

High performance SPDT up to 40 GHz

SMA - SMA 2.9

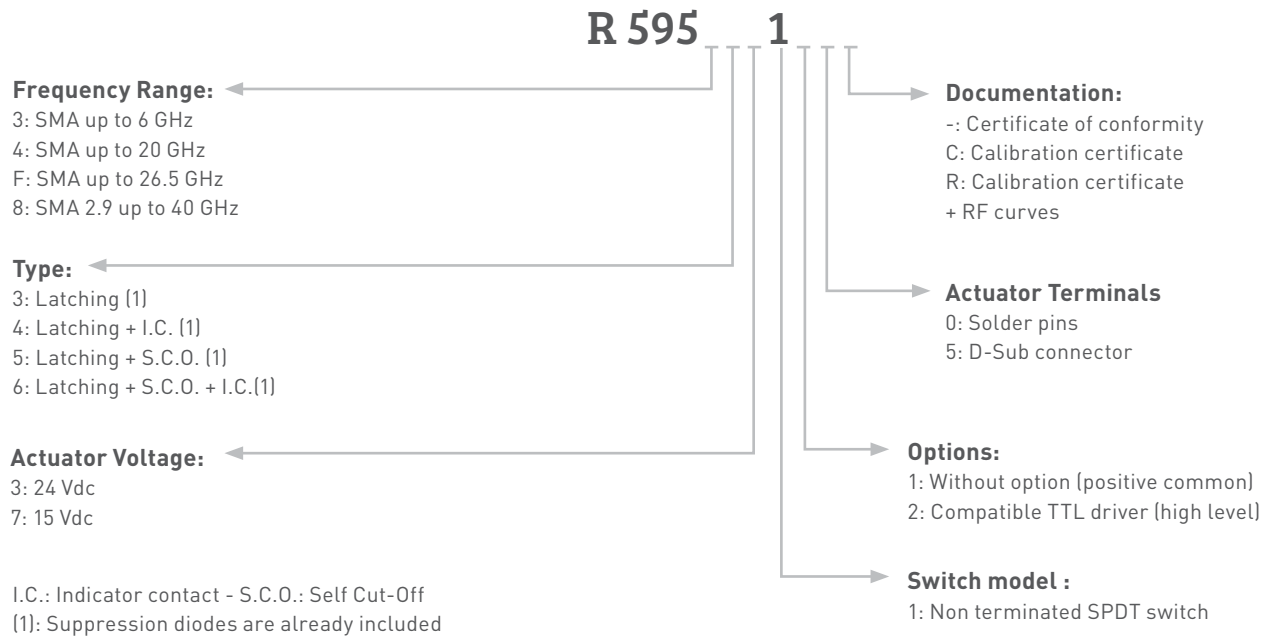


Radiall's PLATINUM series switches are optimised to perform at a high level over an extended life cycle, with outstanding RF performance, and a guaranteed insertion loss repeatability of 0.03 dB over a life span of 10 million switching cycles. PLATINUM series switches are perfect for automated test and measurement equipment, as well as signal monitoring devices.

Example of P/N:

R595443125 is a SPDT SMA 20 GHz, latching, 24Vdc, with TTL driver, Indicators, D-Sub connector.

PART NUMBER SELECTION



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GENERAL SPECIFICATIONS

Operating mode		Latching	
Nominal operating voltage (across temperature range)	Vdc	24 (24 to 30)	15 (12 to 20)
Coil resistance at 23°C (+/- 10%)	Ω	350	120
Operating current at 23°C	mA	68	125
TTL input	High level	3 to 7 Volts: 800µA max 7 Volts	
	Low level	0 to 0.8 Volts: 20µA max 0.8 Volts	
Switching time	ms	15	
Life (Min)	SMA	10 million cycles	
	SMA 2.9	5 million cycles	
Actuator terminals		D-Sub 9 pin female Solder pins	
Weight	g	60	

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range	Latching
Storage temperature range	-25°C to +75°C
Temperature cycling (MIL STD 202F, Method 107D, Cond.A)	-55°C to +85°C
Sine vibration operating (MIL STD 202, Method 204D, Cond.D)	-55°C to +85°C (10 cycles)
Random vibration operating	16.91g (rms) 50-2000 Hz 3min/axis
Shock operating (MIL STD 202, Method 213B, Cond.G)	50g / 11ms, sawtooth
Humidity operating	15 to 95% relative humidity
Humidity storage (MIL STD 202, Method 106E, Cond.E)	65°C, 95% RH, 10 days
Altitude operating	15,000 feet (4,600 meters)
Altitude storage (MIL STD 202, Method 105C, Cond.B)	50,000 feet (15,240 meters)

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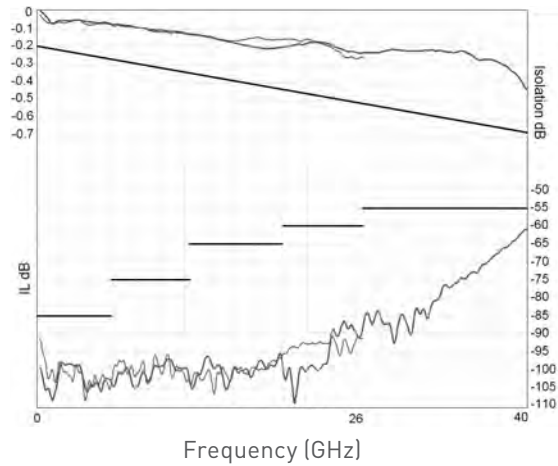
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RF PERFORMANCES

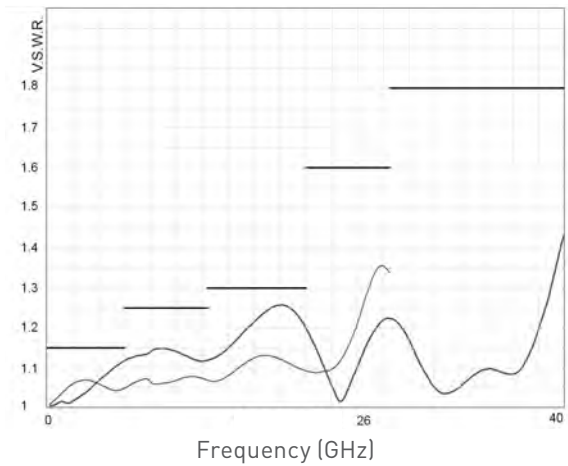
Part Number		R5953--1--	R5954--1--	R595F--1--	R595F--1--	
Frequency range	GHz	DC to 6	DC to 20	DC to 26.5	DC to 40	
Impedance	Ω	50				
Insertion Loss (Max)	dB	0.20 + (0.45 / 26.5) x frequency (GHz)				
Isolation (Min)	dB	85	DC to 6 GHz 6 to 12.4 GHz 12.4 to 20 GHz	85 75 65	DC to 6 GHz 6 to 12.4 GHz 12.4 to 20 GHz 20 to 26.5 GHz 26.5 to 40 GHz	85 75 65 60 55
V.S.W.R (Max)		1.15	DC to 6 GHz 6 to 12.4 GHz 12.4 to 18 GHz 18 to 20 GHz	1.15 1.25 1.30 1.60	DC to 6 GHz 6 to 12.4 GHz 12.4 to 18 GHz 18 to 26.5 GHz 26.5 to 40 GHz	1.15 1.25 1.30 1.60 1.80
Repeatability (up to 10 million cycles measured at 25°C)	dB	0.03 dB maximum			0.05 dB maximum	

TYPICAL RF PERFORMANCES

Insertion Loss and Isolation



V.S.W.R.



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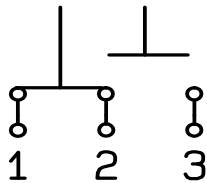
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SWITCH MODEL: NON TERMINATED SPDT SWITCH

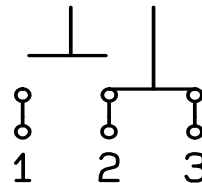
The non terminated SPDT switch is a single pole double throw switch. This switch is considered "break before make".

RF SCHEMATIC DIAGRAM

Position E1

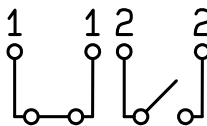


Position E2

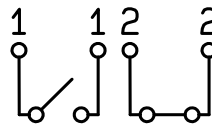


POSITION INDICATOR

State 11



State 22



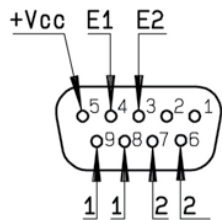
Standard drive option "1"

(Positive common):

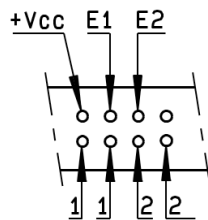
- Connect pin +Vcc to supply (+20 Vdc to +32 Vdc)
- Select desired RF path by applying ground to the corresponding "close" pin (Ex: ground pin E1 to switch to position E1. RF path 1-2 closed and RF path 2-3 open)
- To open desired path and close the new RF path, connect ground to the corresponding "close" pin (Ex: ground pin E2 to open RF path 1-2 and close RF path 2-3)

TTL drive option "2"

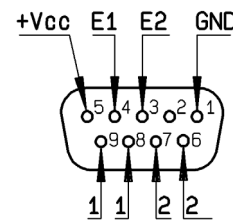
- Connect pin GND to ground
- Connect pin +Vcc to supply (+20 Vdc to +32 Vdc)
- Select (close) desired RF path by applying TTL "High" to the corresponding "drive" pin (Ex: apply TTL "High" to pin E1 to switch to position E1. RF path 1-2 closed and RF path 2-3 open)
- To open desired path and close the new RF path, apply TTL "High" to the "drive" pin which corresponds to the desired RF path (Ex: apply TTL "High" to pin E2)



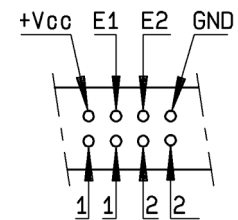
D-Sub connector



Solder pins



D-Sub connector



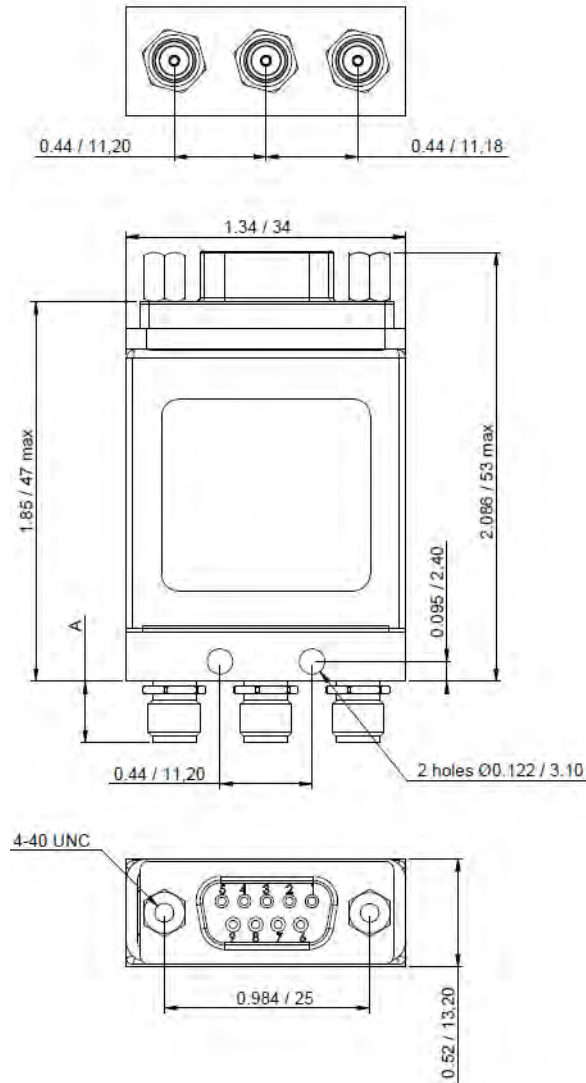
Solder pins

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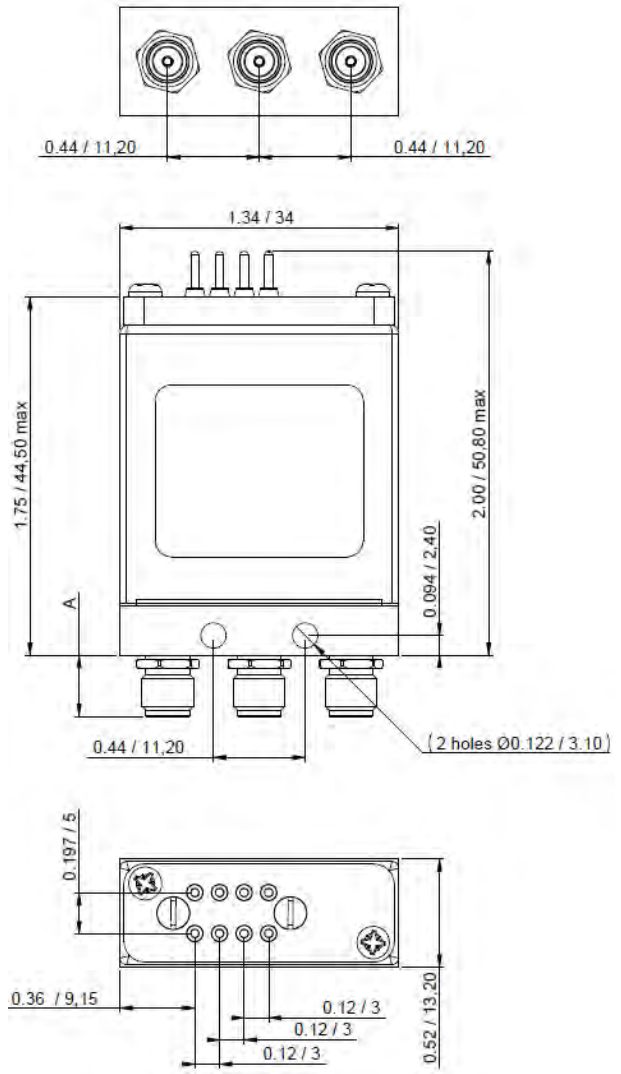
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TYPICAL OUTLINE DRAWING

With D-Sub connector



With solder pins



All dimensions are in inches/millimeters

Connectors	A max (mm)
SMA	7.4
SMA 2.9	6.3

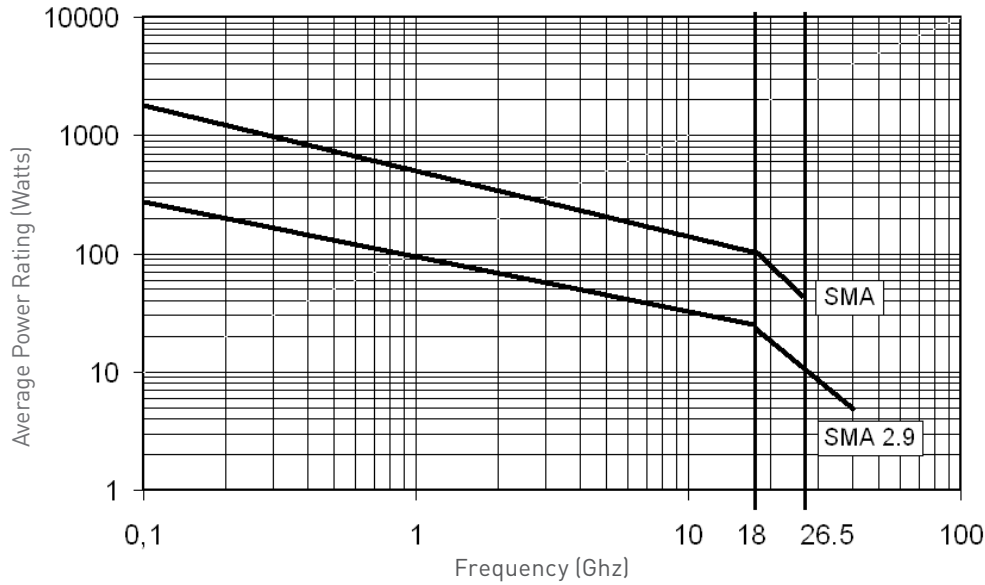
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RF POWER RATING CHART

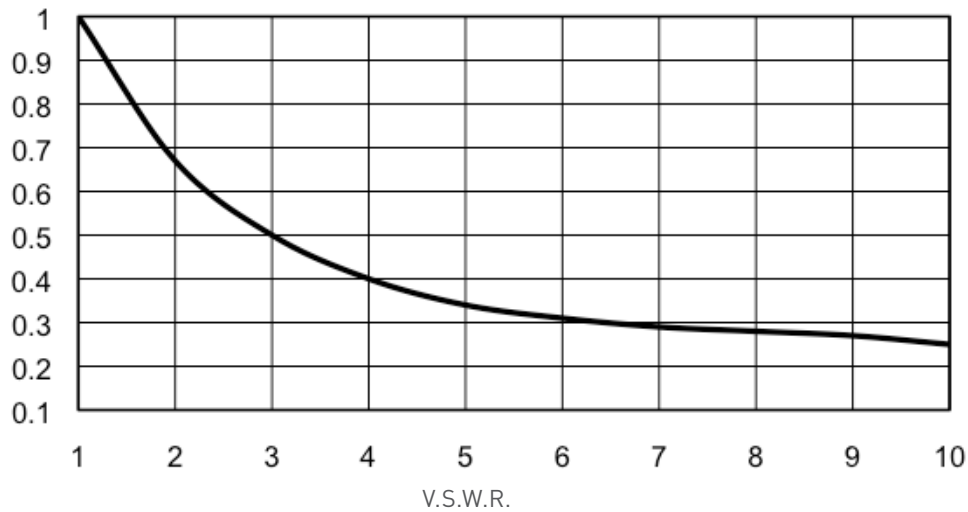
This graph is based on the following conditions:

- Ambient temperature: + 25°C
- Sea level
- V.S.W.R.: 1 and cold switching



DERATING FACTOR VERSUS VSWR

The average power input must be reduced for load V.S.W.R. above 1:1



Optional Features for SPDT

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. Contact Radiall sales directly for availability.

Examples of dedicated application options:



SMA SPDT with a SINGLE input TTL driver. This option is available in a latching configuration upon special request. Key advantages include less wires and 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.