



**TEST REPORT**  
**ON**  
**5.6 TO 6.0 GHz**  
**SINGLE POLE TWO THROW**  
**REFLECTIVE TRANSMIT / RECEIVE SWITCH MODULE**  
**AMC MODEL No:**  
**SWN-2181-2DTR-HPR2W-TRW1**

Serial Numbers: 2MS812054 THRU 2MS812060

DESIGNED  
BY  
Dr. A. Gorwara

TESTED  
BY  
R. Afable

REPORTED  
BY  
E. Elder

DRH  
JDT  
EJC  
MKN  
JJ

**October 6, 2004**

AMERICAN MICROWAVE CORPORATION., 7311-G Grove Road, Frederick, MD 21704  
Tel: 301-662-4700 • Fax: 301-662-4938 • Email: [sales@americanmicrowavecorp.com](mailto:sales@americanmicrowavecorp.com)  
Website: <http://www.americanmicrowavecorp.com>

**ISO9001 : 1994 CERTIFIED**

## TABLE OF CONTENTS

●	PRODUCT DESCRIPTION AND ELECTRICAL SPECIFICATIONS	PAGE 3
●	PRODUCT FEATURE AND ENVIRONMENTAL SPECIFICATIONS	PAGE 4
●	MECHANICAL OUTLINE	PAGE 5
●	FUNCTIONAL SCHEMATIC	PAGE 6
●	TEST DATA ON SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBERS 2MS812054 THRU 2MS812060	PAGE 7
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812054	PAGE 8
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812055	PAGE 9
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812056	PAGE 10
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812057	PAGE 11
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812058	PAGE 12
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812059	PAGE 13
●	TEST DATA FOR SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER 2MS812060	PAGE 14

## SINGLE POLE, TWO THROW REFLECTIVE TRANSMIT / RECEIVE SWITCH MODULE AMC MODEL No: SWN-2181-2DTR-HPR2W-TRW1

### FEATURES:

- **5.6 TO 6.0 GHz FREQUENCY RANGE**
- **2 WATTS HIGH POWER**
- **VERY LOW INSERTION LOSS**
- **HIGH ISOLATION**
- **LOW VIDEO TRANSIENT**

### SPECIFICATIONS:

- |                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| ● FREQUENCY         | : 5.6 TO 6.0 GHz                                                                                 |
| ● INSERTION LOSS    | : 2.0 dB MAXIMUM, 1.5 dB TYPICAL                                                                 |
| ● ISOLATION         | : 70 dB MINIMUM                                                                                  |
| ● VSWR (ALL PORTS)  | : 2.0:1 MAXIMUM, 1.5:1 TYPICAL                                                                   |
| ● SPEED             | : TURN ON/OFF: 300 nSEC MAXIMUM,<br>200 nSEC TYPICAL                                             |
| ● CONTROL           | : SINGLE CONTROL TTL TOGGLE<br>LOGIC "0" = J1-J2 ON (TRANSMIT)<br>LOGIC "1" = J1-J3 ON (RECEIVE) |
| ● POWER HANDLING    | : 1.5 WATTS MINIMUM, 2.0 WATTS TYPICAL (J2<br>TRANSMIT ONLY)<br>100 mWATTS (J3 RECEIVE ONLY)     |
| ● POWER SUPPLY      | : +5 V @ 100 mA MAXIMUM<br>-12 V @ 75 mA MAXIMUM                                                 |
| ● RECEIVE ARM (J3)  | : INTERNALLY TERMINATED                                                                          |
| ● TRANSMIT ARM (J2) | : REFLECTIVE / NON-TERMINATED                                                                    |

## PRODUCT FEATURE

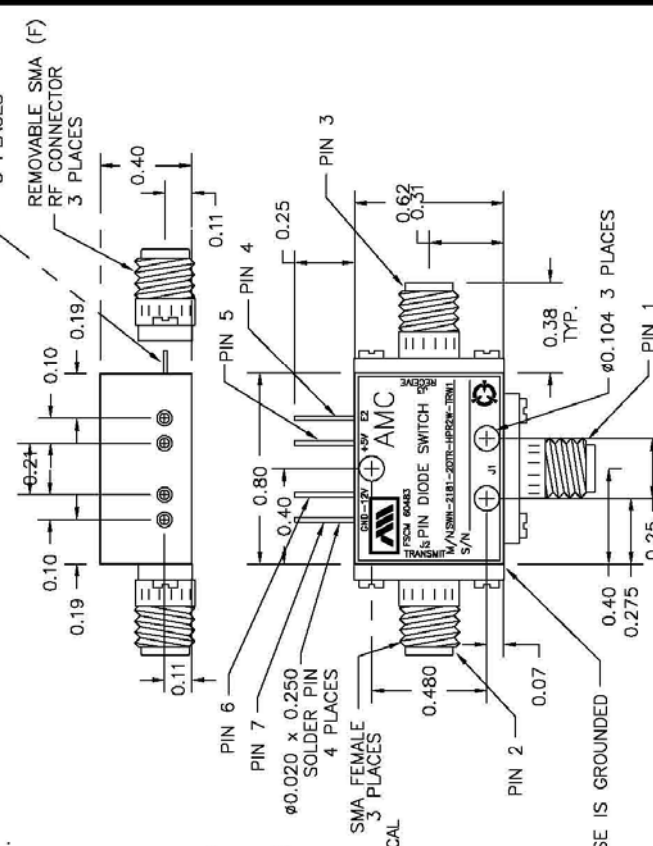
ZONE	REV.	REVISIONS	DESCRIPTION	DATE	APPROVED
			ORIGINAL JOB# 810213E	06/05/98	

**DESCRIPTION**

AMC MODEL SWN-218-2DTR-HPR2W-TRW1 IS A SINGLE POLE TWO THROW, HIGH POWER (2 WATTS) REFLECTIVE T/R SWITCH MODULE WITH VERY LOW INSERTION LOSS, HIGH ISOLATION, LOW VIDEO TRANSIENT AND WITH INTEGRAL TTL DRIVER, DESIGNED FOR 5.6 TO 6.0 GHz FREQUENCY RANGE OPERATION.

**SPECIFICATIONS**

- FREQUENCY RANGE: 5.6 TO 6.0 GHz
- INSERTION LOSS: 2.0 dB MAXIMUM, 1.5 dB TYPICAL
- ISOLATION: 70 dB MINIMUM
- VSWR (ALL PORTS): 2.0:1 MAXIMUM, 1.5:1 TYPICAL
- SPEED: TURN ON/OFF 300 nSEC MAXIMUM, 200 nSEC TYPICAL
- CONTROL: SINGLE CONTROL TTL TOGGLE
- LOGIC "0" = J1-J2 ON (TRANSMIT)
- LOGIC "1" = J1-J3 ON (RECEIVE)
- COMMON PORT
- TRANSMIT PORT
- RECEIVE PORT
- POWER HANDLING: 1.5 WATT MINIMUM, 2.0 WATTS TYPICAL (J2 TRANSMIT ONLY)  
100 mWATTS (J3 RECEIVE ONLY)
- POWER SUPPLY: +5V @ 100 mA MAXIMUM  
-12V @ 75 mA MAXIMUM
- RECEIVE ARM (J3): INTERNALLY TERMINATED
- TRANSMIT ARM (J2): REFLECTIVE



CASE IS GROUNDED

**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: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE  
 NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

**AMERICAN MICROWAVE CORPORATION**

7311-G GROVE ROAD  
 FREDERICK, MARYLAND 21704 USA  
 TEL: 301-662-4700 FAX: 301-662-4938  
 WEBSITE: [www.americamicrowavecorp.com](http://www.americamicrowavecorp.com)  
 E-MAIL: [sales@americamicrowavecorp.com](mailto:sales@americamicrowavecorp.com)  
 ISO 9001:2000 CERTIFIED

DATE	DATE	DATE	DATE	DATE	DATE
APPROVALS	DATE	APPROVALS	DATE	APPROVALS	DATE
DESIGNED	06/05/98	DESIGNED	06/05/98	DESIGNED	06/05/98
DRAWN	06/05/98	DRAWN	06/05/98	DRAWN	06/05/98
CHECKED	06/05/98	CHECKED	06/05/98	CHECKED	06/05/98

TITLE: PRODUCT FEATURE

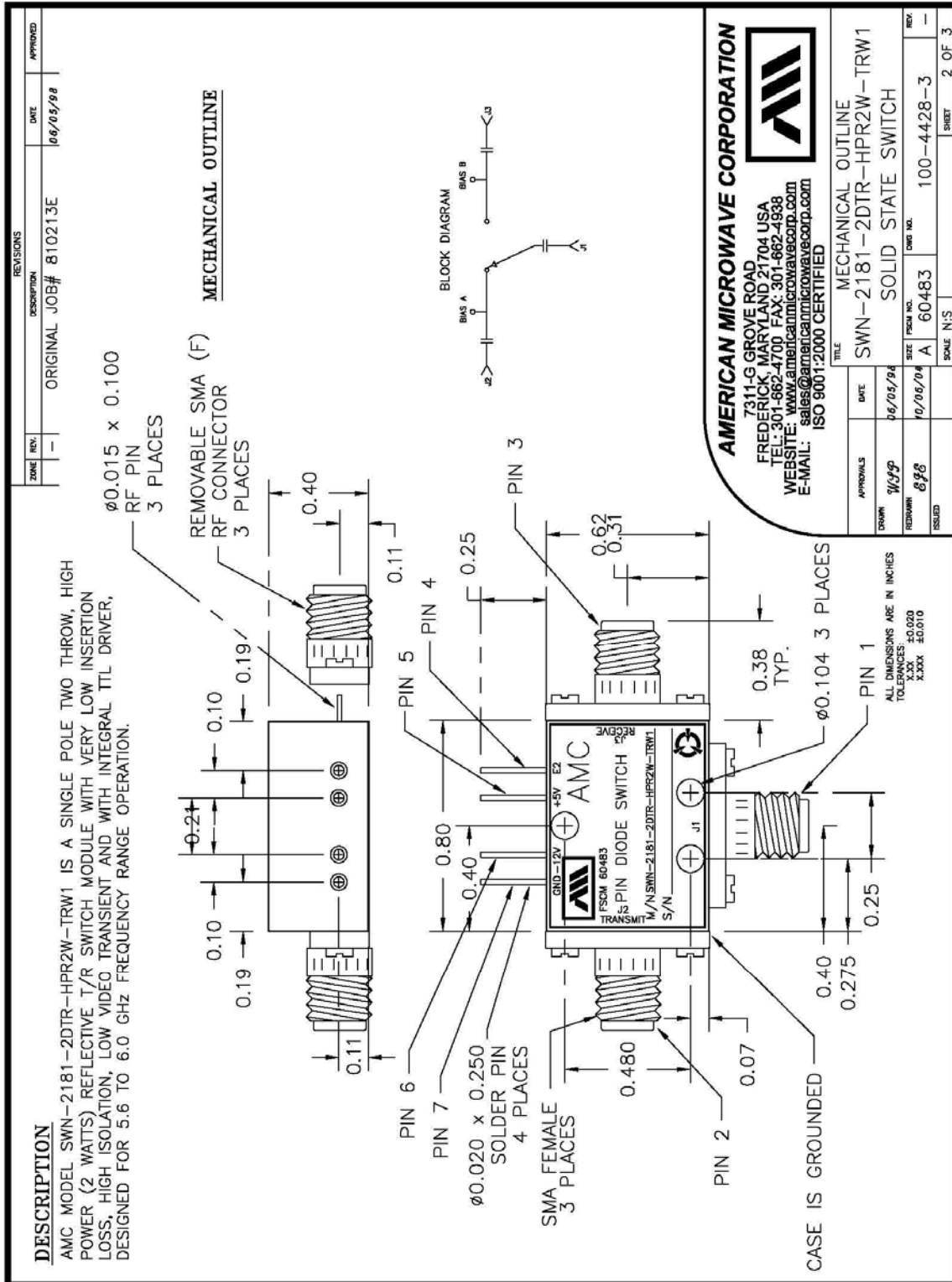
SWN-218-2DTR-HPR2W-TRW1

SOLID STATE SWITCH

SIZE FROM NO. A 60483 DWG NO. 100-4428-3

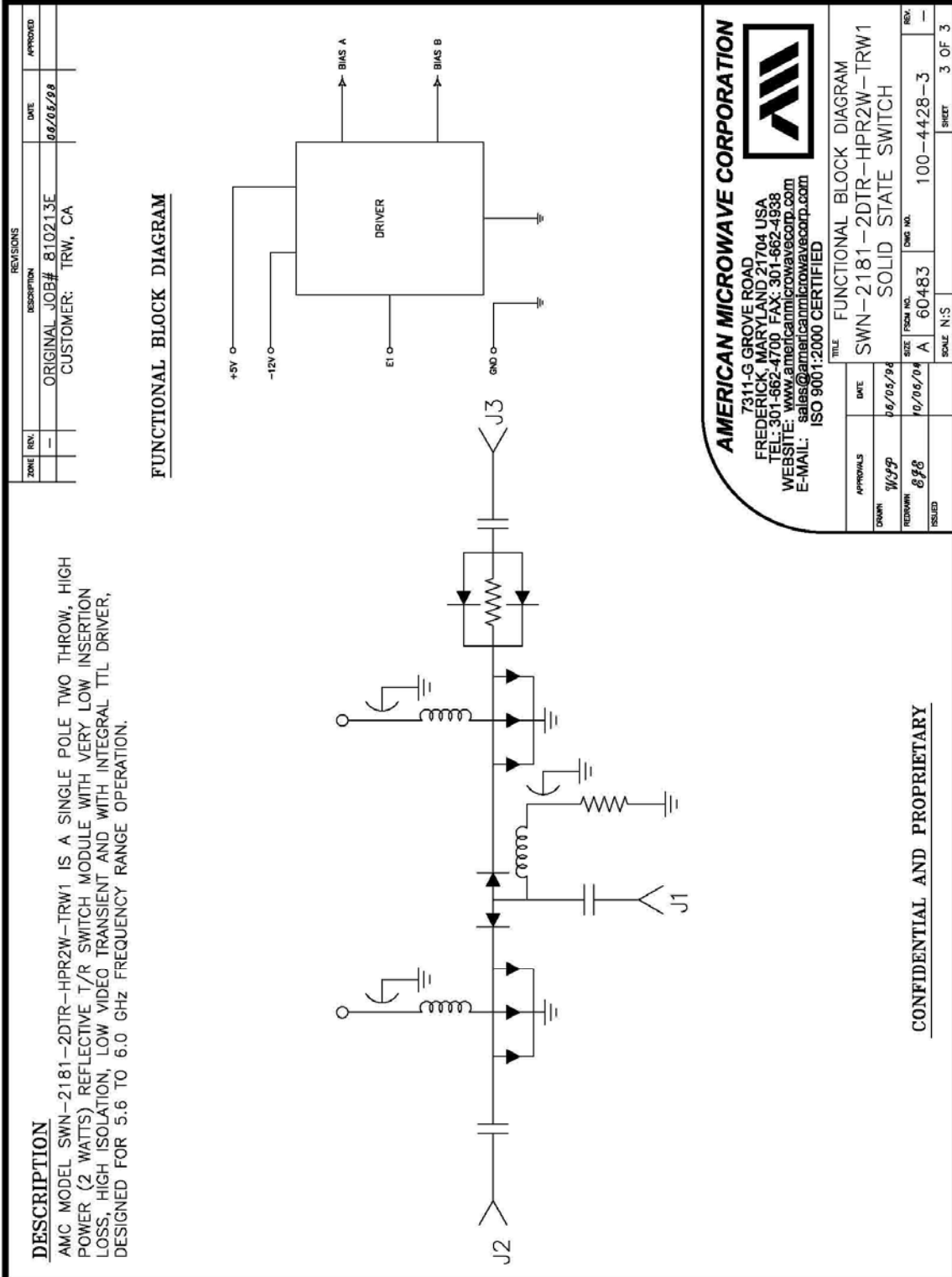
SCALE: N/S SHEET 1 OF 3

**OUTLINE DRAWING**





**FUNCTIONAL SCHEMATIC**



CONFIDENTIAL AND PROPRIETARY

## FINAL TEST DATA

FINAL TEST DATA SHEETS

FOR

AMC MODEL NUMBER

# SWN-2181-2DTR-HPR2W-TRW1

Serial Numbers:

2MS812054 THRU 2MS812060





**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812054

FORM: SW-01/0698



DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812054  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

INSERTION LOSS	RETURN LOSS					
	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.27 dB	27.01 dB	1. :1	17.10 dB	1. :1		
J1-J3 1.73 dB	24.41 dB	1. :1	18.02 dB	1. :1	28.58 dB	1. :1

ISOLATION	SWITCHING SPEED			
	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: William 31347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98





**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812055

FORM: SW-01/0698



DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812055  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_  
+5V I+ 100mA  
+2V I- 72mA

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1-20 dB	18.07 dB	1. :1	14.33 dB	1. :1		
J1-J3 2.02 dB	21.44 dB	1. :1	13.52 dB	1. :1	10.19 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: with from 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98

**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812056

FORM: SW-01/0698



AMERICAN MICROWAVE CORPORATION  
 7311-G GROVE ROAD, FREDERICK, MD 21704  
 TEL: (301)662-4700 FAX: (301)662-4938

DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812056  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.25 dB	20.86 dB	1. :1	16.52 dB	1. :1		
J1-J3 1.36 dB	19.98 dB	1. :1	15.83 dB	1. :1	26.67 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: Wiltron 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98



**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812057

FORM: SW-01/0698



DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812057  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.43 dB	24.30 dB	1. :1	15.72 dB	1. :1		
J1-J3 1.69 dB	26.66 dB	1. :1	17.96 dB	1. :1	34.35 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 ns		< 300 ns	
J1-J3 70 dB	< 300 ns		< 300 ns	

NOTE: Any additional Test Data on Back

TESTED ON: with from 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98



**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812058

FORM: SW-01/0698



DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812058  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

45 I-100 uA  
72 I-72 uA

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.26 dB	18.51 dB	1. :1	13.72 dB	1. :1		
J1-J3 1.32 dB	21.32 dB	1. :1	15.86 dB	1. :1	38.10 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: Wilson 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98



**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812059

FORM: SW-01/0698



AMERICAN MICROWAVE CORPORATION  
 7311-G GROVE ROAD, FREDERICK, MD 21704  
 TEL: (301)662-4700 FAX: (301)662-4938

DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812059  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

+6 I+100mA  
-12 I-72mA

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.30 dB	23.29 dB	1. :1	15.54 dB	1. :1		
J1-J3 1.49 dB	18.61 dB	1. :1	14.15 dB	1. :1	29.00 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: withron 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98



**FINAL TEST DATA**

AMC MODEL NO: SWN-2181-2DTR-HPR2W-TRW1, SERIAL NUMBER: 2MS812060

FORM: SW-01/0698



DATE: 1/4/98

**MICROWAVE SWITCH FINAL TEST DATA**

JOB NO: 810213E MODEL NO: SWN-2181-2DTR SERIAL NO: 2MS812060  
 CUSTOMER: TRW TECHNICIAN: PA  
 SPECIFICATION: \_\_\_\_\_ FREQUENCY RANGE: \_\_\_\_\_

*+5 I+100  
-12 I-72*

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J1-J2 1.77 dB	23.35 dB	1. :1	17.58 dB	1. :1		
J1-J3 1.33 dB	20.91 dB	1. :1	16.45 dB	1. :1	31.60 dB	1. :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J1-J2 70 dB	< 300 nS		< 300 nS	
J1-J3 70 dB	< 300 nS		< 300 nS	

NOTE: Any additional Test Data on Back

TESTED ON: Wilson 37347A

TEST: PA  
 QA/QC: Q2 RMC  
 DATE: 12-31-98