

**SPnT up to 12.4 GHz - RAMSES Concept**

N - BNC - TNC



Radiall's R573 & R574 multithrow coaxial switches are offered in many configurations (over 40,000 possible combinations) including Terminated and non Terminated options. Radiall offers reliable products, with shorter delivery times and competitive pricing. Excellent typical RF performance make RAMSES switches (12.4 GHz) ideal for Automated Test Equipment (ATE) and other measurement applications.

These switches are suitable for defense, industrial, and telecommunication applications.

Example of P/N:  
R573103600 is a SP6T N up to 12.4 GHz, Normally Open, 28 Vdc, and solder pins.

**PART NUMBER SELECTION**

**R 57**

**Model:**

- 3: Without 50 Ω termination
- 4: With 50 Ω termination

**RF Connectors:**

- 0: N up to 3 GHz
- 1: N up to 12.4 GHz (9)
- 2: BNC up to 3 GHz (4) (5)
- 5: TNC up to 3 GHz (4) (5)
- 6: TNC up to 12.4 GHz (4) (5)

**Type:**

- 0: Normally open
- 1: Normally open + I.C.
- 2: Latching
- 3: Latching + I.C.
- 4: Latching + S.C.O. (1) (4)
- 5: Latching + S.C.O. + I.C. (1) (4)
- 8: Latching + S.C.O. + A.R. (1)
- 9: Latching + S.C.O. + I.C. + A.R. (1)

**Actuator Voltage:**

- 2: 12 Vdc
- 3: 28 Vdc

**Actuator Terminals:**

- 0: Solder pins
- 5: D-Sub connector

**Options:\***

- 0: Without option
- 1: Positive common (2) (6)
- 2: Compatible TTL driver (1) (8)
- 3: With suppression diodes
- 4: With suppression diodes and positive common (2) (6)
- 8: BCD TTL driver compatible (1) (3) (7) (8)

**Number of positions:**

- 3: 3 Positions
- 4: 4 Positions
- 5: 5 Positions
- 6: 6 Positions
- 7: 7 Positions
- 8: 8 Positions
- 9: 9 Positions
- 0: 10 Positions
- 1: 11 Positions
- 2: 12 Positions

I.C.: Indicator contact / S.C.O.: Self Cut-Off / A.R.: Auto Reset  
 (1): These models are already equipped with suppression diodes  
 (2): Standard products are equipped with negative common  
 (3): Latching BCD driver enables also a global reset through driver code 0000 (see BCD logic coding page 1-13)  
 (4): Available only up 6 positions  
 (5): Model "3" only  
 (6): Option not available for type 4, 5, 8 and 9  
 (7): Option available only with type 0, 1, 8 and 9  
 (8): Polarity is not relevant to application for switches with TTL driver  
 (9) 7 to 12 positions are available only up to 8 GHz  
 \*For precisions see availability of options chart page 5-21

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**GENERAL SPECIFICATIONS**

**Type 2, 3, 4 and 5:**

Latching models have a RESET pin which commands the reset of all positions. This command should be used before switching from one position to another. If not, two positions will be set at the same time.

Note: During the RESET operation the global current the nominal operating current multiplied by the number of positions.

**Type 8, 9:**

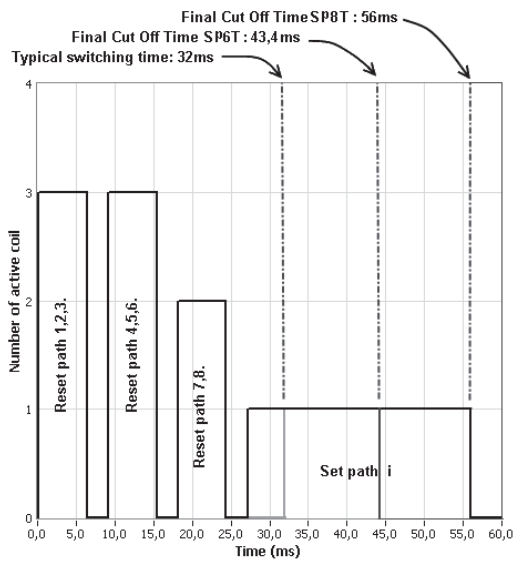
Latching models with AUTOMATIC RESET are available; these products have an internal SET/RESET circuit which automatically resets all the non-selected positions and sets the desired position. This option simplifies the use of latching switches by suppressing the RESET command in switching sequence.

An electronic circuit supplies successively groups of 2, 3 or 4 actuators, in order to limit the maximum current. The current with this option is the total current of 2, 3 or 4 reset coils in the same time (see table below).

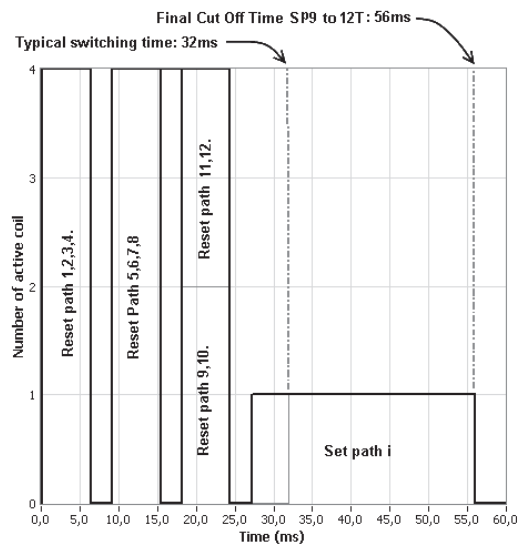
Example: During the AUTOMATIC RESET operation, at 28 Vdc, 4 position switch has a temporary consumption of only 250 mA, during 40 ms maximum.

**SWITCHING SEQUENCE**

For SP6 to 8T



For SP9 to 12T



n = number of positions

Operating Total Current At 23 ° C (mA) SPnT Latching				
Number of positions	12 Volts		28 Volts	
	Manual reset	Automatic reset	Manual reset	Automatic reset
3 to 4	320 x n	640	125 x n	250
5 to 8	320 x n	960	125 x n	375
9 to 12	320 x n	1280	125 x n	500

Availability of options according to both type and number of positions

Type	Numbers of positions	Available options
0 or 1	3 to 12	0 - 1 - 2 - 3 - 4 - 8
2 or 3	3 to 6	0 - 1 - 2 - 3 - 4
	7 to 12	0 - 1 - 3 - 4
4 or 5	3 to 6	0 - 2
	7 to 12	Not available
8 or 9	3 to 12	0 - 2 - 8

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### GENERAL SPECIFICATIONS

Operating mode		Normally open		Latching	
Nominal operating voltage (across operating temperature)	Vdc	12 (10.2 / 13)	28 (24 / 30)	12 (10.2 / 13)	28 (24 / 30)
Coil resistance (+/-10%)	Ω	47.5	275	See table on previous page	
Nominal operating current at 23°C	mA	250	102		
Average power		See Power Rating Chart page 1-13			
TTL input	High Level	2.2 to 5.5 V (TTL Option) / 3.5 to 5.5 V (BCD Option)		800µA max 5.5 volts	
	Low Level	0 to 0.8 V (TTL Option) / 0 to 1.5 V (BCD Option)		20µA max 0.8 volts	
Indicator rating		1 Watt / 30 Volts / 100 mA			
Switching time (Max)		ms		15 ms For automatic reset models: SP3T to SP6T => 40 ms SP7T to SP12T => 50 ms	
Life (Min)	Non terminated SP3 to 6T (R573 serie)		2 million cycles		
	Terminated SP3 to 6T (R574 serie)				
	SP7 to 12T (all models)				
Connectors		N - TNC - BNC			
Actuator terminals		Solder pins or male 25 pin D-Sub connector			
Operating temperature range		-40°C to +85°C			
Storage temperature range		-55°C to +85°C			
Vibration (MIL STD 202, method 204D, cond.C)		10-2000 Hz , 10g		operating	
Shock (MIL STD 202, method 213B, cond.C)		50g / 1 ms, 1/2 sine		operating	

### RF PERFORMANCES

N - TNC - BNC Connector						
Number of positions	Frequency range GHz	V.S.W.R. (max)	Insertion loss (max) dB	Isolation (min) dB	Impedance Ω	
3 to 6	DC - 12.4	DC - 3	1.20	0.20	80	50
		3 - 8	1.35	0.35	70	
		8 - 12.4	1.50	0.50	60	
7 to 10	DC - 8	DC - 3	1.30	0.30	80	
		3 - 8	1.50	0.50	70	
11 to 12	DC - 8	DC - 3	1.35	0.50	70	
		3 - 8	1.70	1.00	60	

See page 5-25 for typical RF performances

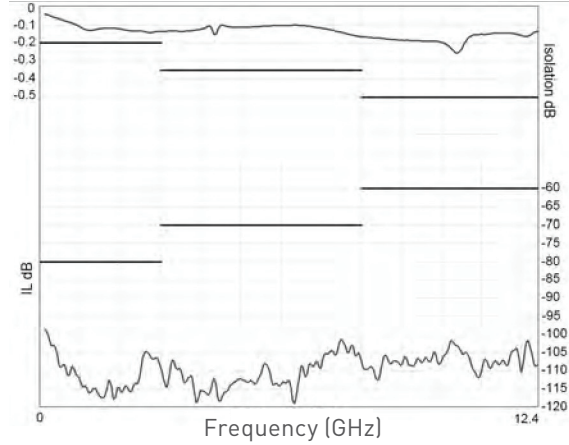
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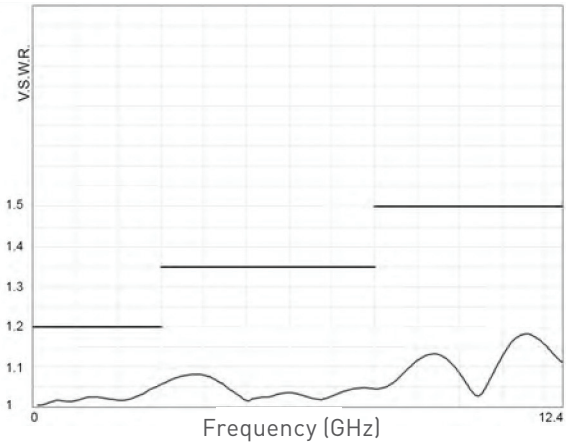
**R573 AND R574 TYPICAL RF PERFORMANCES**

Example: SP6T N up to 12.4 GHz

**Insertion Loss and Isolation**

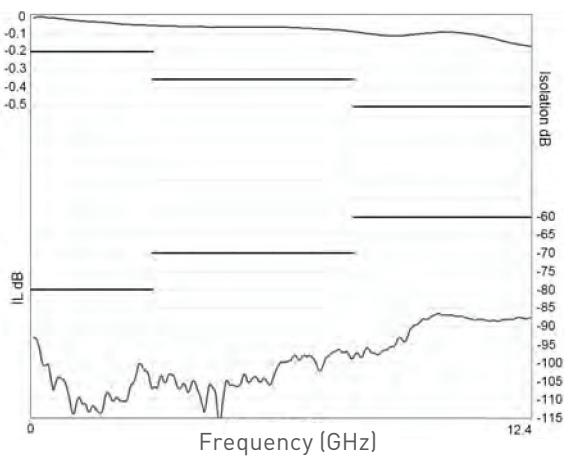


**V.S.W.R.**

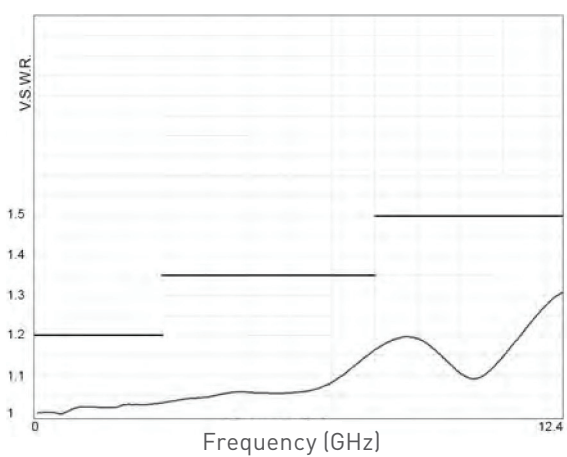


Example: SP6T TNC up to 12.4 GHz

**Insertion Loss and Isolation**

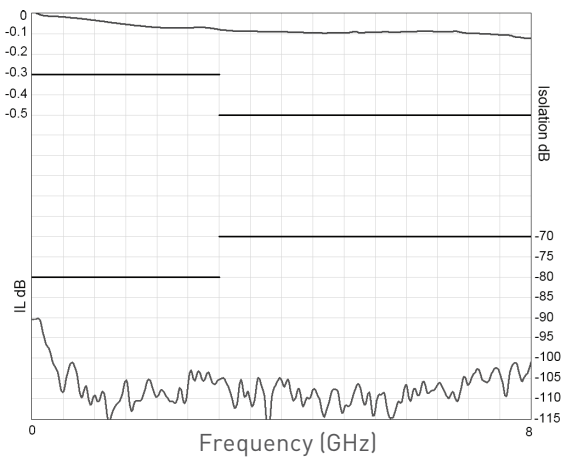


**V.S.W.R.**

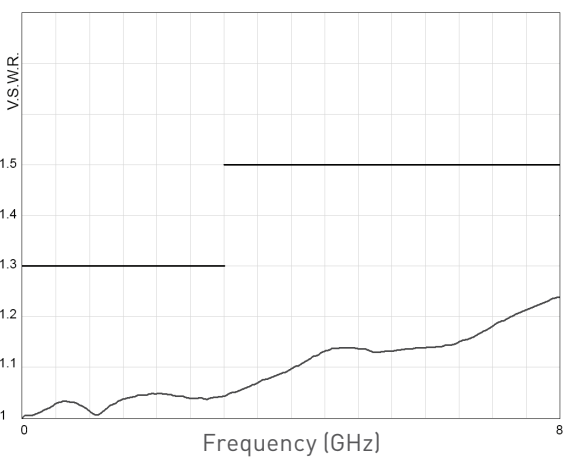


Example: SP8T up to 8 GHz

**Insertion Loss and Isolation**



**V.S.W.R.**



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**TYPICAL OUTLINE DRAWINGS**

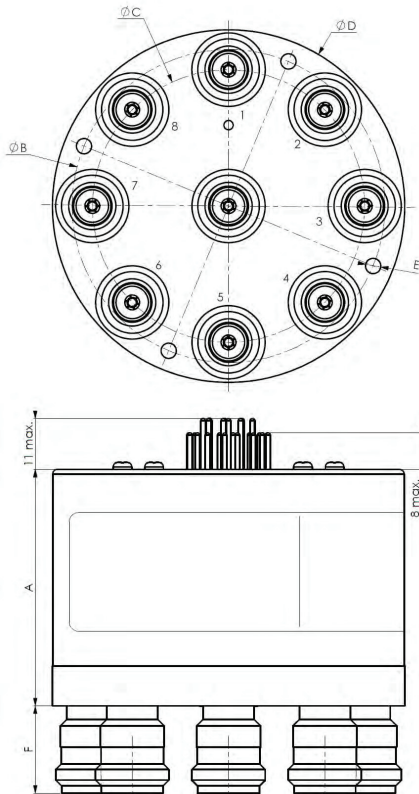
TERMINATED or NOT 3 to 12 positions

Type	A max (mm)	
	Solder Pins	D-Sub Connector
Type 0 - 1 - 2 or 3 with option 0 - 1 - 3 or 4	56	66
Type 0 - 1 - 2 or 3 with option 2 or 8 and Type 4 - 5 - 8 or 9 with option 0 - 1 - 2 or 8	71	71

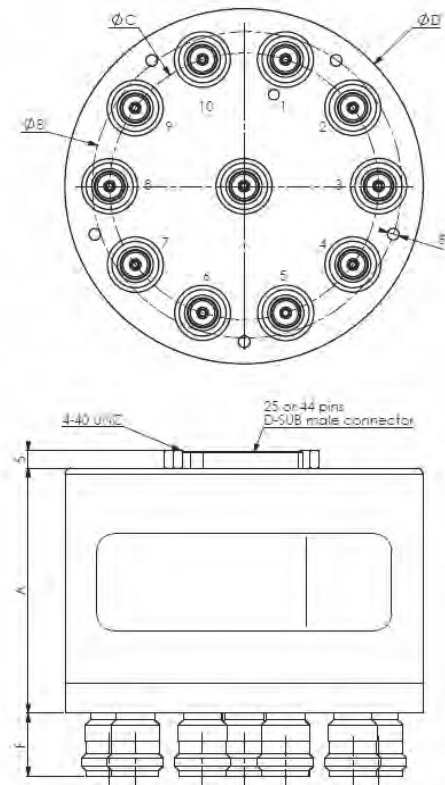
Connectors	F max (mm)
N	18.8
BNC	11
TNC	11

Number of positions	B diameter	C diameter	D diameter	E
3 - 6	54	44.7	63.5	6 holes M4/60°
7 - 8	67.7	58.9	76.2	4 holes M4/90°
9 - 10	88.9	76.2	101.6	5 holes M4/72°
11 - 12	67.7	101.6	127	6 holes M4/60°

Model SP8T positions up to 8 GHz  
with solder pins



Model SP10T positions up to 8 GHz  
D-Sub male connector



**RF CONNECTORS ALLOCATION**

See on page 5-25 and 5-26