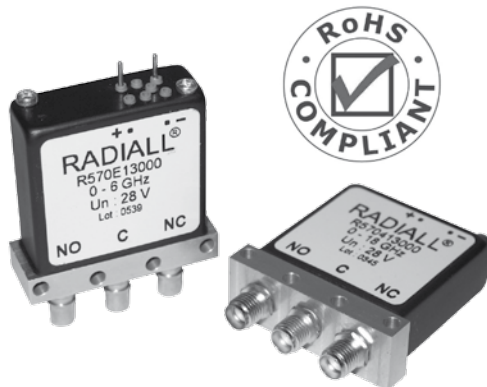


**SPDT up to 50 GHz****Pc Board - SMA - SMA2.9 - 2.4mm - QMA - SMC - SMB - mini SMB - DIN 1.6/5.6****COAXIAL SPDT  
RELAYS**

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)

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

**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)

(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)		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 <b>page 1-16</b>			
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 - 24 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		V.S.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	
		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 - 18 DC - 26.5	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](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.

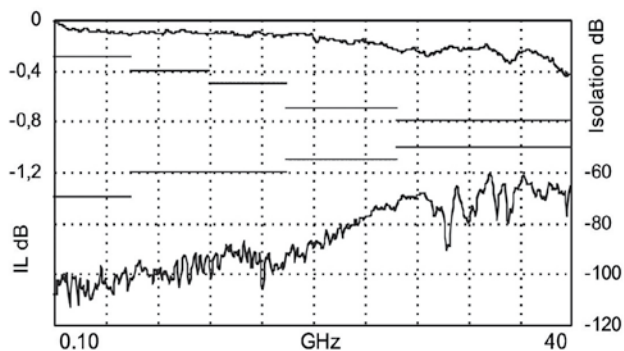
**SPDT up to 50 GHz**

Pc Board - SMA - SMA2.9 - 2.4mm - QMA - SMC - SMB - mini SMB - DIN 1.6/5.6

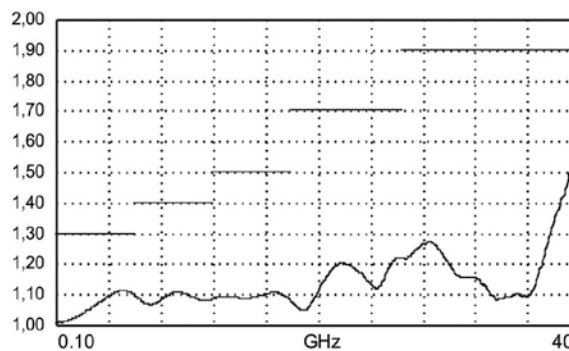
COAXIAL SPDT  
RELAYS**R570 AND R572 TYPICAL RF PERFORMANCES**

Example: SPDT SMA2.9 up to 40 GHz

Insertion Loss and Isolation

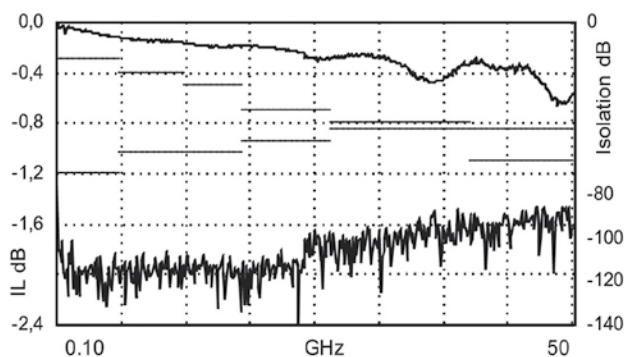


V.S.W.R.



Example: SPDT 2.4mm up to 50 GHz

Insertion Loss and Isolation

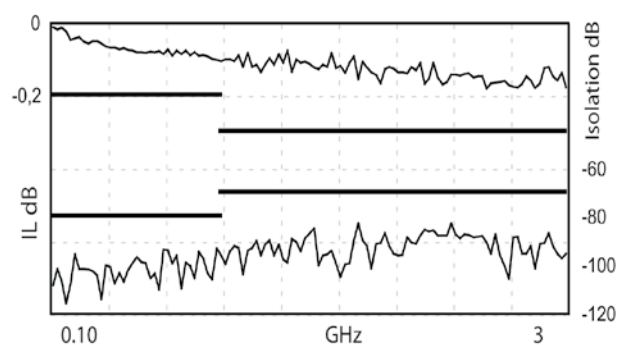


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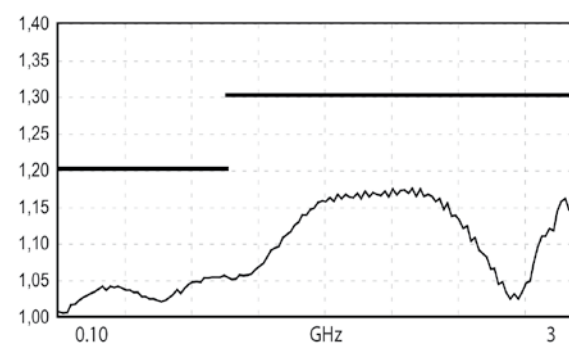


Example: SPDT mini SMB up to 3 GHz

Insertion Loss and Isolation



V.S.W.R.

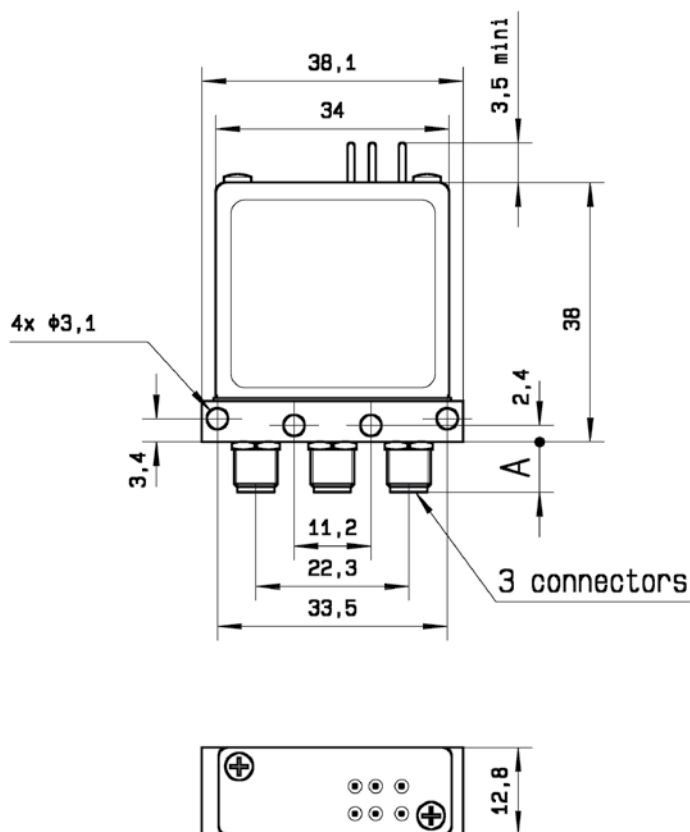
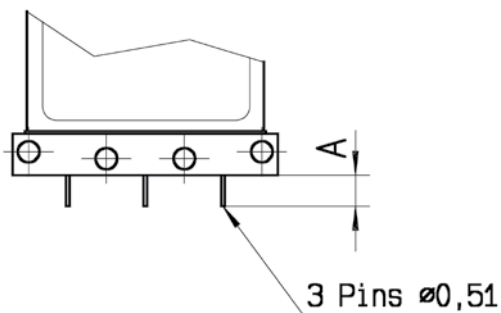


Note: see page 2-18 for other connectors.

To download technical data sheets, visit [www.radiall.com](http://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

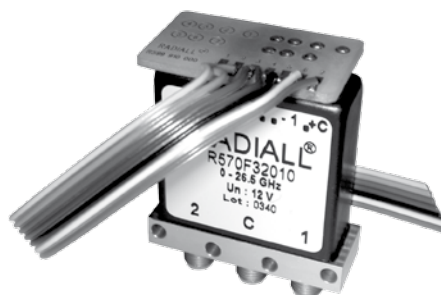
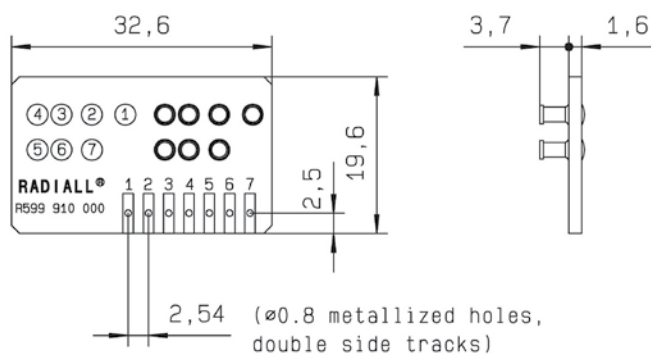


See page 2-27 for pin identification.

## 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](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.

# SPDT up to 18 GHz N - TNC - BNC

## COAXIAL SPDT RELAYS



RADIAL's RAMSES SPDT N, BNC & TNC switches are designed for high performance in RF & Microwave systems up to 18 GHz. With RADIAL'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](http://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 <b>page 1-16</b>			
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 temperatur erange		-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	50
		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	50
		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	50
		1 - 2	1.20	0.20	80	
		2 - 3	1.25	0.25	75	

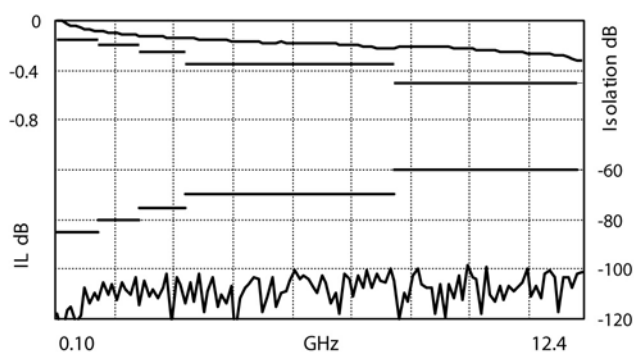
See page 2-22 for typical RF performances

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

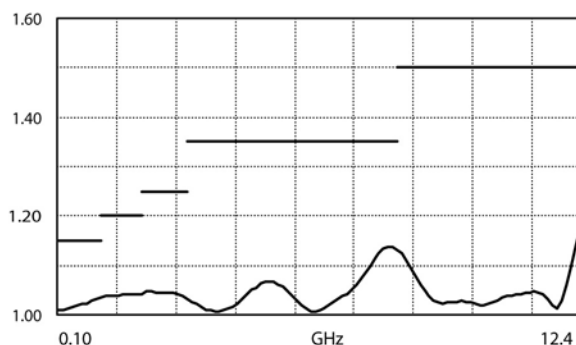
## R570 TYPICAL RF PERFORMANCES

Example: SPDT N and TNC up to 12.4 GHz

Insertion Loss and Isolation

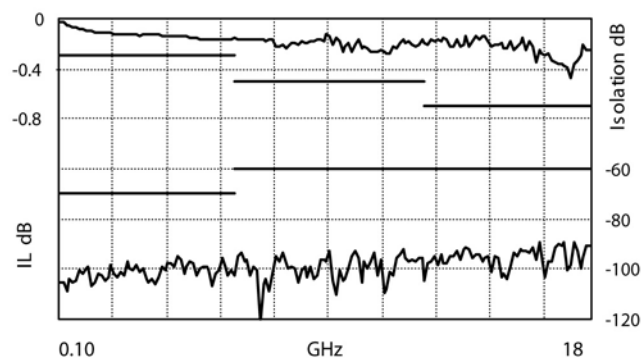


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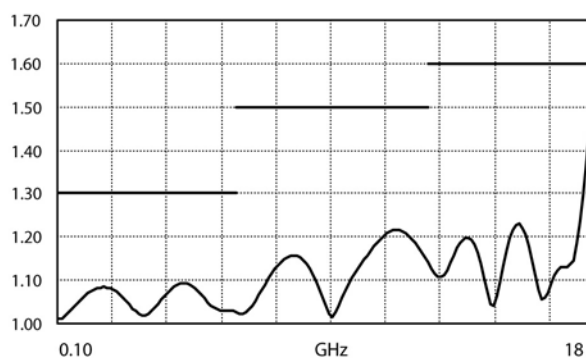


Example: SPDT TNC up to 18 GHz

Insertion Loss and Isolation



V.S.W.R.

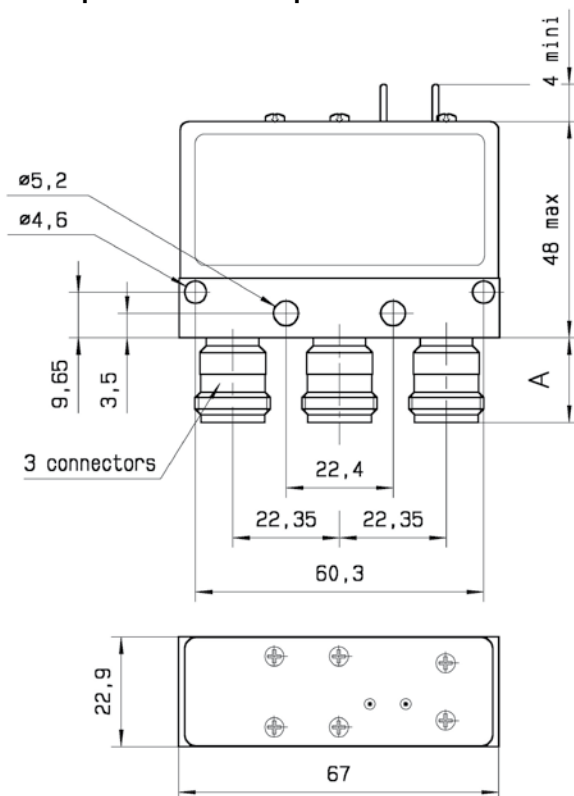


To download technical data sheets, visit [www.radiall.com](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.

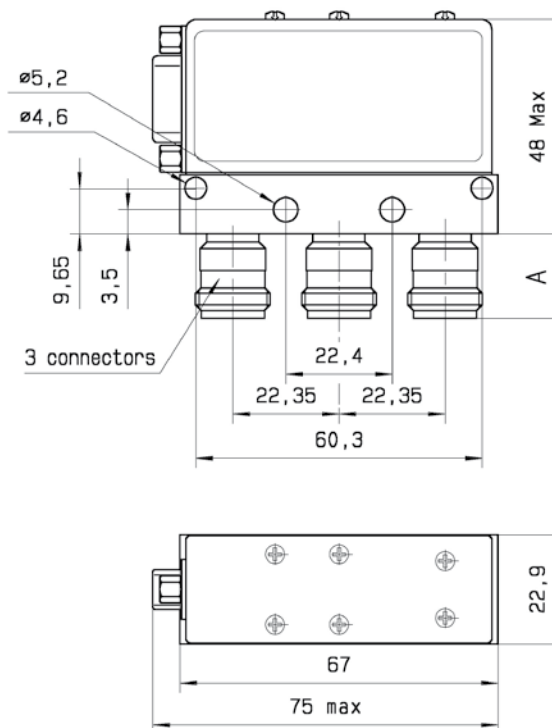


## TYPICAL OUTLINE DRAWING

### Example: SPDT N up to 12.4 GHz



**See page 2-27 for pin allocation**



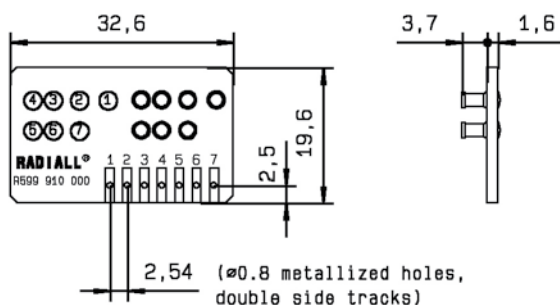
**See page 2-27 for D-Sub pin allocation**

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](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.



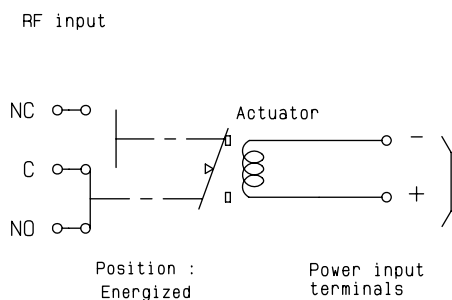
# COAXIAL SPDT - Electrical Schematics

## R570/R572 Series

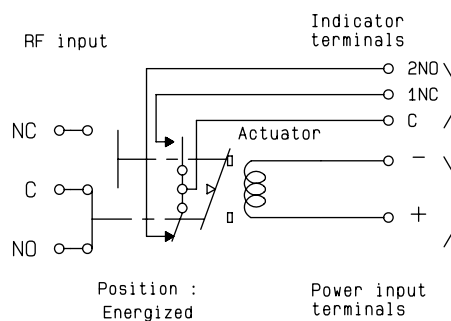
### COAXIAL SPDT RELAYS

## FAILSAFE

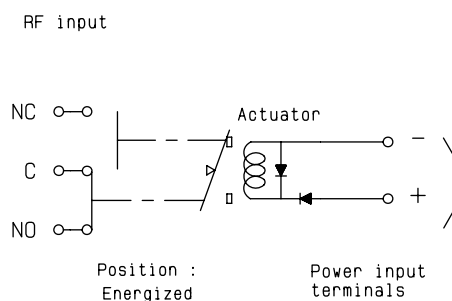
**WITHOUT OPTION**  
R570 -1- 000 / R572 -1- 000



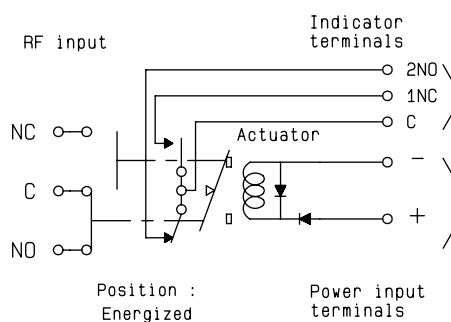
**WITH INDICATOR CONTACT**  
R570 -2- 000



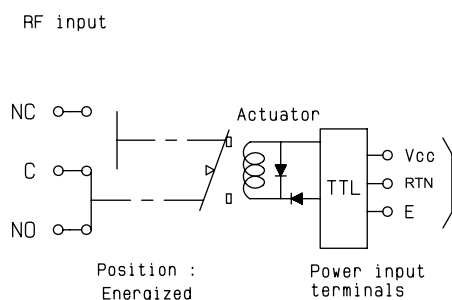
**WITH SUPPRESSION DIODES**  
R570 -1- 030



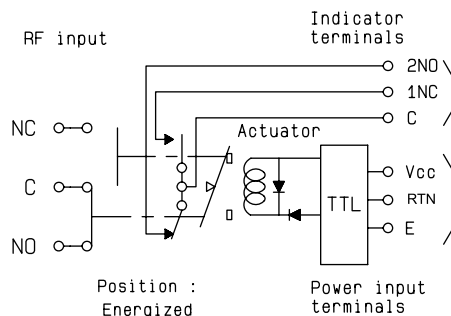
**WITH SUPPRESSION DIODES AND INDICATOR CONTACT**  
R570 -2- 030



**WITH TTL DRIVER**  
(suppression diodes are included)  
R570 -1- 100



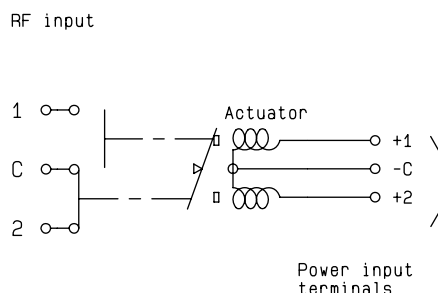
**WITH TTL DRIVER AND INDICATOR CONTACT**  
(suppression diodes are included)  
R570 -2- 100



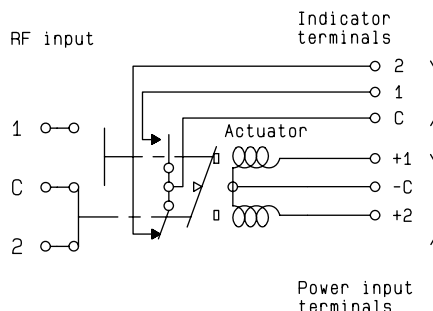
To download technical data sheets, visit [www.radiall.com](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.

# LATCHING

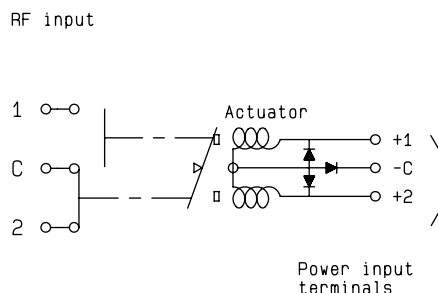
**WITHOUT OPTION**  
R570 -3- 000 and R572 -3- 000



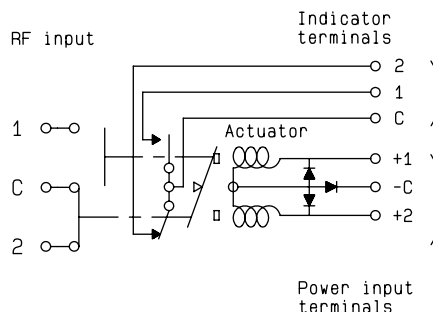
**WITH INDICATOR CONTACT**  
R570 -4- 000



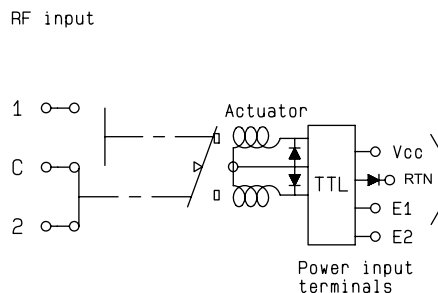
**WITH SUPPRESSION DIODES**  
R570 -3- 030



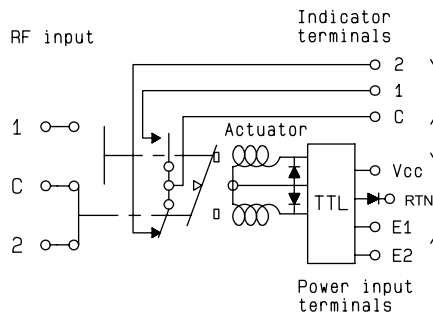
**WITH SUPPRESSION DIODES AND INDICATOR CONTACT**  
R570 -4- 030



**WITH TTL DRIVER**  
(suppression diodes are included)  
R570 -3- 100



**WITH TTL DRIVER AND INDICATOR CONTACT**  
(suppression diodes are included)  
R570 -4- 100



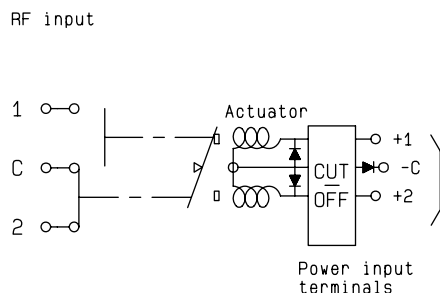
# COAXIAL SPDT - Electrical Schematics

## R570/R572 Series

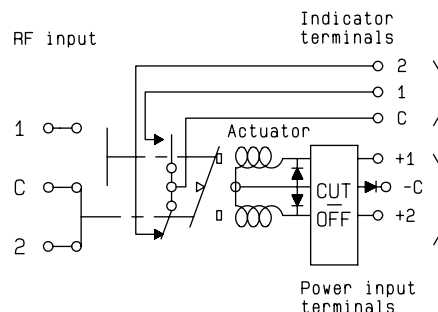
### COAXIAL SPDT RELAYS

## LATCHING

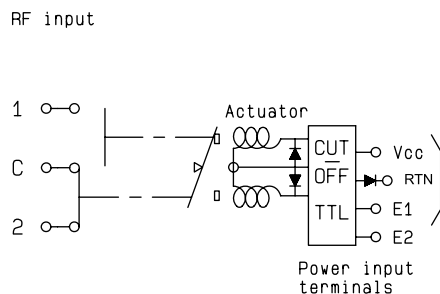
**WITH CUT-OFF**  
(suppression diodes are included)  
R570 -5- 000



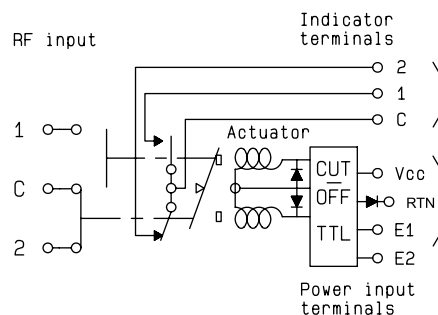
**WITH CUT-OFF AND INDICATOR CONTACT**  
(suppression diodes are included)  
R570 -6- 000



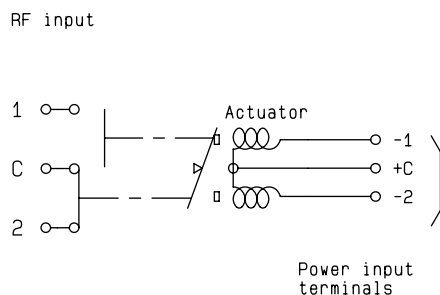
**WITH CUT-OFF AND TTL DRIVER**  
(suppression diodes are included)  
R570 -5- 100



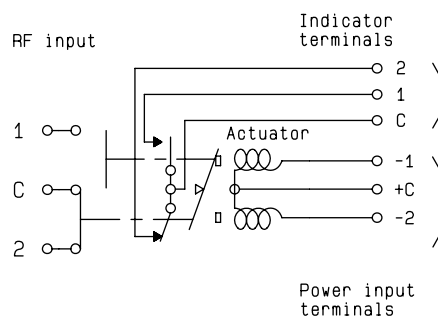
**WITH CUT-OFF, TTL AND INDICATOR CONTACT**  
(suppression diodes are included)  
R570 -6- 100



**WITH POSITIVE COMMON, NO OPTION**  
R570 -3- 010 / R572 -3- 010



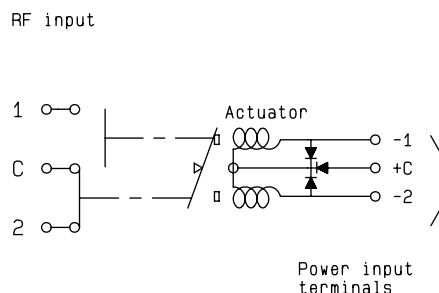
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R570 -4- 010



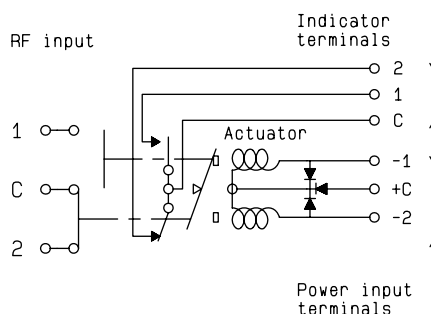
To download technical data sheets, visit [www.radiall.com](http://www.radiall.com) & enter the part number in the Search box.  
For more detailed technical information please consult Radiall customer support.

## LATCHING

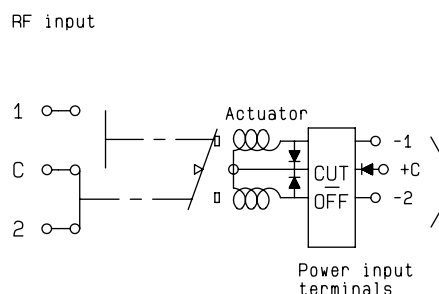
**WITH POSITIVE COMMON AND SUPPRESSION DIODES**  
R570 -3- 040



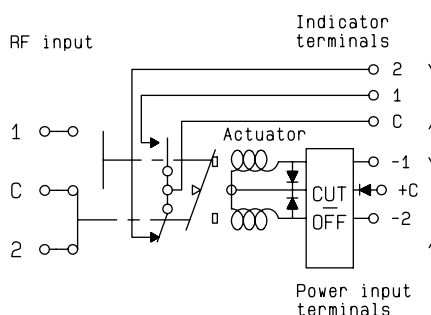
**WITH POSITIVE COMMON, SUPPRESSION DIODES AND INDICATOR CONTACT**  
R570 -4- 040



**WITH POSITIVE COMMON AND CUT-OFF**  
(suppression diodes are included)  
R570 -5- 010



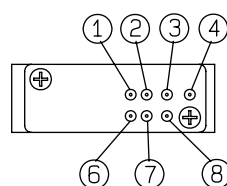
**WITH POSITIVE COMMON, CUT-OFF AND INDICATOR CONTACT**  
(suppression diodes are included)  
R570 -6- 010



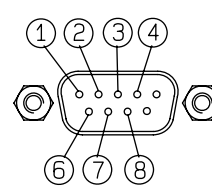
## PIN IDENTIFICATION

Type	PIN							
	1	2	3	4	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					
Latching + I.C.	-2 or +2	-1 or +1	+C or -C		2	1	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				
Latching + TTL + I.C.	E2	E1	RTN	VCC	2	1	C	
Latching + TTL + I.C. + Cut-off	E2	E1	RTN	VCC	2	1	C	

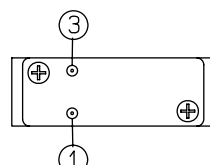
**Bottom view**



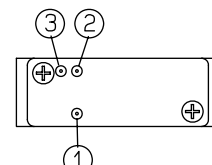
Solder pins : R570



D-Sub 9 pins : R570



Solder pins : failsafe R572



Latching R572

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

## 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:



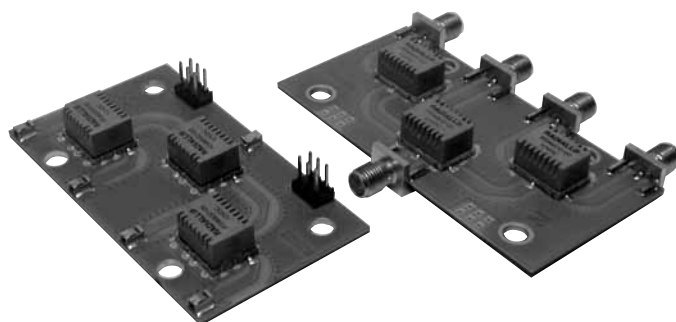
SMA SPDT with SINGLE input TTL driver. This option is available in latching configuration upon special request. Key advantages:  
Less wires, easier connection.



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

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