

Radiall's RAMSES SPDT switches offer excellent reliability, high performance and operating frequencies from DC to 50 GHz. With RADIALL's RAMSES Concept (which provides for a life span of 10 million cycles) all options are available to respond to customer needs.

These relays are dedicated to all market applications including: Military, Instrumentation and Telecommunications.

Example of P/N:

R570413100 is a SPDT SMA 18 GHz, failsafe, 28 Vdc, with TTL driver, without option, solder pins.

PART NUMBER SELECTION

R 570

Frequency range: ←

- 3: SMA up to 3 GHz
- B: SMB up to 3 GHz
- C: SMC up to 3 GHz
- E: QMA up to 6 GHz (4)
- 4: SMA up to 18 GHz
- F: SMA up to 26.5 GHz
- 8: SMA2.9 up to 40 GHz (5)
- J: 2.4mm up to 50 GHz
- 9: DIN 1.6/5.6 up to 2.5 GHz
- H: mini SMB up to 3 GHz (6)
- A: Pc board mount up to 3 GHz (6)

Type: ←

- 1: Failsafe
- 2: Failsafe + I.C.
- 3: Latching
- 4: Latching + I.C.
- 5: Latching + S.C.O. (1)
- 6: Latching + S.C.O. + I.C. (1)

Actuator Voltage: ←

- 2: 12 Vdc
- 3: 28 Vdc

Actuator voltage: →

- 0: Solder pins

Options: →

- 0: Without option
- 1: Positive common (2) (3)
- 3: With suppression diodes (1)
- 4: With suppression diodes and positive common (2) (3)

TTL Option: →

- 0: Without TTL driver
- 1: With TTL driver (high level) (1) (2)

I.C.: Indicator contact - S.C.O.: Self Cut-Off

(1): Suppression diodes are already included in Self Cut-OFF & TTL option

(2): Polarity is not relevant to application for switches with TTL driver

(3): Positive common shall be specified only with type 3, 4, 5 & 6 because failsafe switches can be used with both polarities

(6): Available only upon request

(4): The QLF trademark (Quick Lock Formula®) standard applies to QMA and QN series and guarantees the full intermateability between suppliers using this trademark. Using QLF certified connectors also guarantees the specified level of RF performances.

(5): Connector SMA2.9 is equivalent to "K connector®", registered trademark of Anritsu.



GENERAL SPECIFICATIONS

Operating mode		Failsafe		Latching			
Nominal operating voltage (across temperature range)	Vdc	12	28	12	28		
		(10.2 to 13)	(24 to 30)	(10.2 to 13)	(24 to 30)		
Coil resistance at 23°C (+/-10%)	Ω	47.5	275	58	350		
Operating current at 23°C	mA	250	102	210	80		
Average power		See Power Rating Chart page 1-16					
TTL Input	High level	2.5 to 5.5 Volts		800µA max 5.5 Volts			
	Low level	0 to 0.8 Volts		20µA max 0.8 Volts			
Indicator rating		1 W / 30 V / 100mA					
Switching time	ms	10					
Life	SMA - SMA2.9 - QMA	10 million cycles					
	DIN 1.6/5.6 - Pc Board	5 million cycles					
	SMB - SMC - mini SMB	2.5 million cycles					
	2.4mm	2 million cycles					
Connectors		SMA - SMA2.9 - QMA - DIN 1.6/5.6 - SMB - SMC Mini SMB - Pc Board - 2.4 mm					
Operating temperature range	DIN 1.6/5.6 - SMB - SMC - mini SMB - 2.4mm	-25°C to +70°C					
	SMA - SMA2.9 - QMA - Pc Board	-40°C to +85°C					
Storage temperature range	DIN 1.6/5.6 - SMB - SMC - mini SMB - 2.4mm	-40°C to +85°C					
	SMA - SMA2.9 - QMA - Pc Board	-55°C to +85°C					
Vibration (MIL STD 202, Method 204D, cond.D)		10-2000 Hz, 20g		Operating			
Shock (MIL STD 202, Method 213B, cond.C)		100g / 6ms, ½ sine		Operating			

RF PERFORMANCES

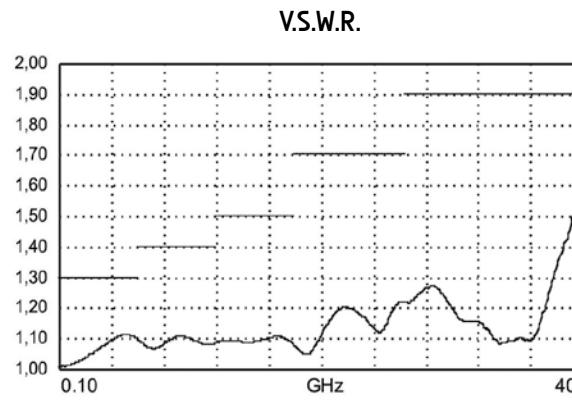
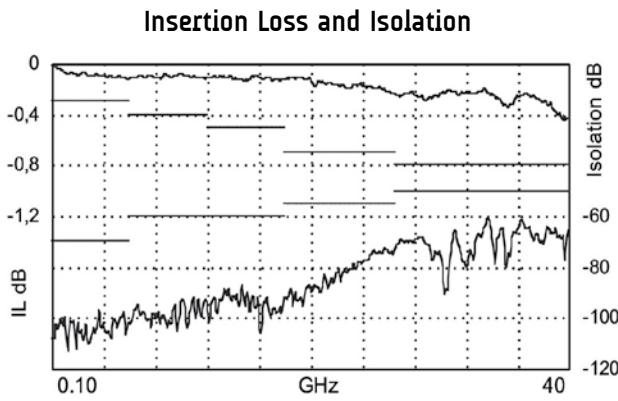
Connectors	Frequency Range GHz		VS.W.R. (max)	Insertion Loss (max) dB	Isolation (min) dB	Impedance Ohms
DIN 1.6/5.6	DC - 2.5	DC - 1	1.20	0.20	80	75
		1 - 2.5	1.30	0.30	70	
Mini SMB	DC - 3	DC - 1	1.20	0.20	80	75
		1 - 3	1.30	0.30	70	
SMB - SMC	DC - 3	DC - 3	1.20	0.20	80	50
QMA	DC - 6	DC - 3	1.20	0.20	80	50
		3 - 6	1.30	0.30	70	
SMA	DC - 3	DC - 3	1.20	0.20	80	50
		3 - 8	1.30	0.30	70	
		8 - 12.4	1.40	0.40	60	
		12.4 - 18	1.50	0.50	60	
		18 - 26.5	1.70	0.70	55	
SMA 2.9	DC - 40	DC - 6	1.30	0.30	70	50
		6 - 12.4	1.40	0.40	60	
		12.4 - 18	1.50	0.50	60	
		18 - 26.5	1.70	0.70	55	
		26.5 - 40	1.90	0.80	50	
PC Board	DC - 3	DC - 3	1.20	0.20	80	50
2.4mm	DC - 50	DC - 6	1.30	0.30	70	50
		6 - 12.4	1.40	0.40	60	
		12.4 - 18	1.50	0.50	60	
		18 - 26.5	1.70	0.70	55	
		26.5 - 40	1.90	0.80	50	
		40 - 50	1.90	1.10	50	

See page 2-14, 2-18 and 2-19 for typical RF performances

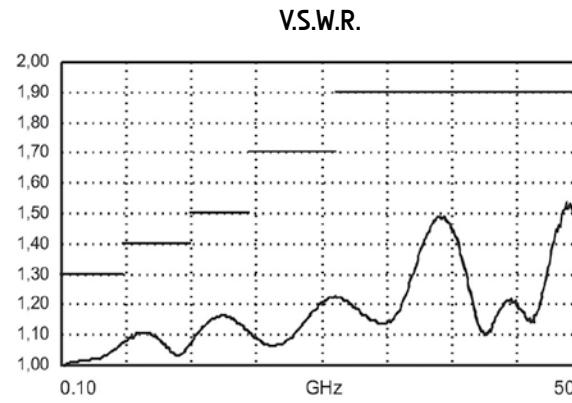
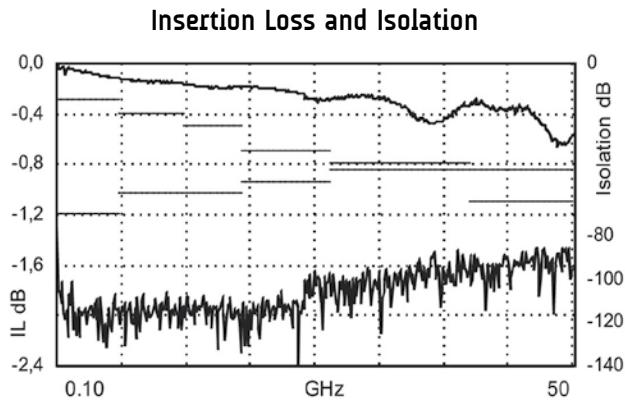
To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

R570 AND R572 TYPICAL RF PERFORMANCES

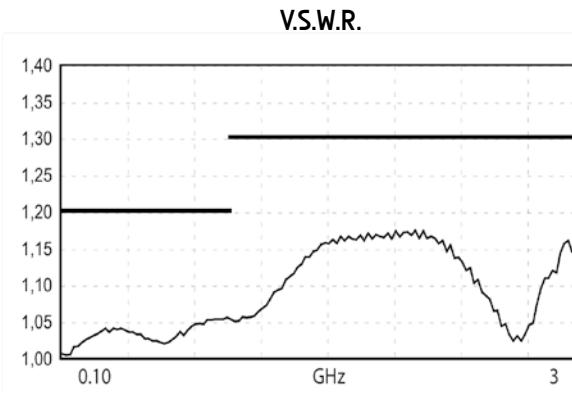
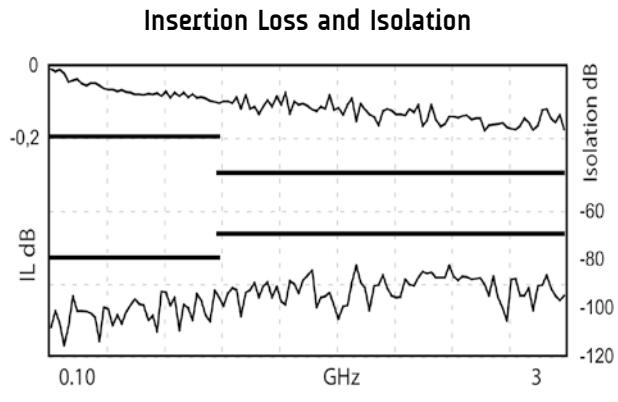
Example: SPDT SMA2.9 up to 40 GHz



Example: SPDT 2.4mm up to 50 GHz



Example: SPDT mini SMB up to 3 GHz

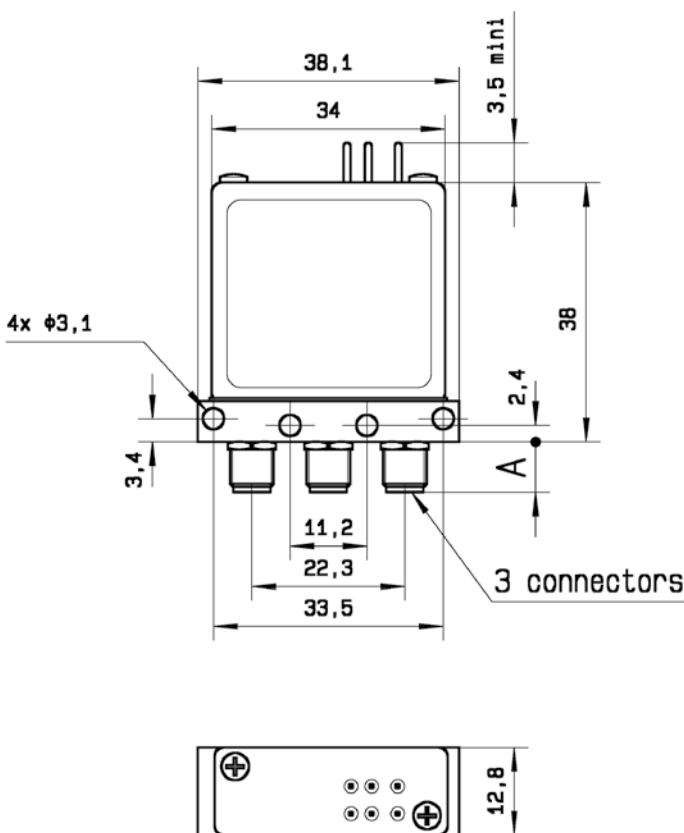


Note: see page 2-18 for other connectors.

To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

TYPICAL OUTLINE DRAWING

Connectors	A max (mm)
SMA	7.4
SMA2.9 & 2.4mm	6.3
SMB - SMC	9.3
QMA	10.8
Mini SMB	7.5
DIN 1.6/5.6	11.5
Pc Board	4.5

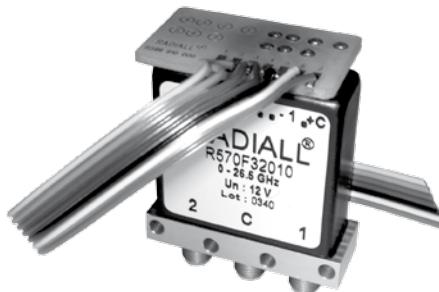
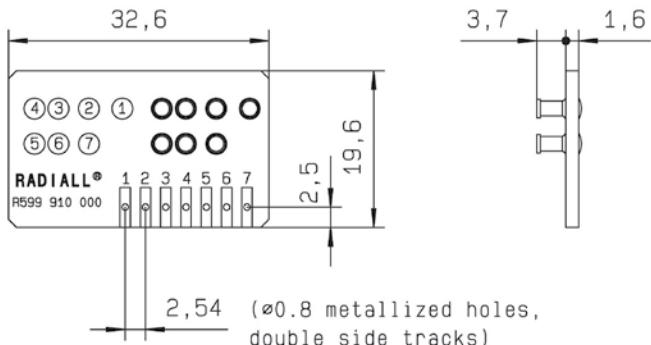


See page 2-27 for pin identification.

ACCESSORIES

A printed circuit board interface connector (ordered separately) has been designed for easy mounting on terminals.

For SPDT model R570 series => Radiall part number: **R599 910 000**



To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
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RADIALl's RAMSES SPDT N, BNC & TNC switches are designed for high performance in RF & Microwave systems up to 18 GHz. With RADIALl's RAMSES concept (modular concept) a full range of configurations are available. They are commonly used for applications where high power handling capability is required.

These relays are dedicated to all market applications including: Defense, Instrumentation and Telecommunications.

Example of P/N:

R570113035 is a SPDT N 12.4 GHz, failsafe, 28 Vdc, with suppression diodes, without option, D-Sub connector.

PART NUMBER SELECTION

R 570

Frequency range: ←

- 0: N up to 3 GHz
- 1: N up to 12.4 GHz
- 2: BNC up to 3 GHz
- 5: TNC up to 3 GHz
- 6: TNC up to 12.4 GHz
- D: TNC up to 18 GHz

Type: ←

- 1: Failsafe
- 2: Failsafe + I.C.
- 3: Latching
- 4: Latching + I.C.
- 5: Latching + S.C.O. (1)
- 6: Latching + S.C.O. + I.C. (1)

Actuator Voltage: ←

- 2: 12 Vdc
- 3: 28 Vdc

Actuator Voltage: →

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

Options: →

- 0: Without option
- 1: Positive common (2) (3)
- 3: With suppression diodes (1)
- 4: With suppression diodes and positive common (2) (3)

TTL Option: →

- 0: Without TTL driver
- 1: With TTL driver (high level) (1) (2)

I.C.: Indicator contact - S.C.O.: Self Cut-Off

(1): Suppression diodes are already included in Self Cut-Off & TTL option

(2): Polarity is not relevant to application for switches with TTL driver

(3): Positive common shall be specified only with type 3, 4, 5 & 6 because failsafe switches can be used with both polarities

To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

GENERAL SPECIFICATIONS

Operating mode		Failsafe		Latching			
Nominal operating voltage (across temperature range)	Vdc	12	28	12	28		
		(10.2 to 13)	(24 to 30)	(10.2 to 13)	(24 to 30)		
Coil resistance at 23°C (+/-10%)	Ω	47.5	275	38	225		
Operating current at 23°C	mA	250	102	320	125		
Average power		See Power Rating Chart page 1-16					
TTL input	High level	2.2 to 5.5 Volts		800µA max 5.5 Volts			
	Low level	0 to 0.8 Volts		20µA max 0.8 Volts			
Switching time	ms	15					
Life		2.5 million cycles					
Connectors		N - TNC - BNC					
Actuator terminals		Solders pins or 9 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.D)		10-2000 Hz, 20g		Operating			
Shock (MIL STD 202, Method 213B, cond.C)		100g / 6 ms, ½ sine		Non operating			

RF PERFORMANCES

Connectors	Frequency Range GHz	V.S.W.R. (max)	Insertion Loss (max) dB	Isolation (min) dB	Impedance Ohms
N / TNC	DC - 3 DC - 12.4	DC - 1	1.15	0.15	85
		1 - 2	1.20	0.20	80
		2 - 3	1.25	0.25	75
		3 - 8	1.35	0.35	70
		8 - 12.4	1.50	0.50	60
TNC 18GHz	DC - 18	DC - 6	1.30	0.30	70
		6 - 12.4	1.50	0.50	60
		12.4 - 18	1.60	0.70	60
BNC	DC - 3	DC - 1	1.15	0.15	85
		1 - 2	1.20	0.20	80
		2 - 3	1.25	0.25	75

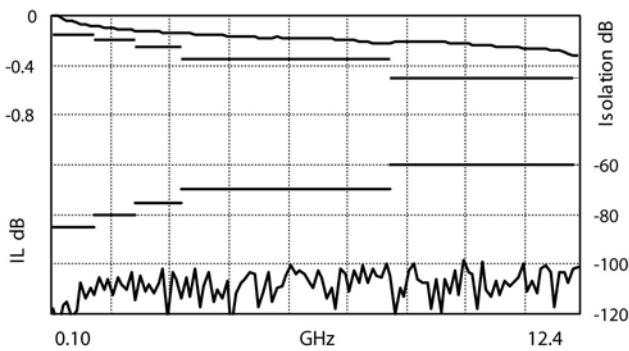
See page 2-22 for typical RF performances

To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

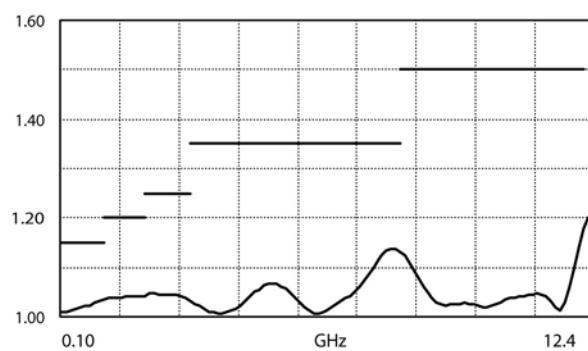
R570 TYPICAL RF PERFORMANCES

Example: SPDT N and TNC up to 12.4 GHz

Insertion Loss and Isolation

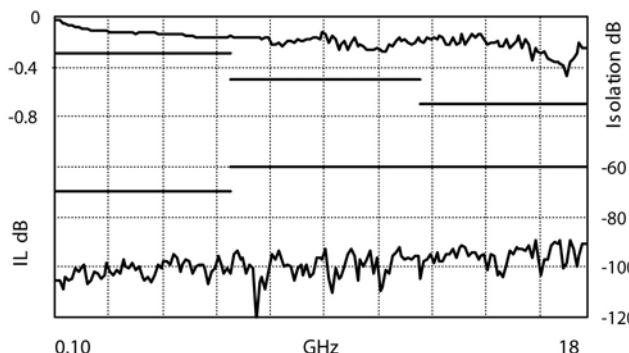


V.S.W.R.

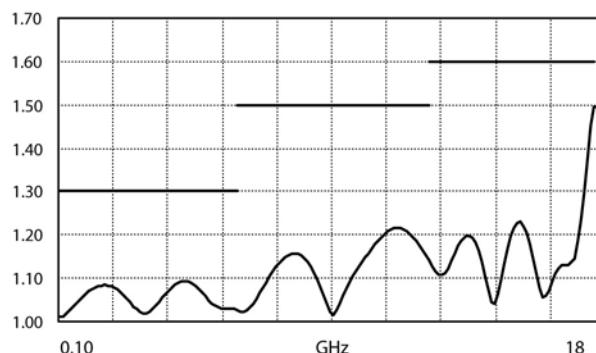


Example: SPDT TNC up to 18 GHz

Insertion Loss and Isolation



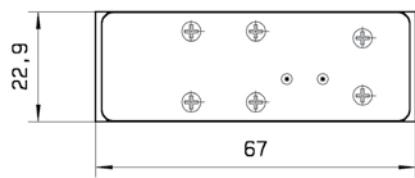
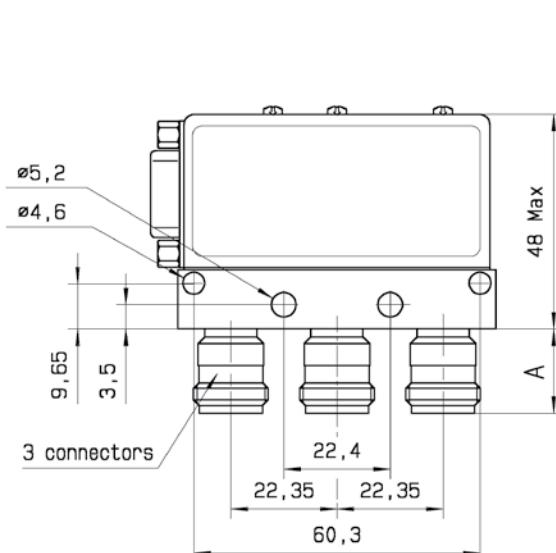
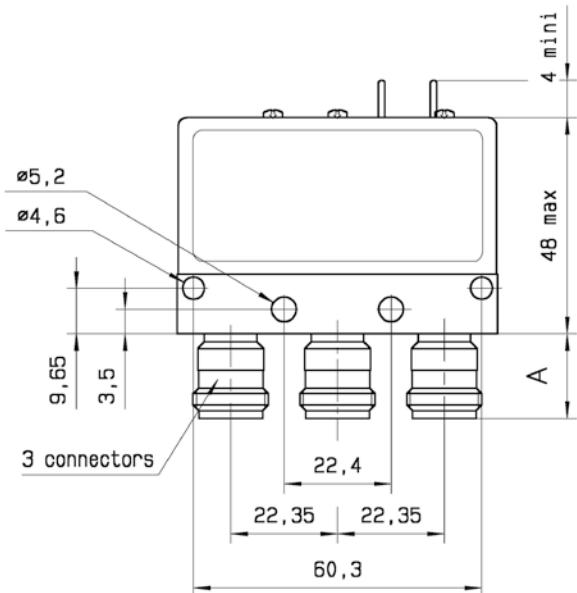
V.S.W.R.



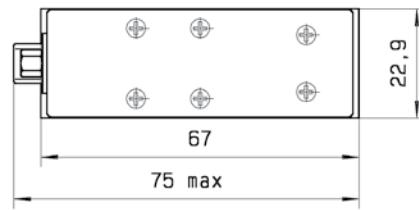
To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

TYPICAL OUTLINE DRAWING

Example: SPDT N up to 12.4 GHz



See page 2-27 for pin allocation

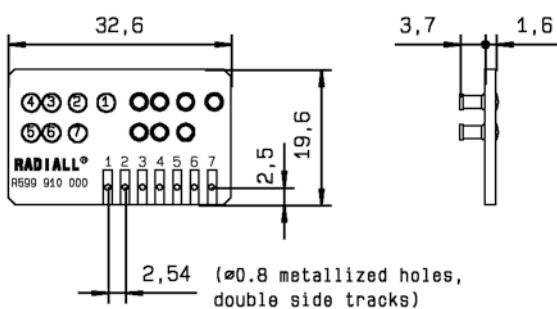


See page 2-27 for D-Sub pin allocation

Connectors	N	TNC	BNC
A max (mm)	17.7	11.3	11.3

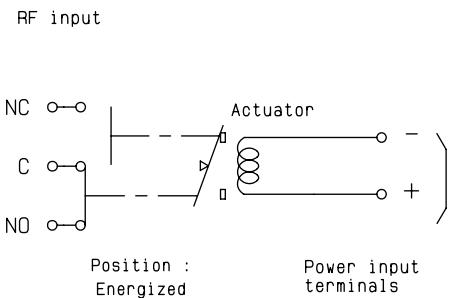
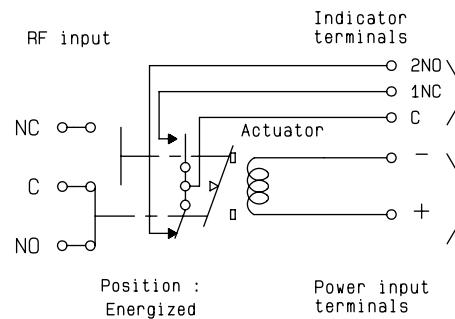
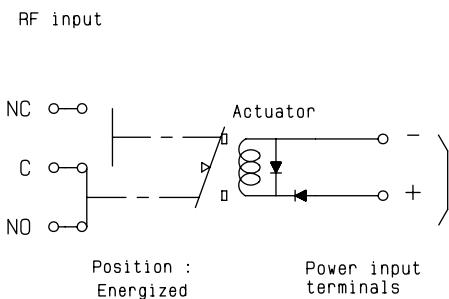
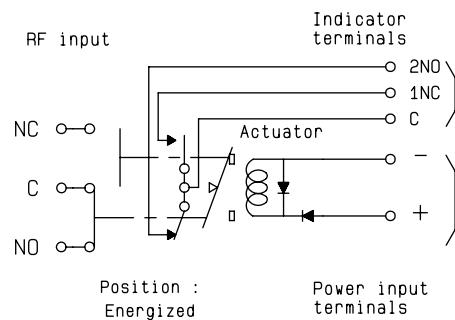
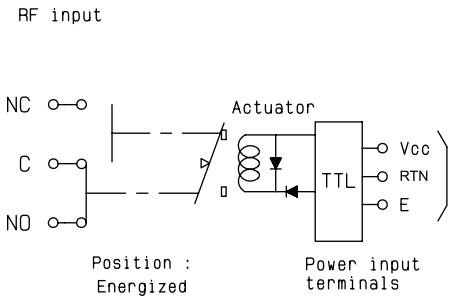
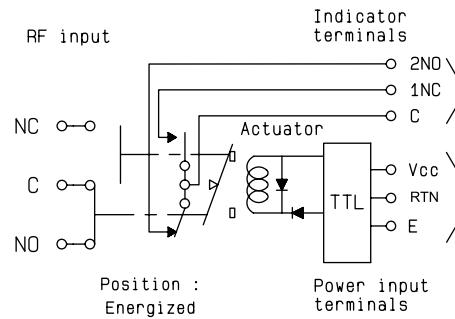
ACCESSORIES

A printed circuit board interface connector (ordered separately) has been designed for easy mounting on terminals.

For SPDT model R570 series => Radiall part number: **R599 910 000**

To download technical data sheets, visit www.radiall.com & enter the part number in the Search box.
For more detailed technical information please consult Radiall customer support.

FAILSAFE

WITHOUT OPTION
R570 -1- 000 / R572 -1- 000WITH INDICATOR CONTACT
R570 -2- 000WITH SUPPRESSION DIODES
R570 -1- 030WITH SUPPRESSION DIODES AND INDICATOR CONTACT
R570 -2- 030WITH TTL DRIVER
(suppression diodes are included)
R570 -1- 100WITH TTL DRIVER AND INDICATOR CONTACT
(suppression diodes are included)
R570 -2- 100

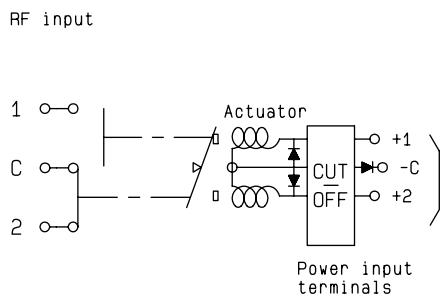
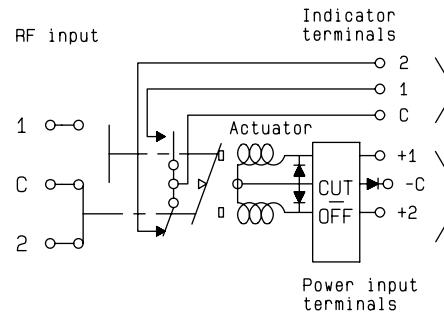
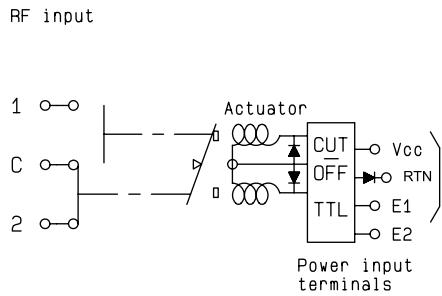
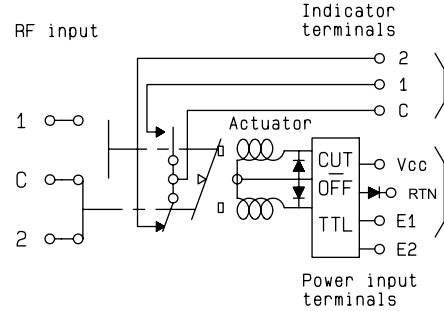
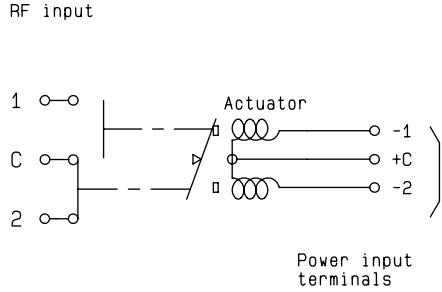
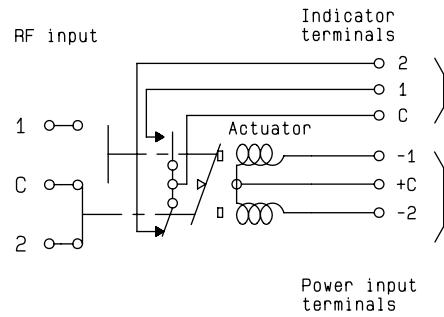
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For more detailed technical information please consult Radiall customer support.

LATCHING

WITHOUT OPTION R570 -3- 000 and R572 -3- 000 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>Power input terminals</p>	WITH INDICATOR CONTACT R570 -4- 000 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>Indicator terminals</p> <p>Power input terminals</p>
WITH SUPPRESSION DIODES R570 -3- 030 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>Power input terminals</p>	WITH SUPPRESSION DIODES AND INDICATOR CONTACT R570 -4- 030 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>Indicator terminals</p> <p>Power input terminals</p>
WITH TTL DRIVER (suppression diodes are included) R570 -3- 100 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>TTL</p> <p>Power input terminals</p>	WITH TTL DRIVER AND INDICATOR CONTACT (suppression diodes are included) R570 -4- 100 <p>RF input</p> <p>1 ○—○ C ○—○ 2 ○—○</p> <p>Actuator</p> <p>TTL</p> <p>Indicator terminals</p> <p>Power input terminals</p>

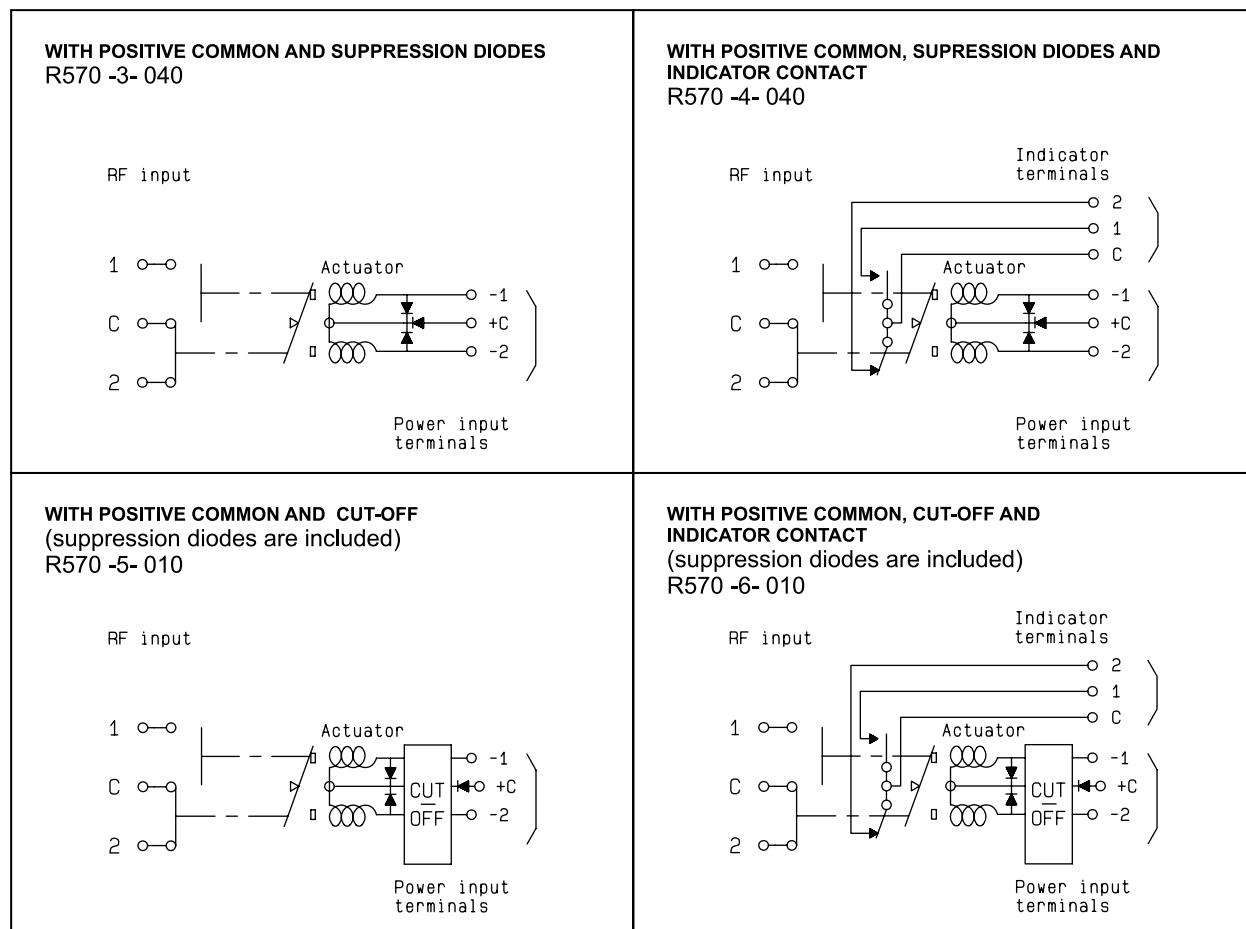
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LATCHING

WITH CUT-OFF
(suppression diodes are included)
R570 -5- 000WITH CUT-OFF AND INDICATOR CONTACT
(suppression diodes are included)
R570 -6- 000WITH CUT-OFF AND TTL DRIVER
(suppression diodes are included)
R570 -5- 100WITH CUT-OFF, TTL AND INDICATOR CONTACT
(suppression diodes are included)
R570 -6- 100WITH POSITIVE COMMON, NO OPTION
R570 -3- 010 / R572 -3- 010WITH POSITIVE COMMON AND INDICATOR CONTACT
R570 -4- 010

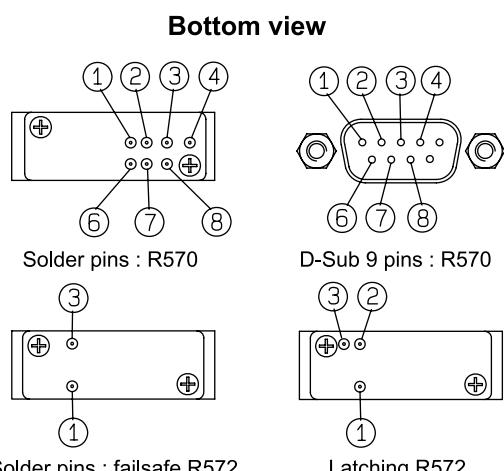
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LATCHING



PIN IDENTIFICATION

Type	PIN							
	1	2	3	4	5	6	7	8
Failsafe	+		-					
Failsafe + I.C.	+		-		2NO	1NC	C	
Failsafe + TTL	E		RTN	VCC				
Failsafe + I.C. + TTL	E		RTN	VCC	2NO	1NC	C	
Latching	-2 or +2	-1 or +1	+C or -C					
Latching + Cut-off	-2 or +2	-1 or +1	+C or -C		2	1	C	
Latching + I.C.	-2 or +2	-1 or +1	+C or -C					
Latching + I.C. + Cut-off	-2 or +2	-1 or +1	+C or -C		2	1	C	
Latching + TTL	E2	E1	RTN	VCC				
Latching + TTL + Cut-off	E2	E1	RTN	VCC	2	1	C	
Latching + TTL + I.C.	E2	E1	RTN	VCC	2	1	C	
Latching + TTL + I.C. + Cut-off	E2	E1	RTN	VCC	2	1	C	



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Optional Features for SPDT

COAXIAL SPDT
RELAYS

GENERAL

All miniature SPDT switches fitted with SMA, QMA, SMC, SMB or SMA2.9 connectors can be delivered with 34 mm narrow width RF body. Ask RADIALL for availability.



Examples of dedicated application options:



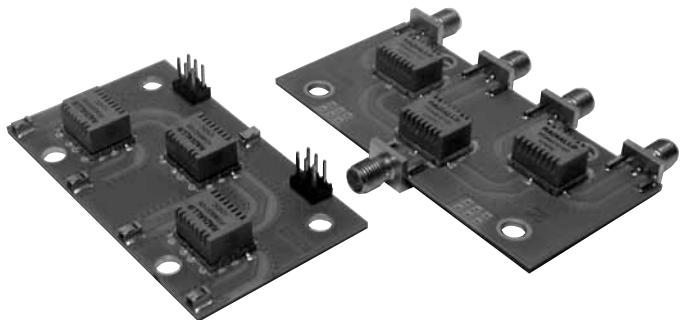
SMA SPDT with SINGLE input TTL driver. This option is available in latching configuration upon special request. Key advantages: Less wires, easier connection.



SPDT with HN coaxial connectors and MILC38999 circular connector for L band airbone applications.



SPDT models available for high power military applications (up to 100 watts CW from DC to 18 GHz).



A SP4T design up to 8 GHz with SMT relays mounted on a PCB fitted with UMP (Ultra Miniature Pressure) contact. Various switching configurations can be designed according to your specific requests.



A SMA SPDT with a specific RF body (with mounting leg) for easy mounting on front panel of switching matrix.

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