

**NARROWBAND**

**SP3T SWITCH**

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

**SERIES VN/VN-HA**

**GENERAL INFORMATION:**

Series VN and VN-HA 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 +180 mA and -5 volts at -75 mA supplies. Logic is TTL "0" when "on" and "1" when "off". Different supply voltages and logic available if specified at time order. Operating temperature from -55°C to +85°C.
- 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.

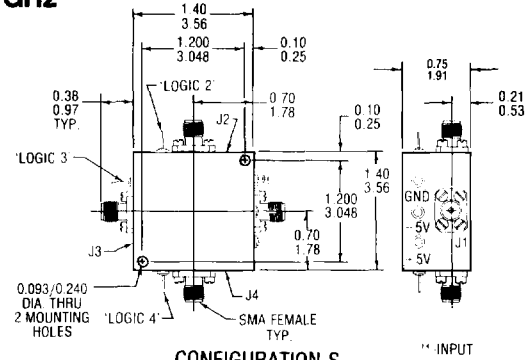
**NOTES:**

1. Drive connection is normally supplied as a solder feedthrough terminal. Other connectors available (when specified at time of order) include SMA, SMC and Multi-pin. (If multi-pin connector is required, package thickness will increase to 1.00 inch.)
2. When ordering, add suffix for configuration desired to the model number. ('S' for square, 'R' for seven sided.) i.e. VN-30R.
3. If driver is required, add "D" to the model number when ordering, i.e. Model VN-15HAR, with driver, becomes VN-15HARD.
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 VN-62RD-1 is a seven sided SP3T reflective switch with driver whose frequency range is 5.9 to 6.4 GHz and a switching speed of 100 nanosec.
5. Any unit listed can be supplied with pins instead of RF connectors. (Consult factory.)
6. Switches (Configuration 'S') are available with output connectors in line with input. Sizes may change and a special part number may be assigned. (Consult factory.)

**MECHANICAL OUTLINES**

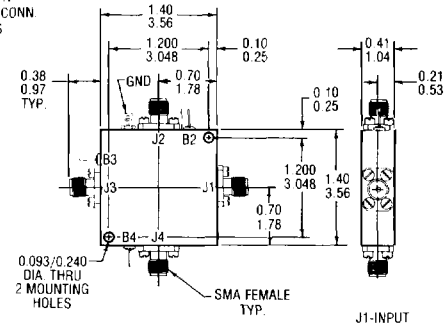
Outline	A Inches cm.	B Inches cm.
1	0.71 1.80	1.350 3.429
2	1.00 2.54	2.000 5.080
3	1.25 3.18	2.550 6.477

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

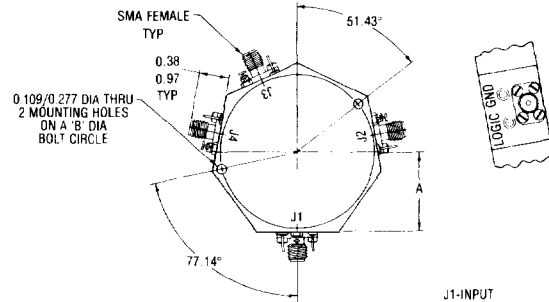


**CONFIGURATION S  
OUTLINE WITH DRIVER**

ALSO AVAILABLE WITH  
OPTIONAL MULTIPIN CONN.  
PACKAGE THICKNESS  
WILL INCREASE TO  
1.00. ITT CANNON  
MDB1-9PSP OR  
EQUIV.

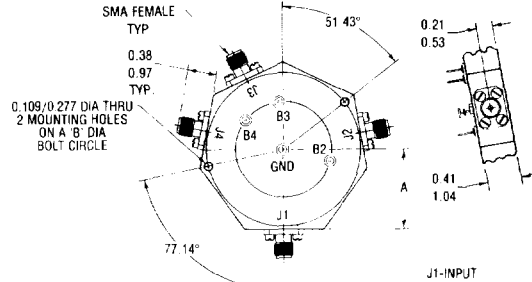


**CONFIGURATION S  
OUTLINE WITHOUT DRIVER**



**CONFIGURATION R  
OUTLINE WITH DRIVER**

ALSO AVAILABLE WITH  
OPTIONAL MULTIPIN  
CONN. PACKAGE  
THICKNESS WILL INCREASE  
TO 1.00. ITT CANNON  
MDB1-9PSP OR  
EQUIV.



**CONFIGURATION R  
OUTLINE WITHOUT DRIVER**

**NARROWBAND**

**SP3T SWITCH**

**SERIES VN/VN-HA**

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

**ELECTRICAL PERFORMANCE**

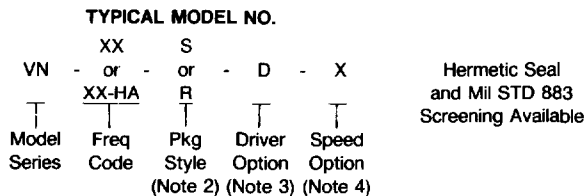
Power: 1 watt average, 10 watts peak, survival

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 Max. dB Ref. / Abs.	VSWR † Max.	Config. R Outline Only Ref. / Abs.	Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.	Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.
VN-10	VN-10-HA	0.02-0.07	60	0.45 / 0.55	1.40	2 / 2	500	0.50 / 0.60	N/A	N/A
VN-11	VN-11-HA	0.02-0.07	80	0.50 / 0.60	1.40	2 / 2	500	0.55 / 0.65	N/A	N/A
VN-12	VN-12-HA	0.20-25	60	0.55 / 0.65	1.40	2 / 2	500	0.60 / 0.70	N/A	N/A
VN-14	VN-14-HA	0.2-0.25	80	0.60 / 0.70	1.40	2 / 2	500	0.65 / 0.75	N/A	N/A
VN-15	VN-15-HA	0.4-0.45	60	0.55 / 0.65	1.40	2 / 2	200	0.60 / 0.70	N/A	N/A
VN-16	VN-16-HA	0.4-0.45	80	0.60 / 0.70	1.40	2 / 2	200	0.65 / 0.75	N/A	N/A
VN-19	VN-19-HA	0.7-0.8	60	0.65 / 0.75	1.40	1 / 2	100	0.70 / 0.80	20	0.75 / 0.85
VN-21	VN-21-HA	0.7-0.8	80	0.70 / 0.80	1.40	1 / 2	100	0.75 / 0.85	20	0.80 / 0.90
VN-22	VN-22-HA	0.95-1.22	60	0.75 / 0.85	1.40	1 / 2	100	0.80 / 0.90	20	0.85 / 0.95
VN-23	VN-23-HA	0.95-1.22	80	0.80 / 0.90	1.40	1 / 2	100	0.85 / 0.95	20	0.90 / 1.00
VN-25	VN-25-HA	1.02-1.10	60	0.75 / 0.85	1.40	1 / 2	100	0.80 / 0.90	20	0.85 / 0.95
VN-26	VN-26-HA	1.02-1.10	80	0.80 / 0.90	1.40	1 / 2	100	0.85 / 0.95	20	0.90 / 1.00
VN-27	VN-27-HA	1.2-1.4	60	0.75 / 0.85	1.40	1 / 2	100	0.80 / 0.90	20	0.85 / 0.95
VN-28	VN-28-HA	1.2-1.4	80	0.80 / 0.90	1.40	1 / 2	100	0.85 / 0.95	20	0.90 / 1.00
VN-30	VN-30-HA	1.5-1.6	60	0.80 / 0.90	1.40	1 / 2	100	0.85 / 0.95	20	0.90 / 1.00
VN-31	VN-31-HA	1.5-1.6	80	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-32	VN-32-HA	1.7-2.4	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-34	VN-34-HA	1.7-2.4	80	0.95 / 1.05	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
VN-35	VN-35-HA	2.2-2.3	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-36	VN-36-HA	2.2-2.3	80	0.95 / 1.05	1.40	1 / 2	100	1.00 / 1.10	20	1.10 / 1.20
VN-38	VN-38-HA	2.9-3.1	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-39	VN-39-HA	2.9-3.1	80	0.95 / 1.05	1.40	1 / 3	100	1.00 / 1.10	20	1.10 / 1.20
VN-41	VN-41-HA	3.1-3.5	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-42	VN-42-HA	3.1-3.5	80	0.95 / 1.05	1.40	1 / 3	100	1.00 / 1.10	20	1.10 / 1.20
VN-43	VN-43-HA	3.3-3.7	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-45	VN-45-HA	3.3-3.7	80	0.95 / 1.05	1.40	1 / 3	100	1.00 / 1.10	20	1.10 / 1.20
VN-46	VN-46-HA	3.7-4.2	60	0.90 / 1.00	1.40	1 / 2	100	0.95 / 1.05	20	1.00 / 1.10
VN-47	VN-47-HA	3.7-4.2	80	0.95 / 1.05	1.40	1 / 3	100	1.00 / 1.10	20	1.10 / 1.20
VN-49	VN-49-HA	4.2-4.4	60	1.00 / 1.10	1.40	1 / 2	100	1.10 / 1.20	20	1.20 / 1.30
VN-50	VN-50-HA	4.2-4.4	80	1.10 / 1.20	1.20	1 / 3	100	1.20 / 1.30	20	1.30 / 1.40
VN-51	VN-51-HA	4.4-5.0	60	1.10 / 1.20	1.50	1 / 2	100	1.20 / 1.30	20	1.30 / 1.40
VN-53	VN-53-HA	4.4-5.0	80	1.15 / 1.25	1.50	1 / 3	100	1.25 / 1.35	20	1.40 / 1.50
VN-54	VN-54-HA	5.0-5.25	60	1.15 / 1.25	1.50	1 / 2	100	1.25 / 1.35	20	1.40 / 1.50
VN-55	VN-55-HA	5.0-5.25	80	1.20 / 1.30	1.50	1 / 3	100	1.30 / 1.40	20	1.40 / 1.50
VN-57	VN-57-HA	5.4-5.9	60	1.20 / 1.30	1.50	1 / 2	100	1.30 / 1.40	20	1.40 / 1.50
VN-59	VN-59-HA	5.4-5.9	80	1.30 / 1.40	1.50	1 / 3	100	1.40 / 1.50	20	1.50 / 1.60
VN-61	VN-61-HA	5.9-6.4	60	1.30 / 1.40	1.50	1 / 2	100	1.40 / 1.50	20	1.50 / 1.60
VN-62	VN-62-HA	5.9-6.4	80	1.40 / 1.50	1.50	1 / 3	100	1.50 / 1.60	20	1.60 / 1.70
VN-63	VN-63-HA	6.7-7.4	60	1.35 / 1.45	1.50	1 / 2	100	1.50 / 1.60	20	1.60 / 1.70
VN-65	VN-65-HA	6.7-7.4	80	1.45 / 1.55	1.50	1 / 3	100	1.60 / 1.70	20	1.70 / 1.80
VN-66	VN-66-HA	7.1-7.7	60	1.40 / 1.50	1.50	1 / 2	100	1.50 / 1.60	20	1.60 / 1.70
VN-67	VN-67-HA	7.1-7.7	80	1.50 / 1.60	1.50	1 / 3	100	1.60 / 1.70	20	1.70 / 1.80
VN-68	VN-68-HA	8.5-9.6	60	1.50 / 1.60	1.50	1 / 2	100	1.60 / 1.70	20	1.70 / 1.80
VN-70	VN-70-HA	8.5-9.6	80	1.60 / 1.70	1.50	1 / 3	100	1.70 / 1.80	20	1.80 / 1.90
VN-71	VN-71-HA	9.0-9.2	60	1.50 / 1.60	1.50	1 / 2	100	1.60 / 1.70	20	1.70 / 1.80
VN-72	VN-72-HA	9.0-9.2	80	1.60 / 1.70	1.50	1 / 3	100	1.70 / 1.80	20	1.80 / 1.90
VN-74	VN-74-HA	9.3-9.7	60	1.50 / 1.60	1.50	1 / 2	100	1.60 / 1.70	20	1.70 / 1.80
VN-75	VN-75-HA	9.3-9.7	80	1.60 / 1.70	1.50	1 / 3	100	1.70 / 1.80	20	1.80 / 1.90
VN-76	VN-76-HA	9.8-10.4	60	1.50 / 1.60	1.50	1 / 2	100	1.60 / 1.70	20	1.70 / 1.80
VN-78	VN-78-HA	9.8-10.4	80	1.60 / 1.70	1.50	1 / 3	100	1.70 / 1.80	20	1.80 / 1.90
VN-80	VN-80-HA	10.0-10.5	60	1.55 / 1.65	1.50	1 / 2	100	1.70 / 1.80	20	1.80 / 1.90
VN-82	VN-82-HA	10.0-10.5	80	1.65 / 1.75	1.50	1 / 3	100	1.80 / 1.90	20	1.90 / 2.00
VN-83	VN-83-HA	12.0-12.4	60	1.60 / 1.70	1.50	1 / 2	100	1.70 / 1.80	20	1.80 / 1.90
VN-85	VN-85-HA	12.0-12.4	80	1.70 / 1.80	1.50	1 / 2	100	1.80 / 1.90	20	1.90 / 2.00
VN-87	VN-87-HA	13.1-13.5	60	1.70 / 1.80	1.60	1 / 2	100	1.80 / 1.90	20	1.90 / 2.00
VN-89	VN-89-HA	13.1-13.5	80	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
VN-91	VN-91-HA	14.5-15.5	60	1.70 / 1.80	1.60	1 / 2	100	1.80 / 1.90	20	1.90 / 2.00
VN-92	VN-92-HA	14.5-15.5	80	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
VN-93	VN-93-HA	15.0-17.0	60	1.60 / 1.70	1.60	1 / 2	100	1.70 / 1.80	20	1.80 / 1.90
VN-95	VN-94-HA	15.0-17.0	80	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
VN-96	VN-96-HA	16.0-18.0	60	1.80 / 1.90	1.60	1 / 2	100	1.90 / 2.00	20	2.00 / 2.10
VN-98	VN-98-HA	16.0-18.0	80	2.00 / 2.10	1.60	1 / 2	100	2.10 / 2.20	20	2.25 / 2.35

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 500 mW.



**KDI/triangle ELECTRONICS**

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