



TEST DATA

ON

DC TO 2.5 GHz (USABLE TO 4 GHz)

HIGH POWER (5 WATTS)

HIGH SPEED

LOW INSERTION LOSS

LOW VIDEO TRANSIENT

REFLECTIVE

SP2T

T/R SOLID STATE SWITCH

AMC MODEL No:

SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W

(Serial Number: 2MS008239)

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

AUGUST 17, 2000

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

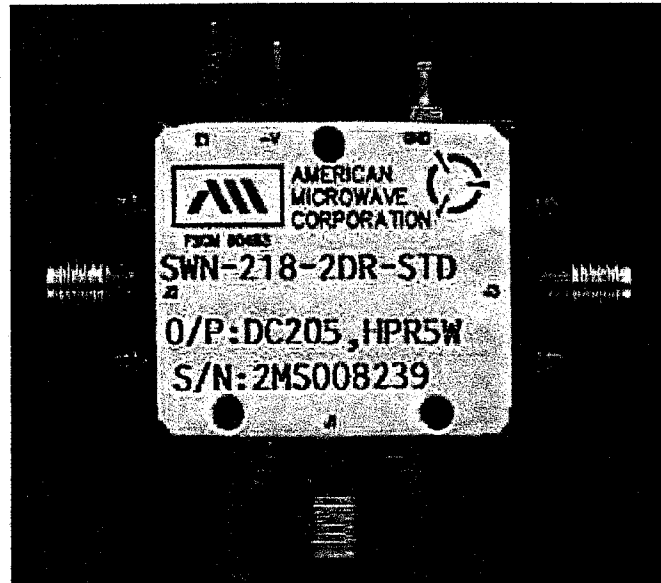
E-MAIL ADDRESS: AMCPMI@AOL.COM

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



**AMERICAN MICROWAVE
CORPORATION**

SP2T REFLECTIVE HIGH POWER (5 WATTS) T/R SOLID STATE SWITCH



KEY FEATURES

- DC TO 2.5 GHz
- ULTRA HIGH SPEED
- HIGH POWER
- TTL LOGIC COMPATIBLE

AMC MODEL No: SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W

SPECIFICATIONS: (REFLECTIVE)

| | | |
|-----------------------------------|---|--|
| • FREQUENCY RANGE | : | DC to 2.5 GHz (USABLE TO 4 GHz) |
| • INSERTION LOSS | : | 1.0 dB MAX. |
| | : | 0.55 dB TYP. @ 40 MHz |
| | : | 0.75 dB TYP. @ 1 GHz |
| | : | 1.0 dB TYP. @ 2.5 GHz |
| • ISOLATION | : | ≥ 20 dB MIN. |
| | : | ≥ 50 dB TYP. @ 40 MHz |
| | : | ≥ 28 dB TYP. @ 1 GHz |
| | : | ≥ 20 dB TYP. @ 2.5 GHz |
| • VSWR | : | 1.5:1 |
| • SWITCHING SPEED | : | "RISE" 20nS MAX., 15nS TYP. |
| | : | "FALL" 20nS MAX., 15nS TYP. |
| | : | "ON" 40nS MAX., 35nS TYP. |
| | : | "OFF" 40nS MAX., 35nS TYP. |
| • CONTROL | : | Single control (Independent control available) |
| • VIDEO TRANSIENTS | : | ≤ 66mV Peak to Peak @ 300 MHz Bandwidth |
| | : | ≤ 21mV Peak to Peak @ 20 MHz Bandwidth |
| • RF INPUT POWER | : | 5 watt (Other power Levels available) |
| • DC POWER SUPPLY | : | - 5vdc @ 20mA MAX. |
| (Other supply voltages available) | : | |
| • SIZE | : | 1.2"(L) X 1.0"(W) X 0.50"(H) |
| • WEIGHT | : | ≤ 1.5 oz. |

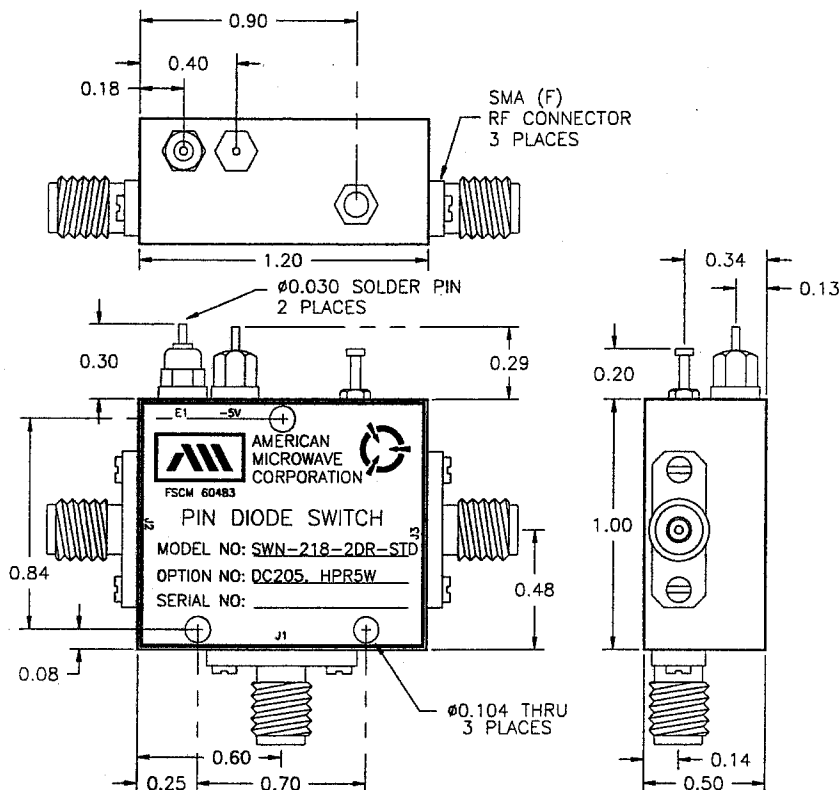
AUGUST 17, 2000

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SUMMARY TEST DATA

| | |
|-----------------------------------|-------------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |



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.

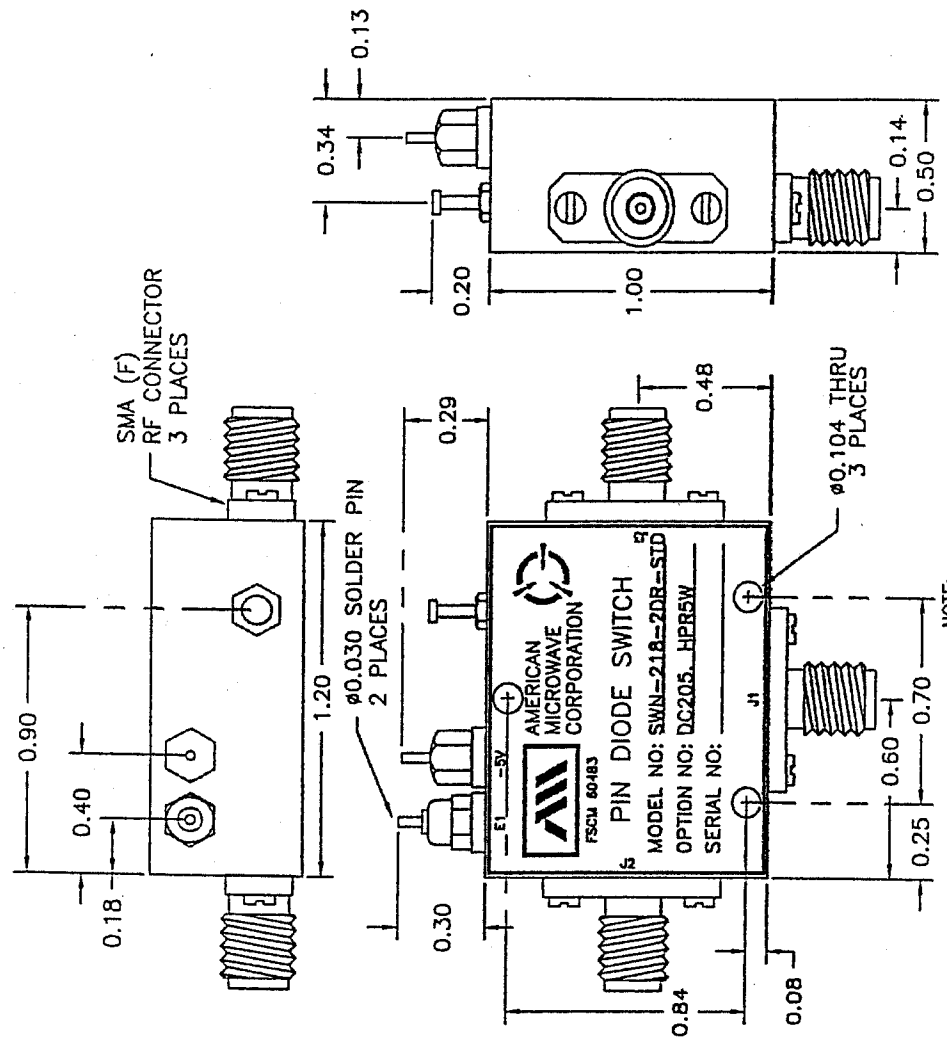
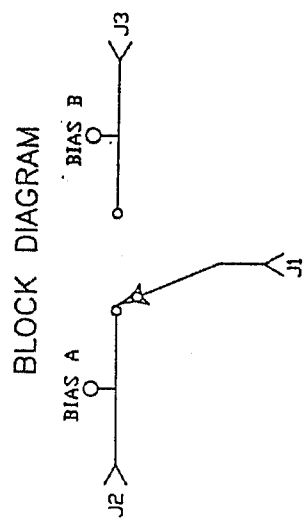
AUGUST 17, 2000

| ZONE | REV. | DESCRIPTION | DATE | APPROVED |
|------|------|-----------------------|------------|----------|
| | | ORIGINAL JOB# 003038E | 10/8/15/00 | |

DESCRIPTION:
 AMC MODEL SWN-218-2DR-STANDARD OPTIONS DC204, HPR5W IS A SINGLE POLE TWO THROW, HIGH POWER (5 WATTS) REFLECTIVE 1/R SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION, LOW VIDEO TRANSIENT AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR DC TO 2.5 GHz OPERATION USABLE TO 4 GHz.

SPECIFICATIONS:

- FREQUENCY: DC TO 2.5 GHz (USABLE TO 4 GHz)
- INSERTION LOSS: 0.8 dB TYPICAL, 1.0 dB MAXIMUM
- ISOLATION: 22 dB TYPICAL, 20 dB MAXIMUM
- VSWR (ALL PORTS): 1.5:1
- SWITCHING SPEED: 40 nS MAXIMUM, 30 nS TYPICAL (50% TTL TO 90/10% RF)
- RF POWER: 5 WATTS (10 WATTS AVAILABLE)
- CONTROL: TTL SINGLE ENDED 1 BIT
- POWER SUPPLY: -5 VDC @ 25 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



CONFIDENTIAL AND PROPRIETARY

| APPROVALS | DATE | TITLE |
|-----------|----------|---|
| WCP, RBL | 08/15/00 | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND |
| WCP | 8/25/00 | PRODUCT FEATURE |
| WCP | 8/25/00 | SWN-218-2DR-STANDARD |
| | | OPTIONS DC205, HPR5W |

| SIZE | FSCM NO. | DWG NO. | REV. |
|------|----------|-------------|------|
| A | 60483 | 100-4427-13 | |

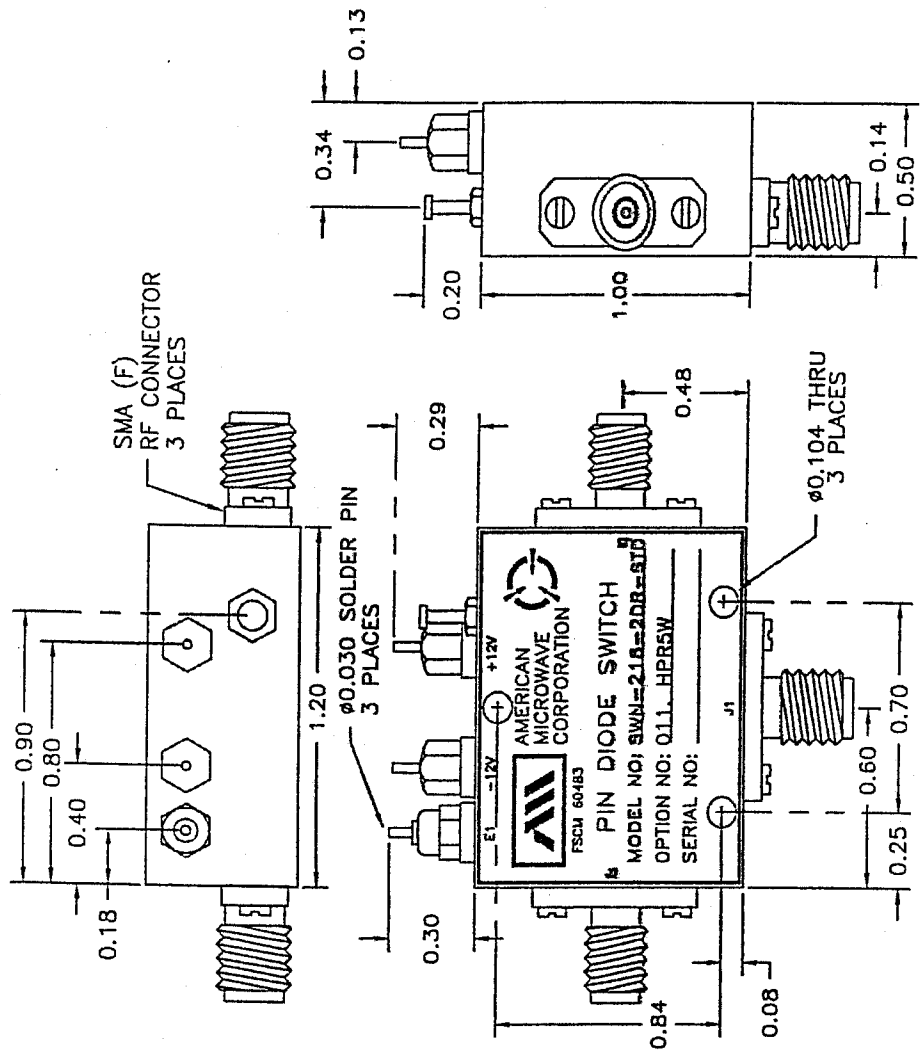
SCALE N/S SHEET 1 of 3

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

ENVIRONMENTAL RATINGS:

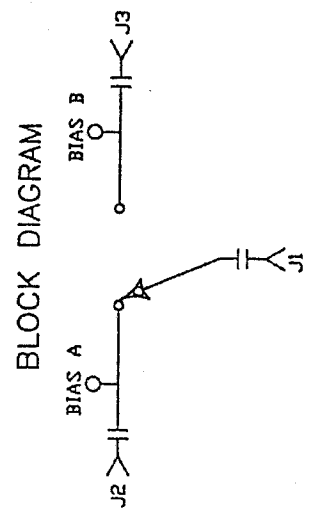
- TEMPERATURE: -55°C TO +85°C (OPERATING)
 - TEMPERATURE: -65°C TO +125°C (STORAGE)
 - HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
 - SHOCK: MIL-STD-202F, METHOD 213B COND. B
 - VIBRATION: MIL-STD-202F, METHOD 204D COND. B
 - ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
 - TEMPERATURE CYCLE: MIL-STD-202F,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

AMC MODEL SWN-218-2DR-STANDARD OPTIONS 011, HPR5W IS A SINGLE POLE TWO THRU, HIGH POWER (5 WATTS) REFLECTIVE T/R SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION, LOW VIDEO TRANSIENT AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR 100 MHz TO 1.0 GHz OPERATION.



NOTE:
 DR=WITH DRIVER, REFLECTIVE

- SPECIFICATIONS:**
- FREQUENCY: 100 MHz TO 1.0 GHz (USABLE TO 2.5 GHz)
 - INSERTION LOSS: 0.8 dB TYPICAL, 1.0 dB MAXIMUM
 - ISOLATION: 30 dB TYPICAL, 28 dB MAXIMUM
 - VSWR (ALL PORTS): 1.6:1
 - SWITCHING SPEED: 50 ns MAXIMUM (50% TTL TO 90/10% RF)
 - RF POWER: 5 WATTS
 - CONTROL: TTL SINGLE ENDED 1 BIT
 - POWER SUPPLY: +12 VDC @ 25 mA MAXIMUM, -12 VDC @ 25 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
 - SHOCKS: 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

CONFIDENTIAL AND PROPRIETARY

| | | | |
|---|------------------|---|-------------------|
| | | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND | |
| TITLE SWN-218-2DR-STANDARD OPTIONS 011, HPR5W | | PRODUCT FEATURE | |
| DRAWN WSP, R.R.d | DATE 08/15/00 | SIZE A | FSCM NO. 60483 |
| CHECKED WSP | ISSUED WSP | DWS NO. 100-4427-12 | REV. |
| APPROVALS | | SCALE N/S | SHEET 1 of 3 |

DESCR: AMC MODEL 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
- 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
- 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

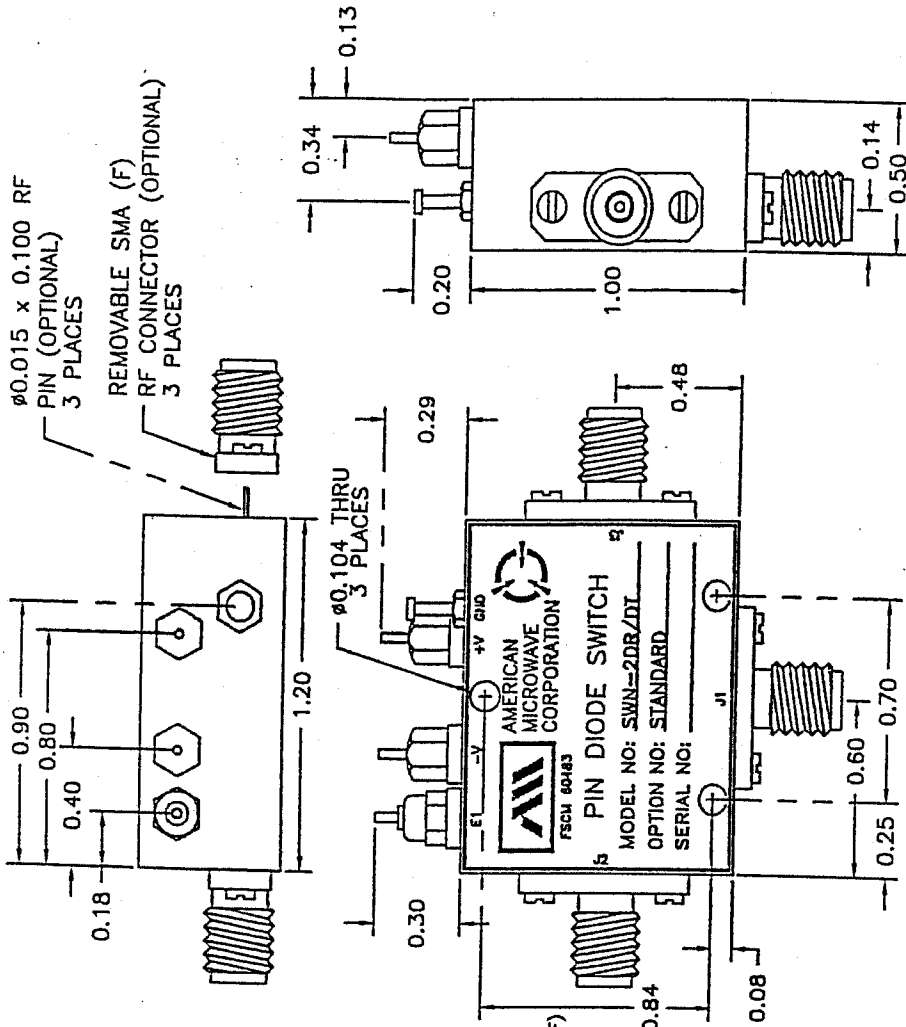
OPTIONS:

- 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)
- 11B: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 41B: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 61B: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01: -12V POWER SUPPLIES
- B02: -15V POWER SUPPLIES
- B03: REVERSE LOGIC "1" = ON "0" = OFF
- B04: DRIVERLESS, CURRENT CONTROLLED
- B05: HIGH SPEED, TURNON/TURNOFF 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: -55C TO +85C (OPERATING)
-65C TO +125C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE DR REVISION



NOTE:

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

| | | |
|--|---------------|--------------|
| APPROVALS | | DATE |
| DRAWN: WJp, R.R.d | DATE: 1/29/99 | |
| CHECKED: WJ | DATE: 7/21/99 | |
| ISSUED: Rk | DATE: 7/21/99 | |
| TITLE: AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND | | |
| OUTLINE DRAWING | | |
| SWN-2DR/DT-STANDARD | | |
| SOLID STATE SWITCH | | |
| SIZE: FSCB IN. | DWG NO. | REV. |
| A | 60483 | 100-4427-1 |
| SCALE | N/S | SHEET 1 of 2 |

| DATE | REV. | DESCRIPTION | DATE | APPROVED |
|---------|------|------------------|------|----------|
| 7/20/99 | | ORIGINAL RELEASE | | |

DESCRIPTION:
 AMC MODEL 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
REFLECTIVE 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

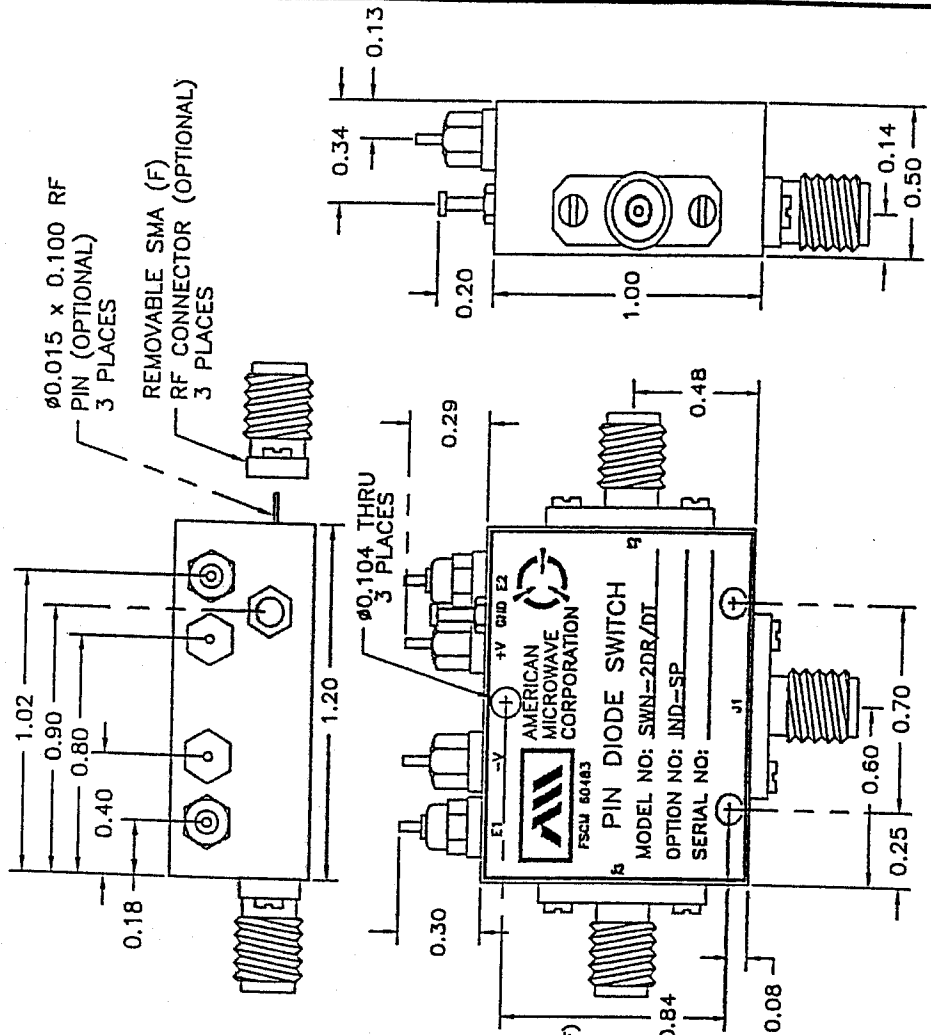
OPTIONS:

- 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)
- 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 41B 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 61B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
- 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
- B01 -12V POWER SUPPLIES
- B02 -15V POWER SUPPLIES
- B03 REVERSE LOGIC "1"=ON "0"=OFF
- B04 DRIVERLESS, CURRENT CONTROLLED
- B05 HIGH SPEED, TURNON/TURNOFF 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

| | | | |
|-----------|----------|----------|---|
| APPROVALS | | DATE | TITLE |
| DESIGNED | WSP, RRD | 7/20/99 | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND |
| CHECKED | WSP | 7/29/99 | OUTLINE DRAWING |
| ISSUED | WSP | 7/29/99 | SWN-2DR/DT-IND-SP SOLID STATE SWITCH |
| SIZE | A | FSCM NO. | 60483 |
| SCALE | N/S | DWG NO. | 100-4427-2 |
| | | | REV. |
| | | | 1 of 2 |

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
REFLECTIVE 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 us
- CONTROL: TTL LOGIC "0" - J1-J2 ON "1" - J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.
100mA MAX.(ABSORPTIVE/NON-REFLECTIVE)
-5V @ 75mA MAX.(REFLECTIVE)
- SIZE: 1.2" (L) x 1.00" (W) x 0.50" (H)
- WEIGHT: 1.2 oz.

OPTIONS:

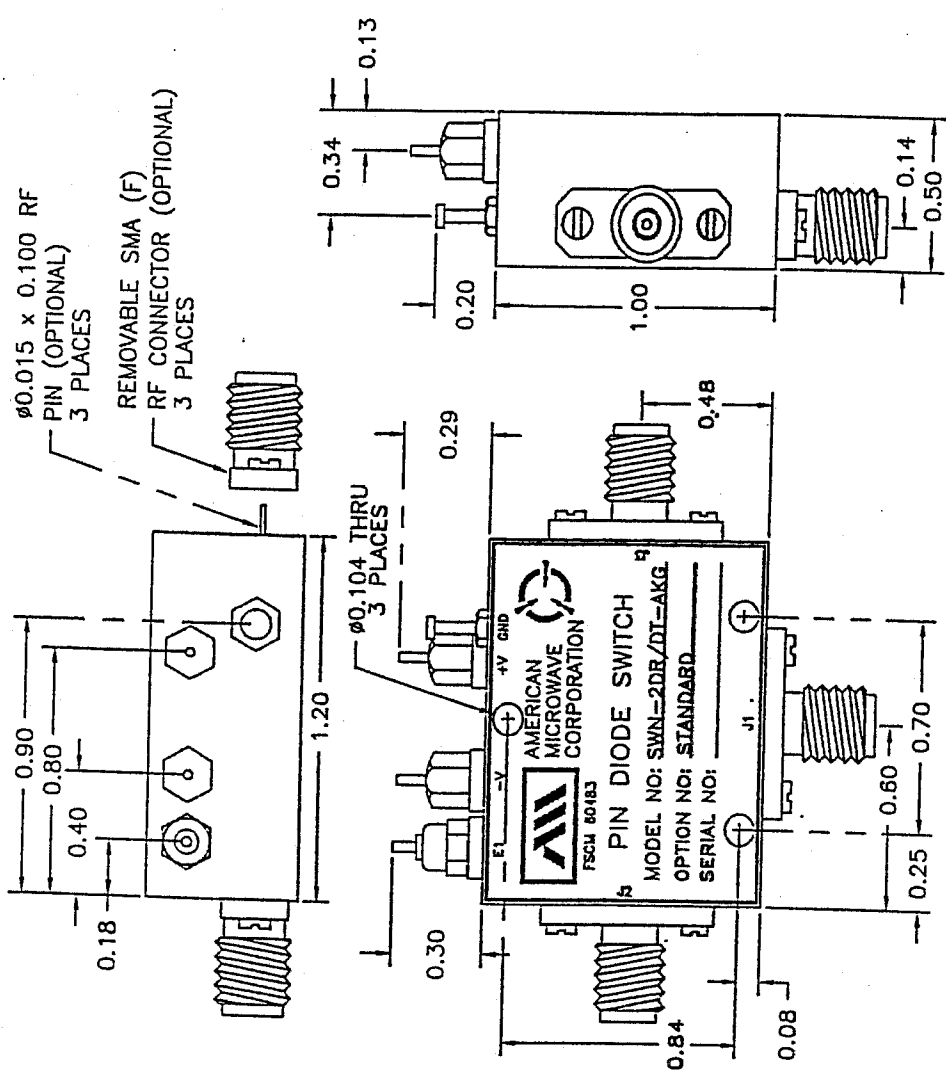
- SINGLE CONTROL WITH SOLDER PIN STANDARD
- 10M18: INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" - ON "1" - OFF)
 - 10M18: 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 GHz AND 0.5db AT 18 GHz)
 - 100M18: 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 11B: 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 21B: 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 41B: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 61B: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 121B: 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20: 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220: 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020: 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01: -12V POWER SUPPLIES
 - B02: -15V POWER SUPPLIES
 - B03: REVERSE LOGIC "1"=ON "0"=OFF
 - B04: DRIVERLESS, CURRENT CONTROLLED
 - B05: HIGH SPEED, TURNON/TURNOFF 20 nsec MAXIMUM WHEN APPLICABLE OR OPTION IS
 - 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

| ZONE | REV. | REVISIONS | DATE | APPROVED |
|------|------|------------------|---------|----------|
| | | ORIGINAL RELEASE | 7/21/99 | |



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

| | | | |
|--------------------------|-----------------|---|--------------------|
| | | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND | |
| TITLE OUTLINE DRAWING | | SWN-2DR/DT-AKG-STANDARD SOLID STATE SWITCH | |
| DRAWN WSP, RSL | DATE 7/21/99 | SIZE A | FIG. NO. 60483 |
| CHECKED WUP | ISSUED BA | SCALE N/S | REV. 100-4790-1 |
| APPROVALS | | SHEET 1 of 2 | |

DESCR. REV. DATE APPROVED

REVISIONS

DESCRIPTION ORIGINAL RELEASE

DATE 7/27/99

APPROVED

AMC MODEL SWN-2DR/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
- 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.

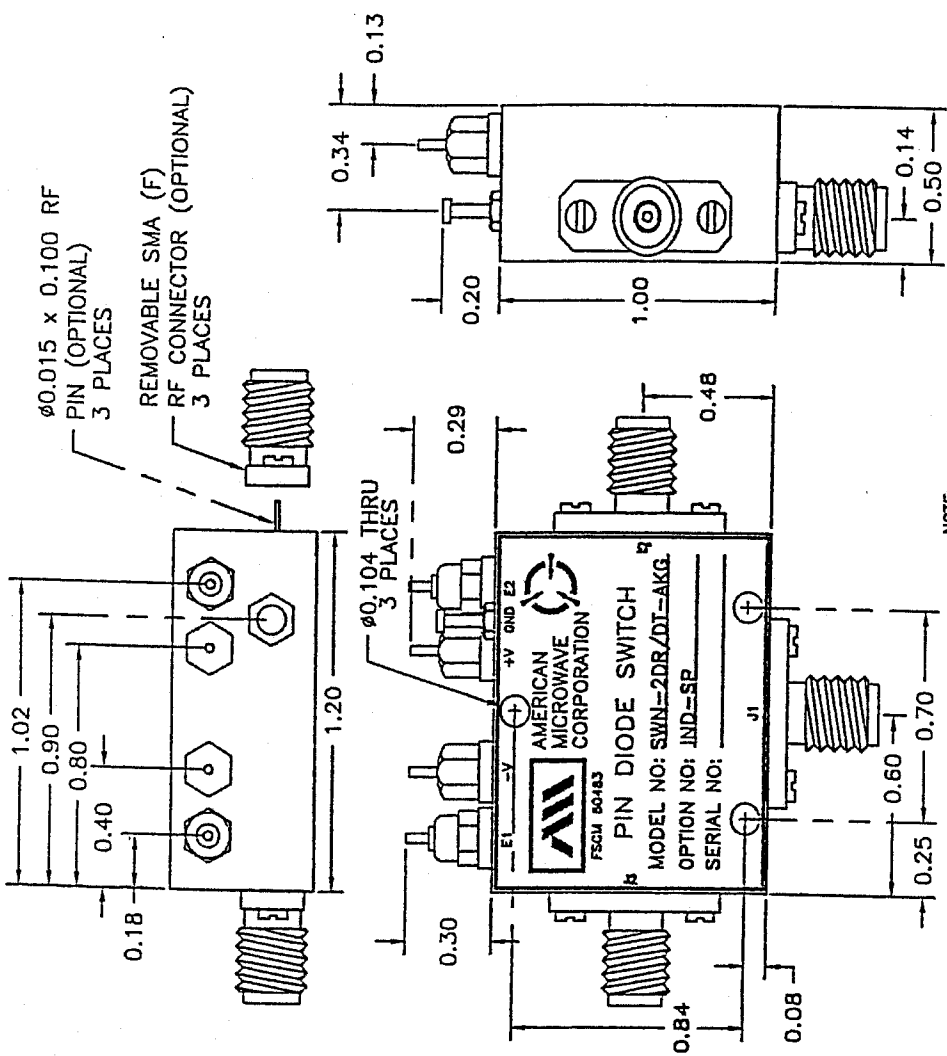
OPTIONS:

- 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 18 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)
- 41B: 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
- 61B: 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
- 121B: 12 GHz TO 20 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 msec 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)
- -55°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



NOTE:

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

| | | | | |
|---------------|------------|--------------|---|--|
| APPROVALS | | DATE | TITLE | |
| DRAWN | WJP, R.R.J | 7/27/99 | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND | |
| CHECKED | WJP | 7/27/99 | OUTLINE DRAWING | |
| ISSUED | CA | 7/27/99 | SWN-2DR/DT-AKG-IND-SP SOLID STATE SWITCH | |
| SIZE FSC# NO. | | DWG NO. | REV. | |
| A 60483 | | 100-4790-2 | | |
| SCALE N/S | | SHEET 1 of 2 | | |

DESCRIPTION:

AMC M... 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 WITH INTEGRAL TTL DRIVER, DESIGNED FOR BROAD BAND OPERATIONS.

SPECIFICATIONS:

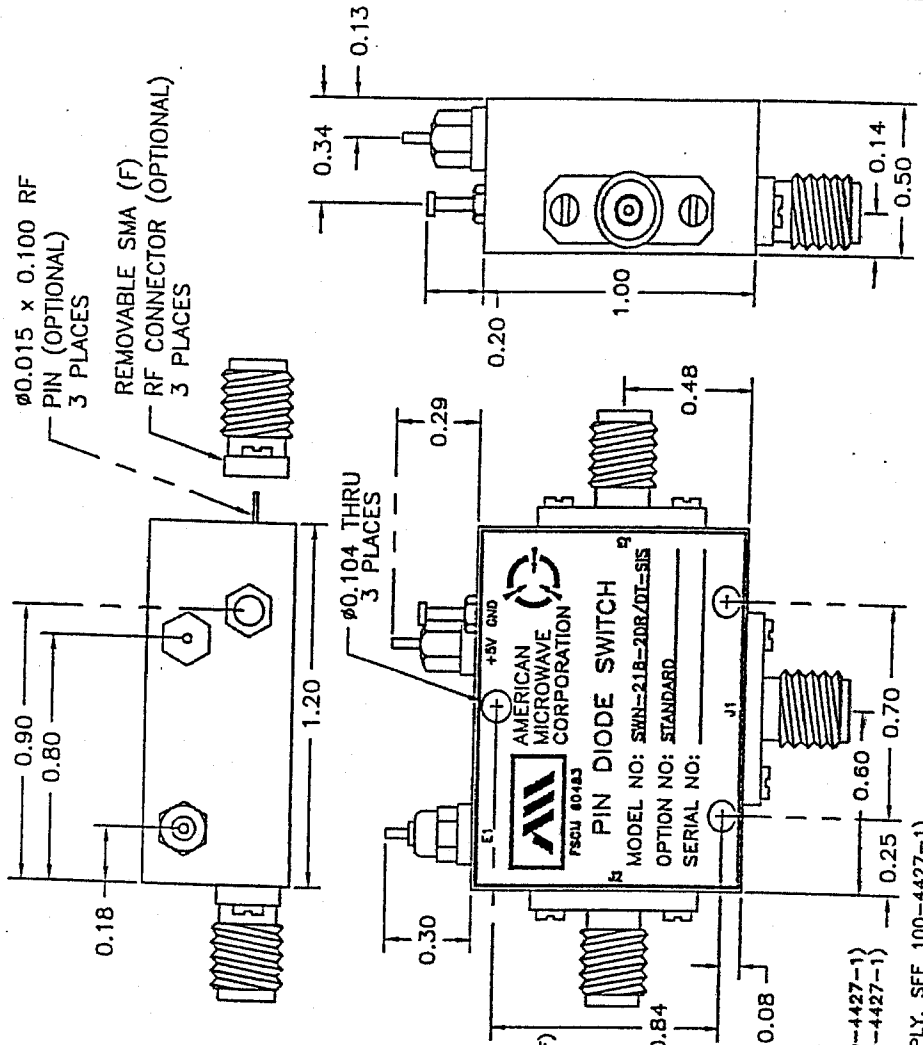
- FREQUENCY: 0.5 GHz TO 18 GHz
- INSERTION LOSS: REFLECTIVE: 2.5db
..... ABSORPTIVE: 3.0db
- ISOLATION: 0.5 GHz TO 2 GHz: 55db
..... 2 GHz TO 12 GHz: 45db
..... 12 GHz TO 18 GHz: 25db
- VSWR: REFLECTIVE IN/OUT: 2.0:1
..... ABSORPTIVE IN/OUT: 2.0:1
- SPEED: RISE: 15ns TYPICAL, 20ns MAX.
..... FALL: 15ns TYPICAL, 20ns MAX.
..... DELAY ON: 75ns TYPICAL, 100ns MAX.
..... DELAY OFF: 75ns TYPICAL, 100ns MAX.
..... (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- POWER INPUT: 1 WATT CW, 10 WATTS PEAK 1 usec
- SURVIVAL POWER: TTL LOGIC "0"= J1-J2 ON "1"= J1-J3 ON
- CONTROL: +5V @ 100 mA MAX.
- POWER SUPPLY: SMA FEMALE
..... SOLDER PIN
- CONNECTORS: (L) 1.2" X (W) 1.0" X (H) 0.5"
- SIZE: 1.5 OUNCE TYPICAL
- 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 GHz 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 100-4427-1)
- 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 H5
- 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 TRANSMITS - 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



| | | | | |
|------|------|------------------|---------|----------|
| ZONE | REV. | DESCRIPTION | DATE | APPROVED |
| | | ORIGINAL RELEASE | 7/12/99 | |

| | | |
|------------------|---------------|--|
| APPROVALS | DATE | TITLE |
| DRAWN: R.R.A. | 7/12/99 | AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND |
| CHECKED: LUP | 7/19/99 | OUTLINE DRAWING |
| ISSUED: PA | 7/19/99 | SWN-218-2DR/DT-SIS-STANDARD REFLECTIVE OR NON-REFLECTIVE (ABSORPTIVE) |
| SIZE: FSCU NO. A | DWG NO. 60483 | SOLID STATE SWITCH |
| SCALE: N/S | | REV. 100-4427-5 |
| SHEET: 1 | | OF 2 |

DESCRIPTION:

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

| | | | |
|------|------|---------|----------|
| ZONE | REV. | DATE | APPROVED |
| | | 7/12/99 | |

ORIGINAL RELEASE

- 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.
(CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- POWER INPUT: 1 WATT CW, 10 WATTS PEAK 1 usec
- SURVIVAL POWER: TTL LOGIC "0" = J1-J2 ON "1" = J1-J3 ON
- POWER SUPPLY: +5V @ 100 mA MAX.
- CONNECTORS: SMA FEMALE CONTROL
SOLDER PIN
- SIZE: (L) 1.2" X (W) 1.0" X (H) 0.5"
- WEIGHT: 1.5 OUNCE TYPICAL

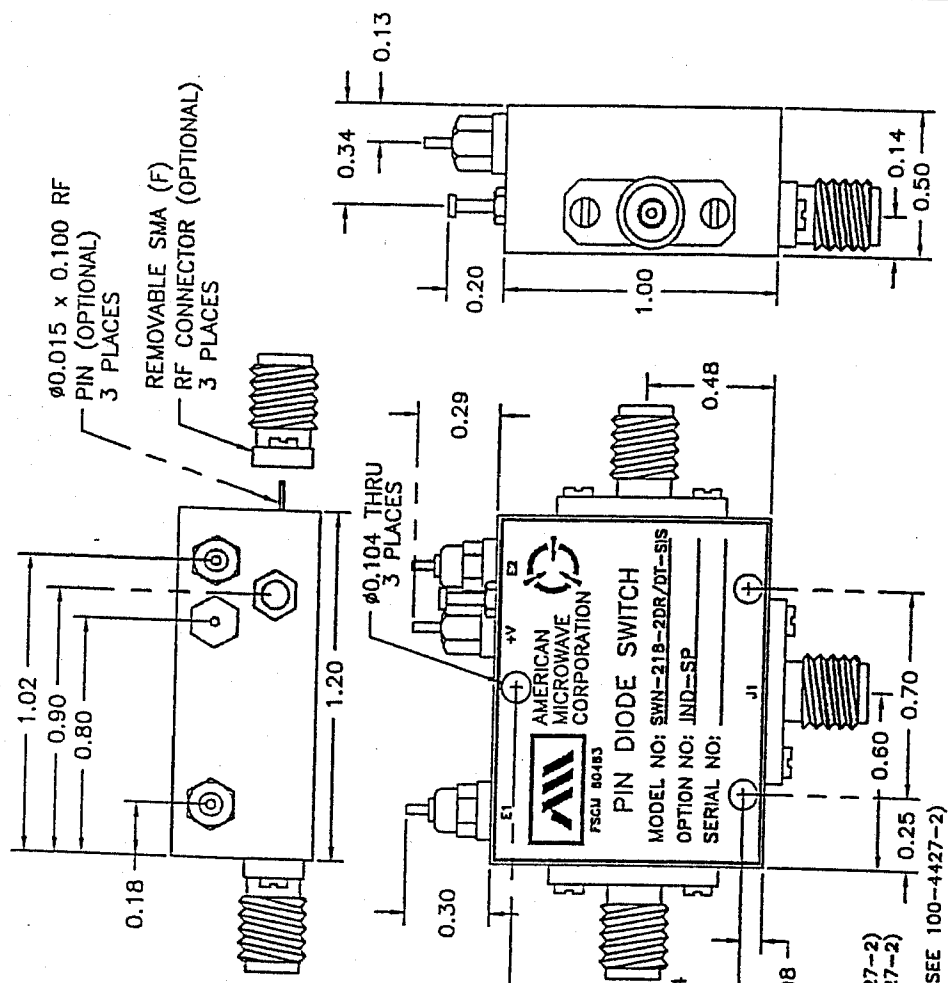
OPTIONS:

- SINGLE CONTROL WITH SOLDER PIN STANDARD**
- IND-SP INDEPENDANT CONTROL WITH SOLDER PIN (LOGIC "0" = ON "1" = OFF)
 - 10M1B 10 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 10 MHz AND 0.5db AT 18 GHz)
 - 100M1B 100 MHz TO 18 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 0.5db AT 18 GHz)
 - 11B 1 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 21B 2 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 412 4 GHz TO 12.4 GHz (NO CHANGE IN INSERTION LOSS)
 - 61B 6 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 121B 12 GHz TO 18 GHz (NO CHANGE IN INSERTION LOSS)
 - 100M20 100 MHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.5db AT 100 MHz AND 1.0db AT 20 GHz)
 - 220 2 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - 1020 10 GHz TO 20 GHz (INSERTION LOSS INCREASES BY 1.0db AT 20 GHz)
 - B01 -12V POWER SUPPLIES (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 INSERTION LOSS VERSION
 - B09 LOW ISOLATION VERSION
 - B10 HIGHER ISOLATION VERSION

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55C TO +85C (OPERATING)
-65C TO +125C (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



| | | | |
|---|-------|---------|--|
| APPROVALS | | DATE | TITLE AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND |
| DESIGN | 9.9.1 | 7/12/99 | |
| CHECKED | WUP | 7/19/99 | |
| ISSUED | PA | 7/19/99 | |
| SCALE N/S | | | REV. NO. 100-4427-6 |
| SIZE FSCJ NO. A 60483 | | | REV. 1 of 2 |
| OUTLINE DRAWING | | | |
| SWN-218-2DR/DT-SIS-IND-SP | | | |
| REFLECTIVE OR NON-REFLECTIVE (ABSORPTIVE) | | | |
| SOLID STATE SWITCH | | | |

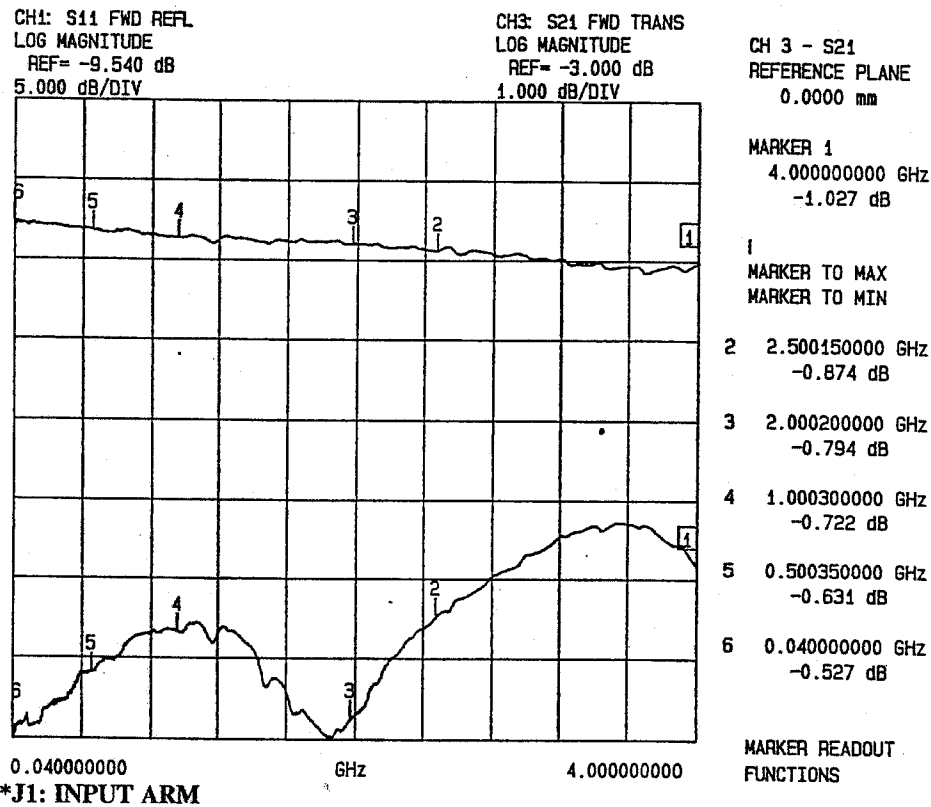


SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
 OPTION NUMBER : DC205, HPR5W
 SERIAL NUMBER : 2MS008239
 ENGINEER : RENE AFABLE
 VOLTAGE & CURRENT DRAW : -5V @ 8mA

INSERTION LOSS & RETURN LOSS*

J1-J2



| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 40 MHz | 0.52 dB | 28.3 dB |
| 500 MHz | 0.63 dB | 25.4 dB |
| 1.0 GHz | 0.72 dB | 22.8 dB |
| 2.0 GHz | 0.79 dB | 28.2 dB |
| 2.5 GHz | 0.87 dB | 21.8 dB |
| 4.0 GHz | 1.02 dB | 18.6 dB |

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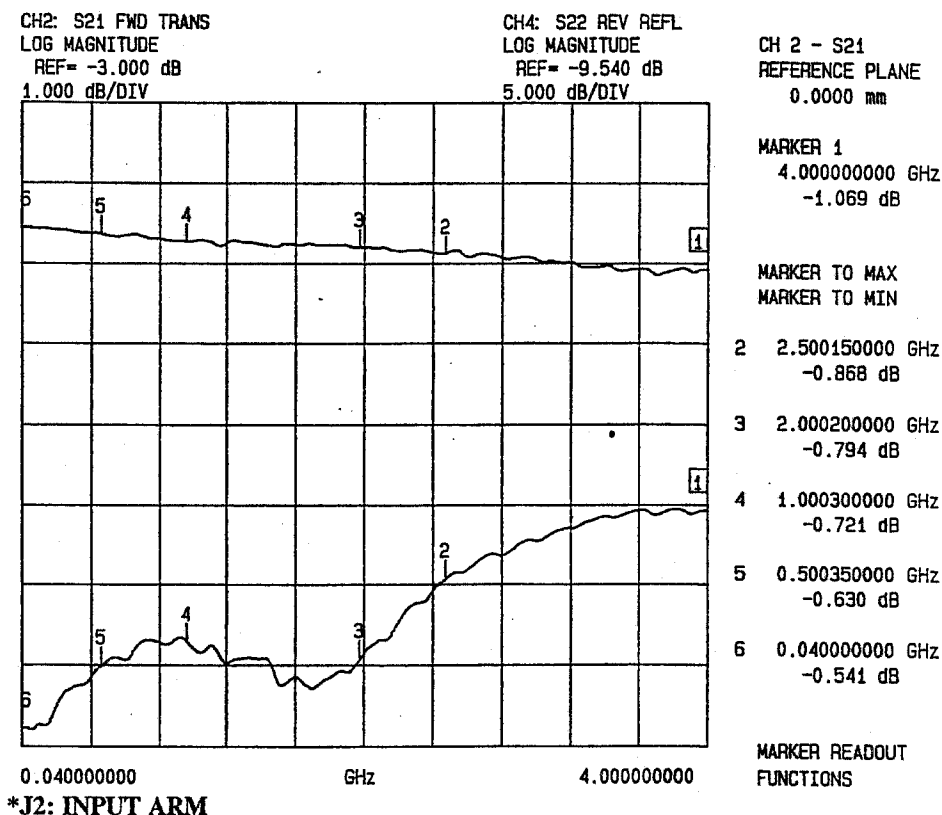
PAGE 12



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

INSERTION LOSS & RETURN LOSS* J2-J1



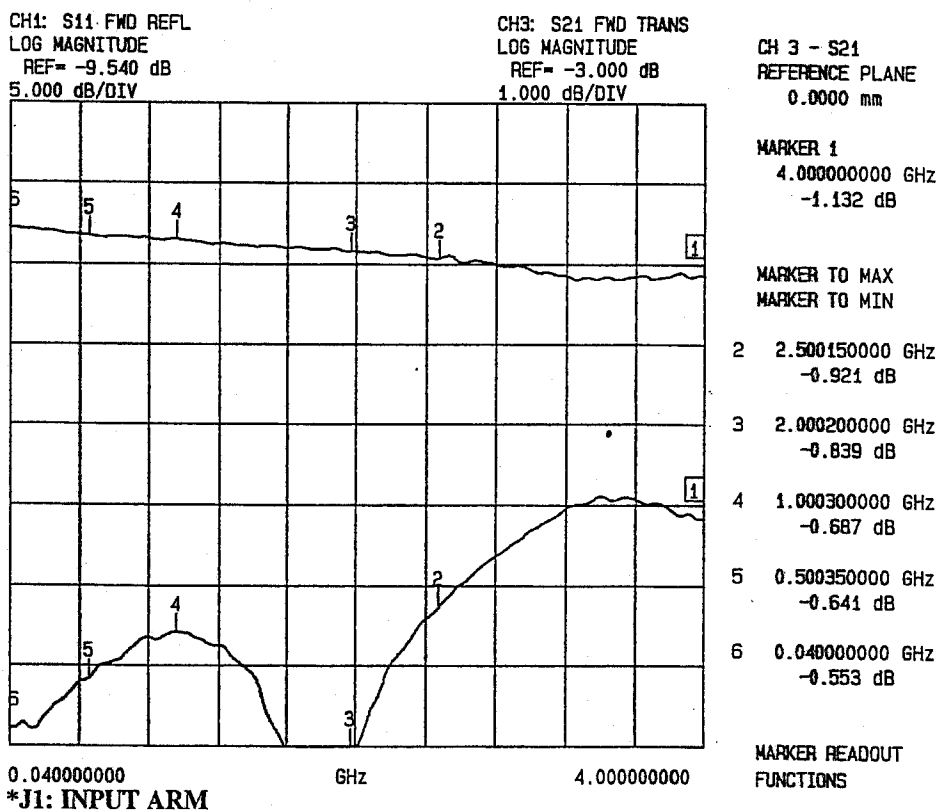
| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 40 MHz | 0.54 dB | 28.4 dB |
| 500 MHz | 0.63 dB | 24.5 dB |
| 1.0 GHz | 0.72 dB | 23.1 dB |
| 2.0 GHz | 0.79 dB | 24.1 dB |
| 2.5 GHz | 0.86 dB | 19.1 dB |
| 4.0 GHz | 1.06 dB | 14.8 dB |



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

INSERTION LOSS & RETURN LOSS* J1-J3



| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 40 MHz | 0.55 dB | 28.4 dB |
| 500 MHz | 0.64 dB | 25.2 dB |
| 1.0 GHz | 0.68 dB | 22.3 dB |
| 2.0 GHz | 0.83 dB | 31.2 dB |
| 2.5 GHz | 0.92 dB | 20.7 dB |
| 4.0 GHz | 1.13 dB | 15.3 dB |



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

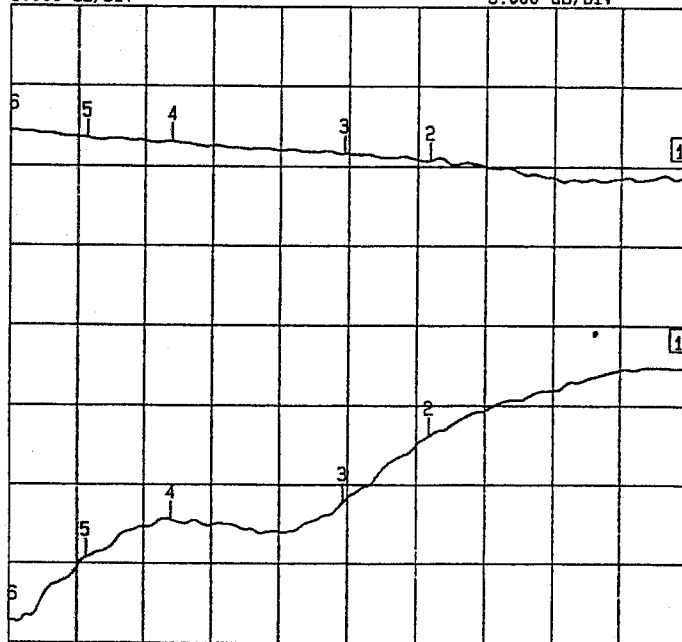
INSERTION LOSS & RETURN LOSS*

J3-J1

CH2: S21 FWD TRANS
LOG MAGNITUDE
REF= -3.000 dB
1.000 dB/DIV

CH4: S22 REV REFL
LOG MAGNITUDE
REF= -9.540 dB
5.000 dB/DIV

CH 2 - S21
REFERENCE PLANE
0.0000 mm



MARKER 1
4.000000000 GHz
-1.132 dB

MARKER TO MAX
MARKER TO MIN

- 2 2.500150000 GHz
-0.921 dB
- 3 2.000200000 GHz
-0.839 dB
- 4 1.000300000 GHz
-0.687 dB
- 5 0.500350000 GHz
-0.641 dB
- 6 0.040000000 GHz
-0.553 dB

0.040000000 GHz 4.000000000

MARKER READOUT
FUNCTIONS

*J3: INPUT ARM

| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 40 MHz | 0.55 dB | 28.1 dB |
| 500 MHz | 0.64 dB | 24.1 dB |
| 1.0 GHz | 0.68 dB | 21.7 dB |
| 2.0 GHz | 0.83 dB | 20.5 dB |
| 2.5 GHz | 0.92 dB | 16.3 dB |
| 4.0 GHz | 1.13 dB | 12.1 dB |



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

ISOLATION*

(AS MEASURED ON A VECTOR NETWORK ANALYZER CW)

| FREQUENCY | J2 | J3 |
|-----------|-------|-------|
| 50 MHz | 52 dB | 51 dB |
| 100 MHz | 48 dB | 48 dB |
| 300 MHz | 38 dB | 38 dB |
| 500 MHz | 33 dB | 33 dB |
| 750 MHz | 29 dB | 30 dB |
| 1.0 GHz | 28 dB | 28 dB |
| 1.25 GHz | 25 dB | 26 dB |
| 1.5 GHz | 24 dB | 25 dB |
| 1.75 GHz | 23 dB | 23 dB |
| 2.0 GHz | 23 dB | 23 dB |
| 2.25 GHz | 22 dB | 22 dB |
| 2.5 GHz | 21 dB | 21 dB |
| 2.75 GHz | 20 dB | 20 dB |
| 3.0 GHz | 19 dB | 19 dB |
| 3.25 GHz | 18 dB | 18 dB |
| 3.5 GHz | 17 dB | 17 dB |
| 3.75 GHz | 16 dB | 15 dB |
| 4.0 GHz | 15 dB | 14 dB |
| 4.5 GHz | 13 dB | 12 dB |
| 5.0 GHz | 13 dB | 10 dB |

*J1: INPUT ARM

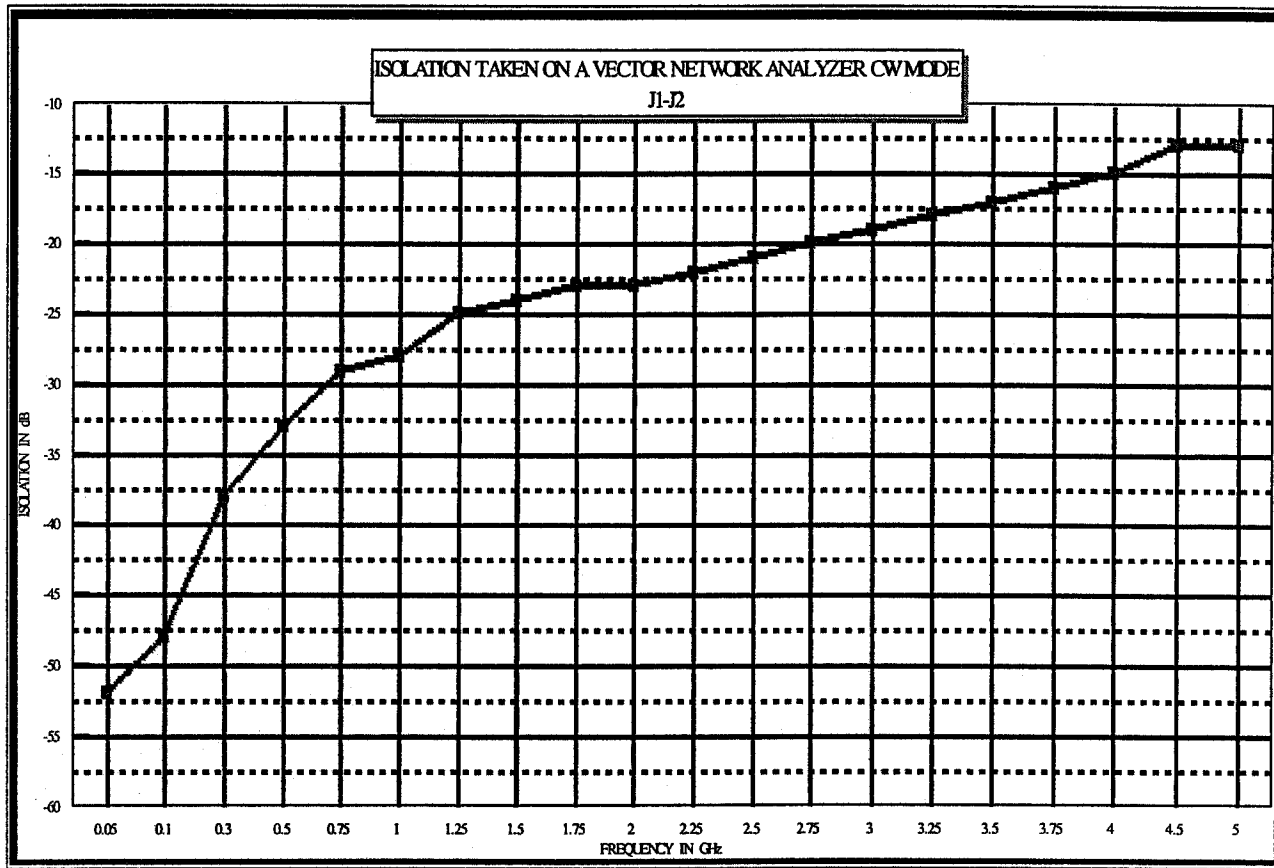
AUGUST 17, 2000



MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-2DR-STANDARD
 : DC205, HPR5W
 : 2MS008239
 : RENE AFABLE
 : -5V @ 8mA

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



*J1: INPUT ARM

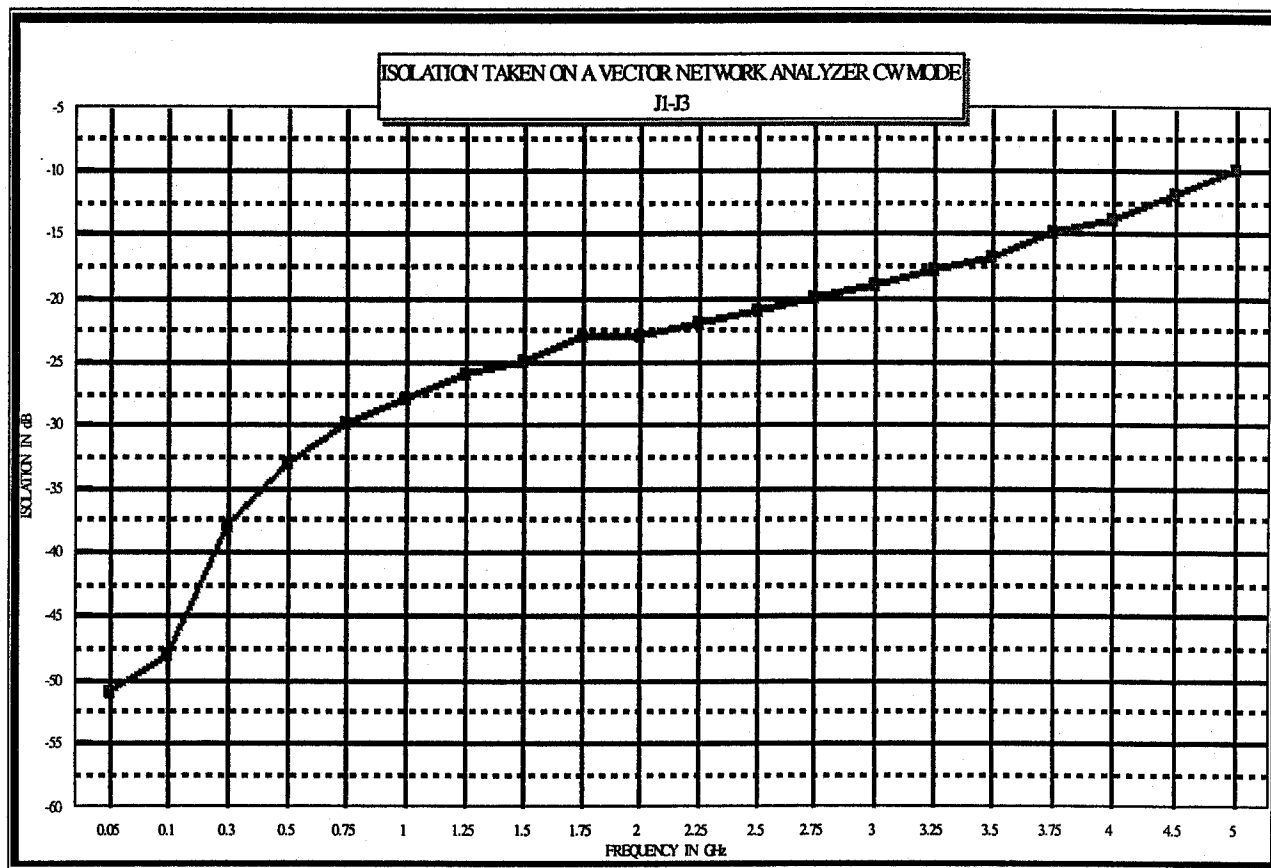
AUGUST 17, 2000



MODEL NUMBER
 OPTION NUMBER
 SERIAL NUMBER
 ENGINEER
 VOLTAGE & CURRENT DRAW

: SWN-218-2DR-STANDARD
 : DC205, HPR5W
 : 2MS008239
 : RENE AFABLE
 : -5V @ 8mA

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



*J1: INPUT ARM

AUGUST 17, 2000



TEST DATA
FROM
100 MHz TO 1 GHz
ON A
SP2T
T/R SOLID STATE SWITCH

AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)

PREPARED
BY
KATIE BAISEY

TESTED
BY
RENE AFABLE

AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

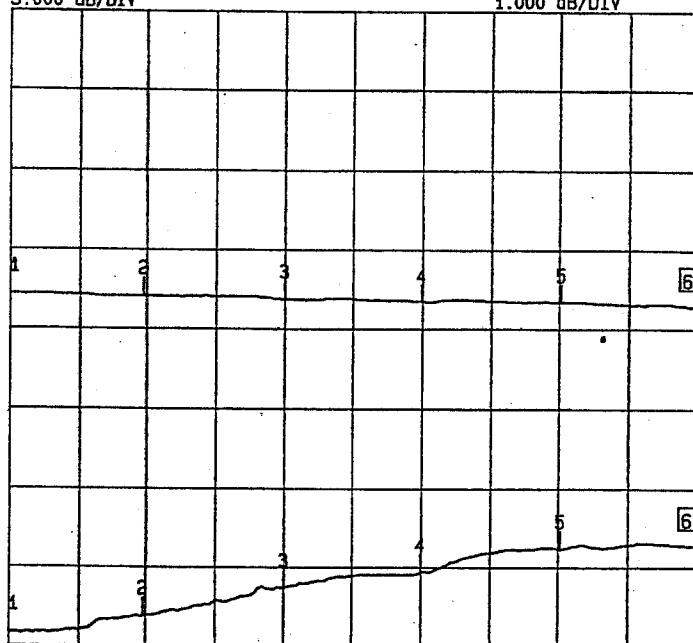
INSERTION LOSS & RETURN LOSS*

J1-J2

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

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

CH 3 - S21
REFERENCE PLANE
0.0000 mm



MARKER 6
1.000300000 GHz
-0.719 dB

MARKER TO MAX
MARKER TO MIN

- 1 0.101875000 GHz
-0.559 dB
- 2 0.280075000 GHz
-0.579 dB
- 3 0.463225000 GHz
-0.618 dB
- 4 0.641425000 GHz
-0.647 dB
- 5 0.824575000 GHz
-0.653 dB

0.101875000

GHz

1.000300000

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

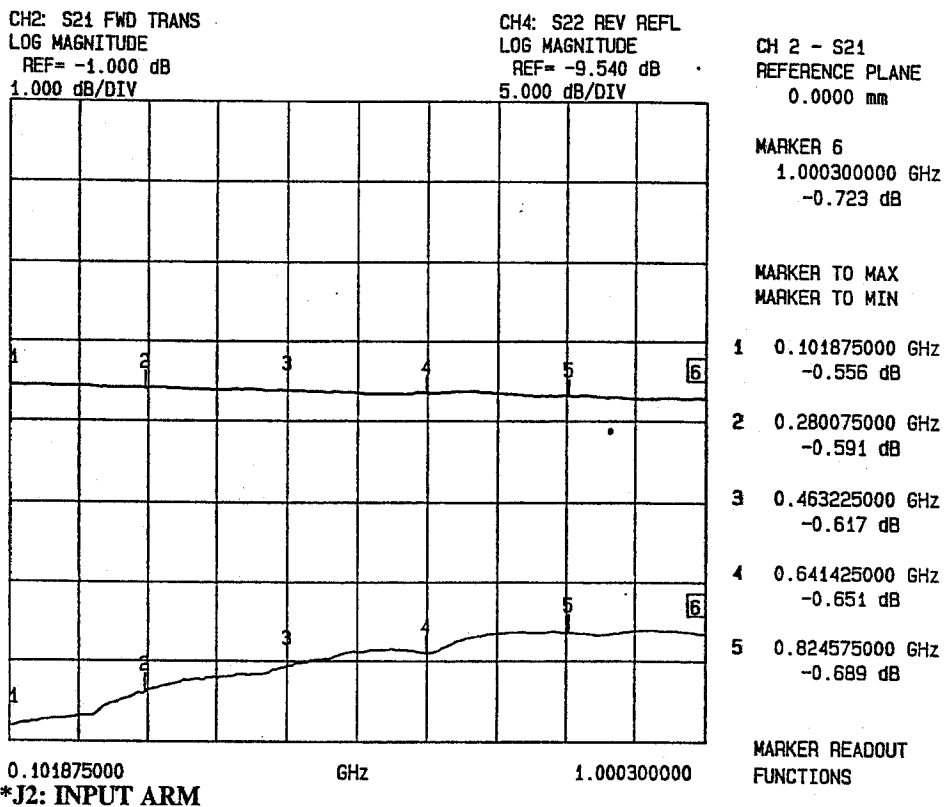
| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 100 MHz | 0.55 dB | 28.6 dB |
| 280 MHz | 0.57 dB | 27.5 dB |
| 460 MHz | 0.61 dB | 25.7 dB |
| 640 MHz | 0.64 dB | 24.7 dB |
| 820 MHz | 0.65 dB | 23.3 dB |
| 1.0 GHz | 0.71 dB | 23.1 dB |



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

INSERTION LOSS & RETURN LOSS* J2-J1



| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 100 MHz | 0.55 dB | 28.5 dB |
| 280 MHz | 0.59 dB | 26.4 dB |
| 460 MHz | 0.61 dB | 24.8 dB |
| 640 MHz | 0.65 dB | 24.0 dB |
| 820 MHz | 0.68 dB | 22.7 dB |
| 1.0 GHz | 0.72 dB | 22.8 dB |

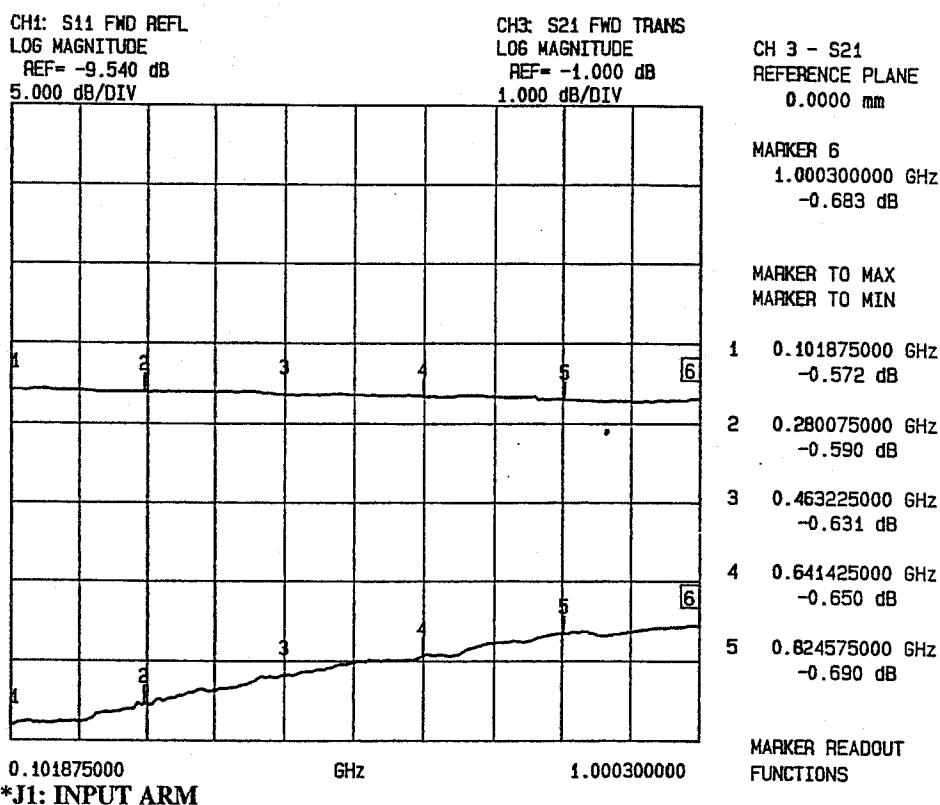


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

INSERTION LOSS & RETURN LOSS*

J1-J3



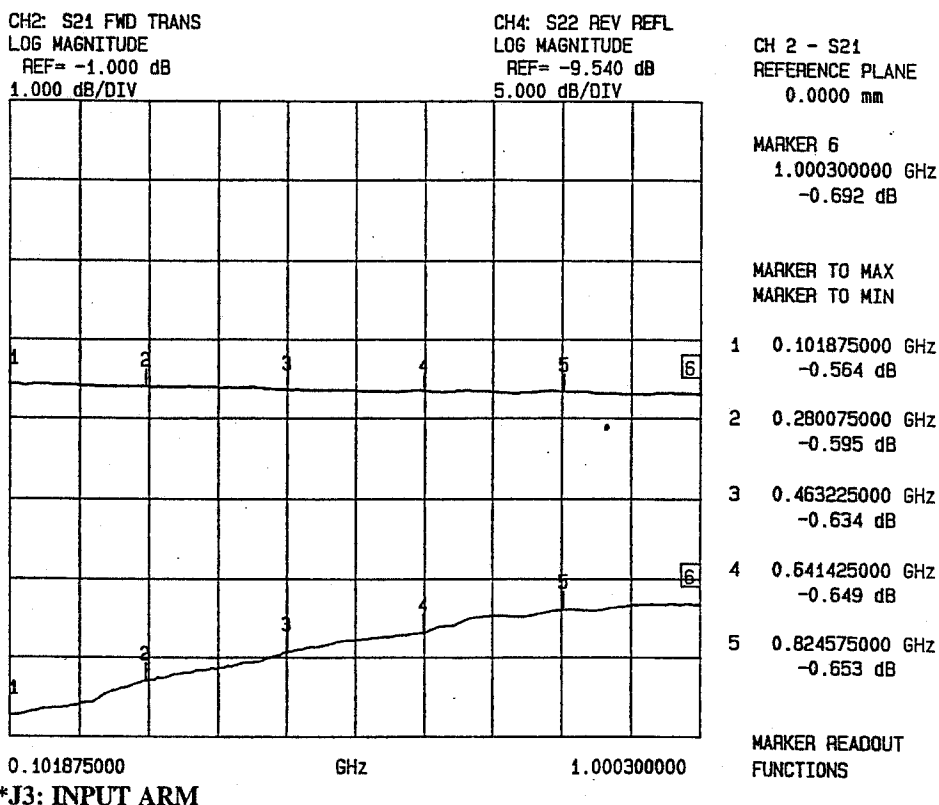
| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 100 MHz | 0.57 dB | 28.5 dB |
| 280 MHz | 0.59 dB | 27.1 dB |
| 460 MHz | 0.63 dB | 25.4 dB |
| 640 MHz | 0.65 dB | 24.1 dB |
| 820 MHz | 0.69 dB | 22.7 dB |
| 1.0 GHz | 0.68 dB | 22.3 dB |



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

INSERTION LOSS & RETURN LOSS* J3-J1



| FREQUENCY | INSERTION LOSS | RETURN LOSS |
|-----------|----------------|-------------|
| 100 MHz | 0.56 dB | 28.2 dB |
| 280 MHz | 0.59 dB | 26.0 dB |
| 460 MHz | 0.63 dB | 24.1 dB |
| 640 MHz | 0.64 dB | 22.9 dB |
| 820 MHz | 0.65 dB | 21.4 dB |
| 1.0 GHz | 0.69 dB | 21.1 dB |



**AMPLITUDE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 2.5 GHz
ON A
SP2T**

T/R SOLID STATE SWITCH

**AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

AUGUST 17, 2000

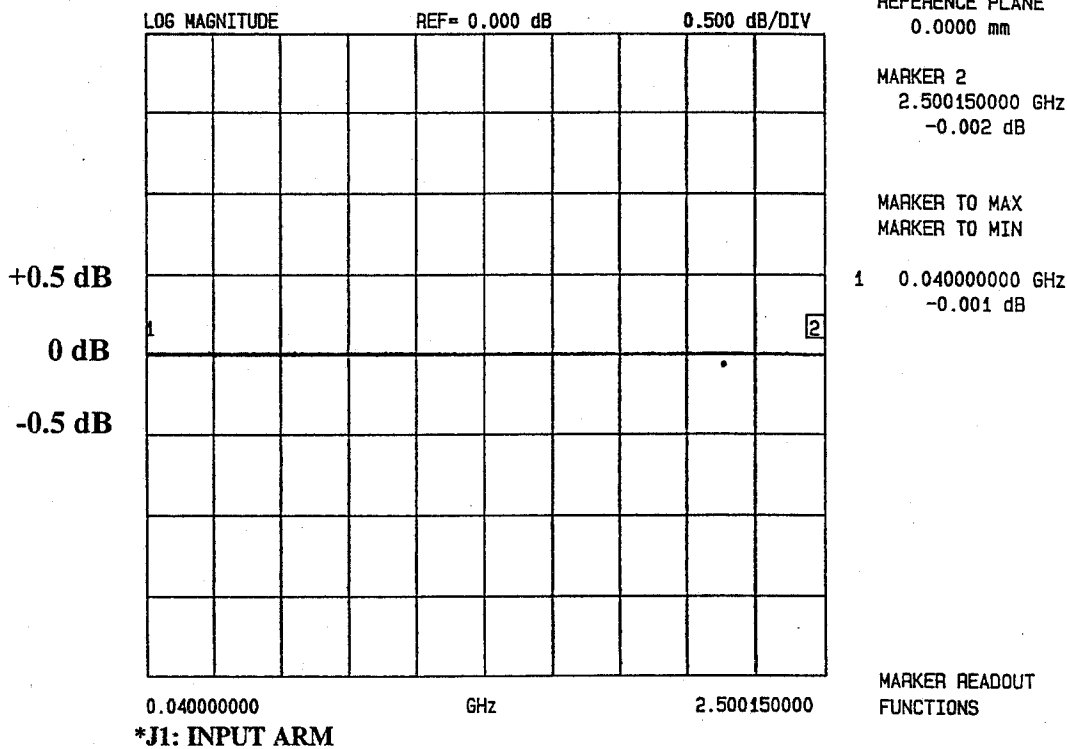


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

AMPLITUDE* J1-J2 (REFERENCE)

S21 FORWARD TRANSMISSION



| FREQUENCY | AMPLITUDE (PEAK) (POSITIVE SIDE) | AMPLITUDE (PEAK) (NEGATIVE SIDE) |
|-----------|-------------------------------------|-------------------------------------|
| 40 MHz | | -0.001 dB |
| 2.5 GHz | | -0.002 dB |

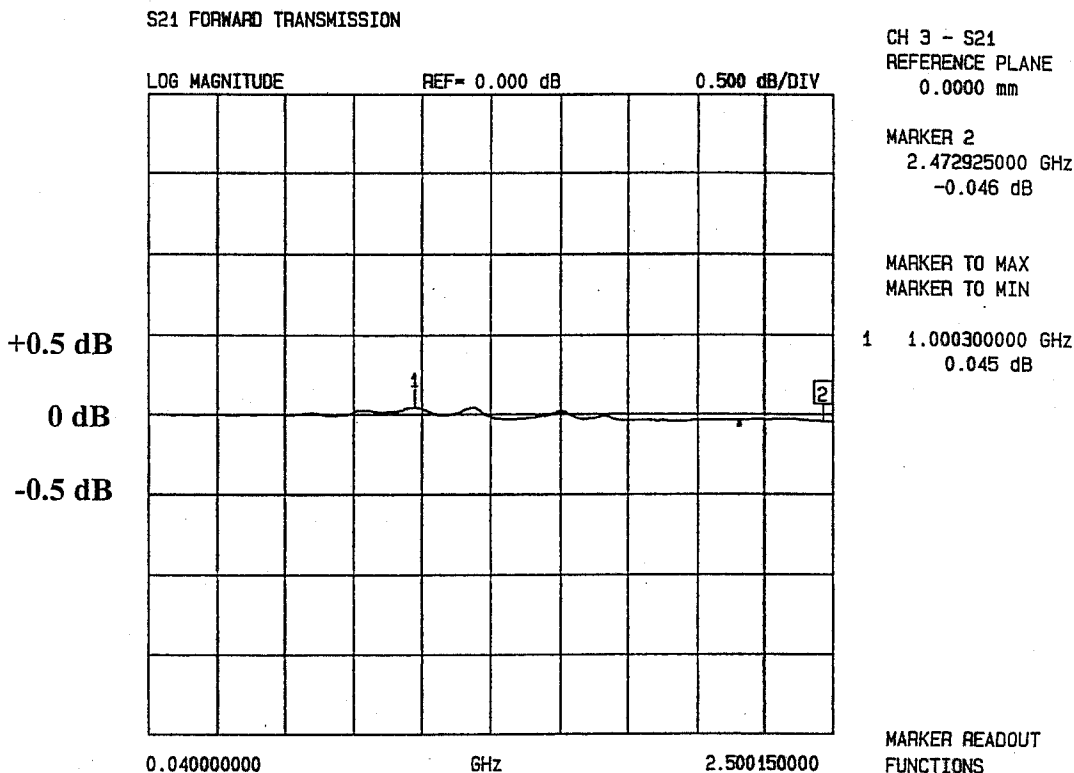
AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

AMPLITUDE*
J1-J2



*J1: INPUT ARM

| FREQUENCY | AMPLITUDE (PEAK) (POSITIVE SIDE) | AMPLITUDE (PEAK) (NEGATIVE SIDE) |
|-----------|-------------------------------------|-------------------------------------|
| 1.0 GHz | 0.045 dB | |
| 2.47 GHz | | -0.046 dB |

AUGUST 17, 2000



PHASE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 2.5 GHz
ON A
SP2T

T/R SOLID STATE SWITCH

**AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

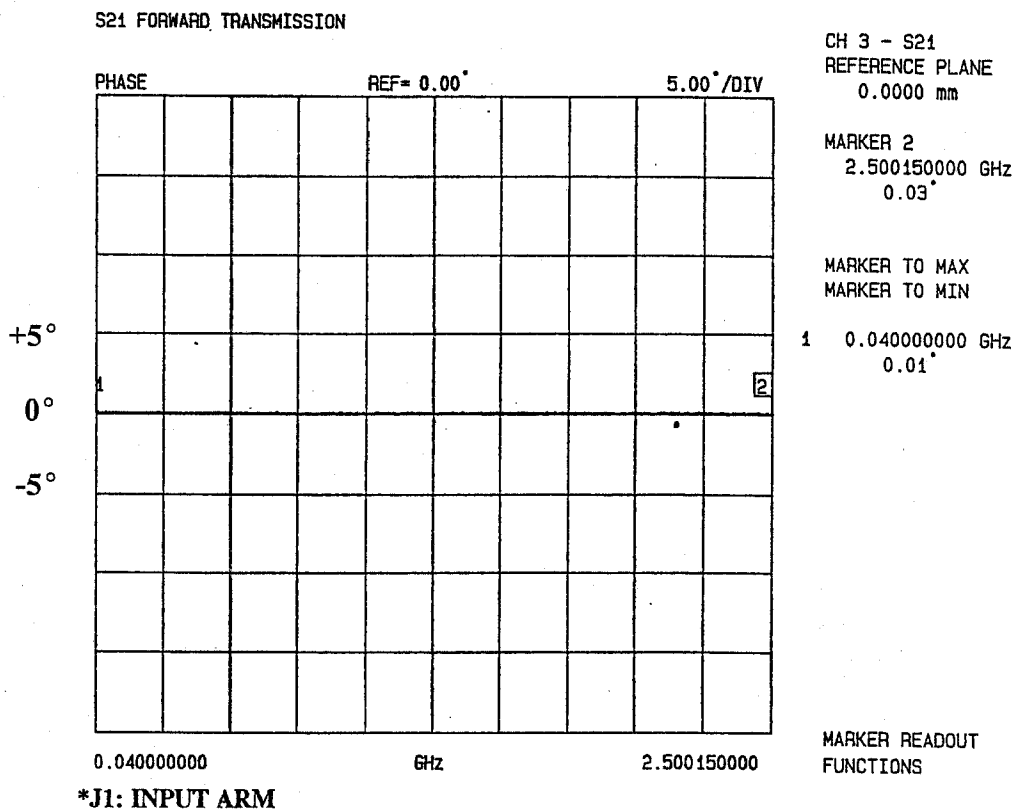
AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

PHASE* J1-J2 (REFERENCE)



| FREQUENCY | PHASE (PEAK) (POSITIVE SIDE) | PHASE (PEAK) (NEGATIVE SIDE) |
|-----------|---------------------------------|---------------------------------|
| 40 MHz | 0.01° | |
| 2.5 GHz | 0.03° | |

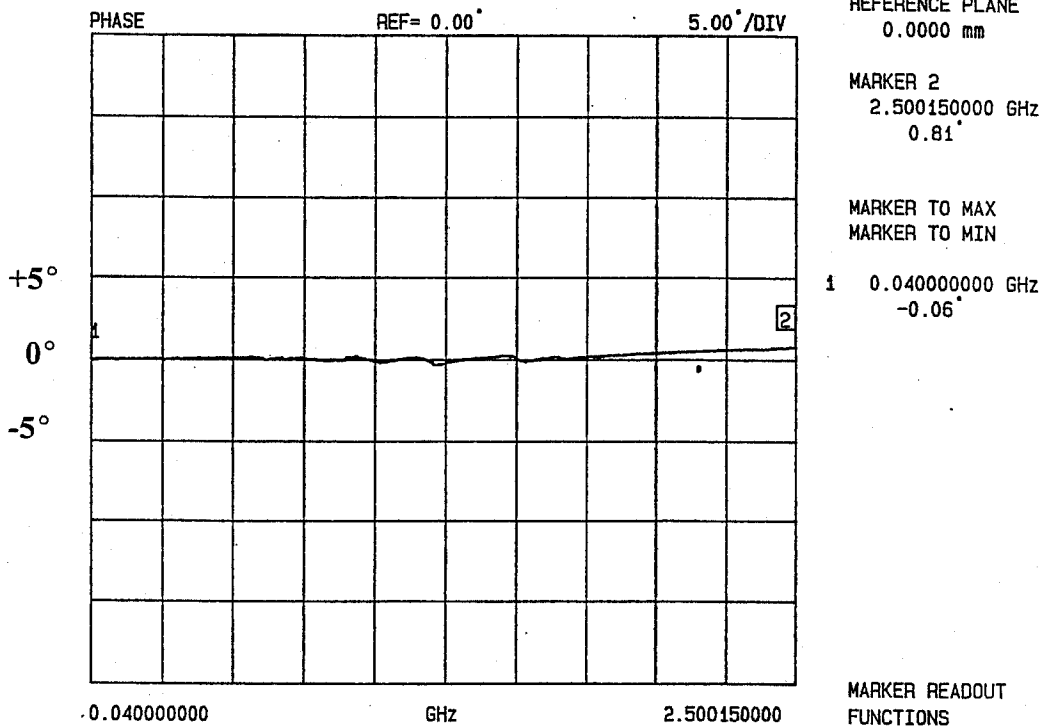


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

PHASE* J1-J2

S21 FORWARD TRANSMISSION



*J1: INPUT ARM

| FREQUENCY | PHASE (PEAK) (POSITIVE SIDE) | PHASE (PEAK) (NEGATIVE SIDE) |
|-----------|---------------------------------|---------------------------------|
| 40 MHz | | -0.06° |
| 2.5 GHz | 0.81° | |



**AMPLITUDE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 3.5 GHz
ON A
SP2T
T/R SOLID STATE SWITCH**

**AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

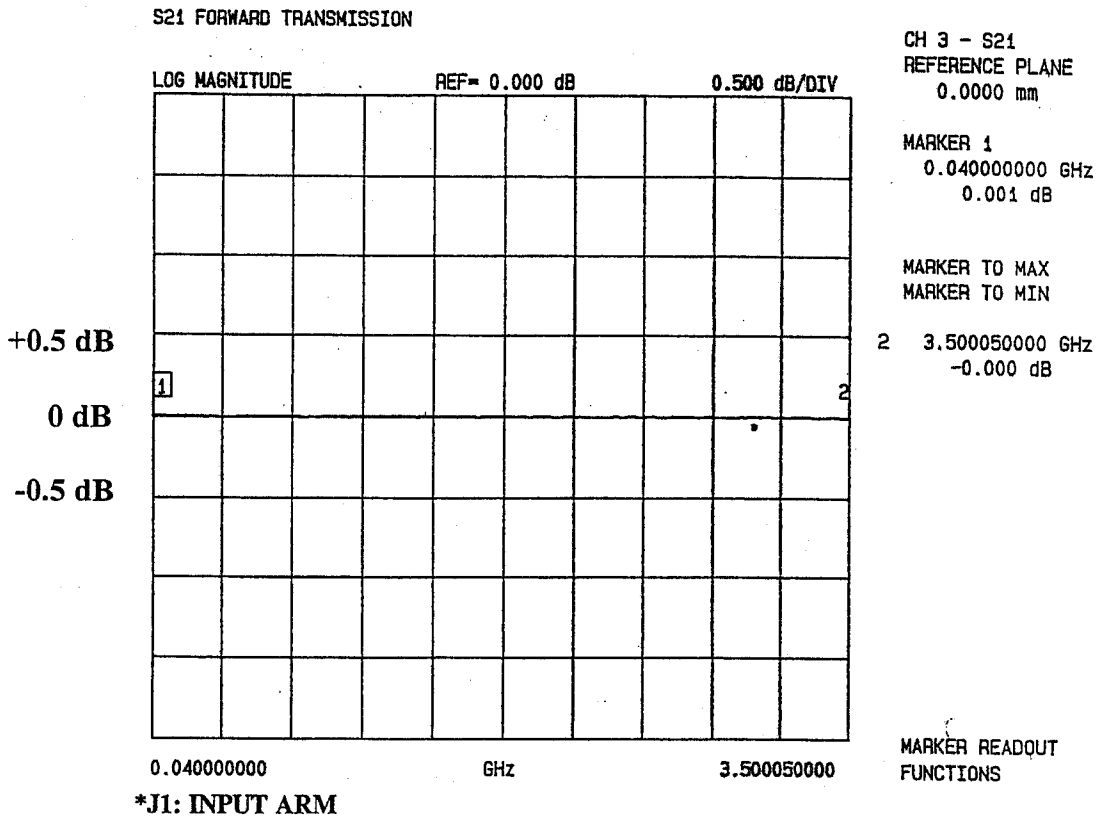
AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

AMPLITUDE* J1-J2 (REFERENCE)



| FREQUENCY | AMPLITUDE (PEAK) (POSITIVE SIDE) | AMPLITUDE (PEAK) (NEGATIVE SIDE) |
|-----------|-------------------------------------|-------------------------------------|
| 40 MHz | 0.001 dB | |
| 3.5 GHz | 0.000 dB | |

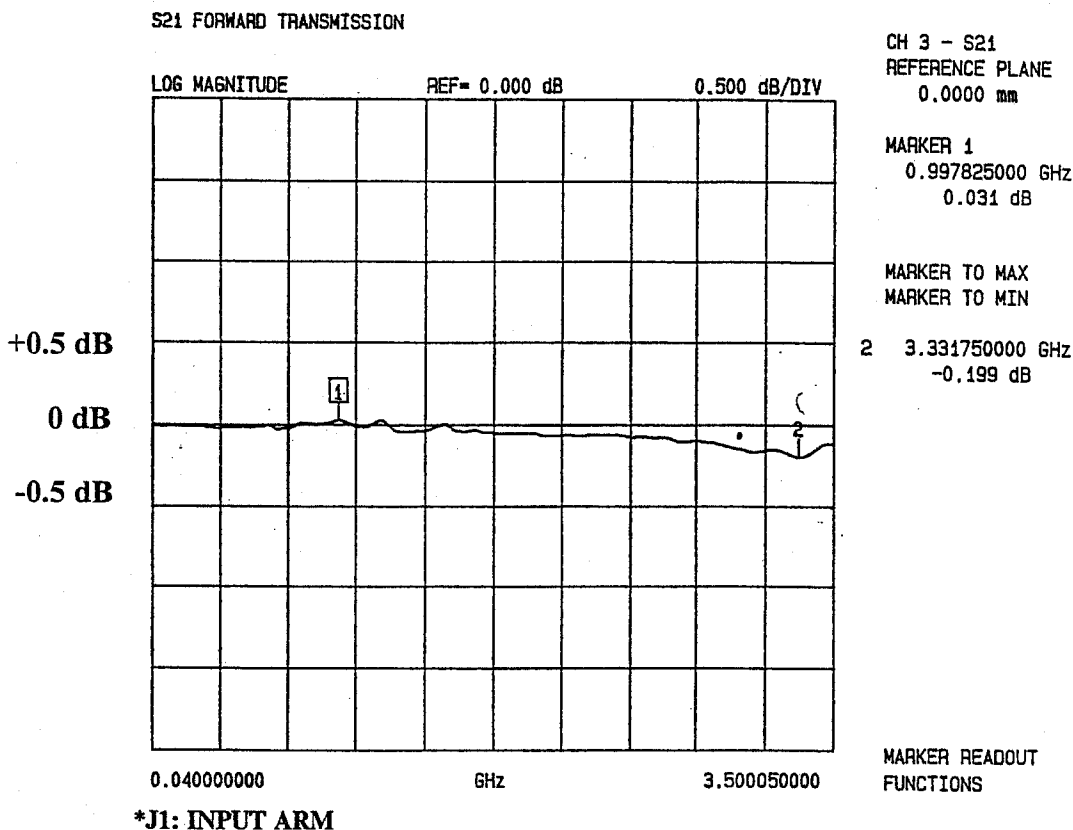
AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

AMPLITUDE* J1-J2



| FREQUENCY | AMPLITUDE (PEAK) (POSITIVE SIDE) | AMPLITUDE (PEAK) (NEGATIVE SIDE) |
|-----------|-------------------------------------|-------------------------------------|
| 0.99 GHz | 0.031 dB | |
| 3.33 GHz | | -0.199 dB |

AUGUST 17, 2000



PHASE
DATA
BETWEEN
PORT TO PORT
FROM
40 MHz TO 3.5 GHz
ON A
SP2T

T/R SOLID STATE SWITCH

AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)

PREPARED
BY
KATIE BAISEY

TESTED
BY
RENE AFABLE

AUGUST 17, 2000

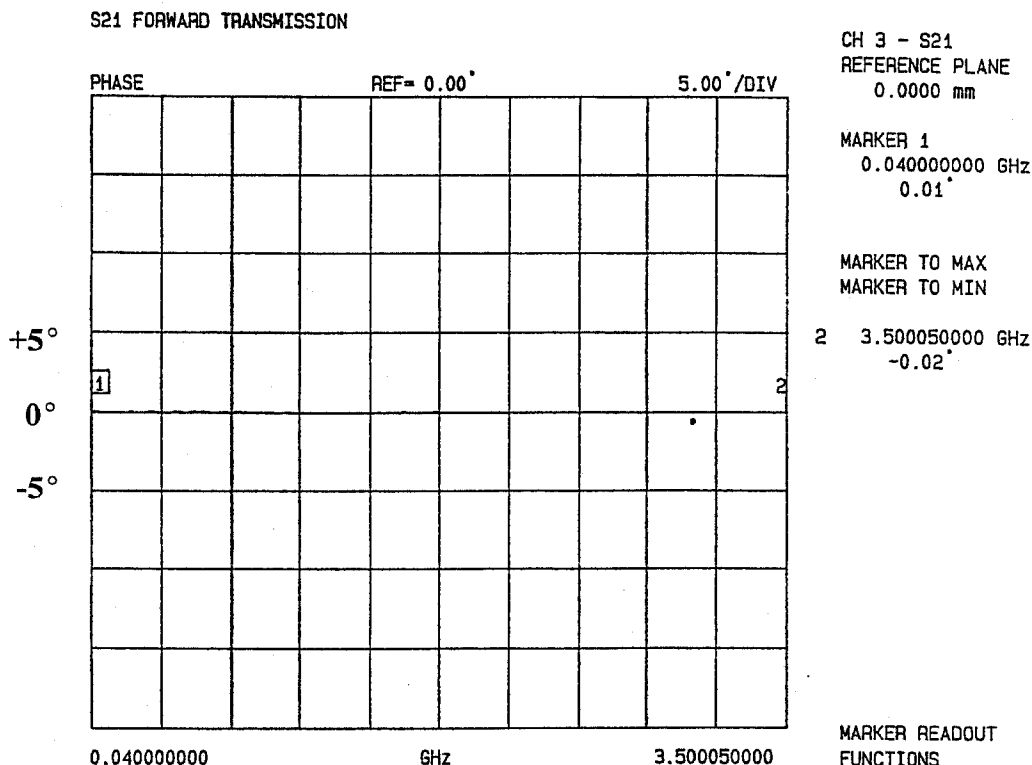
7311 G GROVE ROAD, FREDERICK, MARYLAND 21704 • Tel. (301) 662-4700 • Fax (301) 662-4938



SUMMARY TEST DATA

MODEL NUMBER : SWN-218-2DR-STANDARD
OPTION NUMBER : DC205, HPR5W
SERIAL NUMBER : 2MS008239
ENGINEER : RENE AFABLE
VOLTAGE & CURRENT DRAW : -5V @8mA

PHASE* J1-J2 (REFERENCE)



*J1: INPUT ARM

| FREQUENCY | PHASE (PEAK) (POSITIVE SIDE) | PHASE (PEAK) (NEGATIVE SIDE) |
|-----------|---------------------------------|---------------------------------|
| 40 MHz | 0.01° | |
| 3.5 GHz | | -0.02° |

AUGUST 17, 2000

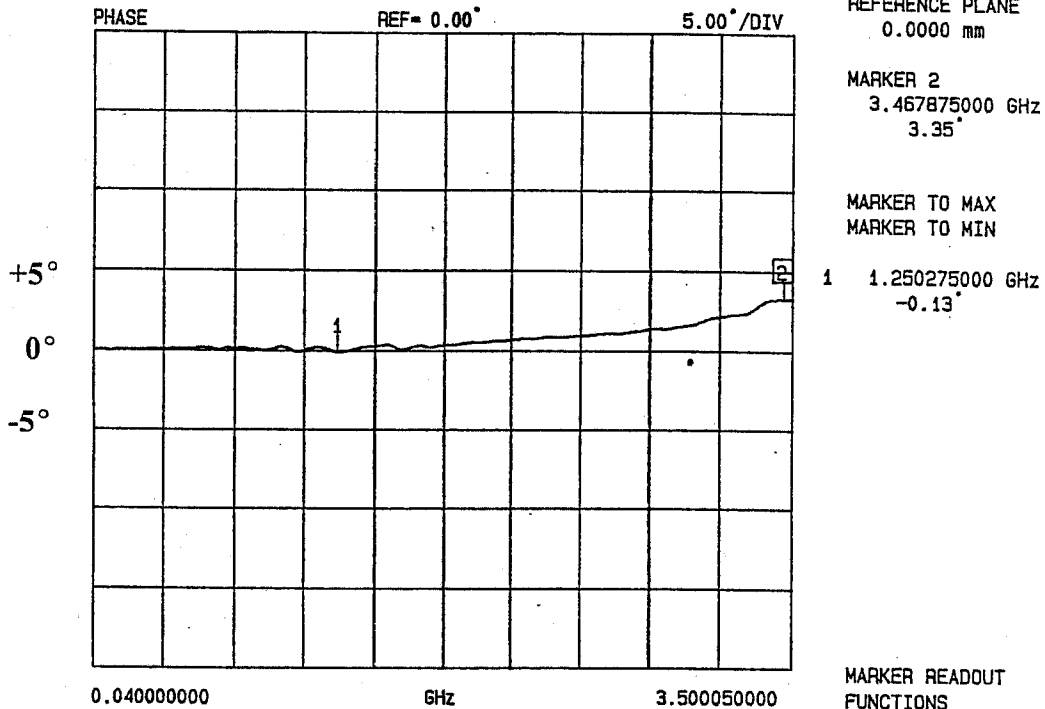


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @8mA |

PHASE*
J1-J2

S21 FORWARD TRANSMISSION



*J1: INPUT ARM

| FREQUENCY | PHASE (PEAK) (POSITIVE SIDE) | PHASE (PEAK) (NEGATIVE SIDE) |
|-----------|---------------------------------|---------------------------------|
| 3.46 GHz | 3.35° | |
| 1.25 GHz | | -0.13° |

AUGUST 17, 2000



SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

SWITCHING SPEED

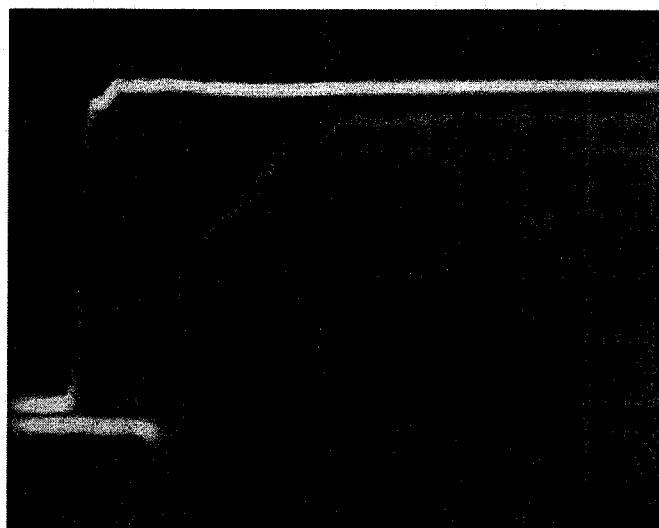
"Rise/Fall" Time: 10% RF to 90% RF & 90% RF to 10% RF
 "On/Off" Time: 50% TTL to 90% RF or 10% RF

TYPICAL OF ALL ARMS

"DELAY ON": 31 nS
 "RISE TIME": 18 nS

HORIZONTAL SCALE:
 10 nS PER DIVISION

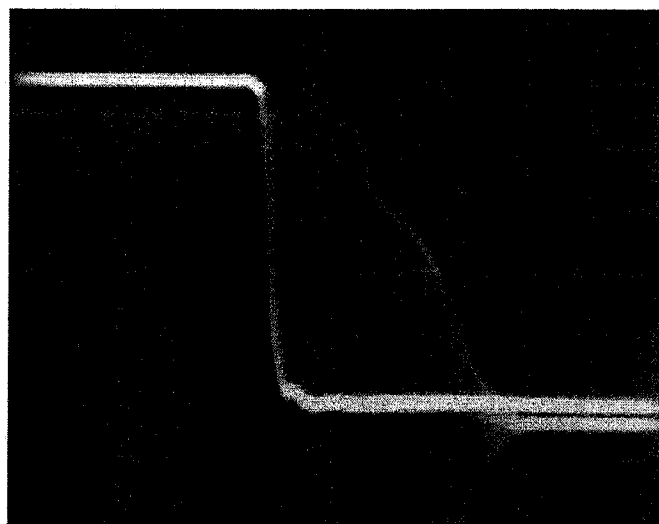
VERTICAL SCALE:
 0.1V PER DIVISION



"DELAY OFF": 34 nS
 "FALL TIME": 20 nS

HORIZONTAL SCALE:
 10 nS PER DIVISION

VERTICAL SCALE:
 0.1V PER DIVISION





SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

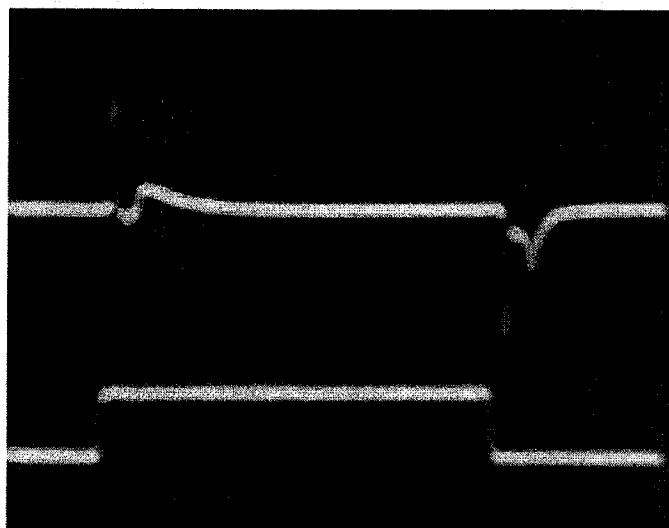
VIDEO TRANSIENTS

TYPICAL OF ALL ARMS

≤ 66 mV P-P
MEASURED IN A
300 MHZ BANDWIDTH

VERTICAL SCALE:
20 mV PER DIVISION

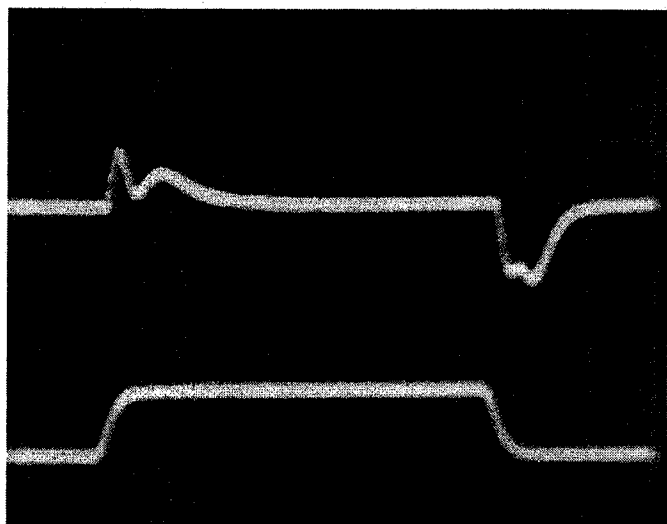
HORIZONTAL SCALE:
20 nS PER DIVISION



≤ 21 mV P-P
MEASURED IN A
20 MHZ BANDWIDTH

VERTICAL SCALE:
10 mV PER DIVISION

HORIZONTAL SCALE:
20 nS PER DIVISION





APPENDIX A
MISCELLANEOUS
TEST DATA AND PLOTS
ON
ISOLATION
AS
MEASURED
ON A VECTOR NETWORK ANALYZER
ON A
SP2T
T/R SOLID STATE SWITCH
AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)
FROM
40 MHz TO 4 GHz
AND
FROM
100 MHz TO 1 GHz
AUGUST 17, 2000

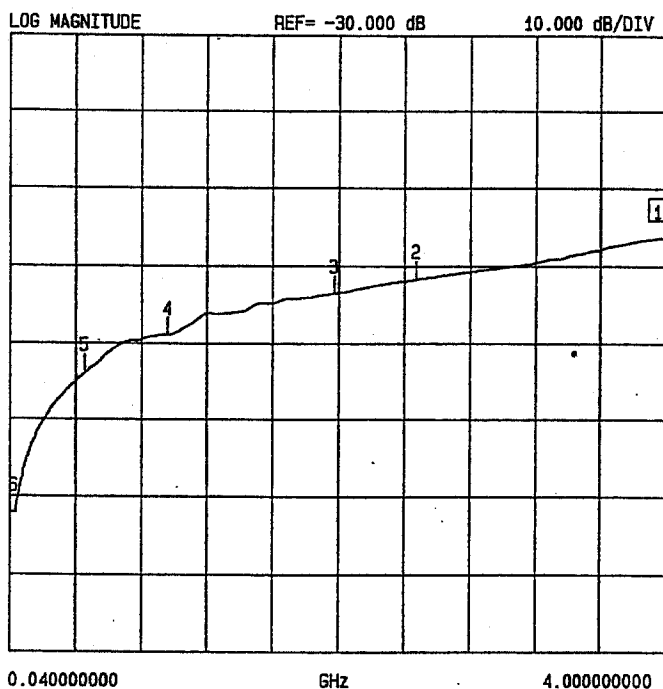


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

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

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 1
4.00000000 GHz
-16.213 dB

MARKER TO MAX
MARKER TO MIN

2 2.500150000 GHz
-21.547 dB

3 2.000200000 GHz
-23.348 dB

4 1.000300000 GHz
-28.755 dB

5 0.500350000 GHz
-33.731 dB

6 0.040000000 GHz
-52.050 dB

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

| FREQUENCY | ISOLATION |
|-----------|-----------|
| 40 MHz | 52.05 dB |
| 500 MHz | 33.73 dB |
| 1.0 GHz | 28.75 dB |
| 2.0 GHz | 23.34 dB |
| 2.5 GHz | 21.54 dB |
| 4.0 GHz | 16.21 dB |

AUGUST 17, 2000

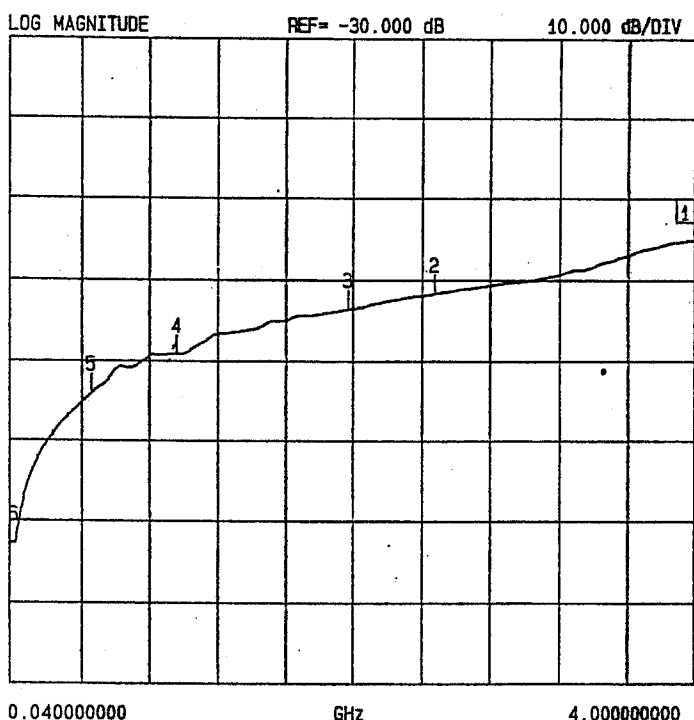


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

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

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 1
4.000000000 GHz
-15.077 dB

MARKER TO MAX
MARKER TO MIN

2 2.500150000 GHz
-21.509 dB

3 2.000200000 GHz
-23.456 dB

4 1.000300000 GHz
-29.028 dB

5 0.500350000 GHz
-33.868 dB

6 0.040000000 GHz
-52.719 dB

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

| FREQUENCY | ISOLATION |
|-----------|-----------|
| 40 MHz | 52.71 dB |
| 500 MHz | 33.86 dB |
| 1.0 GHz | 29.02 dB |
| 2.0 GHz | 23.45 dB |
| 2.5 GHz | 21.50 dB |
| 4.0 GHz | 15.07 dB |

AUGUST 17, 2000



**ISOLATION
DATA
FROM
100 MHz TO 1 GHz
ON A
SP2T
T/R SOLID STATE SWITCH**

**AMC MODEL No:
SWN-218-2DR-STANDARD OPTIONS DC205, HPR5W
(Serial Number: 2MS008239)**

**PREPARED
BY
KATIE BAISEY**

**TESTED
BY
RENE AFABLE**

AUGUST 17, 2000

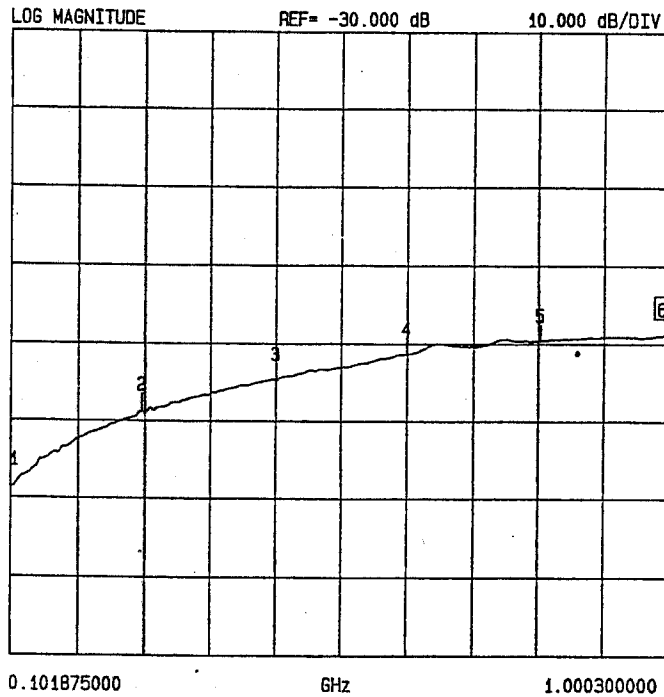


SUMMARY TEST DATA

| | |
|-----------------------------------|-------------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

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

S21 FORWARD TRANSMISSION



CH 3 - S21
REFERENCE PLANE
0.0000 mm

MARKER 6
1.000300000 GHz
-28.812 dB

MARKER TO MAX
MARKER TO MIN

| | | |
|---|-----------------|------------|
| 1 | 0.101875000 GHz | -48.595 dB |
| 2 | 0.280075000 GHz | -38.744 dB |
| 3 | 0.463225000 GHz | -34.619 dB |
| 4 | 0.641425000 GHz | -31.292 dB |
| 5 | 0.824575000 GHz | -29.584 dB |

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

| FREQUENCY | ISOLATION |
|-----------|-----------|
| 100 MHz | 48.59 dB |
| 280 MHz | 38.74 dB |
| 460 MHz | 34.61 dB |
| 640 MHz | 31.29 dB |
| 820 MHz | 29.58 dB |
| 1.0 GHz | 28.81 dB |

AUGUST 17, 2000

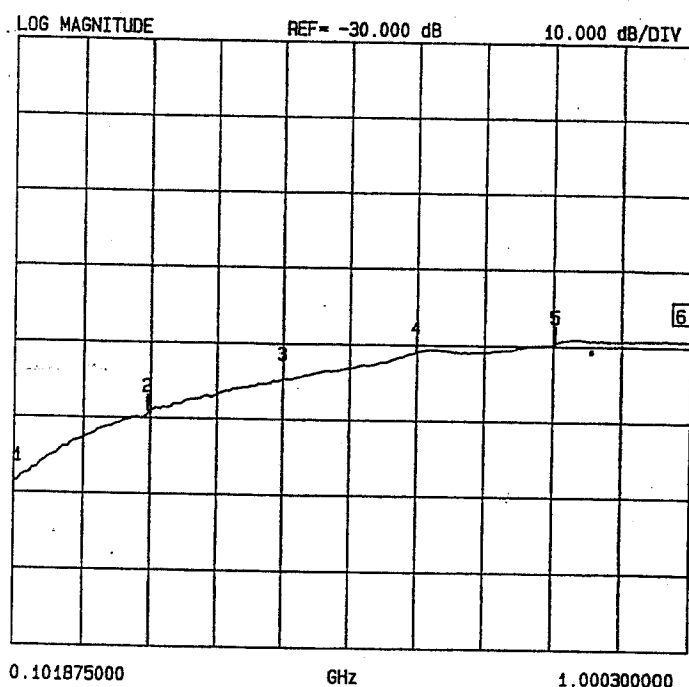


SUMMARY TEST DATA

| | |
|------------------------|------------------------|
| MODEL NUMBER | : SWN-218-2DR-STANDARD |
| OPTION NUMBER | : DC205, HPR5W |
| SERIAL NUMBER | : 2MS008239 |
| ENGINEER | : RENE AFABLE |
| VOLTAGE & CURRENT DRAW | : -5V @ 8mA |

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

S21 FORWARD TRANSMISSION



CH 3 - S21

REFERENCE PLANE
0.0000 mm

MARKER 6

1.000300000 GHz
-29.158 dBMARKER TO MAX
MARKER TO MIN

- | | | |
|---|-----------------|------------|
| 1 | 0.101875000 GHz | -48.495 dB |
| 2 | 0.280075000 GHz | -39.160 dB |
| 3 | 0.463225000 GHz | -34.675 dB |
| 4 | 0.641425000 GHz | -30.899 dB |
| 5 | 0.824575000 GHz | -29.506 dB |

MARKER READOUT
FUNCTIONS

*J1: INPUT ARM

| FREQUENCY | ISOLATION |
|-----------|-----------|
| 100 MHz | 48.49 dB |
| 280 MHz | 39.16 dB |
| 460 MHz | 34.67 dB |
| 640 MHz | 30.89 dB |
| 820 MHz | 29.50 dB |
| 1.0 GHz | 29.15 dB |

AUGUST 17, 2000