

**NARROWBAND  
SPST SWITCH  
HIGH ISOLATION-REFLECTIVE AND ABSORPTIVE**

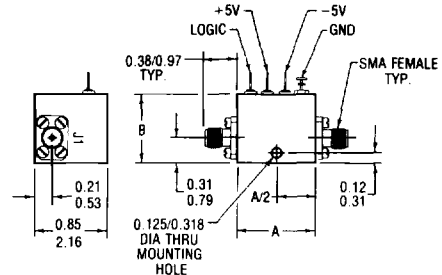
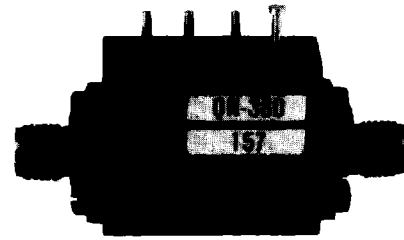
**SERIES QN/QN-HA**

**GENERAL INFORMATION:**

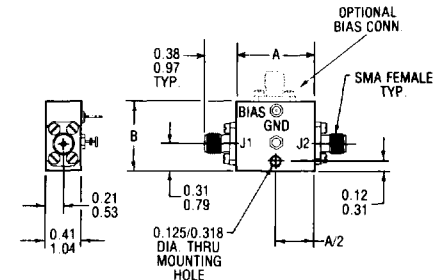
Series QN and QN-HA broadband switches are medium power devices that operate over commonly used narrowband frequency ranges. Carefully selected diodes placed in either series, series-shunt configurations produce excellent electrical performance from UHF through KU bands.

**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:** Switches without drivers require +50 mA max. for the "off" condition. For the "on" condition models QN-10 through QN-38 and QN-11-HA through QN-99-HA require -5 volts at -60 mA max and models QN-40 through QN-99 require -5 volts at 0 mA.  
 Switches with drivers require a ±5 volt supply at ±70 mA. Logic is TTL "0" when "on" and "1" when "off". Different supply voltages and logic available when specified at time order is placed.  
**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 (if specified when order is placed) include types N, TNC, and BNC.



OUTLINE WITH DRIVER J1-INPUT



OUTLINE WITHOUT DRIVER J1-INPUT

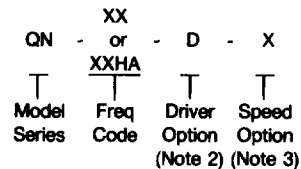
**NOTES:**

1. Drive connection is normally supplied as a solder feedthrough terminal. Other connectors available (if specified when order is placed) include SMA and SMC.
2. If driver is required, add "D" to the model number when ordering, i.e. Model QN-10, with driver, becomes QN-10D..
3. 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 QN-54D-2 is a SPST reflective switch, with driver, whose frequency range is 4.4 to 5.0 GHz and a switching speed of 10 nanosecs.
4. Any unit listed can be supplied with pins instead of RF connectors. (Consult factory.)
5. Any of the switches listed are available with absorptive input and output on request.

**MECHANICAL OUTLINES**

Outline	A Inches/cm.	B Inches/cm.
1	0.91 2.31	0.76 1.93
2	1.10 2.79	1.26 3.20
3	1.10 2.79	0.71 1.80
4	1.00 2.54	1.06 2.69
5	0.91 2.31	0.81 2.06
6	0.90 2.29	1.11 2.82
7	1.10 2.79	1.16 2.95
8	1.50 3.81	1.31 3.33

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



TYPICAL MODEL NO.

Hermetic Seal  
and Mil STD 883  
Screening Available

**NARROWBAND**

# SPST SWITCH

# SERIES QN/QN-HA

**HIGH ISOLATION-REFLECTIVE AND ABSORPTIVE**

## ELECTRICAL PERFORMANCE

STANDARD SWITCH								HIGH SPEED OPTION			
Isolation: 60 dB or 80 dB minimum Power: 1 watt average, 10 watts peak, survival Speed: 2 microsec. maximum								MODEL-1		MODEL-2	
								Speed Nanosec.	Insertion Loss Max. dB Ref. / Abs.	Speed Nanosec. Ref. / Abs.	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.	Outline Ref. / Abs.					
QN-10	QN-11-HA	0.02-0.07	60	0.25 / 0.35	1.30	4 / 8	500	0.30 / 0.40	N/A	N/A	
QN-11	QN-12-HA	0.02-0.07	80	0.30 / 0.40	1.30	4 / 8	500	0.35 / 0.45	N/A	N/A	
QN-13	QN-14-HA	0.2-0.25	60	0.35 / 0.45	1.30	1 / 5	500	0.40 / 0.50	N/A	N/A	
QN-14	QN-15-HA	0.2-0.25	80	0.40 / 0.50	1.30	1 / 5	500	0.45 / 0.55	N/A	N/A	
QN-16	QN-17-HA	0.4-0.45	60	0.35 / 0.45	1.30	1 / 5	500	0.40 / 0.50	N/A	N/A	
QN-17	QN-18-HA	0.4-0.45	80	0.40 / 0.50	1.30	1 / 5	500	0.45 / 0.55	N/A	N/A	
QN-19	QN-20-HA	0.7-0.8	60	0.45 / 0.55	1.30	1 / 5	200	0.50 / 0.60	10 / 20	0.55 / 0.65	
QN-20	QN-21-HA	0.7-0.8	80	0.50 / 0.60	1.30	1 / 5	200	0.55 / 0.65	10 / 20	0.60 / 0.70	
QN-22	QN-23-HA	0.95-1.22	60	0.55 / 0.65	1.30	1 / 6	100	0.60 / 0.70	10 / 20	0.70 / 0.75	
QN-23	QN-24-HA	0.95-1.22	80	0.60 / 0.70	1.30	1 / 6	100	0.65 / 0.75	10 / 20	0.75 / 0.80	
QN-25	QN-26-HA	1.02-1.10	60	0.55 / 0.65	1.30	1 / 6	100	0.60 / 0.70	10 / 20	0.70 / 0.75	
QN-26	QN-27-HA	1.02-1.10	80	0.60 / 0.70	1.30	1 / 6	100	0.65 / 0.75	10 / 20	0.75 / 0.80	
QN-28	QN-29-HA	1.2-1.4	60	0.55 / 0.65	1.30	1 / 6	100	0.60 / 0.70	10 / 20	0.70 / 0.75	
QN-29	QN-30-HA	1.2-1.4	80	0.60 / 0.70	1.30	1 / 6	100	0.65 / 0.75	10 / 20	0.75 / 0.80	
QN-31	QN-32-HA	1.5-1.6	60	0.60 / 0.70	1.30	1 / 6	100	0.65 / 0.75	10 / 20	0.75 / 0.80	
QN-32	QN-33-HA	1.5-1.6	80	0.70 / 0.80	1.30	1 / 6	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-34	QN-35-HA	1.7-2.4	60	0.70 / 0.80	1.30	1 / 6	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-35	QN-36-HA	1.7-2.4	80	0.75 / 0.85	1.30	1 / 6	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-37	QN-38-HA	2.2-2.3	60	0.70 / 0.80	1.30	1 / 6	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-38	QN-39-HA	2.2-2.3	80	0.75 / 0.85	1.30	1 / 6	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-40	QN-40-HA	2.9-3.1	60	0.70 / 0.80	1.30	2 / 7	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-41	QN-42-HA	2.9-3.1	80	0.75 / 0.85	1.30	2 / 8	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-43	QN-43-HA	3.1-3.5	60	0.70 / 0.80	1.30	2 / 7	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-44	QN-45-HA	3.1-3.5	80	0.75 / 0.85	1.30	2 / 8	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-46	QN-46-HA	3.3-3.7	60	0.70 / 0.80	1.30	2 / 7	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-47	QN-48-HA	3.3-3.7	80	0.75 / 0.85	1.30	2 / 8	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-49	QN-49-HA	3.7-4.2	60	0.70 / 0.80	1.30	2 / 7	100	0.75 / 0.85	10 / 20	0.85 / 0.90	
QN-50	QN-50-HA	3.7-4.2	80	0.75 / 0.85	1.30	2 / 8	100	0.80 / 0.90	10 / 20	0.90 / 0.95	
QN-51	QN-52-HA	4.2-4.4	60	0.80 / 0.90	1.30	2 / 7	100	0.85 / 0.95	10 / 20	0.95 / 1.00	
QN-53	QN-53-HA	4.2-4.4	80	0.85 / 0.95	1.30	2 / 8	100	0.90 / 1.00	10 / 20	1.00 / 1.05	
QN-54	QN-54-HA	4.4-5.0	60	0.90 / 1.00	1.30	3 / 7	100	0.95 / 1.05	10 / 20	1.00 / 1.10	
QN-56	QN-56-HA	4.4-5.0	80	0.95 / 1.05	1.30	3 / 8	100	1.00 / 1.10	10 / 20	1.10 / 1.15	
QN-57	QN-57-HA	5.0-5.25	60	0.95 / 1.05	1.30	3 / 7	100	1.00 / 1.10	10 / 20	1.10 / 1.15	
QN-59	QN-59-HA	5.0-5.25	80	1.00 / 1.10	1.30	3 / 8	100	1.10 / 1.15	10 / 20	1.15 / 1.20	
QN-60	QN-60-HA	5.4-5.9	60	1.00 / 1.10	1.30	3 / 7	100	1.10 / 1.15	10 / 20	1.15 / 1.20	
QN-62	QN-61-HA	5.4-5.9	80	1.10 / 1.20	1.30	3 / 8	100	1.15 / 1.25	10 / 20	1.20 / 1.30	
QN-63	QN-63-HA	5.9-6.4	60	1.10 / 1.20	1.30	3 / 7	100	1.15 / 1.25	10 / 20	1.20 / 1.30	
QN-65	QN-64-HA	5.9-6.4	80	1.20 / 1.30	1.30	3 / 8	100	1.25 / 1.35	10 / 20	1.30 / 1.40	
QN-66	QN-66-HA	6.7-7.4	60	1.15 / 1.25	1.30	3 / 7	100	1.20 / 1.30	10 / 20	1.25 / 1.35	
QN-68	QN-67-HA	6.7-7.4	80	1.25 / 1.35	1.30	3 / 8	100	1.30 / 1.40	10 / 20	1.35 / 1.45	
QN-69	QN-69-HA	7.1-7.7	60	1.20 / 1.30	1.30	3 / 7	100	1.25 / 1.35	10 / 20	1.30 / 1.40	
QN-71	QN-70-HA	7.1-7.7	80	1.30 / 1.40	1.30	3 / 8	100	1.35 / 1.45	10 / 20	1.40 / 1.50	
QN-72	QN-72-HA	8.5-9.6	60	1.30 / 1.40	1.30	3 / 7	100	1.40 / 1.50	10 / 20	1.50 / 1.60	
QN-74	QN-73-HA	8.5-9.6	80	1.40 / 1.50	1.30	3 / 8	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-75	QN-75-HA	9.0-9.2	60	1.30 / 1.40	1.30	1 / 7	100	1.40 / 1.50	10 / 20	1.50 / 1.60	
QN-77	QN-76-HA	9.0-9.2	80	1.40 / 1.50	1.30	1 / 8	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-78	QN-77-HA	9.3-9.7	60	1.30 / 1.40	1.30	1 / 7	100	1.40 / 1.50	10 / 20	1.50 / 1.60	
QN-80	QN-79-HA	9.3-9.7	80	1.40 / 1.50	1.30	1 / 8	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-81	QN-80-HA	9.8-10.4	60	1.30 / 1.40	1.30	1 / 7	100	1.40 / 1.50	10 / 20	1.50 / 1.60	
QN-83	QN-81-HA	9.8-10.4	80	1.40 / 1.50	1.30	1 / 8	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-84	QN-83-HA	10.0-10.5	60	1.35 / 1.45	1.30	1 / 7	100	1.45 / 1.55	10 / 20	1.55 / 1.70	
QN-86	QN-84-HA	10.0-10.5	80	1.45 / 1.55	1.30	1 / 8	100	1.55 / 1.65	10 / 20	1.65 / 1.75	
QN-87	QN-86-HA	12.0-12.4	60	1.40 / 1.50	1.30	1 / 7	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-89	QN-87-HA	12.0-12.4	80	1.50 / 1.60	1.30	1 / 8	100	1.60 / 1.70	10 / 20	1.70 / 1.80	
QN-90	QN-88-HA	13.1-13.5	60	1.50 / 1.60	1.40	1 / 7	100	1.60 / 1.70	10 / 20	1.70 / 1.80	
QN-92	QN-90-HA	13.1-13.5	80	1.60 / 1.70	1.40	1 / 8	100	1.70 / 1.80	10 / 20	1.80 / 1.90	
QN-93	QN-91-HA	14.5-15.5	60	1.50 / 1.60	1.40	1 / 7	100	1.60 / 1.70	10 / 20	1.70 / 1.80	
QN-95	QN-93-HA	14.5-15.5	80	1.60 / 1.70	1.40	1 / 8	100	1.70 / 1.80	10 / 20	1.80 / 1.90	
QN-96	QN-94-HA	15.0-17.0	60	1.40 / 1.50	1.40	1 / 7	100	1.50 / 1.60	10 / 20	1.60 / 1.70	
QN-97	QN-96-HA	15.0-17.0	80	1.60 / 1.70	1.40	1 / 8	100	1.70 / 1.80	10 / 20	1.80 / 1.90	
QN-98	QN-97-HA	16.0-18.0	60	1.50 / 1.70	1.40	1 / 7	100	1.60 / 1.80	10 / 20	1.70 / 2.00	
QN-99	QN-98-HA	16.0-18.0	80	1.70 / 1.90	1.40	1 / 8	100	1.80 / 2.00	10 / 20	1.90 / 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' Input and 'ON' Output and 'OFF' Input Position.  
 Insertion Loss measured with input power less than 100 mW.

**KDI/triangle  
ELECTRONICS**

31 Farinella Drive • East Hanover, NJ 07936 • Phone: (201) 884-1423  
 TWX: (710) 986-8202 • FAX: (201) 884-0445