## *SPDT Low PIM up to 18 GHz*


To meet growing market demands created by the deployment of 4G/LTE networks, Radiall has introduced a new range of Low PIM switches. RAMSES SPDT Low PIM switches are perfectly suited for RF test systems and test benches requiring excellent passive intermodulation performance up to 18 GHz; with a guarantee PIM performance of -160 dBc @ +43 dBm over a life span of 2 million switching cycles.

These products are specific to instrumentation and telecommunication applications.

Example of P/N:
R570413030LP is a SPDT Low PIM SMA 18 GHz, failsafe, 28 Vdc, with supression diodes, solder pins.

## PART NUMBER SELECTION

**R 570 ... LP**

**Frequency Range:**
1: N up to 12.4 GHz
4: SMA 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 Terminals:**
0: Solder pins
5: D-Sub connector [4]

**Options:**
0: Without option
1: Positive common [2]
3: With suppression diodes
4: With suppression diodes and positive common [2]

**TTL Option:**
0: Without TTL driver
1: With TTL driver [1] [3]

I.C.: Indicator contact - S.C.O.: Self Cut-Off
(1): Suppression diodes are already included in Self Cut-OFF & TTL option
(2): Positive common shall be specified only with type 3, 4, 5 & 6 because failsafe models can be used with both polarities
(3): Polarity is not relevant to application for switches with TTL driver
(4): Only available for N models

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## GENERAL SPECIFICATIONS

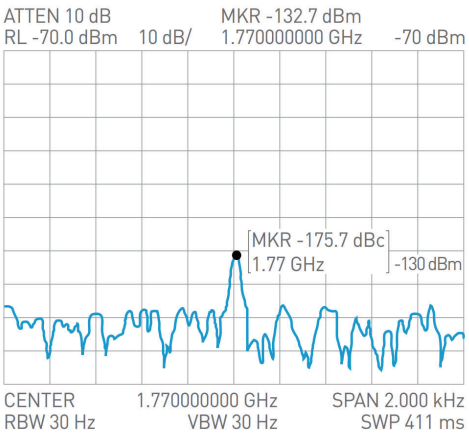
| Operating mode | | | Failsafe | | Latching | |
|---|---|---|---|---|---|---|
| Nominal operating voltage (across operating temperature) | | Vdc | 12 (10.2 to 13) | 28 (24 to 30) | 12 (10.2 to 13) | 28 (24 to 30) |
| Coil resistance at 23°C (+/-10%) | SMA | Ω | 47.5 | 275 | 58 | 350 |
| | N | | 38 | 200 | 38 | 225 |
| Operating current at 23°C | SMA | mA | 250 | 102 | 210 | 80 |
| | N | | 320 | 140 | 320 | 125 |
| Average power | | | See Power Rating Chart on page 1-16 | | | |
| TTL input | | High Level | 2.2 to 5.5 V (TTL Option ) / 3.5 to 5.5 V ( BCD Option) | | | |
| | | Low Level | 0 to 0.8 V (TTL Option ) / 0 to 1.5 V ( BCD Option) | | | |
| Indicator rating | | | 1 Watt / 30 Volts / 100 mA | | | |
| Switching time | | ms | 15 ms | | | |
| Life (Min) | | | 2 million cycles | | | |
| Connectors | | | SMA - N | | | |
| 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.D) | | | 10-2000 Hz - 20 g operating | | | |
| Shock (MIL STD 202, method 213B, cond.C) | | | 100 g / 6 ms - ½ sine operating | | | |

*Reset: supply voltage time 1 sec. max./duty cycle 10%

## RF PERFORMANCE

| Connectors | Number of positions | Frequency Range GHz | | V.S.W.R. (max) | Insertion loss (max) dB | Isolation (min) dB | Impedance Ω | Third order intermodulation |
|---|---|---|---|---|---|---|---|---|
| SMA | 4 and 6 | DC - 18 | DC - 3 | 1.20 | 0.20 | 80 | 50 | -160 dBc @ +43 dBm (2 carriers 20 W) |
| | | | 3 - 8 | 1.30 | 0.30 | 70 | | |
| | | | 8 - 12.4 | 1.40 | 0.40 | 60 | | |
| | | | 12.4 - 18 | 1.50 | 0.50 | 60 | | |
| N | | DC - 12.4 | DC - 3 | 1.20 | 0.20 | 80 | | |
| | | | 3 - 8 | 1.35 | 0.35 | 70 | | |
| | | | 8 - 12.4 | 1.50 | 0.50 | 60 | | |

## OUTSTANDING PIM PERFORMANCE




### Passive Intermodulation

| | |
|---|---|
| **Tone 1** | 1810 MHz, approximately 43 dBm |
| **Tone 2** | 1850 MHz, approximately 43 dBm |
| **3rd order PIM** | 160 dBc at 1770 MHz |

Depending on application, carrier powers and frequencies, PIM measurements can vary. PIM testing is not measured during product acceptance test.

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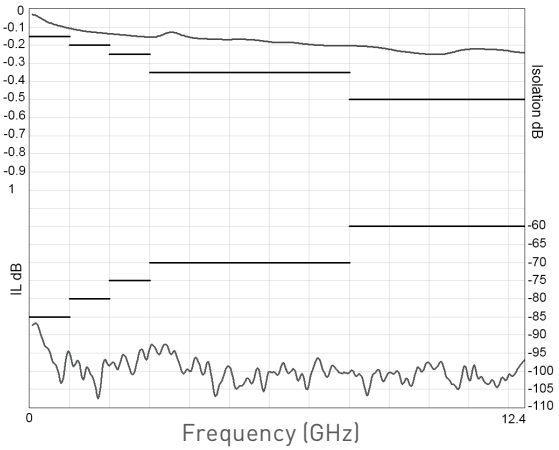
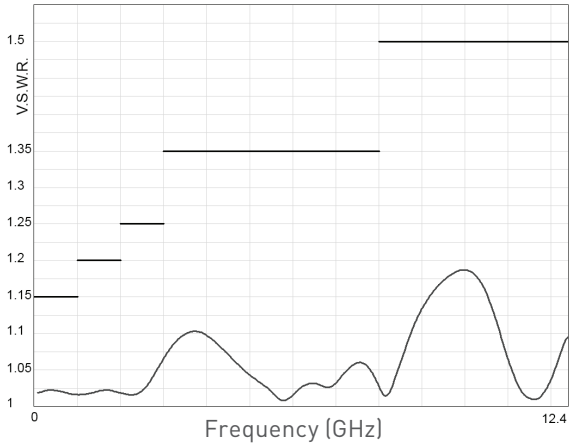
# TYPICAL RF PERFORMANCE

**Example: SPDT N up to 12.4 GHz**

### Insertion Loss and Isolation

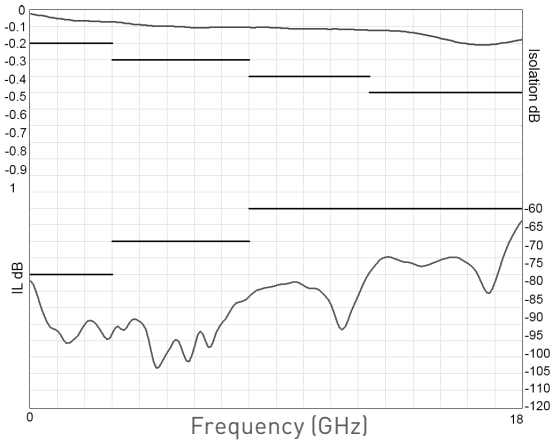



### V.S.W.R.

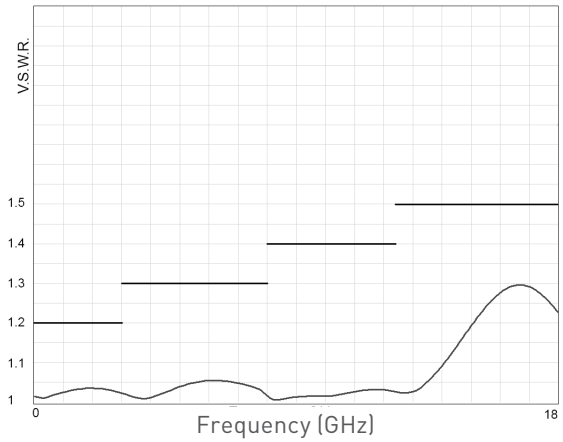



**Example: SPDT SMA up to 18 GHz**

### Insertion Loss and Isolation




### V.S.W.R.

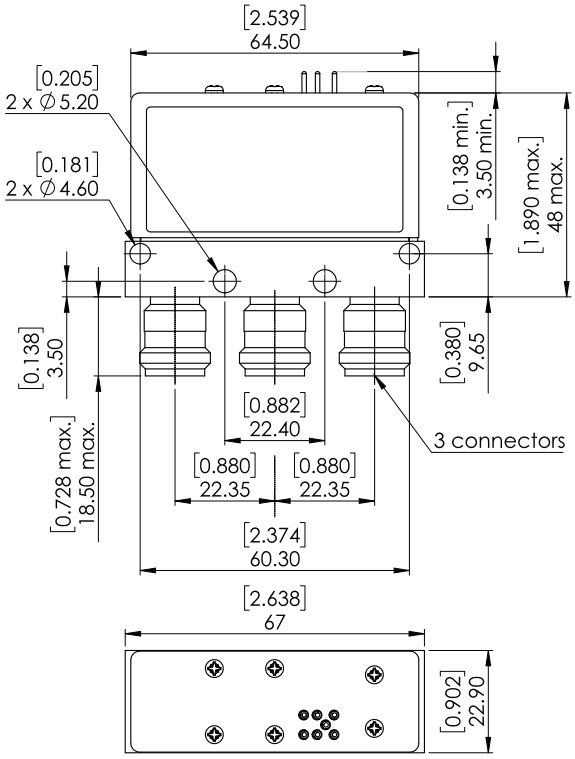



See electrical schematics from page 2-20 to 2-23.

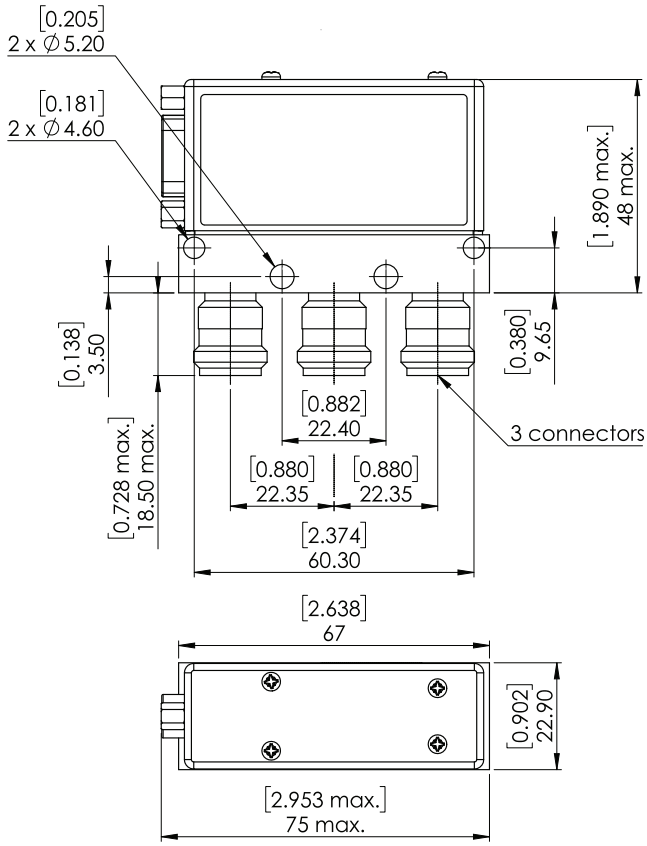
## *SPDT Low PIM up to 18 GHz*

### TYPICAL OUTLINE DRAWING

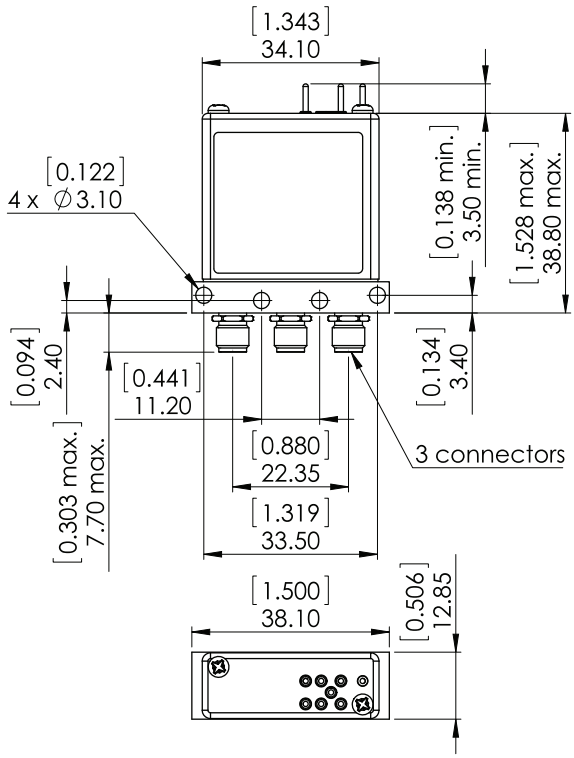
**Example: SPDT N up to 12.4 GHz with pins**




**Example: SPDT N up to 12.4 GHz with D-sub**




**Example: SPDT SMA up to 18 GHz**




All dimensions are in millimeters [inches].