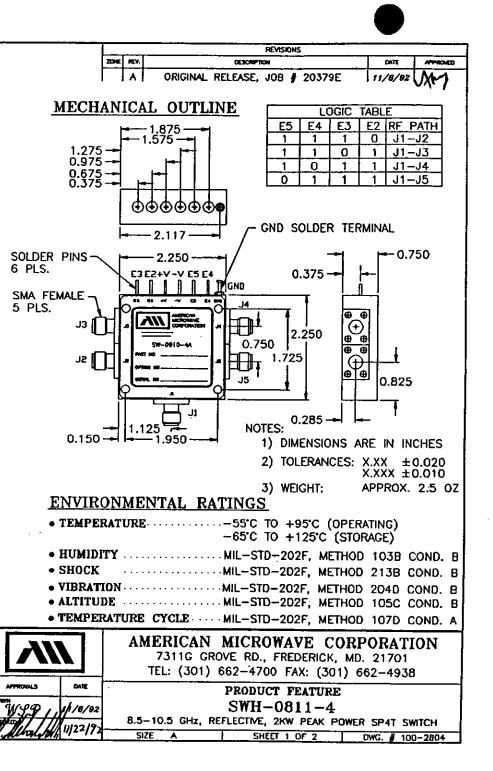
### **SPECIFICATIONS**

- INSERTION LOSS
   9.0-10.0 GHz 1.8dB MAXIMUM 8.5-10.5 GHz 2.0dB MAXIMUM
- ISOLATION ······ 50dB MINIMUM
- SWITCHING TIME

RISE	(10%	RF	TO	90%	RF)	•••••	50nS	MAXIMUM
FALL	(90%	RF	TO	10%	RF)	•••••	100nS	MAXIMUM
ON	(50%	ΠL	то	90%	RF)	<i>.</i> . <b></b> .	150nS	MAXIMUM
OFF	(50%	ΠL	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 µS PULSE WIDTH 800 TO 4000 Hz PRF RATE OR 1DOW PEAK/5W AVERAGE 0.2 TO 65 µS PULSE WIDTH UP TO 150 KHz PRF RATE
- CONNECTORS
   RF INPUT/OUTPUT······SMA FEMALE
   POWER
   CONTROL
   SOLDER PIN
   CONTROL
- AVAILABLE OPTIONS

A01 · · · · · · · · · · · · · · · · · 50Ω CC	NTROL IMPEDANCE
Α02 · · · · · · 100Ω Ο	ONTROL IMPEDANCE
A03 · · · · · · · · · · · · · · · · · INVERS	E CONTROL LOGIC (LOGIC "O" ISOLATION)
A14 ·····J1 SMA	MALE, J2 TO J5 SMA FEMALE
A15 J1 SMA	FEMALE, J2 TO J5 SMA MALE
A16 · · · · · · · · · · · · · · · +15VD0	POWER SUPPLY



7-3





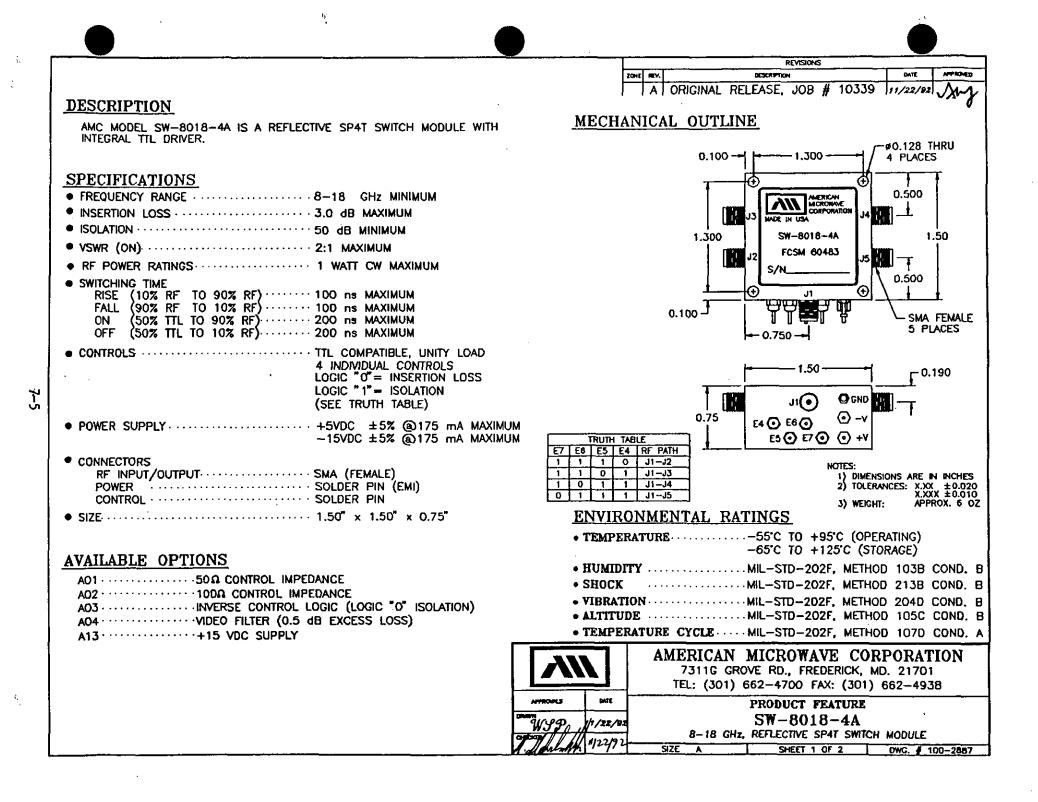
8.5-10.5 GHz, REFLECTIVE, 2KW PEAK POWER SP4T SWITCH

SHEET 2 OF 2

DWG. # 100-2804

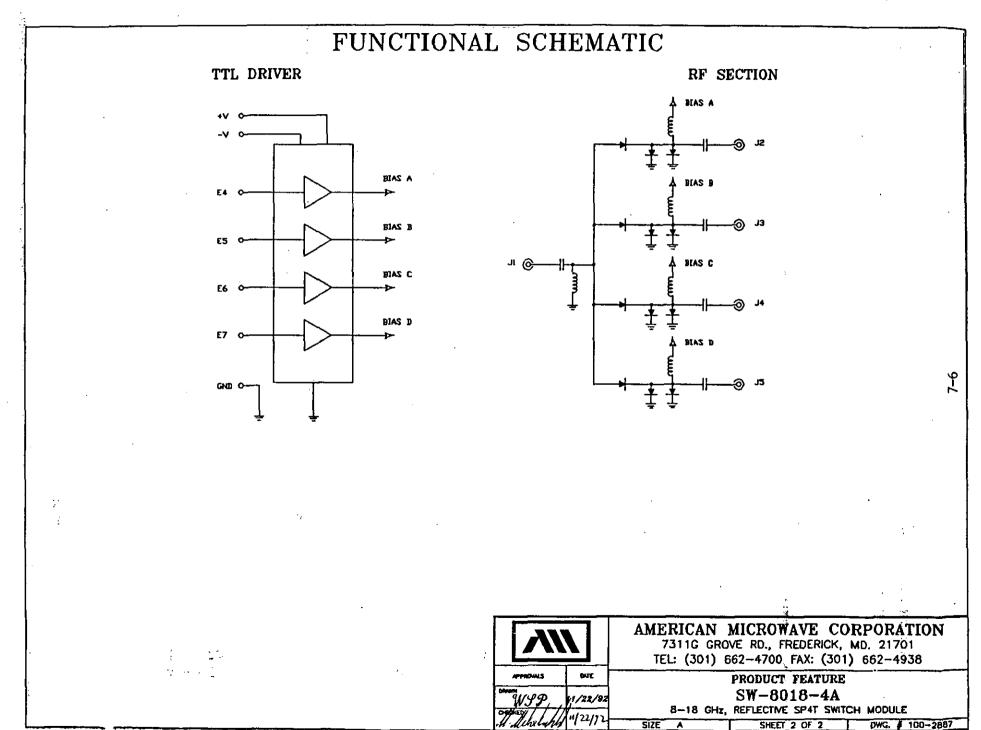
SIZE A

FUNCTIONAL SCHEMATIC DRIVER CIRCUIT **RF SECTION** +V 0--v BIAS 2 -Ŧ J2 6 BIAS 2 E2 0--∕>-BIAS 3 -BIAS 3 E3 0-J3 ⊳ J1 🕞 BIAS 4 🗠 BIAS 4 E4 ♪ J4  $\mathbf{O}$ Ŧ BIAS 5 E5 O--BIAS 5 -GND Ŧ J5 0 <u>0</u>-7-4 ちょうち ちょうしょうしょう AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 DATE APTROVALS PRODUCT FEATURE SWH-0811-4 ŴLP 1/6/92









AMC MODEL SW-218-4S IS A REFLECTIVE SP4T BAND-SWITCH MODULE WITHOUT DRIVER CIRCUITRY.

## **SPECIFICATIONS**

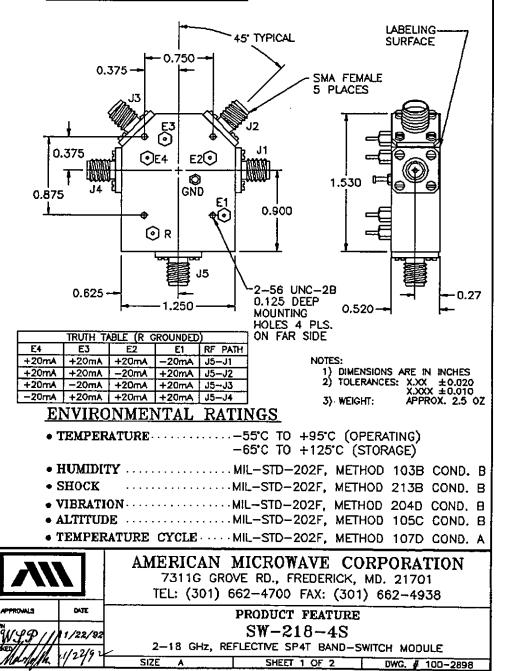
• FREQUENCY
J5-J1
J5-J4
INSERTION LOSS
J5-J1
J5-J4
J5-J3 2.3 dB MAXIMUM
<ul> <li>ISOLATION</li> <li>J5–J1</li></ul>
J5-J2
J5-J4
• VSWR (ON)
J5J1
J5-J2
J5-J3 2.5:1 MAXIMUM
RF POWER RATINGS     HAXIMUM     +27 dBm CW MAXIMUM
• SWITCHING TIME
RISE (10% RF TO 90% RF) · · · · · · · 300 ns MAXIMUM FALL (90% RF TO 10% RF) · · · · · · · 300 ns MAXIMUM
ON (50% TTL TO 90% RE)
OFF (50% TTL TO 10% RF) 500 ns MAXIMUM
CONTROLS     CONTROLLED     CONTROLLED
4 INDIVIDUAL CONTROLS +2D mA = ISOLATION
-20  mA = INSERTION LOSS
(SEE TRUTH TABLE)
CONNECTORS
RF INPUT/OUTPUT······SMA (FEMALE) CONTROL ·······SOLDER PIN
● SIZE ······· 1.25" × 1.53" × 0.52"

### AVAILABLE OPTIONS

	SMA MALE, J1-J4 SMA FEMALE
A14J5	SMA FEMALE, J1-J4 SMA MALE
A15 · · · · · · · · · · · · · · · · 60	dB ISOLATION (CONSULT FACTORY)

### MECHANICAL OUTLINE

ZONE REV.



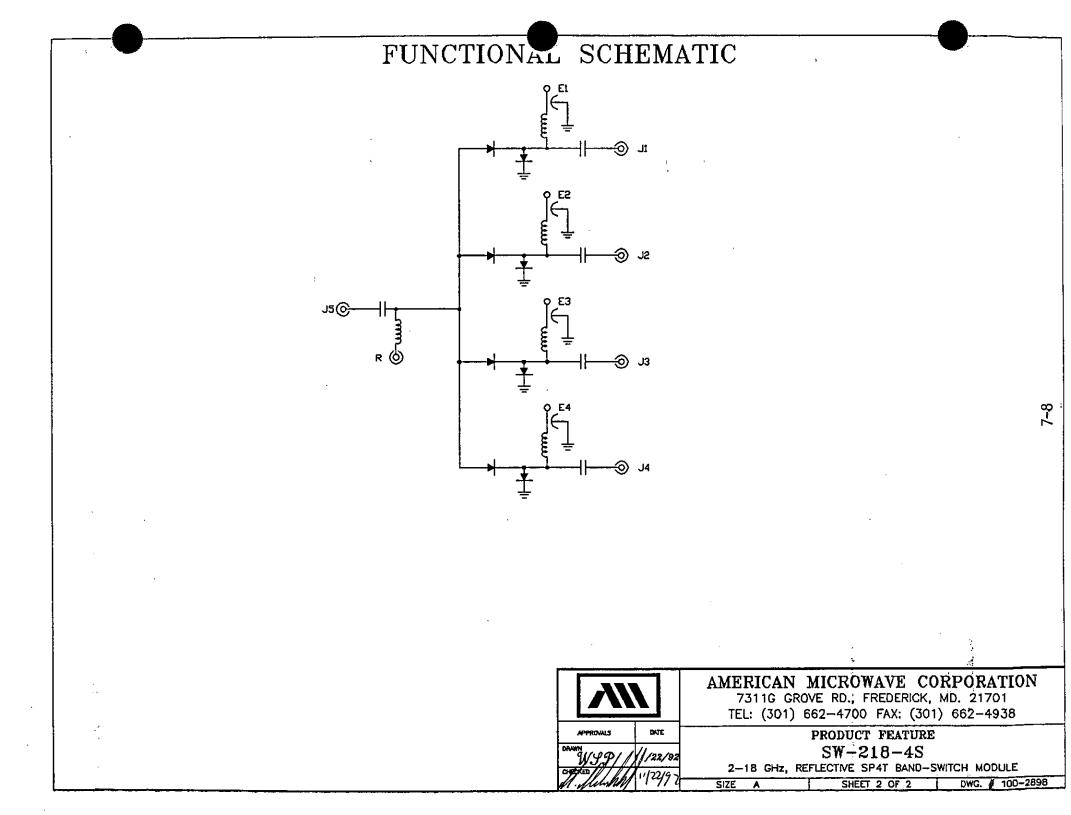
REVISIONS

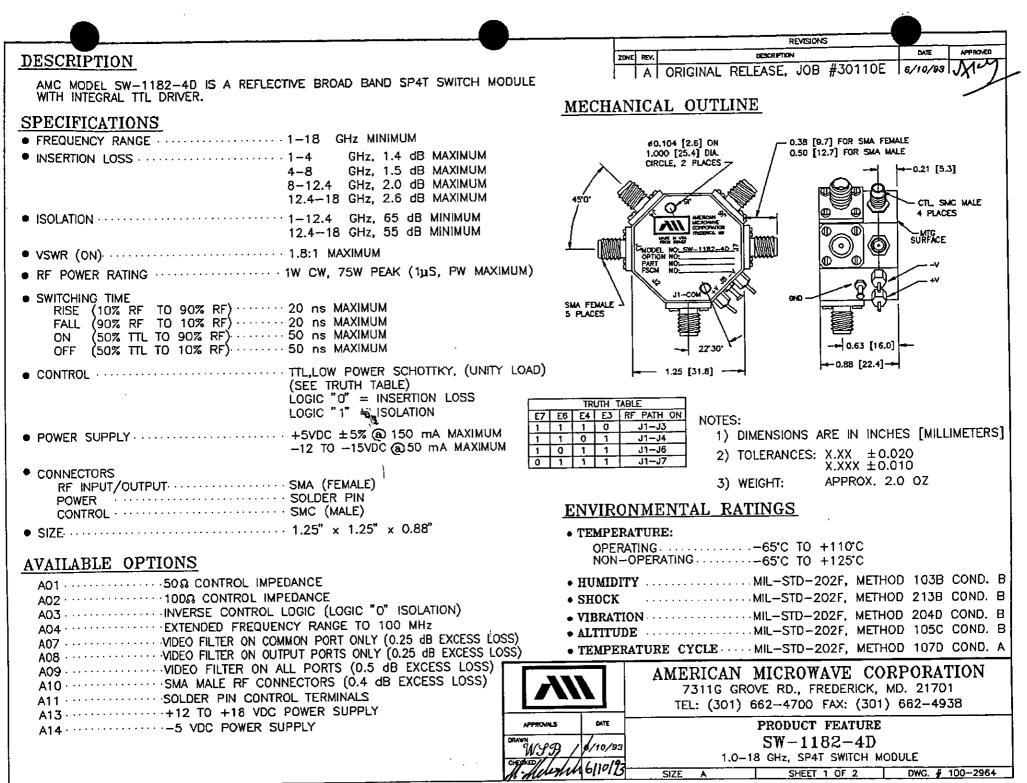
A ORIGINAL RELEASE, AMC DWG # 200-370 11/22/92

DATE

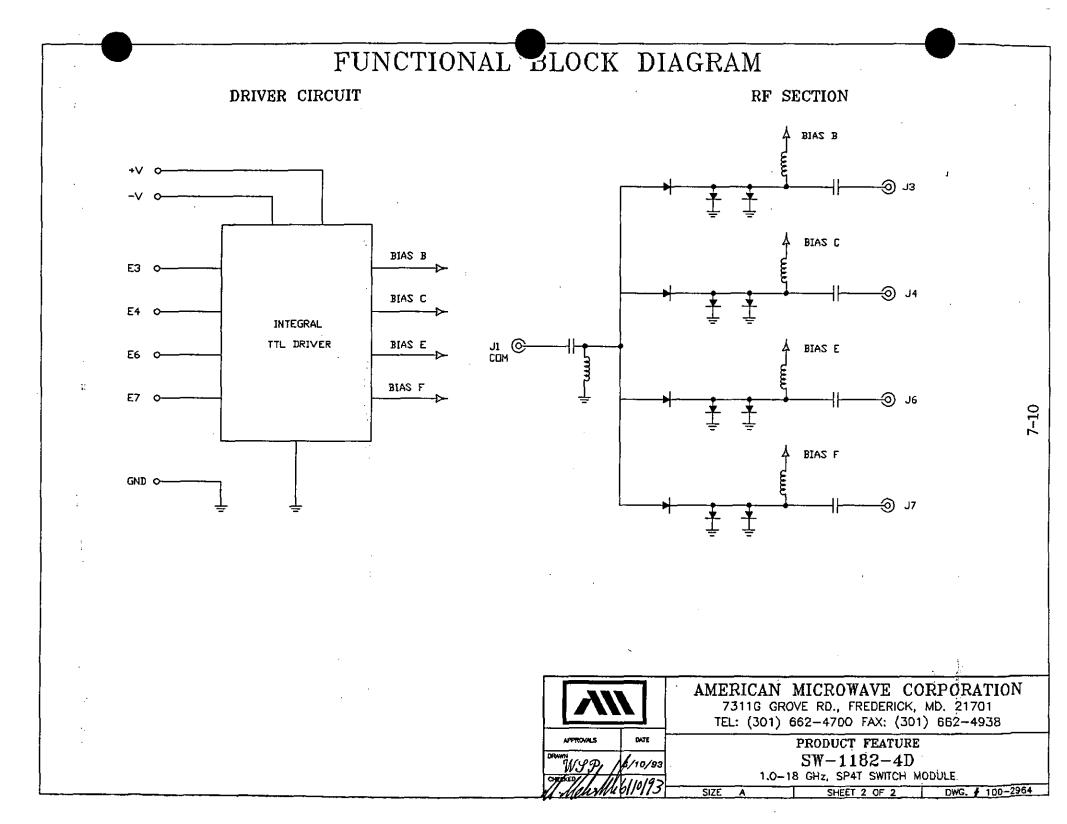
APPROVED

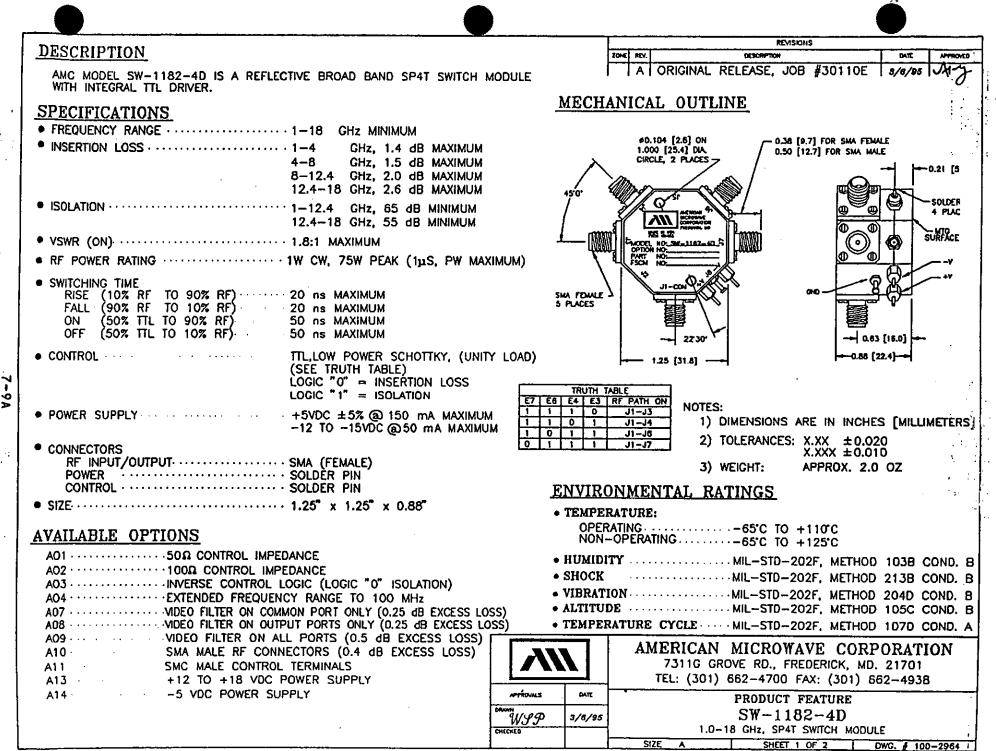
DESCRIPTION





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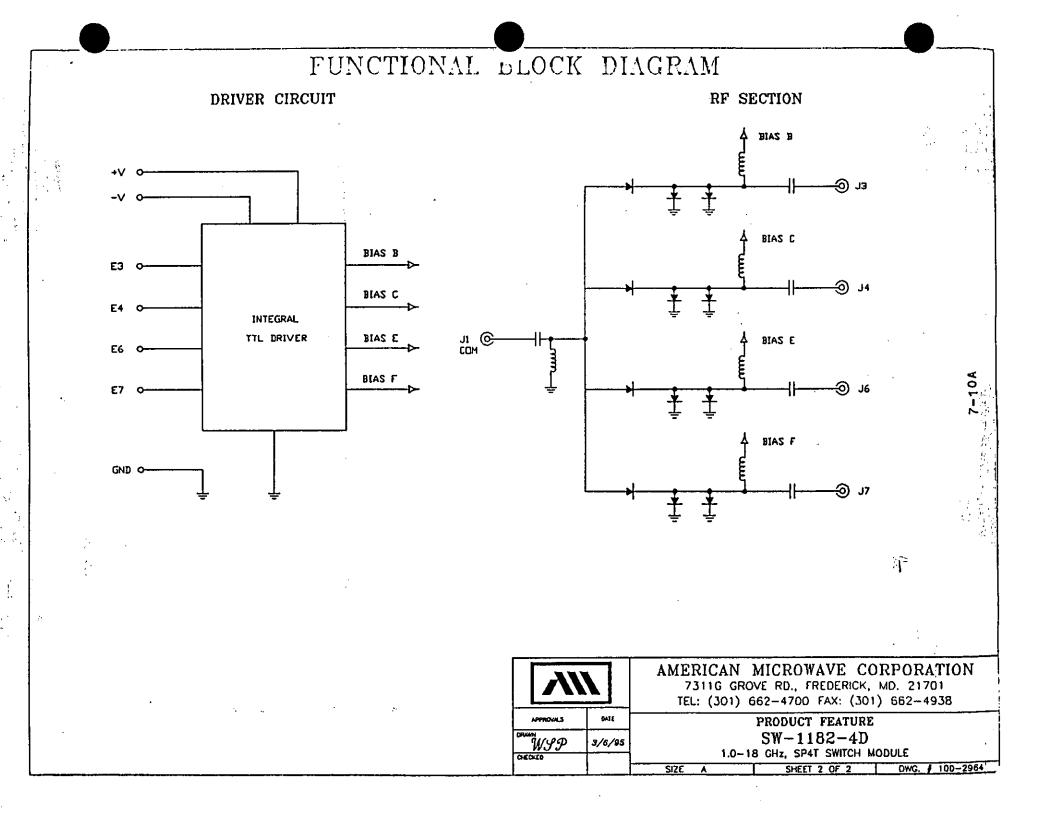
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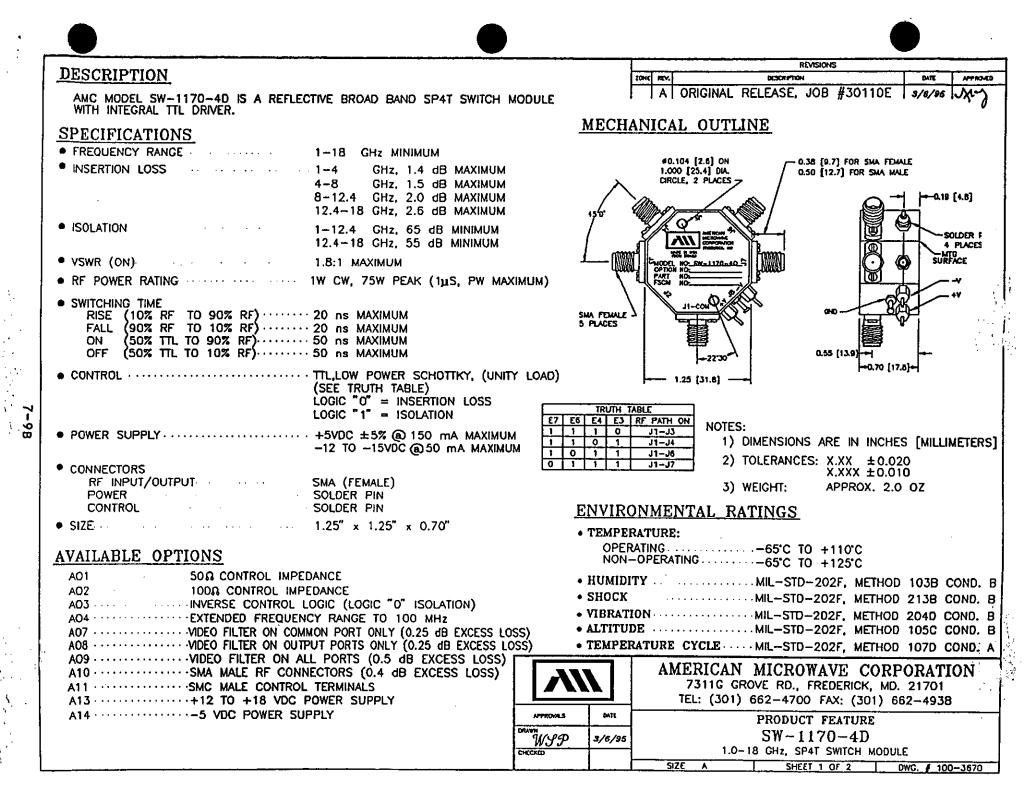
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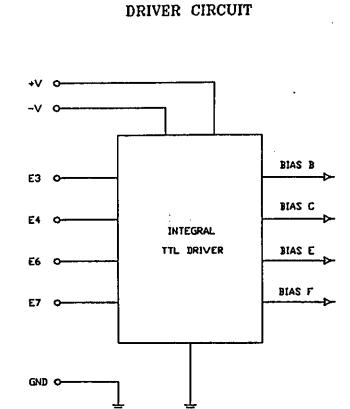
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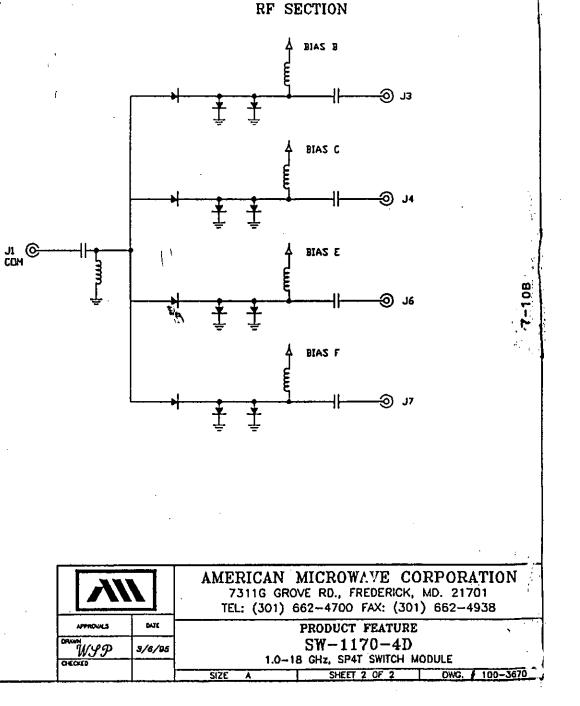


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FUNCTIONAL BLOCK DIAGRAM

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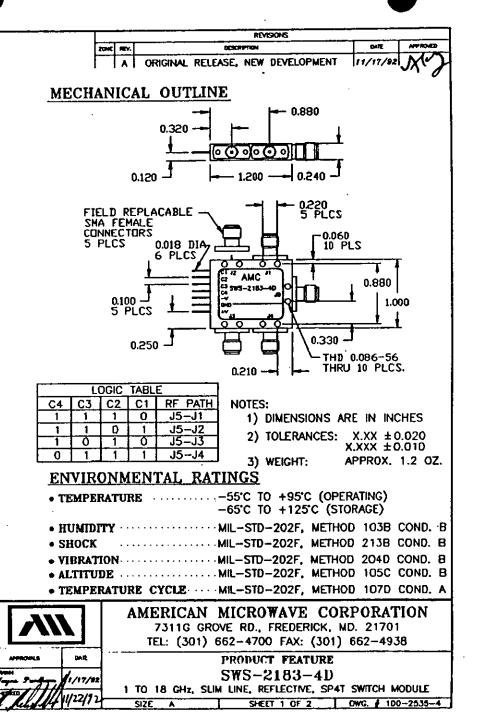
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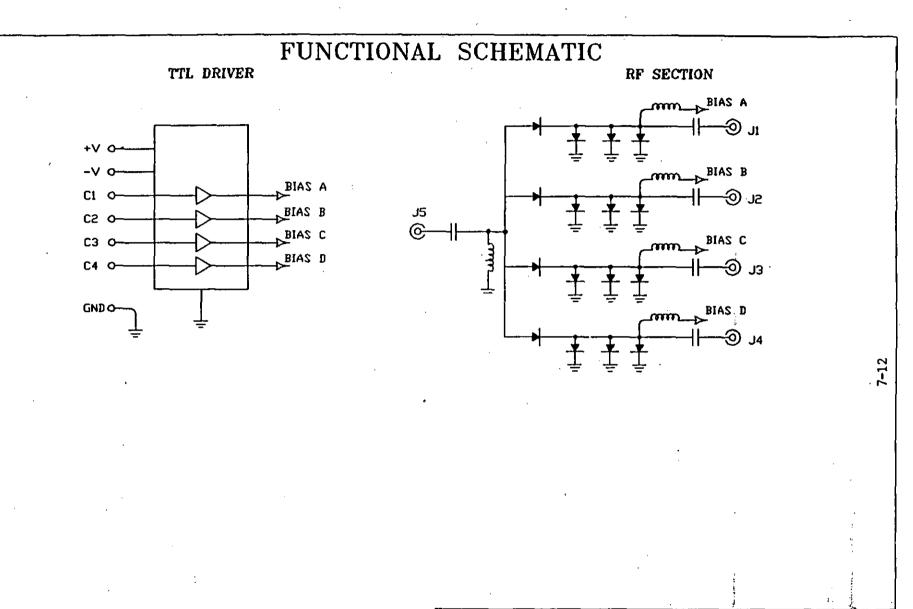
AMC MODEL SWS-2183-4D IS A REFLECTIVE BROAD BAND SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, PACKAGED IN A LOW PROFILE, HERMETICALLY SEALED HOUSING.

#### SPECIFICATIONS

• FREQUENCY RANGE ...... 1-18 GHz MINIMUM 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 SWITCHING TIME RISE (10% RF TO 90% RF) ..... 10 nS MAXIMUM FALL (90% RF TO 10% RF) ..... 10 nS MAXIMUM (50% TTL TO 90% RF) ..... 20 nS MAXIMUM 0N (50% TTL TO 10% RF) ..... 20 nS MAXIMUM OFF • RF POWER RATINGS ...... 1W CW, MAXIMUM **4 INDIVIDUAL CONTROLS** LOGIC "O" - INSERTION LOSS LOGIC "1"= ISOLATION -12VDC ±5% @ 70 mA MAXIMUM CONNECTORS RF INPUT/OUTPUT...... FIELD REPLACEABLE SMA (FEMALE) POWER SOLDER PIN CONTROL ...... SOLDER PIN AVAILABLE OPTIONS A01 ·······50 Q CONTROL IMPEDANCE A02 ..... 1000 CONTROL IMPEDANCE A03 ..... INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION) A04 ..... EXTENDED FREQUENCY TO 100 MHz A07 ······ INPUI/OUTPUT VIDED FILTER (0.5 dB EXCESS LOSS, 2-18 GHz) AOB ...... SINGLE ENDED ECL (15 nS ON/OFF TIME) A12 ······2 BIT DECODER



7-11



AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 -DATE PRODUCT FEATURE 2 SWS-2183-4D 1/17/00 1 TO 18 GHz, SLIM LINE, REFLECTIVE, SP4T SWITCH MODULE SHEET 2 OF 2 DWG. / 100-2535-4

SIZE A



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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

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

<ul> <li>FREQUENCY</li> </ul>	RANGE · · · · · · · · · · · · · · · · · · ·	· 0.1–2	GHZ MINIMUN
INSERTION L	.0SS · · · · · · · · · · · · · · · · · ·	·1 dB	MAXIMUM

- SWITCHING TIME RISE (10% RF TO 90% RF) ..... 50 ns MAXIMUM FALL (90% RF TO 10% RF) ..... 50 ns MAXIMUM (50% TTL TO 90% RF) ..... 150 ns MAXIMUM ON OFF (50% TTL TO 10% RF) ..... 150 ns MAXIMUM
- RF POWER RATINGS + + 27 dBm CW MAXIMUM

• CONTROL • • • • • • • • • • • • • • • • • • •	TTL COMPATIBLE, UNITY LOAD
l	LOGIC "O" = ISOLATION
. l	LOGIC "1" = INSERTION LOSS
POWER STIPPLY	+5VDC +5% @ 200 mA MAXIMU

FOMEK SOLLA. -5VDC ± 5% (a) 5D mA MAXIMUM CONNECTORS

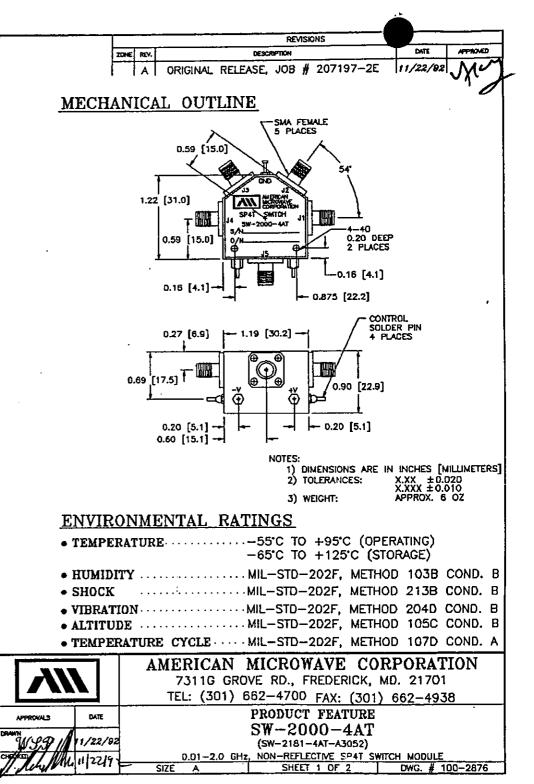
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	RF INPUT/OUTPUT········SMA (FEMALE)
	RF INPUT/OUTPUT······SMA (FEMALE) POWER ···········SOLDER PIN (EMI)
	CONTROL · · · · · · · · · · · · · · · · · · ·
•	SIZE

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### AVAILABLE OPTIONS

A02 ······1000 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



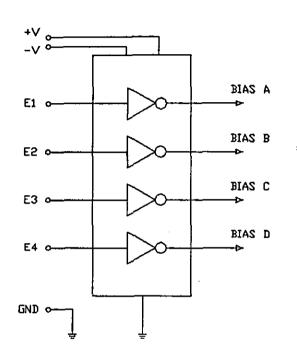
	ZONE REV. DESCRIPTION DATE APPROVED
DESCRIPTION	A ORIGINAL RELEASE, JOB # 207197-2E 11/22/92
AMC MODEL SW-2000-4AT IS AN ABSORPTIVE SP4T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR LOW LOSS AND LOW VSWR BROAD BAND APPLICATIONS.	
SPECIFICATIONS	0.59 [15.0]
<ul> <li>FREQUENCY RANGE</li> <li>INSERTION LOSS</li> <li>INSERTION LOSS</li> <li>INSERTION LOSS</li> </ul>	
ISOLATION     SOLATION     SOLATION	
VSWR (ON/OFF)     VSWR (ON/OFF)     SWITCHING TIME	0.59 [15.0] 0/M 0.20 DEEP 0/M 2 PLACES
RISE (10% RF TO 90% RF)	0.15 [4.1]
RF POWER RATINGS     +27 dBm CW MAXIMUM     ADD	0.27 [6.9] +
CONTROL TTL COMPATIBLE, UNITY LOAD LOGIC "0"= ISOLATION LOGIC "1"= INSERTION LOSS	
● POWER SUPPLY	
CONNECTORS     RF INPUT/OUTPUT······ SMA (FEMALE)     POWER ····· SOLDER PIN (EMI)     SOLDER PIN (EMI)	0.20 [5.1] 0.20 [5.1] 0.60 [15.1] -
• SIZE	NOTES: 1) DIMENSIONS ARE IN INCHES [MILLIMETERS] 2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010 3) WEIGHT: APPROX. 6 OZ
AVAILABLE OPTIONS	ENVIRONMENTAL RATINGS
A01	• TEMPERATURE
A03 INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS)	• HUMIDITY MIL-STD-202F, METHOD 103B COND. B
A10 ± 12VDC TO ± 18VDC SUPPLY POWER	SHOCK     MIL-STD-202F, METHOD 213B COND. B     VIBRATION     OND     MIL-STD-202F, METHOD 204D COND. B
A11 ·····SMC MALE CTL CONNECTOR	• ALTITUDEMIL-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)
	SIZE A SHEET 1 DF 2 DWG. # 100-2876

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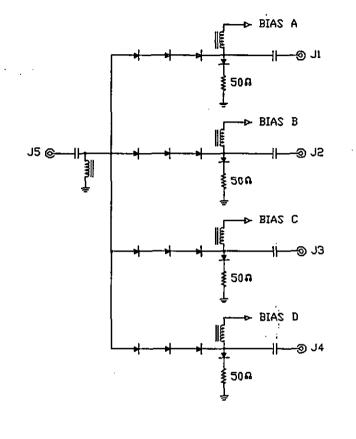
FUNCTION SCHEMATIC

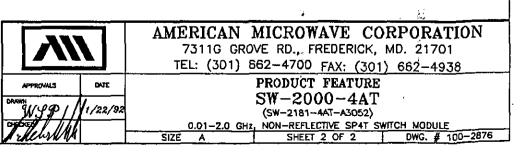
TTL DRIVER



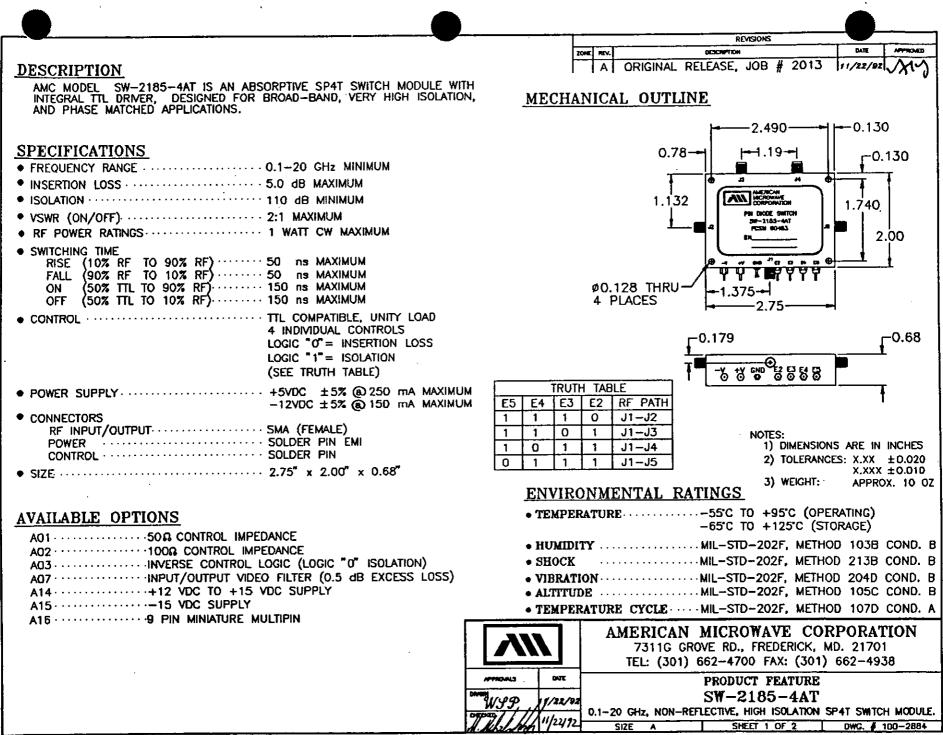


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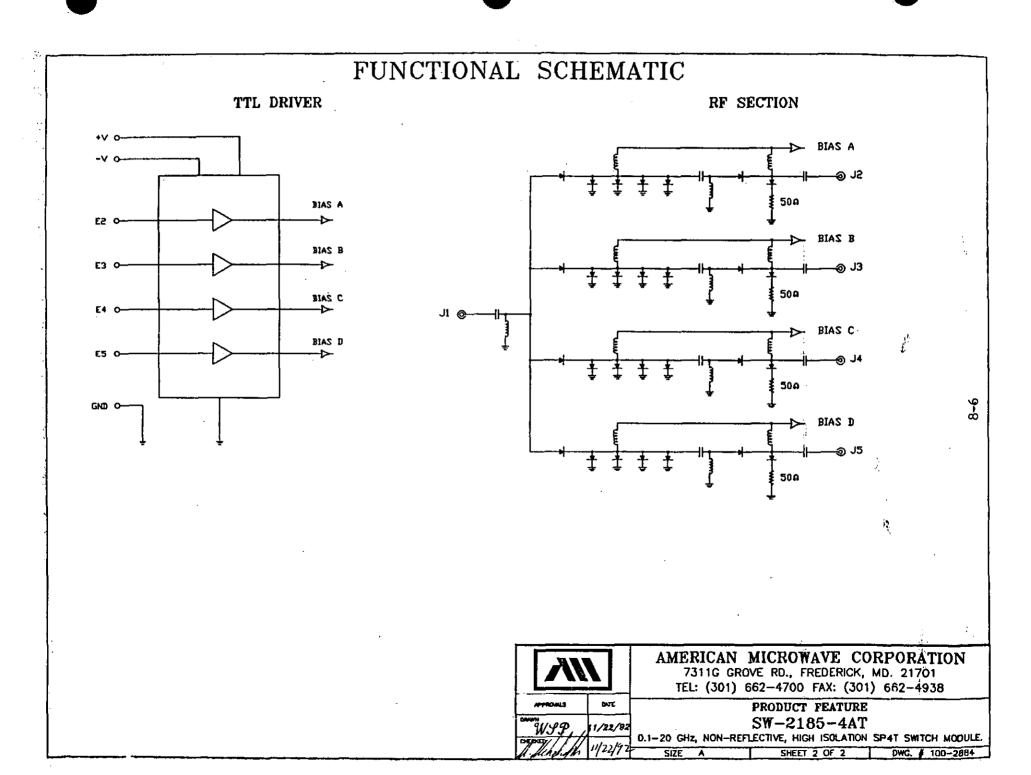




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	• 1.0-18 GHz	RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-5D	9-5
	• 0.3-20 GHz	SWITCH MODULE, AMC MODEL NO: SW-2181-5A-171	9-7

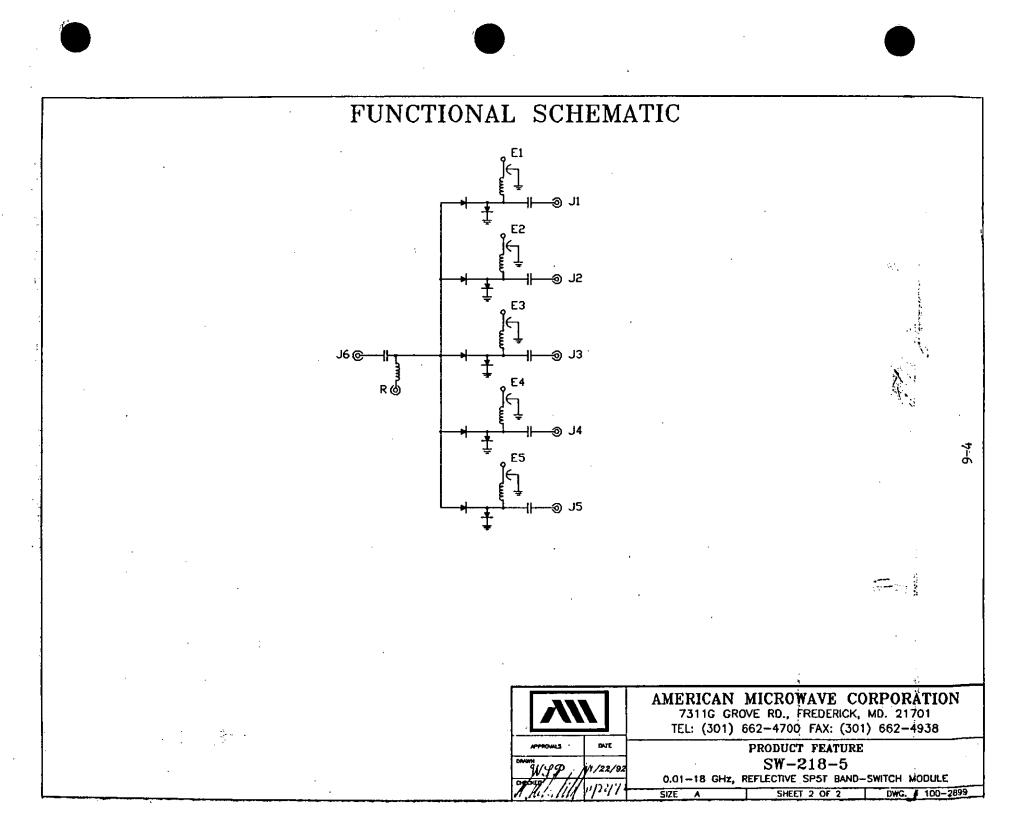
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	REVISIONS
DESCRIPTION	ZONE REV. DESCRIPTION DATE APPROVED
AMC MODEL SW-218-5 IS A REFLECTIVE SP5T BAND-SWITCH MODULE DRIVER CIRCUITRY.	E WITHOUT I A ORIGINAL RELEASE 11/22/92
<u>SPECIFICATIONS</u>	MECHANICAL OUTLINE
FREQUENCY	
J6-J1       0.01-2       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	0.375 - 0.750 - SMA FEMALE 6 PLACES
INSERTION LOSS	2 <sup>15</sup>
JG-J1	
JG-J4	$0.375 \qquad 1 \qquad \bigcirc E4 \qquad E2 \bigcirc \qquad 311 \qquad = \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
• ISOLATION	
J6-J1	
J6–J3	
J6-J4	
VSWR (ON)	
J6-J1	
J6-J2	0.625 - 1 250 - 0.125 DEEP 0.500
J6-J4	TRUTH TABLE (R CROUNDED) HOLES 4 PLS.
J6-J5 2.5:1 MAXIMUM	ES EA E3 E2 E1 RF PATH ON FAR SIDE
• RF POWER RATINGS	+20mA +20mA +20mA +20mA -20mA J8-J1 +20mA +20mA +20mA -20mA +20mA J6-J2 +20mA +20mA -20mA +20mA +20mA J6-J2 +20mA +20mA -20mA +20mA +20mA J6-J3 1) DIMENSIONS ARE IN INCHES
SWITCHING TIME RISE (10% RF TO 90% RF) ······· 300 ns MAXIMUM	+20mA -20mA +20mA +20mA +20mA J6-J4 2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010
FALL (90% RF TO 10% RF) 300 ns MAXIMUM	-20mA +20mA +20mA +20mA +20mA J6-J5 3) WEIGHT: APPROX. 3.0 ( ENVIRONMENTAL RATINGS
ON (50% TTL TO 90% RF)	• TEMPERATURE
· ·	-65°C TO +125°C (STORAGE)
CONTROLS ······· CURRENT CONTROLLED     5 INDIVIDUAL CONTROLS	• HUMIDITY
+20  mA = ISOLATION	• SHOCK MIL-STD-202F, METHOD 213B COND.
-20  mA = INSERTION LOSS	• VIBRATION
(SEE TRUTH TABLE)	• ALTITUDEMIL-STD-202F, METHOD 105C COND.
<ul> <li>CONNECTORS RF INPUT/OUTPUT SMA (FEMALE)</li> </ul>	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND.
CONTROL	AMERICAN MICROWAVE CORPORATION
● SIZE · · · · · · · · · · · · · · · · · · ·	7311G GROVE RD., FREDERICK, MD. 21701
AVAILABLE OPTIONS	TEL: (301) 662-4700 FAX: (301) 662-4938
	APPROVES DATE PRODUCT FEATURE
A13······J6 SMA MALE, J1-J5 SMA FEMALE A14······J6 SMA FEMALE, J1-J5 SMA MALE	W.99 /1/22/92 SW-218-5
A15	OUT 11/22/1 0.01-18 GHZ, REFLECTIVE SPST BAND-SWITCH MODULE

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· ·	REVISIONS
DESCRIPTION	ZONE REV. DESCRIPTION DATE APPROV
AMC MODEL SW-1182-5D IS A REFLECTIVE BROAD BAND SP5T SWITCH MODULE WITH INTEGRAL TTL DRIVER.	
	MECHANICAL OUTLINE
SPECIFICATIONS	#0.104 [2.6] ON
FREQUENCY RANGE	1.000 [25.4] DIA. CIRCLE, 2 PLACES 0.50 [12.7] FOR SMA HALE
▶ INSERTION LOSS · · · · · · · · · · · · · · · · · ·	
ISOLATION ····································	S PLACES
VSWR (ON)	
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	SMA FEMALE
CONTROL TTL,LOW POWER SCHOTTKY, (UNITY LOAD (SEE TRUTH TABLE) LOGIC "O" = INSERTION LOSS	
LOGIC "1" = ISOLATION +5VDC ±5% @ 200 mA MAXIMUM −12 TO −15VDC @55 mA MAXIMUM	TRUTH TABLE           E7         E6         E5         E4         E3         RF         PATH         ON           1         1         1         0         J1J3         1)         DIMENSIONS         ARE         IN         INCHES         [MILLIMETERS]           1         1         0         1         J1J3         2)         TDLERANCES:         X.XX         ±0.020           1         1         0         1         J1J5         X.XXX         ±0.010
CONNECTORS	1 0 1 1 1 J1-J6 3) WEIGHT: APPROX. 2.0 OZ
RF INPUT/OUTPUT··········· SMA (FEMALE) POWER ····································	0 1 1 1 1 JI-J7
CONTROL ····································	ENVIRONMENTAL RATINGS
SIZE	• TEMPERATURE:
VAILABLE OPTIONS	OPERATING NON-OPERATING -65°C TO +110°C +125°C
A01	• HUMIDITYMIL-STD-202F, METHOD 103B CONI
A021000 CONTROL IMPEDANCE	• SHOCK
A0.3INVERSE CONTROL LOGIC (LOGIC "O" ISOLATION)	• VIBRATION
AND A COLOR AND A	• ALTITUDEMIL-STD-202F, METHOD 105C CONI
A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS) A08 VIDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)	• TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND
AND WIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)	AMERICAN MICROWAVE CORPORATION
A10SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)	7311G GROVE RD., FREDERICK, MD. 21701
A11 ······SOLDER PIN CONTROL TERMINALS	TEL: (301) 662-4700 FAX: (301) 662-4938
A13·····+12 TO +18 VDC POWER SUPPLY	ROWLS DATE PRODUCT FEATURE
A14····································	SW_1182-5D
	10-18 GHZ SP5T SWITCH MODULE
	10-31 SIZE A SHEET 1 OF 2 DWG. # 100-31

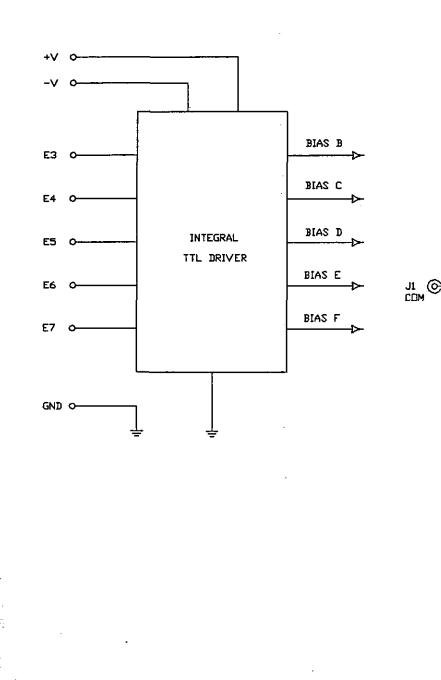
9-5

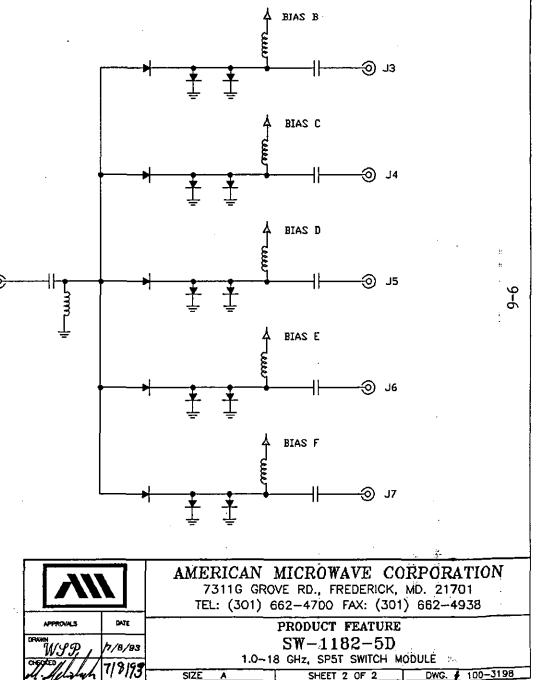
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DRIVER CIRCUIT

**RF** SECTION

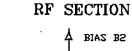


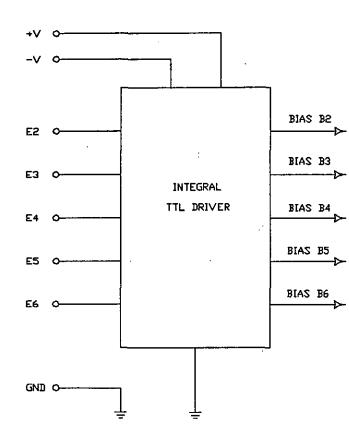


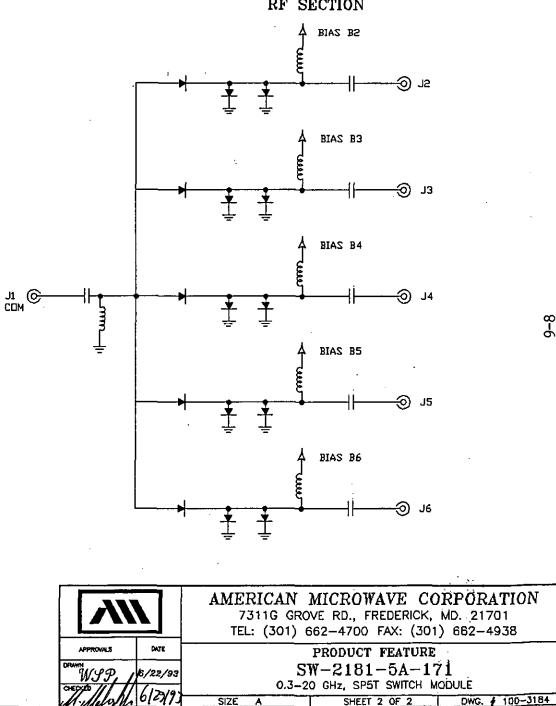
	<u> </u>					. <u> </u>
DESCRIPTION	•		ZDHE REV.	REVISIONS	DATE	APPROVED
	REFLECTIVE BROAD BAND SP5T SWITCH			EASE, JOB #212326	5-2 6/22/93	16/29/°
SPECIFICATIONS		MECH	ANICAL OUTLIN	<u>E.</u>		-
FREQUENCY RANGE	0.3-20 GHz MINIMUM		ł		0.63 [16.0] 🖛 -	
INSERTION LOSS	4—8 GHz, 1.5 dB MAXIMUM 8—12.4 GHz, 2.0 dB MAXIMUM 12.4—20 GHz, 3.0 dB MAXIMUM	SMA FEMALE - 6 PLACES				0.21 (5.3)
ISOLATION	0.3-12.4 GHz, 60 dB MINIMUM 12.4-20 GHz, 50 dB MINIMUM	1.25 (31.8)	J3 PIN DIODE			TERMINAL
VSWR (ON) ·······		10000	SWITCH		0	
<ul> <li>SWITCHING TIME</li> <li>RISE (10% RF TO 90% RF)</li> <li>FALL (90% RF TO 10% RF)</li> <li>ON (50% TTL TO 90% RF)</li> <li>OFF (50% TTL TO 10% RF)</li> </ul>	· 15 ns MAXIMUM · 45 ns MAXIMUM	* *				
CONTROL ·····	• TTL, LOW POWER SCHOTTKY, (UNITY LO (SEE TRUTH TABLE) LOGIC "1" = INSERTION LOSS LOGIC "0" = ISOLATION			P0.104 THRU		
POWER SUPPLY		E6         E5         E4         E2           0         0         0         0         0           0         0         0         0         1	1 <u>J1-J2</u> 0 <u>J1-J3</u>	TES: 1. DIMENSIONS ARE 1 2. TOLERANCES: >	IN INCHES [MIL K.XX ±0.020	LIMETER
CONNECTORS RF INPUT/OUTPUT······ POWER/CONTROL······	SMA (FEMALE) SOLDER PIN	0     0     1     0       0     1     0     0       1     0     0     0	0 J1-J5 0 J1-J6	3. WEIGHT: A	APPROX. 2.5 0	z
• SIZE		ENVIR	<u>ONMENTAL RAT</u>	INGS		
			RATURE:			
VAILABLE OPTIONS		OPE NON	RATING	-65°C TO +110°C -65°C TO +125°C		
A01			ITY		ETHOD 103B	COND.
A02 ····································		• SHOCK	•••••	MIL-STD-202F, ME	ETHOD 213B	COND.
A03 ·······················INVERSE CONTROL A04 ············EXTENDED FREQUE		• VIBRAT	CION • • • • • • • • • • • • • • • • • • •	MIL-STD-202F, ME	ETHOD 204D	COND.
A07			DE			
A08 ······ VIDEO FILTER ON OU	TPUT PORTS ONLY (0.25 dB EXCESS LOSS)	• TEMPE	RATURE CYCLE	MIL-STD-202F, ME	ETHOD 107D	COND.
A09 ······VIDEO FILTER ON / A10 ······SMA MALE RF CON			AMERICAN	MICROWAVE C	CORPORAT	TION
A11				VE RD., FREDERIC	•	
A13 ·····+12 TO +18 VDC	POWER SUPPLY			62-4700 FAX: (3	01) 662-493	38
A1412 TO -18 VDC		APPROVALS DATE	_	PRODUCT FEATUR		
	DRAM	WSP 1 4/22/8	· · · · · · · · · · · · · · · · · · ·	W-2181-5A-		
	°99	Key/ al 1/12019	D.3-20	O GHZ, SP5T SWITCH	MODULE	

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT









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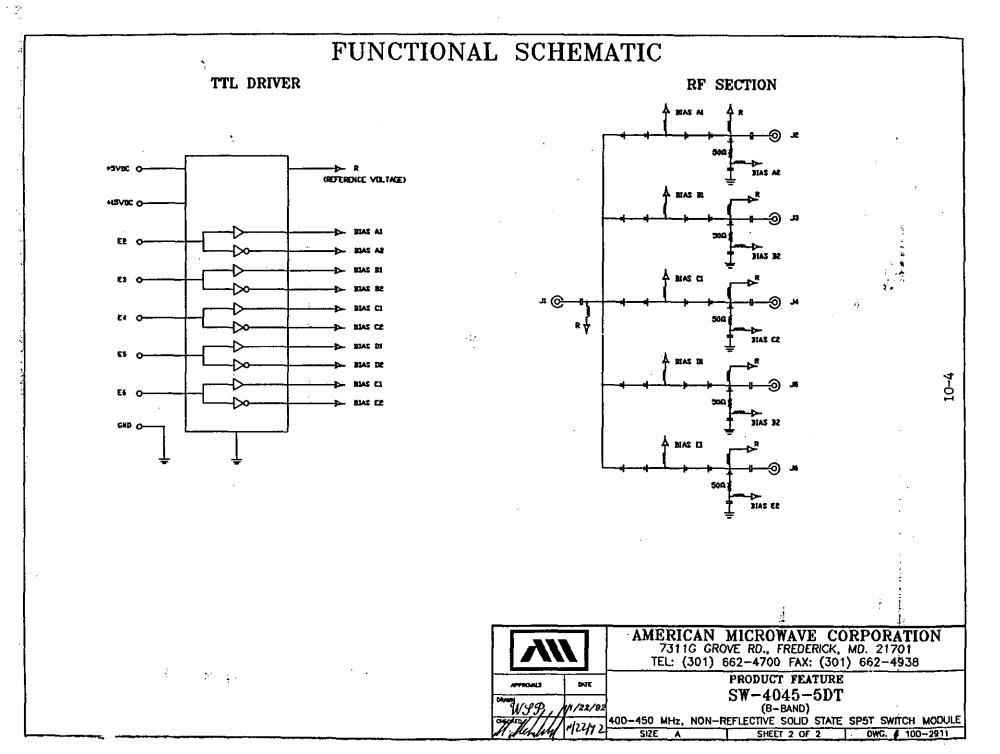
DESCRIPTION	REVISIONS DATE APPROVED
AMC MODEL SW-4045-5DT IS AN ABSORPTIVE SP5T SWITCH MODULE WITH INTEGRAL TTL DRIVER, DESIGNED FOR HIGH RELIABILITY APPLICATIONS SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED, ISOLATION AND SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.	A ORIGINAL RELEASE, JOB # 10358-5E 11/22/92
SPECIFICATIONS         • FREQUENCY RANGE         • INSERTION LOSS         • INSERTION LOSS         • INSERTION LOSS         • INSERTION LOSS BALANCE         • INSERTION LOSS VARIATION OVER TEMPERATURE         • INSERTION LOSS VARIATION OVER FREQUENCY         • ±0.1 dB MAXIMUM         • ISOLATION         • SWAR (ON/OFF)         • 1.3:1 MAXIMUM         • RF POWER         • + 16 dBm CW MAXIMUM         • SWITCHING TIME         RISE (10% RF TO 90% RF)         • 40 ns MAXIMUM	RANGE     0.175- 0.370- 1     2.59- 2.336- 1-0.487 TYPICAL       Image: Constraint of the second se
ON (50% TTL TO 90% RF)	NOTES: 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES: X.XX $\pm 0.020$ X.XXX $\pm 0.010$ 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) REOUREDNENT MIL-STD-454 (5 AND 9),MIL-F-19870 ENVIRONMENTAL RATINGS • TEMPERATURE: OC TO +65°C (OPERATING)
<ul> <li>HARMONIC DISTORTION PRODUCTS</li></ul>	-55°C TO +70°C (STORAGE) • HUMDITY
-20 dBm/SQUARE FOOT     CONDUCTED SUSCEPTIBILITY     (INTERMODULATION)     ···· ≥ -85 dBm FOR -20 dBm Rf     INTERFERENCE LEVEL     ON DC POWER LINES	VIBRATION     VIBRATION     O 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     SC YOLES, 5°C PER MINUTE, -55°C TO +55°C,     RANDOM VIBRATION     C 20 TO 2000 Hz AND 6 G RWS, 10 MINUTES PER AXIS AT +55°C/-55°C
POWER SUPPLY	AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 PRODUCT FEATURE
• SIZE ····································	SW-4045-5DT           WJP         1/22/92           (B-BAND)           WJP         1/22/92           400-450         MHz, NON-REFLECTIVE SOLID STATE SP5T SWITCH MODULE           SIZE         SHEET 1 OF 2           DWG. # 100-2911

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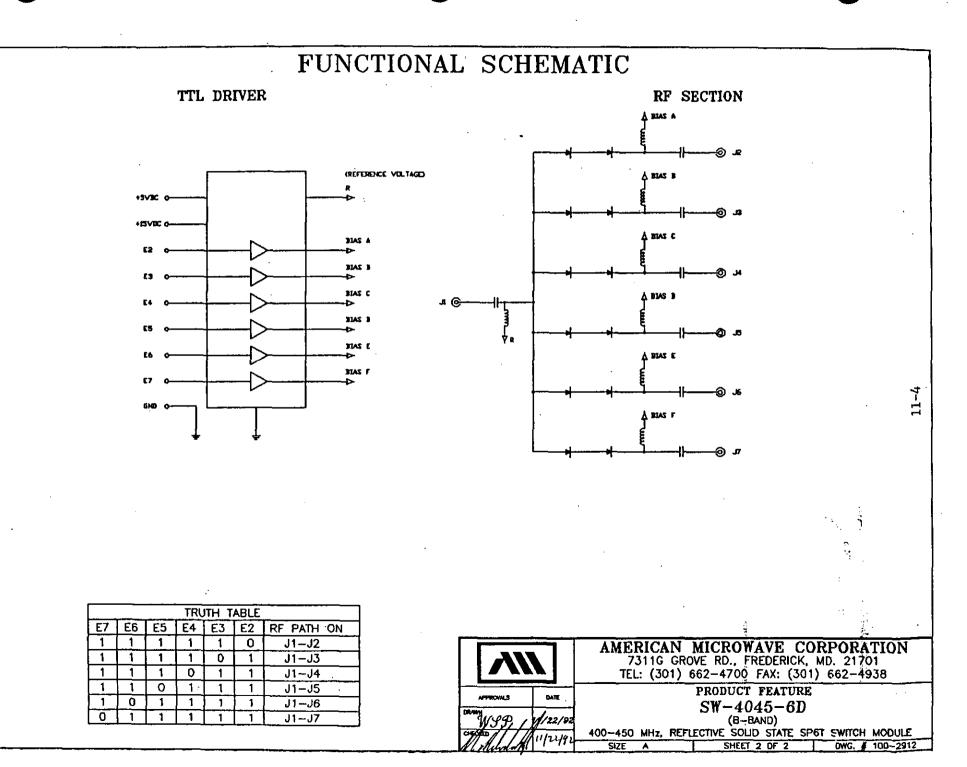
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SECTION	PRODUCT DESCRIPTION			
11	SP6T, REFLEO	CTIVE	11-1	
	• 400-450 MHz	SOLID STATE, B BAND SWITCH MODULE, AMC MODEL NO: SW-4045-6D	11-3	
	• 2.0-2.5 GHz	SOLID STATE, E BAND, SWITCH MODULE, AMC MODEL NO: SW-2025-6D	11-5	
	• 1-18 GHz	RADIAL SWITCH MODULE, AMC MODEL NO: SW-1182-6D	11-7	

		)				Ó	
DESCRIPTION			ZDHE REV.	REVI	SIONS	CATE	ATTRONED
AMC MODEL SW-4045-BD IS A REFLECT INTEGRAL TIL DRIVER, DESIGNED FOR SUCH AS SHIPBOARD RADARS WHERE SW SPECTRAL PURITY ARE OF EXTREME IMPO	HIGH RELIABILITY APPLICATIONS WITCHING SPEED, ISOLATION AND	MECH		NL RELEASE, JOB	# 10358-6E	11/22/91	Nor
SPECIFICATIONS • FREQUENCY RANGE • INSERTION LOSS • INSERTION LOSS BALANCE • INSERTION LOSS VARIATION OVER TEMPERATURE • INSERTION LOSS VARIATION OVER TREQUENCY • ISOLATION • VSWR (ON) • RF POWER • SWITCHING TIME RISE (10% RF TO 90% RF) • FALL (90% RF TO 10% RF) • ON (50% TTL TO 90% RF) • OFF (50% TTL TO 10% RF)	0.9 dB MAXIMUM 0.2 dB MAXIMUM ±0.1 dB MAXIMUM 45.1 dB MAXIMUM 45.5 dB MINIMUM 1.3:1 MAXIMUM +16 dBm CW MAXIMUM 40 ns MAXIMUM 40 ns MAXIMUM 300 ns MAXIMUM	NOTES: 1) Driensions are		1.59 1.336 1.336 1.070	2.836 -0.467 TY -0.467 TY -0.4		ه
SETTLING TIME ON (90% TO WITHIN ±0.25 db of Insertion LOSS) OFF (10% TO MINMUM ISOLATION REQUIREMENT)     VOLTAGE TRANSIENTS     CONTROLS	0.7 JIS MAXIMUM 1.0 JIS MAXIMUM 1 Vpp MAXIMUM ACROSS 500 LOAD STANDARD TTL COMPATIBLE 5 INDIVIDUAL CONTROLS LOGIC "0" - INSERTION LOSS LOGIC "1" = ISOLATION (SEE TRUTH TABLE ON SHEET 2 OF 2)	3) WEIGHT: API 4) MATERIALS PROCI TO: NIL-T-1950X CLASS 8, MIL-F- TYPE, ER COMPO 5) REDUIREMENT MIL (5 AND 9).MIL-F ENVIRONME	CXX ± 0.010 PRDX. 5 OZ ESS AND PARTS JMIL-W-38510 -18870 JANTX NENTS STD-454 18870 ENTAL RAT	<u>'INGS</u> ) +65°C (OPERATING)		-SMA FEMALE 7 PLACES	
٢		SHOCK     VIBRATION     MTBF     ENVIRONMI     TEMPERATURE CYC	MIL-S MIL-S MIL-S MIL-S MIL-S T x 10 ENTAL STR LES 10 CM	TO +70°C (STDRAGE TD-202, METHOD 103 -901 GRADE A, CLAS -167, TYPE 1 MBRATIO 0 <sup>6</sup> HOURS, @+50°C ( IESS SCREE CLES, 1/2 HOUR SDA	, condition 8 s I dr II n, 0.1g sinusoida operation <u>:NING (ES</u> k minute, -55°C	<u>55)</u>	2000 Hz
RADIATION SUSCEPTIBILITY	≥-76 dBm for RF interference field of -20 dBm/Square foot	♦ VIBRATION	······ 10 G@	LES, -55°C TO +85°C D 60 Hz FOR 1 MINU TD-883 METHOD 1015	te, 3 axis	W R	
CONDUCTED SUSCEPTIBILITY (INTERMODULATION) ·····	OF -20 dBm ON DC POWER LINES	• ESS (NEXT HIGHER THERMAL • • • • •	160 H ASSEMBLY)	LES, 5°C PER MINUTE 2000 Hz AND 6 G RM	(on temperature) , -55°C to +55°C	E (105°C AME C.	
POWER SUPPLY     CONNECTORS	+5VDC ±5% @ 90 mA MAXIMUM +15VDC ±5% @ 40 mA MAXIMUM (OVER VOLTAGE PROTECTED)		7311	CAN MICRO G GROVE RD., 1 301) 662-4700	REDERICK, M	D. 21701	
RF INPUT/OUTPUT POWER CONTROL	Solder Pin Solder Pin	Contents Content Co	1 400-450 MH	SW-40 (8-	FEATURE 045-6D BAND) ID STATE SP6T	SWITCH M	

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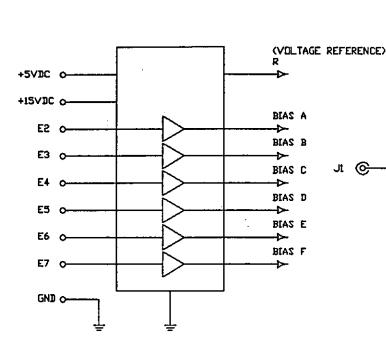
ALC MOREL IN: 222-00 S A BELEVITY CARE OF EXAMILY MEDUCE WITH MEDUCE WITH MEDUCE WITH MEDUCE AND A DEVICE WITH A DEVICE WITH MEDUCE AND A DEVICE WITH MEDUCE AND A DEVICE WITH MEDUCE AND A DEVICE WITH A DEVICE WITH A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE AND A DEVICE WITH A DEVICE AND A DEVICE AND A DEVICE AND A DEVICE AND A DEVICE AND A DEVICE AND A DEVICE AND A DEVIC AND A DEVICE AND A DEVICE AND A DEVICE AND	DESCRIPTION		20HE REV.	REVISK		DATE AP
INTEGRAL TH. DRIVER, DESIGNED TOPH HICH RELIABILITY APPLICATIONS SPECTRAL PURITY ARGE OF EXTREME IMPORTANCE. PERCEPTICATIONS SPECTRAL PURITY ARGE OF EXTREME IMPORTANCE. 2.0–2.5 GHz MINIMUM INSERTION LOSS:					# 10358-1E	11/22/92
BLOH AS SHIPBOARD FADARS WIERE SWITCHING SPEED, ISOLATION AND SPECIFICAL PURITY ARE C STRING MORTANCE.         MORTANCE.         SPECIFICATIONS           9 PECUFICATIONS	AMC MODEL SW-2025-60 IS A REFLECTIVE SPOT SWITCH N INTEGRAL TTL DRIVER DESIGNED FOR HIGH RELIABILITY &	L WITH ATIONS	1 1771 0000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	·····
SPECIFICAL PURITY ARE OF EXTREME IMPORTANCE.         PRECIFICATIONS         ONDERSTAND ARE OF EXTREME IMPORTANCE.         INSERTION LOSS         ON FROUENCES         O. 4. dB MAXIMUM         INSERTION LOSS VARIANO VER TREPERTURE.         O. 4. dB MAXIMUM         INSERTION LOSS VARIANO VER TREPERTURE.         INSERTION LOSS VARIANO VER TREOVERS EL MAXIMUM         VOLTAGE TRANSIENTS         STANDARD TTL COMPATIBLE         INTERSE (LOS RF)         INTERSE (LOS RF)         CONTROLS         STANDARD TTL COMPATIBLE         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902, RF)         INTERSE (LOS RET NO 1052, TL 10 902,	SUCH AS SHIPBOARD RADARS WHERE SWITCHING SPEED. IS			ידואד דידידר		
FFREQUENCY FANCE       20-0-25 CH2 MINIMUM         INSERTION LOSS	SPECTRAL PURITY ARE OF EXTREME IMPORTANCE.	<u>[v]</u>				
FFREQUENCY FANCE       20-0-25 CH2 MINIMUM         INSERTION LOSS	SPECIFICATIONS	្រ	#0.086-56 UNC-28 x	: 0.190 DEEP ON #1.750		<u>⊢</u> 30° <sub>т∕тр</sub>
INSERTION LOSS       1.5 dB MAXIMUM         INSERTION LOSS BALANCE:       0.4 dB MAXIMUM         INSERTION LOSS VARIAND ORE TEMERATURE:       0.4 dB MAXIMUM         INSERTION LOSS VARIAND ORE TEMERATURE:       0.1 dB MAXIMUM         INSERTION LOSS VARIAND ORE TEMERATURE:       0.1 dB MAXIMUM         ISCILITON       -0.1 dB MAXIMUM         ISCILITON:       -1.41 MAXIMUM         ISCILITON:       -1.41 MAXIMUM         ISCILITON:       -1.41 MAXIMUM         ON (50% TTL TO 90% RF)       -40 on SMAXIMUM         OF (50% TTL TO 103% RF)       -40 on SMAXIMUM         OF (10% TO MINH 40.25 dB OF INSERTION LGSS)       0.7 µs MAXIMUM         OF (10% TO MINH 40.25 dB OF INSERTION LGSS)       0.7 µs MAXIMUM         OF (10% TO MINH 40.25 dB OF INSERTION LGSS)       0.7 µs MAXIMUM         OF (10% TO MINH 40.25 dB OF INSERTION LGSS)       1.0 µs MAXIMUM         OF (10% TO MINH 40.25 dB OF INSERTION LGSS)       0.0 NEETICL         LOGIC 0"- INSERTION LGSS       LOGIC 0"- INSERTION LGSS         LOGIC 0"- INSERTION LGSS		ļ		7		
INSERTION LOSS BALANCE       0.4 dB MXMUMM         INSERTION LOSS WARATINO ORE TEMPERATURE TAME TEMPERATURE RANGE         INSERTION LOSS VARATINO ORE TEMPERATURE TAME TEMPERATURE RANGE         INSERTION LOSS VARATINO ORE TEMPERATURE TEMPERATURE RANGE         INSCRIPTION LOSS VARATINO ORE TEMPERATURE TEMPERATURE RANGE         INSCRIPTION LOSS CONTROL         SWITCHING TIME         ON (50% TO TIL TO 10% RF)       40 on SMAXIMUM         VOLTAGE TRANSIENTS       1 Vop MAXIMUM ACROSS 500 LOAD         SCICITION OFF (50% TTL TO 10% RF)       1.0 JE ANXIMUM         VOLTAGE TRANSIENTS       1 Vop MAXIMUM ACROSS 500 LOAD         CONTROLS       5 INDIMULUL CONTROLS         LOGIC "1" = ISOLATION         SCIET TUNT TANNE RECORDER ARE NECKES       1 VOP MAXIMUM ACROSS 500 LOAD         CONTROLS       5 INDIMULUAL CONTROLS         LOGIC "1" = ISOLATION       5 INDIMULUAL CONTROLS						
INSERTION LOSS VARIATION OVER TEMPERATURE - 40.6 B MUXIMUM OVER OPERATING TEMPERATURE RANGE         INSERTION LOSS VARIATION OVER FEQUENCY       -0.1 dB MUXIMUM         INSERTION LOSS VARIATION OVER FEQUENCY       -0.1 dB MUXIMUM         INSERTION LOSS VARIATION OVER FEQUENCY       -0.1 dB MUXIMUM         ISOLATION       -30 dBm CW MAXIMUM         ISOLATION       -30 dBm CW MAXIMUM         RF POWER       -30 dBm CW MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 ST RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         ON (500 TTL TO 100 RF)       -40 ns MAXIMUM         OCATACE THANSIENTS       '1 YOP MAXIMUM         OCATACE THANSIENTS       '1 YOP MAXIMUM         OCATACE THANSIENTS       '1 YOP MAXIMUM         OCATACE THANSIENTS       '1 YOP MAXIMUM         OVERTION PRODUCTS       -55 dBc MINIMUM         OFF (500 TSTRING BAND 2-2.5 GH;) HOU dB BELOW THE OUTPUT SIGNAL LEVEL       'TEMPERATURE'         MICHTERATURE       -90 dBm (NSUPLY AND CONTROL LEVEL         RADIATIVE       -90 dBm (NSUPLY AND CONTROL LEVEL					\ 🖗	
INSERTION LOSS VIRIAITON OVER PEQUENCY.       -0.01 dB MANNUM         VISOLATION       -0.01 dB MANNUM         VISOLATION       -0.01 dB MANNUM         VISOLATION       -0.01 dB MANNUM         SWERT       +30 dBm CW MAXIMUM         RF POWER       +30 dBm CW MAXIMUM         SWERT       -0 ns MAXIMUM         ON (5002 THL TO 5002 RF)       -40 ns MAXIMUM         OF (602 THL TO 102 RF)       -40 ns MAXIMUM         OF (002 THL TO 102 RF)       -40 ns MAXIMUM         VOLTAGE TRANSIENTS       -40 ns MAXIMUM         VOLTAGE TRANSIENTS       -10 ps MAXIMUM         VOLTAGE TRANSIENTS       -50 dB MINNUM         VOLTAGE TRANSIENTS       -50 dB MINN		TEMPERATURE RANCE	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER		A Start of	11 P. C.
ISOLATION       40 dB MINIMUM         VSWR (ON)       1.4:1 MAXIMUM         RF POWER       +30 dBm CW MAXIMUM         RF FOWER       +30 dBm CW MAXIMUM         NOTE:       40 ns MAXIMUM         OFF (502 RF T0 102 RF)       40 ns MAXIMUM         OFF (502 RTL T0 102 RF)       40 ns MAXIMUM         OFF (502 TTL T0 902 RF)       40 ns MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 RF)       10 ps MAXIMUM         OFF (502 TTL T0 902 TS       55 dB BELOW THE 017PUT SGAL LEVEL         NOTES       10 ps dbm/S001AFED TSGAL LEVEL         NO PFATING BAND       55 dB BELOW THE 017PUT SGAL LE		ILMPLATORE RAINSE	13 1		144 / // s/	
VSWR (DN)						
RF POWER.       40 ns MAXIMUM         RNTCHING TIME       40 ns MAXIMUM         RSE (102 RF T0 1902 RF)       40 ns MAXIMUM         ON (502 RTL T0 902 RF)       40 ns MAXIMUM         OFF (502 RTL T0 1902 RF)       40 ns MAXIMUM         OFF (502 RTL T0 1902 RF)       40 ns MAXIMUM         ON (502 RTL T0 1902 RF)       40 ns MAXIMUM         ON (502 RTL T0 1902 RF)       40 ns MAXIMUM         OVLTAGE RANSIENTS       1 Vp MAXIMUM         OULTAGE RANSIENTS       1 Vp MAXIMUM         OULTAGE RANSIENTS       5 NORMALL         OULTAGE RANSIENTS       5 NORMALL CONFATIBLE         DOGIC "1" = ISOLATION (SEE RUTH TABLE, ON SHET 2 OF 2)       3 MEDRIFIC APPROXAGE         PSPURIOS SKRALS/SPECTRAL PURITY       56 db BLOW THE OUTPUT SKNAL LEVEL         N NO PERATINE BAND (100 MH2 20 th & 25 T0 10 GH2)       56 db BLOW THE OUTPUT SKNAL LEVEL         RADIATION       2-90 dBm/SQUARE FOOT, 1 FOOT DISTAKCE APPROXIMATELY       -90 dBm/SQUARE FOOT, 1 FOOT DISTAKCE APPROXIMATELY         RADIATION SUSCEPTIBILITY       2-76 dBn FOR RF INTERFERENCE LIVEL ON DOC 2000 RD CONGRUPE RESS       10 GWBER 200 M ANXIMUM 1600 KUPC 200 MD R DOWER POWER INSS         CONDUCTED SUSCEPTIBILITY       2-76 dBn FOR RF INTERFERENCE LIVEL ON D COWER LIVEL       10 G 4000 B L7 DR 1 MINIT, -55C T0 +55C         POWER SUPLY       -90 dBm RF IN REFRENCE LIVEL ON D COWER LIVES </td <td></td> <td></td> <td> ╋</td> <td></td> <td></td> <td></td>			╋			
SWITCHING TIME RISE (10% RF TO 90% RF)       40 ns MAXIMUM AND (50% RF TO 10% RF)       40 ns MAXIMUM AND (50% RF TO 10% RF)       40 ns MAXIMUM AND (50% RF)       400 ns MA					THE PARTY OF SERVICE	. NO:
RISE (102 RF T0 102 RF)       40 ns MAXIMUM         FALL (92 RF T0 102 RF)       40 ns MAXIMUM         ON (502 RTL T0 102 RF)       40 ns MAXIMUM         OFF (502 RTL T0 102 RF)       400 ns MAXIMUM         OFF (102 RT TINE T0 102 RF)       400 ns MAXIMUM         OFF (102 RT TINE T0 102 RF)       400 ns MAXIMUM         VOLTAGE TRANSIENTS       10 ps MAXIMUM         CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL CONTROLS       STANDARD TTL COMPATIBLE         B INDMULAL STREET 2 07 20       TEMPERATURE         I INDMERTING BAND       CONTROLS         RADIATIVE       -90 dBm SURPEY AND CONTROL LEVEL	SWITCHING TIME			X		
FALL (90% RF TO 10% RF)	RISE (10% RF TO 90% RF)			'		Not IT VE
OFF (50% TIL 10 TOS # R)	FALL (90% RF TO 10% RF)					
OFF (50% TIL 10 TOS # R)	ON (50% TTL TO 90% RF)		TT			
Image: Construction of the section Loss of the section			0.16-+1-0.10			
OFF (10x TO MINUM ISOLATION REQUIRENT):       1.0 ps MAXIMUM       ACROSS 506 LOAD         VOLTAGE TRANSIENTS:       1 YOP MAXIMUM ACROSS 506 LOAD         CONTROLS:       STANDARD TIL COMPATIBLE         6 INDIVIDUAL CONTROLS:       STANDARD TIL COMPATIBLE         1 CONTROLS:       STANDARD TIL COMPATIBLE         6 INDIVIDUAL CONTROLS:       STANDARD TIL COMPATIBLE         1 CONTROLS:       STANDARD TIL COMPATIBLE         1 CONTROLS:       STANDARD TIL COMPATIBLE         1 CONTROLS:       STANDARD TIL COMPATIBLE         1 CONTROL:       STANDARD TIL COMPATIBLE         1 CONTROL       STANDARD TIL CONTROL         1 CONTROL<					.57 <u>TYPICA</u>	-2.00
• VOLTAGE TRANSIENTS       1 Vpp MAXMUM ACROSS 50R LOAD         • CONTROLS       • STANDARD TTL COMPATIBLE         • CONTROLS       • STANDARD TTL COMPATIBLE         • CONTROLS       • STANDARD TTL COMPATIBLE         • LOGIC * 0" = INSERTION       LOSS         LOGIC * 0" = INSERTION       LOSS         LOGIC * 1" = ISOLATION       Standard         (SEE TRUTH TABLE, ON SHET 2 OF 2)       • STANDARD TTL COMPATIBLE         • SPURIOUS SIGNALS/SPECTRAL PURITY       • STANDARD TTL COMPARISE AND         • NON OPERATING BAND       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARD TTL COMPARISE AND         (100 MHz-2 GHz & 2.5 TO 10 GHz)       • STANDARDARD TTL COMPARISE AND				1. 01/0 -1		TYPICAL
• CONTROLS       STANDARD TTL COMPATIBLE B INDIVIDUAL CONTROLS LOGIC "0" = INSERTION LOSS LOGIC "1" = ISOLATION (SEE TRUTH TABLE, ON SHEET 2 OF 2)       2) TOLERANCES: XX: 1 0020 3) WEIGH: APPROX. 6 02       70: WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18550 JUL-12- 202 #000 \$0, WIL-7-18570 JUL-12- 202 #000 \$0, WIL-7-12- 202 #000 \$0, WIL-7-12- 202 #0, FOOT 1500 DISTANCE APPROXIMATELY -90 #000 \$0, WIL-7-12- 200						
B INDMUDUAL CONTROLS DORC 1" = INSERTION LOGIC 1" = INSERTION (SEE TRUTH TABLE, ON SHEET 2 OF 2)       3) WEIGHT: XXXX 4-0010 DORC 10" = INSERTION LOGIC 1" = INSERTION (SEE TRUTH TABLE, ON SHEET 2 OF 2)       3) WEIGHT: XXXX 4-0010 DORC 10" = INSERTION (SEE TRUTH TABLE, ON SHEET 2 OF 2)         HARMONIC DISTORTION PRODUCTS:       -65 dB MINIMUM (SEE TRUTH TABLE, ON SHEET 2 OF 2)       -55 dB MINIMUM (MIL 2)       -55 dB MINIMUM (SEE TRUTH TABLE, ON SHEET 2 OF 2)         SPURIOUS SIGNALS/SPECTRAL PURITY (M/PM SDEBANDS IN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND 2-2.5 GHz) 100 GB BELOW THE OUTPUT SIGNAL LEVEL IN RADIATIVE:       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTIVE:       -90 dBm/SQUARE FOOT, 20 dBm/SQUARE FOOT       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTIVE:       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTIVE:       -90 dBm/SQUARE FOOT, 20 dBm ON DC POKEN LINES CONDUCTIVE:       -90 dBm/SQUARE FOOT, 20 dBm/SQUARE FOOT       -90 dBm/SQUARE FOOT, 20 dBm/SQUARE FOOT       -90 dBm/SQUARE FOOT, 20 dBm/SQUARE FOOT       -90 dBm/SQUARE FOOT, 20 dBm/SQUARE FO			1) DIME 2) TOLE	NSIONS ARE IN INCHES RANCES: X.XX ±0.020	4) MATERIALS P TO: MIL-T-1	ROCESS AND I 9500 MIL-M-3
LOSE TRUTH TABLE, ON SHEET 2 OF 2)         HARMONIC DISTORTION PRODUCTS       65 dBc MINIMUM         SPURIOUS SIGNALS/SPECTAL PURITY (AM/PM SUBBANDS IN OPERATING BAND 2-2.5 GH2) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (100 MH2-2 GH2 & 2.5 TO 10 GH2)       65 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (100 MH2-2 GH2 & 2.5 TO 10 GH2)       65 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (100 MH2-2 GH2 & 2.5 TO 10 GH2)       65 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (100 MH2-2 GH2 & 2.5 TO 10 GH2)       65 dB BELOW THE OUTPUT SIGNAL LEVEL IN FOOT DISTANCE APPROXIMATELY CONDUCTIVE       90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTIVE       1 x 10 <sup>6</sup> HOURS, @+50°C OPERATION INFORMATION       90 CBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTED SUSCEPTIBILITY       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY (INTERMODULATION)       2-76 dBm FOR RF INTERFERENCE IEVEL OF -20 dBm ON DC POWER LINES RETINGUE (INTERFERENCE IEVEL ON C POWER LINES RETINGUE (INTERFERENCE IEVEL ON CO POWER LINES RETINGUE (INTERFERENCE IEVEL ON CO POWER LINES RETINGUE (INTERFERENCE IEVEL ON C POWER LINES RETINGUE (INTERFERENCE IEVEL ON C POWER LINES RETINGUE (INTERFERENCE IEVEL ON C POWER LINES RETINGUE (INTERFERENCE IEVEL ON CO POWER LINES RETINGUE (INTERFERENCE IEVEL ON CO POWER LINES RETINGUE (INTERFERENCE IEVEL ON CO POWER LINES RETINGUE (INTE			•	$X.XXX \pm 0.010$	CLASS B, MI	L-F-18870 JA
Lister Rule in the result i		055	3) WEIG		5) REQUIREMEN	T MIL-STD-45
HARMONIC DISTORTION PRODUCTS       (see Inuin Hable, on sheet 2 of 2)         HARMONIC DISTORTION PRODUCTS       65 dB MINIMUM         Spurous Science, Spectral, Purity (AM/PM SideBands in Operating Band (100 MHz-2 GHz & 2.5 to 10 GHz)       -55 dB below The Output Signal Level (100 MHz-2 GHz & 2.5 to 10 GHz)       • TemPerature       -55C 10 +76C (Storace)         In Non Operating Band (100 MHz-2 GHz & 2.5 to 10 GHz)       • 55 dB below The Output Signal Level (100 MHz-2 GHz & 2.5 to 10 GHz)       • 65 dB below The Output Signal Level (100 MHz-2 GHz & 2.5 to 10 GHz)       • 10 GRADE A, CLASS 1 DR II (100 MHz-2 GHz & 2.5 to 10 GHz)         Rabiative       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY CONDUCTED SUSCEPTIBILITY       • 76 dBm FOR RF INTERFERENCE IEVEL (000 MUZED SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       • -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 AUB 0 G FWS, 10 MINUTE, 5 AXIS (000 CH2 CH2 GHZ)       • UBARATION       • 10 G @ 60 Hz FOR 1 MINUTE, 5 AXIS (000 CH2 SUSCEPTIBILITY       • -76 dBm FOR RF INTERFERENCE IEVEL (000 CH2 NULL CH2 CH2 CH2 CH2 CH2 CH2 CH2 CH2 CH2 CH2	LOGIC "1"= ISOLAT	ENIVID(	ONMENTAL D	ATINCS	(5 AND 9),M	IL-F-18870
<ul> <li>HARMONIL DISTORTION PRODUCTS</li> <li>SPURIOUS SIGNALS/SPECTRAL PURITY (AM/PW SDEBANDS IN GPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NDN OPERATING BAND 2-2.5 GHz) 100 GHz)</li> <li>RF LEAKAGE 2000 HZ COR 1 NORTH SUSCEPTIBILITY</li> <li>CONDUCTIVE 2010 DISTANCE APPROXIMATELY 2-76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm GN DC POWER LIVES 2-76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm FOR 200 ABm RF NITERFERENCE LEVEL ON DC POWER LIVES</li> <li>CONDUCTED SUSCEPTIBILITY (INTERMODULATION)</li> <li>2-85 dBm FOR -20 dBm RF INTERFERENCE LEVEL OF -20 dBm GN DC POWER LIVES NITERFERENCE LEVEL ON DC POWER LIVES POWER SUPPLY</li> <li>CONNECTORS RF INPUT/OUTPUT</li> <li>CONNECTORS RF INPUT/OUTPUT</li> <li>CONNECTORS RF INPUT/OUTPUT</li> <li>SMA FEMALE 20 DE RPIN CONTROL</li> <li>CONNECTORS</li> <li>CONNECTORS</li> <li>CONNECTORS RF INPUT/OUTPUT</li> <li>SMA FEMALE 20 DE ROT</li> <li>CONNECTORS RF INPUT/OUTPUT</li> <li>SMA FEMALE 20 DE ROT</li> <li>SMA FEMALE 20 DE ROT</li> <li>SOLDER PIN CONTROL</li> <li>CONTROL</li> <li>CONNECTORS</li> <li>CONTROL</li> <li>CONNECTORS</li> <li>CONDUCT FBATURES<td></td><td></td><td></td><td></td><td></td><td></td></li></ul>						
SPORTUDE SUBJECTIVE UPORT IN CRAFTING BAND 2-2.5 GH2) 100 dB BELOW THE OUTPUT SIGNAL LEVEL IN NON OPERATING BAND (122)		• IEMPERAT				
(M/M*) SUBJECTORS       CONNECTORS       Status       Status <t< td=""><td>SPURIOUS SIGNALS/SPECTRAL PURITY SUBJECT SIGNALS/SPECTRAL PURITY</td><td>HUNIDITY.</td><td></td><td></td><td>CONDITION B</td><td></td></t<>	SPURIOUS SIGNALS/SPECTRAL PURITY SUBJECT SIGNALS/SPECTRAL PURITY	HUNIDITY.			CONDITION B	
IN OND OPERATING BANU (100 MH2-2 GHz & 2.5 TO 10 GHz)		SHOCK		S-901 GRADE A, CLASS	I DR II	
• RF LEAKAGE RADIATIVE       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY -90 dBm ON SUPPLY AND CONTROL LINES. • 90 dBm ON SUPPLY AND CONTROL LINES. • ADIATION SUSCEPTIBILITY       -90 dBm FOR RF INTERFERENCE FIELD OF -20 dBm FOR RF INTERFERENCE FIELD OF -20 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES         • CONDUCTED SUSCEPTIBILITY       ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES         • CONDUCTED SUSCEPTIBILITY (INTERNODULATION)       ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES         • POWER SUPPLY       +550C ±55% @120 mA MAXIMUM +1550C ±55% @120 mA MAXIMUM +1550C ±55% @120 mA MAXIMUM +1550C ±55% @120 mA MAXIMUM +1550C ±55% @120 mA MAXIMUM (OVER VOLTAGE PROTECTED)       -550C TO +650C. RANDOM VBRATION       -20 TO 200D Hz AND 6 G RMS, 10 MINUTES PER AXIS AT +555C/- TEL: (301) 662-4700 FAX: (301) 662-4938         • POWER SUPPLY       -550C DE FINI (OVER VOLTAGE PROTECTED)       -550C DE FINI WYPP ///22/28       AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938         • OWER       SOLDER PIN CONTROL       SOLDER PIN SOLDER PIN       -76 dBm FOR FINI FINIFERENCE D D EFE FINIFUL       -76 DE ENTINE	IN NUM UMERATING BANU (100 MHz-1) CH2 & 2.5 TO 10 CH2)	AL LEVEL	N	-S-167, TYPE 1 VIBRATION,	, 0.1G SINUSOIDAL 2	25 Hz TO 2000
RADIATIVE       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY 00 dBm ON SUPPLY AND CONTROL LINES.       -90 dBm/SQUARE FOOT, 1 FOOT DISTANCE APPROXIMATELY -90 dBm ON SUPPLY AND CONTROL LINES.       -90 dBm ON SUPPLY AND CONTROL LINES.       -90 dBm ON SUPPLY AND CONTROL LINES.         RADIATION SUSCEPTIBILITY       -2-76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm ON DC POWER LINES       -90 dBm ON DC POWER LINES       -90 dBm ON DC POWER LINES         CONDUCTED SUSCEPTIBILITY       -2-76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -96 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -96 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       -96 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES         POWER SUPPLY       -96 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES       -985 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES         POWER SUPPLY       -550C ±5% @120 mA NAXINUM (OVER VOLTAGE PROTECTED)       -85 dBm FOR -20 dBm RF INFUT/OUTPUT       SMA FEMALE SOLDER PIN CONTROL       -980 AB FEMALE SOLDER PIN CONTROL       -980 AF FEMALE SOLDER PIN CONTROL       -980 AF FEMALE SOLDER PIN CONTROL       -980 AF FEMALE SOLDER PIN CONTROL       -980 AF FEMALE SOLDER PIN       -980 AF FEMALE SOLDER PIN CONTROL       -980 AF FEMALE SOLDER PIN       -980 AF FEMALE SOLDER PIN <td></td> <td>• MIBE</td> <td></td> <td></td> <td></td> <td></td>		• MIBE				
1 FOOT DISTANCE APPROXIMATELY       1 FOOT DISTANCE APPROXIMATELY       1 FOOT DISTANCE APPROXIMATELY         • CONDUCTIVE       -90 dBm ON SUPPLY AND CONTROL LINES.       -90 dBm FOR RF INTERFERENCE FIELD OF -20 dBm FOR RF INTERFERENCE FIELD OF -20 dBm ON SUPPLY AND CONTROL LINES.       • TEMPERATURE CYCLES.       -10 G @ 60 Hz FOR 1 MINUTE, 3 AXIS         • CONDUCTED SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       • -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON C POWER LINES       • -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON C POWER LINES       • -76 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES       • UBRATION       • 00 Q @ 60 Hz FOR 1 MINUTE, -55°C TO +55°C.         • CONDUCTED SUSCEPTIBILITY (INTERNODULATION)       • 2 -76 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES       • -76 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES       • UBRATION       • 00 Q 000 Hz AND 6 G RMS, 10 MINUTE, -55°C TO +55°C.         • POWER SUPPLY       +5VDC ±5% @ 120 mA MAXINUM +15VDC ±5% @ 40 mA MAXINUM (OVER VOLTAGE PROTECTED)       • SMA FEMALE POWER       • SOLDER PIN (OVER VOLTAGE PROTECTED)       • MIC         • CONTROL       · SOLDER PIN CONTROL       · SOLDER PIN O''''''''''''''''''''''''''''''''''''	RADIATIVE	ENVIR	<u>ONMENTAL S'</u>	<u> TRESS SCREEN</u>	<u>NING (ESS</u>	5)
CONDUCTIVE       -90 dBm ON SUPPLY AND CONTROL LINES.         RADIATION SUSCEPTIBILITY       ≥ -76 dBm FOR RF INTERFERENCE FIELD OF -20 dBm /SQUARE FOOT       + TEMPERATURE SHOCK       4 CYCLES, -55° TO +65°.         • UBRATION SUSCEPTIBILITY       ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       + 00 (DEPRATING)       + 00 (DEPRATING)         • CONDUCTED SUSCEPTIBILITY       ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       + 00 (DEPRATING)       + 00 (DEPRATING)         • CONDUCTED SUSCEPTIBILITY       > -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER LINES       + 00 (DEPRATING)       + 00 (DEPRATING)         • CONDUCTED SUSCEPTIBILITY       (INTERFERENCE LEVEL ON DC POWER LINES       + 00 (DEPRATING)       - 80 (DEPRATING)         • CONDUCTED SUSCEPTIBILITY       (INTERFERENCE LEVEL ON DC POWER LINES       + 00 (DEPRATING)       - 80 (DEPRATING)         • CONDUCTED SUSCEPTIBILITY       (INTERFERENCE LEVEL ON DC POWER LINES       + 50°C       - 50°C TO +55°C.         • POWER SUPPLY       + 5VDC ±5% @10 0 mA MAXINUM +15VDC ±5% @40 mA MAXINUM (OVER VOLTAGE PROTECTED)       + 5VDC ±5% @10 0 mA MAXINUM +15VDC ±5% @40 mA MAXINUM (OVER VOLTAGE PROTECTED)       AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938         • POWER       SOLDER PIN CONTROL       SOLDER PIN (WPP) / (1/22/92       AME       SW -2025 - 6D (E-BAND)	1 FOOT DISTANCE APPRO	• TEMPERAT	TURE CYCLES	CYCLES, 1/2 HOUR SOAK		
<ul> <li>RADIATION SUSCEPTIBILITY</li></ul>	CONDUCTIVE	ROL LINES. • IEMPERATI	IURE SHOCK · · · · · · 4	CYCLES, -55°C TO +85°C		
-20 dBm/SQUARE FOOT       -20 dBm/SQUARE FOOT       -20 dBm /SQUARE FOOT       160 HOURS @ 125°C JUNCTION TEMPERATURE (105°C AMBIENT)         • CONDUCTED SUSCEPTIBILITY       ≥ -76 dBm FOR RF INTERFERENCE LEVEL OF -20 dBm ON DC POWER UNES       • SSC (NEXT HIGHER ASSEMBLY)         • CONDUCTED SUSCEPTIBILITY (INTERMODULATION)       ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER UNES       • SSC (NEXT HIGHER ASSEMBLY)         • POWER SUPPLY       +5VDC ±5% @120 mA MAXIMUM +15VDC ±5% @40 mA MAXIMUM (OVER VOLTAGE PROTECTED)       • SSC (NEXT HIGHER ASSEMBLY)         • CONNECTORS RF INPUT/OUTPUT       SMA FEMALE POWER       • SOLDER PIN SOLDER PIN         • CONTROL       SOLDER PIN (DAMINED       • SOLDER PIN (DAMINED						8
<ul> <li>CONDUCTED SUSCEPTIBILITY</li></ul>	•					
OF -20 dBm ON DC POWER LINES CONDUCTED SUSCEPTIBILITY (INTERMODULATION) → 2-85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES POWER SUPPLY → +5VDC ±5% @120 mA MAXIMUM +15VDC ±5% @40 mA MAXIMUM +15VDC ±5% @40 mA MAXIMUM (OVER VOLTAGE PROTECTED) CONNECTORS RF INPUT/OUTPUT → SMA FEMALE POWER → SOLDER PIN CONTROL → SOLDER PIN CONTROL → SOLDER PIN CONTROL → SOLDER PIN CONTROL → CONTROL	● CONDUCTED SUSCEPTIBILITY ····································	CE LEVEL . FSS (NEY"			A TOM LIVE OVE (	TOD C AMDIENT
CONDUCTED SUSCEPTIBILITY (INTERMODULATION)····· ≥ -85 dBm FOR -20 dBm RF INTERFERENCE LEVEL ON DC POWER LINES POWER SUPPLY···································	OF -20 dBm ON DC POV	ES THÈRMA	AL	CYCLES, 5°C PER MINUTE.	-55°C TO +55°C.	
<ul> <li>POWER SUPPLY.</li> <li>+5VDC ±5% @120 mA MAXIMUM +15VDC ±5% @40 mA MAXIMUM (OVER VOLTAGE PROTECTED)</li> <li>CONNECTORS RF INPUT/OUTPUT.</li> <li>SMA FEMALE POWER.</li> <li>SOLDER PIN SOLDER PIN</li> <li>SOLDER PIN SOLDER PIN</li> <li>SOLDER PIN</li> <!--</td--><td></td><td>RANDOM</td><td>M VIBRATION</td><td>TO 2000 Hz AND 6 G RMS,</td><td>10 MINUTES PER</td><td>AXIS AT +55°C/</td></ul>		RANDOM	M VIBRATION	TO 2000 Hz AND 6 G RMS,	10 MINUTES PER	AXIS AT +55°C/
+15VDC ±5% @40 mA MAXINUM (OVER VOLTAGE PROTECTED) CONNECTORS RF INPUT/OUTPUT··································						
+15WC ±5%@40 mA MAXIMUM (OVER VOLTAGE PROTECTED)       7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938         • CONNECTORS RF INPUT/OUTPUT       SMA FEMALE SOLDER PIN CONTROL       • PRODUCT FEATURE SOLDER PIN SOLDER PIN         • OWER       • SW-2025-6D (E-BAND)			AMEI	RICAN MICROW	AVE CORF	ORATIO
CONNECTORS     RF INPUT/OUTPUT     SOLDER PIN     CONTROL     SOLDER PIN     CONTROL     SOLDER PIN     SOLDER PIN     SOLDER PIN     CONTROL     SOLDER PIN     SOLDE			73	S11G GROVE RD., FF	REDERICK, MD.	21701
RF INPUT/OUTPUT       SMA FEMALE       APPROVALS       DATE       PRODUCT FEATURE         POWER       SOLDER PIN       SOLDER PIN       SW-2025-6D         CONTROL       SOLDER PIN       WPP //h//22/92       (E-BAND)	CONNECTORS (UVER VULTAGE PRO	.0)	TEL	: (301) 662-4700	FAX: (301) 6	62-4938
POWER SOLDER PIN SW-2025-6D CONTROL SOLDER PIN (E-BAND)	RF INPUT/OUTPUT			PRODUCT	FEATURE	
CONTROL SOLDER PIN (E-BAND)	POWER		DATE			
	CONTROL	TRANKIN MILLER 1	1 /22/82			
	• SIZE					WITCH MODU

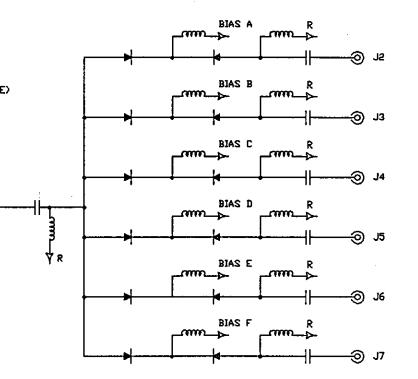
-11-5

# FUNCTIONAL SCHEMATIC

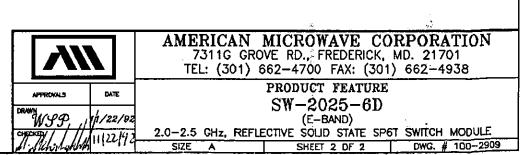
TTL DRIVER

RF SECTION





	TRUTH TABLE							
E7	E7 E6 E5 E4 E3 E2 RF PATH *							
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		

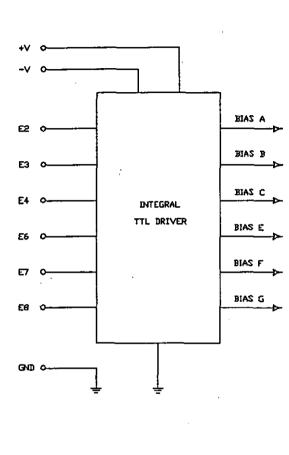


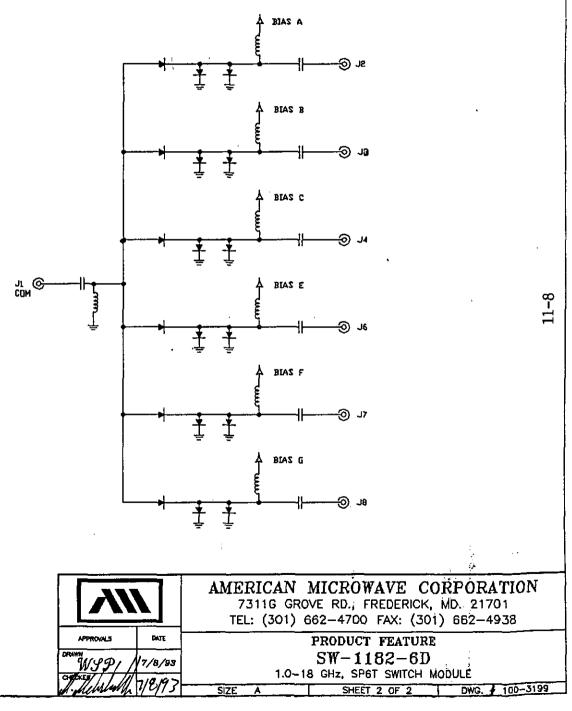
DESCRIPTION	REVISIONS ZONE REV. DESCRIPTION DATE APPROVED
AMC MODEL SW-1182-6D IS A REFLECTIVE BROAD BAND SP6T SWITCH MODUL WITH INTEGRAL TTL DRIVER.	E A ORIGINAL RELEASE, JOB #30110E 7/8/83
SPECIFICATIONS	MECHANICAL OUTLINE
● FREQUENCY RANGE · · · · · · · · · · · · · · · · 1−18 GHz MINIMUM	0.104 [2.6] ON
<ul> <li>INSERTION LOSS</li> <li>4-8 GHz, 1.6 dB MAXIMUM</li> <li>4-8 GHz, 1.8 dB MAXIMUM</li> <li>8-12.4 GHz, 2.2 dB MAXIMUM</li> <li>12.4-18 GHz, 3.2 dB MAXIMUM</li> </ul>	CIRCLE, 2 PLACES 0.50 [12.7] FOR SMA MALE
● ISOLATION · · · · · · · · · · · · · · · · · · ·	
• VSWR (ON)	SURFACE
• RF POWER RATING ····································	
<ul> <li>SWITCHING TIME         RISE (10% RF TO 90% RF)</li></ul>	
• CONTROL	
LOGIC "1" = ISOLATION ● POWER SUPPLY	TRUTH TABLE           E8         E7         E6         E4         E3         E2         RF         PATH         ON           1         1         1         1         0         J1-J2         NOTES:           1         1         1         0         1         J1-J3         1)         DIMENSIONS ARE IN INCHES [MILLIMETERS]           1         1         1         0         1         J1-J4         2)         TOLERANCES:         X.XX $\pm 0.020$
<ul> <li>CONNECTORS</li> <li>RF INPUT/OUTPUT</li> <li>POWER</li> <li>SOLDER PIN</li> </ul>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
CONTROL ······ SMC (MALE)	ENVIRONMENTAL RATINGS
● SIZE ······ 1.25" × 1.25" × 0.88"	• TEMPERATURE:
AVAILABLE OPTIONS	OPERATING65°C TO +110°C NON-OPERATING65°C TO +125°C
A0150Q CONTROL IMPEDANCE	• HUMIDITY MIL-STD-202F, METHOD 103B COND. B
A03 ····································	• SHOCKMIL-STD-202F, METHOD 213B COND. B
A04 EXTENDED FREQUENCY RANGE TO 100 MHz	<ul> <li>VIBRATION</li> <li>MIL-STD-202F, METHOD 204D COND. B</li> <li>ALTITUDE</li> <li>MIL-STD-202F, METHOD 105C COND. B</li> </ul>
A07 ····································	• TEMPERATURE CYCLE ····· MIL-STD-202F, METHOD 103C COND. A
A09 ······ VIDEO FILTER ON ALL PORTS (0.5 dB EXCESS LOSS)	AMERICAN MICROWAVE CORPORATION
A10 ······SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)	7311G GROVE RD., FREDERICK, MD. 21701
A13·····+12 TO +18 VDC POWER SUPPLY	TEL: (301) 662-4700 FAX: (301) 662-4938
	PROMUS ONTE PRODUCT FEATURE
DRAWN W	(JJ) (7/8/33 SW-1182-6D
	1.0-18 GHz, SP6T SWITCH MODULE SIZE A SHEET 1 OF 2 DWG. # 100-3199
	SIZE A SHEET 1 OF 2 DWG. # 100-3199

FUNCTIONAL BLOCK DIAGRAM

DRIVER CIRCUIT

**RF** SECTION





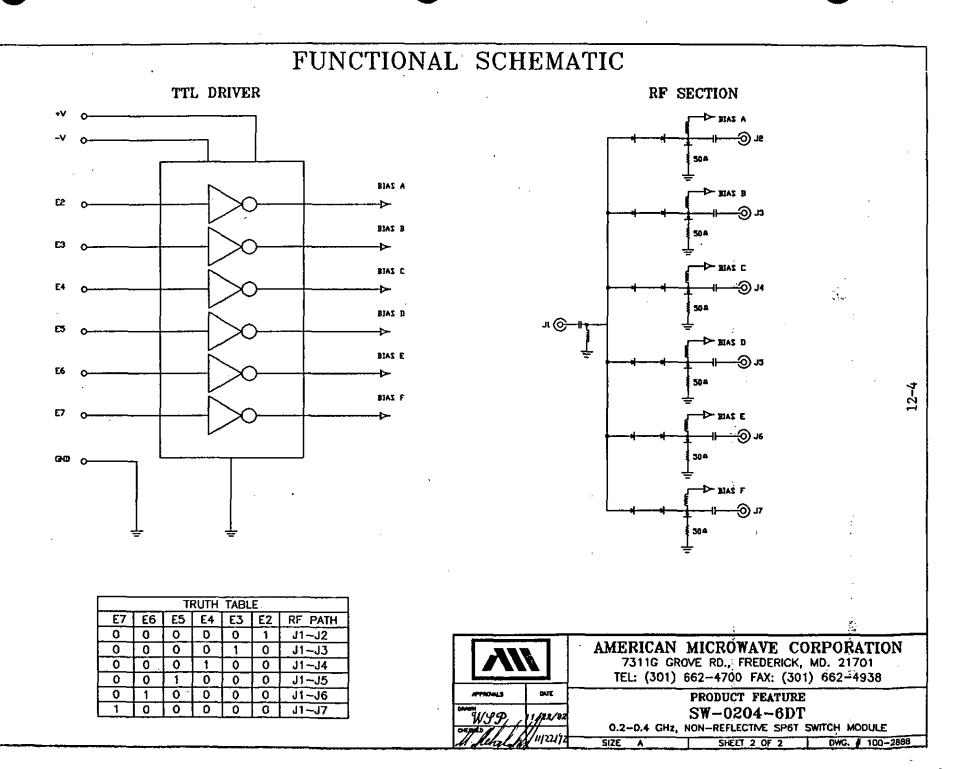


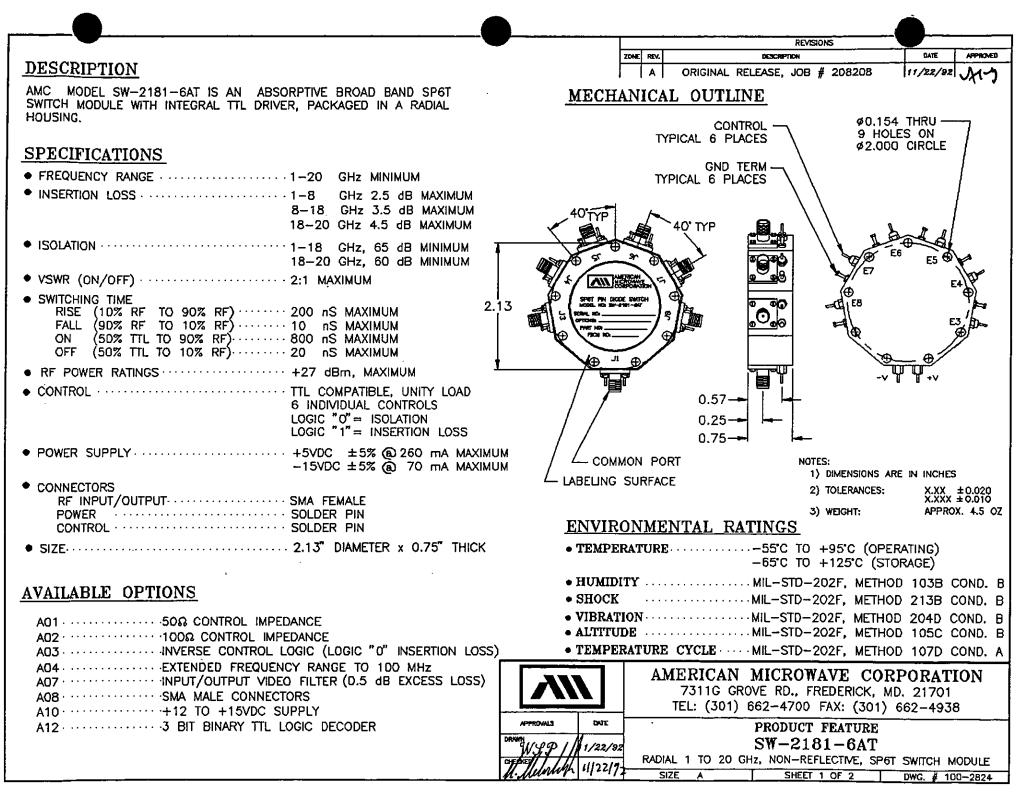
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SECTION	PRODUCT DESCRIPTION H		
12	SP6T, NON-R	EFLECTIVE/ABSORPTIVE	, 12-1
	• 0.2-0.4 GHz	SWITCH MODULE AMC MODEL NO: SW-0204-6DT	12-3
	• 1-20 GHz	RADIAL, SWITCH MODULE, AMC MODEL NO: SW-2181-6AT	12-5

<u>.</u>

			REVISIONS	
DESCRIPTION			ZONE REV. DESCRIPTION A ORIGINAL RELEASE, JOB # 10465	DATE NYTROM 5-2 11/22/82
AMC MODEL SW-0204-6DT IS AN ABS	ORPTIVE SPAT SWITCH MODULE WITH			
INIEGRAL TTL DRIVER, DESIGNED FOR	LOW NOISE, LOW LOSS, LOW VSWR.	MECH	IANICAL OUTLINE	
AND HIGH ISOLATION SWITCHING APPLIC	Allons.			A FEMALE
SDECIELCATIONS		<del>-</del> -	-1.05	PLACES
SPECIFICATIONS FREQUENCY RANGE				<sup>0.35</sup>
INSERTION LOSS		T L	J2 J3 J4 J5 J6 J7	lL
SOLATION		•	AMORICAN MICROWAVE SPOT SWITCH	
VSWR (ON/OFF)		2.00	CORPORATION MODEL ND: SW-0204-BOT	
RF POWER RATINGS			PCSH 00463 MOE N USA 90400 NC PART NC PCSH NC	1.49
SWITCHING TIME				
RISE (10% RF TO 90% RF)	· 30 ns MAXIMUM	<u> </u>		
FALL (90% RF TO 10% RF) ON (50% TTL TO 90% RF)		0.16		-MOUNTING HOL
OFF (50% TTL TO 10% RF)	100 ns MAXIMUM			4-40 HELI-CO
CONTROLS	TTL COMPATIBLE, UNITY LOAD	[~	5.10	x 0.40 DEEP 4 PLACES
	6 INDIVIDUAL CONTROLS			FAR SIDE
	LOGIC "0" = ISOLATION LOGIC "1" = INSERTION LOSS	<del>-</del> -	5.10	
	(SEE TRUTH TABLE ON SHEET 2 OF 2)	┰╼┟╴┌╴		-0.95 TYPICAL
POWER SUPPLY	-	0.75	E8	
	-15VDC ±5% (a) 80 mA MAXIMUM	┸╌┰╴┖╌	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	
CONNECTORS		0.50-1		TYPICAL
RF INPUT/OUTPUT	SMA (FEMALE)		NOTE	
CONTROL	Solder Pin Solder Pin		2)	DIMENSIONS ARE IN INCH TOLERANCES: X.XX ±0.0
SIZE		ENTRID		WEIGHT: APPROX. 12
			CONMENTAL RATINGS	
VAILABLE OPTIONS		<ul> <li>TEMPE</li> </ul>	ERATURE	(OPERATING)
A01 ····· · · · · · · · · · · · · · · · ·	DANCE		MIL-STD-202F, N	
A02 ····································	EDANCE	• SHOCK	Mil-Sid-202F, M	IETHOD 1038 COND
A03 ······ INVERSE CONTROL L A13 ····· + 15 VDC SUPPLY	OGIC (LOGIC "O" INSERTION LOSS)		TION	FTHOD 2040 COND
A14 SMA MALE CONNECT	ORS	<ul> <li>ALTITU</li> </ul>	DEMIL-STD-202F, M	ETHOD 105C COND
A15 CANNON MULTIPIN N	IDM9SSP	• TEMPE	RATURE CYCLE MIL-STD-202F, M	ETHOD 107D COND
A16 ····································			AMERICAN MICROWAVE	CORPORATION
			7311G GROVE RD., FREDERIC	K, MD. 21701
			TEL: (301) 662-4700 FAX: (3	
			PRODUCT FEATU	
	WS			)T
	1. N.	11122192	0.2-D.4 GHz, NON-REFLECTIVE SP6	T SWITCH MODULE

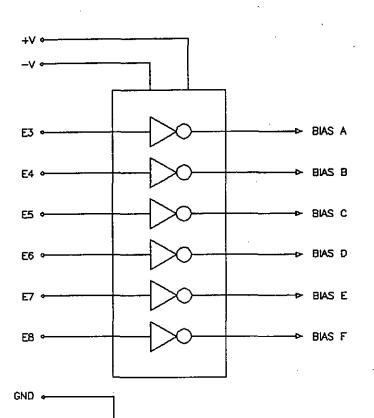


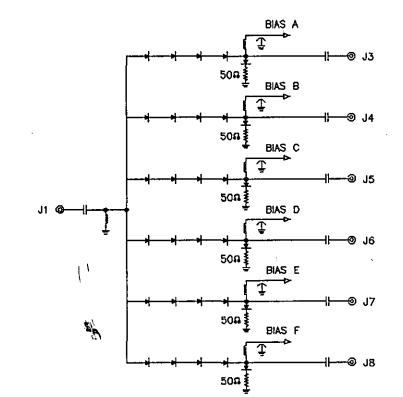


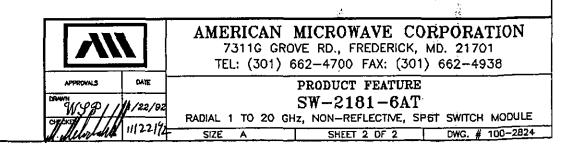
*:*-12--5

DRIVER CIRCUIT

# FUNCTION SCHEMATIC









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SECTION		PRODUCT DESCRIPTION	PAGES
13	SP7T, REFLE	CTIVE	. 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.

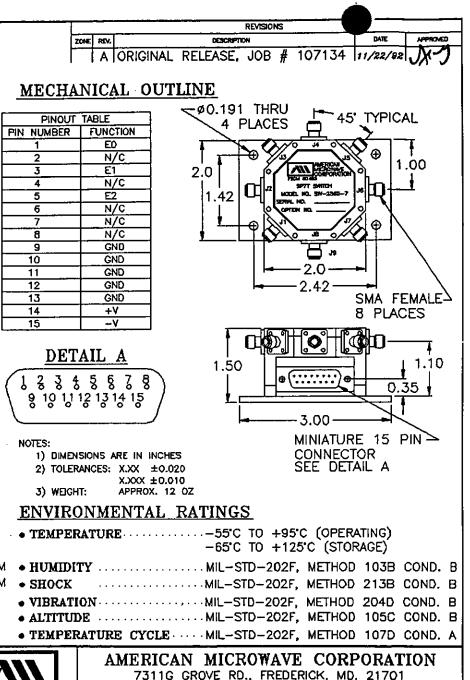
#### SPECIFICATIONS

	SPECIFICATIONS		IN NUMBER			
	• FREQUENCY RANGE 20 MHz-2.56 GHz		2			
	INSERTION LOSS	-	3		2.0 1.00	
	(-7D) REFLECTIVE		4	N/C		
	(-7DT) ABSORPTIVE 2.5 dB MAXIMUM		5	E2	1.42 0 12 wook wo sw-2300-7 JS	
	● AMPLITUDE BALANCE···········±0.1 dB MAXIMUM		6 7	<u>N/C</u> N/C		
	● PHASE BALANCE····································		8	N/C		
			9	GND		
	(-7D) REFLECTIVE		10	GND		
	(-7DT) ABSORPTIVE		12	GND		
	• VSWR		13	GND	SMA FEMALE	
			14	+V	8 PLACES	
- 1	<ul> <li>SWITCHING TIME RISE (10% RF TO 90% RF) ······ 200 nsec MAXIMUM</li> </ul>	L	15	V		
	FALL (90% RF TO 10% RF) 200 nsec MAXIMUM					i
	ON (50% TTL TO 90% RF)		DETA	<u>AIL A</u>	1.50	
-	OFF (50% TTL TO 10% RF)······ 800 nsec MAXIMUM	(	1234	5 8 7 8		
<u>ו</u>	RF POWER RATINGS     HATINGS     HATI			2 13 14 15 /		
~	HARMONIC CONTENTS	)			3.00	
Í	2nd HARMONIC INTERCEPT		<b>`</b>			
	2nd ORDER TWO-TONE INTERCEPT + 50 dBm MINIMUM		NOTES:		MINIATURE 15 PIN > CONNECTOR	
	O dBm INPUT RF POWER     O		,	IONS ARE IN INCHES NCES: X.XX ±0.020	SEE DETAIL A	
	3rd ORDER TWO-TONE INTERCEPT +40 dBm MINIMUM		•	X.XXX ±0.010		
	@ 0 dBm INPUT RF POWER		3) WEIGHT	: APPROX. 12 OZ		
	• RF LEAKAGE (CONDUCTIVE/RADIATED) $\cdots$ > 70 dBc (a) 2.56 GHz		<u>ENVIRO</u>	<u>NMENTAL_RA</u>	ATINGS	
	CONTROL · · · · · · · · · · · · · · · · · · ·	<b>.</b> .	• TEMPER	TURE		
	(SEE TRUTH TABLE ON SHEET 2 OF	F 2)			-65'C TO +125'C (STORAGE)	
	● POWER SUPPLY	IAXIMUM	• HUMIDIT	Y	MIL-STD-202F, METHOD 103B COND. I	3
	-12VDC TO -18VDC @ 250 mA M/	IAXIMUM	• SHOCK		MIL-STD-202F, METHOD 213B COND. E	3
	CONNECTORS		• VIBRATIO	N,	MIL-STD-202F, METHOD 204D COND.	3
	RF INPUT/OUTPUT		• ALTITUD	E	MIL-STD-202F, METHOD 105C COND. E	3
	POWER AND CONTROLS 15 PIN D TYPE CONNECTOR		• TEMPERA	TURE CYCLE	MIL-STD-202F, METHOD 107D COND. /	٩.
	• SIZE · · · · · · · · · · · · · · · · · · ·			AMEDICAN	MICROWAVE CORPORATION	-
		A			ROVE RD., FREDERICK, MD. 21701	
	AVAILABLE OPTIONS				662-4700 FAX: (301) 662-4938	
	A01 ····· SMA MALE CONNECTORS	APPROVALS	DATE			_
	A02 ······7 INDIVIDUAL CONTROLS	DRAWN		C11#	PRODUCT FEATURE	
	A03DIFFERENTIAL TTL LINE RECEIVER/DECODER (RS-422-A)	WSP	// 1/22/92		-2560-7D (OR 7DT)	
	A04 ······INVERSE CONTROL LOGIC	Mer Hilly	11/22/92	U MHZ-2.56 GHZ, RE	FLECTIVE OR NON-REFLECTIVE, SP7T SWITCH MODUL	느

1. Murth 1/22/9 2

SIZE

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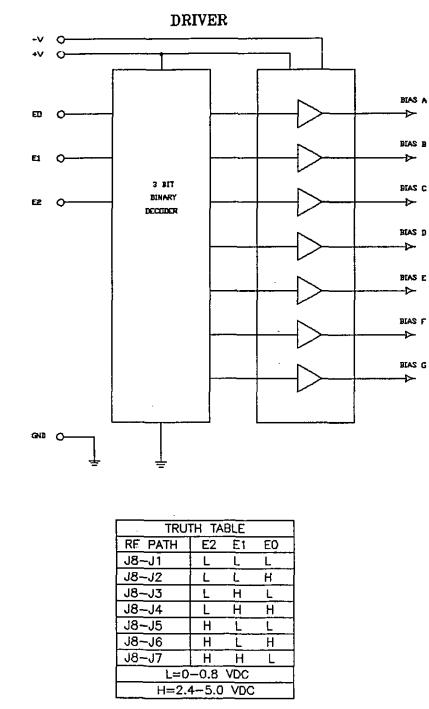


SHEET 1 OF 2

DWG. # 100-2865

L3-3

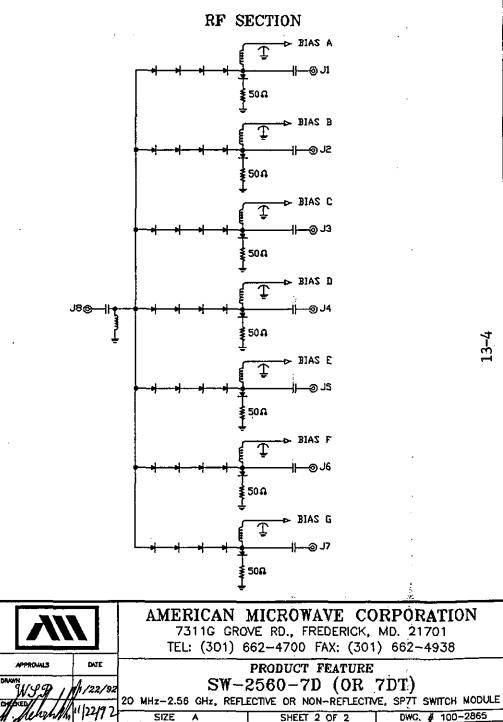
FUNCTION SCHEMATIC

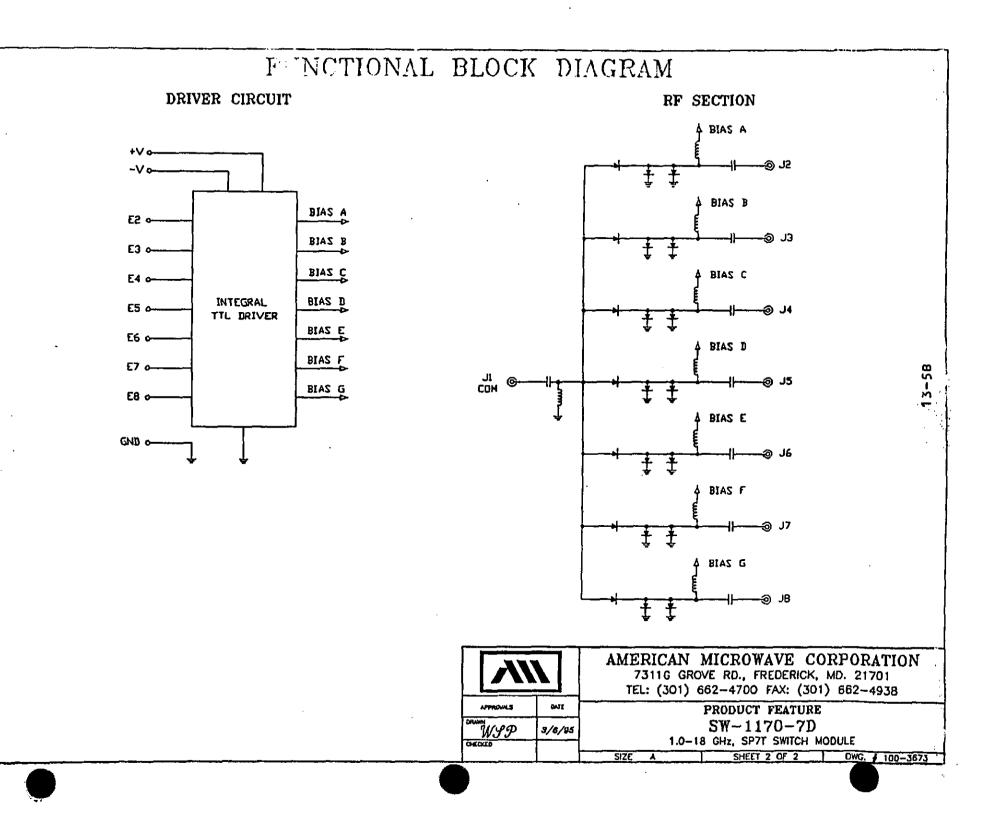


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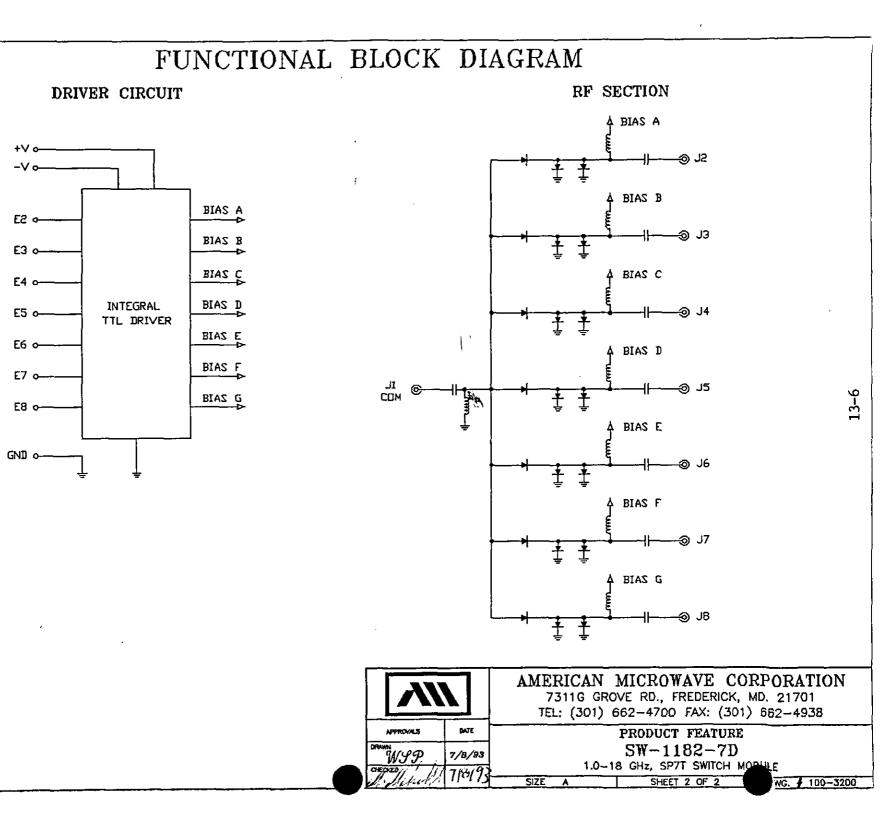
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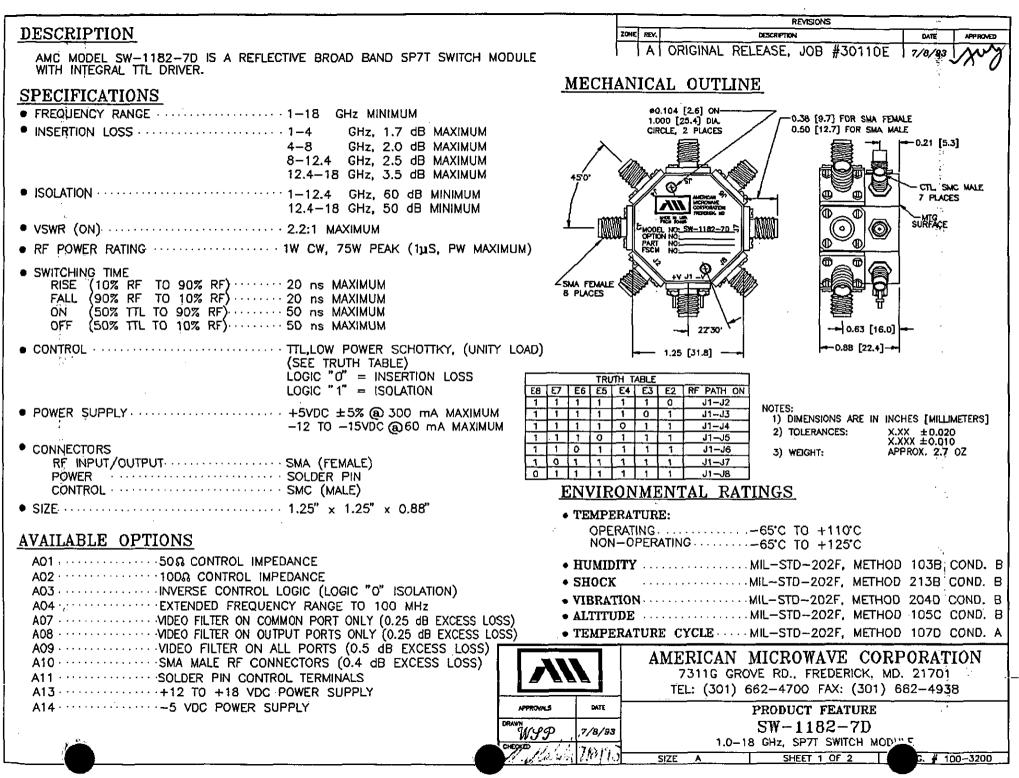
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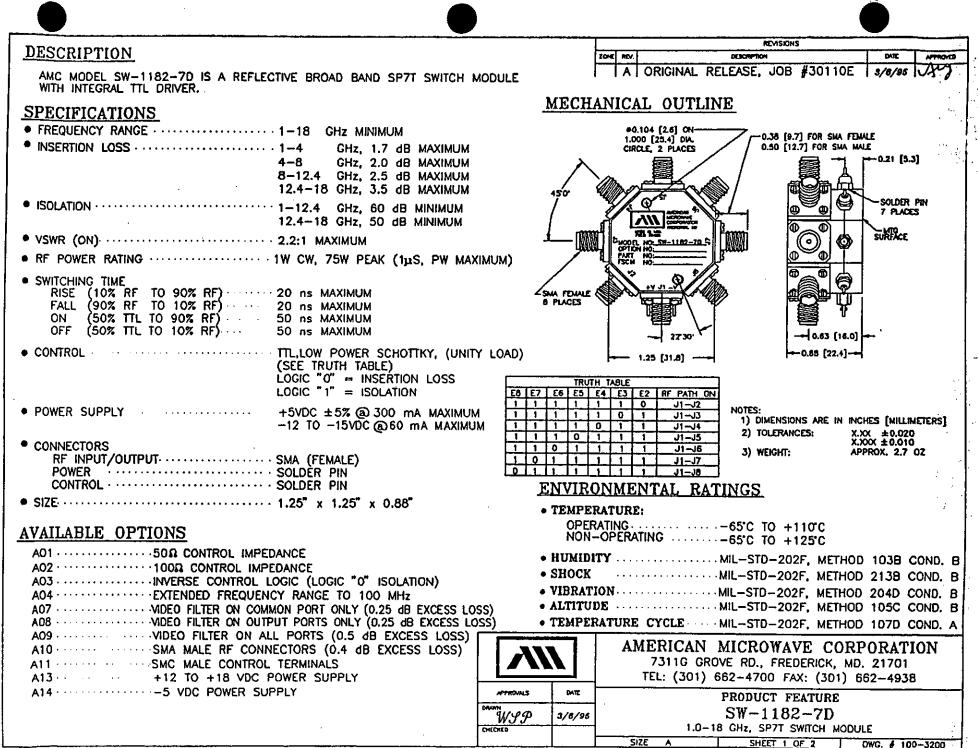
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DESCRIPTION AMC MODEL SW-1170-7D IS A REFLECTIVE BROAD BAND SP7T SWITCH MODULE WITH INTEGRAL ITL DRIVER. SPECIFICATIONS • FREQUENCY RANGE	ľ	A ORIGINAL RELEASE, JOB #30110E \$/6/95
WITH INTEGRAL TTL DRIVER.		IA URIGINAL RELEASE, JUB #JUTIUE 1 3/6/95 UK
• FREQUENCY RANGE	MECHA	ANICAL OUTLINE
		#0.104 [2.6] ON
• INSERTION LOSS 1-4 GHz, 1.7 dB MAXIMUM 4-8 GHz, 2.0 dB MAXIMUM 8-12.4 GHz, 2.5 dB MAXIMUM	$\land$	CIRCLE, 2 PLACES 0.50 [12.7] FOR SMA MALE
■ ISOLATION ■ 12.4-18 GHz, 3.5 dB MAXIMUM ■ ISOLATION ■ 1-12.4 GHz, 60 dB MINIMUM	45'0°	
12.4-18 GHz, 50 dB MINIMUM	INNO	
• VSWR (ON)	yww	
• 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	SMA FDIALE & 8 PLACES	
• CONTROL TTL,LOW POWER SCHOTTKY, (UNITY LOAD)		
(SEE TRUTH TABLE)		
LOGIC "O" = INSERTION LOSS		H TABLE E4 E3 E2 RF PATH ON
	1 1 1	1 1.0 J1-J2 NOTES
	1 1 1 1 1 1	1 0 1 J1-J3 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
	$     1 0 \\     1 0 1 $	<u>1 1 1 31–35</u> X.XXX ±0.010
RF INPUT/OUTPUT	0 1 1	
POWER SOLDER PIN	1 1 1	
	<u>ENVIRO</u>	<u>ONMENTAL RATINGS</u>
• SIZE	• TEMPE	RATURE:
	OPER	RATING
AVAILABLE OPTIONS		-OPERATING 65°C TO +125°C
		ITY
AO2 ····································		MIL-STD-202F, METHOD 213B COND.
A04 ······EXTENDED FREQUENCY RANGE TO 100 MHz	• VIBRAT	TON MIL-STD-202F. METHOD 204D COND.
A07 VIDEO FILTER ON COMMON PORT ONLY (0.25 dB EXCESS LOSS)		DE MIL-STD-202F, METHOD 105C COND.
A08 MDEO FILTER ON OUTPUT PORTS ONLY (0.25 dB EXCESS LOSS)	• TEMPE	RATURE CYCLE MIL-STD-202F, METHOD 107D COND.
A09 · · · · · · · · · · · · · · · · · · ·		AMERICAN MICROWAVE CORPORATION
A10SMA MALE RF CONNECTORS (0.4 dB EXCESS LOSS)		7311G GROVE RD., FREDERICK, MD. 21701
A11SMC MALE CONTROL TERMINALS		TEL: (301) 662-4700 FAX: (301) 662-4938
A13 ······+12 TO +18 VDC POWER SUPPLY	DATE	PRODUCT FEATURE
CRAWM		SW_1170_7D
WSP	3/8/95	1.0-18 GHz, SP7T SWITCH MODUL <sup>®</sup>
CKCKD		SIZE A SHEET 1 OF 2 100-3873

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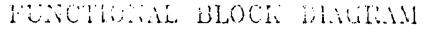






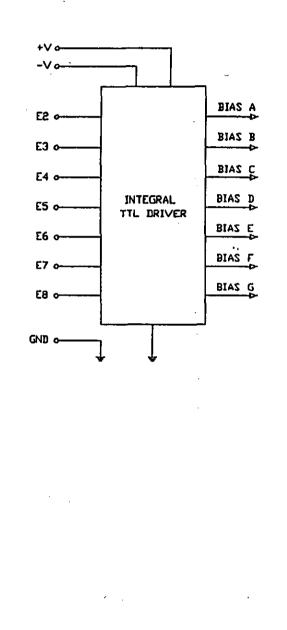
13-5A

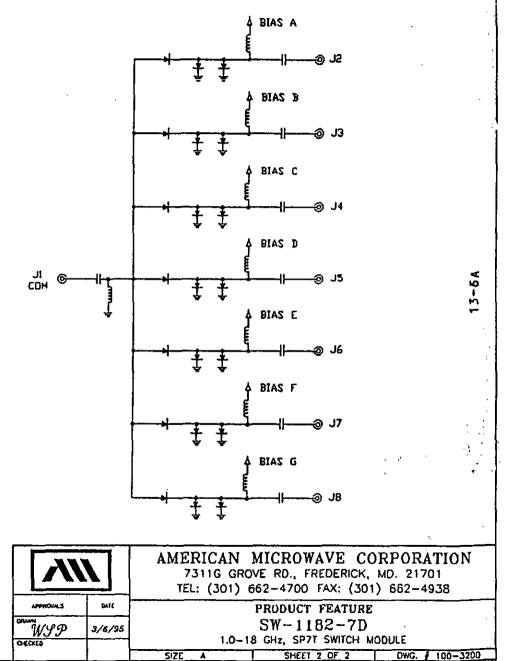
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DRIVER CIRCUIT







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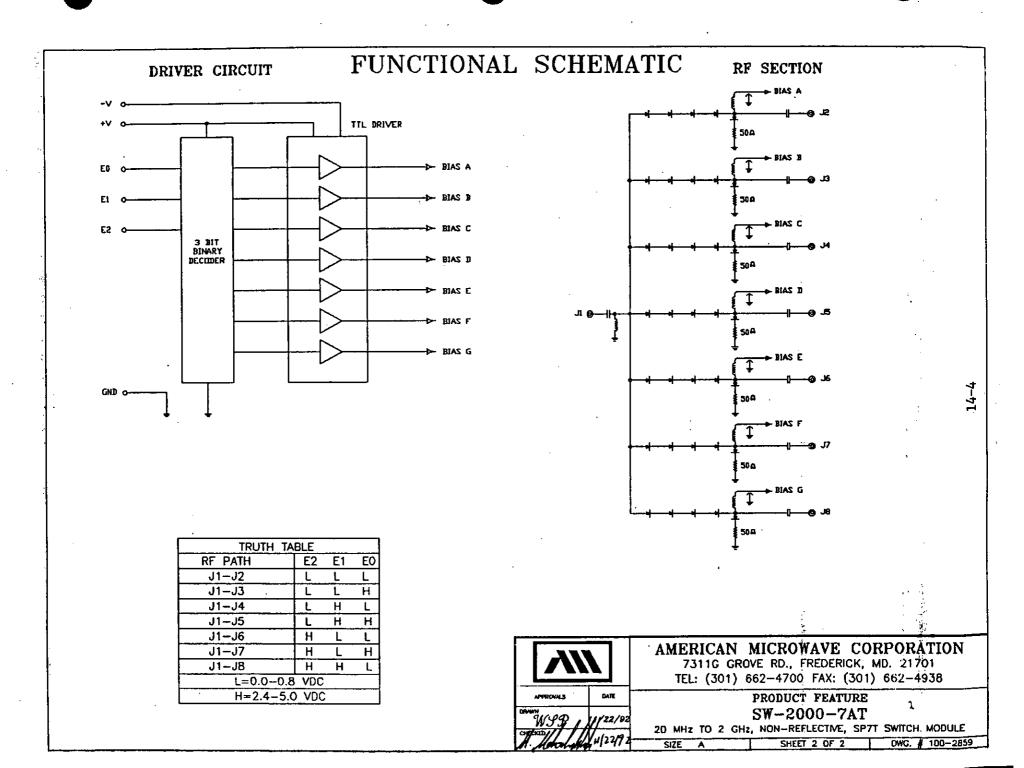


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	• 0.02-2 GHz	SWITCH MODULE, AMC MODEL NO: SW-2000-7AT	14-3
	• 0.02-2.6 GHz	RADIAL SWITCH MODULE, AMC MODEL NO: SW-2560-7DT	14-5

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DESCRIPTION	REVISIONS ZONE REV. DESCRIPTION DATE APPROVED
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.	A ORIGINAL RELEASE, JOB # 204108-2 11/22/92 MM MECHANICAL OUTLINE SMA (FEMALE) CONNECTOR 8 PLACES
SPECIFICATIONS         • FREQUENCY RANGE         • INSERTION LOSS         • INSERTION LOSS         • AMPLITUDE BALANCE         • ISOLATION         • SOULATION         • SWITCHING TIME         RISE (10% RF TO 90% RF)         • COO nsec MAXIMUM         • SWITCHING TIME         RISE (10% RF TO 10% RF)         • COO nsec MAXIMUM         • SOUTH TO 90% RF)         • ON (50% TTL TO 90% RF)         • COO nsec MAXIMUM         • FREQUENCY RANGE         • COO nsec MAXIMUM         • SOW TTL TO 90% RF)         • COO nsec MAXIMUM         • COM SOW TTL TO 10% RF)         • COM SOW TTL TO 10% RF)	8 PLACES         0.83           0.1975         0.50           TYPICAL         4 PLACES           4 PLACES         DD NUT           PAINT         90.125 THRU           SW-2000-7AT         1.770           SW-2000-7AT         1.770           SW-2000-7AT         0.115           0.115         0.24           TYPICAL         0.21           0.00         DETAIL A
<ul> <li>HAR POWER HARINGS ************************************</li></ul>	Image: Second second
<ul> <li>POWER SUPPLY</li></ul>	2) TOLERANCES: X.XX $\pm 0.020$ X.XXX $\pm 0.010$ 3) WEIGHT: APPROX. 12 OZ ENVIRONMENTAL RATINGS • TEMPERATURE
CONNECTOR (MDH−9SSP) ● SIZE ······ 3.94" x 2.00" x 0.83"	-65°C TO +125°C (STORAGE) • HUMIDITY
AVAILABLE OPTIONS A01SMA MALE CONNECTORS A02±12 TO ±18 VDC SUPPLIES A037 INDIVIDUAL CONTROLS A04INVERSE CONTROL LOGIC	VIBRATION     MIL-STD-202F, METHOD 204D COND. E     ALTITUDE     MIL-STD-202F, METHOD 105C COND. E     TEMPERATURE CYCLE     MIL-STD-202F, METHOD 107D COND. /     AMERICAN MICROWAVE CORPORATION     7311G GROVE RD., FREDERICK, MD. 21701     TEL: (301) 662-4700 FAX: (301) 662-4938
Devery	MODULS         DVE         PRODUCT FEATURE           (\$P, n1/22/92         SW-2000-7AT           20 MHz TO 2 GHz, NON-REFLECTIVE, SP7T SWITCH MODULE           MAL, M, II(22/92           SIZE           SIZE           SIZE           SIZE

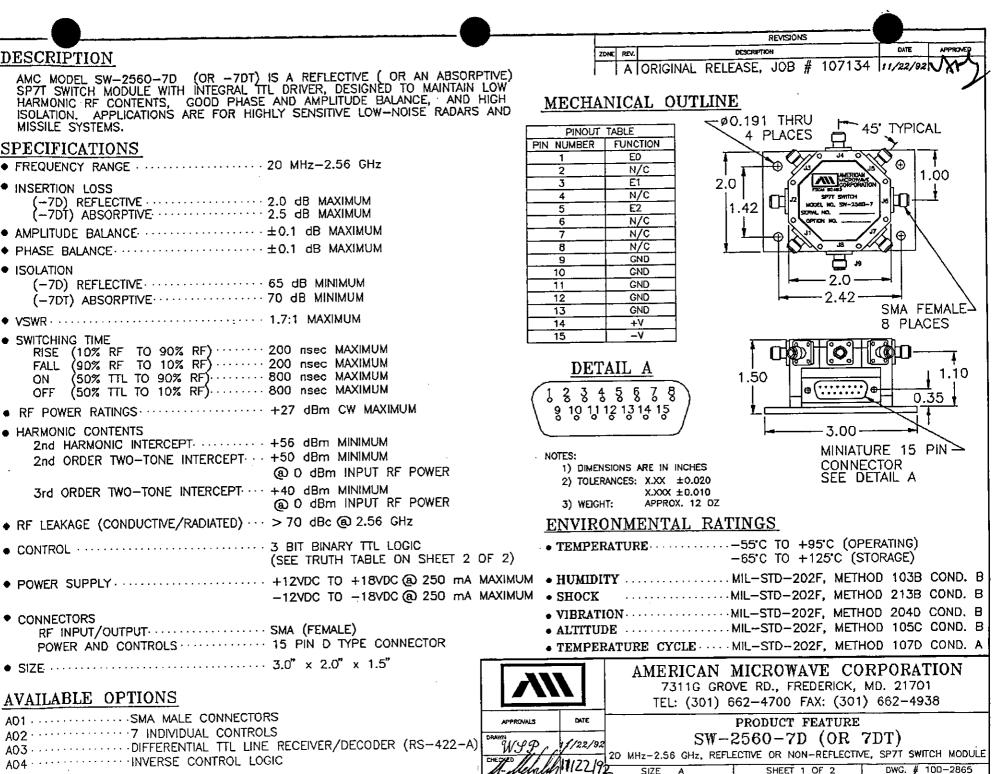


#### DESCRIPTION

AMC MODEL SW-2560-7D (OR -7DT) IS A REFLECTIVE ( OR AN ABSORPTIVE) SP7T SWITCH MODULE WITH INTEGRAL TIL 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 ISOLATION (-7D) REFLECTIVE ..... 65 dB MINIMUM SWITCHING TIME
  - RISE (10% RF TO 90% RF) ..... 200 nsec MAXIMUM FALL (90% RF TO 10% RF) ..... 200 nsec MAXIMUM (50% TTL TO 90% RF) ..... 800 nsec MAXIMUM ON OFF (50% TTL TO 10% RF) ..... 800 nsec MAXIMUM
- RF POWER RATINGS +27 dBm CW MAXIMUM
- HARMONIC CONTENTS 2nd ORDER TWO-TONE INTERCEPT +50 dBm MINIMUM (a) 0 dBm INPUT RF POWER
- 3rd ORDER TWO-TONE INTERCEPT .... +40 dBm MINIMUM O dBm INPUT RF POWER
- ◆ RF LEAKAGE (CONDUCTIVE/RADIATED) ··· > 70 dBc @ 2.56 GHz
- (SEE TRUTH TABLE ON SHEET 2 OF 2)
- -12VDC TO -18VDC @ 250 mA MAXIMUM . SHOCK
- CONNECTORS RF INPUT/OUTPUT ..... SMA (FEMALE) POWER AND CONTROLS ..... 15 PIN D TYPE CONNECTOR
- AVAILABLE OPTIONS
- AD1 ..... SMA MALE CONNECTORS A03 ..... DIFFERENTIAL TTL LINE RECEIVER/DECODER (RS-422-A) AD4 ..... INVERSE CONTROL LOGIC

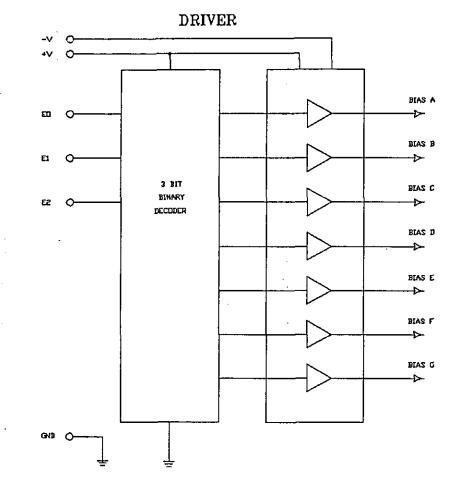


FUNCTIONAL SCHEMATIC

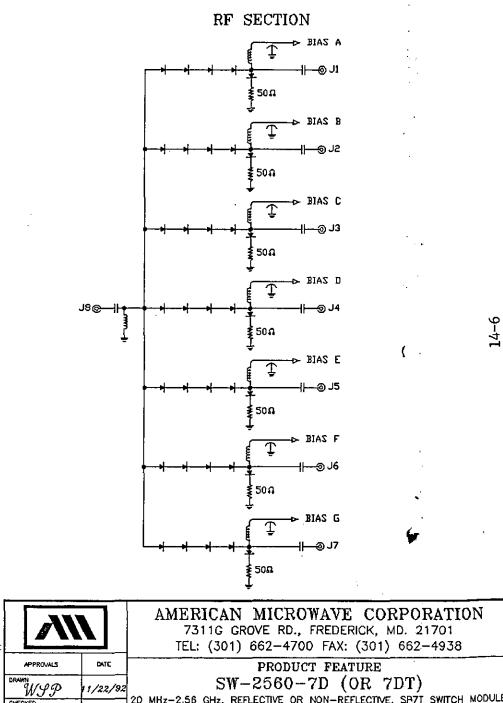
11/22/92

SIZE A

CHECKED



TRUTH TABLE			
RF PATH	E2	E1	EO
J8–J1	L	L	L
J8J2	L	L	Н
J8–J3	L	Н	L
J8–J4	Ĺ	н	н
J8-J5	Н	L	L.
J8-J6	Н	L	Н
J8–J7	Ħ	н	Ĺ
L=0-0.8 VDC			
H=2.4-5.0 VDC			



20 MHz-2.56 GHz, REFLECTIVE OR NON-REFLECTIVE, SPTT SWITCH MODULE

SHEET 2 OF 2

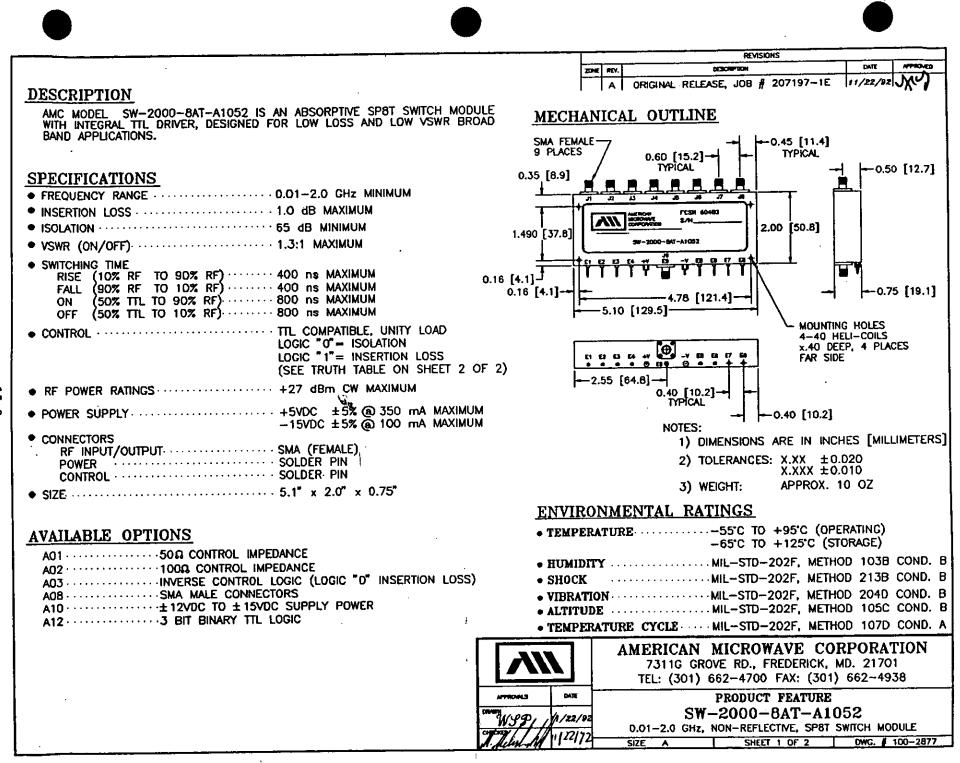
DWG. # 100-2865

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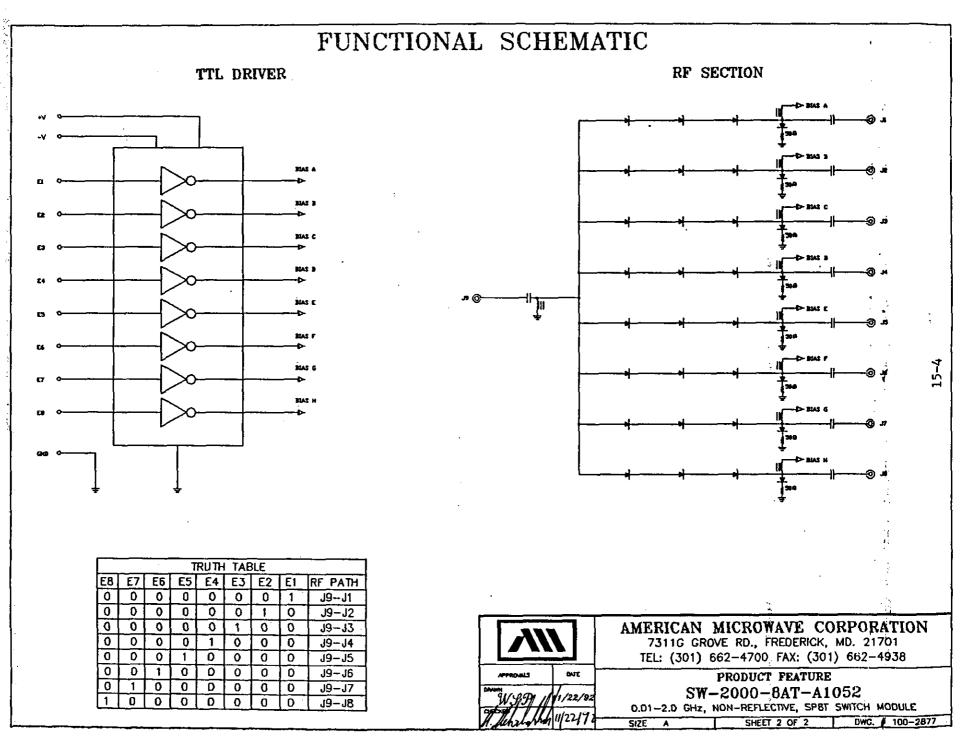
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	• 0.01-2.0 GHz	SWITCH MODULE, AMC MODEL NO: SW-2000-8AT-A1052	15-3
	• 250-500 MHz	NOISE IMMUNE, WITH TTL COMPATIBLE OPTO-COUPLER, SWITCH MODULE, AMC MODEL NO: SW-2000-8AT-200	15-5
	• 1-2 GHz	RADIAL SWITCH MODULE AMC MODEL NO: SW-1020-8AT	15-7
	• 2-4 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









### 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.

MOUNTING HOLES-TYP SPECIFICATIONS ON FAR SIDE 4040 HELI-CDIL ----------X 0.4 DP. 4 PLS. • FREQUENCY RANGE ..... 250-500 MHz MINIMUM JI JE J3 J4 J5 J6 J7 J6 2.000 3.00 5V-000-0A7-008 SWITCHING TIME SERIAL NO. RISE (10% RF TO 90% RF) ..... 150 nS MAXIMUM PART NUL FALL (90% RF TO 10% RF) ..... 250 nS MAXIMUM ON (50% TTL TO 90% RF) ..... 200 nS MAXIMUM 9 PIN TYPE D-OFF (50% TTL TO 10% RF) ..... 5DD nS MAXIMUM SUB MINIATURE 2.250-RF DUT CONNECTOR. SEE SHEET 2 DETAIL B 4.50-HARMONIC CONTENT -0.250 SUPPLY ြုံ CONTROL 0.75 -• (1990)• RF LEAKAGE (CONDUCTIVE/RADIATED) ··· > 80 dBC (a) 500 MHz 26 PIN TYPE DD • CONTROLS ...... DIFFERENTIAL TTL, WITH OPTO COUPLERS; CONNECTOR. SEE NOTES: 8 INDIVIDUAL CONTROL PAIRS. SHEET 2 DETAIL A LOGIC "1" INSERTION LOSS 1) DIMENSIONS ARE IN INCHES LOCIC "O" ISOLATION 2) TOLERANCES: X.XX ±0.020 X.XXX ±0.010 3) WEIGHT: APPROX, 14 OZ ~5.2 ±0.25VDC a 440 mA MAXIMUM ENVIRONMENTAL RATINGS DC LINES ARE FILTERED TO PREVENT RF LEAKAGE AND PROVIDE TRUE • TEMPERATURE .....-55'C TO +95'C (OPERATING) POWER SUPPLY DECOUPLING. -65°C TO +125°C (STORAGE) CONNECTIONS RF INPUT/OUTPUT······SMA FEMALE • 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 AMERICAN MICROWAVE CORPORATION A01  $\cdots$  ± 12 TO ± 18VDC SUPPLIES 7311G GROVE RD., FREDERICK. MD. 21701 A02 ..... EXTENDED FREQUENCY BAND FROM 10 MHz TO TEL: (301) 662-4700 FAX: (301) 662-4938 2000 MHz (RF PERFORMANCE IS SUBJECT PRODUCT FEATURE APPROVES DATE TO CHANGE, CONSULT FACTORY) SW-2000-8AT-200 WYP A03 ..... INVERSE CONTROL LOGIC (LOGIC "0" INSERTION LOSS) 1/17/92 250-500 MHz, NON-REFLECTIVE, NOISE IMMUNE SPRT SWITCH MODULE A04 .....SMA MALE CONNECTORS WITH TTL COMPATIBLE OPTO-COUPLER 122/9 SIZE A SHEET 1 OF 2 DWG. # 100-2814

REVISIONS

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11/17/82 100

APPROVED

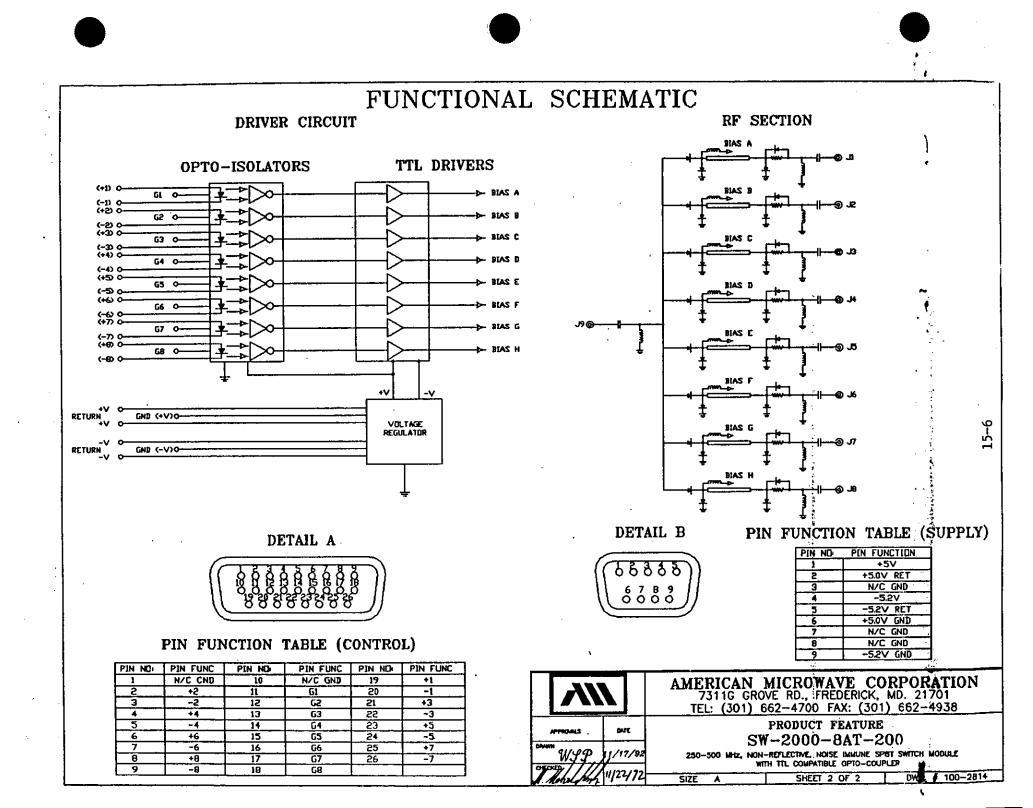
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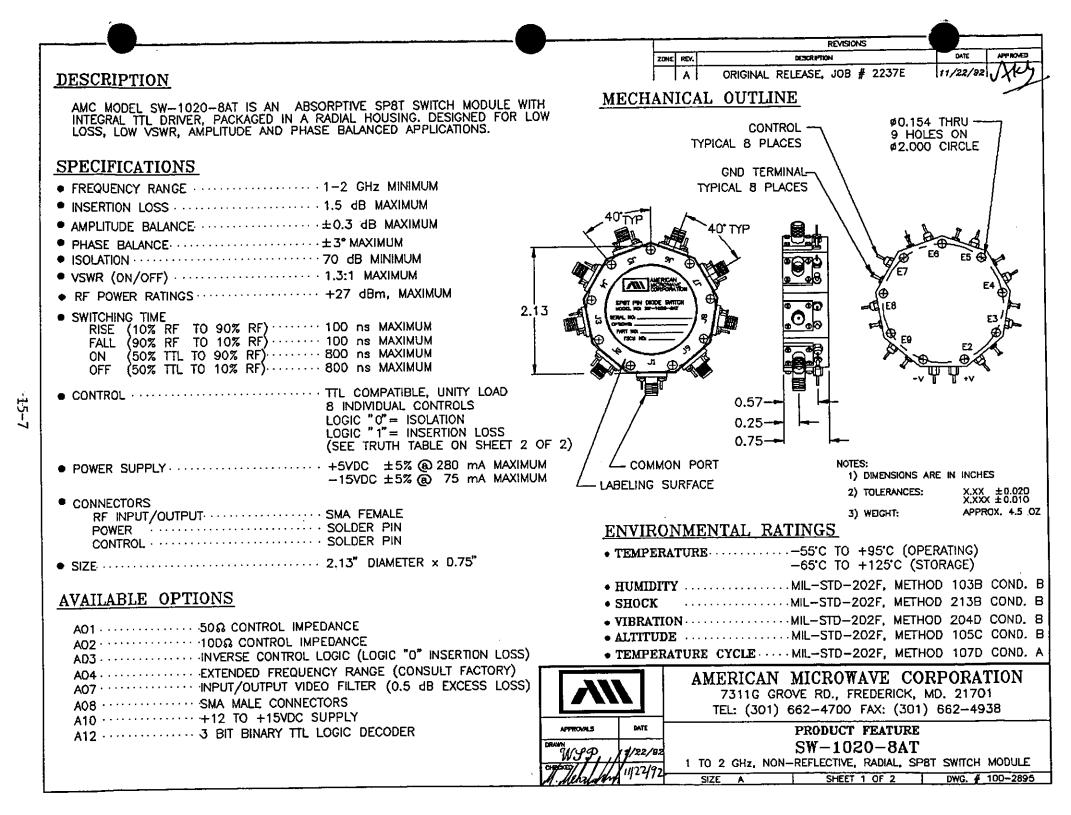
ORIGINAL RELEASE, JOB # 1101995

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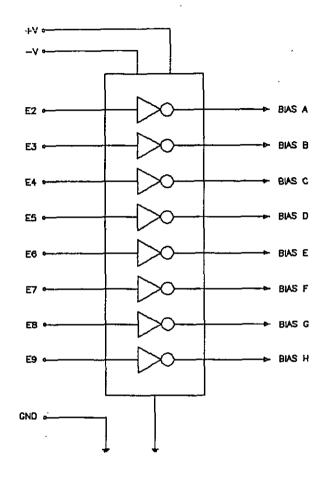
INPUT PORTS -

MECHANICAL OUTLINE

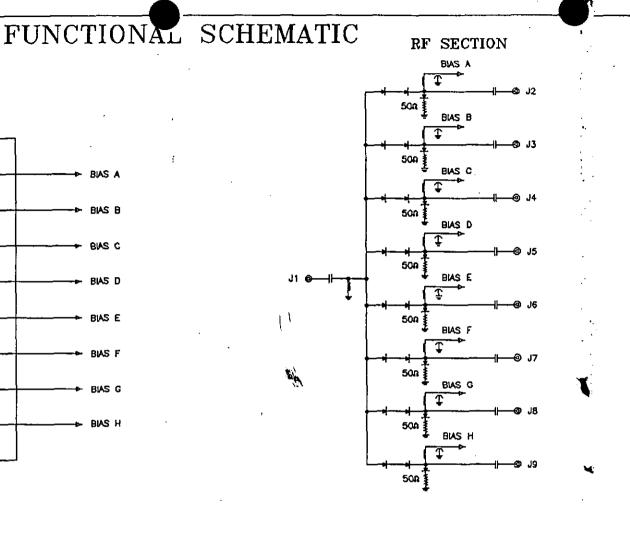


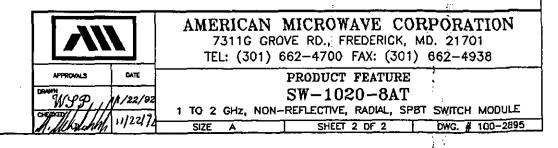


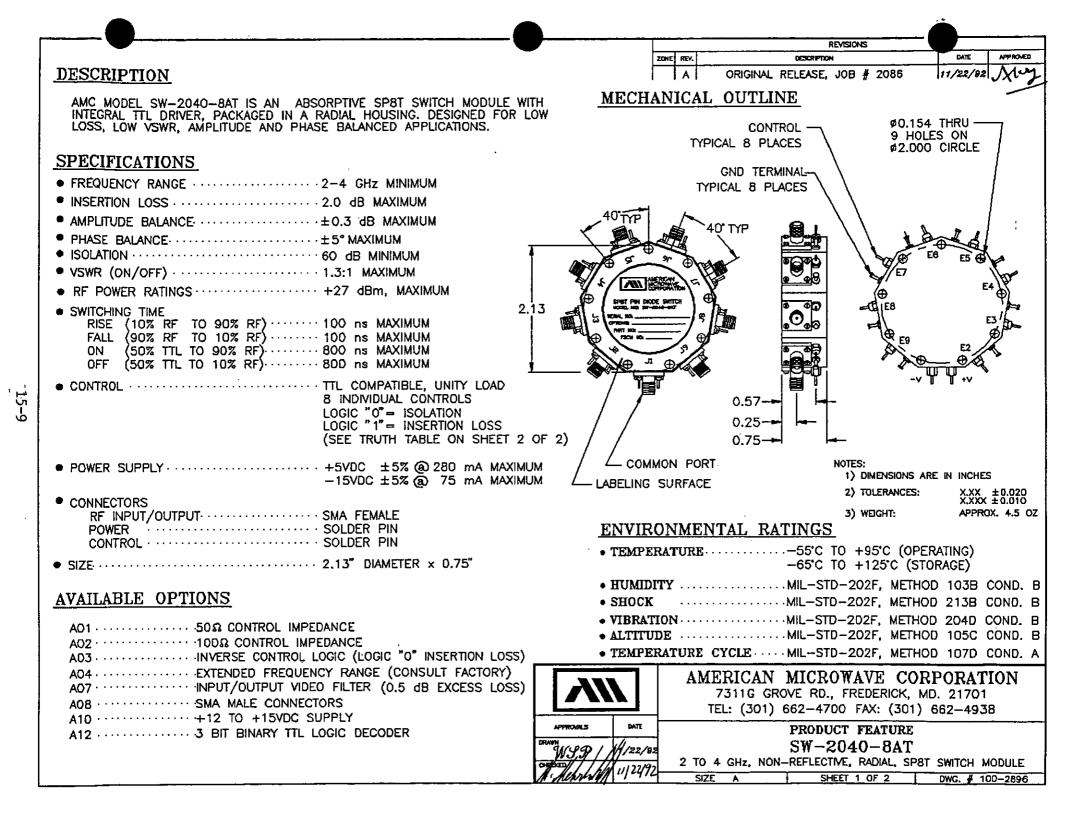
DRIVER CIRCUIT



			T	RUTH	TAB	LE		
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
Q	0	0	Q	0	1	Q	0	J1J4
0	D	0	0	1	0	0	0	J1–J5
D	D	0	1	0	0	D	D	J1-J6
0	0	1	0	0	0	0	Ø	J1-J7
0	1	0	0	0	0	0	0	J1–J8
1	Ø	0	0	0	0	0	0	J1–J9

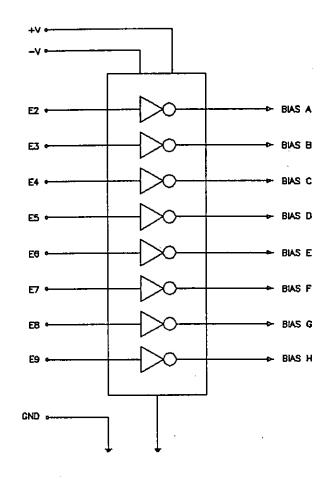




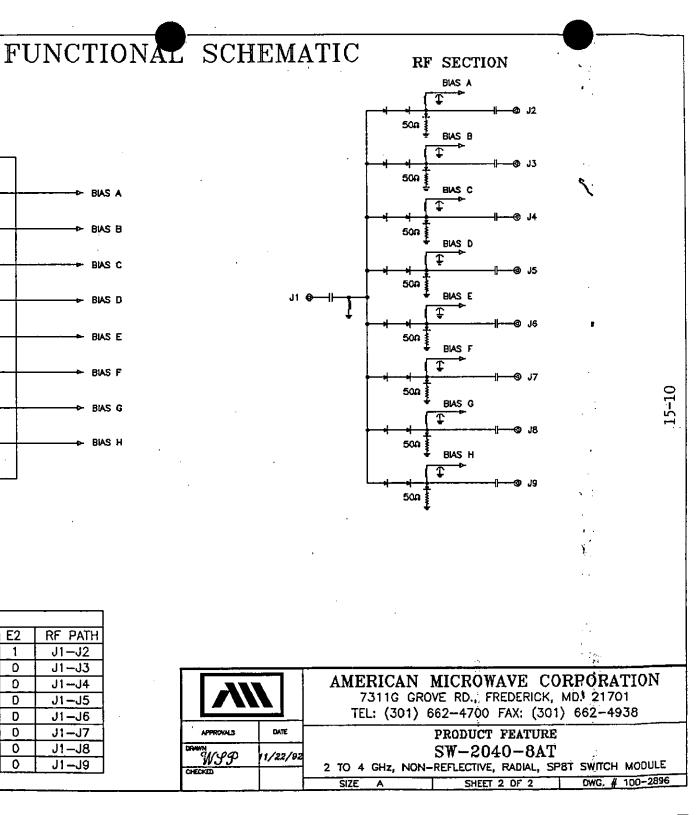


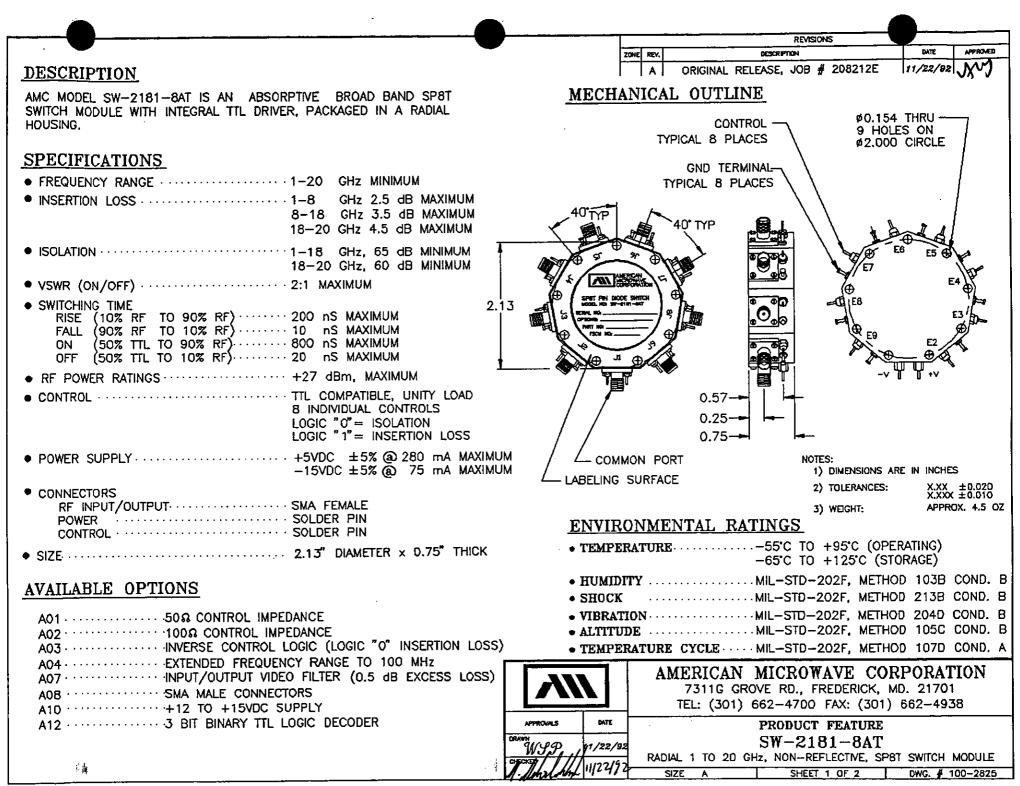
DRIVER CIRCUIT

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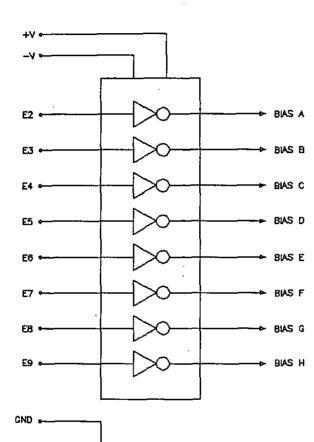
	TRUTH TABLE							
E9	E8	E7 .	E6	E5	.E4	E3	E2	RF PATH
0	0	0	0	0	0	0	1	J1-J2
0	0	0	0	0	0	1	0	J1–J3
0	0	0	0	0	1	0	0	J1-J4
0	D	0	0	1	0	0	D	J1-J5
0	D	0	1	0	0	0	D	J1–J6
0	0	1	0	0	0	0	0	J1-J7
0	1	0	0	0	0	0	0	J1–J8
_1	0	0	0	0	0	0	0	J1–J9

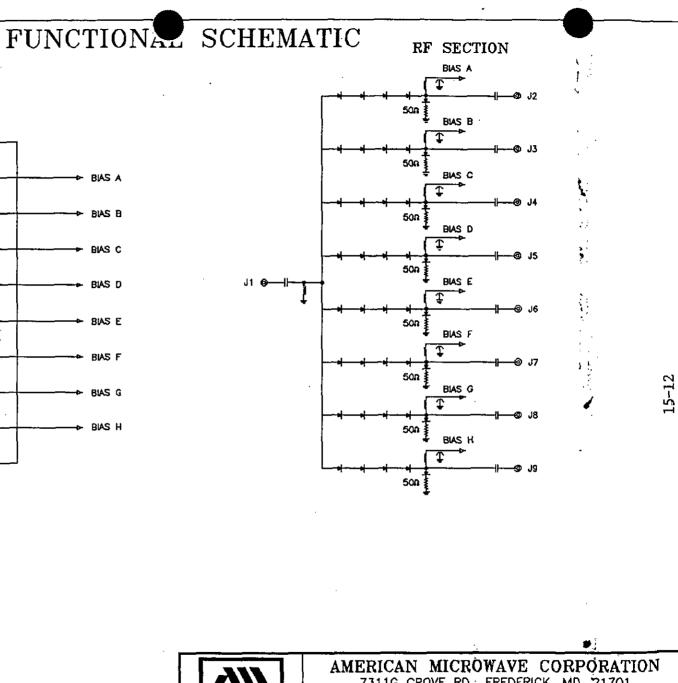




15-11

DRIVER CIRCUIT





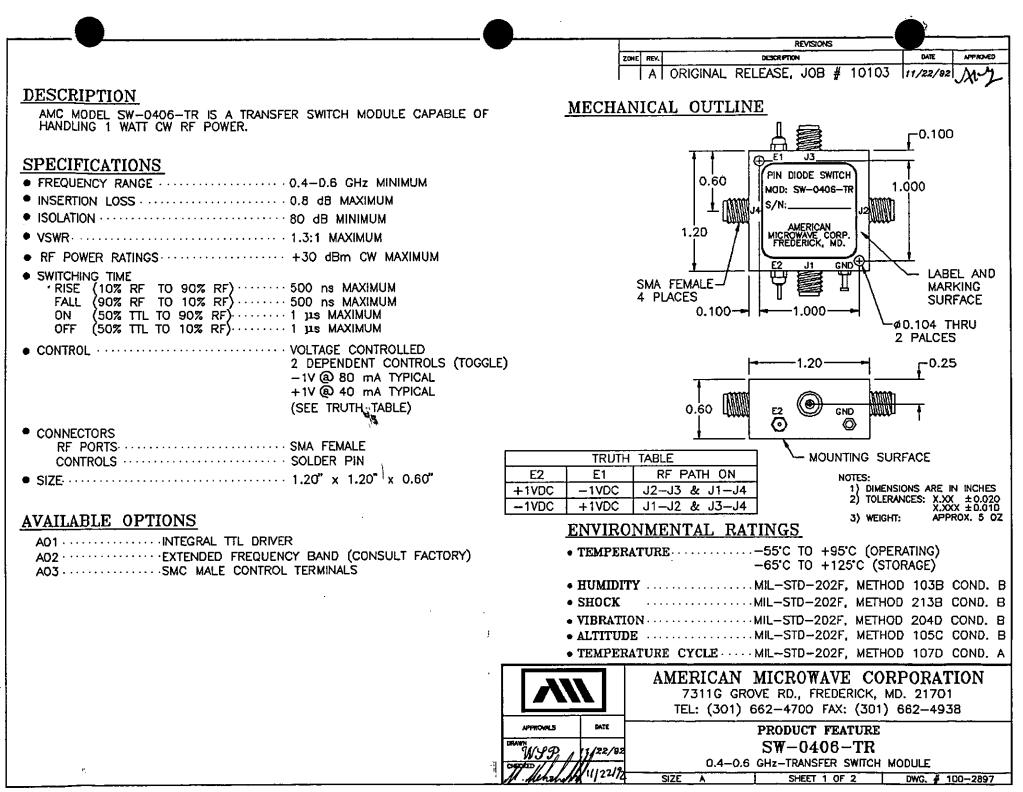
AMERICAN MICRÓWAVE CORPÓRATION 7311G GROVE RD.; FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938 PRODUCT FEATURE SW-2181-8AT RADIAL 1 TO 20 GHz, NON-REFLECTIVE, SP8T SWITCH MODULE SIZE A SHEET 2 OF 2 DWG. # 100-2825



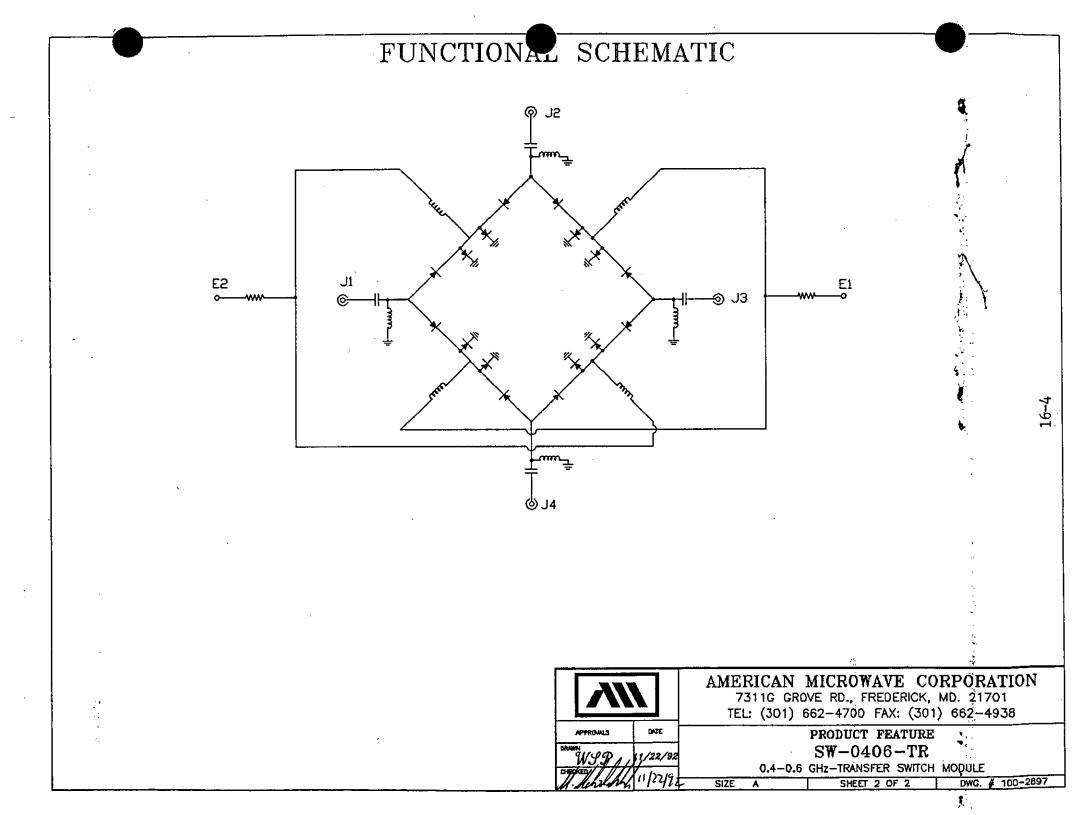
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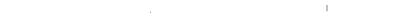
SECTION	V		PRODUCT DESCRIPTION	PAGES
16	TRANSI	FER SW	/ITCH	. 16-1
	• 0.4-0.6		1 WATT SWITCH MODULE AMC MODEL NO: SW-0406-TR	16-3



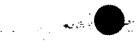
16-3







AMERICAN MICROWAVE CORPORATION 7311-G GROVE ROAD, FREDERICK MD. 21701 •USA• TEL: (201) 662-4700; FAX: (301) 662-4938



# **SWITCHED**

# AMERICANNORMUL **FILTER BANKS**

**NEW** 

# **PRODUCT DEVELOPMENTS**

# AT

# AMERICAN MICROWAVE CORPORATION

**NOVEMBER 22, 1992** 

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

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1.0	SP6T, 0.01-8 GHz	SWITCHED FILTER BANK		1-2	2
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### 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	0.10 0.0	CHT 3 6dB MAXIMUM
CHANNEL 3	0.0-1.0	
CHANNEL 4	1.4-2./	GHZ, 3.808 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		CONSULT FACTORY)
NUIE: (DIFFERENT FREQUENCE DANUS		

ISOLATION · · · · · · · · · · · · · · · · · · ·	60	dB	MINIMUM
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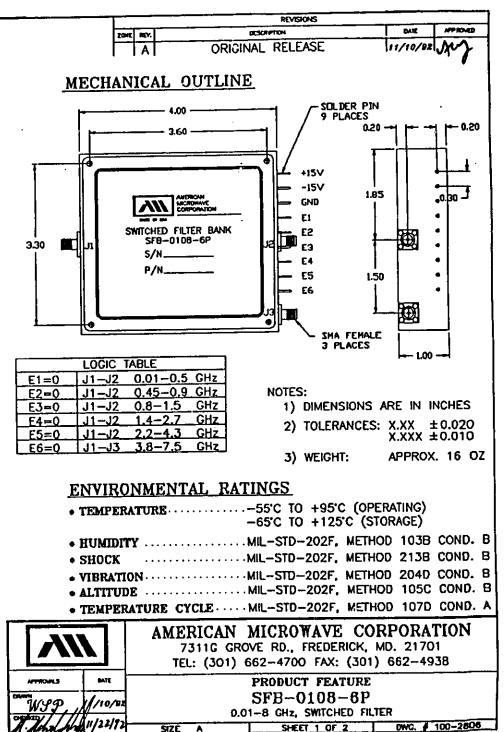
- VSWR (ON) ..... 2:1 MAXIMUM
- SWITCHING TIME

DELAY ON	(50% TTL T	0 90%	<b>RF</b> ) 500nS	MAXIMUM
DELAY OFF	(50% TTL T	10%	RF) · · · · · · · 500nS RF) · · · · · · 500nS	MAXIMUM

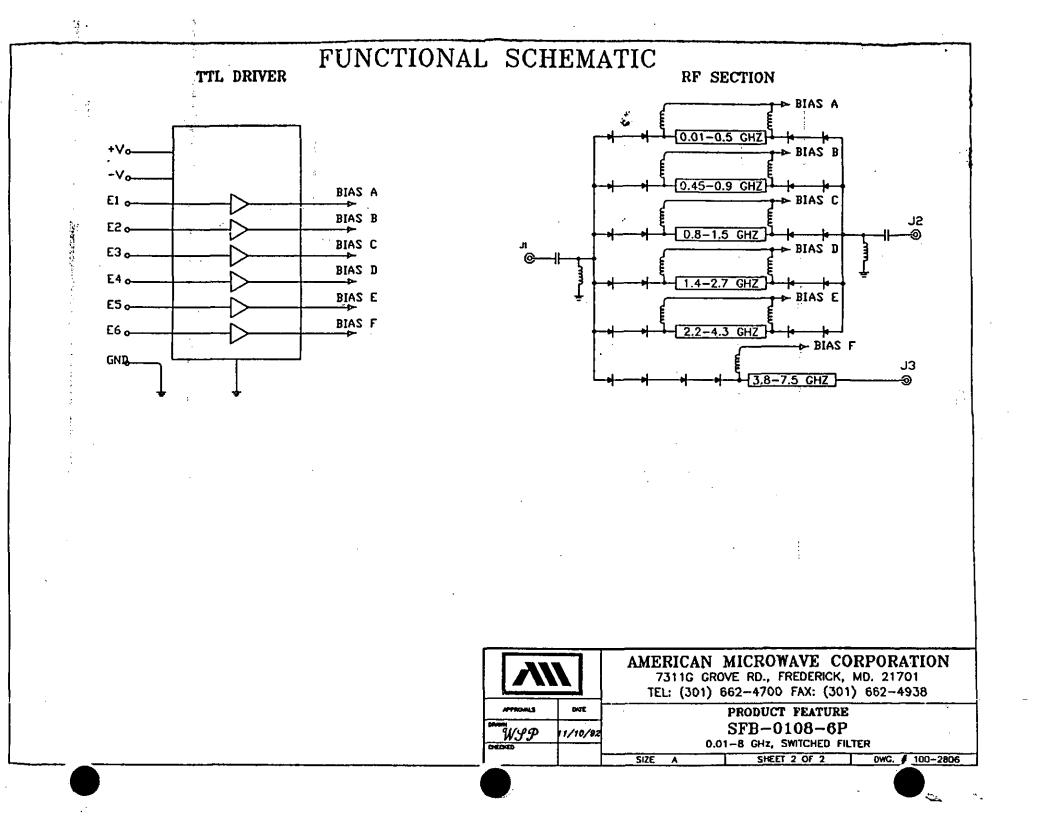
- RF POWER RATINGS ..... +27dBm CW MAXIMUM
- CONNECTORS RF INPUT/OUTPUT······SMA FEMALE POWER ······SOLDER PIN CONTROL ······SOLDER PIN
- SIZE ...... 4.0" x 3.3" x 1.0"

### AVAILABLE OPTIONS

A13 ······ ± 15 VOLT DC SUPPLY
A14 J1 SMA MALE, J2 & J3 SMA FEMALE
A15J1 SMA FEMALE, J2 & J3 SMA MALE
A19 SMC CONTROL TERMINALS
A20 ·····
A21 ······ 3 BIT DECODER OPTION



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# AMERICAN MICROWAVE CORPORATION

7311-G GROVE ROAD, FREDERICK, MD 21701 •USA• TEL: (301) 662-4700, FAX: (301) 662-4938 TEST DATA

ON

AMER CORPORATION 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

E-MAIL: AMCPMI@AOL.COM

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

A REAL COLOR AND A REAL AND A REA	10 MHz TO 2 GHz
	ABSORPTIVE
8	LOW LOSS, HIGH ISOLATION
No.2	SP8T PIN DIODE SWITCH
1 x y	LOW LOSS
E CH	• ABSORPTIVE
	HIGH ISOLATION
	AMC MODEL Nos:
SWN-2000	<b>J-8DR/DT-0012</b> (ABSORPTIVE or REFLECTIVE)
	R/DT-05-10M2 (ABSORPTIVE or REFLECTIVE)
	R/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)
MSNC-8D	R/DT-06-10M2 (ABSORPTIVE or REFLECTIVE)
	SPECIFICATIONS:
• FREQUENCY RANGE	: 10 MHz GHz TO 2 GHz
• INSERTION LOSS	<ul> <li>: 2.50 dB MAX.</li> <li>(For Absorptive, Non-Absorptive or Reflective reduces Loss by about 0.5 dB)</li> <li>: 1.50 dB TYP. @ 0.01 GHz</li> <li>: 1.30 dB TYP. @ 1.0 GHz</li> <li>: 1.50 dB TYP. @ 1.0 GHz</li> </ul>
• ISOLATION	: 2.00 dB TYP. @ 2.0 GHz : 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
<ul> <li>DC POWER SUPPLY</li> <li>SIZE &amp; WEIGHT</li> </ul>	: +5vdc @ 250 mA MAX., <200 mA TYP. (+5/-5vdc Standard, : -5vdc @ 75 mA MAX., <50 mA TYP. Other Voltage Options Also Available) : 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.
	TYPICAL FOR ABSORPTIVE OR REFLECTIVE VERSIONS. W (SP2T, SP3T, SP4T, SP5T, SP6T & SP7T) DESIGNS AVAILABLE.
WEBSITE: HTTP://WWW.AMWA	VE.COM E-MAIL: AMCPMI@AOL.COM

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

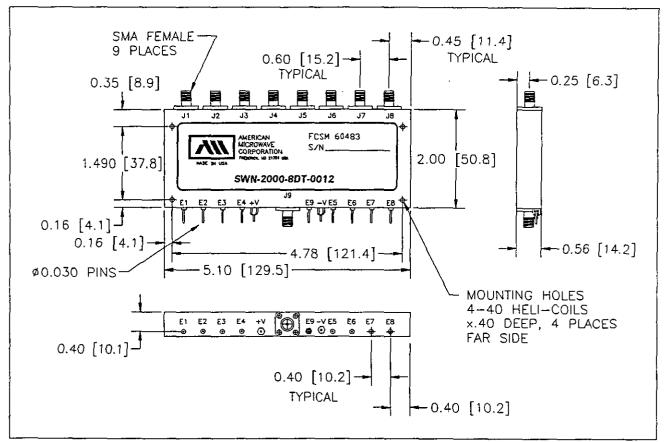


MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

**TECHNICIAN** 

# 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

PAGE 4



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# SUMMARY TEST DATA

MODEL NUMBER

: SWN-2000-8DR/DT-0012

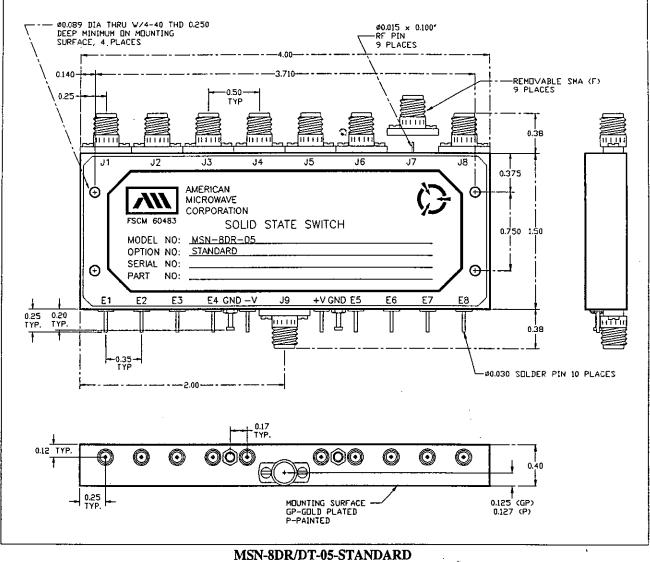
- : MSN-8DR/DT-05-10M2
- : MSN-9DR/DT-06-10M2

TECHNICIAN

: R. AFABLE

# MECHANICAL OUTLINES

(CONTINUED)



WITH INDEPENDENT CONTROLS

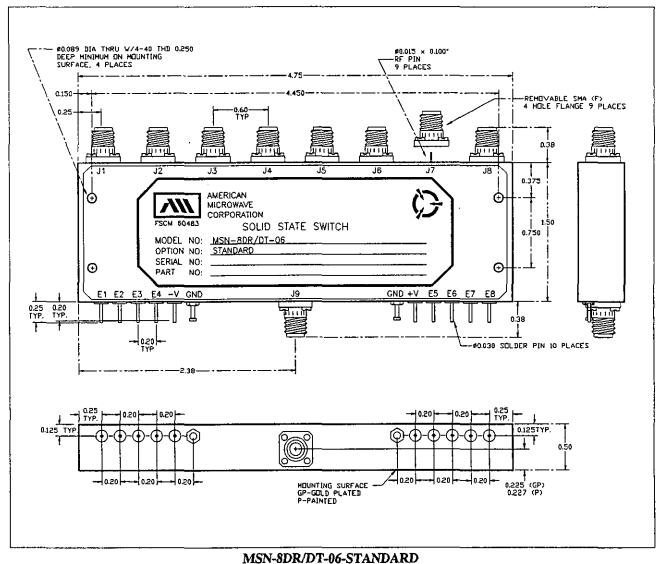


MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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### MECHANICAL OUTLINES (CONTINUED)



WITH INDEPENDENT CONTROLS



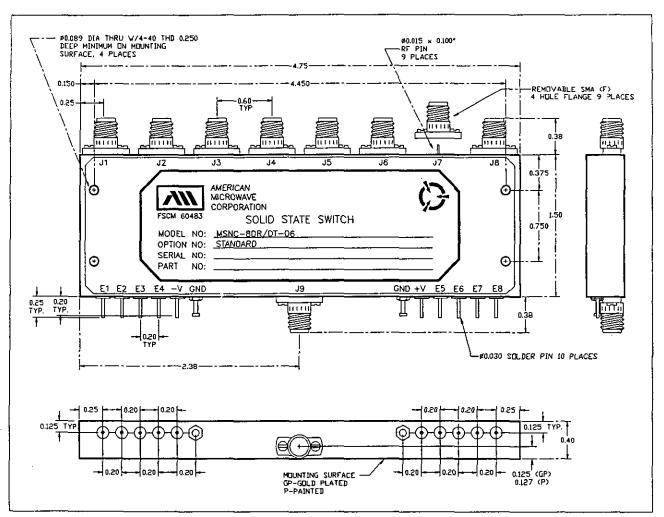
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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

**TECHNICIAN** 

### MECHANICAL OUTLINES (CONTINUED)



MSNC-8DR/DT-06-STANDARD WITH INDEPENDENT CONTROLS

PAGE 7

### AVAILABLE OPTIONS AND HOW TO ORDER SWN-2000 SERIES OF SWITCHES

### EXAMPLE :

# $\frac{SWN}{1} - \frac{2000}{2} - \frac{8}{3} \frac{D}{4} \frac{T}{5} - \frac{XXXX}{6} - \frac{\#\#\#}{7}$

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 ± 5vdc)		
004	+ 15vdc DC Power Supply (Standard is ± 5vdc)		
005	3-bit Binary Decoder		
006	- 12vdc DC Power Supply (Standard is ± 5vdc)		
007	- 15vdc DC Power Supply (Standard is ± 5vdc)		
008	MULTIPIN CONNECTOR		
009	0.4" THICK OPTION AVAILABLE (Consult Factory For Details)		
XXXX	Indicates the Frequecy for which the Switch has been Adjusted		
	For Example: 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		

### 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

### PAGE 8

# **AVAILABLE OPTIONS AND HOW TO ORDER MSN SERIES OF SWITCHES**

### **EXAMPLE:**

3.

4.

: 05

### <u>MSN - 8 DR/DT - 05 - XXX - ###</u> 56

2 3 1 4

- : Switch Designator Microwave <u>Switch New</u> 1. : MSN 2.
  - : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T) : 8
  - : DT/DR : D=Integral Driver, T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
    - : 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
- : Frequency Range of Switch as Illustrated Below :### 6.

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 Mbz TO 2.0 GHZ FREQUENCY RANGE
10M18	10 Mbz 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 20 115 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





MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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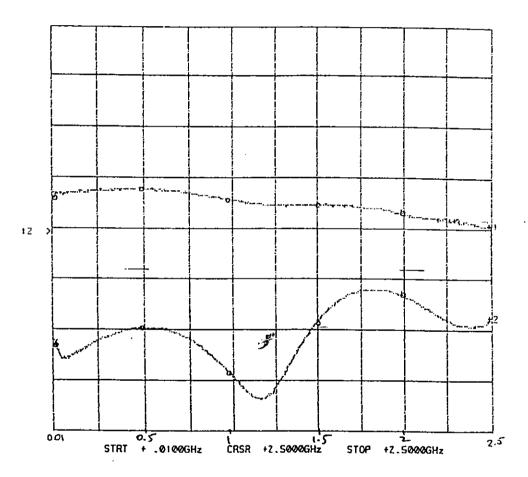
SERIAL NUMBER

### : 8MS60475

# **INSERTION LOSS & RETURN LOSS**

### J9 TO J1

CH1: A -M - 1.94 dB CH2: B -M - 18.41 dB 1.0 dB/ REF - 2.00 dB 5.0 dB/ REF - 9.54 dB



Markers			
	Frequency	Chan. 1	Chan. Z
No.	<u>(Hz)</u>	(86)	<u>(98)</u>
WHE I	IE+07	- 1.382	- 20.949
500 H :Z	4.955501E+08	- 1.200	- 19.268
1 Ct Ht - 3	9.997751E+08	- 1.404	- 23.756
1.5 11 4	1.497775E+09	- 1.503	- 18,730
Z y act	1.995775E+09	- 1.673	- 16,131
Cursors			
Z-5 Q44.	2.5E+09	- 1.936	- 18,416

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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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TECHNICIAN

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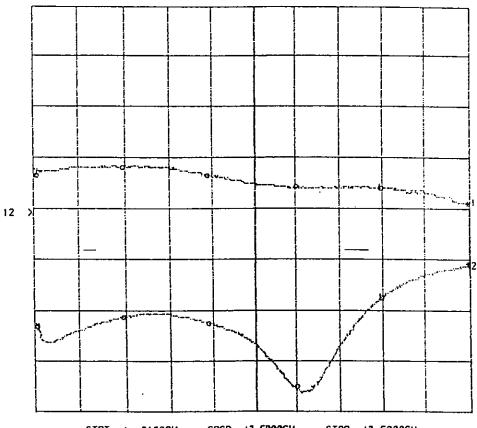
SERIAL NUMBER

: 8MS60475

## **INSERTION LOSS & RETURN LOSS**

**J9 TO J2** 

CHI: A -M	-	1.89 d8	CHZ: 8 -M	-	15.10 d8
I.0 dB/ REF	-	2.00 dB	5.0 d87 REF	-	9.54 dB



STRT + .0100GHz CRSR +2.5000GHz STOP +2.5000GHz

<u>Markers</u>			• •
	Frequency	Chan. I	- Chan. 2
No	<u>(Hz)</u>	<u>(d8)</u>	(d8)
<u>, e p. 1</u>	12+07	- 1.338	- 21.141
- <del>1</del> - 2	4.955501E+0B	- 1.156	- 20:141-1
3	9.997751E+08	- 1.321	- 20.718
4	1.497775E+09	- 1,568	- 26.898
act	1.995775E+09	- 1.557	- 18.158
			기간 6 모든 것
Cursers			in a second
<b>1</b>	2.5E+09	- 1.898	- 15.974340
<u>1</u> ·			- 1 <b>4</b> -

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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

TECHNICIAN

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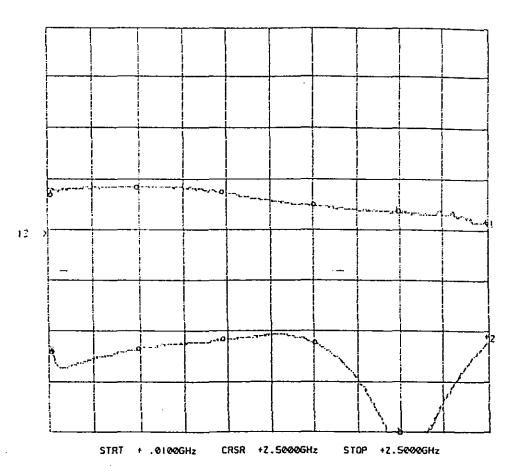
SERIAL NUMBER

### : 8MS60475

# **INSERTION LOSS & RETURN LOSS**

### **J9 TO J3**

CH1: A -M	-	1.86 d8	СН2: В -л	-	20.25 d8
1.0 dB/ REF	-	Z.00 dB	5.0 dB/ REF	-	9,54 d8



### Markers

	Frequency	Chan, 1	Chan. 2
No.	<u>(Hz)</u>	(dB)	(86)
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
ect	1.99577SE+09	- 1.629	- 31.304
Cursons			•
I	2.52+09	~ 1.860	- 20.229



MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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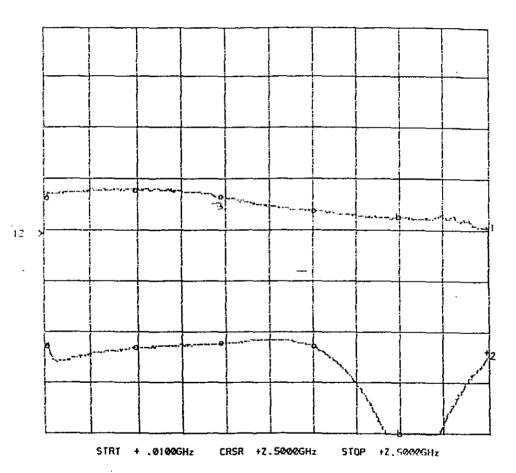
SERIAL NUMBER

### : 8MS60475

### **INSERTION LOSS & RETURN LOSS**

### J9 TO J4

CH1: A -M	-	1.95 dB	CH2: 8 -M	-	21.64 dB
1.0 dB/ REF	-	Z.00 d8	5.0 dB/ BEF	-	9.54 dB



### Markers

	Frequency —	Chan. 1	Chan. 2
No.	<u>(Hz)</u>	<u>(dB)</u>	<u>(4B)</u>
t	1E+07	- 1.365	- 21.031
2	4.955501E+08	- 1.178	- 21.130
3	9.997751E+08	- 1.318	- 20.530
4	1.497775E+09	- 1 590	- 20.828
401	1.995775E+09	- 1.733	- 32.545
Cursors			
1	2.5E+09	- 1.942	- 21.603



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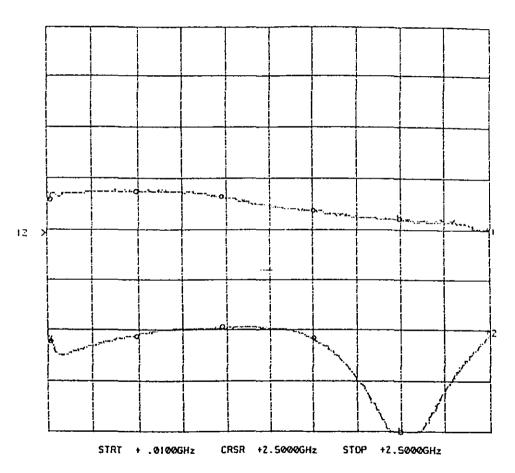
SERIAL NUMBER

### : 8MS60475

# **INSERTION LOSS & RETURN LOSS**

J9 TO J5

CHI: A -H	-	2.01 dB	CH2: 8 -M	-	19.71	dB
1.0 d8/ R£F	-	2.00 dB	5.0 d8/ REF		9.54	d9



Markers			
	Frequency	Chan. 1	Chan. 2
No.	<u>(Hz)</u>	<u>(dB)</u>	<u>(dB)</u>
1	LE+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
act	I.995775E+09	- 1.788	- 30.573
Cursors			
F	2.5E+09	- 2.019	- 19.790





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: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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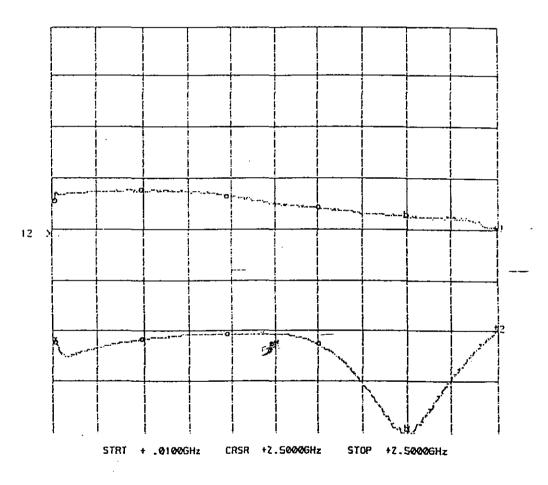
SERIAL NUMBER

: 8MS60475

# **INSERTION LOSS & RETURN LOSS**

J9 TO J6

CH1: A -M	-	1.96 d0	сн2: 8 -м	-	19.21 d9
1.0 dB/ REF	-	2.0-0 dB	5.0 d8/ REF	-	9.54 d8



Markers			
	Frequency	Chan. 1	Chan. 2
No.	<u>(Hz)</u>	( 86 )	<u>(dB)</u>
t	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
Cursors			
i	2.5E+09	- 1.969	- 19.208



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SERIAL NUMBER

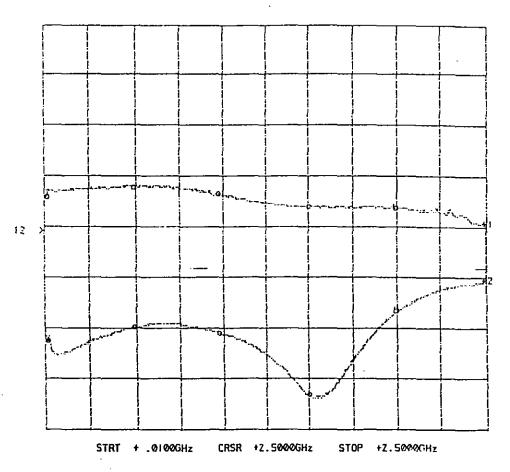
### : 8MS60475

# **INSERTION LOSS & RETURN LOSS**

**J9** TO **J7** 

 CH1:
 A
 -N
 1.94
 dB
 CH2:
 B
 -N
 14.99
 d9

 1.0
 dB/
 REF
 2.00
 dB
 5.0
 dB/
 REF
 9.54
 dB



Markers			
	Frequency	Chan. 1	Chan. 2
N2.	<u>(Hz)</u>	<u>(8b)</u>	<u>(dB)</u>
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	- (.579	- 25.815
act	1.995775E+09	• 1.607	- 17.851
Cursors			
1	2.5E+09	- 1.953	- 14.86Z



MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

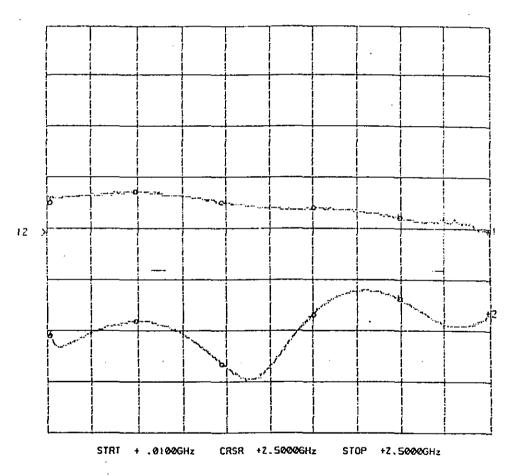
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SERIAL NUMBER

### : 8MS60475

# **INSERTION LOSS & RETURN LOSS**

CH1: A -M	-	2.05 d8	CH2: 8 -M	- 17.71 dB
1.0 dB/ REF	-	2.00 dB	5.0 d8/ REF	- 9.54 dB



Markers			
-	Frequency	Chan. I	Chan. 2-
No.	<u>(H2)</u>	<u>(dB)</u>	<u>(dB)</u>
1	1E+07	- t.481	- 20.010
2	4.955501E+08	- 1.288	~ 18.503
3	9.997751E+08	- 1.470	- 22.773
4	1.49777SE+09	- 1.612	- 17.977
act	1.995775E+09	- 1.772	- 16.395
Cursors			
1	2.5E+09	- 2.052	- 17.664



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# SUMMARY TEST DATA

MODEL NUMBER

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SERIAL NUMBER

### : 8MS60475

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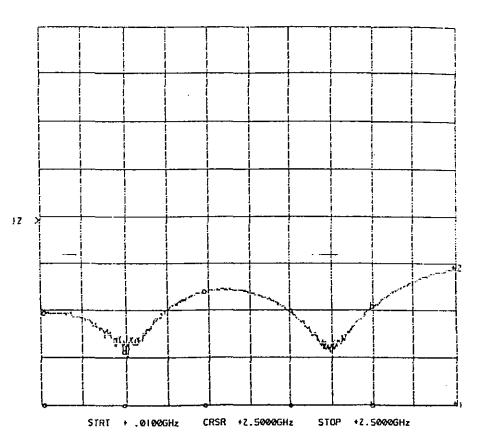
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: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2

# **OFF-ARM TERMINATION**

J1-J9

CH1: n -M - 47.22 dB CH2: 8 -M - 20.38 dB 1.0 dB/ REF - 2.00 dB 10.0 dB/ REF - 9.54 dB



<u>Markers</u>

	Frequency	Chan: -1	Chan. 2
No.	(Hz)	( <u>dB</u> )	<u>(dB)</u>
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	- 28.670
Cursors			
1	2.5E+09	~ 48.10Z	~ 28.389



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MODEL NUMBER

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SERIAL NUMBER

### :8MS60475

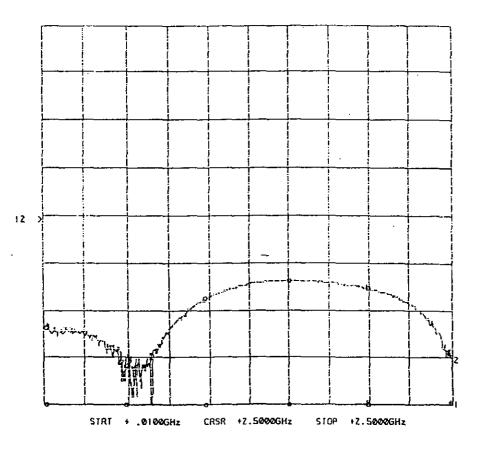
: R. AFABLE

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2

# **OFF-ARM TERMINATION**

J2-J9

CHE: 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 Frequency Chan. I Chan. Z <u>(dB)</u> - 43.213 <u>(d8)</u> - 33.029 <u>(Hz)</u> <u>Nç.</u> 1E+07 1 4.955501E+08 - 48.368 - 47.674 2 - 27.206 3 9.997751E+08 - 52.673 4 1.497775E+09 - 45.317 - 23.119 act 1.995775E+09 - 24.822 - 46.042 Cursors 1 2.5E+09 - 49.866 - 43.114

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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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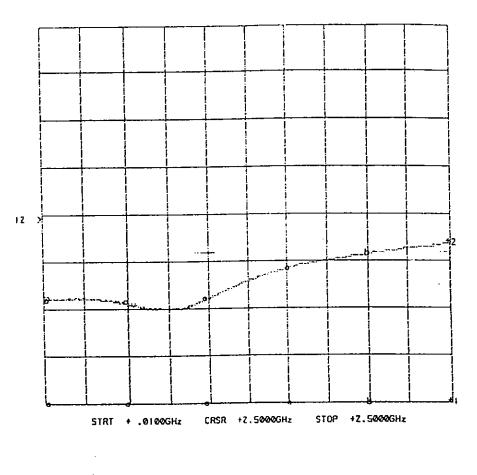
SERIAL NUMBER

### : 8MS60475

# **OFF-ARM TERMINATION**

J3-J9

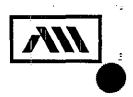
CH1: A -M	- 47.55 d8	CHZ: 8 -M	- IS.68 d8
1.0 d8/ REF	- 2.00 dB	10.0 d8/ REF	- 9.54 dB



Markers			
	Frequency	Chan. I	Chan, 2
<u>No.</u>	(Hz)	<u>(gb)</u>	<u>(8b)</u>
1	1E+07	- 47.009	- 27.491
2	4.9555012+08	- 43.971	- 27.876
3	9.997751E+00	- 51.761	- 27.233
4	1.497775E+09	- 47.136	- 20.987
act	1.9957752+09	- 49.888	- 17.955
Cursons			
ł	2.5E+09	- 48.218	- 15.697

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# SUMMARY TEST DATA

MODEL NUMBER

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: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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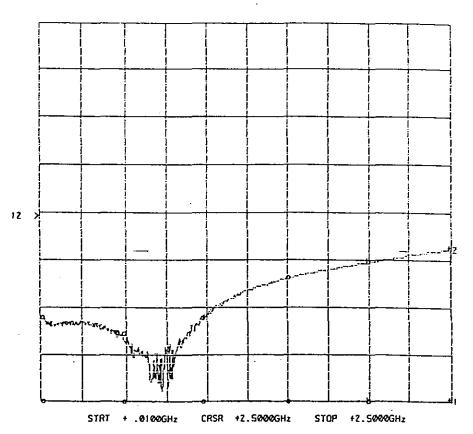
SERIAL NUMBER

#### : 8MS60475

# **OFF-ARM TERMINATION**

J4-J9

CH1: A -M - 52.38 a8 CH2: B -M - 17.13 d8 1.0 d8/ REF - 2.00 d8 10.0 d8/ REF - 9.54 d8



Markers Chan: 2 Frequency Chan, 1 <u>(d8)</u> - 45.224 <u>No.</u> (H2) <u>(dB)</u> 1E+07 - 32.458 1 2 4.955501E+08 - 35.742 - 44.543 - 31.359 3 9.997751E+08 - 44.713 - 23.437 4 1.497775E+09 - 50.811 act 1.995775E+09 - 46.916 - 19.839 Cursons I 2.5E+09 - 44.872 - 17.126

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# SUMMARY TEST DATA

MODEL NUMBER

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SERIAL NUMBER

: 8MS60475

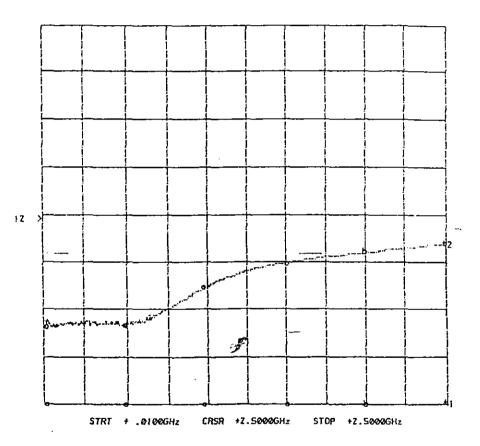
: R. AFABLE

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2

# **OFF-ARM TERMINATION**

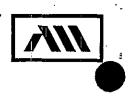
J5-J9

CH1: A -M - 47.19 d8 CH2: 8 -M - 15.59 d8 1.0 d8/ REF - 2.00 d8 10.0 d8/ REF - 9.54 d8



Markers Frequency Chan. 2 Chan: 1 <u>(d8)</u> - 32.974 No. (<u>Hz )</u> 1E+07 (80) - 49.910 - 32.53 - 48.102 = 32.639 - 45.312 - 24.866 - 49.825 - 19.592 1 Z 4.955501E+08 3 9.997751E+08 - 49.025 - 19.592 - 49.053 - 17.367 1.497775E+09 4 act 1.995775E+09 - 51.091 - 15.609

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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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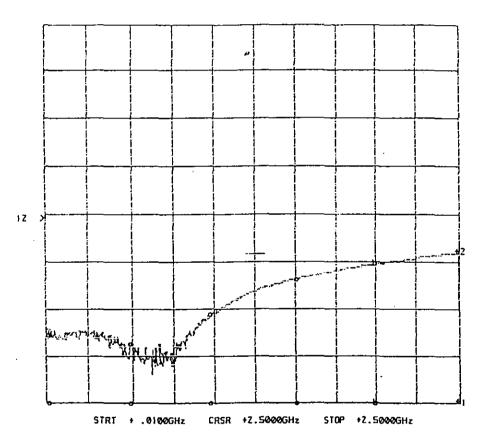
SERIAL NUMBER

#### : 8MS60475

# **OFF-ARM TERMINATION**

J6-J9

CH1: A -M - 45.11 d8 CH2: B -M - 17.40 d8 1.0 d8/ REF - 2.00 d8 10.0 d8/ REF - 9.54 d8



<u>Harkers</u>

	Frequency	Chan. I	Chan. Z
No.	<u>(Hz)</u>	<u>(d8)</u>	<u>(d8)</u>
1	1E+07	- 53.024	- 35.300
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
•		17 . I	
Cursors			
1	2.5E+09	- 47.586	- 17.395

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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

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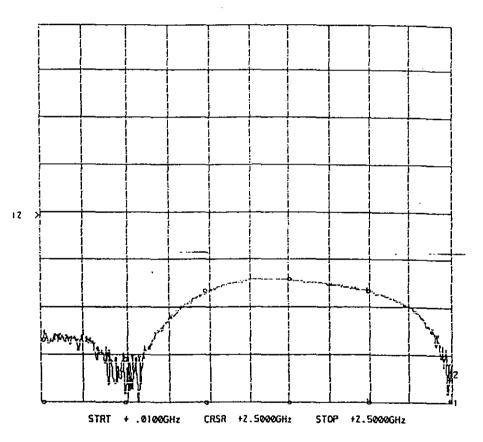
SERIAL NUMBER

#### : 8MS60475

# **OFF-ARM TERMINATION**

J7-J9

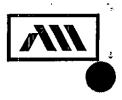
CH1: A -M	- 53.00	dЮ	CH2: B -M	-	44.97 dB
1.0 dB/ REF	- Z.00	d9	10.0 dB/ REF	-	9.54 dB



<u>Markers</u>

	- Frequency	Chan. 1	Chan. Z
No.	(Hz)	(dB)	<u>(d9)</u>
I I	1E+07	- 45.608	- 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	- ZS.025
Cursons			
1	2.5E+09	- 47.295	- 47.388





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MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

TECHNICIAN

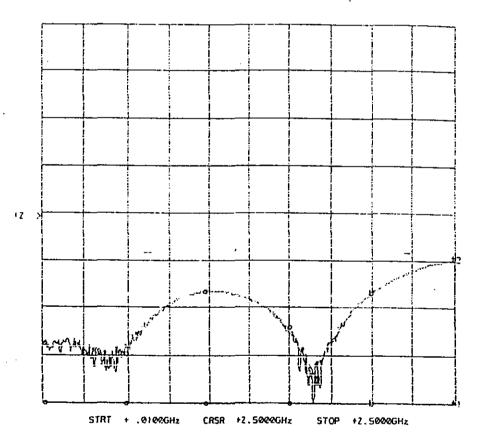
SERIAL NUMBER

#### : 8MS60475

# **OFF-ARM TERMINATION**

J8-J9

CHI: A -R - 45.31 d8 CHZ: B -M - 19.02 d8 1.0 d8/ REF - 2.00 d6 10.0 d8/ REF - 9.54 d8



Herkers

	Frequency	Chan. F	Chan. Z
No.	<u>(H:)</u>	1981	<u>(d8)</u>
I	IE+07	- 47.635	- 36.407
2	4.955501E+08	- 44.730	- 37,121
3	9.997751E+08	- 47.833	- 28.019
4	1.497775E+09	- 49.338	- 33.452
act	1.9957756+09	- 44.719	- 28.404
Cursors			
I	2.5E+09	- 47.729	- 10.999

MAY 25, 1998



MODEL NUMBER

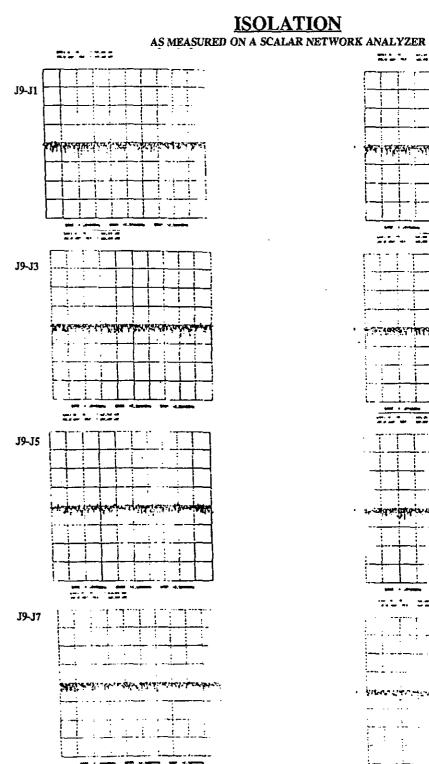
**TECHNICIAN** 

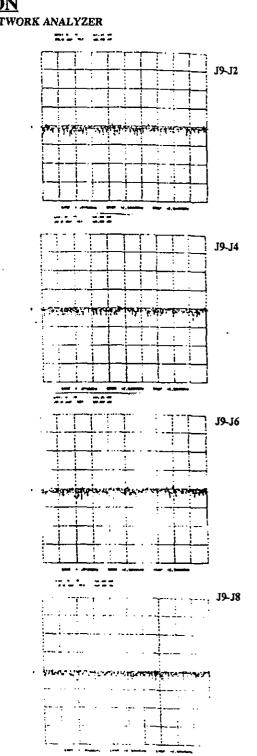
SERIAL NUMBER

: 8MS60475

: R. AFABLE

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2





MAY 25, 1998



MODEL NUMBER

: SWN-2000-8DR/DT-0012 : MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

TECHNICIAN

.

SERIAL NUMBER

: 8MS60475

# **ISOLATION**

# ISOLATION AS MEASURED ON A SPECTRUM ANALYSES

	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	<i>5</i> 79 dB		84 dB	86 dB	72 dB

# J9 (COMMON ARM) TO:

MAY 25, 1998



MODEL NUMBER

: MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2 : R. AFABLE

: SWN-2000-8DR/DT-0012

**TECHNICIAN** 

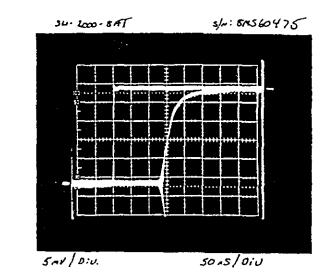
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SERIAL NUMBER

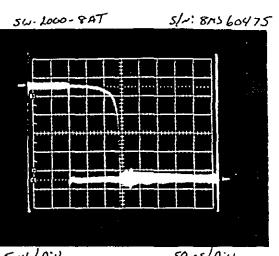
:8MS60475

# 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



"OFF" 150nS, "FALL" 20nS



5-0/0:0

50 AS/0iU

HORIZONTAL SCALE: 50nS/DIVISION

VERTICAL SCALE: 5mV/DIVISION

HORIZONTAL SCALE: 50nS/DIVISION

VERTICAL SCALE: 5mV/DIVISION

MAY 25, 1998



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# SUMMARY TEST DATA

MODEL NUMBER

TECHNICIAN

SERIAL NUMBER

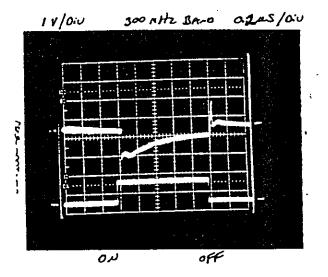
: 8MS60475

: R. AFABLE

: SWN-2000-8DR/DT-0012

: MSN-8DR/DT-05-10M2 : MSN-9DR/DT-06-10M2

# VIDEO TRANSIENTS TYPICAL FOR ALL ARMS



#### AS MEASURED IN A 300MHz BANDWIDTH

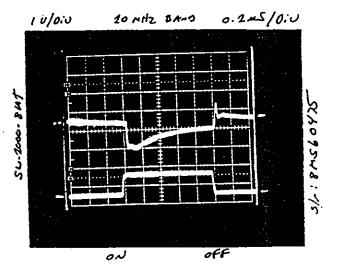
HORIZONTAL SCALE: 0.2µS/DIVISION

VERTICAL SCALE: 1.0 V/DIVISION

#### AS MEASURED IN A 20MHz BANDWIDTH

HORIZONTAL SCALE: 0.2µS/DIVISION

VERTICAL SCALE: 1.0 V/DIVISION



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

ANTER CORPORATION

E-MAIL: AMCPMI@AOL.COM

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

•	( Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre Alexandre	
• •		10 MHz TO 18 GHz
	A A A A A A A A A A A A A A A A A A A	ABSORPTIVE & REFLECTIVE
		LOW LOSS, HIGH ISOLATION
	No.	SP7T & SP8T PIN DIODE SWITCHES
		• LOW LOSS
		• ABSORPTIVE
	a fuel a start for the second second start for the	HIGH ISOLATION
	A MILE CORRECT OF CONTRACT OF	• ULTRA-BROADBAND
		AMC MODEL Nos:
· ·	SWN-1170-7DT-004	418 (RADIAL), SW-2181-8AT-00118 (RECTANGULAR)
, <b>j</b>		118(RADIAL), SWN-218-8DT-00118(RECTANGULAR)
		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 nŠ MAX., 5nS TYP.
		: "ON" : 150nS MAX., 80nS TYP.
ł	• CONTROL	: "OFF" : 50 nS MAX., 25nS TYP. : TTL Compatible (Independent Control, Standard; 3-bit Binary Decoder Available)
ł	VIDEO TRANSIENTS	: 2.0 V Peak to Peak in a 20 MHz BW (Without Video Filters)
	• RF INPUT POWER	: 3.0 V Peak to Peak in a 300 MHz BW (Without Video Filters)
	• DC POWER SUPPLY	: + 20 dBm Operating, 1 Watt Survival : + 5vdc @ 250 mA MAX:, < 200 mA TYP. (± 5vde Standard, Other Voltage Options
		: - 5rdc @ 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.
-	2.	: SW-2181-8AT (Rectangular) : 5.10" X 2.0" X 0.75" @ <7.0 oz.
, ⇒'⊧n		: 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 trz.
		PICAL FOR ABSORPTIVE OR REFLECTIVE VERSIONS
•	OTHER MULTI-THROW (	SP2T, SP3T, SP4T, SP5T, SP6T & SP7T) DESIGNS AVAILABLE
· .	WEBSITE: HTTP://WWW.AMWA	VE.COM E-MAIL: AMCPMI@AOL.COM

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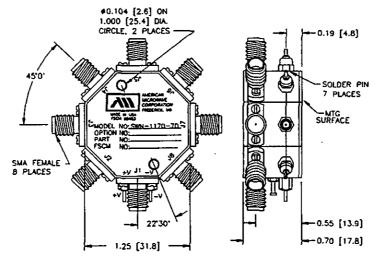
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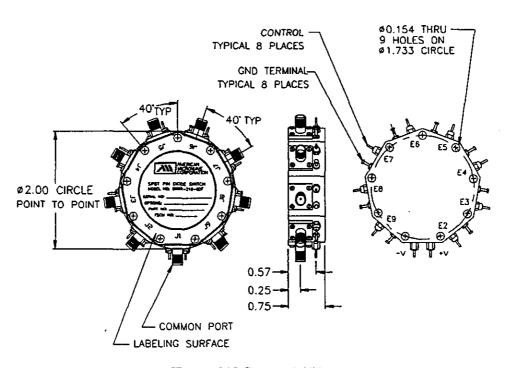
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# **MECHANICAL OUTLINES**



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

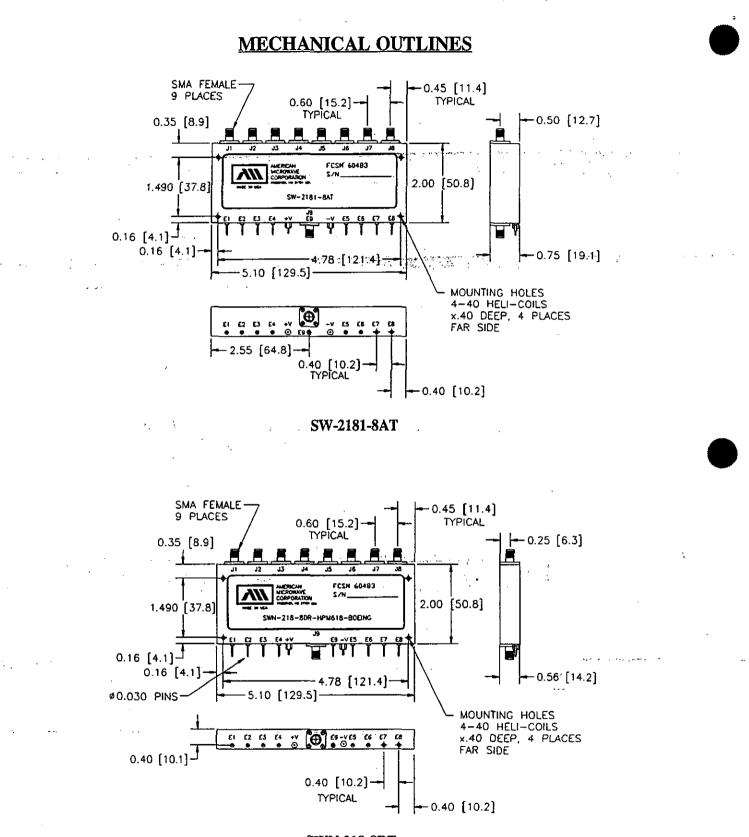
JUNE 1, 1998

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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

#### PAGE 4

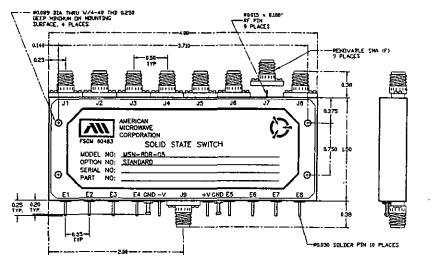
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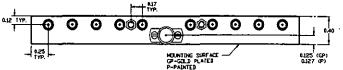
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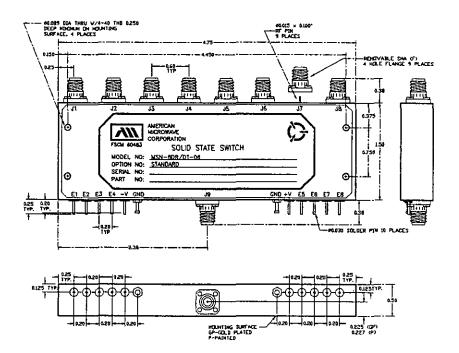


# MECHANICAL OUTLINES CONTINUED





MSN-8DR/DT-05-STANDARD



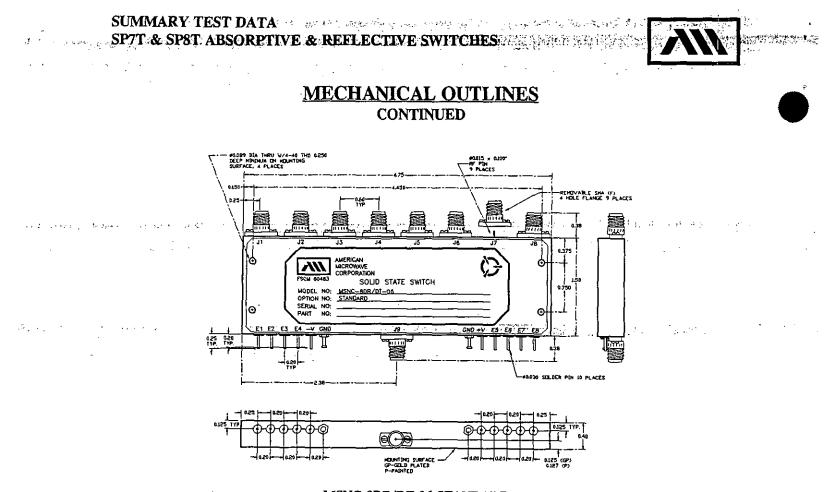
MSN-8DR/DT-06-STANDARD Tolerance: X.XX ±0.002", X.XXX ±0.005"

JUNE 1, 1998

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MSNC-8DR/DT-06-STANDARD WITH INDEPENDENT CONTROLS

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JUNE 1, 1998

PAGE 6

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# AVAILABLE OPTIONS AND HOW TO ORDER

#### EXAMPLE :

5.

6.

# $\frac{\text{SWN} - 218 - 8 \text{ D T}}{1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7} - \frac{\# \# \#}{6}$

- 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
  - : T : T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
  - : 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 Frequecy 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

SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES



# AVAILABLE OPTIONS AND HOW TO ORDER MSN SERIES OF SWITCHES

6

#### EXAMPLE :

0.00120

#### MSN - 8 DR/DT - 05 - XXXX - ###

# 1 2 3 4 5

- 1. : MSN
- : Switch Designator <u>Microwave Switch New</u>
- 2. :8
- : Number of Throws, ie: 3 (SP3T), 4 (SP4T), 5 (SP5T), 6 (SP6T), 7 (SP7T), 8 (SP8T)
- 3. : DT/DR
- /DR : D=Integral Driver, T = Terminated (Absorptive), R = Reflective (Non-Absorptive)
  - : 05 : 05=0.5" between SMA connectors center to center; 06=0.6" between SMA connectors center to center
- 4. : 05 5. : XXXX

6.

: XXXX :Available Options as Noted Below :### : 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 38 42. 1772
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 AT10 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 <sup></sup>	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

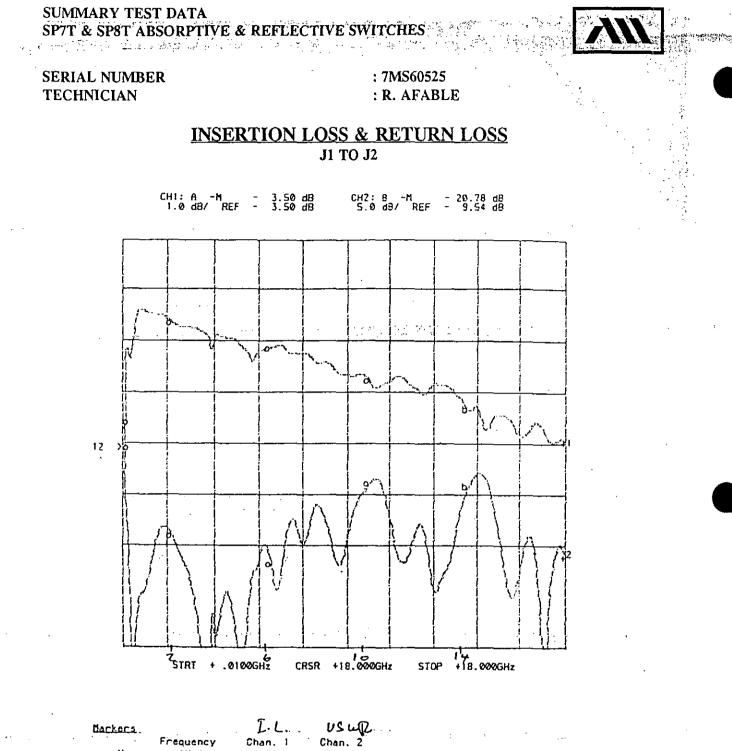
# 10 MHz TO 18 GHz OR 40 MHz TO 18 GHz

**ABSORPTIVE OR REFLECTIVE** (REFLECTIVE SWITCHES OFFER APPROXIMATELY 0.5 dB LESS INSERTION LOSS)

# SP7T OR SP8T

# **PIN DIODE SWITCHES**

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



	Frequency	Chan, 1	Chan, 2
Ne.	<u>(Hz)</u>	<u>(dB)</u>	<u>(dB)</u>
10 Mth	15+07	- 3.594	- 7.292
Z G422	1.3989E+09	- 1,091	- 18.653
6 4 3	5.991674E+09	- 1.595	- 21.333
10 4 4	9.934452E+09	- 20255	~ 13.418
14 . (t act	1.399723E+10	- Z.804	- 13.703
Cursors			
189421	1.8E+10	- 3.480	- 20.740

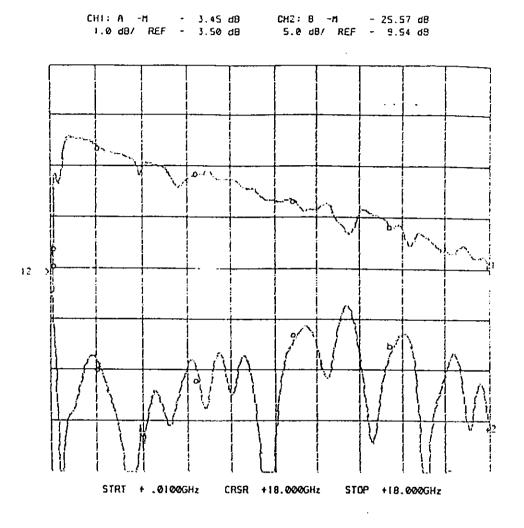
JUNE 1, 1998



SERIAL NUMBER TECHNICIAN

#### : 7MS60525 : R. AFABLE

# INSERTION LOSS & RETURN LOSS J1 TO J3



<u>ŭarkers</u>
No.

No.	<u>(Hz)</u>	_	( <u>d</u> 9 )		( <u>d8)</u>
I	1E+07	-	3.749	-	7.282
Z	1.9389E+09	-	1.295	-	19.548
3	5.391674E+09	-	1.501	-	20.592
4	9.994452E+09	-	2.155	-	15.170
act	1.399723E+10	-	2.529	-	17.098
Cursors					
1	1.8E+10	-	3.409	-	25.453

Chan. | Chan. 2

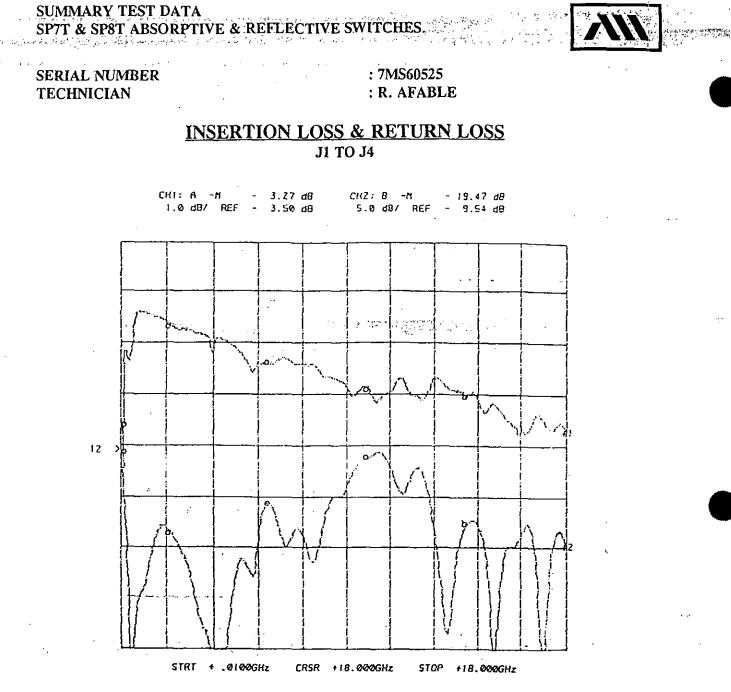
Frequency

JUNE 1, 1998

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••••••••	Backers			
		Frequency	Chan, 1	Chan. 2
	No.	(Hz)	<u>(dB)</u>	<u>(dB)</u>
	1	1E+07	- 3.595	- 7.397
	2	1.3889E+Ø9	~ J.)34	- 18,136
4	3	5.991674E+09	- 1.838	15.120
	4	9.994452E+09	- 2.36S	- 10.605
	act	1.399723E+10	- 2.496	- 17.027
	Cursons			
	1	1.8E+10	- 3.238	- 19.510

JUNE 1, 1998

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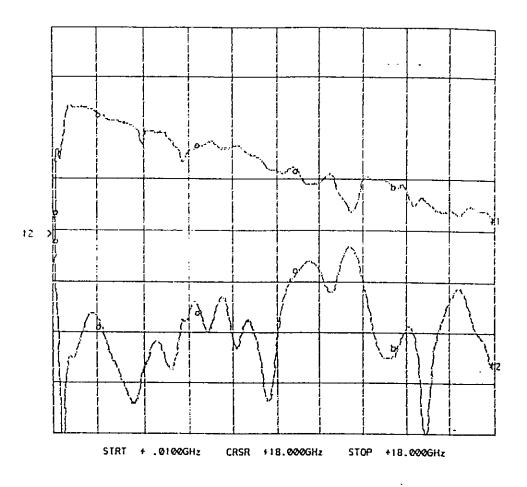
SERIAL NUMBER TECHNICIAN

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#### : 7MS60525 : R. AFABLE

# INSERTION LOSS & RETURN LOSS J1 TO J5

CHI: A -M - 3.30 dB CH2: B -M - 22.68 dB I.0 dB/ REF - 3.50 dB 5.0 dB/ REF - 9.54 dB



#### <u>darkers</u>

	Frequency	Chan. 1	Chan. 2
No.	<u>(Hz)</u>	<u>(dB)</u>	<u>(dB)</u>
1	18+07	- 3.793	- 7.545
2	1.9889E+09	- 1.244	- 19.164
3	5.991674E+09	- 1,799	- 17.603
4	J.994452E+09	- 2.332	- 13.418
act	1.399723E+10	- 1.645	- 21,191
Cursors			
1	1.8E+10	- 3.315	- 22.770

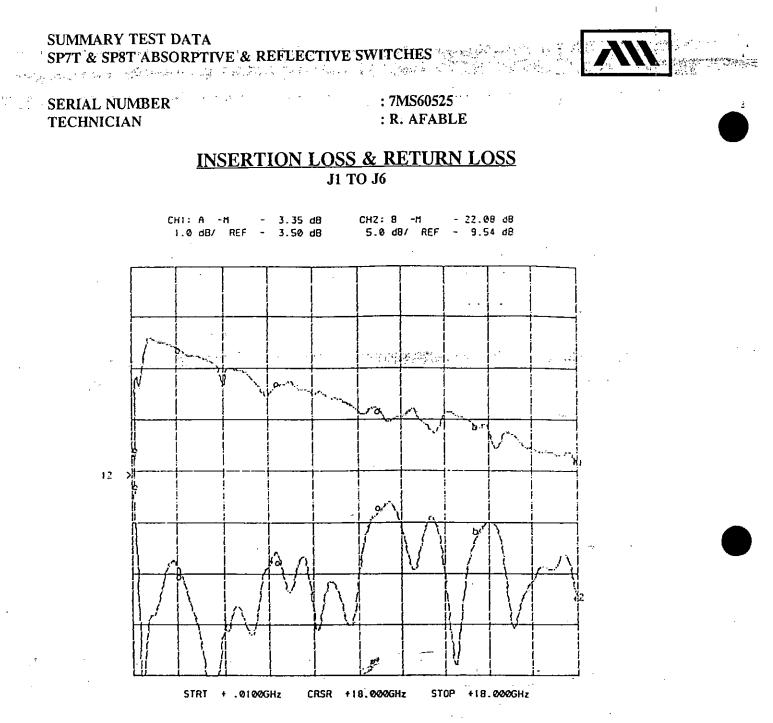
JUNE 1, 1998

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Markers. Chan. 1 Chan, Z Frequency (86) <u>(Hz)</u> (86) No. Ł IE+07 - 3.799 7.402 2 1.9889E+09 - 1.134 - 19.790 5.991674E+09 - 1.788 3 - 18.415 4 9.994452E+03 - 2.316 act 1.399723E+10 - 2.623 -13.126% - 15.373

<u>Cursors</u>

<u>ors</u> 1 1.8E+10 - 3.332 - 22.059

JUNE 1, 1998

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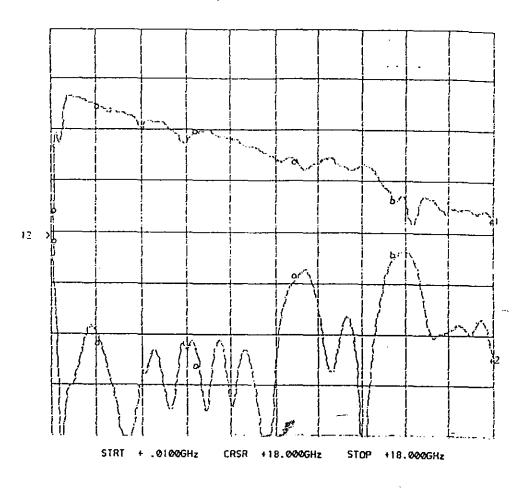
SERIAL NUMBER **TECHNICIAN** 

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## : 7MS60525 : R. AFABLE

# **INSERTION LOSS & RETURN LOSS** J1 TO J7

CH1: A ~M ~ 3.28 d8 I.0 dB/ REF ~ 3.50 dB CH2: 8 -M CHZ: 8 -M - 22.08 dB 5.0 dB/ REF - 9.54 dB CHI: A ~M



<u>tiankens</u>

	-		
	Frequency	Chan. I	Chan. 2
No.	<u>(Hz)</u>	<u>(dB)</u>	<u>(d8)</u>
1	1E+07	- 3.617	7.375
2	1.98896+09	- 1.014	- 20.444
3	S.991674E+09	- I.SO3	22.553
4	9.994452E+09	- 2.085	13.731
act	1.399723E+10	- 2.843	11.627
Sursors			
ł	1.8E+10	- 3.250	- 22.037

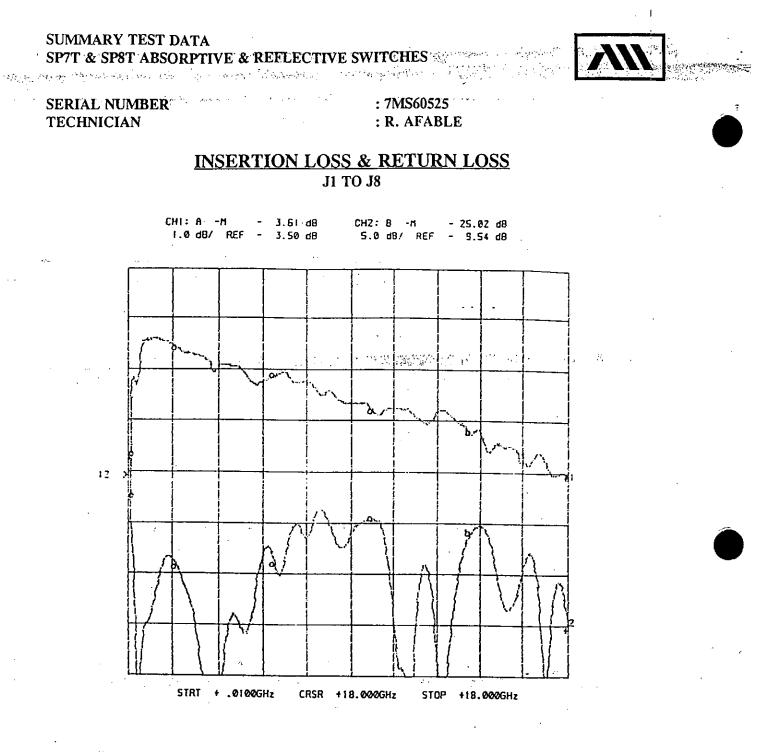


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Markers

	rrequency"	Chan. 1	Chan. Z
- <u>No.</u>	<u>(Hz)</u>	<u>(dB)</u>	( <u>dB</u> )
I	FE+07	- 3.996	- 7.622
2	1.9889£+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>			
1	1 00110		

1 1.0E+10 - 3.505 - 25.036

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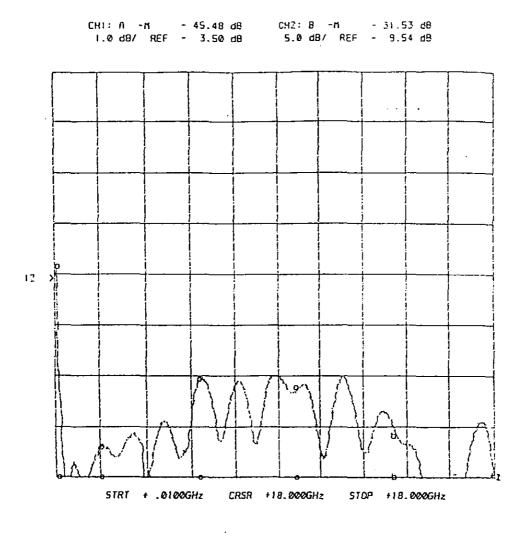
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SERIAL NUMBER TECHNICIAN

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#### : 7MS60525 : R. AFABLE

# OFF-ARM TERMINATION J1-J2



<u>Harkers</u>

	Frequency	Chan. I	Chan, 2
No.	<u>(Hz)</u>	<u>(dB)</u>	<u>(dB)</u>
t	12+07	- 43.169	- 7.853
2	1.9889E+09	- 45.273	- 26.525
3	5.991674E+09	- 44.158	- 19.691
4	9.9944526+09	- 48.481	- 20.608
act	1.3997236+10	- 43.499	- 25.382
Cursons			
1	1.8E+10	- 45.240	- 31.815

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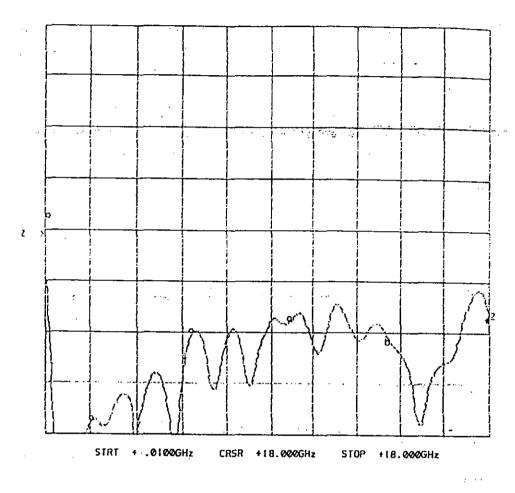
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# : R. AFABLE

# **OFF-ARM TERMINATION** J1-J3

CHZ: 8 -M - 18.25 d8 5.0 dB/ REF - 9.54 dB



•	Uarkers	Frequency	Chan. 2.			
	<u>No.</u> 1 2 3 4	(Hz) 1E+07 1.9889E+09 5.99:674E+09 9.994452E+09	<u>(dB)</u> - 7.885 - 28.01 <i>3</i> - 19.268 - 18.103			in the second as
· ,	G <u>ursors</u> 1	1.393723E+10	- 20.460 - ***	,	• •	

1 1.86+10

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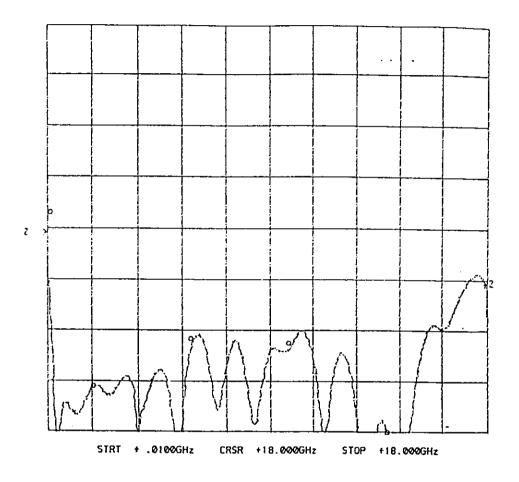
SERIAL NUMBER TECHNICIAN

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#### : 7MS60525 : R. AFABLE

# OFF-ARM TERMINATION J1-J4

CHZ: 8 -M - 14.95 d8 5.0 d8/ REF - 9.54 d8



Hackers

	Frequency	Chan, 2
No.	<u>(Hz)</u>	<u>(d8)</u>
ŧ	1E+07	- 8.226
2	1.9889E+09	- 24.954
3	5.991674E+09	- Z0.257
4	9.994452E+09	- 20.751
act	1.399723E+10	- 31.595
005005		

Cursons t 1.86+10 - 14.967

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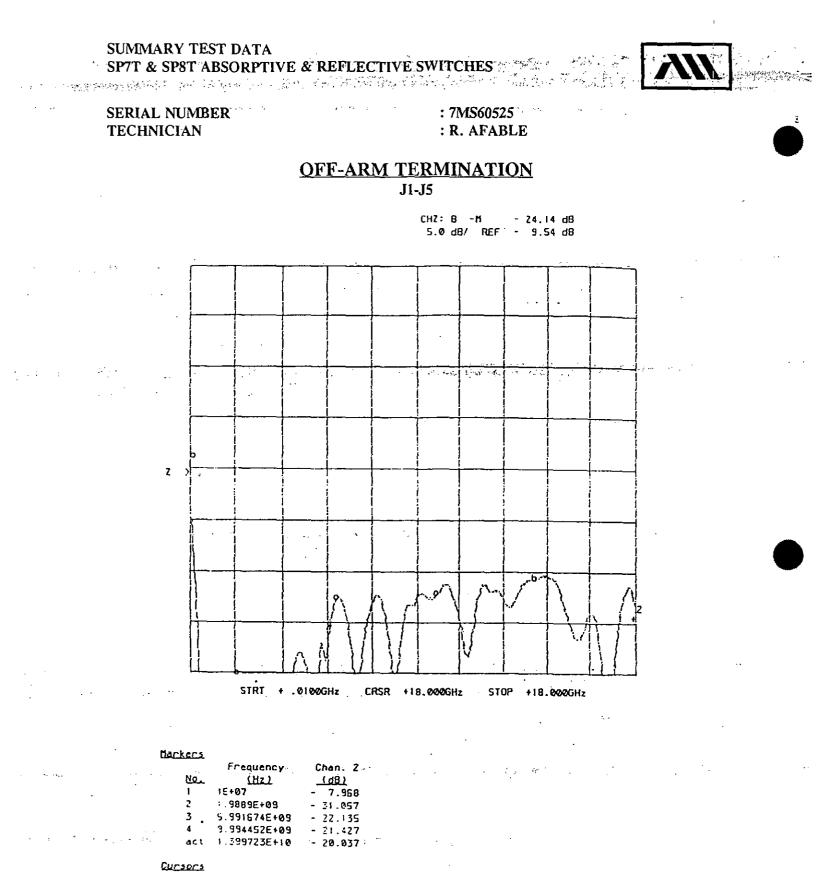
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1.8E+10

- 24.135

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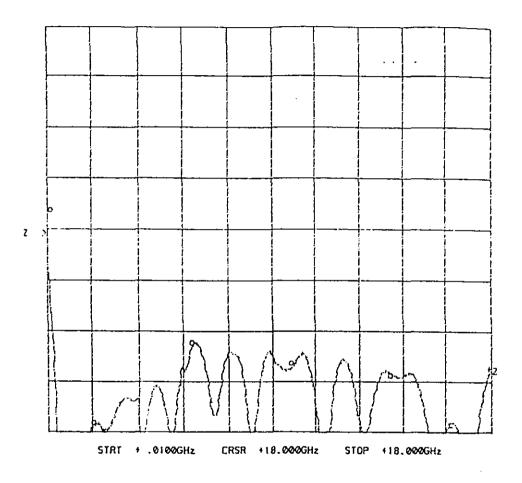
SERIAL NUMBER TECHNICIAN

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#### : 7MS60525 : R. AFABLE

# OFF-ARM TERMINATION J1-J6

CHZ: 8 -M - 23.38 d8 5.0 d8/ REF - 9.54 d8



<u>ilarkers</u>

	Frequency	Chan. 2
No.	(Hz)	<u>(dB)</u>
1	12+07	- 7.292
2	1.98896+09	- 28.738
3	5.991674E+03	- 20.514
4	9.994452E+03	- 22.509
act	1.399723E+10	- 23.82 <b>2</b>
Cursons		
1	1.8E+10	- 23.349

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SP7T & SP8T ABSORPTIVE & REFLECTIVE SWITCHES

n - Bergerer og aværer er æn men her i selfende Britikærer mæk konstruktioner i som britisker i som britisker i



# SERIAL NUMBER TECHNICIAN

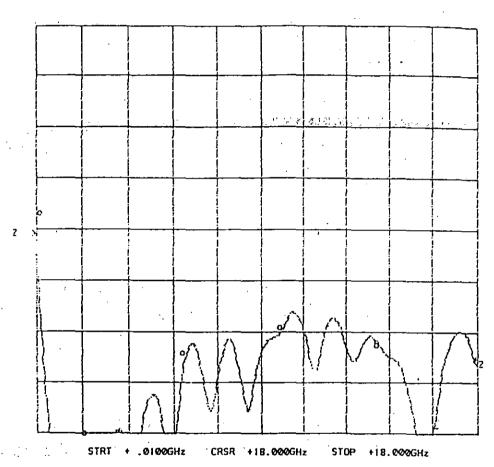
## : 7MS60525 : R. AFABLE



# J1-J7

CHZ: B -M - 22.29 dB 5.0 dB/ REF - 9.54 dB

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#### Markers

	Frequency	- Chan 2 .
No.	<u>(Hz)</u>	<u>(d8)</u>
1	1E+07	- 7.545
Z	1.9889E+09	- 34.040
3	5.991674E+09	- 21.663
4	'9.994452E+09	- 18.995
act	1.399723E+10	- 20.878
Cursors		
1	1.8E+10	- 22.273

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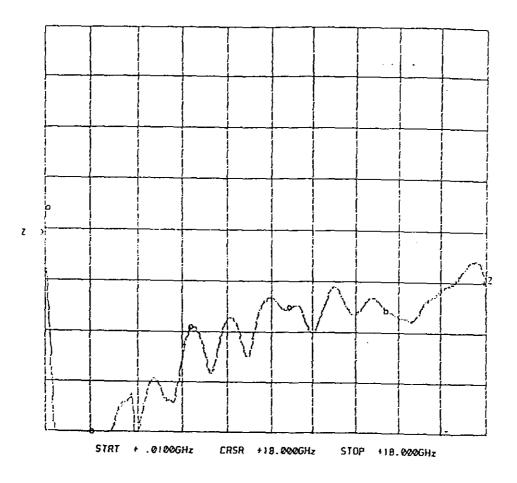
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# OFF-ARM TERMINATION J1-J8

CH2: B -M - 14.51 dB 5.0 dB/ REF - 9.54 dB



<u>Narkers</u>

	Frequency	Chan. Z
10.	<u>(Hz)</u>	<u>(d8)</u>
1	1E+07	- 7.298
Z	1.9889E+09	- 30.277
3	5.991674E+09	- 19.048
4	9.994452E+09	- 18.972
act	1.399723E+10	- 17.433
Cursors		
1	1.8E+10	- 14.527

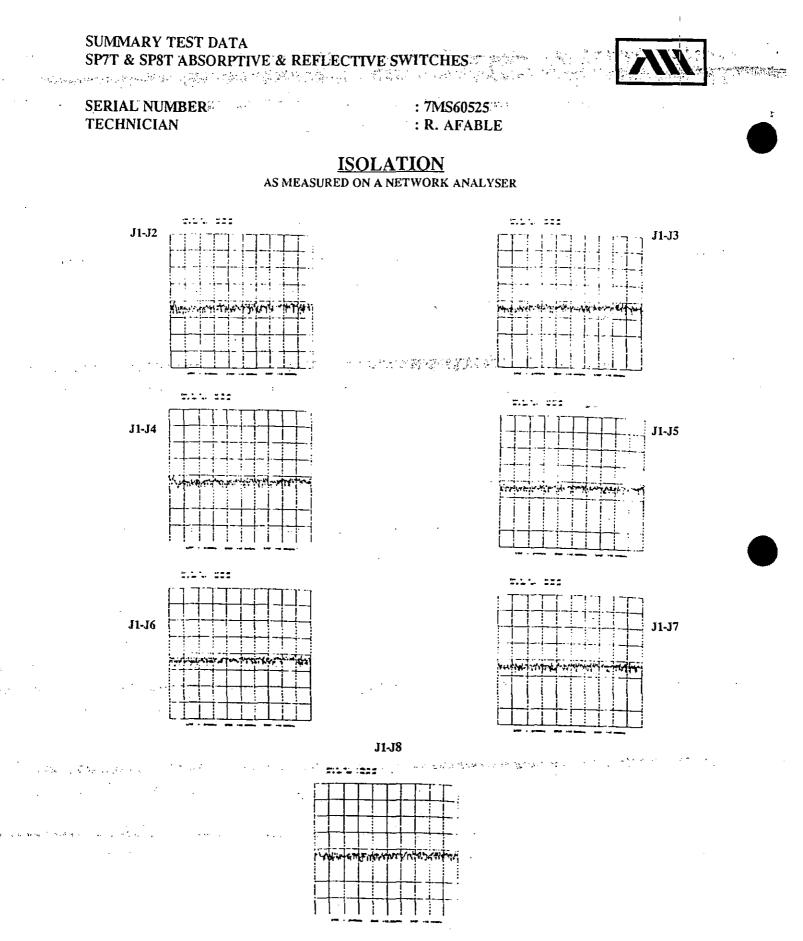
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# ISOLATION AS MEASURED ON A SPECTRUM ANALYSES

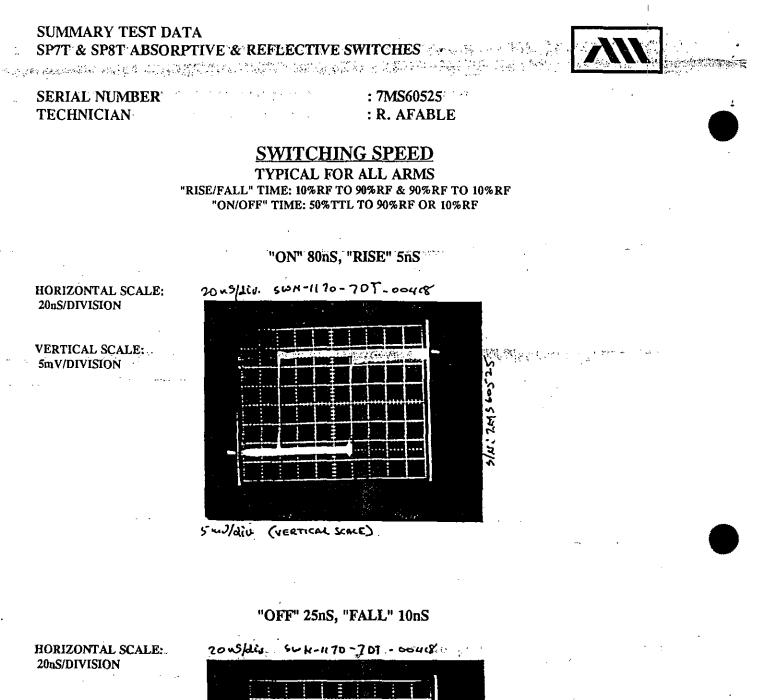
	J2	J3	J4	J5	J6	J7	J8
20 MHz	78 dB	71 dB	98 dB	98 dB	96 dB	98 dB	82 dB
50 MHz	68 dB	68 dB	83 dB	78 dB	87 dB	98 dB	74 dB
500 MHz	64 dB	63 dB	66 dB	66 dB	76 dB	78 dB	66 dB
2.0 GHz	91 dB	94 dB	98 dB	98 dB	98 dB	98 dB	94 dB
4.0 GHz	92 dB	92 dB	94 dB	94 dB	94 dB	92 dB	90 dB
6.0 GHz	80 dB	88 dB	90 dB	95 dB	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

# J1 (COMMON ARM) TO:





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VERTICAL SCALE: 5mV/DIVISION

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Smillin (vertical scale)

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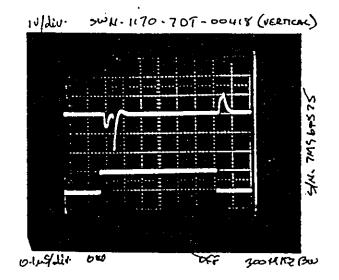


#### SERIAL NUMBER **TECHNICIAN**

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:7MS60525 : R. AFABLE

VIDEO TRANSIENTS TYPICAL FOR ALL ARMS



AS MEASURED IN A 300MHz BANDWIDTH

HORIZONTAL SCALE: 0.1µS/DIVISION

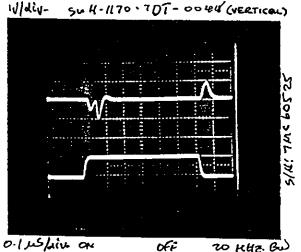
VERTICAL SCALE: 1.0 V/DIVISION

#### AS MEASURED IN A 20MHz BANDWIDTH

HORIZONTAL SCALE: 0.1µS/DIVISION

VERTICAL SCALE: 1.0 V/DIVISION

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20 KHZ. Bu

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