



TEST DATA

FROM

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

100 MHz TO 2 GHz

AND

FROM 700 MHz TO 9 GHz

HIGH POWER (10 WATTS)

LOW INSERTION LOSS

AMPLITUDE (± 0.5 dB) AND PHASE ($\pm 5^\circ$) MATCHED

REFLECTIVE

SP2T

SOLID STATE SWITCH

AMC MODEL No:
SWN-218-2DR-STANDARD
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)

REPORTED AND PREPARED
BY
RENE AFABLE

OCTOBER 11, 1999

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

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

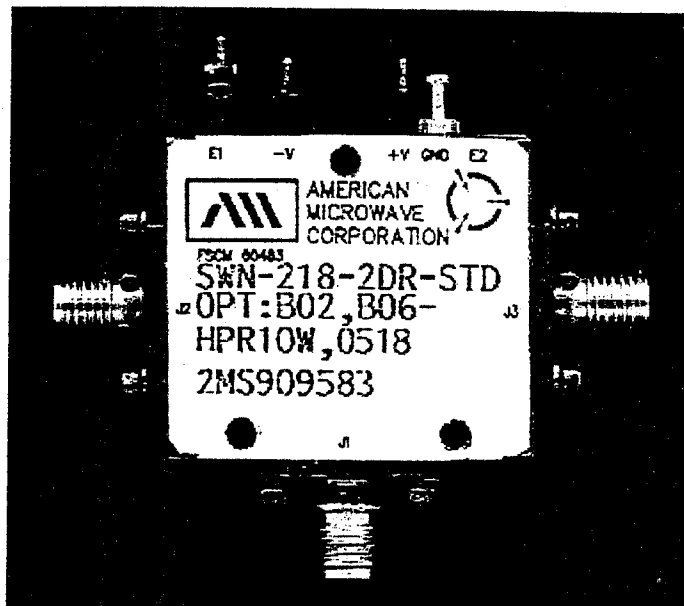


AMERICAN MICROWAVE CORPORATION

SP2T REFLECTIVE HIGH POWER SOLID STATE SWITCH

KEY FEATURES

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



AMC MODEL No: SWN-218-2DR-STANDARD OPTIONS B02, B06-HPR10W, 0518

SPECIFICATIONS: (REFLECTIVE)

• FREQUENCY RANGE	:	500 MHz to 18 GHz (10MHz to 18GHz Optional)
• INSERTION LOSS	:	2.5 dB MAX.
	:	1.00 dB TYP. @ 500 MHz
	:	0.75 dB TYP. @ 2.0 GHz
	:	1.20 dB TYP. @ 10.0 GHz
	:	2.50 dB TYP. @ 18.0 GHz
• ISOLATION	:	≥ 45 dB MIN.
	:	≥ 80 dB TYP. @ 500 MHz
	:	≥ 75 dB TYP. @ 2.0 GHz
	:	≥ 60 dB TYP. @ 10.0 GHz
	:	≥ 45 dB TYP. @ 18.0 GHz
• VSWR	:	2.0:1
• SWITCHING SPEED	:	"RISE" 75ns MAX., 60ns TYP.
	:	"FALL" 20ns MAX., 15ns TYP.
	:	"ON" 150ns MAX., 125ns TYP.
	:	"OFF" 100ns MAX., 75ns TYP.
• CONTROL	:	Single control TTL Compatible (Independent control available)
• VIDEO TRANSIENTS	:	≤2.3 V Peak to Peak, 300 MHZ Bandwidth
	:	≤1.20 V Peak to Peak, 20 MHZ Bandwidth
• RF INPUT POWER	:	+ 40dBm Operating (Other power Levels available)
• DC POWER SUPPLY	:	+ 5vdc @ +100mA MAX.
(Other supply voltages available)	:	- 15vdc @ - 75mA MAX.
• SIZE	:	1.2" (L) X 1.0" (W) X 0.50" (H)
• WEIGHT	:	≤ 1.5 oz.

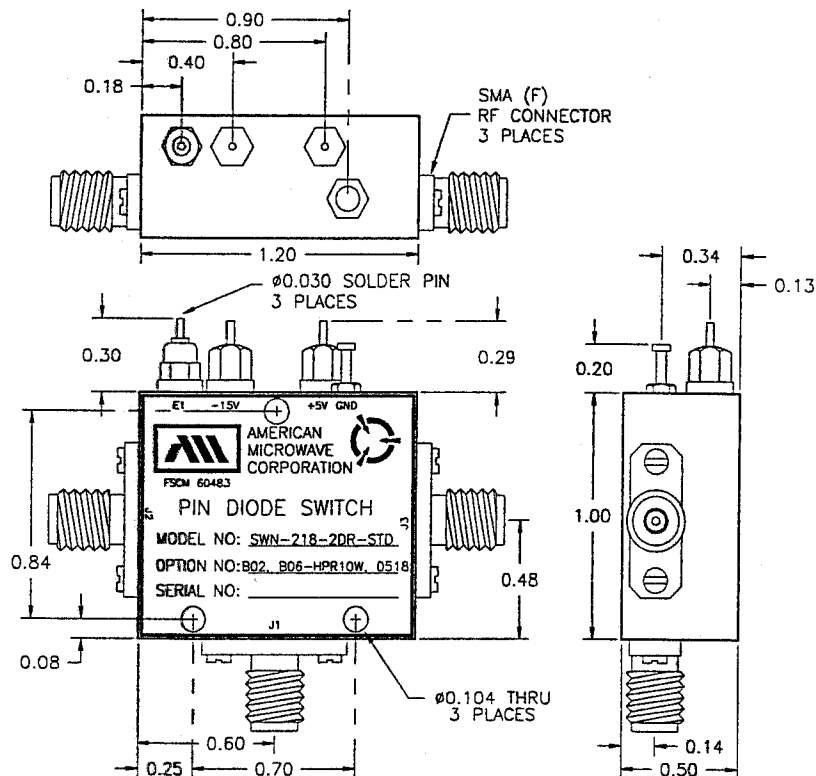
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SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA



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.

OCTOBER 11, 1999

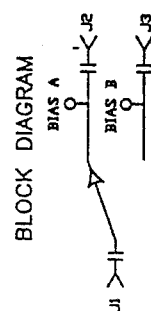
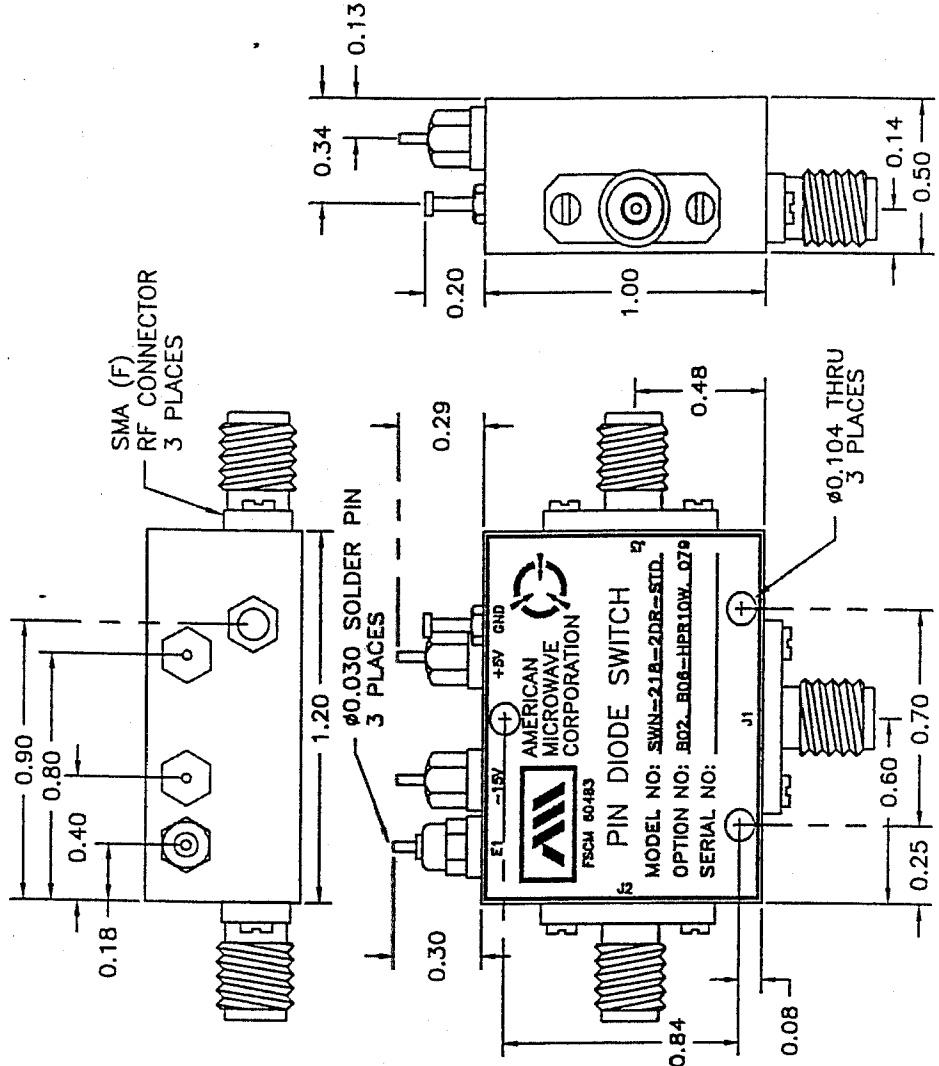
DESCRIPTION:

AMC MODEL SWN-218-2DR-STANDARD OPTIONS B02, B06-HPR10W, 079 IS A HIGH POWER (10 WATTS) SINGLE POLE TWO THROW, REFLECTIVE SWITCH MODULE WITH LOW INSERTION LOSS AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR 700 MHz TO 9.0 GHz OPERATION.

ZONE	REV.	DESCRIPTION	DATE	APPROVED
		ORIGINAL RELEASE	12/99	

SPECIFICATIONS:

- FREQUENCY: 700 MHz TO 9 GHz
- INSERTION LOSS: 1.5 dB MAX. 1.0 dB TYPICAL
- ISOLATION: 60 dB MINIMUM
- VSWR (ALL PORTS): 2.0:1
- SPEED: RISE: 75ns TYPICAL, 60ns MAX. FALL: 25ns TYPICAL, 15ns MAX. DELAY ON: 150ns TYPICAL, 125ns MAX. DELAY OFF: 100ns TYPICAL, 75ns MAX.
- RF POWER: +40 dBm MAXIMUM
- CONTROL: TTL SINGLE CONTROL
- LOGIC "0": J1 TO J2
- LOGIC "1": J1 TO J3
- POWER SUPPLY: +5 VDC @ 100 mA MAXIMUM -15 VDC @ 75 mA MAXIMUM
- CONNECTORS (RF): SMA FEMALE, 3 PLACES
- CONNECTORS (POWER): SOLDER PINS
- CONNECTORS (CONTROL): SOLDER PINS
- 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-204D, 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	WSP, RBLA	10/12/99
CHECKED	CA	10/14/99
ISSUED	WSP	10/14/99

AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		PRODUCT FEATURE	
SWN-218-2DR-STANDARD		OPTIONS B02, B06-HPR10W, 079	
SIZE	FSCM NO.	DWG NO.	REV.
A	60483	100-4427-8	
SCALE N/S		SHEET 1 of 3	

DESCRIPTION: 2DR/DT-STANDARD IS A SINGLE POLE TWO THROW, REFLECTIVE OR ABSORPTIVE/1-N-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: 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
- 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

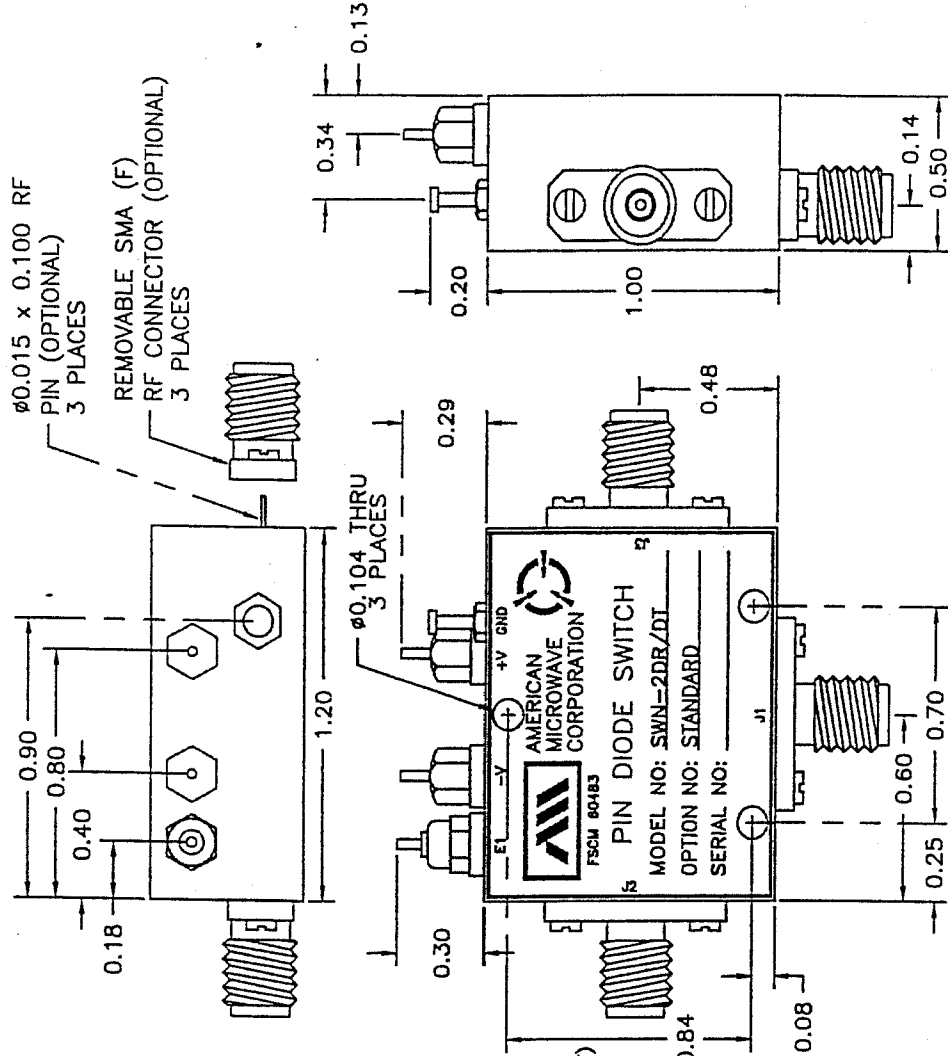
OPTIONS:

- 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)
- 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)
- 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, 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 DR REVISION



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

APPROVALS		DATE
DRAWN	WSP, RSD	1/29/99
CHECKED	WP	2/29/99
ISSUED	PA	7/29/99
TITLE		
AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND		
OUTLINE DRAWING		
SWN-2DR/DT-STANDARD		
SOLID STATE SWITCH		
SIZE	FSCM NO.	DRG NO.
A	60483	100-4427-1
SCALE	N/S	SHEET 1 of 2

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

DESCRIPTION: DR/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: 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
CONTROL: SOLDER PIN
- SIZE: 1.20" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.5 OUNCE TYPICAL

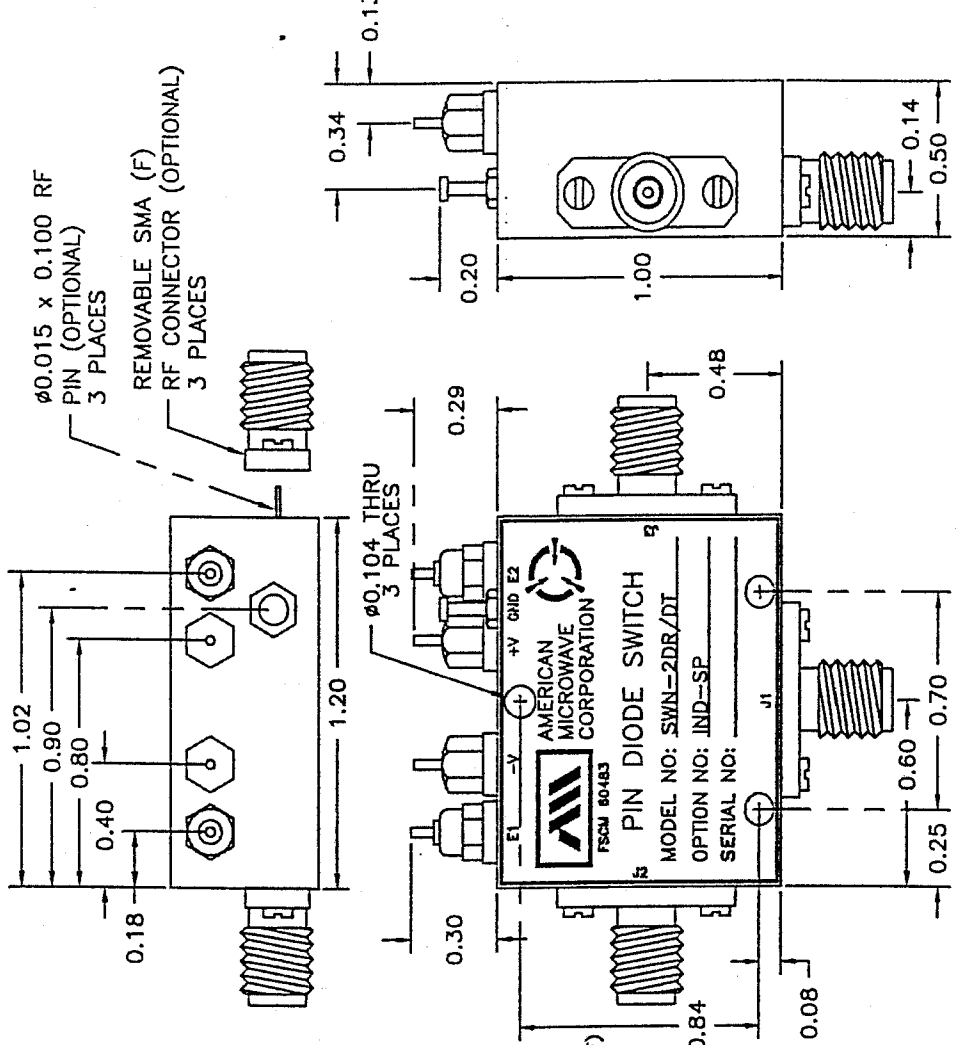
OPTIONS:

- 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)
 - 118 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 218 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 618 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 1218 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1" = ON "0" = OFF
- B04 DRIVERLESS, CURRENT CONTROLLED,
- B05 HIGH SPEED, TURNON/TURNOFF 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
DESIGN: WJP, RPL	1/29/99	AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND
CHECKED: WJP	2/29/99	OUTLINE DRAWING
ISSUED: JF	3/29/99	SWN-2DR/DT-IND-SP SOLID STATE SWITCH
SIZE: A	FSCM NO: 60483	DWG NO: 100-4427-2
SCALE: N/S	SHEET: 1 of 2	

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



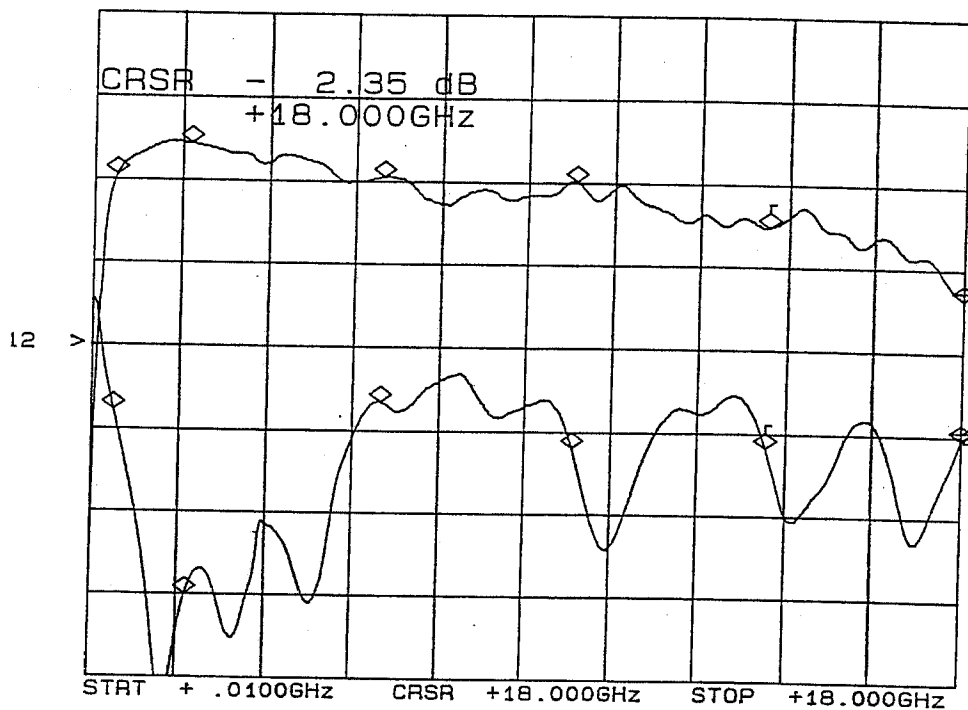
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J2

CH1: A -M S - 2.35 dB CH2: R -M REF - 14.69 dB
 1.0 dB/ REF - 3.00 dB 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.92 dB	13.3 dB
2 GHz	0.55 dB	24.4 dB
6 GHz	0.92 dB	12.7 dB
10 GHz	0.97 dB	15.4 dB
14 GHz	1.50 dB	15.3 dB
18 GHz	2.35 dB	14.6 dB

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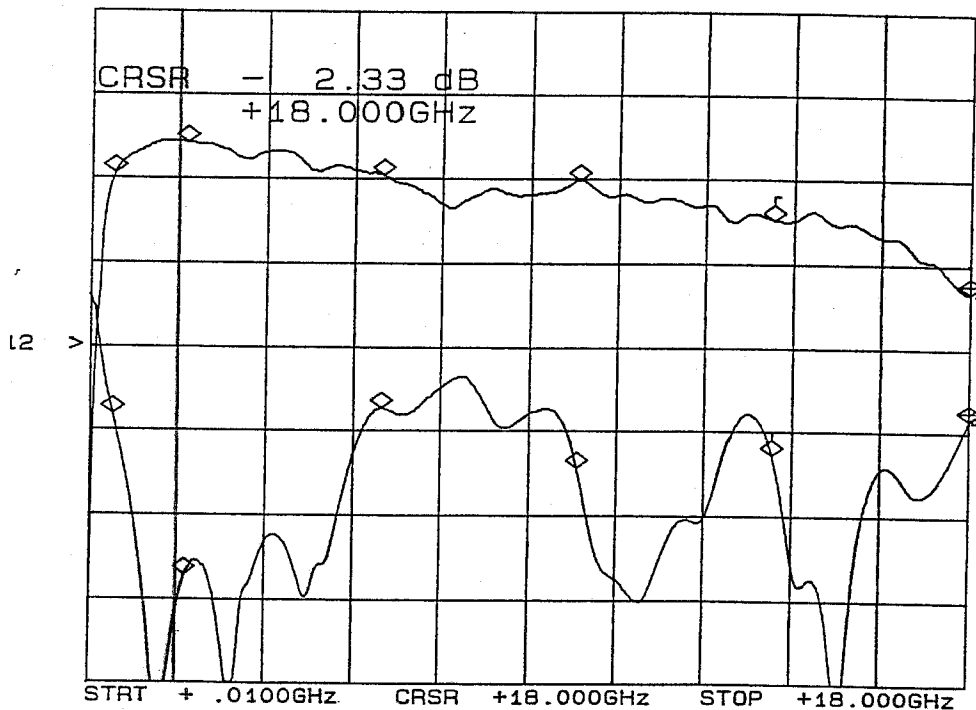
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J3

CH1: A -M S - 2.33 dB CH2: R -M - 13.72 dB
 1.0 dB/ REF - 3.00 dB 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.93 dB	13.5 dB
2 GHz	0.56 dB	23.0 dB
6 GHz	0.95 dB	13.1 dB
10 GHz	1.00 dB	16.7 dB
14 GHz	1.46 dB	15.9 dB
18 GHz	2.33 dB	13.7 dB

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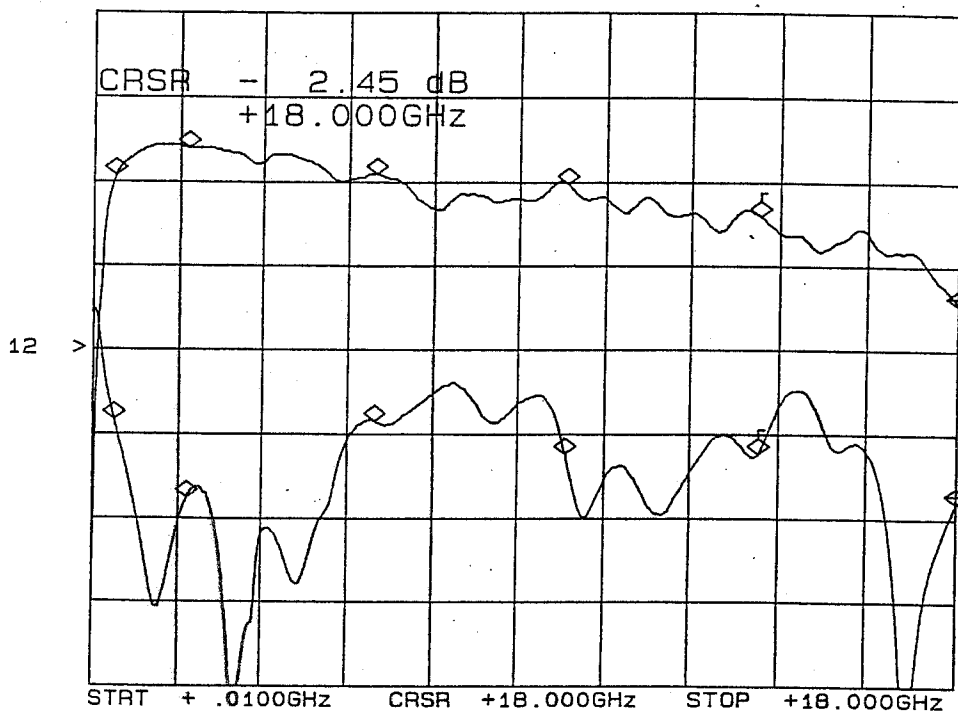
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J2-J1

CH1: A -M S - 2.45 dB
 1.0 dB/ REF - 3.00 dB
 CH2: R -M - 18.48 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.92 dB	13.6 dB
2 GHz	0.58 dB	18.2 dB
6 GHz	0.90 dB	13.7 dB
10 GHz	1.01 dB	15.6 dB
14 GHz	1.39 dB	15.5 dB
18 GHz	2.45 dB	18.4 dB



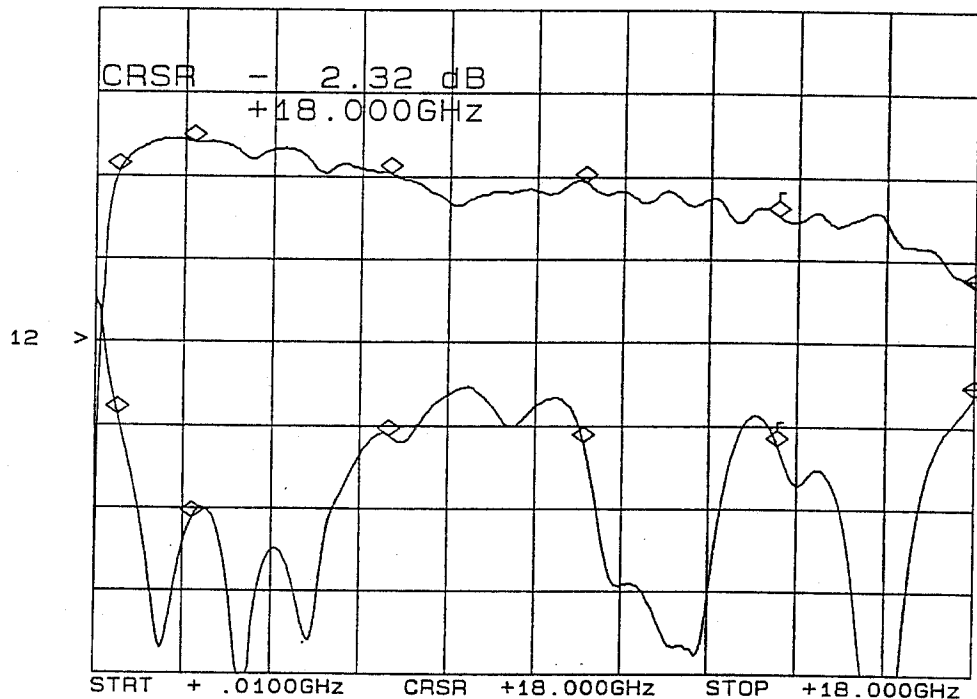
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J3-J1

CH1: A -M S - 2.32 dB CH2: R -M REF - 12.58 dB
 1.0 dB/ REF - 3.00 dB 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
500 MHz	0.93 dB	13.8 dB
2 GHz	0.57 dB	20.0 dB
6 GHz	0.95 dB	15.0 dB
10 GHz	1.05 dB	15.4 dB
14 GHz	1.45 dB	15.6 dB
18 GHz	2.32 dB	12.5 dB

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SUMMARY TEST DATA

MODEL NUMBER SERIAL NUMBER ENGINEER VOLTAGE & CURRENT DRAW	: SWN-218-2DR-STANDARD OPTIONS B02, B06-HPR10W, 0518 : 2MS909583 : RENE AFABLE : +5vdc: @+76.5mA; -15vdc: @ -21.1mA
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ISOLATION*

(AS MEASURED ON A SPECTRUM ANALYZER)

FREQUENCY	J2	J3
100 MHz	95 dB	95 dB
200 MHz	85 dB	84 dB
500 MHz	80 dB	80 dB
700 MHz	80 dB	79 dB
1 GHz	79 dB	77 dB
2 GHz	76 dB	75 dB
4 GHz	73 dB	72 dB
6 GHz	70 dB	69 dB
8 GHz	68 dB	68 dB
9 GHz	66 dB	65 dB
10 GHz	62 dB	62 dB
12 GHz	58 dB	57 dB
14 GHz	57 dB	55 dB
16 GHz	56 dB	54 dB
18 GHz	50 dB	45 dB

* J1: INPUT ARM

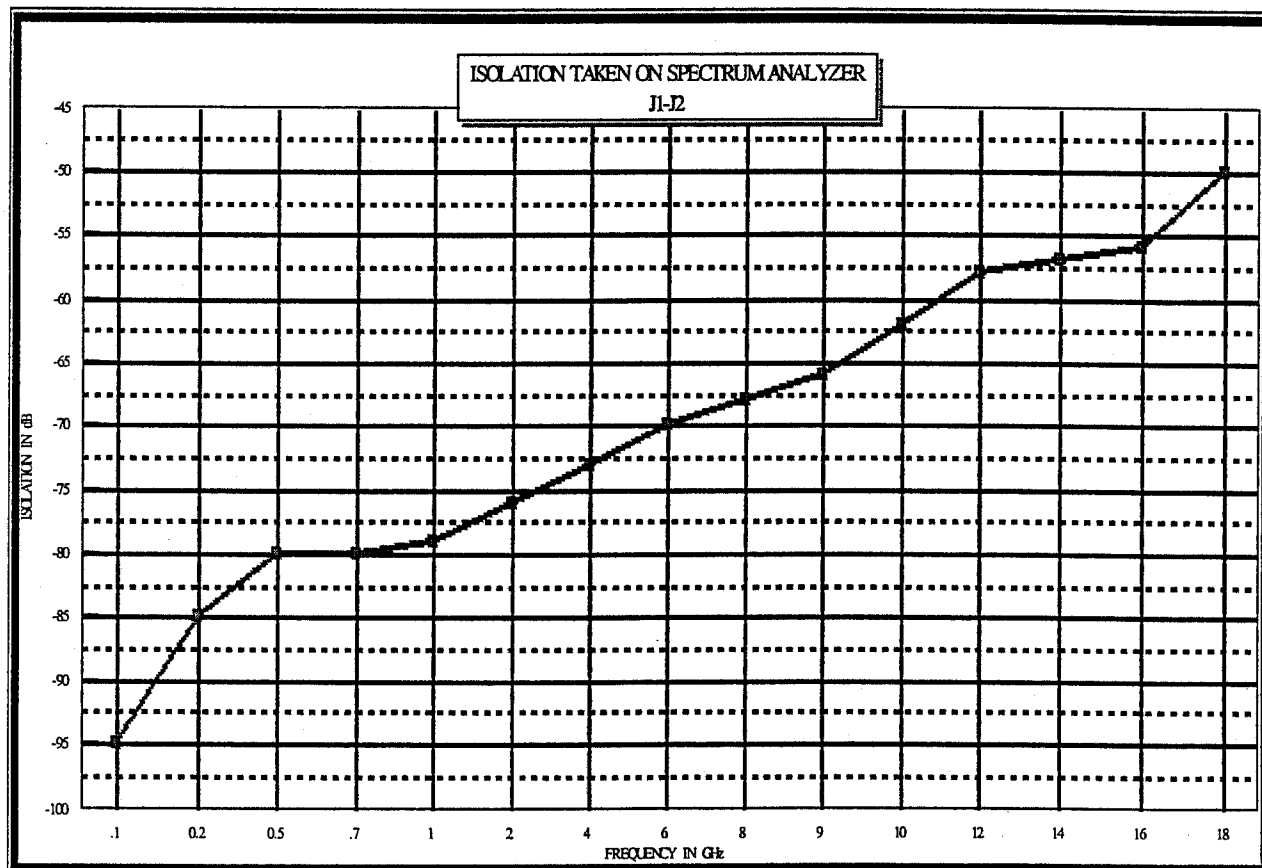
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SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
 SERIAL NUMBER : 2MS909583
 ENGINEER : RENE AFABLE
 VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

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



*J1: INPUT ARM

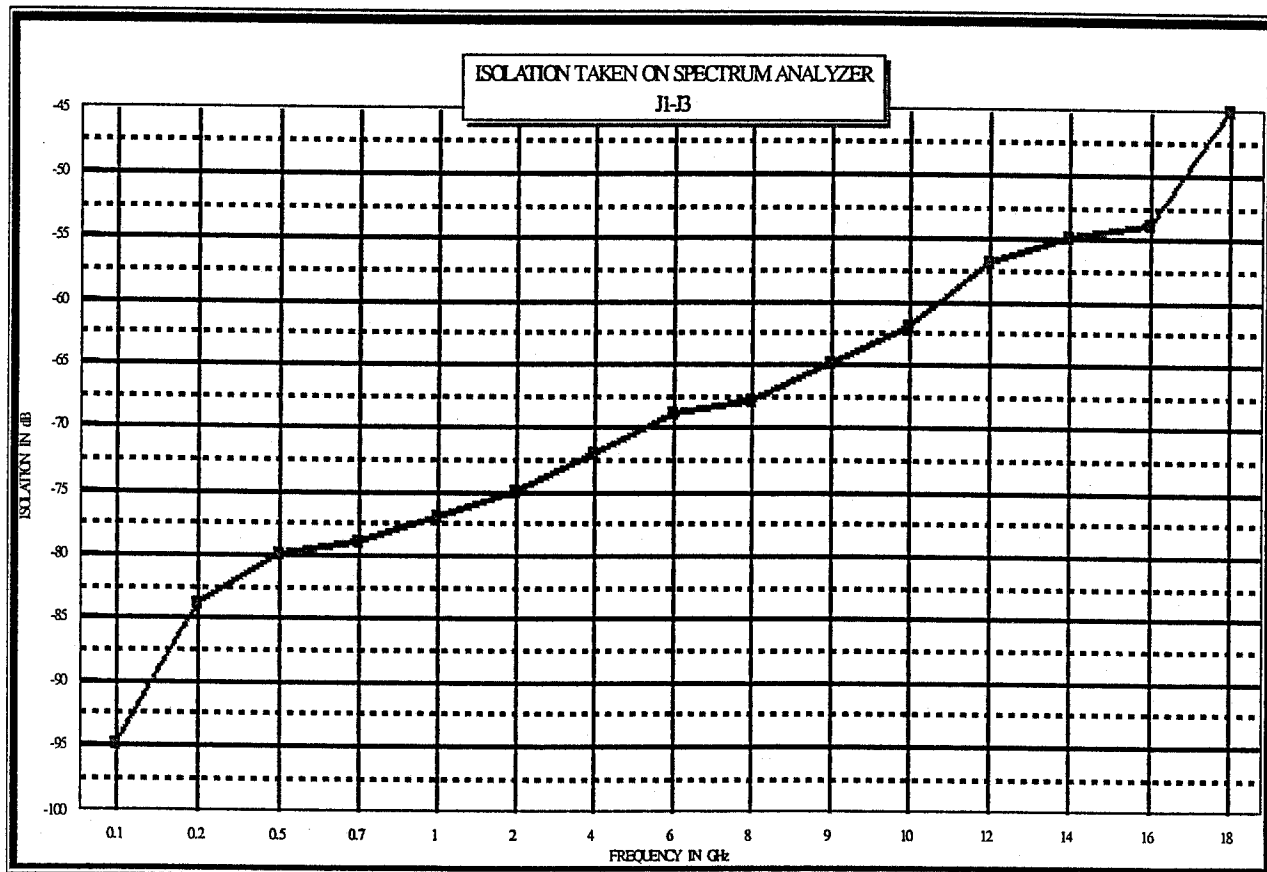
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SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
 SERIAL NUMBER : 2MS909583
 ENGINEER : RENE AFABLE
 VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

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



*J1: INPUT ARM

OCTOBER 11, 1999



**AMPLITUDE
DATA
BETWEEN
PORT TO PORT
FROM**

300 MHz TO 18 GHz

ON A

SP2T

SOLID STATE SWITCH

**AMC MODEL No:
SWN-218-2DR-STANDARS
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)**

**REPORTED AND PREPARED
BY
RENE AFABLE**

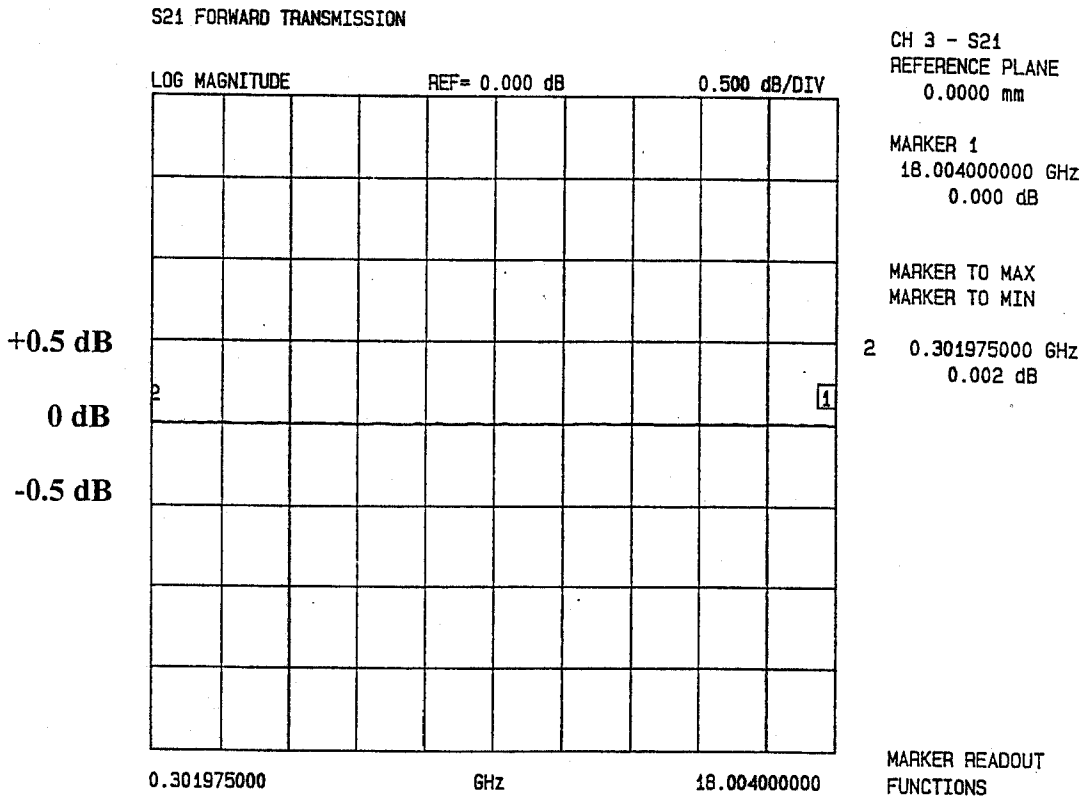
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MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

AMPLITUDE*
J1-J2 (REFERENCE)



*J1: INPUT ARM

FREQUENCY	AMPLITUDE (MAXIMUM) (POSITIVE SIDE)	AMPLITUDE (MAXIMUM) (NEGATIVE SIDE)
18 GHZ	0.000 dB	
300 MHz	0.002 dB	

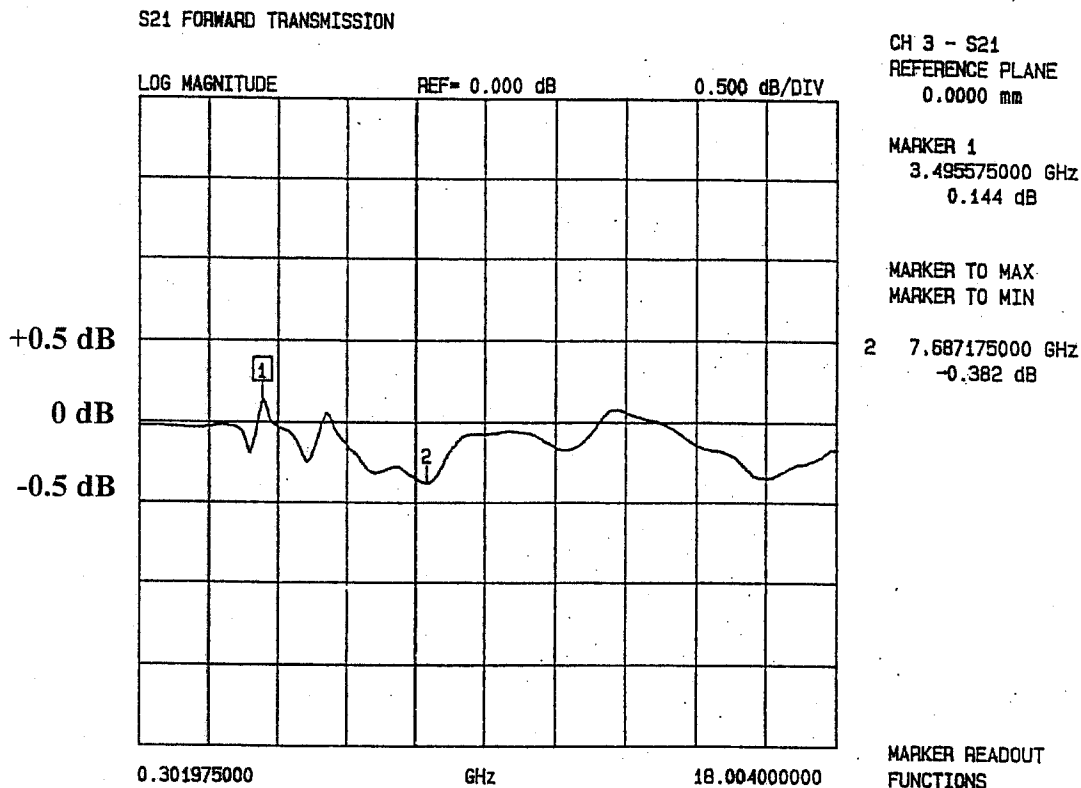
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SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

AMPLITUDE*
J1-J3



*J1: INPUT ARM

FREQUENCY	AMPLITUDE (MAXIMUM) (POSITIVE SIDE)	AMPLITUDE (MAXIMUM) (NEGATIVE SIDE)
3.49 GHZ	0.144 dB	
7.68 GHZ		-0.382 dB

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**AMERICAN MICROWAVE
CORPORATION**

**PHASE
DATA
BETWEEN
PORT TO PORT
FROM
300 MHz TO 18 GHz
ON A
SP2T**

**RADIAL SOLID STATE SWITCH
(SURFACE MOUNTABLE)**

**AMC MODEL No:
SWN-218-2DR-STANDARD
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)**

**REPORTED AND PREPARED
BY
RENE AFABLE**

OCTOBER 11, 1999

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

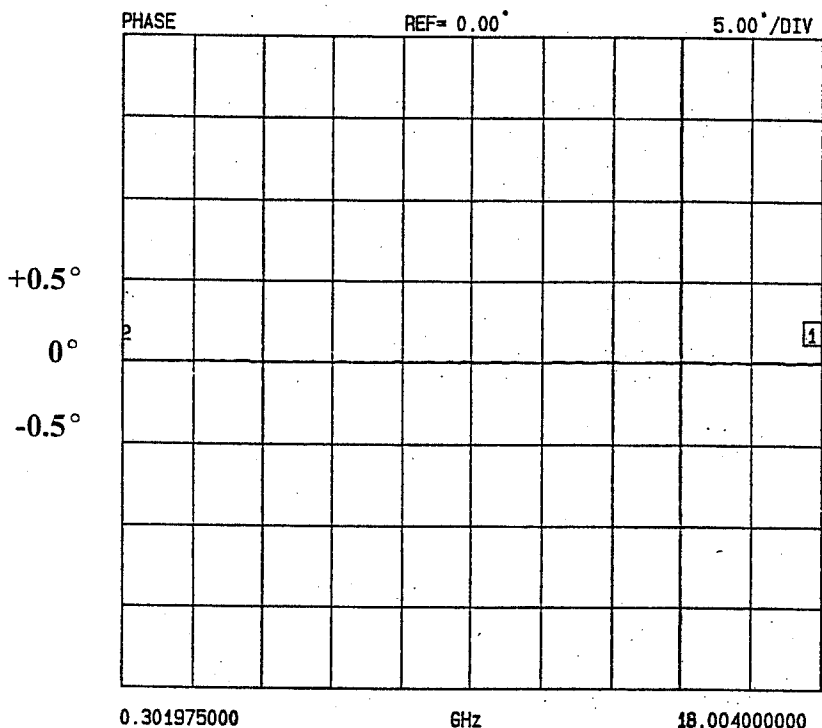


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

PHASE*
J1-J2 (REFERENCE)

S21 FORWARD TRANSMISSION



CH 3 - S21
 REFERENCE PLANE
 0.0000 mm

MARKER 1
 18.004000000 GHz
 0.01°

MARKER TO MAX
 MARKER TO MIN

2 0.301975000 GHz
 -0.02°

MARKER READOUT
 FUNCTIONS

*J1: INPUT ARM

FREQUENCY	PHASE (MAXIMUM) (POSITIVE SIDE)	PHASE (MAXIMUM) (NEGATIVE SIDE)
18 GHZ	0.01°	
300 MHz		-0.02°

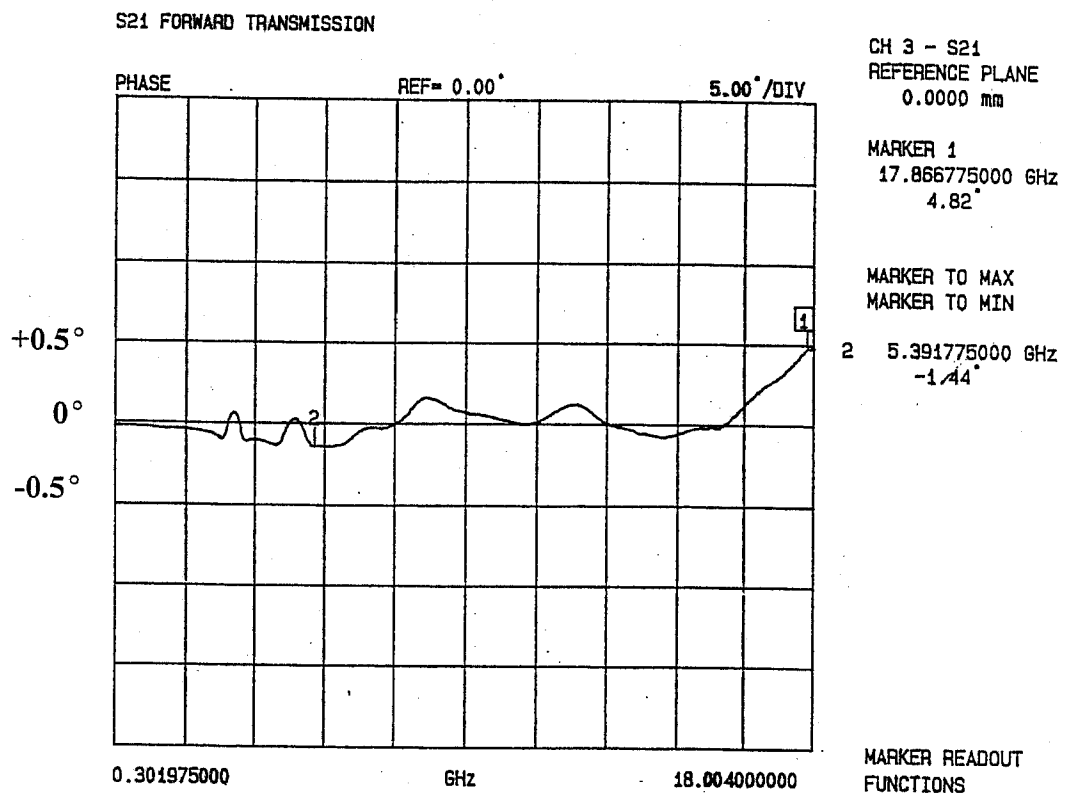
OCTOBER 11, 1999



SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

PHASE* J1-J3



*J1: INPUT ARM

FREQUENCY	PHASE (MAXIMUM) (POSITIVE SIDE)	PHASE (MAXIMUM) (NEGATIVE SIDE)
17.86 GHZ	4.82°	
5.39 GHZ		-1.44°

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**AMERICAN MICROWAVE
CORPORATION**

TEST DATA

FROM

100 MHz TO 2 GHz

HIGH POWER (10 WATTS)

LOW INSERTION LOSS

AMPLITUDE (± 0.5 dB) AND PHASE ($\pm 5^\circ$) MATCHED

MINIATURE REFLECTIVE

SP2T

SOLID STATE SWITCH

AMC MODEL No:

SWN-218-2DR-STANDARD

OPTIONS B02, B06-HPR10W, 0518

(Serial Number: 2MS909583)

REPORTED AND PREPARED

BY

RENE AFABLE

OCTOBER 11, 1999

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



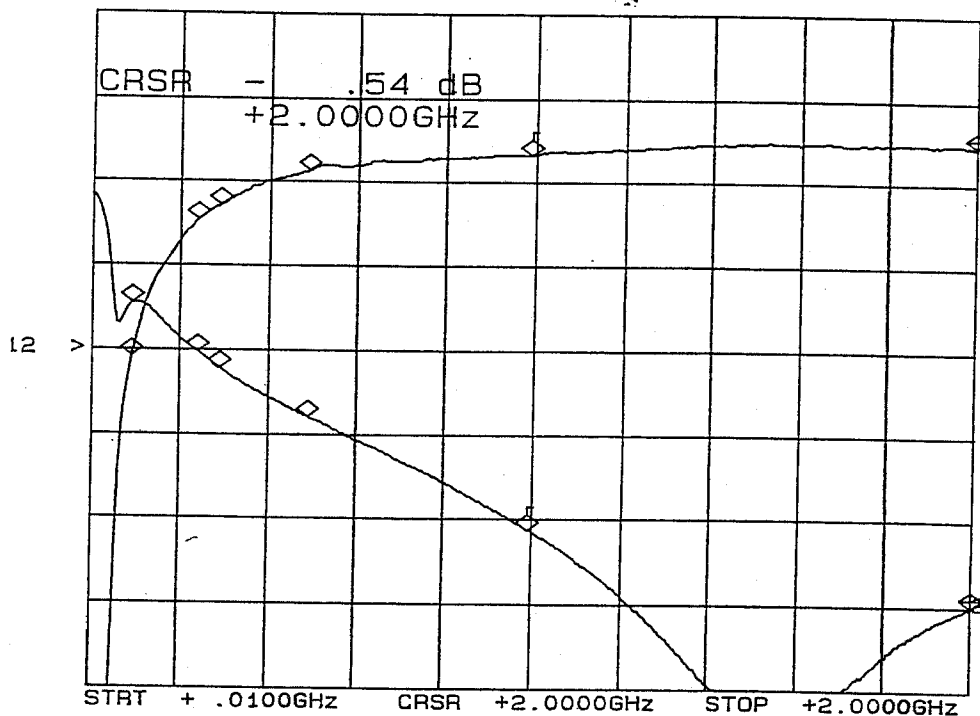
SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-2DR-STANDARD
SERIAL NUMBER	: 2MS909583
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J2

CH1: A -M REF - .54 dB CH2: R -M REF - 24.51 dB
 1.0 dB/ 3.00 dB 5.0 dB/ 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
100 MHz	3.07 dB	6.72 dB
250 MHz	1.44 dB	9.61 dB
300 MHz	1.27 dB	10.5 dB
500 MHz	0.86 dB	13.4 dB
1.0 GHz	0.66 dB	20.1 dB
2.0 GHz	0.54 dB	24.5 dB

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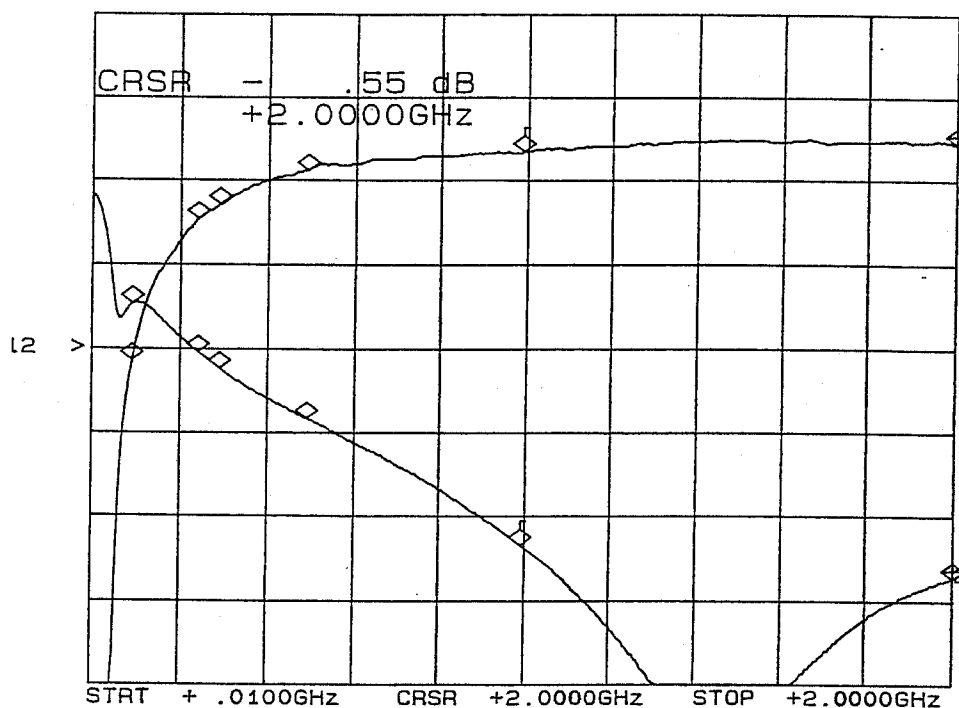
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
 SERIAL NUMBER : 2MS909583
 ENGINEER : RENE AFABLE
 VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J3

CH1: A -M - .55 dB
 1.0 dB/ REF - 3.00 dB
 CH2: R -M - 23.14 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
100 MHz	3.13 dB	6.81 dB
250 MHz	1.46 dB	9.57 dB
300 MHz	1.06 dB	10.6 dB
500 MHz	0.87 dB	14.6 dB
1.0 GHz	0.65 dB	21.1 dB
2.0 GHz	0.55 dB	23.1 dB

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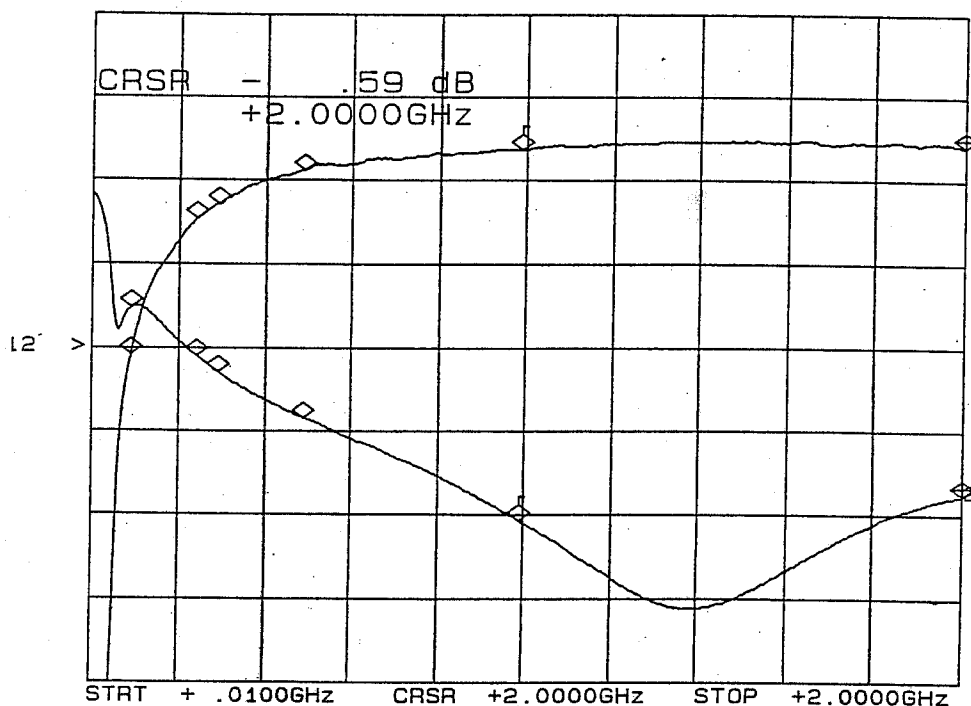
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
 SERIAL NUMBER : 2MS909583
 ENGINEER : RENE AFABLE
 VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J2-J1

CH1: A -M - .59 dB
 1.0 dB/ REF - 3.00 dB
 CH2: R -M - 18.36 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
100 MHz	3.06 dB	7.05 dB
250 MHz	1.44 dB	9.97 dB
300 MHz	1.27 dB	10.9 dB
500 MHz	0.87 dB	13.7 dB
1.0 GHz	0.62 dB	19.8 dB
2.0 GHz	0.59 dB	18.3 dB

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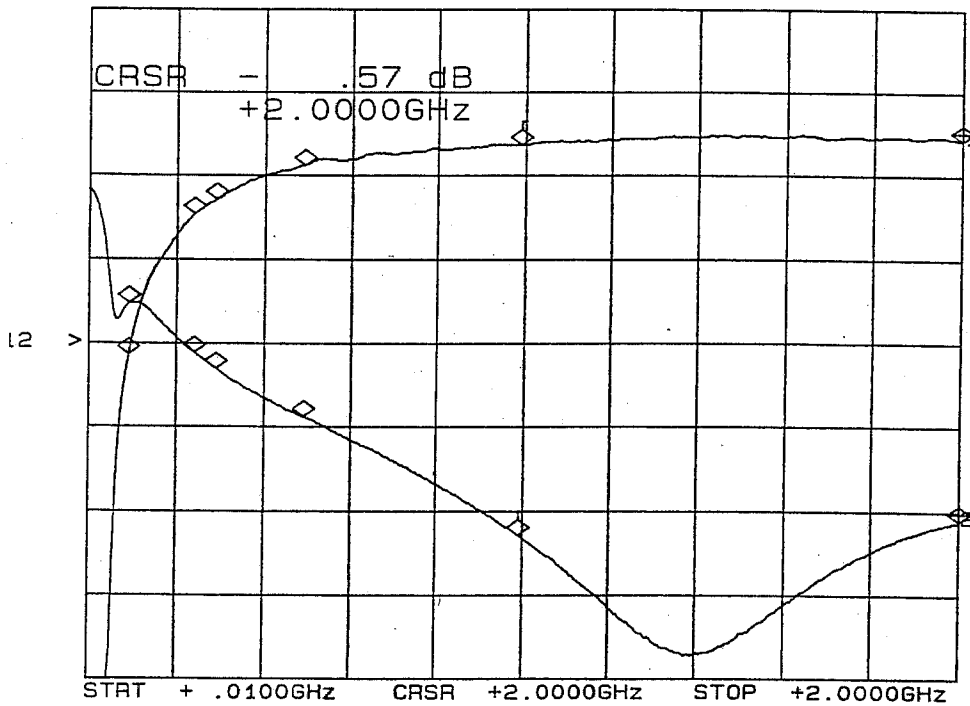
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J3-J1

CH1: A -M - .57 dB CH2: R -M - 20.10 dB
 1.0 dB/ REF - 3.00 dB 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
100 MHz	3.12 dB	7.12 dB
250 MHz	1.45 dB	10.0 dB
300 MHz	1.28 dB	11.0 dB
500 MHz	0.87 dB	13.9 dB
1.0 GHz	0.63 dB	20.9 dB
2.0 GHz	0.57 dB	20.1 dB



TEST DATA

FROM

700 MHz TO 9 GHz

HIGH POWER (10 WATTS)

LOW INSERTION LOSS

AMPLITUDE (± 0.5 dB) AND PHASE ($\pm 5^\circ$) MATCHED

MINIATURE REFLECTIVE

SP2T

SOLID STATE SWITCH

AMC MODEL No:

SWN-218-2DR-STANDARD

OPTIONS B02, B06-HPR10W, 0518

(Serial Number: 2MS909583)

REPORTED AND PREPARED

BY

RENE AFABLE

OCTOBER 11, 1999



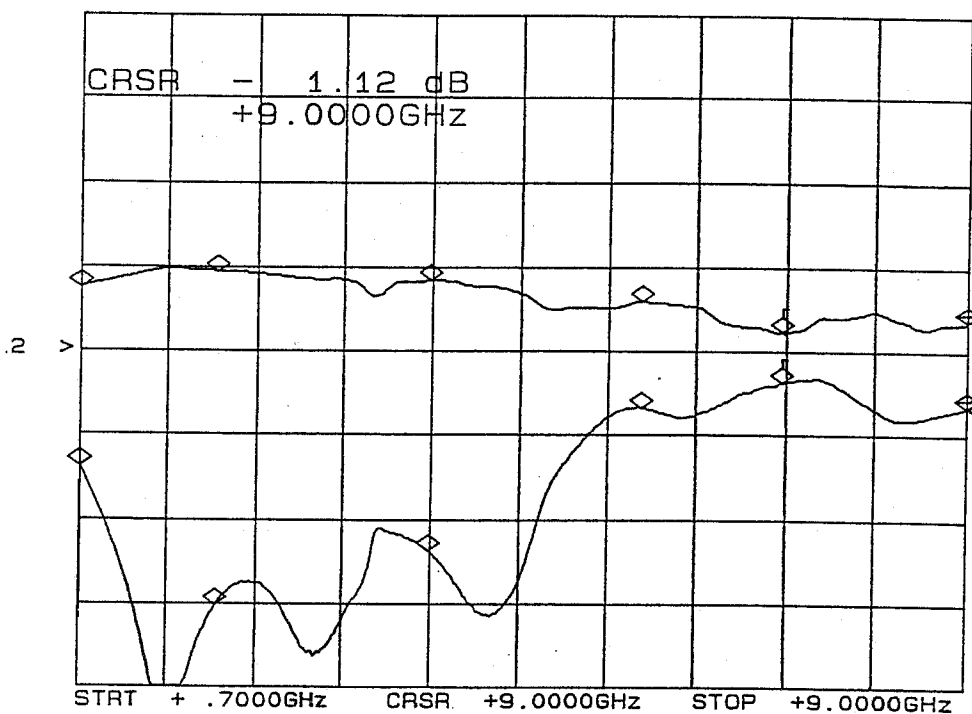
SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-2DR-STANDARD
SERIAL NUMBER	: 2MS909583
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J2

CH1: A -M S - 1.12 dB CH2: A -M REF - 12.85 dB
 1.0 dB/ REF - 1.50 dB 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
700 MHz	0.73 dB	16.4 dB
2.0 GHz	0.54 dB	24.5 dB
4.0 GHz	0.65 dB	21.3 dB
6.0 GHz	0.88 dB	12.9 dB
7.3 GHz	1.26 dB	11.4 dB
9.0 GHz	1.12 dB	12.8 dB



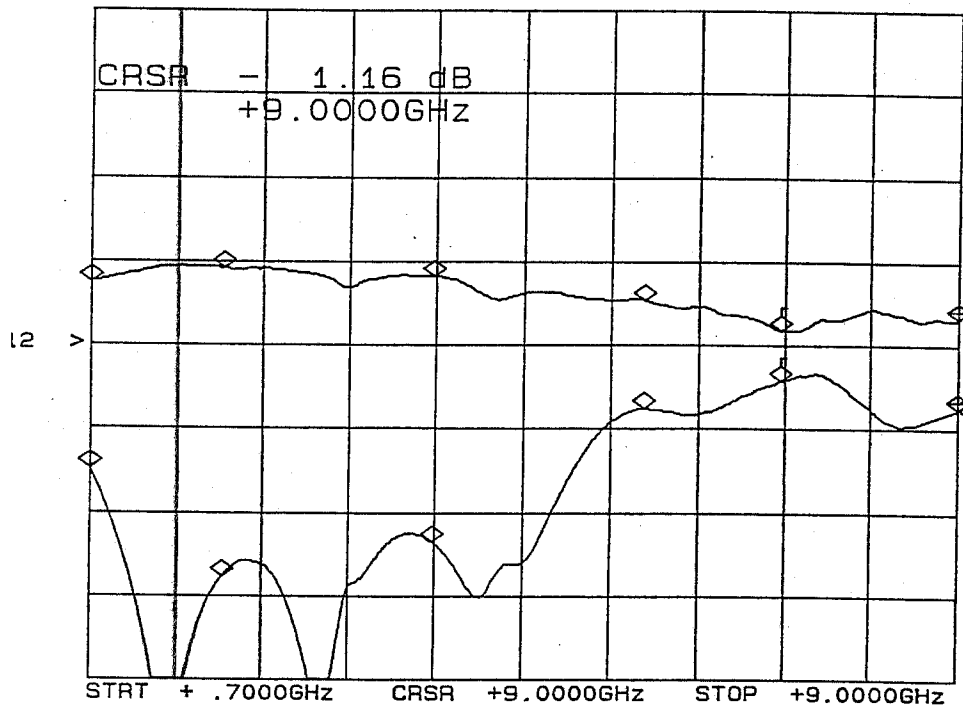
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J1-J3

CH1: A -M S - 1.16 dB
 1.0 dB/ REF - 1.50 dB
 CH2: R -M - 13.36 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
700 MHz	0.74 dB	16.8 dB
2.0 GHz	0.56 dB	23.3 dB
4.0 GHz	0.66 dB	21.2 dB
6.0 GHz	0.94 dB	13.3 dB
7.3 GHz	1.31 dB	11.7 dB
9.0 GHz	1.16 dB	13.3 dB



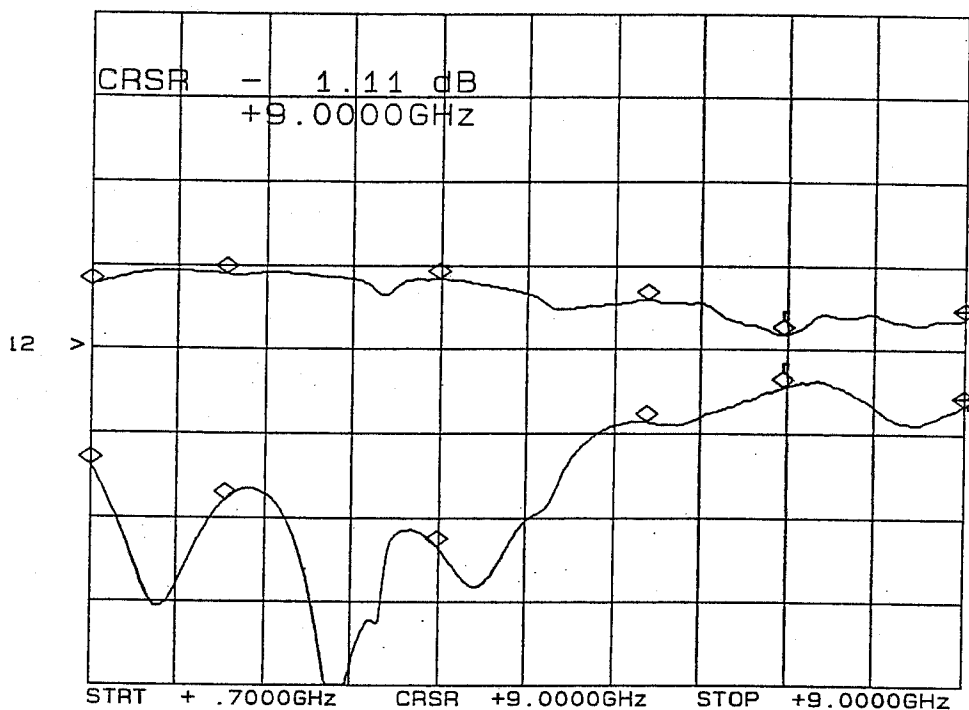
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J2-J1

CH1: A -M S - 1.11 dB
 1.0 dB/ REF - 1.50 dB
 CH2: R -M - 12.82 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
700 MHz	0.73 dB	16.4 dB
2.0 GHz	0.59 dB	18.4 dB
4.0 GHz	0.65 dB	21.2 dB
6.0 GHz	0.89 dB	13.8 dB
7.3 GHz	1.32 dB	11.8 dB
9.0 GHz	1.11 dB	12.8 dB



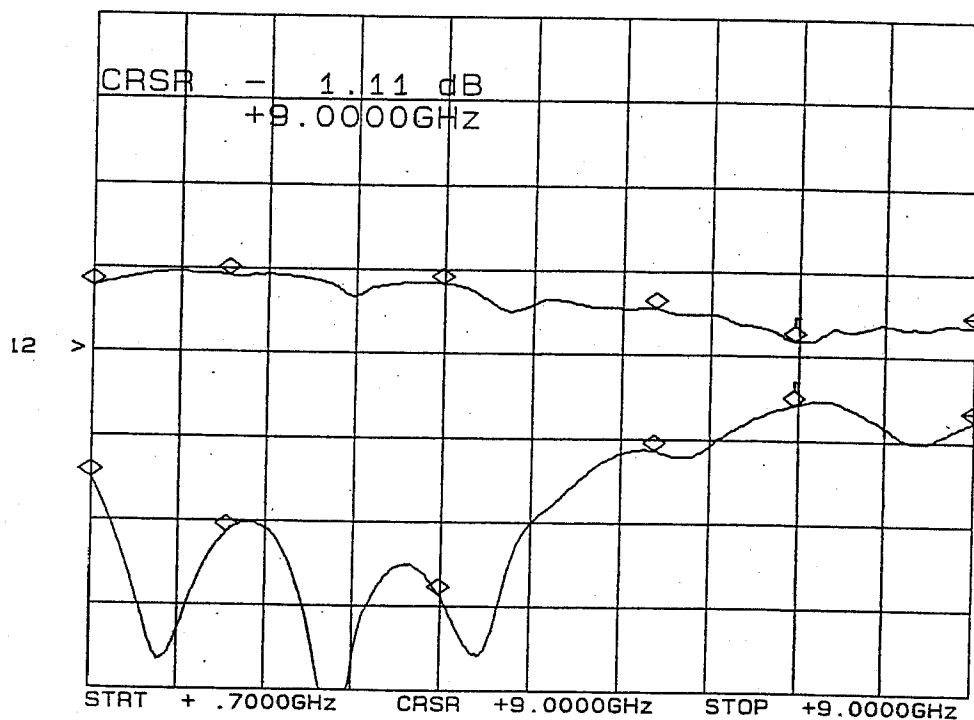
SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

INSERTION LOSS & RETURN LOSS*

J3-J1

CH1: A -M S - 1.11 dB
 1.0 dB/ REF - 1.50 dB
 CH2: R -M - 13.24 dB
 5.0 dB/ REF - 9.54 dB



*J1: INPUT ARM

FREQUENCY	INSERTION LOSS	RETURN LOSS
700 MHz	0.72 dB	16.9 dB
2.0 GHz	0.57 dB	20.1 dB
4.0 GHz	0.65 dB	23.7 dB
6.0 GHz	0.93 dB	16.1 dB
7.3 GHz	1.32 dB	12.4 dB
9.0 GHz	1.11 dB	13.2 dB

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SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : OPTIONS B02, B06-HPR10W, 0518
ENGINEER : 2MS909583
VOLTAGE & CURRENT DRAW : RENE AFABLE
: +5vdc: @+76.5mA; -15vdc: @ -21.1mA

SWITCHING SPEED

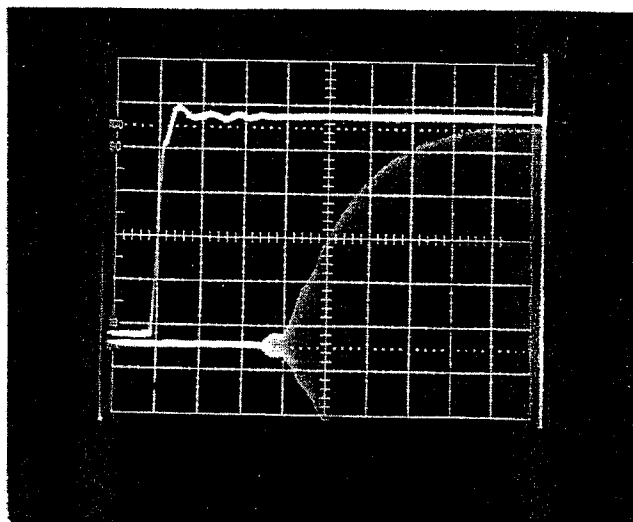
"Rise/Fall" Time: 10% RF to 90% RF & 90% RF to 10% RF
"On/Off" Time: 50% TTL to 90% RF or 10% RF

TYPICAL OF ALL ARMS

"DELAY ON": 120 nS
"RISE TIME": 60 nS

HORIZONTAL SCALE:
20 nS PER DIVISION

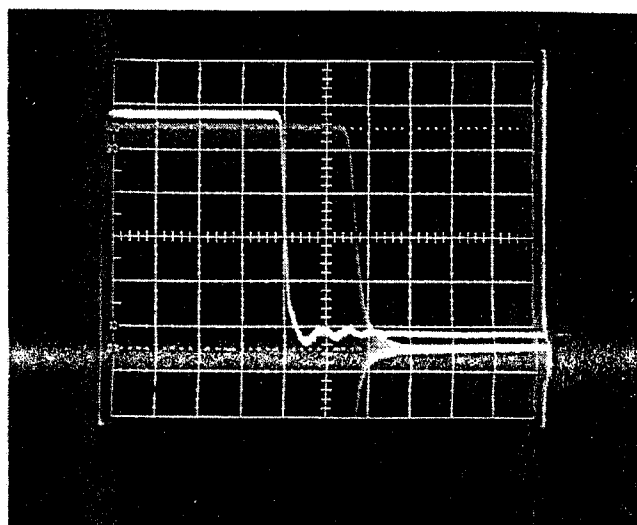
VERTICAL SCALE:
10 mV PER DIVISION



"DELAY OFF": 40 nS
"FALL TIME": 12 nS

HORIZONTAL SCALE:
20 nS PER DIVISION

VERTICAL SCALE:
10 mV PER DIVISION



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SUMMARY TEST DATA

MODEL NUMBER	: SWN-218-2DR-STANDARD
SERIAL NUMBER	: 2MS909583
ENGINEER	: RENE AFABLE
VOLTAGE & CURRENT DRAW	: +5vdc: @+76.5mA; -15vdc: @ -21.1mA

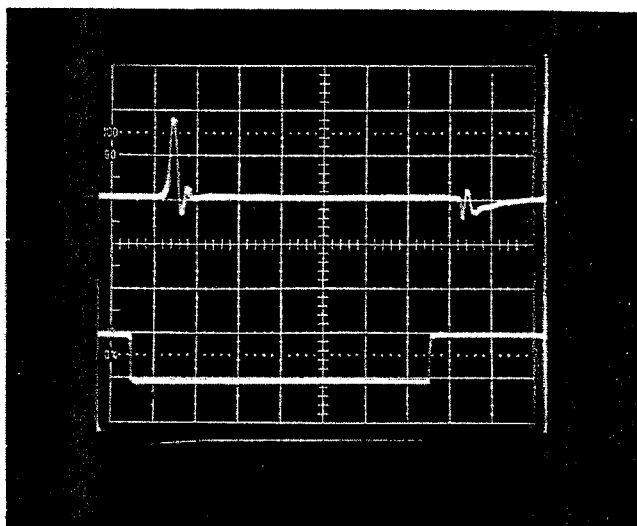
VIDEO TRANSIENTS

TYPICAL OF ALL ARMS

≤ 2.3 V P-P
MEASURED IN A
300 MHZ BANDWIDTH

VERTICAL SCALE:
1 V PER DIVISION

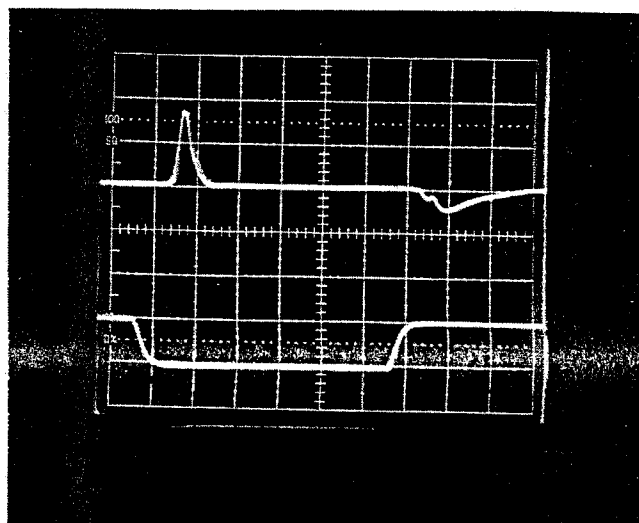
HORIZONTAL SCALE:
50 μ S PER DIVISION



≤ 1.2 V P-P
MEASURED IN A
20 MHZ BANDWIDTH

VERTICAL SCALE:
0.5 V PER DIVISION

HORIZONTAL SCALE:
50 μ S PER DIVISION



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APPENDIX A
MISCELLANEOUS
TEST DATA AND PLOTS
ON ISOLATION
AS MEASURED
ON A SCALAR NETWORK

ANALYZER
(NOISE FLOOR OF SCALAR NETWORK ANALYZER IS -70 dB)

ON A SP2T

SOLID STATE SWITCH

AMC MODEL No:
SWN-218-2DR-STANDARD
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)

FROM 500 MHz TO 18 GHz

100 MHz TO 2 GHz

AND

FROM 700 MHz TO 9 GHz

REPORTED AND PREPARED
BY
RENE AFABLE

OCTOBER 11, 1999



SUMMARY TEST DATA

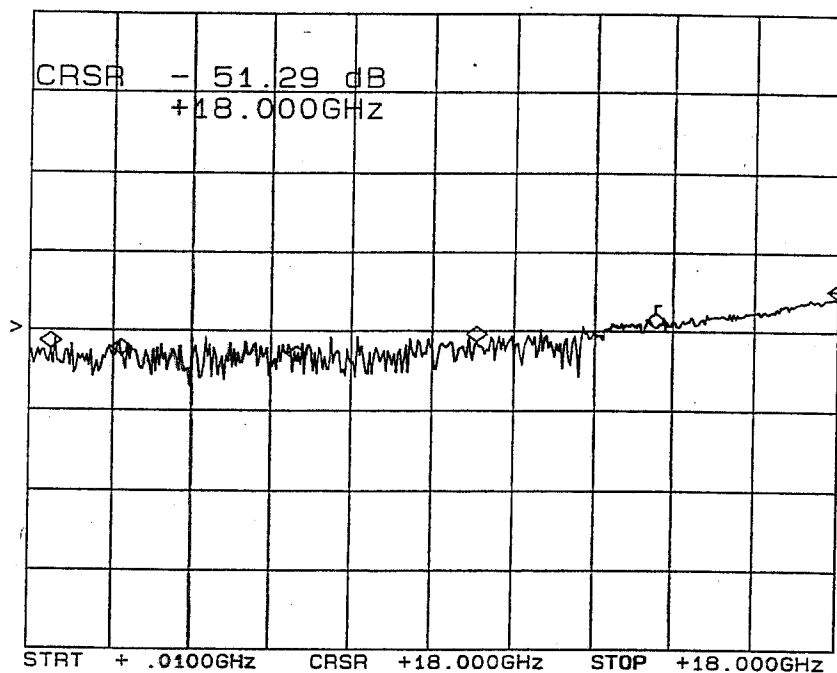
MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J1-J2

CH1: A -M - 51.29 dB
 20.0 dB/ REF - 60.00 dB



*J1: INPUT ARM

FREQUENCY	ISOLATION
500 MHz	64.3 dB
2 GHz	66.1 dB
6 GHz	67.5 dB
10 GHz	62.5 dB
14 GHz	58.8 dB
18 GHz	51.2 dB

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SUMMARY TEST DATA

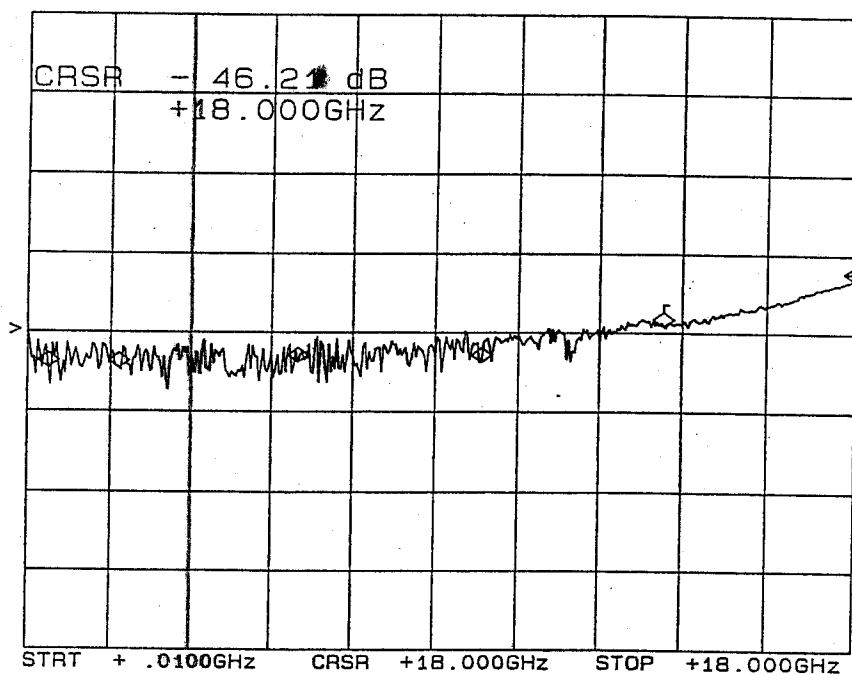
MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J1-J3

CH1: A -M - 46.21 dB
 20.0 dB/ REF - 60.00 dB



*J1: INPUT ARM

FREQUENCY	ISOLATION
500 MHz	68.9 dB
2 GHz	68.9 dB
6 GHz	67.3 dB
10 GHz	67.5 dB
14 GHz	58.3 dB
18 GHz	46.2 dB

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APPENDIX A
MISCELLANEOUS
TEST DATA AND PLOTS
ON
ISOLATION
AS
MEASURED
ON A SCALAR NETWORK
ANALYZER
(NOISE FLOOR OF SCALAR NETWORK ANALYZER IS -70 dB)
ON A
SP2T
SOLID STATE SWITCH
AMC MODEL No:
SWN-218-2DR-STANDARD
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)
FROM 100 MHz TO 2 GHz
REPORTED AND PREPARED
BY
RENE AFABLE
OCTOBER 11, 1999

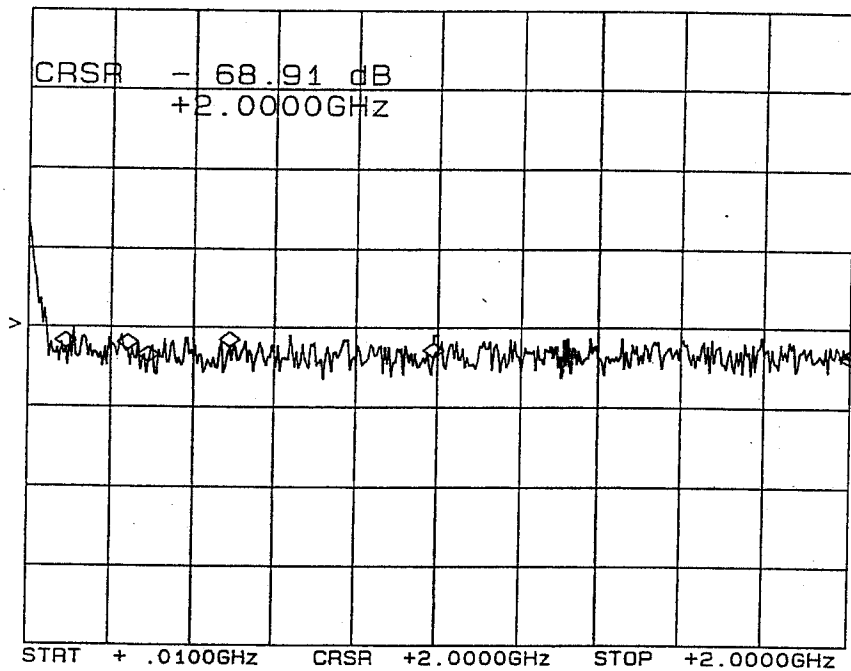


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

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

CH1: A -M - 68.91 dB
 20.0 dB/ REF - 60.00 dB



***J1: INPUT ARM**

FREQUENCY	ISOLATION
100 MHz	65.5 dB
250 MHz	65.4 dB
300 MHz	68.5 dB
500 MHz	64.6 dB
1.0 GHz	67.3 dB
2.0 GHz	68.9 dB

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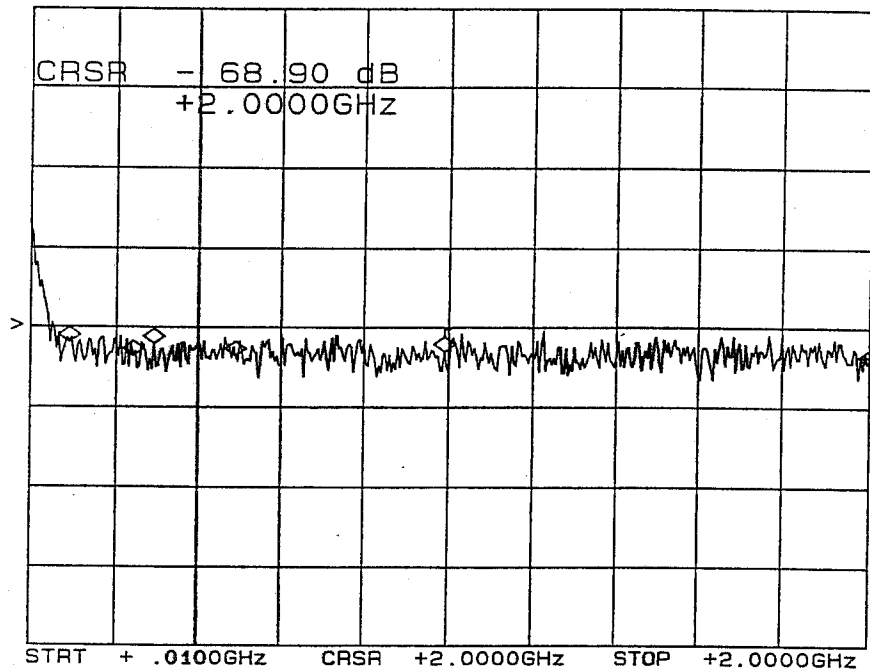


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

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

CH1: A -M - 68.90 dB
 20.0 dB/ REF - 60.00 dB



*J1: INPUT ARM

FREQUENCY	ISOLATION
100 MHz	63.8 dB
250 MHz	66.9 dB
300 MHz	64.0 dB
500 MHz	66.8 dB
1.0 GHz	68.4 dB
2.0 GHz	68.9 dB

OCTOBER 11, 1999



APPENDIX A
MISCELLANEOUS
TEST DATA AND PLOTS
ON
ISOLATION
AS
MEASURED
ON A SCALAR NETWORK
ANALYZER
(NOISE FLOOR OF SCALAR NETWORK ANALYZER IS -70 dB)
ON A
SP2T
SOLID STATE SWITCH
AMC MODEL No:
SWN-218-2DR-STANDARD
OPTIONS B02, B06-HPR10W, 0518
(Serial Number: 2MS909583)
FROM 700 MHz TO 9 GHz
REPORTED AND PREPARED
BY
RENE AFABLE
OCTOBER 11, 1999



SUMMARY TEST DATA

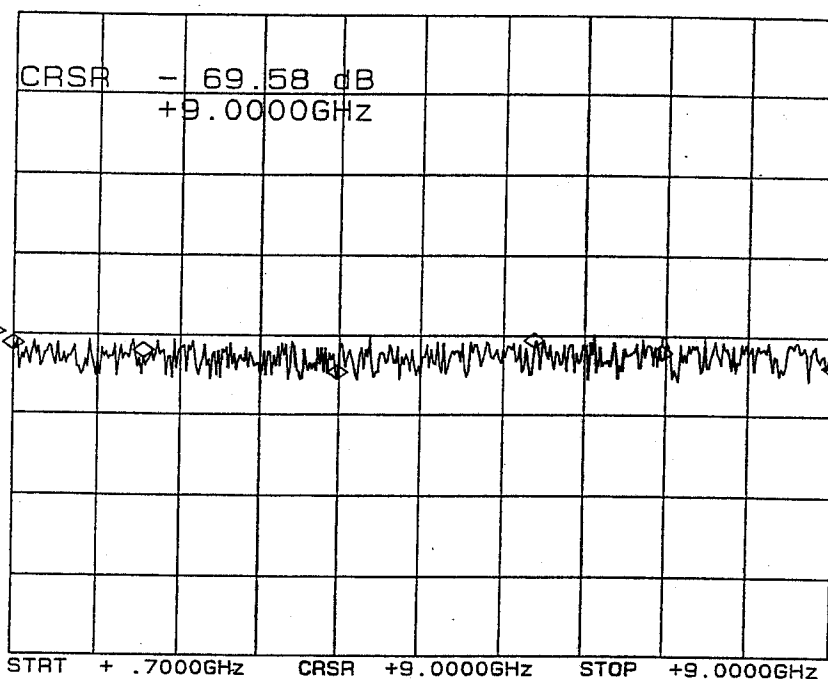
MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

ISOLATION*

(AS MEASURED ON A SCALAR NETWORK ANALYZER)

J1-J2

CH1: A -M - 69.58 dB
 20.0 dB/ REF - 60.00 dB



*J1: INPUT ARM

FREQUENCY	ISOLATION
700 MHz	63.8 dB
2.0 GHz	65.6 dB
4.0 GHz	71.0 dB
6.0 GHz	62.9 dB
7.3 GHz	65.8 dB
9.0 GHz	69.5 dB

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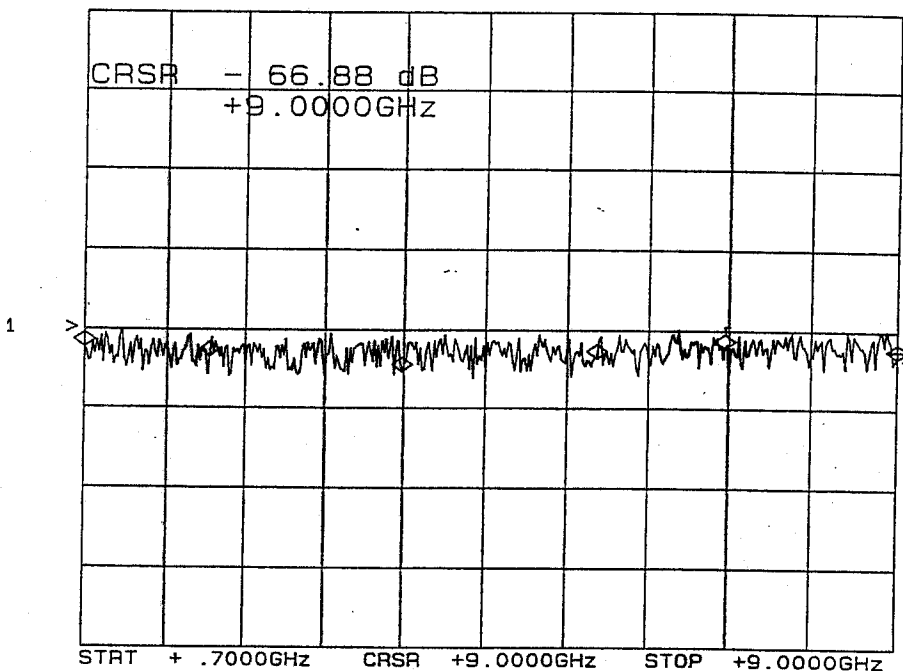


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
SERIAL NUMBER : 2MS909583
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : +5vdc: @+76.5mA; -15vdc: @ -21.1mA

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

CH1: A -M - 66.88 dB
 20.0 dB/ REF - 60.00 dB



***J1: INPUT ARM**

FREQUENCY	ISOLATION
700 MHz	64.5 dB
2.0 GHz	66.6 dB
4.0 GHz	70.5 dB
6.0 GHz	67.1 dB
7.3 GHz	64.4 dB
9.0 GHz	66.8 dB

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