

**NARROWBAND**

**SP8T SWITCH**

**HIGH ISOLATION-REFLECTIVE AND ABSORPTIVE 0.02-18 GHz**

**SERIES TN-8/TN-8-HA**

**GENERAL INFORMATION:**

Series TN-8 and TN-8-HA switches are medium power devices that operate over commonly used frequency ranges. Carefully selected diodes placed in either series, series-shunt, or shunt configurations produce excellent electrical performance from UHF through KU bands.

**GENERAL SPECIFICATIONS:**

**Frequency Coverage:** 0.02 to 18.0 GHz.  
**RF Impedance:** 50 OHMS.  
**RF Power:** +20 dBm operational. Consult factory for high power options.

**DC Requirements:** For switches without drivers, each path requires +60 mA for the "off" condition and -60 mA for the "on" condition.

Switches with drivers require +5 volts at +480 mA and -5 volts at -160 mA supplies. Logic is TTL "0" when "on" and "1" when "off". Different supply voltages and logic available if specified at time of order. Operating temperature from -55°C to +85°C.

**Temperature Information:**

**Switching Speed:** 10% to 90% or 90% to 10% of RF. There is an additional 30 nanosec of driver delay. MIL-E-5400.

**Environment:**

**Connectors:** RF connectors are SMA. Other connectors available (when specified at time of order) include types N, TNC, and BNC. Mating connector supplied for all units with multipin connector; ITT Cannon MDB1-15SSL or equiv.

**NOTES:**

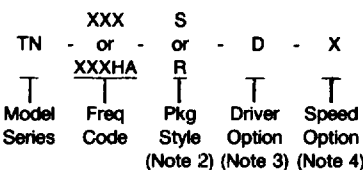
1. All switches, with drivers, are available with either solder pins, or a multi-pin connector for the drive connection, when specified at time of order. (See "outlines with driver")
2. When ordering, add suffix for configuration desired to the model number. ('S' for rectangular, 'R' for nine sided) i.e. TN-810R.
3. If driver is required, add 'D' to the model number when ordering, i.e. Model TN-810R, with driver, becomes TN-810RD.
4. When ordering, the complete model number should be given. The model number consists of the model number for a standard switch plus the dash number for any options, i.e. Model TN-818RD-1 is a nine sided SP8T reflective switch with driver whose frequency range is 0.7 to 0.8 GHz and a switching speed of 100 nanosec.
5. Any unit listed can be supplied with pins instead of RF connectors. (Consult factory.)

**MECHANICAL OUTLINES**

Outline	A Inches cm.	B Inches cm.	C Inches cm.	D Inches cm.	E Inches cm.
1	3.80 8.64	2.00 5.08	3.550 9.017	1.750 4.450	0.40 1.02
2	4.50 10.16	3.00 7.62	4.250 10.795	2.750 6.985	0.50 1.27
3	1.02 2.59	1.950 4.953	—	—	—
4	1.30 3.30	2.550 6.477	—	—	—
5	4.50 11.43	3.50 8.89	4.250 10.795	3.250 8.255	0.50 1.27
6	1.70 4.32	3.400 8.636	—	—	—
7	4.50 11.43	2.35 5.97	4.250 10.795	2.100 5.334	0.50 1.27

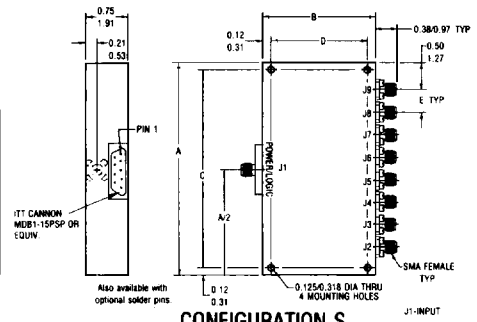
Inches/Centimeters xx ± 0.3 xxx ± .010/ xx ± .08 xxx ± .025

**TYPICAL MODEL NO.**

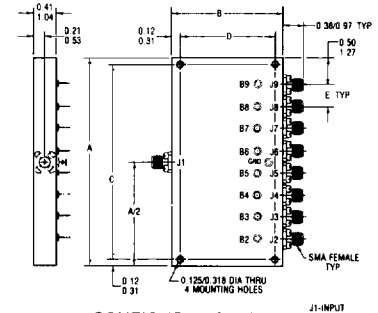


Hermetic Seal  
and Mil STD 883  
Screening Available

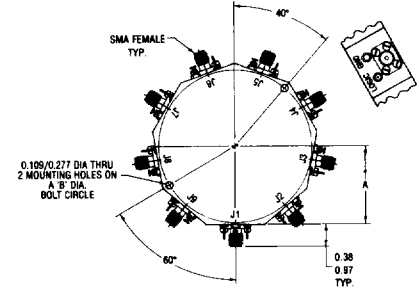
PIN	CONNECTION
1	J2 CONTROL
2	J3 CONTROL
3	J4 CONTROL
4	J5 CONTROL
5	J6 CONTROL
6	J7 CONTROL
7	J8 CONTROL
8	J8 CONTROL
9-12	N.C.
13	+5V
14	-5V
15	GND



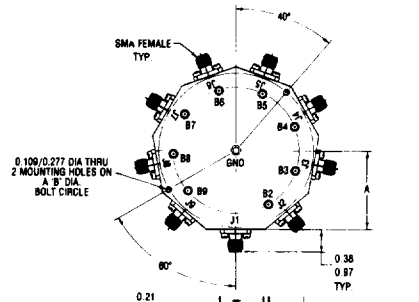
**CONFIGURATION S  
OUTLINE WITH DRIVER**



**CONFIGURATION S  
OUTLINE WITHOUT DRIVER**



**CONFIGURATION R  
OUTLINE WITH DRIVER**



**CONFIGURATION R  
OUTLINE WITHOUT DRIVER**

NARROWBAND

# SP8T SWITCH

# SERIES TN-8/TN-8-HA

HIGH ISOLATION-REFLECTIVE AND ABSORPTIVE 0.02-18 GHz

## ELECTRICAL PERFORMANCE

Power: 1 watt average, 10 watts peak, survival

STANDARD SWITCH								HIGH SPEED OPTION				
Isolation: 60 dB or 80 dB minimum Speed: 2 microsec. maximum								MODEL-1		MODEL-2		
Reflective Model No.	Absorptive Model No.	Frequency Range GHz	Isolation Min. dB	Insertion Loss		VSWR†	OUTLINE		Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.	Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.
				Ref.	Abs.		Config. Square Ref. / Abs.	Config. Round Ref. / Abs.				
TN-810	TN-810-HA	0.02-0.07	60	0.95 / 1.05	1.55	2 / 5	4 / 4	500	1.00 / 1.10	N/A	N/A	
TN-811	TN-811-HA	0.02-0.07	80	1.00 / 1.10	1.55	2 / 5	4 / 4	500	1.05 / 1.15	N/A	N/A	
TN-812	TN-813-HA	0.2-0.25	60	1.05 / 1.15	1.55	2 / 5	4 / 4	500	1.10 / 1.20	N/A	N/A	
TN-814	TN-815-HA	0.2-0.25	80	1.10 / 1.20	1.55	2 / 5	4 / 4	500	1.15 / 1.25	N/A	N/A	
TN-815	TN-816-HA	0.4-0.45	60	1.05 / 1.15	1.55	2 / 5	4 / 4	200	1.10 / 1.20	N/A	N/A	
TN-816	TN-818-HA	0.4-0.45	80	1.10 / 1.20	1.55	2 / 5	4 / 4	200	1.15 / 1.25	N/A	N/A	
TN-818	TN-819-HA	0.7-0.8	60	1.15 / 1.25	1.55	2 / 2	3 / 4	100	1.20 / 1.30	20	1.25 / 1.35	
TN-819	TN-821-HA	0.7-0.8	80	1.20 / 1.30	1.55	2 / 2	3 / 4	100	1.25 / 1.35	20	1.30 / 1.40	
TN-821	TN-822-HA	0.95-1.22	60	1.25 / 1.35	1.55	1 / 2	3 / 4	100	1.30 / 1.40	20	1.35 / 1.45	
TN-822	TN-824-HA	0.95-1.22	80	1.30 / 1.40	1.55	1 / 2	3 / 4	100	1.35 / 1.45	20	1.40 / 1.50	
TN-823	TN-825-HA	1.02-1.10	60	1.25 / 1.35	1.55	1 / 2	3 / 4	100	1.30 / 1.40	20	1.35 / 1.45	
TN-824	TN-827-HA	1.02-1.10	80	1.30 / 1.40	1.55	1 / 2	3 / 4	100	1.35 / 1.45	20	1.40 / 1.50	
TN-826	TN-828-HA	1.2-1.4	60	1.25 / 1.35	1.55	1 / 2	3 / 4	100	1.30 / 1.40	20	1.35 / 1.45	
TN-827	TN-830-HA	1.2-1.4	80	1.30 / 1.40	1.55	1 / 2	3 / 4	100	1.35 / 1.45	20	1.40 / 1.50	
TN-829	TN-831-HA	1.5-1.6	60	1.30 / 1.40	1.55	1 / 2	3 / 4	100	1.35 / 1.45	20	1.40 / 1.50	
TN-831	TN-833-HA	1.5-1.6	80	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-832	TN-834-HA	1.7-2.4	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-833	TN-836-HA	1.7-2.4	80	1.45 / 1.55	1.55	1 / 2	3 / 4	100	1.50 / 1.60	20	1.60 / 1.70	
TN-835	TN-837-HA	2.2-2.3	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-836	TN-839-HA	2.2-2.3	80	1.45 / 1.55	1.55	1 / 2	3 / 4	100	1.50 / 1.60	20	1.60 / 1.70	
TN-837	TN-840-HA	2.9-3.1	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-839	TN-842-HA	2.9-3.1	80	1.45 / 1.55	1.55	1 / 2	3 / 6	100	1.50 / 1.60	20	1.60 / 1.70	
TN-841	TN-843-HA	3.1-3.5	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-842	TN-844-HA	3.1-3.5	80	1.45 / 1.55	1.55	1 / 2	3 / 6	100	1.50 / 1.60	20	1.60 / 1.70	
TN-843	TN-846-HA	3.3-3.7	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-845	TN-848-HA	3.3-3.7	80	1.45 / 1.55	1.55	1 / 2	3 / 6	100	1.50 / 1.60	20	1.60 / 1.70	
TN-846	TN-849-HA	3.7-4.2	60	1.40 / 1.50	1.55	1 / 2	3 / 4	100	1.45 / 1.55	20	1.50 / 1.60	
TN-847	TN-851-HA	3.7-4.2	80	1.45 / 1.55	1.55	1 / 2	3 / 6	100	1.50 / 1.60	20	1.60 / 1.70	
TN-849	TN-852-HA	4.2-4.4	60	1.50 / 1.60	1.55	1 / 2	3 / 4	100	1.60 / 1.70	20	1.70 / 1.80	
TN-851	TN-854-HA	4.2-4.4	80	1.60 / 1.70	1.55	1 / 2	3 / 6	100	1.70 / 1.80	20	1.80 / 1.90	
TN-852	TN-855-HA	4.4-5.0	60	1.60 / 1.70	1.65	1 / 2	3 / 4	100	1.70 / 1.80	20	1.80 / 1.90	
TN-853	TN-857-HA	4.4-5.0	80	1.65 / 1.75	1.65	1 / 2	3 / 6	100	1.75 / 1.85	20	1.90 / 2.00	
TN-855	TN-858-HA	5.0-5.25	60	1.65 / 1.75	1.65	1 / 2	3 / 4	100	1.75 / 1.85	20	1.90 / 2.00	
TN-856	TN-860-HA	5.0-5.25	80	1.70 / 1.80	1.65	1 / 2	3 / 6	100	1.80 / 1.90	20	1.90 / 2.00	
TN-857	TN-861-HA	5.4-5.9	60	1.70 / 1.80	1.65	1 / 2	3 / 4	100	1.80 / 1.90	20	1.90 / 2.00	
TN-859	TN-863-HA	5.4-5.9	80	1.80 / 1.90	1.65	1 / 2	3 / 6	100	1.90 / 2.00	20	2.00 / 2.10	
TN-861	TN-864-HA	5.9-6.4	60	1.80 / 1.90	1.65	1 / 2	3 / 4	100	1.90 / 2.00	20	2.00 / 2.10	
TN-862	TN-866-HA	5.9-6.4	80	1.90 / 2.00	1.65	1 / 2	3 / 6	100	2.00 / 2.10	20	2.10 / 2.20	
TN-863	TN-867-HA	6.7-7.4	60	1.85 / 1.95	1.65	1 / 2	3 / 4	100	2.00 / 2.10	20	2.10 / 2.20	
TN-865	TN-869-HA	6.7-7.4	80	1.95 / 2.05	1.65	1 / 2	3 / 6	100	2.10 / 2.20	20	2.20 / 2.30	
TN-866	TN-870-HA	7.1-7.7	60	1.90 / 2.00	1.65	1 / 2	3 / 4	100	2.00 / 2.10	20	2.20 / 2.30	
TN-867	TN-872-HA	7.1-7.7	80	2.00 / 2.10	1.65	1 / 2	3 / 6	100	2.10 / 2.20	20	2.30 / 2.40	
TN-869	TN-873-HA	8.5-9.6	60	2.00 / 2.10	1.65	1 / 7	3 / 4	100	2.10 / 2.20	20	2.20 / 2.30	
TN-871	TN-875-HA	8.5-9.6	80	2.10 / 2.20	1.65	1 / 7	3 / 6	100	2.20 / 2.30	20	2.30 / 2.40	
TN-872	TN-876-HA	9.0-9.2	60	2.00 / 2.10	1.65	1 / 7	3 / 4	100	2.10 / 2.20	20	2.20 / 2.30	
TN-873	TN-878-HA	9.0-9.2	80	2.10 / 2.20	1.65	1 / 7	3 / 6	100	2.20 / 2.30	20	2.30 / 2.40	
TN-875	TN-879-HA	9.3-9.7	60	2.00 / 2.00	1.65	1 / 7	3 / 4	100	2.10 / 2.20	20	2.20 / 2.30	
TN-876	TN-881-HA	9.3-9.7	80	2.10 / 2.20	1.65	1 / 7	3 / 6	100	2.20 / 2.30	20	2.30 / 2.40	
TN-877	TN-882-HA	9.8-10.4	60	2.00 / 2.10	1.65	1 / 7	3 / 4	100	2.10 / 2.20	20	2.20 / 2.30	
TN-879	TN-884-HA	9.8-10.4	80	2.10 / 2.20	1.65	1 / 7	3 / 6	100	2.20 / 2.30	20	2.30 / 2.40	
TN-881	TN-885-HA	10.0-10.5	60	2.05 / 2.15	1.65	1 / 7	3 / 4	100	2.20 / 2.30	20	2.30 / 2.40	
TN-882	TN-887-HA	10.0-10.5	80	2.15 / 2.25	1.65	1 / 7	3 / 6	100	2.30 / 2.40	20	2.40 / 2.50	
TN-883	TN-888-HA	12.0-12.4	60	2.10 / 2.20	1.65	1 / 7	3 / 4	100	2.20 / 2.30	20	2.30 / 2.40	
TN-885	TN-889-HA	12.0-12.4	80	2.20 / 2.30	1.75	1 / 7	3 / 6	100	2.30 / 2.40	20	2.40 / 2.50	
TN-886	TN-890-HA	13.1-13.5	60	2.20 / 2.30	1.75	1 / 7	3 / 4	100	2.30 / 2.40	20	2.40 / 2.50	
TN-887	TN-892-HA	13.1-13.5	80	2.30 / 2.40	1.75	1 / 7	3 / 6	100	2.40 / 2.50	20	2.50 / 2.60	
TN-889	TN-893-HA	14.5-15.5	60	2.20 / 2.20	1.75	1 / 7	3 / 4	100	2.30 / 2.40	20	2.40 / 2.50	
TN-891	TN-895-HA	14.5-15.5	80	2.30 / 2.40	1.75	1 / 7	3 / 6	100	2.40 / 2.50	20	2.50 / 2.60	
TN-893	TN-896-HA	15.0-17.0	60	2.10 / 2.20	1.75	1 / 7	3 / 4	100	2.20 / 2.30	20	2.30 / 2.40	
TN-895	TN-897-HA	15.0-17.0	80	2.30 / 2.40	1.75	1 / 7	3 / 6	100	2.40 / 2.50	20	2.50 / 2.60	
TN-896	TN-898-HA	16.0-18.0	60	2.30 / 2.40	1.75	1 / 7	3 / 4	100	2.40 / 2.50	20	2.60 / 2.70	
TN-898	TN-899-HA	16.0-18.0	80	2.50 / 2.60	1.75	1 / 7	3 / 6	100	2.60 / 2.70	20	2.80 / 2.90	

If improvement of any of the electrical specifications listed above is required, consult factory.

† Reflective Switch: VSWR measured in the 'ON' input and 'ON' Output Position.  
Absorptive Switch: VSWR measured in the 'ON' Input and 'ON' Output and 'OFF' Output Position.

Insertion Loss measured with input power less than 100 mW. Increase insertion loss by 20% for outer arms, for rectangular (S) package.