



**AMERICAN MICROWAVE  
CORPORATION**

**SUMMARY**

**TEST DATA**

**ON**

**0.5 TO 18.0 GHz**

**HIGH SPEED**

**LOW LOSS**

**RADIAL**

**REFLECTIVE & ABSORPTIVE**

**MULTI-THROW PIN DIODE SWITCHES**

**(SP3T, SP4T, SP5T, SP6T, & SP7T)**

**NEW DESIGNS**

**BY**

**A. K. GORWARA**

**REPORTS PREPARED**

**BY**

**P. WOOD**

**AUGUST 29, 1995**

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



SUMMARY TEST DATA  
COMPARISON CHARTS  
PAGE : 2

# TYPICAL COMPARISON CHARTS OF REFLECTIVE & ABSORPTIVE RADIAL MULTI-THROW PIN DIODE SWITCHES

## CONTENTS

•	INSERTION LOSS vs FREQUENCY	PAGE 3
•	ISOLATION vs FREQUENCY	PAGE 4
•	RETURN LOSS vs FREQUENCY	PAGE 5
•	SWITCHING SPEED	PAGE 6
•	MECHANICAL OUTLINES	PAGE 8 - 10

### NEW AMC MODEL NUMBERS:

- **SWN-1170-3DT-12X**  
SP3T, ABSORPTIVE, 0.5 TO 18.0 GHz, 10ns-ULTRA HIGH SPEED, HIGH ISOLATION, LOW PROFILE RADIAL, PIN DIODE SWITCH
- **SWN-1170-4DR-HPM**  
SP4T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION LOW PROFILE RADIAL PIN DIODE SWITCH
- **SWN-1170-6DR-HPM**  
SP6T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, LOW PROFILE, RADIAL PIN DIODE SWITCH
- **SWN-1170-7DR-HPM**  
SP7T, REFLECTIVE, 0.5 TO 18.0 GHz, HIGH SPEED, HIGH ISOLATION, LOW PROFILE, RADIAL PIN DIODE SWITCH
- **SWN-1170-7DR-12M-DEC**  
SP7T, REFLECTIVE, 0.5 TO 18.0 GHz, LOW LOSS, HIGH SPEED, HIGH ISOLATION, 3-BIT BINARY DECODER, RADIAL PIN DIODE SWITCH

AUGUST 29, 1995



SUMMARY TEST DATA  
COMPARISON CHARTS  
PAGE : 3

NOTES:

- Performance of the SP5T, SWN-1170-5DR-HPM, is similar to that of the SWN-1170-6DR-HPM.
- Performance of the High Speed Absorptive SP4T (SWN-1170-4DT-12X), SP5T (SWN-1170-5DT-12X), SP6T (SWN-1170-6DT-12X), and the SP7T (SWN-1170-7DT-12X) is similar to that of the SP3T (SWN-1170-3DT-12X) except that the Insertion Loss may be 0.5dB higher.
- All of the above noted switches are available in either the SWN-1170 or the SWN-1182 mechanical outline as are shown on pages 7 through 9.
- Standard DC Power Supply Voltage and Current Draw is :
  - $\pm 5$  vdc @ + 150 mA - 75 mA for SWN-1170/1182-3DR/T
  - $\pm 5$  vdc @ + 175 mA -100 mA for SWN-1170/1182-4DR/T
  - $\pm 5$  vdc @ + 250 mA -125 mA for SWN-1170/1182-5/6/7DR/T
- AMC Multi-Throw switch designations/Part Numbers are described as follows:
  - SWN-1170 or SWN-1182 : Model Number
  - 3DT or 3DR etc. : Number of Arms and,  
: D=Integral Driver  
: R=Reflective, T=Terminated(Absorptive)
  - 12X or HPM : Internal AMC design codes

AUGUST 29, 1995



INSERTION LOSS vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES  
 INSERTION LOSS vs FREQUENCY

FREQUENCY	0.5	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X	0.87		0.9	1.16	1.34	1.43	1.76	1.95	2.45	2.76	3.28
SWN-1170-4DR-HPM	0.96		0.73	0.93	1.16	1.15	1.34	1.67	1.74	2.04	2.04
SWN-1170-6DR-HPM	0.72	0.7	0.9	1.01	1.14	1.4	1.7	1.91	1.95	2.06	2.45
SWN-1170-7DR-HPM	0.59		0.71	1.11		1.74		2.01		2.79	2.84
SWN-1182-7DR-12M-DEC	0.59		0.68	0.9		1.54		1.98		2.89	2.93

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



ISOLATION vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES  
 ISOLATION vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X	86	90	90	92	91	92	95	90	90	90	90	88	80	75	72
SWN-1170-4DR-HPM	94	94	96	96	96	94	94	88	88	74	78	78	74	68	68
SWN-1170-6DR-HPM	88			92			98		94			78			74
SWN-1170-7DR-HPM	76			96			98	94		82		74		64	62
SWN-1182-7DR-12M-DEC	75			88	98		100	80	84	76	84	76	76	72	68

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



RETURN LOSS vs FREQUENCY

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES  
 RETURN LOSS vs FREQUENCY

FREQUENCY	0.1	0.2	0.3	0.5	0.8	1	2	4	6	8	10	12	14	16	18
SWN-1170-3DT-12X			15.16			34.69	17.92	14.49	21.19	18.37	22.08	15.86	19.14	22.27	
SWN-1170-4DR-HPM				13.1		23.76	16.37	14.05	18.92	17.01	13.99	24.17	27.93	14.42	
SWN-1170-6DR-HPM				20.01		21.01	27.16	24.54	13.56	12.01	11.07	18.55	15.63	24.03	
SWN-1170-7DR-HPM				22.93		21.8	29.68		14.76		17.1		14.68	15.68	
SWN-1182-7DR-12M-DEC				26.24		24.62	26.4		14.14		11.7		14.22	15.6	

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



SWITCHING SPEED

A COMPARISON CHART OF 1170 AND 1182 SERIES RADIAL SWITCHES  
 SWITCHING SPEED

SWITCHING SPEED	RISE	FALL	ON	OFF
SWN-1170-3DT-12X	2	3	10	10
SWN-1170-4DR-HPM	4	4	55	35
SWN-1170-6DR-HPM	3	3	45	20
SWN-1170-7DR-HPM	4	4	60	30
SWN-1182-7DR-12M-DEC	2	4	44	33

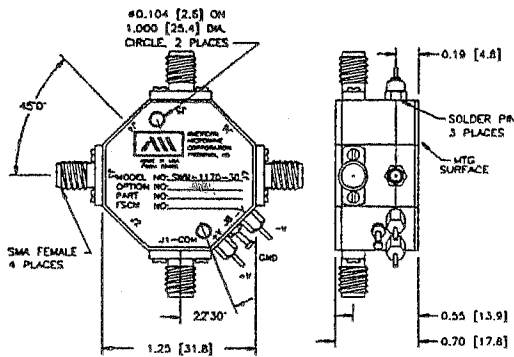
ALL VALUES GIVEN ARE TYPICAL MEASUREMENTS FOR ALL ARMS  
 SWITCHING SPEED AS MEASURED IN NANoseconds



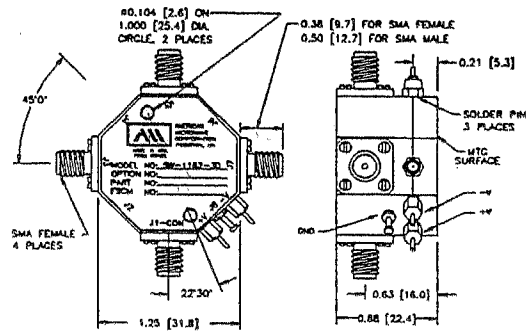
SUMMARY TEST DATA  
COMPARISON CHARTS  
PAGE : 8

MECHANICAL OUTLINES

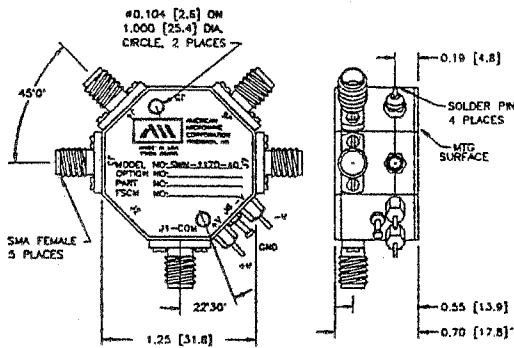
The SWN-1170 and SWN-1182 Series are Radial PIN Diode Switches which are virtually identical in mechanical outline. The Test Data shown in this report is indicative of either design as they may be used interchangeably as requirements demand. The following illustrates the entire SWN-1170 & SWN-1182 series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



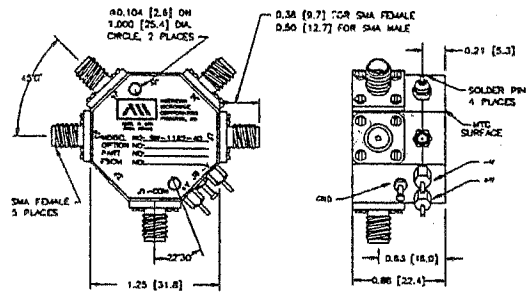
SWN-1170-3DR/DT



SWN-1182-3DR/DT



SWN-1170-4DR/DT



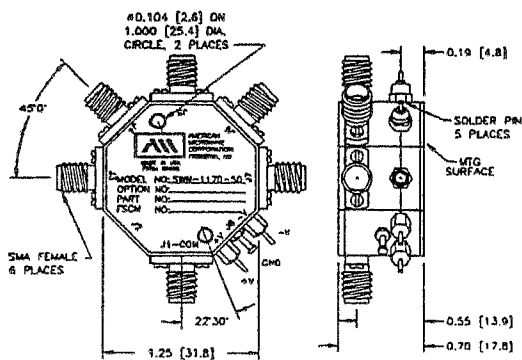
SWN-1182-4DR/DT



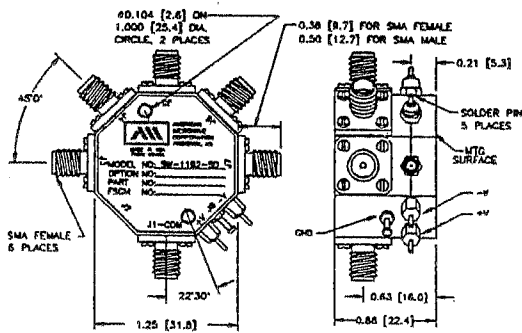


SUMMARY TEST DATA  
COMPARISON CHARTS  
PAGE : 9

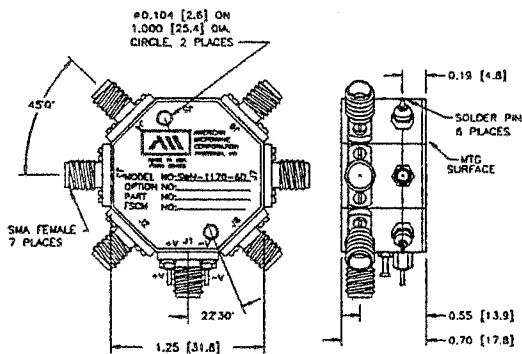
MECHANICAL OUTLINES



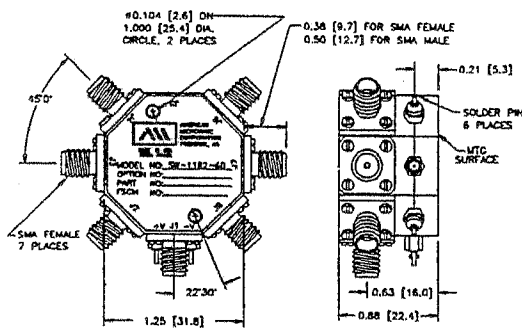
SWN-1170-5DR/DT



SWN-1182-5DR/DT



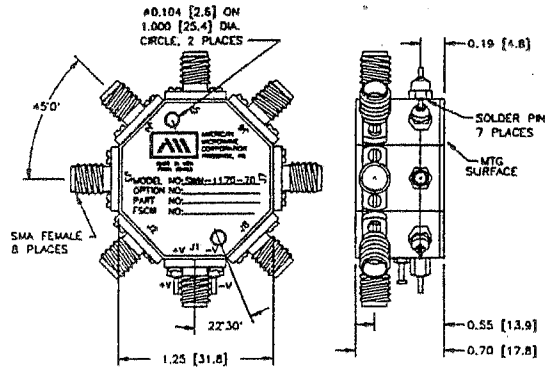
SWN-1170-6DR/DT



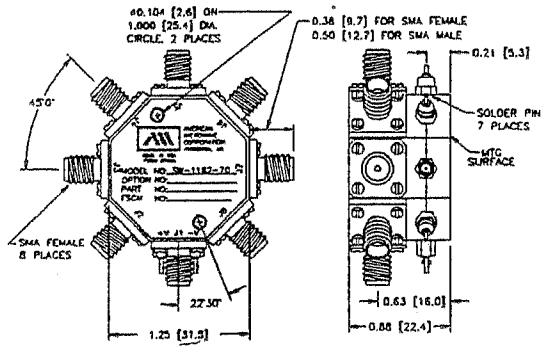
SWN-1182-6DR/DT



MECHANICAL OUTLINES



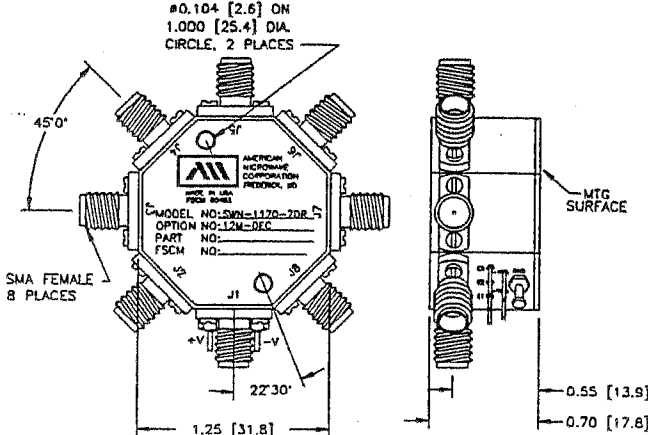
SWN-1170-7DR/DT



SWN-1182-7DR/DT



MECHANICAL OUTLINES



SWN-1170-7DR-12M-DEC