



**AMERICAN MICROWAVE  
CORPORATION**

**TEST DATA**

**ON**

**500 MHz TO 18 GHz  
(10 MHz TO 18 GHz OPTIONAL)**

**65 MHz TO 2 GHz**

**AND**

**FROM 9 GHz TO 10 GHz**

**HIGH POWER (2 WATTS)**

**HIGH ISOLATION**

**LOW INSERTION LOSS**

**NON-REFLECTIVE/ABSORPTIVE**

**SP2T**

**SOLID STATE SWITCH**

**AMC MODEL No:  
SWN-218-2DT OPTION 0518, HPR2W  
(Serial Number: 2MS910753)**

**REPORTED AND PREPARED  
BY  
RENE AFABLE**

**NOVEMBER 15, 1999**

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

**E-MAIL ADDRESS: [AMCPMI@AOL.COM](mailto:AMCPMI@AOL.COM)**

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



**AMERICAN MICROWAVE  
CORPORATION**

## SP2T NON-REFLECTIVE/ABSORPTIVE SOLID STATE PIN DIODE SWITCH

### KEY FEATURES

- 500 MHz TO 18 GHz  
(10MHz to 18GHz optional)
- HIGH POWER (2 WATTS)
- HIGH ISOLATION
- LOW INSERTION LOSS
- TTL LOGIC COMPATIBLE



**AMC MODEL No: SWN-218-2DT OPTION 0518, HPR2W**

### SPECIFICATIONS: (NON-REFLECTIVE)

• FREQUENCY RANGE	:	500 MHz to 18 GHz (10MHz to 18GHz Optional)
• INSERTION LOSS	:	3.0 dB MAX.
	:	0.85 dB TYP. @ 500 MHz
	:	0.75 dB TYP. @ 2 GHz
	:	1.25 dB TYP. @ 10 GHz
	:	3.00 dB TYP. @ 18 GHz
• ISOLATION	:	≥ 80 dB MIN.
	:	≥ 95 dB TYP. @ 500 MHz
	:	≥ 95 dB TYP. @ 2 GHz
	:	≥ 90 dB TYP. @ 10 GHz
	:	≥ 80 dB TYP. @ 18 GHz
• VSWR	:	2.0:1
• SWITCHING SPEED	:	"RISE" 15nS MAX., 10nS TYP.
	:	"FALL" 15nS MAX., 10nS TYP.
	:	"ON" 100nS MAX., 75nS TYP.
	:	"OFF" 100nS MAX., 75nS TYP.
• CONTROL	:	Single control TTL Toggle (Independent control available)
• VIDEO TRANSIENTS	:	≤4.3 V Peak to Peak, 300 MHZ Bandwidth
	:	≤1.7 V Peak to Peak, 20 MHZ Bandwidth
• RF INPUT POWER	:	+20dBm Operating, 1 Watt Survival (Other power Levels available)
• DC POWER SUPPLY	:	+5vdc @ +100mA MAX.
(Other supply voltages available)	:	-12vdc @ -100mA MAX.
• SIZE	:	1.2"(L) X 1.0"(W) X 0.5"(H)
• WEIGHT	:	≤ 1.2 oz.

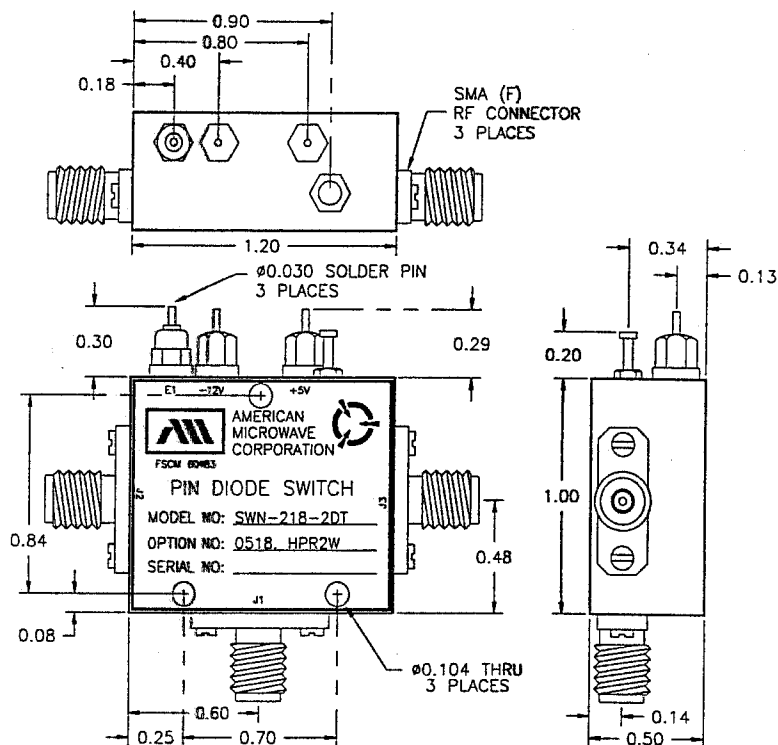
**NOVEMBER 15, 1999**

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## SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-2DT OPTION 0518, HPR2W
SERIAL NUMBER	: 2MS910753
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc: @+69.1mA; -12vdc: @ -62.5mA



ALL DIMENSIONS ARE IN INCHES

TOLERANCES:

X.XX	±0.020
X.XXX	±0.010

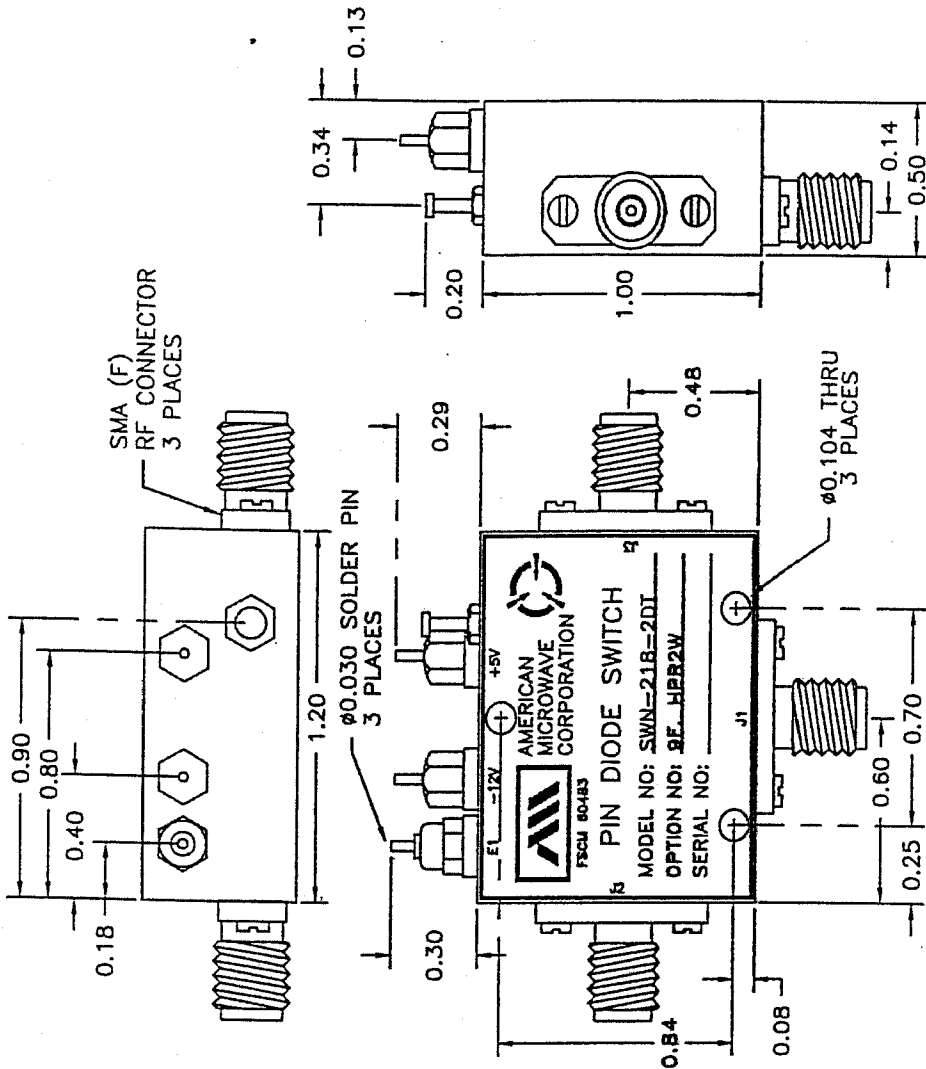
### ENVIRONMENTAL RATINGS:

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

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

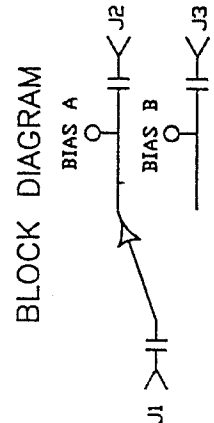
NOVEMBER 15, 1999

**DESCRIPTION:** SWN-218-2DT OPTION 9F, HPR2W IS A SINGLE POLE TWO THROW, HIGH POWER (2 WATT) NON-REFLECTIVE/ABSORPTIVE SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR 9.5 TO 10.0 GHz OPERATION.



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

- SPECIFICATIONS:**
- FREQUENCY: 9.5 GHz TO 10 GHz
  - INSERTION LOSS: 2.0 dB MAX., 1.5 dB TYPICAL
  - ISOLATION: 70 dB MIN., 80 dB TYPICAL
  - VSWR (ALL PORTS): 2.0:1
  - SWITCHING SPEED: 100 ns MAX., 60 ns TYPICAL (50% TTL TO 90% RF)
  - RF POWER: 2 WATTS MIN., 3 WATTS TYPICAL (90% RF TO 10% TTL)
  - CONTROL: TTL SINGLE ENDED 1 BIT
  - POWER SUPPLY: +5 VDC @ 100 mA MAXIMUM, -12 VDC @ 100 mA MAXIMUM
  - CONNECTORS (RF): SMA FEMALE, 3 PLACES
  - CONNECTORS (POWER): SOLDER PINS
  - CONNECTORS (CONTROL): SOLDER PINS
  - LOGIC "0": J1 TO J2
  - LOGIC "1": J1 TO J3
  - SIZE: 1.20" (L) x 1.00" (W) x 0.50" (H)
  - WEIGHT: 1.5 OUNCE TYPICAL



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

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
TITLE PRODUCT FEATURE SWN-218-2DT OPTIONS 9F, HPR2W		DATE 11/15/99	
DRAWN WSP, R.R.A.	CHECKED WSP	SIZE A	PART NO. 100-4427-10
APPROVALS WSP R.R.A.	DATE 11/15/99	SCALE N/S	SHEET 1 OF 3

**DESCRIPTION:** SWN-2DR/DT-STANDARD IS A SINGLE POLE TWO THROW, REFLECTIVE OR ABSORPTIVE/NON-REFLECTIVE SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- REFLECTIVE: 2.5db
- ABSORPTIVE: 3.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 50db
- 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
- ABSORPTIVE IN/OUT: 2.0:1
- ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.
- FALL: 10ns TYPICAL, 15ns MAX.
- DELAY ON: 75ns TYPICAL, 100ns MAX.
- DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.
- -5V @ 75mA MAX.(REFLECTIVE)
- 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)
- CONNECTORS: SMA FEMALE
- RF CONTROL: SOLDER PIN
- SIZE: 1.20" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.5 OUNCE TYPICAL

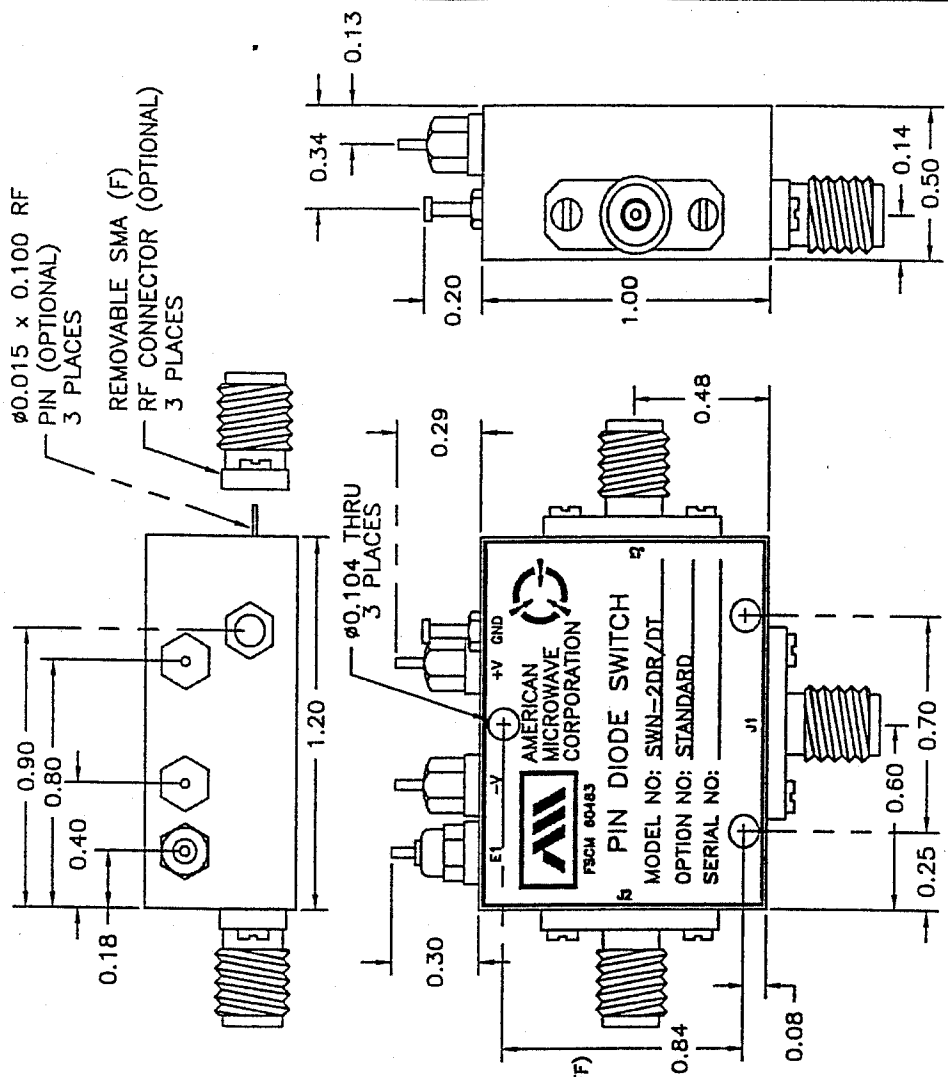
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 61B 5 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
- B06 HIGH POWER - SPECIFY CW POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



**NOTE:**

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

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

APPROVALS		DATE	TITLE	
DRAWN	WSP, JSA	1/29/99	AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
CHECKED	WY	7/21/99	OUTLINE DRAWING	
REVISED	PA	7/29/99	SWN-2DR/DT-STANDARD. SOLID STATE SWITCH	
SIZE	FORM NO. A	DWG NO. 60483	SCALE	N/S
			SHEET	1 OF 2

**DESCRIPTION:** SWN-2DR/DT-IND-SP IS A SINGLE POLE TWO THROW, REFLECTIVE OR ABSORPTIVE/NON-REFLECTIVE SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.5db, ABSORPTIVE: 3.5db
- ISOLATION: 0.5 GHz TO 2 GHz: 60db, 2 GHz TO 18 GHz: 70db
- VSWR: REFLECTIVE IN/OUT: 2.0:1, ABSORPTIVE IN/OUT: 2.0:1, ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX, FALL: 10ns TYPICAL, 15ns MAX, DELAY ON: 75ns TYPICAL, 100ns MAX, DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX, -5V @ 75mA MAX.(REFLECTIVE) 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)
- CONNECTORS: SMA FEMALE CONTROL, SOLDER PIN
- SIZE: 1.20" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.5 OUNCE TYPICAL

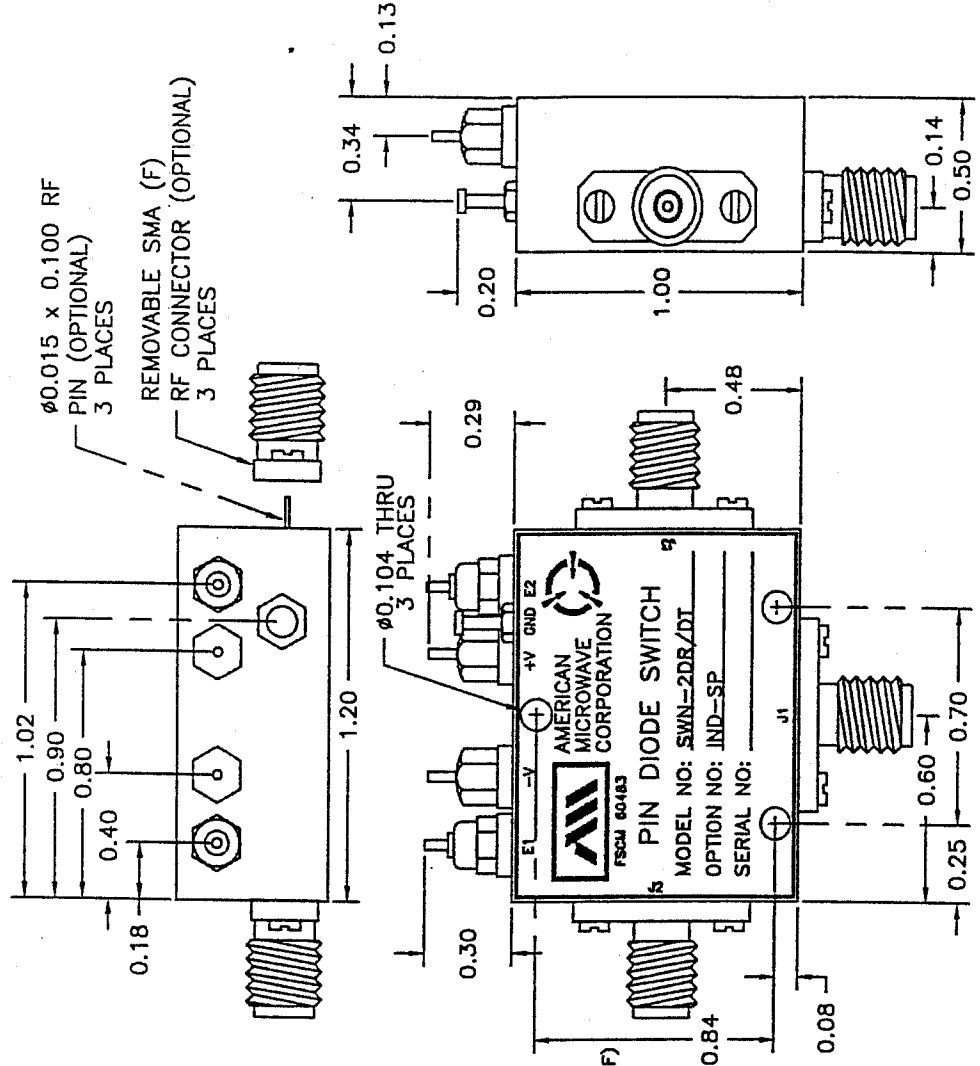
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP: INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
  - 10M1B: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
  - 100M1B: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
  - 21B: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 11B: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 412: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
  - 618: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 1218: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
  - 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - B01: -12V POWER SUPPLIES
  - B02: -15V POWER SUPPLIES
  - B03: REVERSE LOGIC "1" ON "0" OFF
  - B04: DRIVERLESS, CURRENT CONTROLLED,
  - B05: HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
  - B06: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
  - B07: CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
  - B08: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
  - B09: LOW INSERTION LOSS VERSION
  - B10: HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



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

APPROVALS		DATE	TITLE
DRAWN	WSP, JRL	1/29/99	OUTLINE DRAWING
CHECKED	[Signature]	2/29/99	SWN-2DR/DT-IND-SP
ISSUED	[Signature]	7/29/99	SOLID STATE SWITCH
SIZE	FSCM NO. A	DRW NO. 60483	REV. 100-4427-2
SCALE	N/S	SHEET 1 of 2	

AMERICAN MICROWAVE CORPORATION  
FREDERICK, MARYLAND

**DESCRIPTION**  
 AMC MODEL SWN-2DR/DT-AKG-STANDARD IS A SINGLE POLE TWO THROW, REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SWITCH MODULE WITH VERY HIGH ISOLATION, LOW LOSS, HIGH SPEED AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0dB  
 ABSORPTIVE: 4.5dB
- ISOLATION: 0.5 GHz TO 6 GHz: 110dB  
 6 GHz TO 18 GHz: 100dB
- VSWR: REFLECTIVE IN/OUT: 2.0:1  
 ABSORPTIVE IN/OUT: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.  
 FALL: 10ns TYPICAL, 15ns MAX.  
 DELAY: 10ns TYPICAL, 100ns MAX.  
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.  
 -5V @ 75mA MAX.(REFLECTIVE)  
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)
- SIZE: 1.2" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.2 oz.

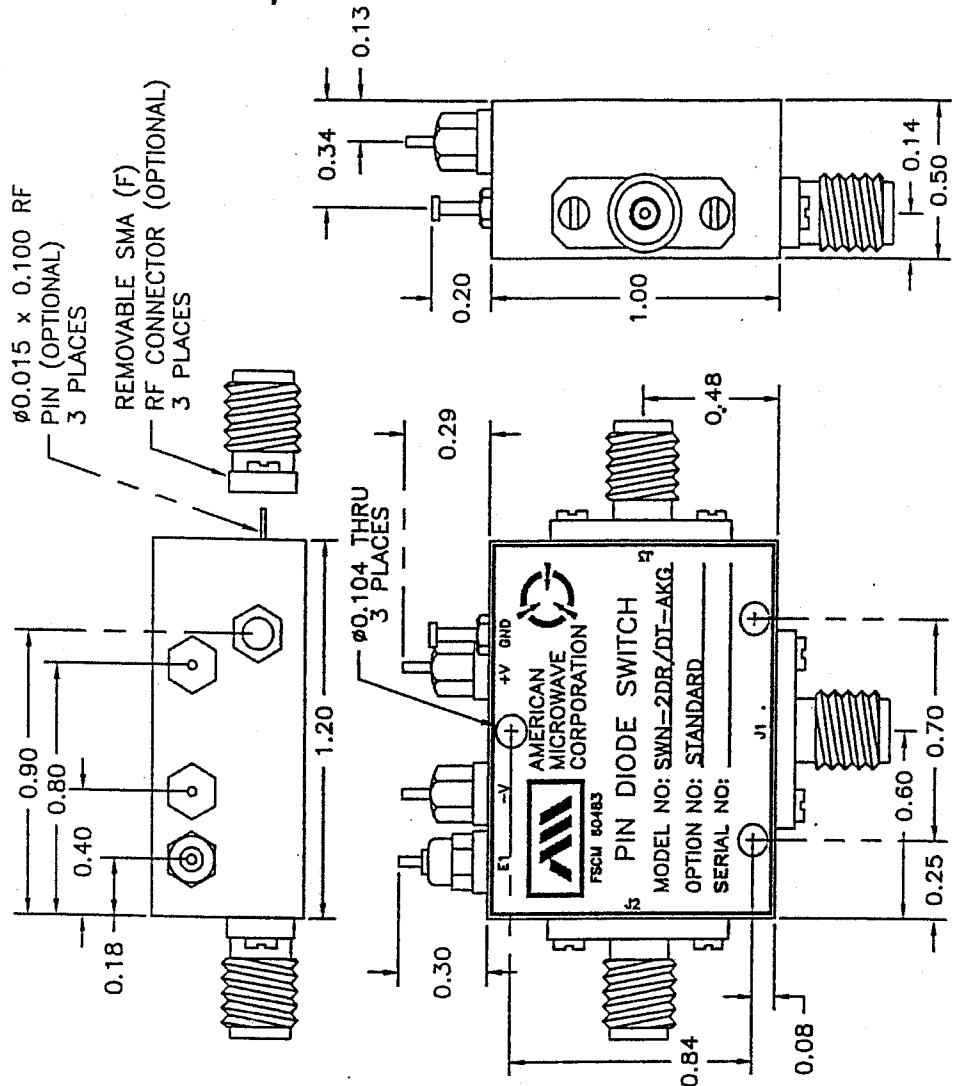
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP: INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
  - 10M1B: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
  - 100M1B: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
  - 11B: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 21B: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 412: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
  - 618: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 1218: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
  - 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - B01: -12V POWER SUPPLIES
  - B02: -15V POWER SUPPLIES
  - B03: REVERSE LOGIC "1" = ON "0" = OFF
  - B04: DRIVERLESS, CURRENT CONTROLLED
  - B05: HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
  - B06: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
  - B07: CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
  - B08: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
  - B09: LOW INSERTION LOSS VERSION
  - B10: HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



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

APPROVALS	DATE	TITLE
WSP, RPA	1/27/99	AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND
CHECKED	WIP 7/29/99	OUTLINE DRAWING
ISSUED	PA 7/27/99	SWN-2DR/DT-AKG-STANDARD
		SOLID STATE SWITCH
SIZE	FSCM NO.	DWG NO.
A	60483	100-4790-1
SCALE	N/S	SHEET
		1 of 2

**DESCRIPTION:**  
 ZDR/DT-AKG-IND-SP IS A SINGLE POLE TWO THROW, REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SWITCH MODULE WITH VERY HIGH ISOLATION, LOW LOSS, HIGH SPEED AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 4.0db  
 ABSORPTIVE: 4.5db
- ISOLATION: 0.5 GHz TO 6 GHz: 110db  
 6 GHz TO 18 GHz: 100db
- VSWR: REFLECTIVE IN/OUT: 2.0:1  
 ABSORPTIVE IN/OUT: 2.0:1  
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 10ns TYPICAL, 15ns MAX.  
 FALL: 10ns TYPICAL, 15ns MAX.  
 DELAY ON: 75ns TYPICAL, 100ns MAX.  
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.  
 -5V @ 75mA MAX.(REFLECTIVE)  
 100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)
- SIZE: 1.2" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.2 oz.

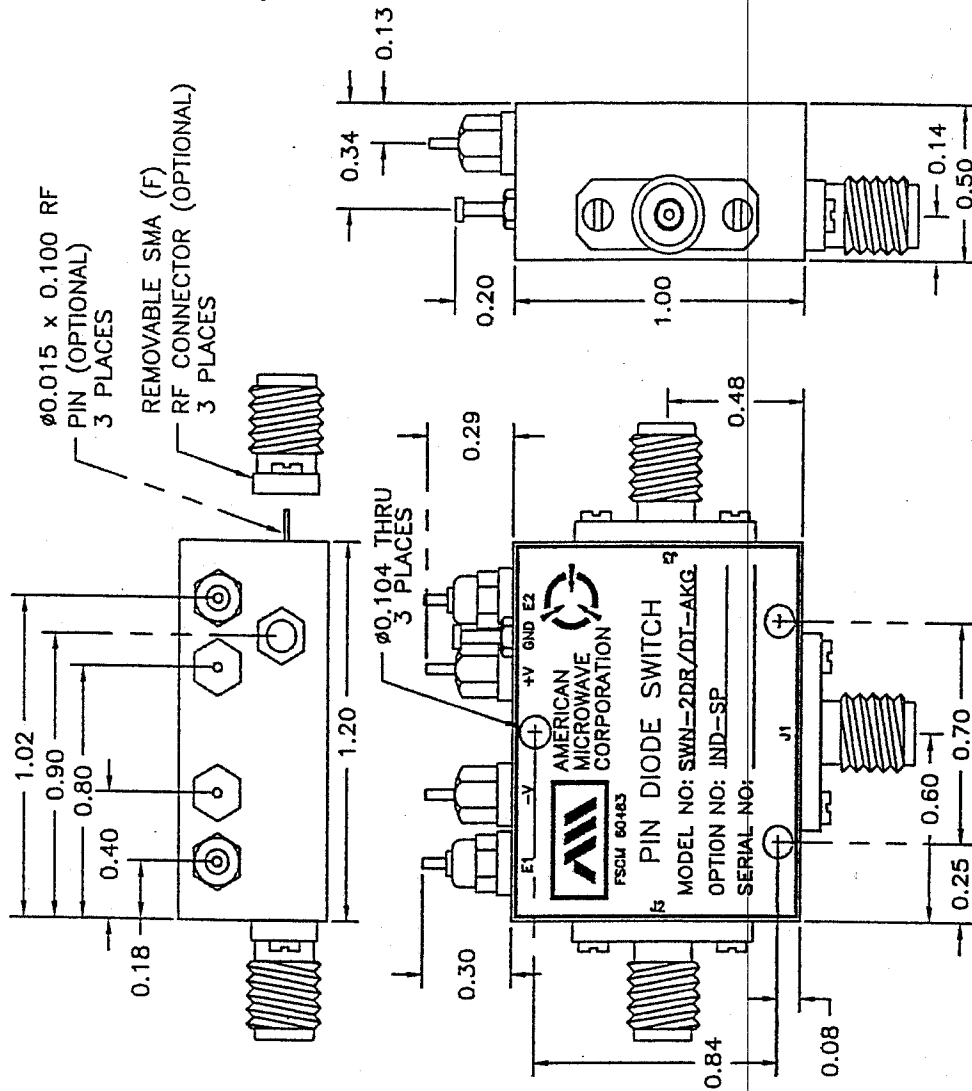
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP: INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
  - 10M1B: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
  - 100M1B: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
  - 11B: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 21B: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 61B: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
  - 121B: 12 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 18 GHz AND 1.0db AT 20 GHz)
  - 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 18 GHz AND 1.0db AT 20 GHz)
  - 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
  - B01: -12V POWER SUPPLIES
  - B02: -15V POWER SUPPLIES
  - B03: REVERSE LOGIC "1" = ON "0" = OFF
  - B04: DRIVERLESS CURRENT CONTROLLED
  - B05: HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION #5
  - B08: HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
  - B07: CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
  - B09: LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
  - B08: LOW INSERTION LOSS VERSION
  - B10: HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

- TEMPERATURE: -55°C TO +95°C (OPERATING)  
 -85°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
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NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



NOTE:

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

APPROVALS		DATE	TITLE
DESIGN	WSP, RPL	1/21/99	OUTLINE DRAWING
CHECKED	WSP	7/29/99	SWN-2DR/DT-AKG-IND-SP
ISSUED	CA	7/29/99	SOLID STATE SWITCH
SIZE	FSCM NO. A	DWG NO. 100-4790-2	REV.
SCALE	N/S	SHEET	1 of 2

AMERICAN MICROWAVE CORPORATION  
 FREDERICK, MARYLAND



**DESCRIPTION:** SWN-218-2DR/DT-SIS IS A SINGLE SUPPLY, SINGLE POLE TWO THROW, REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SWITCH MODULE WITH VERY LOW INSERTION LOSS AND INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.5db  
ABSORPTIVE: 3.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 55db  
2 GHz TO 12 GHz: 45db  
12 GHz TO 18 GHz: 25db
- VSWR: REFLECTIVE IN/OUT: 2.0:1  
ABSORPTIVE IN/OUT: 2.0:1  
ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 15ns TYPICAL, 20ns MAX.  
FALL: 15ns TYPICAL, 20ns MAX.  
DELAY ON: 75ns TYPICAL, 100ns MAX.  
DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 USEC
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.
- CONNECTORS: SMA FEMALE  
SOLDER PIN  
(L) 1.2" X (W) 1.0" X (H) 0.5"
- WEIGHT: 1.5 OUNCE TYPICAL

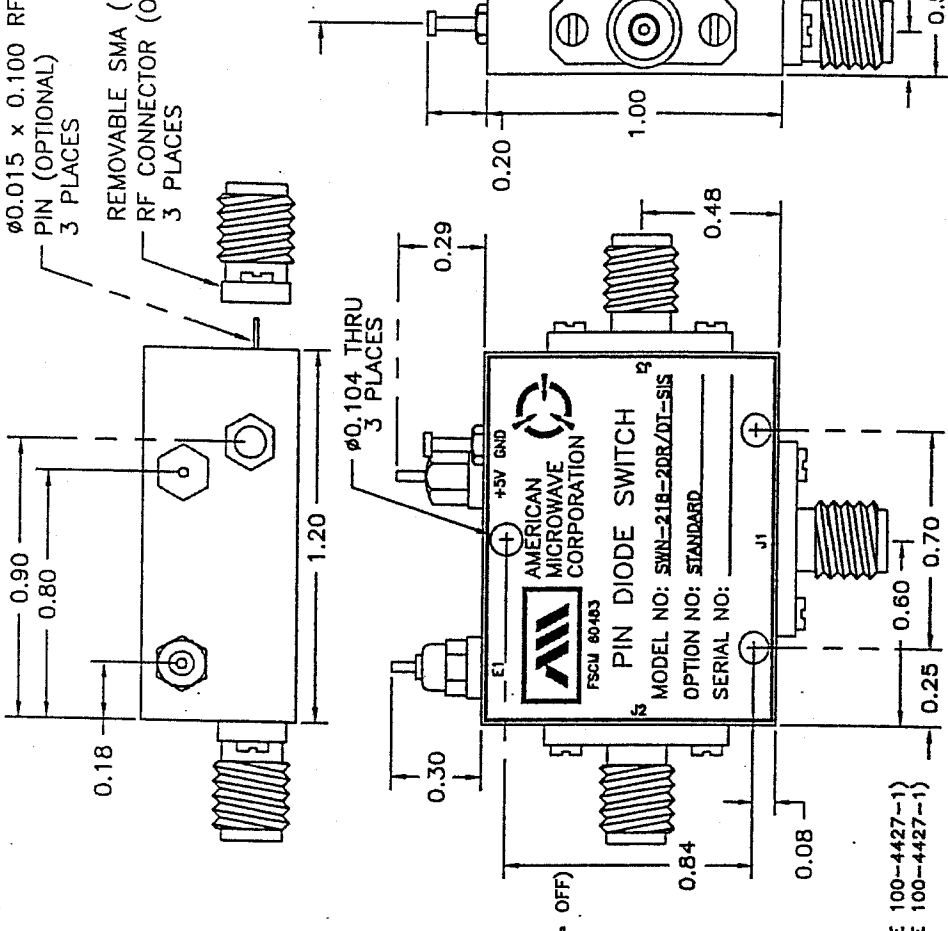
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-1)
- B02 -15V POWER SUPPLIES (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-1)
- B03 REVERSE LOGIC "1" = ON "0" = OFF
- B04 DRIVERLESS, CURRENT CONTROLLED (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-1)
- B05 HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT - SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		OUTLINE DRAWING	
SWN-218-2DR/DT-SIS-STANDARD		REFLECTIVE OR NON-REFLECTIVE (ABSORPTIVE) SOLID STATE SWITCH	
SIZE	FSCJ NO.	DWG NO.	REV.
A	60483	100-4427-5	
SCALE	N/S	SHEET	1 of 2

APPROVALS	DATE
DRAWN: <i>[Signature]</i>	7/12/99
CHECKED: <i>[Signature]</i>	7/13/99
ISSUED	

**DESCRIPTION:**  
 AMC MODEL SWN-218-2DR/DT-SIS IS A SINGLE SUPPLY, SINGLE POLE TWO THROW, REFLECTIVE OR NON-REFLECTIVE/ABSORPTIVE SWITCH MODULE WITH VERY LOW INSERTION LOSS AND INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

**SPECIFICATIONS:**

- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.5db  
 ABSORPTIVE: 3.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 55db  
 2 GHz TO 12 GHz: 45db  
 12 GHz TO 18 GHz: 25db
- VSWR: REFLECTIVE IN/OUT: 2.0:1  
 ABSORPTIVE IN/OUT: 2.0:1  
 ABSORPTIVE OUT/OFF: 2.0:1
- SPEED: RISE: 15ns TYPICAL, 20ns MAX.  
 FALL: 15ns TYPICAL, 20ns MAX.  
 DELAY ON: 75ns TYPICAL, 100ns MAX.  
 DELAY OFF: 75ns TYPICAL, 100ns MAX.
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.
- CONNECTORS: SMA FEMALE  
 SOLDER PIN  
 RF
- SIZE: (L) 1.2 X (W) 1.0" X (H) 0.5"
- WEIGHT: 1.5 OUNCE TYPICAL

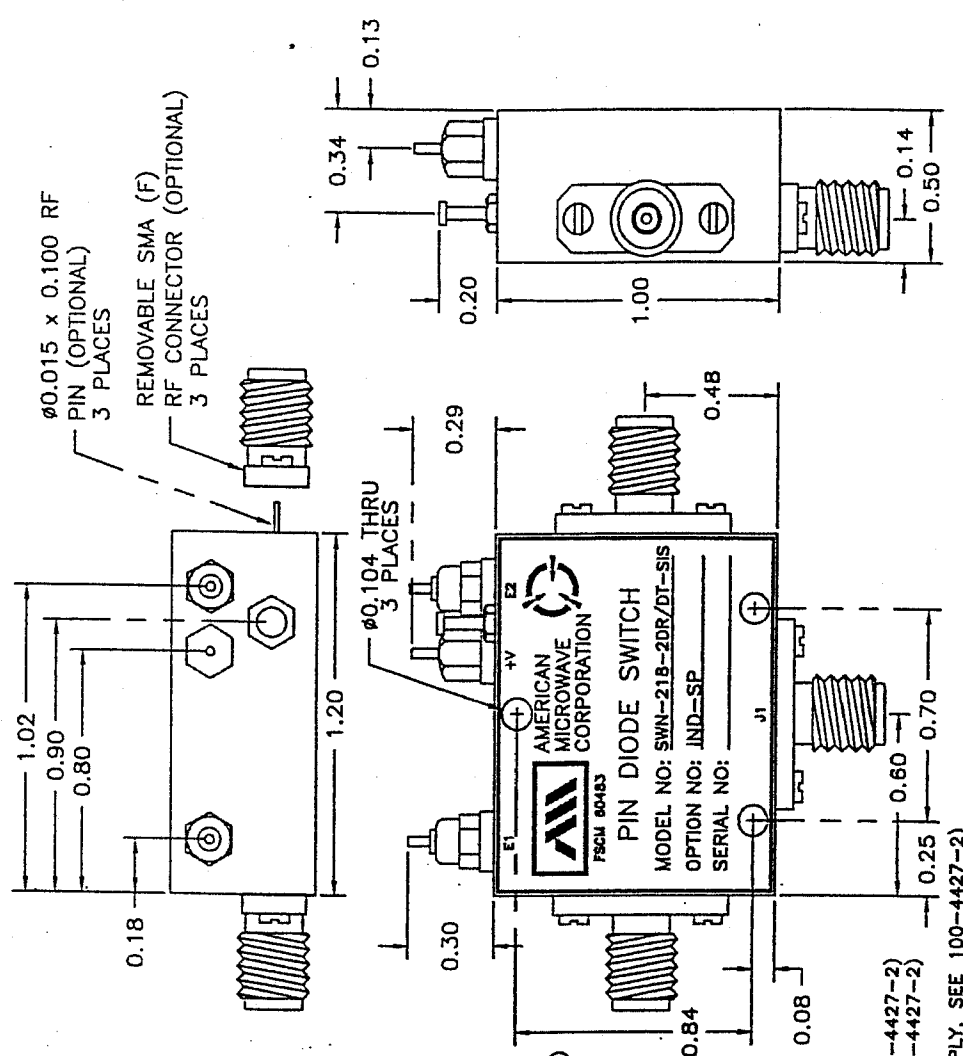
**OPTIONS:**

- SINGLE CONTROL WITH SOLDER PIN STANDARD
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
- 10M18 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
- 100M18 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-2)
- B02 -15V POWER SUPPLIES (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-2)
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED (NOT AVAILABLE WITH SINGLE SUPPLY, SEE 100-4427-2)
- B05 HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION HS
- B06 HIGH POWER - SPECIFY CW POWER, PEAK POWER, PULSE WIDTH, DUTY CYCLE, RF FREQUENCY AND BANDWIDTH
- B07 CUSTOM DESIGNED PRODUCT- SPECIFY INITIALS OF CUSTOMER
- B08 LOW VIDEO TRANSIENTS - SPECIFY VIDEO BANDWIDTH
- B09 LOW INSERTION LOSS VERSION
- B10 HIGHER ISOLATION VERSION

**ENVIRONMENTAL RATINGS:**

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

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



APPROVALS		DATE
DRAWN	PCB	7/18/99
CHECKED	WUP	7/19/99
ISSUED		
TITLE		
AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
OUTLINE DRAWING		
SWN-218-2DR/DT-SIS-IND-SP REFLECTIVE OR NON-REFLECTIVE (ABSORPTIVE) SOLID STATE SWITCH		
SIZE	DWG NO.	REV.
A	60483	100-4427-6
SCALE		SHEET
N/S		1 of 2

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

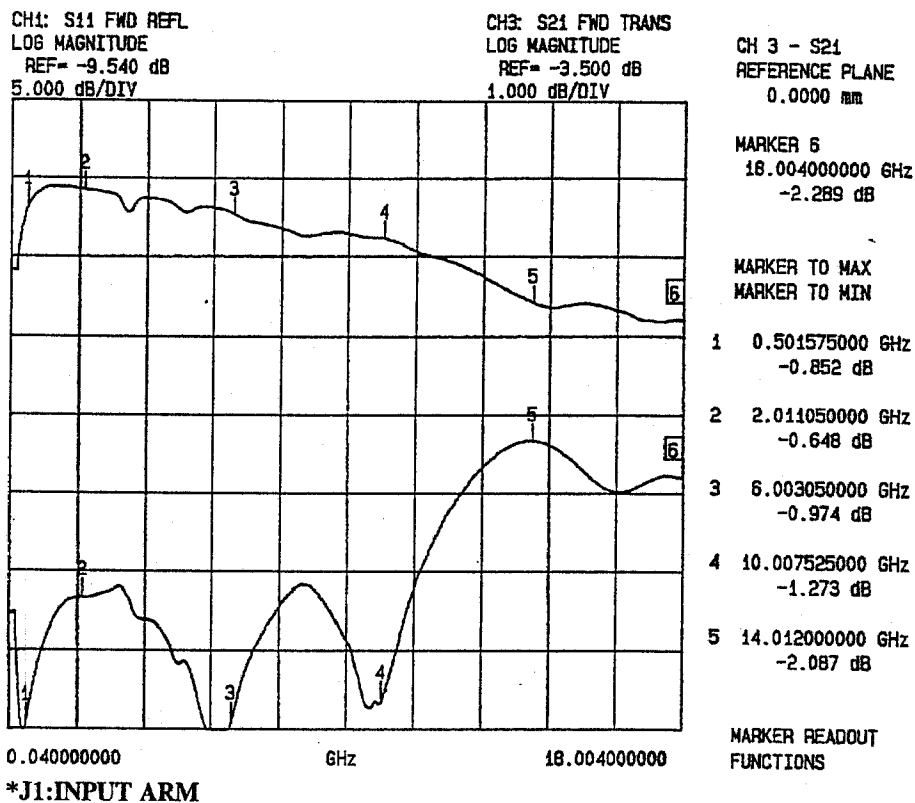


## SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

**INSERTION LOSS & RETURN LOSS\***

J1-J2



FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.85 dB	29.0 dB
2.0 GHz	0.64 dB	21.14 dB
6.0 GHz	0.97 dB	28.9 dB
10.0 GHz	1.27 dB	27.6 dB
14.0 GHz	2.08 dB	11.1 dB
18.0 GHz	2.28 dB	13.5 dB

NOVEMBER 15, 1999

PAGE 11



**SUMMARY TEST DATA**

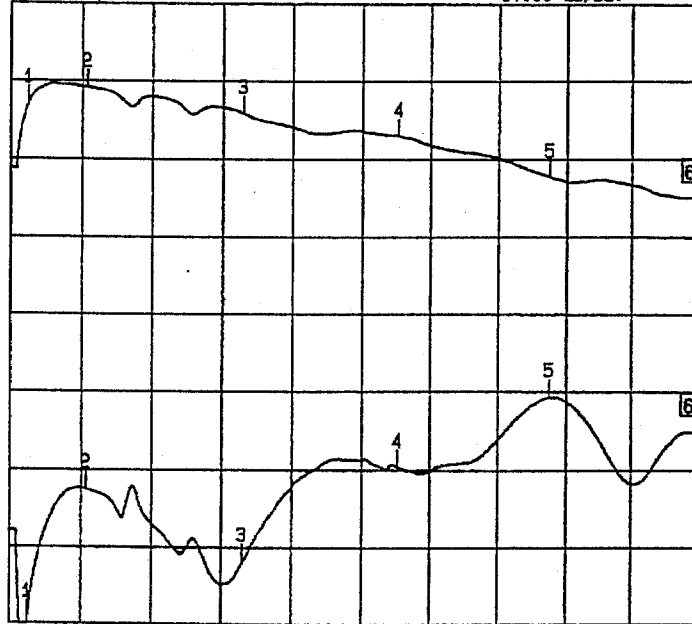
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**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

**INSERTION LOSS & RETURN LOSS\***  
J1-J3

CH1: S11 FWD REFL  
 LOG MAGNITUDE  
 REF= -9.540 dB  
 5.000 dB/DIV

CH3: S21 FWD TRANS  
 LOG MAGNITUDE  
 REF= -3.500 dB  
 1.000 dB/DIV

CH 3 - S21  
 REFERENCE PLANE  
 0.0000 mm



MARKER 6  
 18.004000000 GHz  
 -1.996 dB

MARKER TO MAX  
 MARKER TO MIN

- 1 0.501575000 GHz  
-0.780 dB
- 2 2.011050000 GHz  
-0.584 dB
- 3 6.003050000 GHz  
-0.922 dB
- 4 10.007525000 GHz  
-1.203 dB
- 5 14.012000000 GHz  
-1.732 dB

MARKER READOUT  
 FUNCTIONS

FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.78 dB	29.1 dB
2.0 GHz	0.58 dB	20.7 dB
6.0 GHz	0.92 dB	25.4 dB
10.0 GHz	1.20 dB	19.3 dB
14.0 GHz	1.73 dB	14.8 dB
18.0 GHz	1.99 dB	17.0 dB



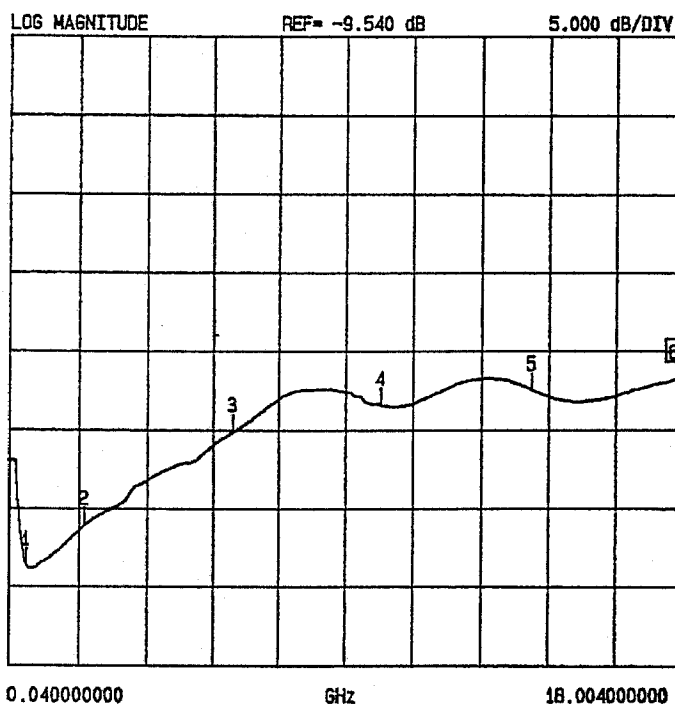
### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### OFF ARM TERMINATION\*

J2

S22 REVERSE REFLECTION



CH 4 - S22  
 REFERENCE PLANE  
 0.0000 mm

MARKER 6  
 18.004000000 GHz  
 -11.227 dB

MARKER TO MAX  
 MARKER TO MIN

- 1 0.501575000 GHz  
-23.223 dB
- 2 2.011050000 GHz  
-20.569 dB
- 3 6.003050000 GHz  
-14.634 dB
- 4 10.007525000 GHz  
-12.962 dB
- 5 14.012000000 GHz  
-11.993 dB

MARKER READOUT FUNCTIONS

\*J2:INPUT ARM

FREQUENCY	RETURN LOSS
500 MHz	23.2 dB
2.0 GHz	20.5 dB
6.0 GHz	14.6 dB
10.0 GHz	12.9 dB
14.0 GHz	11.9 dB
18.0 GHz	11.2 dB



### SUMMARY TEST DATA

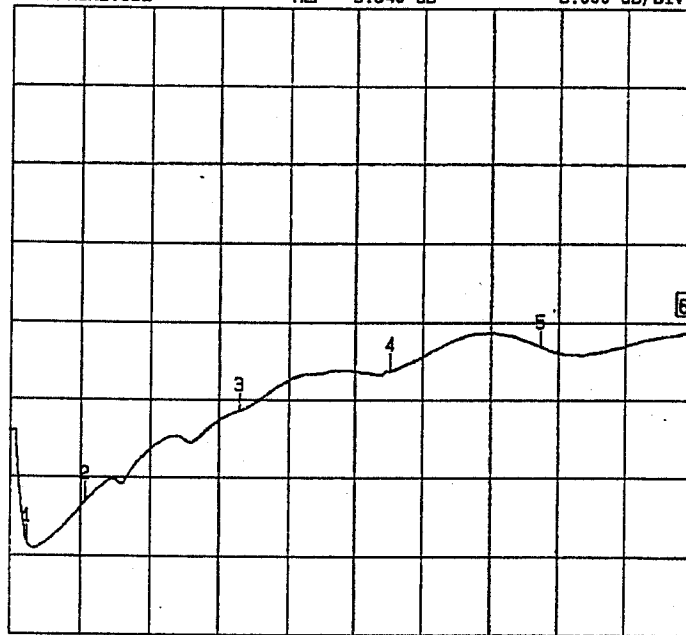
**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### OFF ARM TERMINATION\*

J3

S22 REVERSE REFLECTION

LOG MAGNITUDE REF= -9.540 dB 5.000 dB/DIV



CH 4 - S22

REFERENCE PLANE  
0.0000 mm

MARKER 6  
18.004000000 GHz  
-10.104 dB

MARKER TO MAX  
MARKER TO MIN

- 1 0.501575000 GHz  
-23.727 dB
- 2 2.011050000 GHz  
-20.993 dB
- 3 6.003050000 GHz  
-15.198 dB
- 4 10.007525000 GHz  
-12.643 dB
- 5 14.012000000 GHz  
-11.119 dB

0.040000000

GHz

18.004000000

MARKER READOUT  
FUNCTIONS

\*J3: INPUT ARM

FREQUENCY	RETURN LOSS
500 MHz	23.7 dB
2.0 GHz	20.9 dB
6.0 GHz	15.1 dB
10.0 GHz	12.6 dB
14.0 GHz	11.1 dB
18.0 GHz	10.1 dB



## SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

### ISOLATION\*

(AS MEASURED ON A SPECTRUM ANALYZER)

FREQUENCY	J2	J3
300 MHz	82 dB	80 dB
500 MHz	98 dB	97 Db
1 GHz	98 dB	97 dB
2 GHz	98 dB	98 dB
4 GHz	98 dB	98 dB
6 GHz	100 dB	100 dB
8 GHz	93 dB	98 dB
9.5 GHz	95 dB	98 dB
10 GHz	95 dB	95 dB
12 GHz	92 dB	92 dB
14 GHz	90 dB	90 dB
16 GHz	87 dB	88 dB
18 GHz	82 dB	82 dB

\* J1: INPUT ARM

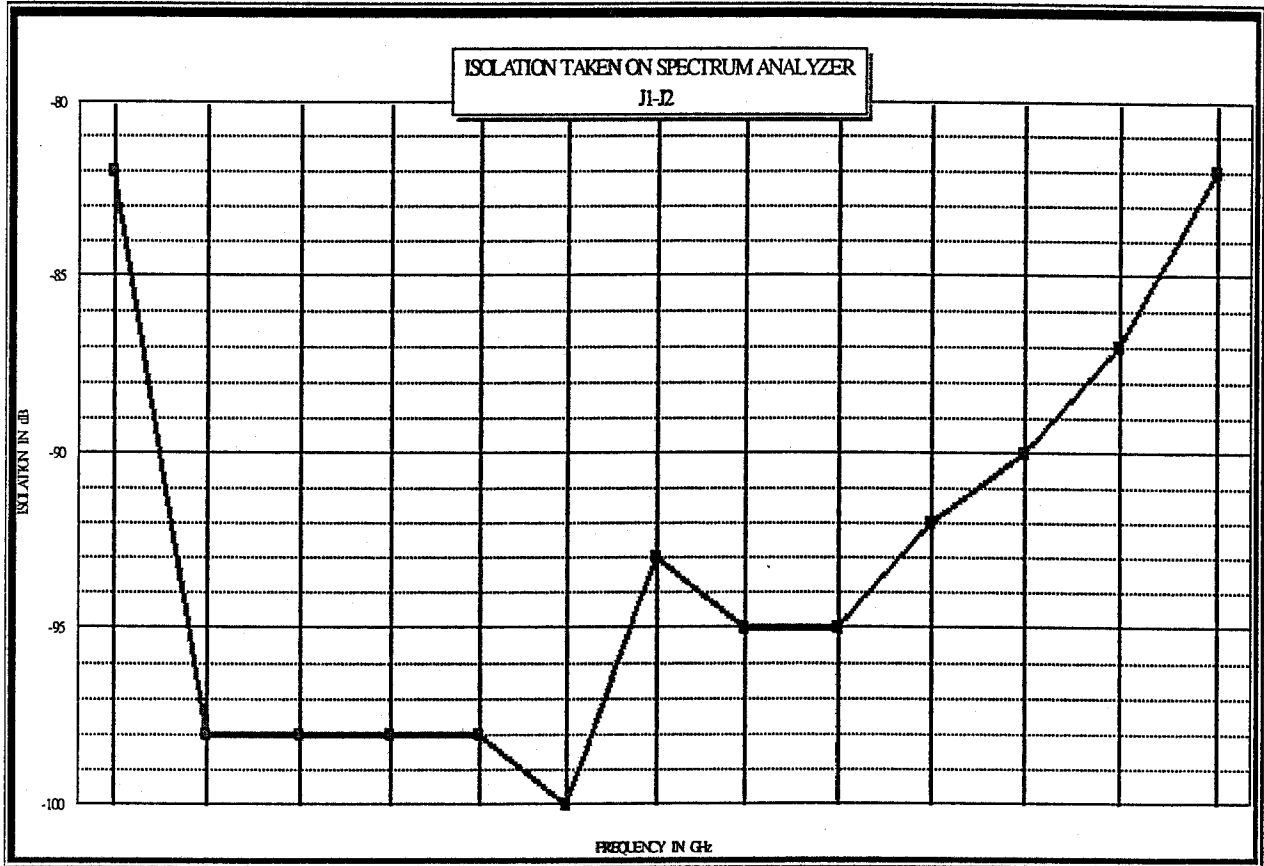
NOVEMBER 15, 1999



**SUMMARY TEST DATA**

<b>MODEL NUMBER</b>	<b>: SWN-218-2DT</b>	<b>OPTION 0518, HPR2W</b>
<b>SERIAL NUMBER</b>	<b>: 2MS910753</b>	
<b>ENGINEER</b>	<b>: RENE AFABLE</b>	
<b>VOLTAGE &amp; CURRENT DRAW</b>	<b>: +5vdc @ +69.1mA;</b>	<b>-12vdc @ -62.5mA</b>

**ISOLATION\***  
(AS MEASURED ON A SPECTRUM ANALYZER)  
**J1-J2**



\*J1: INPUT ARM

NOVEMBER 15, 1999

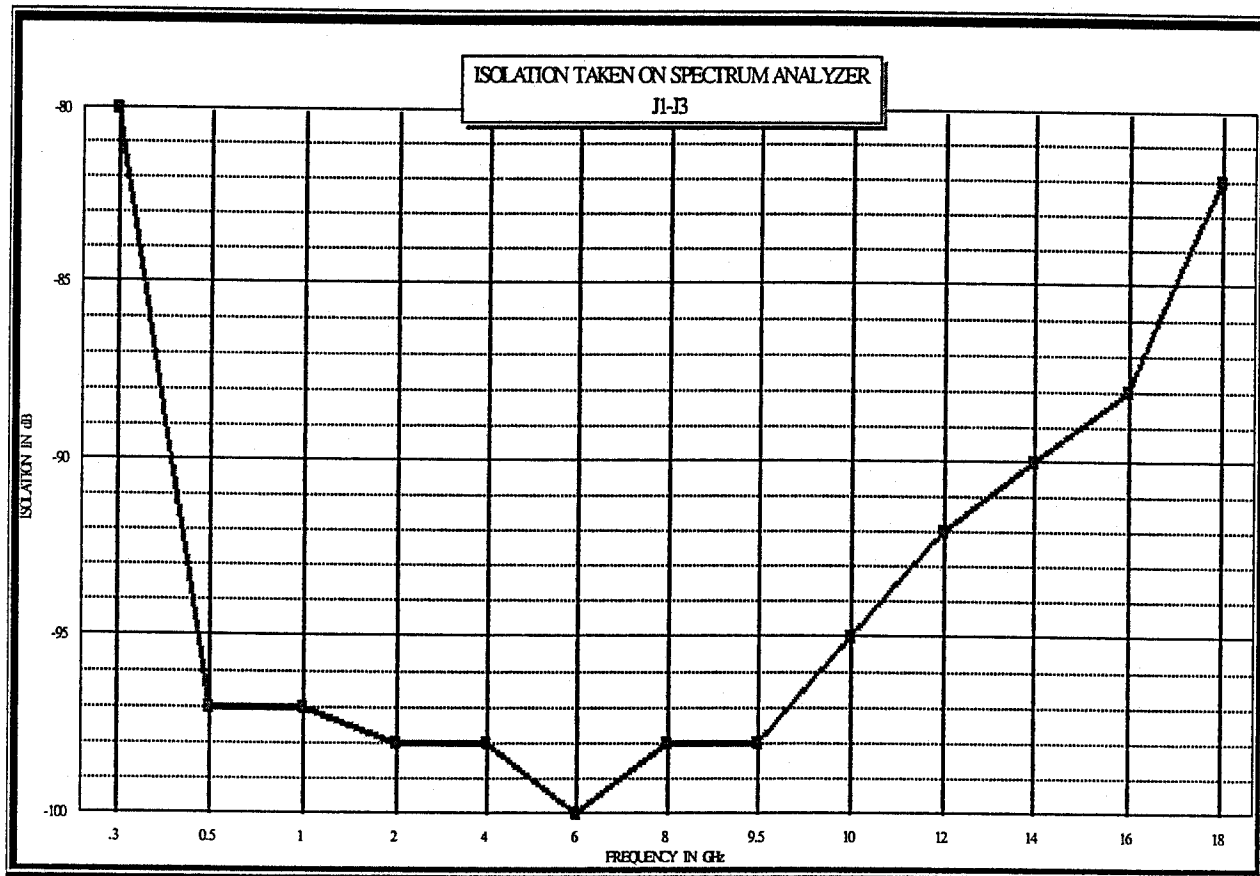




## SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DT OPTION 0518, HPR2W  
SERIAL NUMBER : 2MS910753  
ENGINEER : RENE AFABLE  
VOLTAGE & CURRENT DRAW : +5vdc: @ +69.1mA; -12vdc @ -62.5mA

**ISOLATION\***  
(AS MEASURED ON A SPECTRUM ANALYZER)  
J1-J3



\*J1: INPUT ARM

NOVEMBER 15, 1999



**AMPLITUDE  
DATA  
BETWEEN  
PORT TO PORT  
FROM**

**500 MHz TO 18 GHz**

**ON A**

**SP2T**

**SOLID STATE SWITCH**

**AMC MODEL No:  
SWN-218-2DT OPTION 0518, HPR2W  
(Serial Number: 2MS910753)**

**REPORTED AND PREPARED  
BY  
RENE AFABLE**

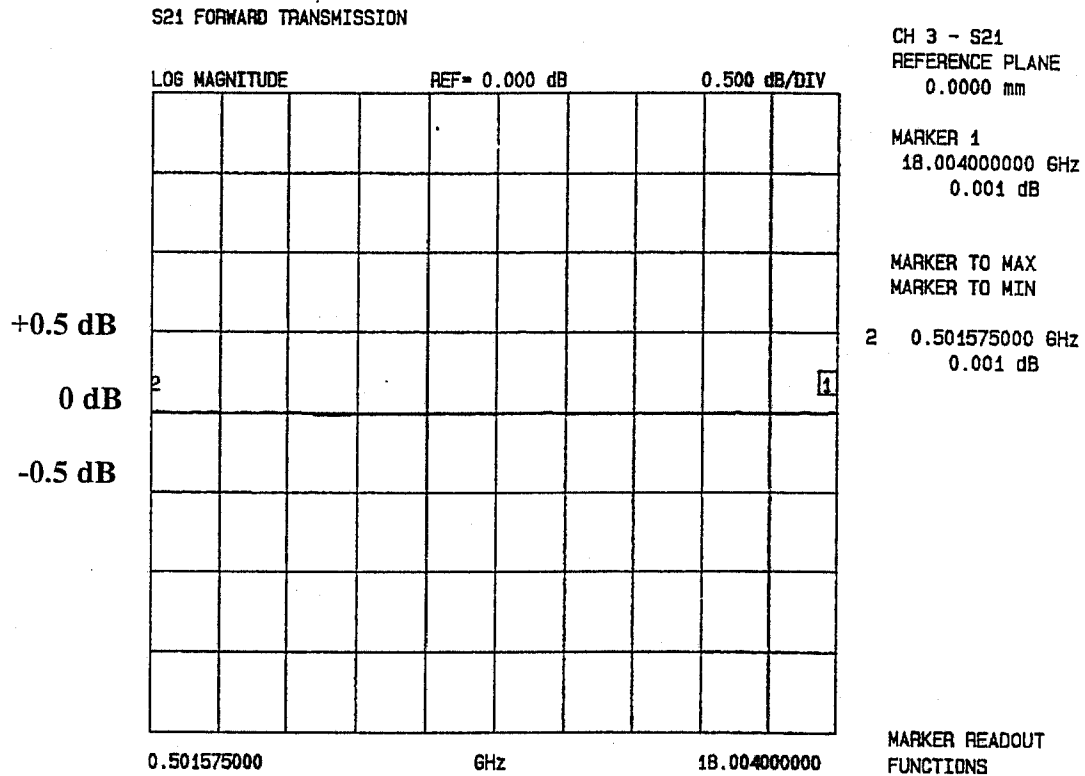
**NOVEMBER 15, 1999**



### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### AMPLITUDE\* J1-J2 (REFERENCE)



\*J1: INPUT ARM

FREQUENCY	AMPLITUDE (MAXIMUM) (POSITIVE SIDE)	AMPLITUDE (MAXIMUM) (NEGATIVE SIDE)
18 GHz	0.001 dB	
500 MHz	0.001 dB	

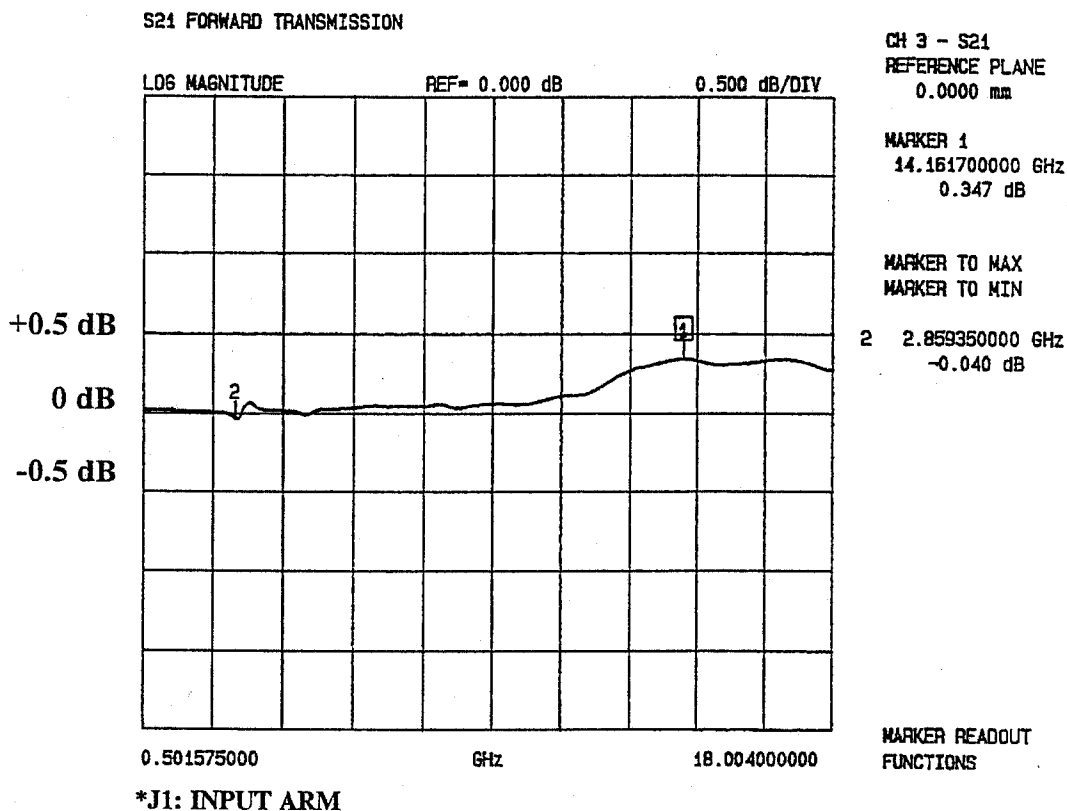
NOVEMBER 15, 1999



### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### AMPLITUDE\* J1-J3



FREQUENCY	AMPLITUDE (MAXIMUM) (POSITIVE SIDE)	AMPLITUDE (MAXIMUM) (NEGATIVE SIDE)
14.16 GHZ	0.347 dB	
2.85 GHz		-0.040 dB

NOVEMBER 15, 1999



**PHASE  
DATA  
BETWEEN  
PORT TO PORT  
FROM**

**500 MHz TO 18 GHz**

**ON A**

**SP2T**

**SOLID STATE SWITCH**

**AMC MODEL No:  
SWN-218-2DT OPTION 0518, HPR2W  
(Serial Number: 2MS910753)**

**REPORTED AND PREPARED  
BY  
RENE AFABLE**

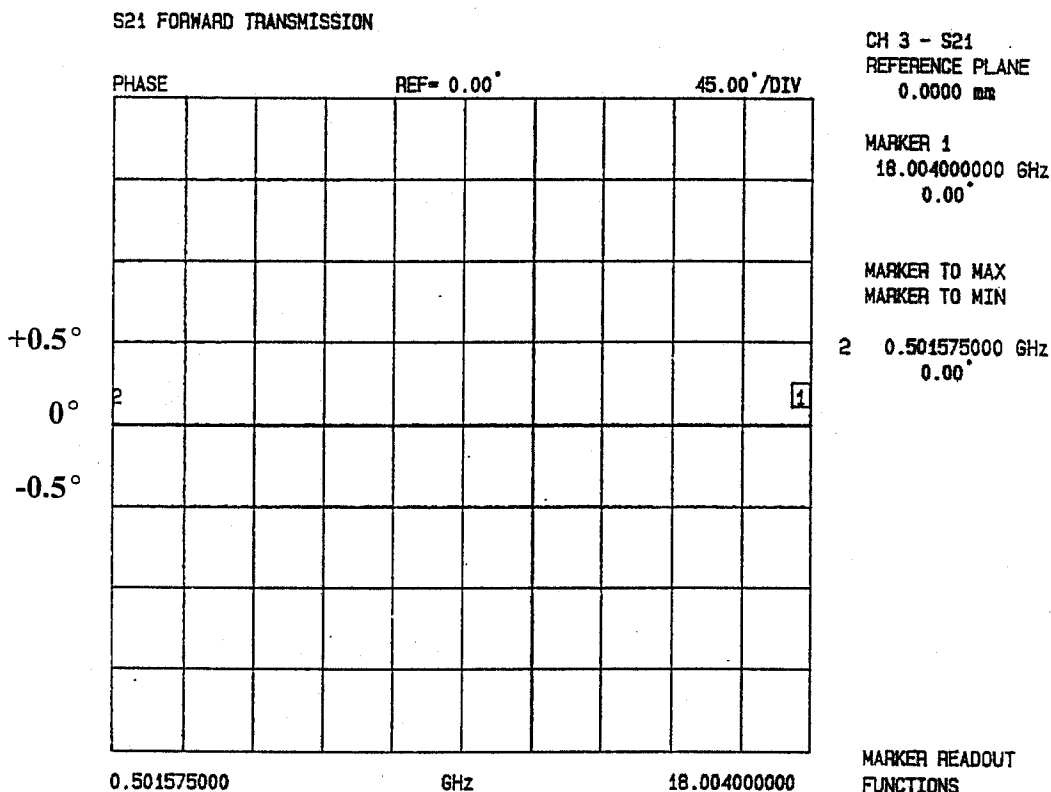
**NOVEMBER 15, 1999**



### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### PHASE\* J1-J2 (REFERENCE)



\*J1: INPUT ARM

FREQUENCY	PHASE (MAXIMUM) (POSITIVE SIDE)	PHASE (MAXIMUM) (NEGATIVE SIDE)
18 GHZ	0.00°	
500 MHz	0.00°	

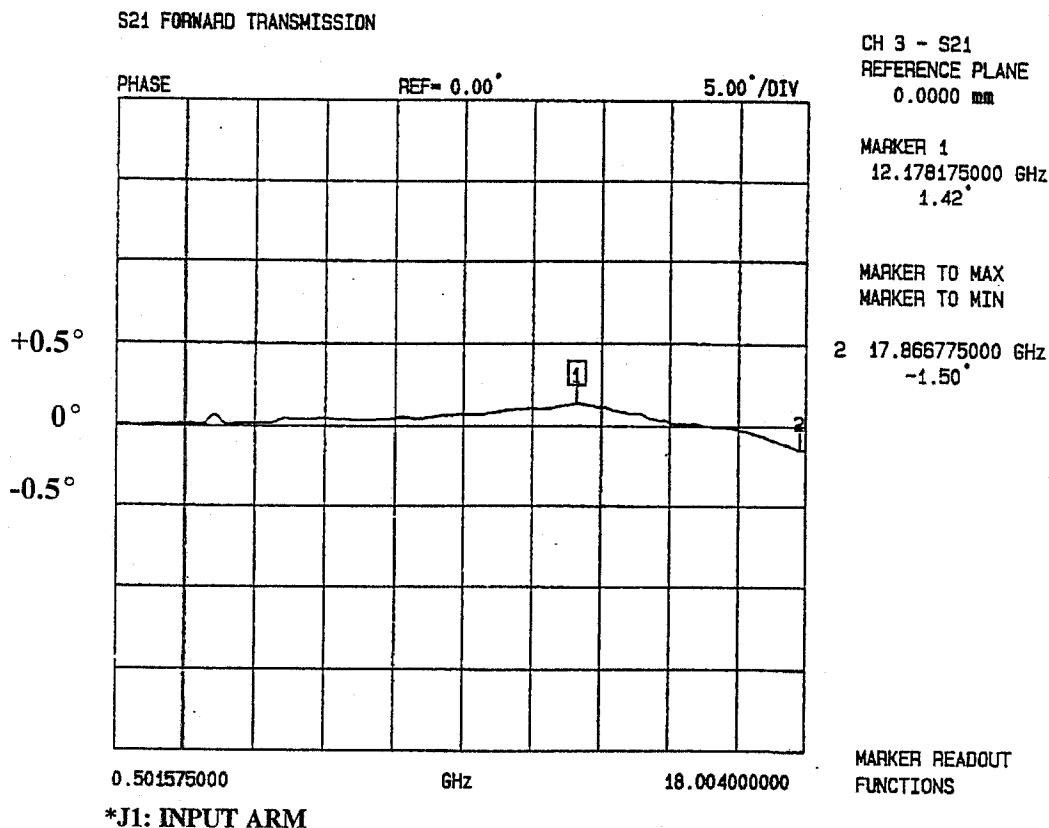
NOVEMBER 15, 1999



### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### PHASE\* J1-J3



FREQUENCY	PHASE (MAXIMUN) (POSITIVE SIDE)	PHASE (MAXIMUM) (NEGATIVE SIDE)
12.17 GHZ	1.42°	
17.86 GHZ		-1.50°

NOVEMBER 15, 1999



**TEST DATA**

**FROM**

**65 MHz TO 2 GHz**

**ON A**

**SP2T**

**SOLID STATE SWITCH**

**AMC MODEL No:**

**SWN-218-2DT OPTION 0518, HPR2W**

**(Serial Number: 2MS910753)**

**REPORTED AND PREPARED**

**BY**

**RENE AFABLE**

**NOVEMBER 15, 1999**



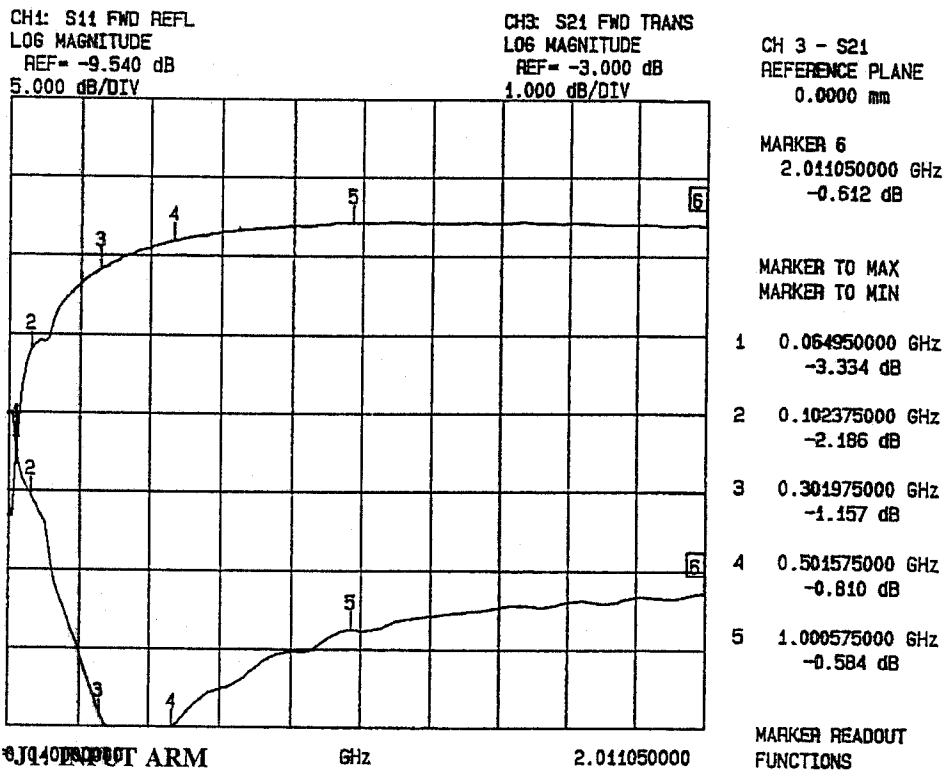


### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### INSERTION LOSS & RETURN LOSS\*

J1-J2



FREQUENCY	INSERTION LOSS	RETURN LOSS
65 MHz	3.33 dB	12.4 dB
100 MHz	2.18 dB	14.8 dB
300 MHz	1.15 dB	28.9 dB
500 MHz	0.81 dB	29.6 dB
1.0 GHz	0.58 dB	23.2 dB
2.0 GHz	0.61 dB	20.9 dB

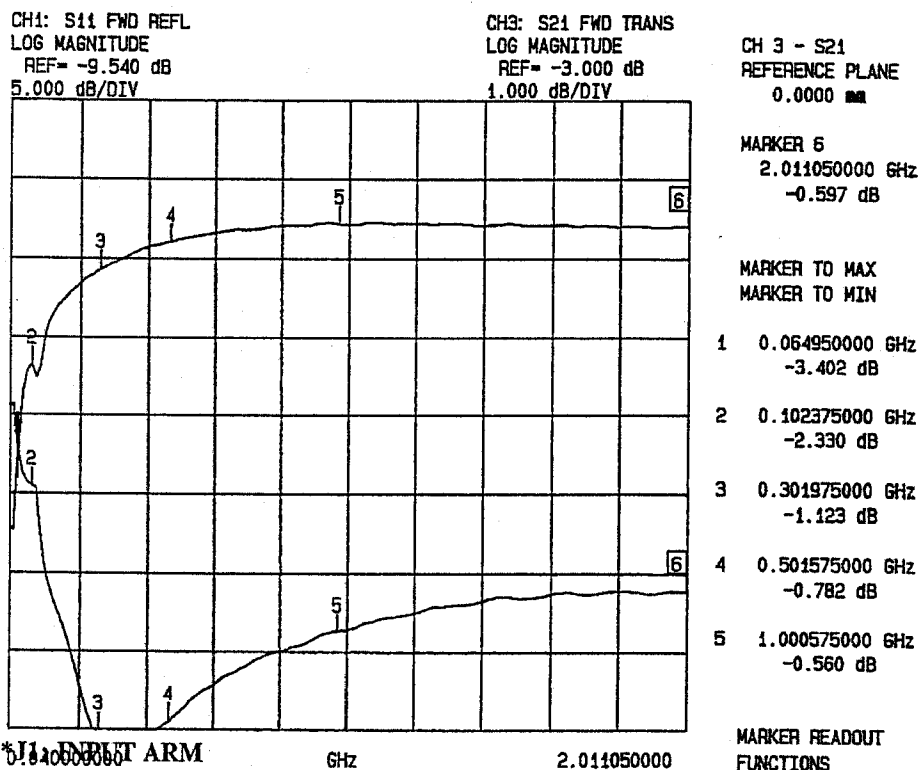


### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### INSERTION LOSS & RETURN LOSS\*

J1-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
65 MHz	3.40 dB	11.9 dB
100 MHz	2.33 dB	14.0 dB
300 MHz	1.12 dB	31.1 dB
500 MHz	0.78 dB	28.9 dB
1.0 GHz	0.56 dB	23.1 dB
2.0 GHz	0.59 dB	20.6 dB



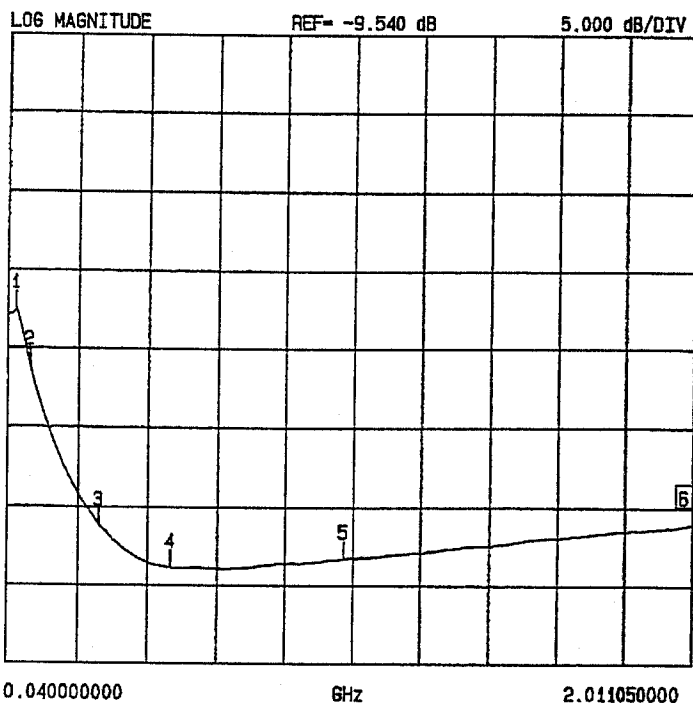
### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### OFF ARM TERMINATION\*

J2

S22 REVERSE REFLECTION



CH 4 - S22  
 REFERENCE PLANE  
 0.0000 mm

MARKER 6  
 2.011050000 GHz  
 -20.620 dB

MARKER TO MAX  
 MARKER TO MIN

- 1 0.064950000 GHz  
-6.996 dB
- 2 0.102375000 GHz  
-10.635 dB
- 3 0.301975000 GHz  
-20.762 dB
- 4 0.501575000 GHz  
-23.404 dB
- 5 1.000575000 GHz  
-22.811 dB

MARKER READOUT FUNCTIONS

0.040000000

GHz

2.011050000

\*J2: INPUT ARM

FREQUENCY	RETURN LOSS
65 MHz	6.9 dB
100 MHz	10.6 dB
300 MHz	20.7 dB
500 MHz	23.4 dB
1.0 GHz	22.8 dB
2.0 GHz	20.6 dB



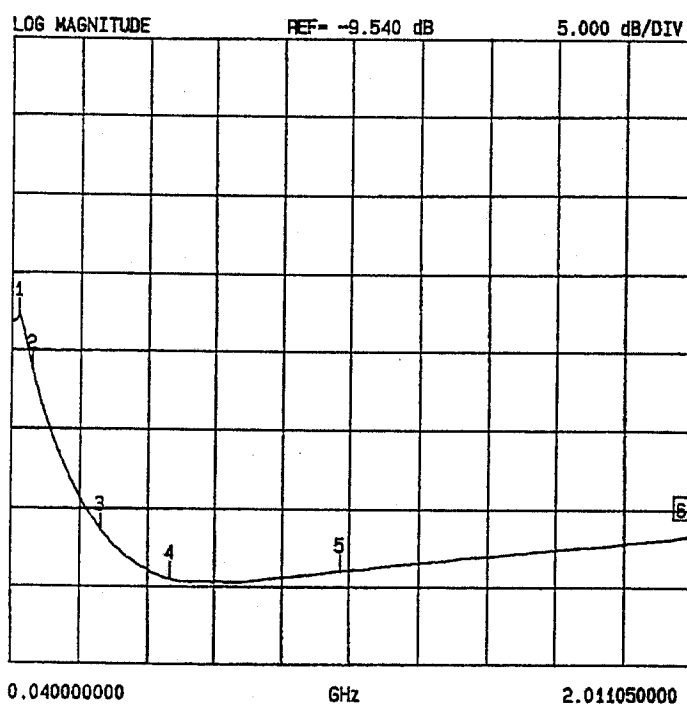
## SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

### OFF ARM TERMINATION\*

J3

S22 REVERSE REFLECTION



CH 4 - S22  
REFERENCE PLANE  
0.0000 mm

MARKER 6  
2.011050000 GHz  
-21.211 dB

MARKER TO MAX  
MARKER TO MIN

1 0.064950000 GHz  
-7.244 dB

2 0.102375000 GHz  
-10.797 dB

3 0.301975000 GHz  
-21.022 dB

4 0.501575000 GHz  
-24.083 dB

5 1.000575000 GHz  
-23.496 dB

MARKER READOUT  
FUNCTIONS

\*J3: INPUT ARM

FREQUENCY	RETURN LOSS
65 MHz	7.2 dB
100 MHz	10.7 dB
300 MHz	21.0 dB
500 MHz	24.0 dB
1.0 GHz	23.4 dB
2.0 GHz	21.2 dB

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**AMERICAN MICROWAVE  
CORPORATION**

**TEST DATA**

**FROM**

**9 GHz TO 10 GHz**

**ON A**

**SP2T**

**SOLID STATE SWITCH**

**AMC MODEL No:**

**SWN-218-2DT OPTION 0518, HPR2W**

**(Serial Number: 2MS910753)**

**REPORTED AND PREPARED**

**BY**

**RENE AFABLE**

**NOVEMBER 15, 1999**

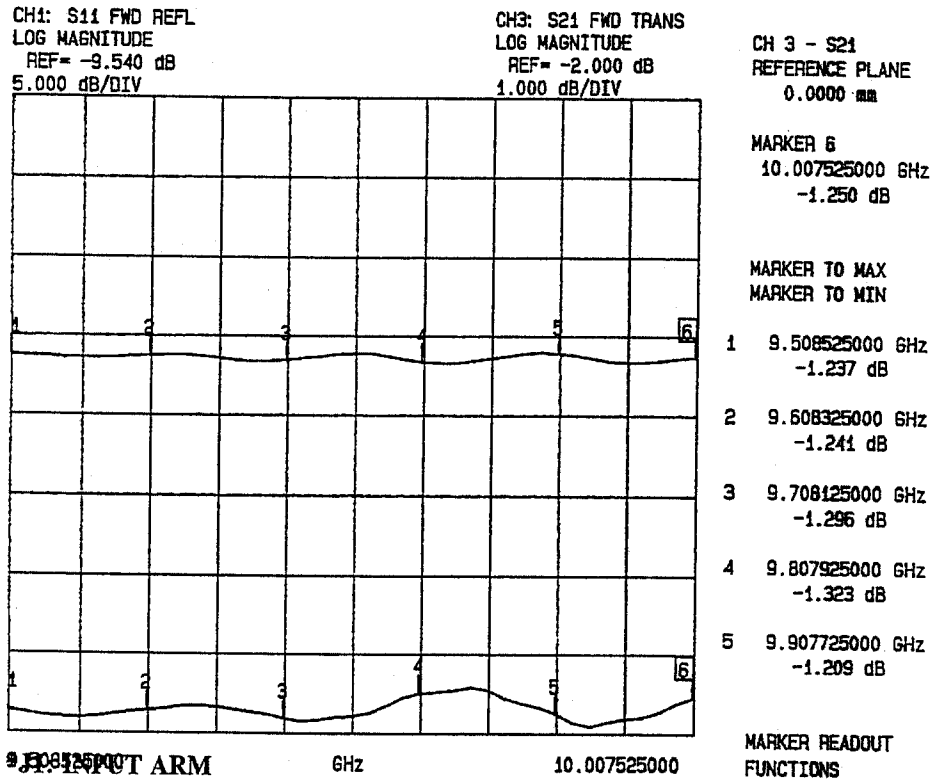
7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938

# SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

## INSERTION LOSS & RETURN LOSS\*

J1-J2



FREQUENCY	INSERTION LOSS	RETURN LOSS
9.5 GHz	1.23 dB	28.1 dB
9.6 GHz	1.24 dB	28.1 dB
9.7 GHz	1.29 dB	28.6 dB
9.8 GHz	1.32 dB	27.0 dB
9.9 GHz	1.20 dB	28.3 dB
10.0 GHz	1.25 dB	27.2 dB

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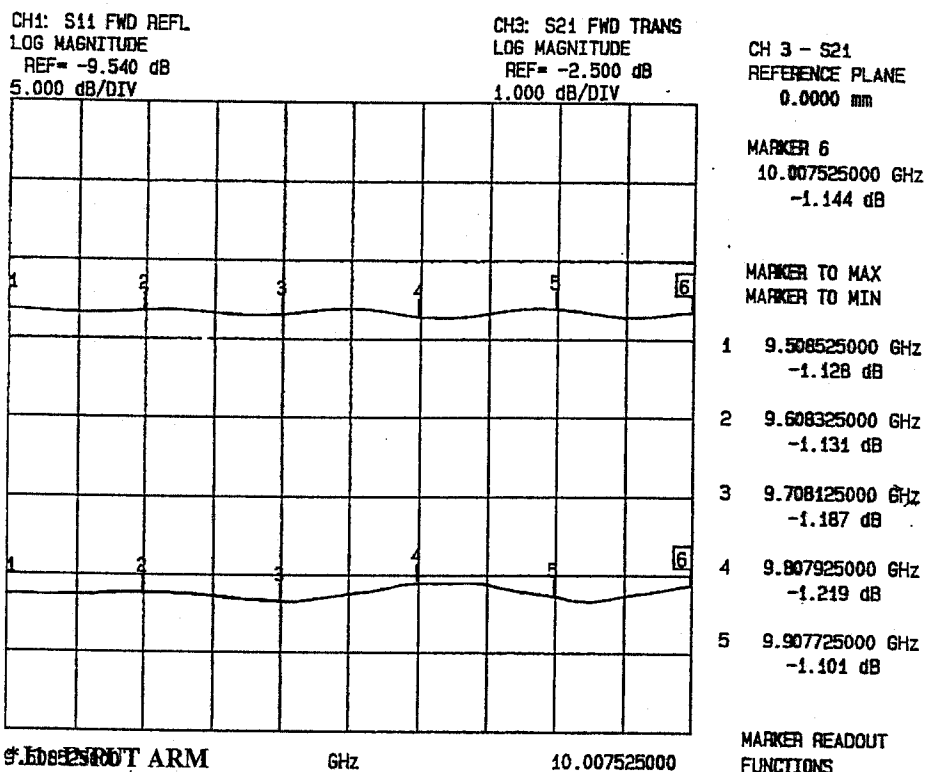


### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTIONS 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### INSERTION LOSS & RETURN LOSS\*

J1-J3



FREQUENCY	INSERTION LOSS	RETURN LOSS
9.5 GHz	1.12 dB	19.2 dB
9.6 GHz	1.13 dB	19.3 dB
9.7 GHz	1.18 dB	19.6 dB
9.8 GHz	1.21 dB	18.9 dB
9.9 GHz	1.10 dB	19.3 dB
10.0 GHz	1.14 dB	19.2 dB



### SUMMARY TEST DATA

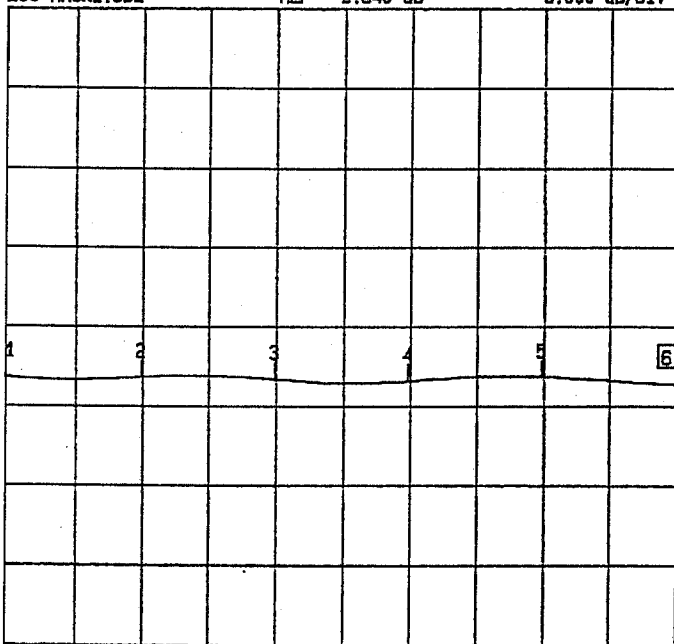
**MODEL NUMBER** : SWN-218-2DT OPTIONS 9F, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

#### OFF ARM TERMINATION\*

J2

S22 REVERSE REFLECTION

LOG MAGNITUDE REF= -9.540 dB 5.000 dB/DIV



CH 4 - S22  
REFERENCE PLANE  
0.0000 mm

MARKER 6  
10.007525000 GHz  
-13.150 dB

MARKER TO MAX  
MARKER TO MIN

- 1 9.508525000 GHz  
-12.719 dB
- 2 9.608325000 GHz  
-12.730 dB
- 3 9.708125000 GHz  
-12.850 dB
- 4 9.807925000 GHz  
-12.946 dB
- 5 9.907725000 GHz  
-12.686 dB

9.508525000 GHz 10.007525000

MARKER READOUT  
FUNCTIONS

\*J2: INPUT ARM

FREQUENCY	RETURN LOSS
9.5 MHz	12.7 dB
9.6 GHz	12.7 dB
9.7 GHz	12.8 dB
9.8 GHz	12.9 dB
9.9 GHz	12.6 dB
10.0 GHz	13.1 dB





### SUMMARY TEST DATA

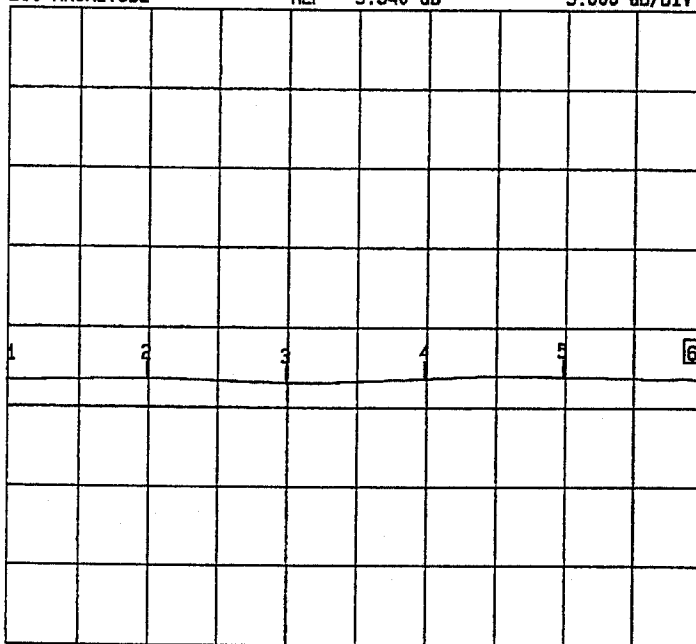
**MODEL NUMBER** : SWN-218-2DT OPTIONS 9F, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

### OFF ARM TERMINATION\*

J3

S22 REVERSE REFLECTION

LOG MAGNITUDE REF= -9.540 dB 5.000 dB/DIV



CH 4 - S22  
REFERENCE PLANE  
0.0000 mm

MARKER 6  
10.007525000 GHz  
-12.753 dB

MARKER TO MAX  
MARKER TO MIN

- 1 9.508525000 GHz  
-12.909 dB
- 2 9.608325000 GHz  
-12.817 dB
- 3 9.708125000 GHz  
-13.051 dB
- 4 9.807925000 GHz  
-12.753 dB
- 5 9.907725000 GHz  
-12.642 dB

MARKER READOUT  
FUNCTIONS

9.508525000

GHz

10.007525000

\*J3: INPUT ARM

FREQUENCY	RETURN LOSS
9.5 GHz	12.9 dB
9.6 GHz	12.8 dB
9.7 GHz	13.0 dB
9.8 GHz	12.7 dB
9.9 GHz	12.6 dB
10.0 GHz	12.7 dB



## SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @+69.1mA; -12vdc: @ -62.5mA

### SWITCHING SPEED

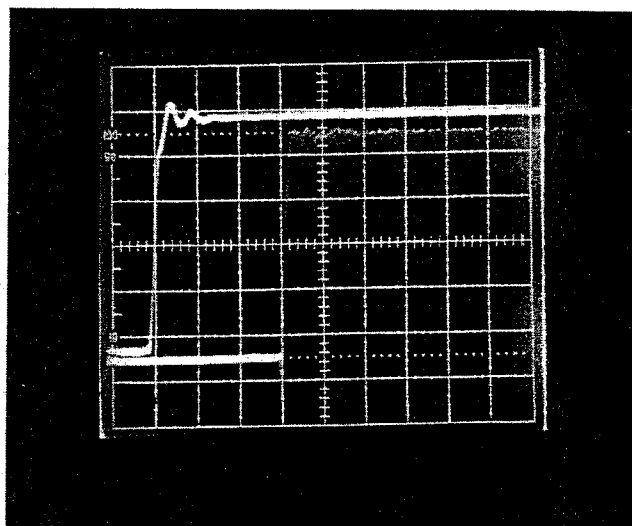
"Rise/Fall" Time: 10% RF to 90% RF & 90% RF to 10% RF  
 "On/Off" Time: 50% TTL to 90% RF or 10% RF

TYPICAL OF ALL ARMS

"DELAY ON": 64 nS  
 "RISE TIME": 4 nS

HORIZONTAL SCALE:  
 20 nS PER DIVISION

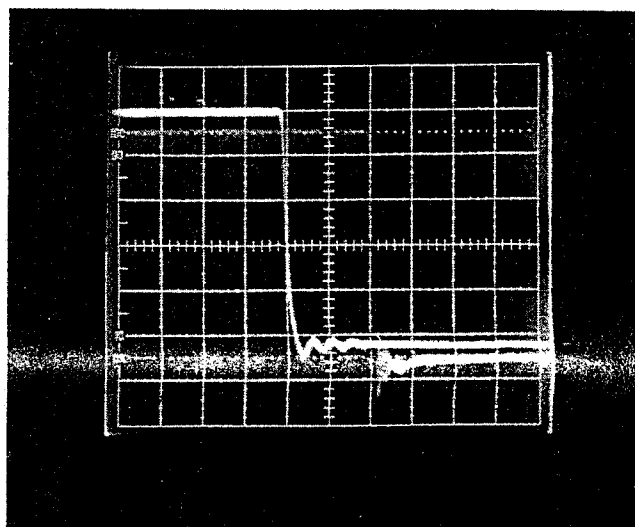
VERTICAL SCALE:  
 10 mV PER DIVISION



"DELAY OFF": 42 nS  
 "FALL TIME": 2 nS

HORIZONTAL SCALE:  
 20 nS PER DIVISION

VERTICAL SCALE:  
 10 mV PER DIVISION



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## SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-2DT OPTION 0518, HPR2W
SERIAL NUMBER	: 2MS910753
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc: @+69.1mA; -12vdc: @ -62.5mA

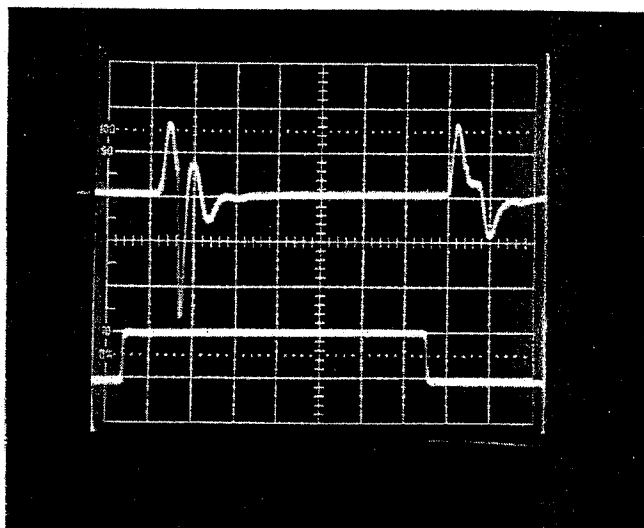
### VIDEO TRANSIENTS

TYPICAL OF ALL ARMS

$\leq 4.3$  V P-P  
MEASURED IN A  
300 MHZ BANDWIDTH

VERTICAL SCALE:  
1 V PER DIVISION

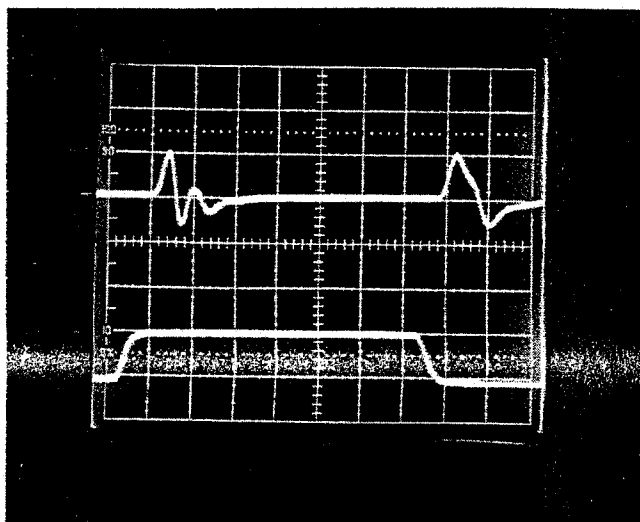
HORIZONTAL SCALE:  
50 nS PER DIVISION



$\leq 1.7$  V P-P  
MEASURED IN A  
20 MHZ BANDWIDTH

VERTICAL SCALE:  
1 V PER DIVISION

HORIZONTAL SCALE:  
50 nS PER DIVISION



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**APPENDIX A**  
**MISCELLANEOUS**  
**TEST DATA AND PLOTS**  
**ON**  
**ISOLATION**  
**AS**  
**MEASURED**  
**ON A VECTOR NETWORK**  
**ANALYZER**  
**ON A SP2T**  
**SOLID STATE SWITCH**

**AMC MODEL No:**  
**SWN-218-2DT OPTION 0518, HPR2W**  
**(Serial Number: 2MS910753)**

**FROM 500 MHz TO 18 GHz**

**65 MHz TO 2GHz**

**AND**

**FROM 9 GHz TO 10 GHz**

**NOVEMBER 15, 1999**



### SUMMARY TEST DATA

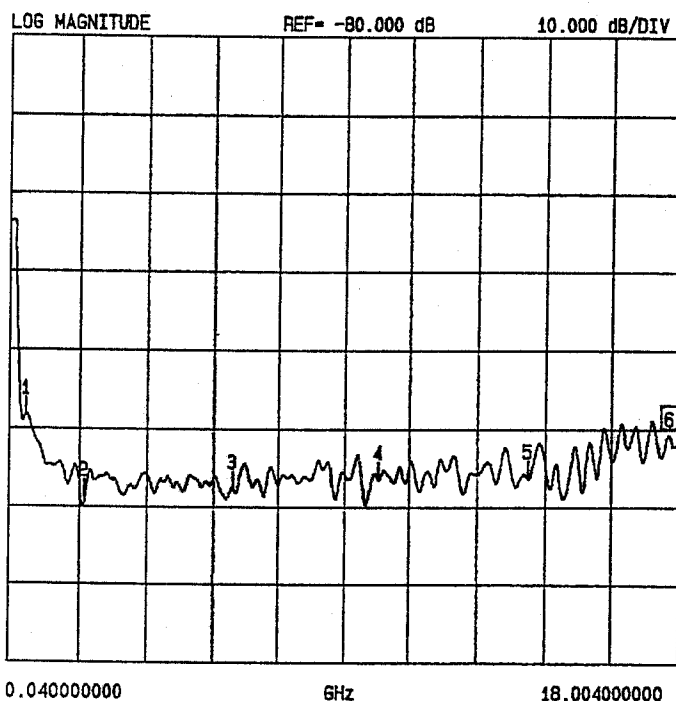
**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

#### ISOLATION\*

(AS MEASURED ON A VECTOR NETWORK ANALYZER)

J1-J2

S12 REVERSE TRANSMISSION



CH 2 - S12  
 REFERENCE PLANE  
 0.0000 mm  
 MARKER 6  
 18.00400000 GHz  
 -92.122 dB  
 MARKER TO MAX  
 MARKER TO MIN  
 1 0.501575000 GHz  
 -88.250 dB  
 2 2.011050000 GHz  
 -98.720 dB  
 3 6.003050000 GHz  
 -97.774 dB  
 4 10.007525000 GHz  
 -96.444 dB  
 5 14.012000000 GHz  
 -96.236 dB  
 MARKER READOUT  
 FUNCTIONS

\*J1: INPUT ARM

FREQUENCY	ISOLATION
500 MHz	88.2 dB
2.0 GHz	98.7 dB
6.0 GHz	97.7 dB
10.0 GHz	96.4 dB
14.0 GHz	96.2 dB
18.0 GHz	92.1 dB

NOVEMBER 15, 1999



## SUMMARY TEST DATA

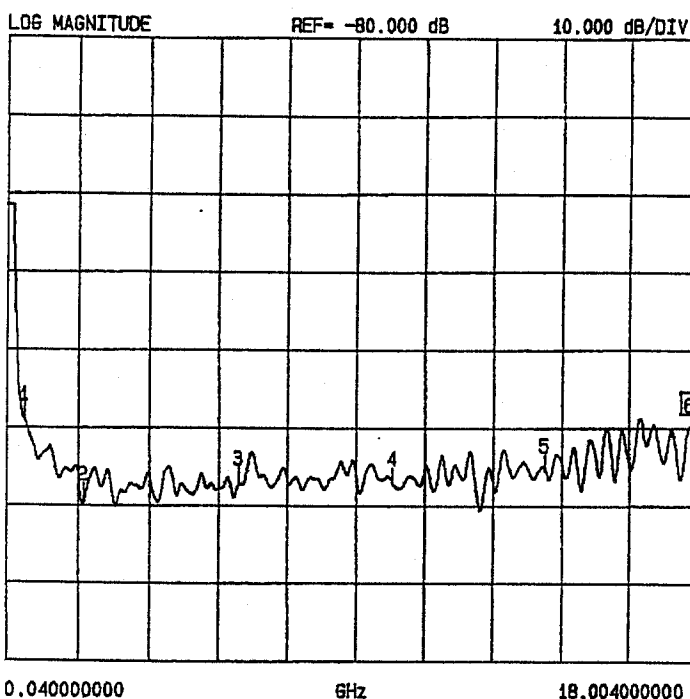
**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

### ISOLATION\*

(AS MEASURED ON A VECTOR NETWORK ANALYZER)

J1-J3

S12 REVERSE TRANSMISSION



CH 2 - S12  
REFERENCE PLANE  
0.0000 mm

MARKER 6  
18.004000000 GHz  
-90.424 dB

MARKER TO MAX  
MARKER TO MIN

- |   |                  |            |
|---|------------------|------------|
| 1 | 0.501575000 GHz  | -89.121 dB |
| 2 | 2.011050000 GHz  | -99.419 dB |
| 3 | 6.003050000 GHz  | -97.212 dB |
| 4 | 10.007525000 GHz | -97.290 dB |
| 5 | 14.012000000 GHz | -95.696 dB |

MARKER READOUT  
FUNCTIONS

\*J1: INPUT ARM

FREQUENCY	ISOLATION
500 MHz	89.1 dB
2.0 GHz	99.4 dB
6.0 GHz	97.2 dB
10.0 GHz	97.2 dB
14.0 GHz	95.6 dB
18.0 GHz	90.4 dB

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**AMERICAN MICROWAVE  
CORPORATION**

**ISOLATION  
DATA AND PLOTS  
FROM  
65 MHz TO 2 GHz  
AS  
MEASURED  
ON A VECTOR NETWORK  
ANALYZER  
ON A  
SP2T  
SOLID STATE SWITCH**

**AMC MODEL No:  
SWN-218-2DT OPTION 0518, HPR2W  
(Serial Number: 2MS910753)**

**REPORTED AND PREPARED  
BY  
RENE AFABLE**

**NOVEMBER 15, 1999**

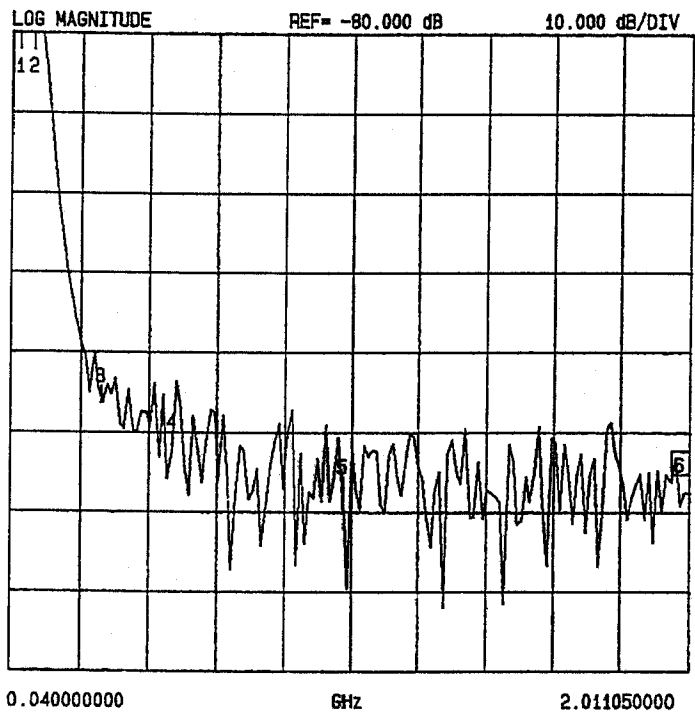


### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

**ISOLATION\***  
 (AS MEASURED ON A VECTOR NETWORK ANALYZER)  
 J1-J2

S12 REVERSE TRANSMISSION



CH 2 - S12  
 REFERENCE PLANE  
 0.0000 mm  
  
 MARKER 6  
 2.011050000 GHz  
 -97.597 dB  
  
 MARKER TO MAX  
 MARKER TO MIN  
 1 0.064950000 GHz  
 -19.589 dB  
 2 0.102375000 GHz  
 -31.774 dB  
 3 0.301975000 GHz  
 -86.298 dB  
 4 0.501575000 GHz  
 -92.118 dB  
 5 1.000575000 GHz  
 -97.656 dB  
  
 MARKER READOUT  
 FUNCTIONS

0.040000000 GHz 2.011050000

\*J1: INPUT ARM

FREQUENCY	ISOLATION
65 MHz	19.5 dB
100 MHz	31.7 dB
300 MHz	86.2 dB
500 MHz	92.1 dB
1.0 GHz	97.6 dB
2.0 GHz	97.5 dB

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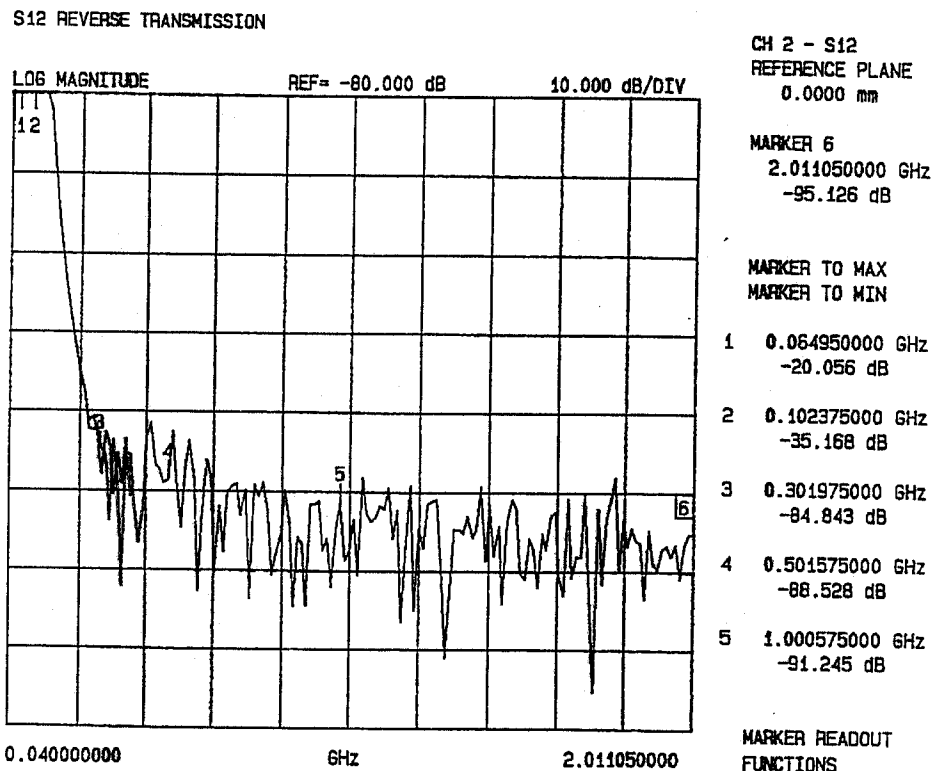




### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

**ISOLATION\***  
 (AS MEASURED ON A VECTOR NETWORK ANALYZER)  
 J1-J3



\*J1: INPUT ARM

FREQUENCY	ISOLATION
65 MHz	20.0 dB
100 MHz	35.1 dB
300 MHz	84.8 dB
500 MHz	88.5 dB
1.0 GHz	91.2 dB
2.0 GHz	95.1 dB

NOVEMBER 15, 1999



**AMERICAN MICROWAVE  
CORPORATION**

**ISOLATION  
DATA AND PLOTS  
FROM  
9 GHz TO 10 GHz  
AS  
MEASURED  
ON A VECTOR NETWORK  
ANALYZER  
ON A  
SP2T  
SOLID STATE SWITCH**

**AMC MODEL No:  
SWN-218-2DT OPTION 0518, HPR2W  
(Serial Number: 2MS910753)**

**REPORTED AND PREPARED  
BY  
RENE AFABLE**

**NOVEMBER 15, 1999**



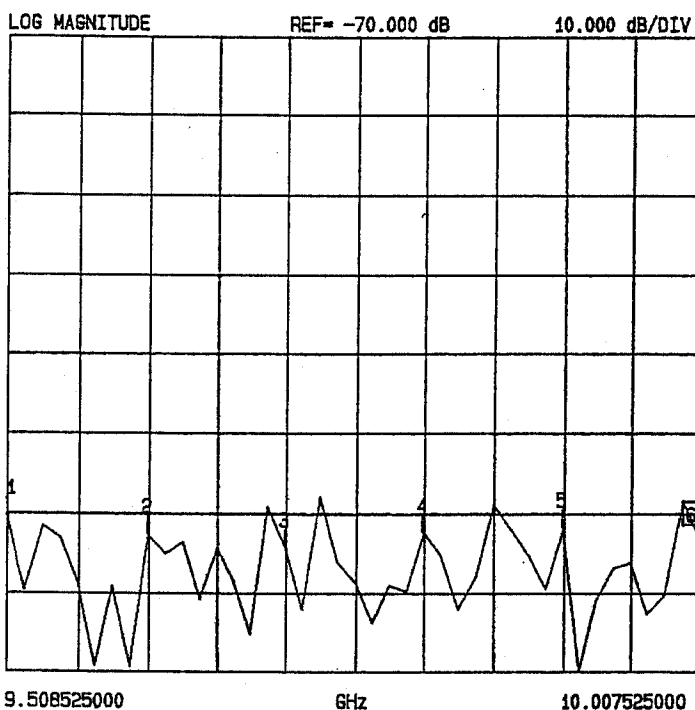
### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

### ISOLATION\*

(AS MEASURED ON A VECTOR NETWORK ANALYZER)  
 J1-J2

S12 REVERSE TRANSMISSION



CH 2 - S12  
 REFERENCE PLANE  
 0.0000 mm

MARKER 6  
 10.007525000 GHz  
 -93.482 dB

MARKER TO MAX  
 MARKER TO MIN

- 1 9.508525000 GHz  
-90.269 dB
- 2 9.608325000 GHz  
-92.593 dB
- 3 9.708125000 GHz  
-94.164 dB
- 4 9.807925000 GHz  
-92.250 dB
- 5 9.907725000 GHz  
-91.759 dB

MARKER READOUT  
 FUNCTIONS

\*J1: INPUT ARM

FREQUENCY	ISOLATION
9.5 GHz	90.2 dB
9.6 GHz	92.5 dB
9.7 GHz	94.1 dB
9.8 GHz	92.2 dB
9.9 GHz	91.7 dB
10.0 GHz	93.4 dB

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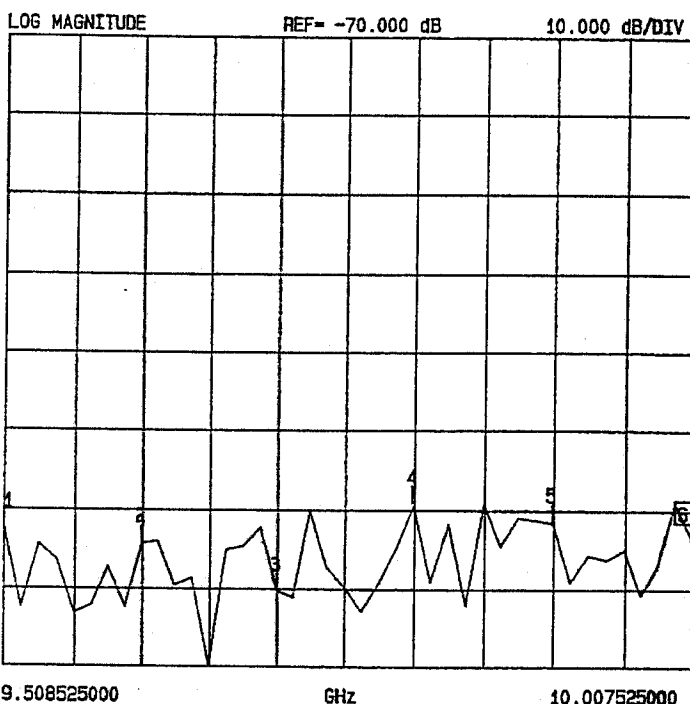


### SUMMARY TEST DATA

**MODEL NUMBER** : SWN-218-2DT OPTION 0518, HPR2W  
**SERIAL NUMBER** : 2MS910753  
**ENGINEER** : RENE AFABLE  
**VOLTAGE & CURRENT DRAW** : +5vdc: @ +69.1mA; -12vdc: @ 62.5mA

**ISOLATION\***  
 (AS MEASURED ON A VECTOR NETWORK ANALYZER)  
 J1-J3

S12 REVERSE TRANSMISSION



CH 2 - S12  
 REFERENCE PLANE  
 0.0000 mm

MARKER 6  
 10.007525000 GHz  
 -93.729 dB

MARKER TO MAX  
 MARKER TO MIN

- 1 9.508525000 GHz -92.569 dB
- 2 9.608325000 GHz -94.165 dB
- 3 9.708125000 GHz -100.266 dB
- 4 9.807925000 GHz -89.252 dB
- 5 9.907725000 GHz -91.538 dB

MARKER READOUT FUNCTIONS

\*J1: INPUT ARM

FREQUENCY	ISOLATION
9.5 GHz	92.5 dB
9.6 GHz	94.1 dB
9.7 GHz	100.2 dB
9.8 GHz	89.2 dB
9.9 GHz	91.5 dB
10.0 GHz	93.7 dB

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