

**BROADBAND**

**SP5T SWITCH**

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

**SERIES TB-5/TB-5-HA**

**GENERAL INFORMATION:**

Series TB-5 and TB-5-HA switches are medium power devices that operate over relatively wide 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 +300 mA and -5 volts at -110 mA supplies. Logic is TTL "0" when "on" and "1" when "off". Different supply voltages and logic available if specified at time of order.
- Temperature Information:** Operating temperature from -55°C to +85°C.
- Switching Speed:** 10% to 90% or 90% to 10% of RF. There is an additional 30 nanosec of driver delay.
- Environment:** MIL-E-5400, MIL-STD-202, MIL-E-16400 MIL-STD-883 (Special request only).
- 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 MDB1-9SSL or equiv.

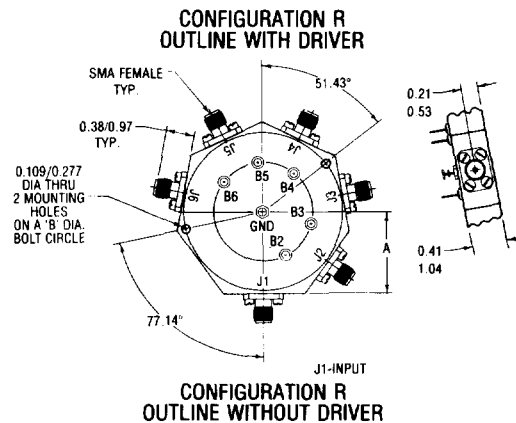
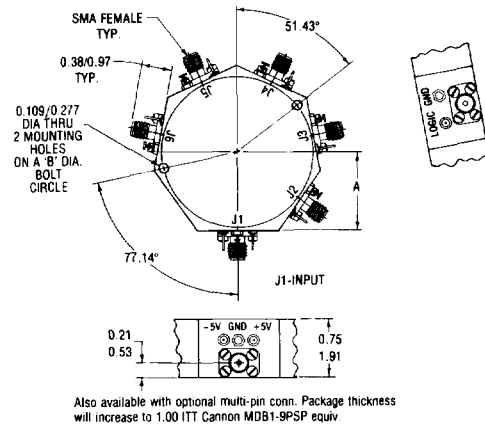
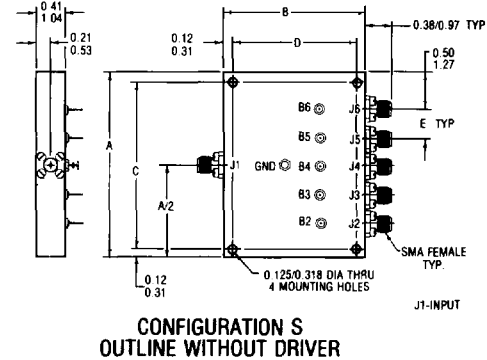
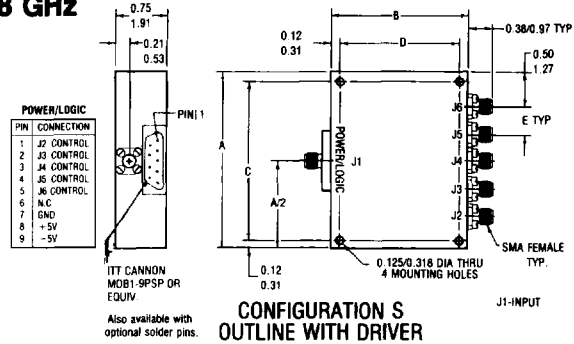
**NOTES:**

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 seven sided) i.e. TB-510HAR.
3. If driver is required, add 'D' to the model number when ordering, i.e. Model TB-510R, with driver, becomes TB-510RD.
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 TB-530RD-1 is a seven sided SP5T reflective switch with driver whose frequency range is 0.5 to 1.0 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	2.60 6.61	2.00 5.08	2.350 5.969	1.750 4.445	0.40 1.02
2	3.00 7.62	3.00 7.62	2.750 6.985	2.750 6.985	0.50 1.27
3	0.71 1.80	1.350 3.429	—	—	—
4	1.00 2.54	2.000 5.080	—	—	—
5	3.00 7.62	3.50 8.89	2.750 6.985	3.250 8.255	0.50 1.27
6	1.25 3.18	2.550 6.477	—	—	—

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



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**ELECTRICAL PERFORMANCE**

Power: 1 watt average, 10 watts peak, survival

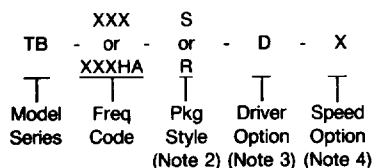
STANDARD SWITCH									HIGH SPEED OPTION			
Isolation: 60 dB or 80 dB minimum Speed: 2 microsec. maximum									MODEL-1		MODEL-2	
									Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.	Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.
Reflective Model No.	Absorptive Model No.	Frequency Range GHz	Isolation Min. dB.	Insertion Loss Max. dB Ref. / Abs.	VSWR† Max.	Config. Square Ref. / Abs.	Outline Config. Round Ref. / Abs.					
TB-510	TB-510-HA	0.02-0.1	60	0.90 / 1.00	1.80	2 / 5	4 / 4	500	0.95 / 1.05	N/A	N/A	
TB-512	TB-511-HA	0.02-0.1	80	1.00 / 1.10	1.80	2 / 5	4 / 4	500	1.05 / 1.15	N/A	N/A	
TB-514	TB-512-HA	0.1-1.0	60	1.20 / 1.30	1.80	2 / 5	4 / 4	500	1.25 / 1.35	N/A	N/A	
TB-516	TB-515-HA	0.1-1.0	80	1.30 / 1.40	1.80	2 / 5	4 / 4	500	1.35 / 1.45	N/A	N/A	
TB-518	TB-519-HA	0.1-2.0	60	1.50 / 1.60	1.80	2 / 5	4 / 4	500	1.55 / 1.65	N/A	N/A	
TB-520	TB-522-HA	0.1-2.0	80	1.60 / 1.70	1.80	2 / 5	4 / 4	500	1.65 / 1.75	N/A	N/A	
TB-522	TB-523-HA	0.25-0.5	60	1.20 / 1.30	1.80	2 / 5	4 / 4	500	1.25 / 1.35	N/A	N/A	
TB-524	TB-526-HA	0.25-0.5	80	1.30 / 1.40	1.80	2 / 5	4 / 4	500	1.35 / 1.45	N/A	N/A	
TB-526	TB-527-HA	0.25-1.0	60	1.20 / 1.30	1.80	2 / 5	4 / 4	500	1.25 / 1.35	N/A	N/A	
TB-528	TB-528-HA	0.25-1.0	80	1.30 / 1.40	1.80	2 / 5	4 / 4	500	1.35 / 1.45	N/A	N/A	
TB-530	TB-531-HA	0.5-1.0	60	1.10 / 1.20	1.80	1 / 2	4 / 4	100	1.20 / 1.30	20	1.30 / 1.40	
TB-532	TB-532-HA	0.5-1.0	80	1.20 / 1.30	1.80	1 / 2	4 / 4	100	1.30 / 1.40	20	1.40 / 1.50	
TB-534	TB-534-HA	0.5-2.0	60	1.20 / 1.30	1.80	1 / 2	4 / 4	100	1.30 / 1.40	20	1.40 / 1.50	
TB-536	TB-535-HA	0.5-2.0	80	1.30 / 1.40	1.80	1 / 2	4 / 4	100	1.40 / 1.50	20	1.50 / 1.60	
TB-538	TB-538-HA	1.0-2.0	60	1.10 / 1.20	1.80	1 / 2	3 / 4	100	1.20 / 1.30	20	1.35 / 1.45	
TB-540	TB-539-HA	1.0-2.0	80	1.20 / 1.30	1.80	1 / 2	3 / 4	100	1.30 / 1.40	20	1.40 / 1.50	
TB-542	TB-542-HA	1.0-4.0	60	1.20 / 1.30	1.80	1 / 2	3 / 4	100	1.30 / 1.40	20	1.40 / 1.50	
TB-544	TB-543-HA	1.0-4.0	80	1.30 / 1.40	1.80	1 / 2	3 / 6	100	1.40 / 1.50	20	1.50 / 1.60	
TB-546	TB-544-HA	1.0-6.0	60	1.40 / 1.50	1.80	1 / 2	3 / 4	100	1.50 / 1.60	20	1.60 / 1.70	
TB-548	TB-546-HA	1.0-6.0	80	1.50 / 1.60	1.80	1 / 2	3 / 6	100	1.60 / 1.70	20	1.70 / 1.80	
TB-550	TB-548-HA	1.5-3.0	60	1.10 / 1.20	1.80	1 / 2	3 / 4	100	1.20 / 1.30	20	1.30 / 1.40	
TB-552	TB-551-HA	1.5-3.0	80	1.20 / 1.30	1.80	1 / 2	3 / 6	100	1.30 / 1.40	20	1.40 / 1.50	
TB-554	TB-552-HA	2.0-4.0	60	1.30 / 1.40	1.80	1 / 2	3 / 4	100	1.40 / 1.50	20	1.50 / 1.60	
TB-556	TB-554-HA	2.0-4.0	80	1.40 / 1.50	1.80	1 / 2	3 / 6	100	1.50 / 1.60	20	1.60 / 1.70	
TB-558	TB-555-HA	2.0-8.0	60	1.50 / 1.60	1.80	1 / 2	3 / 4	100	1.60 / 1.70	20	1.70 / 1.80	
TB-560	TB-558-HA	2.0-8.0	80	1.60 / 1.70	1.90	1 / 2	3 / 6	100	1.70 / 1.80	20	1.80 / 1.90	
TB-562	TB-562-HA	3.0-12.0	60	2.70 / 2.80	2.30	1 / 1	3 / 4	100	2.80 / 2.90	20	3.00 / 3.10	
TB-564	TB-563-HA	3.0-12.0	80	2.80 / 2.90	2.30	1 / 1	3 / 4	100	2.90 / 3.00	20	3.10 / 3.20	
TB-566	TB-566-HA	4.0-8.0	60	1.50 / 1.60	1.90	1 / 1	3 / 4	100	1.60 / 1.70	20	1.70 / 1.80	
TB-568	TB-567-HA	4.0-8.0	80	1.60 / 1.70	1.90	1 / 2	3 / 6	100	1.70 / 1.80	20	1.80 / 1.90	
TB-570	TB-568-HA	2.0-18.0	60	3.20 / 3.30	2.50	1 / 1	3 / 4	100	3.35 / 3.50	20	3.50 / 3.60	
TB-572	TB-571-HA	2.0-18.0	80	3.50 / 3.60	2.50	1 / 1	3 / 4	100	3.60 / 3.70	20	3.70 / 3.80	
TB-574	TB-572-HA	5.0-10.0	60	1.90 / 2.00	1.90	1 / 1	3 / 4	100	2.00 / 2.10	20	2.20 / 2.30	
TB-576	TB-574-HA	5.0-10.0	80	2.00 / 2.10	1.90	1 / 1	3 / 6	100	2.10 / 2.20	20	2.30 / 2.40	
TB-578	TB-575-HA	6.0-12.0	60	2.10 / 2.20	1.90	1 / 1	3 / 4	100	2.20 / 2.30	20	2.40 / 2.50	
TB-580	TB-576-HA	6.0-12.0	80	2.20 / 2.30	1.90	1 / 1	3 / 4	100	2.30 / 2.40	20	2.40 / 2.50	
TB-582	TB-578-HA	6.0-18.0	60	3.20 / 3.30	2.50	1 / 1	3 / 4	100	3.35 / 3.50	20	3.50 / 3.60	
TB-584	TB-579-HA	6.0-18.0	80	3.50 / 3.60	2.50	1 / 1	3 / 4	100	3.60 / 3.70	20	3.70 / 3.80	
TB-586	TB-582-HA	7.0-12.4	60	2.20 / 2.30	2.00	1 / 1	3 / 4	100	2.30 / 2.40	20	2.60 / 2.70	
TB-588	TB-583-HA	7.0-12.4	80	2.30 / 2.40	2.00	1 / 1	3 / 4	100	2.40 / 2.50	20	2.70 / 2.80	
TB-590	TB-584-HA	7.0-18.0	60	3.20 / 3.30	2.50	1 / 1	3 / 4	100	3.35 / 3.50	20	3.50 / 3.60	
TB-591	TB-586-HA	7.0-18.0	80	3.50 / 3.60	2.50	1 / 1	3 / 4	100	3.60 / 3.70	20	3.70 / 3.80	
TB-593	TB-588-HA	8.0-18.0	60	3.10 / 3.30	2.50	1 / 1	3 / 4	100	3.30 / 3.50	20	3.50 / 3.60	
TB-594	TB-591-HA	8.0-18.0	80	3.30 / 3.60	2.50	1 / 1	3 / 4	100	3.50 / 3.70	20	3.70 / 3.80	
TB-596	TB-594-HA	12.0-18.0	60	3.10 / 3.30	2.50	1 / 1	3 / 4	100	3.35 / 3.50	20	3.50 / 3.60	
TB-597	TB-597-HA	12.0-18.0	80	3.30 / 3.60	2.50	1 / 1	3 / 4	100	3.60 / 3.70	20	3.70 / 3.80	

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.

**TYPICAL MODEL NO.**



Hermetic Seal  
and Mil STD 883  
Screening Available