

# NARROWBAND SP4T SWITCH

## REFLECTIVE AND ABSORPTIVE 0.02-18 GHz

### GENERAL INFORMATION:

Series TF-4 and TN-4-A narrowband 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 +240 mA and -5 volts at -100 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:

- 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".)
- When ordering, add suffix for configuration desired to the model number. ('S' for rectangular, 'R' for seven sided.) i.e. TF-411R.
- If driver is required, add "D" to the model number when ordering, i.e. Model TN-411AR, with driver, becomes TN-411ARD.
- 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 TF-420RD-1 is a seven sided SP4T reflective switch with driver whose frequency range is 0.7 to 0.8 GHz and a switching speed of 100 nanosec.
- Any unit listed can be supplied with pins instead of RF connectors. (Consult factory.)

### MECHANICAL OUTLINES

Outline	A Inches cm.	B Inches cm.
1	0.71 1.80	1.350 3.429
2	1.00 2.54	2.000 5.080

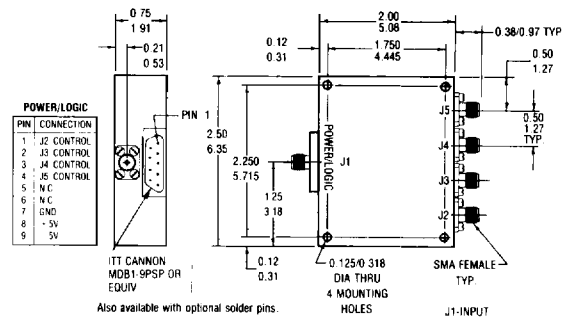
Inches/Centimeters  
 xx ± 0.3 xxx ± .010 / xx ± .08 xxx ± .025

### TYPICAL MODEL NO.

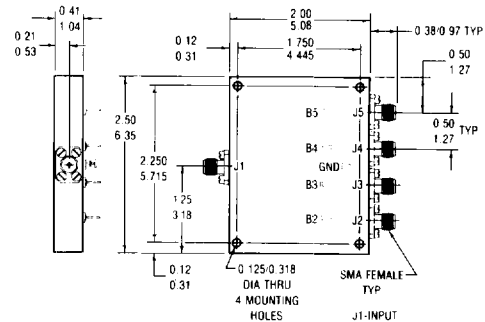
TF	XXX	S			
or	-	or	-	D	-
TN	XXXA	R			X
Model Series	Freq Code	Pkg Style	Driver Option	Speed Option	
		(Note 2)	(Note 3)	(Note 4)	

Hermetic Seal  
 and Mil STD 883  
 Screening Available

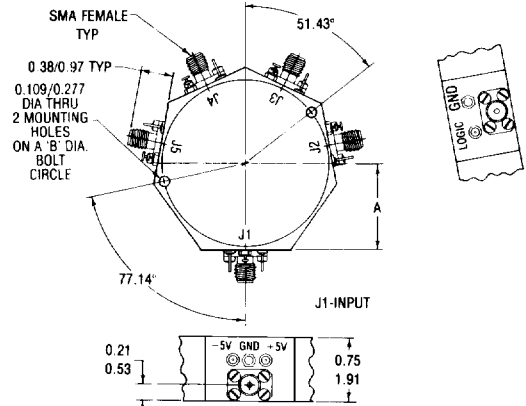
# SERIES TF-4/TN-4-A



CONFIGURATION S  
 OUTLINE WITH DRIVER

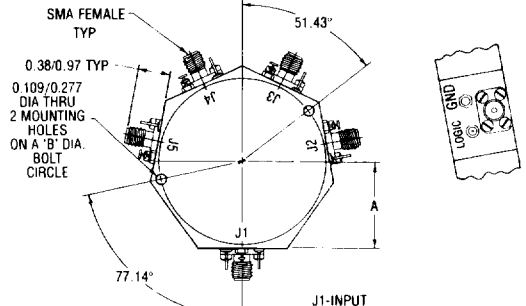


CONFIGURATION S  
 OUTLINE WITHOUT DRIVER



Also available with optional multi-pin conn. Package thickness will increase to 1.00 ITT Cannon MDB1-9PSP equiv.

CONFIGURATION R  
 OUTLINE WITH DRIVER



CONFIGURATION R  
 OUTLINE WITHOUT DRIVER

**NARROWBAND**

**SP4T SWITCH**

**SERIES TF-4/TN-4-A**

**REFLECTIVE AND ABSORPTIVE 0.02-18 GHz**

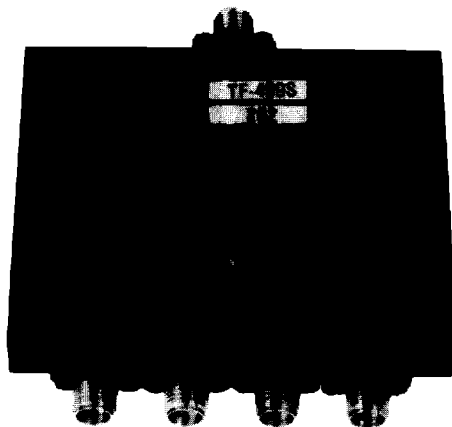
**ELECTRICAL PERFORMANCE**

Power: 1 watt average, 10 watts peak, survival

STANDARD SWITCH						HIGH SPEED OPTION			
Isolation: 30 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	Insertion Loss Max. dB Ref. / Abs.	VSWR† Max.	Outline Config. R Only Ref. / Abs.				
TF-411	TN-411-A	0.02-0.07	0.50 / 0.60	1.40	2 / 2	500	0.55 / 0.64	N/A	N/A
TF-414	TN-414-A	0.2-0.25	0.50 / 0.60	1.40	2 / 2	500	0.55 / 0.65	N/A	N/A
TF-417	TN-417-A	0.4-0.45	0.60 / 0.70	1.40	2 / 2	200	0.65 / 0.75	N/A	N/A
TF-420	TN-420-A	0.7-0.8	0.70 / 0.80	1.40	1 / 2	100	0.80 / 0.90	20	0.90 / 1.00
TF-423	TN-423-A	0.95-1.22	0.80 / 0.90	1.40	1 / 2	100	0.90 / 1.00	20	1.00 / 1.10
TF-426	TN-426-A	1.02-1.10	0.80 / 0.90	1.40	1 / 2	100	0.90 / 1.00	20	1.00 / 1.10
TF-429	TN-429-A	1.2-1.4	0.80 / 0.90	1.40	1 / 2	100	0.90 / 1.00	20	1.00 / 1.10
TF-432	TN-432-A	1.5-1.6	0.80 / 0.90	1.40	1 / 2	100	0.90 / 1.00	20	1.00 / 1.10
TF-435	TN-435-A	1.7-2.4	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-438	TN-438-A	2.2-2.3	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-441	TN-441-A	2.9-3.1	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-444	TN-444-A	3.1-3.5	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-447	TN-447-A	3.3-3.7	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-450	TN-450-A	3.7-4.2	0.90 / 1.00	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
TF-453	TN-453-A	4.2-4.4	1.00 / 1.10	1.40	1 / 2	100	1.10 / 1.20	20	1.20 / 1.30
TF-456	TN-456-A	4.4-5.0	1.10 / 1.20	1.40	1 / 2	100	1.20 / 1.30	20	1.30 / 1.40
TF-459	TN-459-A	5.0-5.25	1.10 / 1.20	1.50	1 / 2	100	1.20 / 1.30	20	1.30 / 1.40
TF-462	TN-462-A	5.4-5.9	1.10 / 1.20	1.50	1 / 2	100	1.20 / 1.30	20	1.30 / 1.40
TF-465	TN-465-A	5.9-6.4	1.10 / 1.20	1.50	1 / 2	100	1.20 / 1.30	20	1.30 / 1.40
TF-468	TN-468-A	6.7-7.4	1.25 / 1.35	1.50	1 / 2	100	1.40 / 1.50	20	1.50 / 1.60
TF-471	TN-471-A	7.1-7.7	1.25 / 1.35	1.50	1 / 2	100	1.40 / 1.50	20	1.50 / 1.60
TF-474	TN-474-A	8.5-9.6	1.40 / 1.50	1.50	1 / 2	100	1.50 / 1.60	20	1.60 / 1.70
TF-477	TN-477-A	9.0-9.2	1.40 / 1.50	1.50	1 / 2	100	1.50 / 1.60	20	1.60 / 1.70
TF-480	TN-480-A	9.3-9.7	1.40 / 1.50	1.50	1 / 2	100	1.50 / 1.60	20	1.60 / 1.70
TF-483	TN-483-A	9.8-10.4	1.60 / 1.70	1.60	1 / 2	100	1.70 / 1.80	20	1.80 / 1.90
TF-486	TN-486-A	10.0-10.5	1.60 / 1.70	1.60	1 / 2	100	1.70 / 1.80	20	1.80 / 1.90
TF-489	TN-489-A	12.0-12.4	1.70 / 1.80	1.60	1 / 2	100	1.80 / 1.90	20	1.90 / 2.00
TF-492	TN-491-A	13.1-13.5	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
TF-495	TN-494-A	14.5-15.5	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
TF-496	TN-496-A	15.0-17.0	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
TF-499	TN-499-A	16.0-18.0	1.80 / 1.90	1.60	1 / 2	100	1.95 / 2.05	20	2.10 / 2.20

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.



**KDI/triangle  
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