

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

**Visit our website - *Click HERE***

## DP3T-SPDT Coaxial Switches DC to 6 GHz, DC to 20 GHz, DC to 26.5 GHz, DC to 40 GHz

Radiall's PLATINUM SERIES switches are optimized to perform at a high level over an extended life span. With outstanding RF performances, 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.

PART NUMBER SELECTION

**R 5 9 5 _ _ _ _ _ _ _**

**RF Connectors :**
**3 : SMA up to 6 GHz**
**4 : SMA up to 20 GHz**
**F : SMA up to 26.5 GHz**
**8 : SMA 2.9 up to 40 GHz (1)**

**TYPE :**
**3 : Latching**
**4 : Latching + Indicators**
**5 : Latching + Self Cut-Off**
**6 : Latching + Self Cut-Off + Indicators**

**ACTUATOR VOLTAGE :**
**3 : 24Vdc**
**7 : 15Vdc**

**DOCUMENTATION :**
**- : Certificate Of Conformity**
**C : Calibration certificate**
**R : Calibration certificate + RF curves**

**ACTUATOR TERMINAL :**
**0 :Solder pins**
**5 : D-Sub connector**

**OPTIONS :**
**1 : Without option (Positive common)**
**2 : Compatible TTL driver (High level)**

**Switch model :**
**1 : Non terminated SPDT switch**
**2 : Terminated SPDT switch**
**3 : Terminated 4 port bypass switch**
**4 : Non terminated 5 port DP3T switch**

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

PICTURE

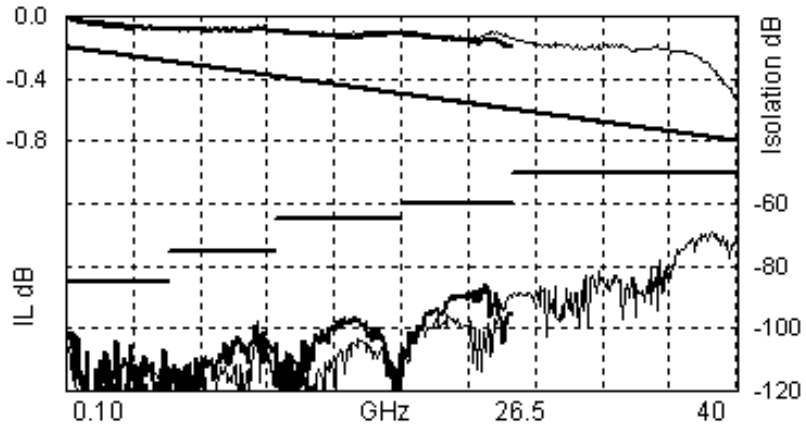


This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

RF PERFORMANCES

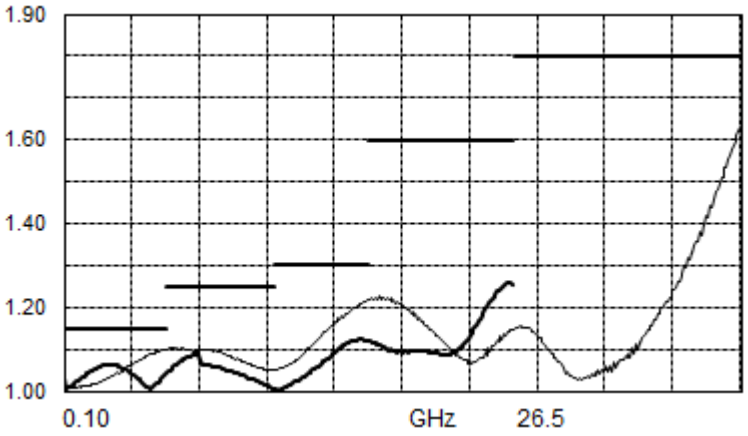
| **PART NUMBER** | **R5953-----** | **R5954-----** | **R595F-----** | **R5958-----** |
|---|---|---|---|---|
| **Frequency Range** GHz | DC to 6 | DC to 20 | DC to 26.5 | DC to 40 |
| **Impedance** Ohms | 50 | | | |
| **Insertion Loss dB (Maximum)** | 0.20 + (0.45 / 26.5) x frequency (GHz) | | | |
| **Isolation dB (Minimum)** | 85 | DC to 6 GHz : 85<br>6 to 12.4 GHz : 75<br>12.4 to 20 GHz : 65 | DC to 6 GHz : 85<br>6 to 12.4 GHz : 75<br>12.4 to 20 GHz : 65<br>20 to 26.5 GHz : 60 | DC to 6 GHz : 85<br>6 to 12.4 GHz : 75<br>12.4 to 20 GHz : 65<br>20 to 26.5 GHz : 60<br>26.5 to 40 GHz : 55 |
| **V.S.W.R. (Maximum)** | 1.15 | DC to 6 GHz : 1.15<br>6 to 12.4 GHz : 1.25<br>12.4 to 20 GHz : 1.30 | DC to 6 GHz : 1.15<br>6 to 12.4 GHz : 1.25<br>12.4 to 20 GHz : 1.30<br>20 to 26.5 GHz : 1.60 | DC to 6 GHz : 1.15<br>6 to 12.4 GHz : 1.25<br>12.4 to 20 GHz : 1.30<br>18 to 26.5 GHz : 1.60<br>26.5 to 40 GHz : 1.80 |
| **Third order Inter Modulation** | -120 dBc typical (2 carriers 20W) | | | |
| **Repeatability** (up to 10 million cycles measured at 25°C) | 0.03 dB maximum | | | 0.05 dB maximum |

TYPICAL RF PERFORMANCES




**Insertion Loss and Isolation :**

**26.5GHz model with SMA connector**
**40GHz model with SMA2.9 connector**




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

**26.5GHz model with SMA connector**
**40GHz model with SMA2.9 connector**

This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

ADDITIONAL SPECIFICATIONS

| **Operating mode** | | **Latching** | | |
|---|---|---|---|---|
| **Nominal operating voltage (Vdc)** (across operating temperature) | | | **24** (20 / 32) | **15** (12 / 20) |
| **Coil resistance (+/-10%) (Ohms)** | | SPDT | 350 | 120 |
| | | Terminated SPDT, DP3T, Bypass | 175 | 60 |
| **Nominal operating current at 23°C (mA)** | | SPDT | 68 | 125 |
| | | Terminated SPDT, DP3T, Bypass | 140 | 250 |
| **Average power** | **All models** | RF path | Cold switching : See Power Rating Chart on final page<br>Hot switching : 1 Watt CW | |
| | **Terminated model** | Internal terminations | 1 Watt average into 50Ω | |
| | | External terminations | 0.5 Watt average into 50Ω | |
| **TTL input** | **High Level** | 3 to 7 V | | 800 µA max at 7 V |
| | **Low Level** | 0 to 0.8 V | | 20 µA max at 0.8V |
| **Switching time max (ms)** | | 15 | | |
| **Life min for** | **SMA** | 10 million cycles | | |
| | **SMA 2.9** | 5 million cycles | | |
| **Connectors** | | SMA – SMA 2.9 | | |
| **Actuator terminal** | | D-Sub pin female<br>Solder pins | | |
| **Weight max (g)** | **SPDT** | < 60 | | |
| | **Terminated SPDT, DP3T, Bypass** | < 100 | | |

ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| **Operating temperature range** (°C) | -25 to +75 |
| **Storage temperature range** (°C) | -55 to +85 |
| **Temperature cycling** (MIL-STD-202 , Method 107D , Cond.A) (°C) | -55 to +85 (10 cycles) |
| **Sine vibration operating** (MIL STD 202 , Method 204D , Cond.D) | 10-2000 Hz, 20g |
| **Random vibration operating** | 16.91g (rms) 50–2000 Hz 3min/axis |
| **Shock operating** (MIL STD 202 , Method 213B , Cond.G) | 50g / 11 ms, 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) |

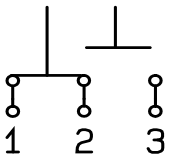
This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

## SWITCH MODEL 1: NON TERMINATED SPDT SWITCH

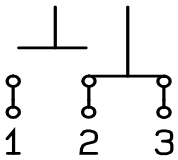
The non-terminated SPDT switch is a single pole double throw switch. This switch is “break before make”.

RF SCHEMATIC DIAGRAM

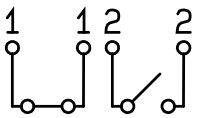
**Position E1**



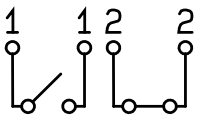

**Position E2**




INDICATORS POSITION

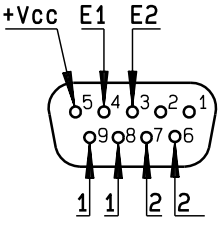



**State “11”**

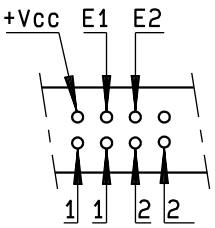



**State “22”**

**Standard drive option “1” (Positive common):**
- Connect pin +Vcc to supply
- 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)



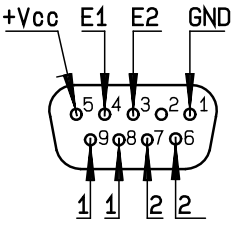

**D-Sub connector**



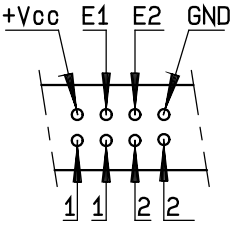

**Solder pins**

**TTL drive option “2”**
- Connect pin GND to ground.
- Connect pin +Vcc to supply
- 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 to open RF path 1-2 and close RF path 2-3).




**D-Sub connector**

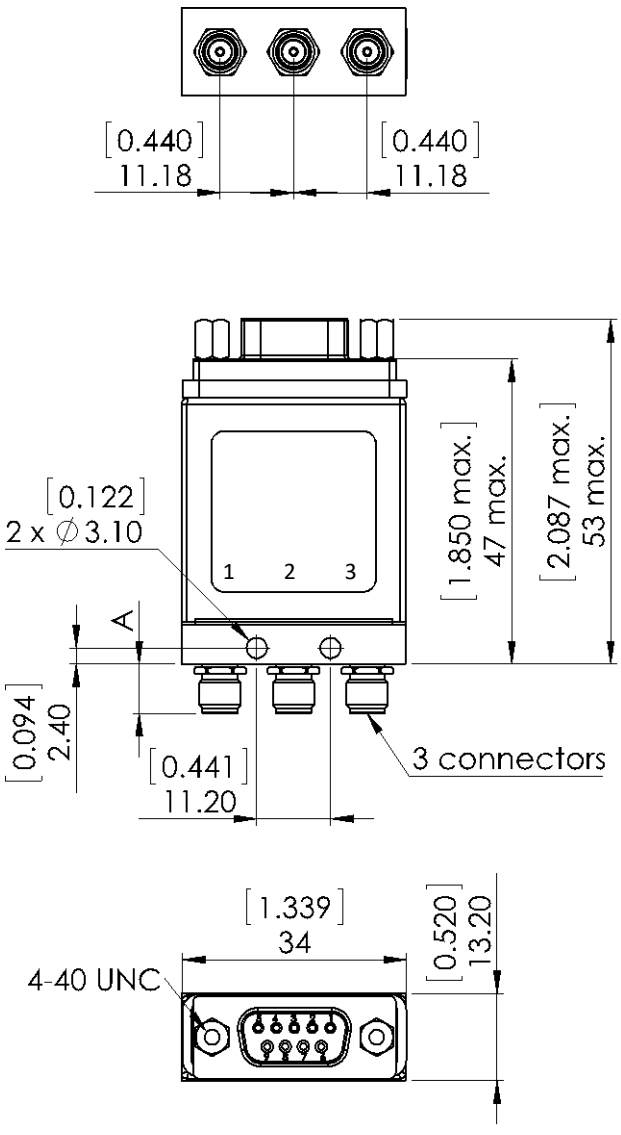



**Solder pins**

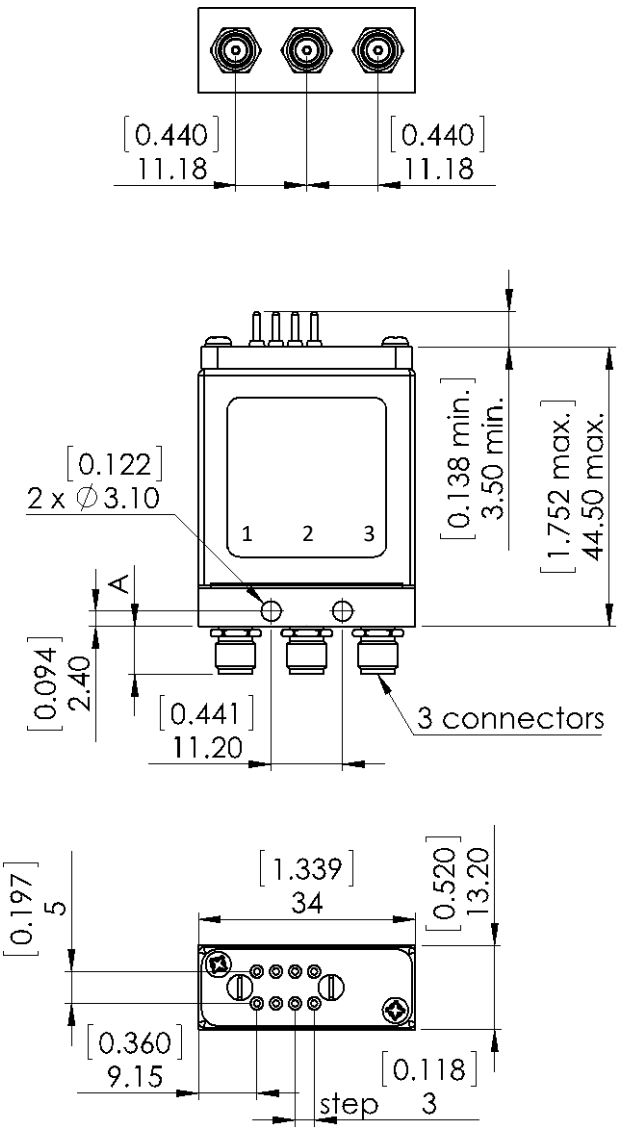
This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

All dimensions are in millimeters [inches].

**With D-Sub connector**




**With solder pins**




| Connectors | A max mm [inches] |
|---|---|
| SMA up to 26.5GHz | 7.7 [0.303] |
| SMA 2.9 up to 40GHz | 6.7 [0.264] |

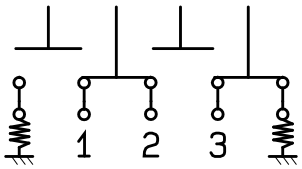
This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

## SWITCH MODEL 2: TERMINATED SPDT SWITCH

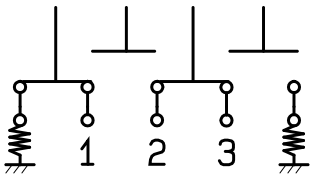
The-terminated SPDT switch is a single pole double throw switch. The unused ports are terminated into 50ohms. This switch is “break before make”.

### RF SCHEMATIC DIAGRAM

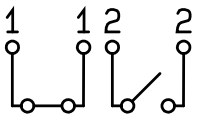
**Position E1**



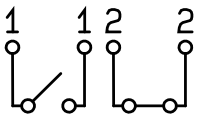

**Position E2**




### INDICATORS POSITION



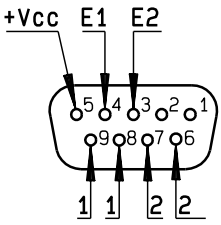

**State “11”**



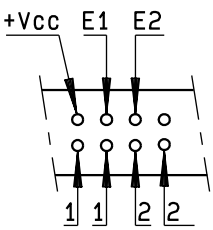

**State “22”**

**Standard drive option “1” (Positive common):**

- Connect pin +Vcc to supply
- 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)




**D-Sub connector**

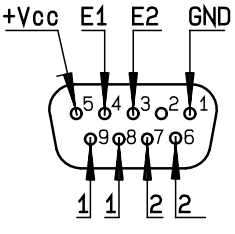



**Solder pins**

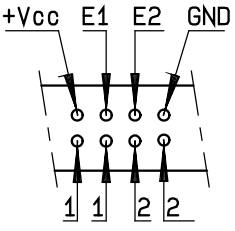
**TTL drive option “2”**

- Connect pin GND to ground.
- Connect pin +Vcc to supply
- 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 to open RF path 1-2 and close RF path 2-3).




**D-Sub connector**

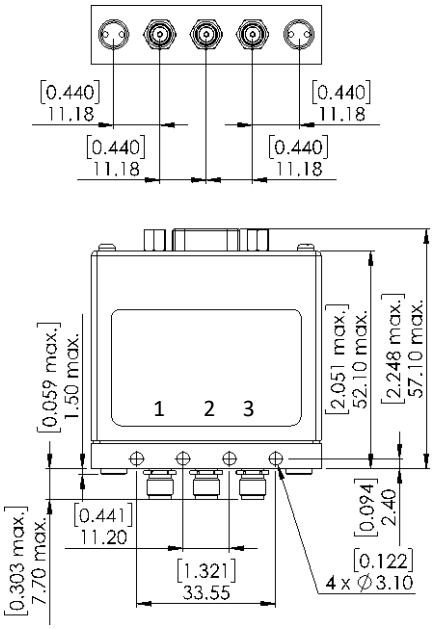



**Solder pins**

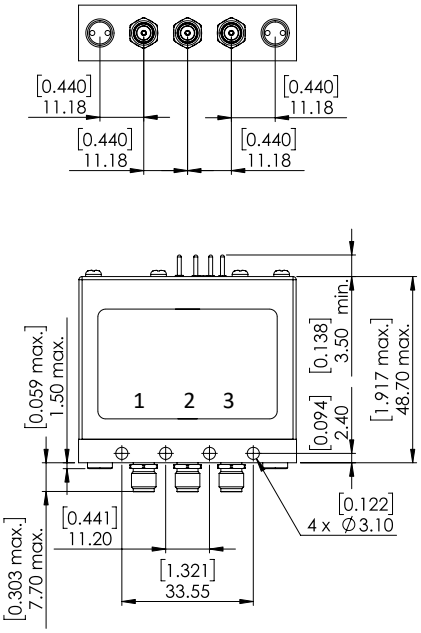
This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

All dimensions are in millimeters [inches].

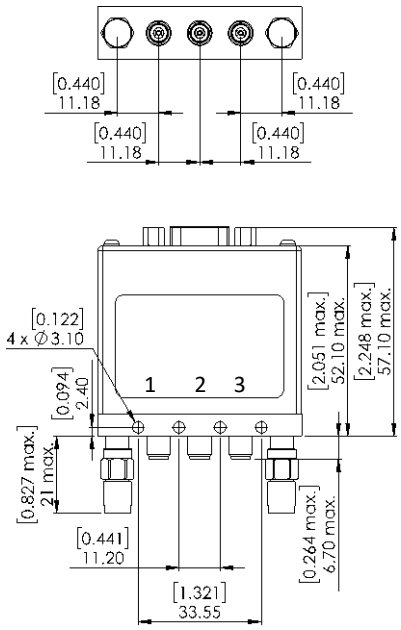
### Model SMA with D-Sub connector



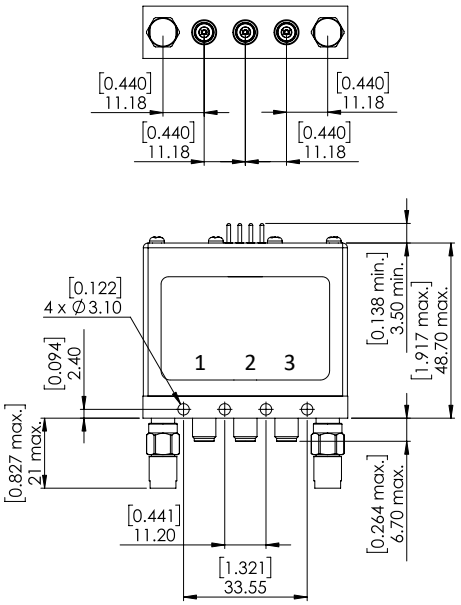

### Model SMA with solder pins



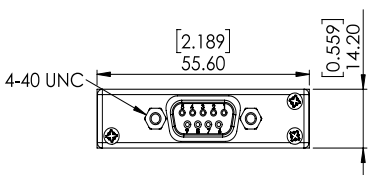

### Model SMA2.9 with D-Sub connector



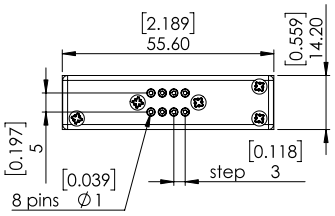

### Model SMA2.9with solder pins




### TOP view - D-Sub connector




### TOP view - solder pins



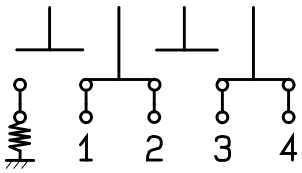

This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

## SWITCH MODEL 3: TERMINATED 4 PORT BYPASS SWITCH

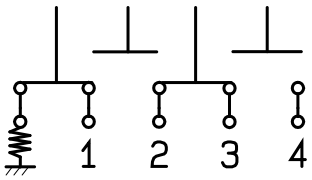
The terminated 4 port bypass switch can terminate into 50 ohms the device under test. These switches are “break before make”.

### RF SCHEMATIC DIAGRAM

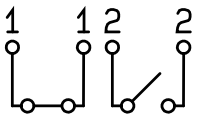
**Position E1**



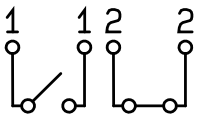

**Position E2**




### INDICATORS POSITION

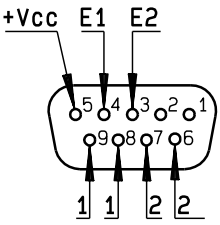



**State “11”**

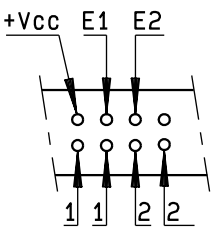



**State “22”**

**Standard drive option “1” (Positive common):**
- Connect pin +Vcc to supply
- 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)



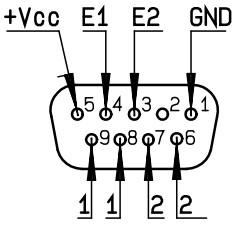

**D-Sub connector**



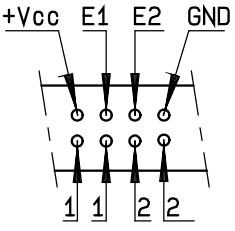

**Solder pins**

**TTL drive option “2”**
- Connect pin GND to ground.
- Connect pin +Vcc to supply
- 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 to open RF path 1-2 and close RF path 2-3).




**D-Sub connector**

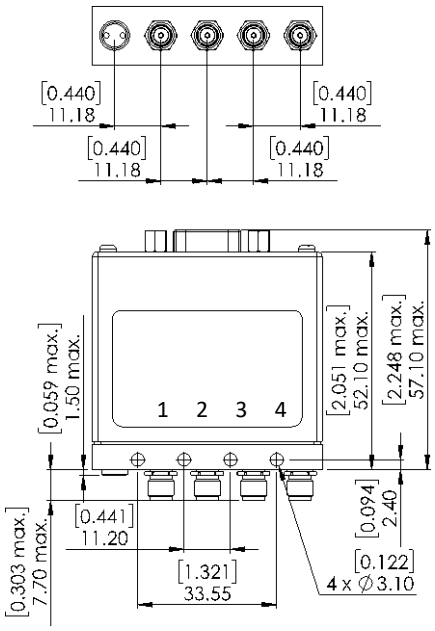



**Solder pins**

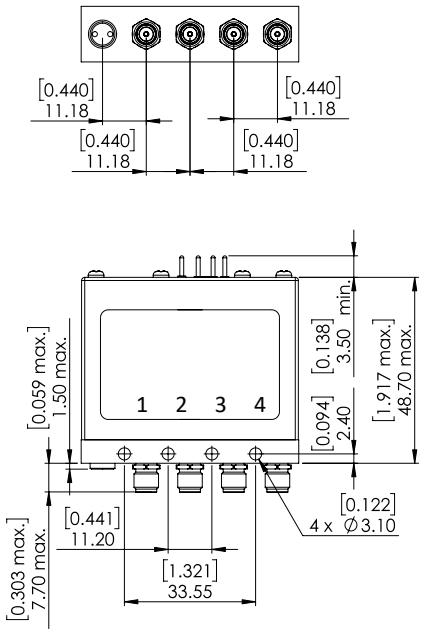
This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

All dimensions are in millimeters [inches].

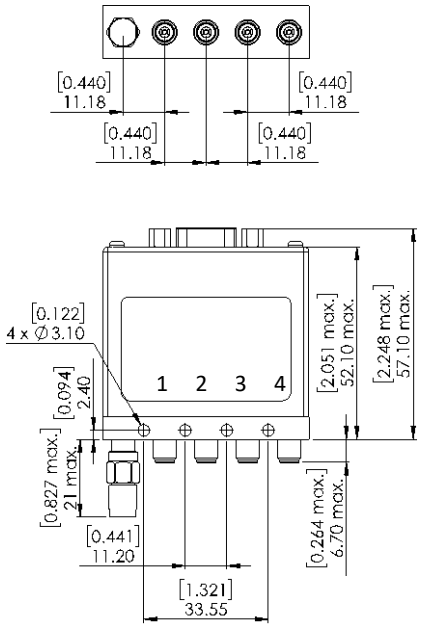
**Model 26.5 GHz with D-Sub connector**



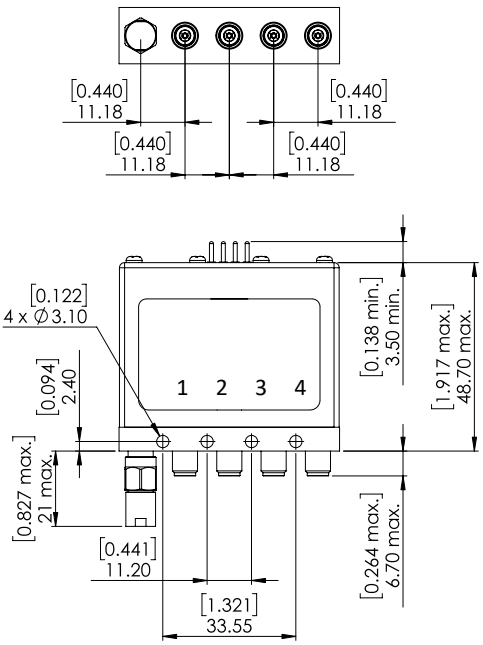

**Model 26.5 GHz with solder pins**



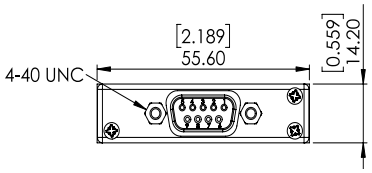

**Model 40 GHz with D-Sub connector**



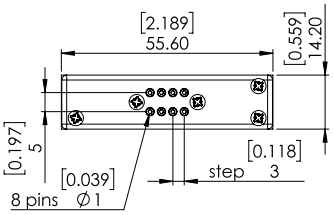

**Model 40 GHz with solder pins**




**TOP view - D-Sub connector**




**TOP view - solder pins**



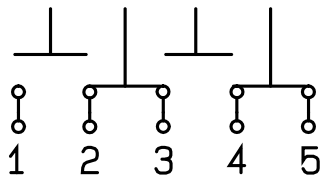

This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

## SWITCH MODEL 4: NON TERMINATED 5 PORT DP3T SWITCH

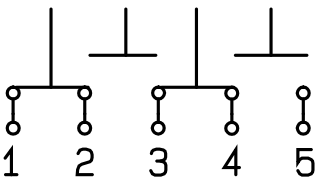
The non-terminated 5 port DP3T switch can used as SPDT with high power terminations, as a bypass switch. In this application, the fifth port can be terminated externally with a high power termination. These switches are “break before make”.

### RF SCHEMATIC DIAGRAM

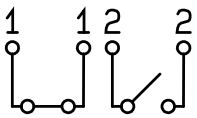
**Position E1**



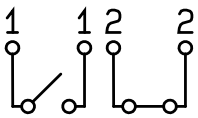

**Position E2**




### INDICATORS POSITION



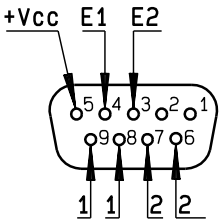

**State “11”**



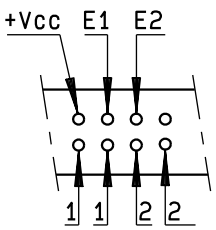

**State “22”**

**Standard drive option “1” (Positive common):**

- Connect pin +Vcc to supply
- Select desired RF path by applying ground to the corresponding "Close" pin (Ex: ground pin E1 to switch to position E1. RF path 2-3and RF path 4-5 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 2-3 and 4-5 and close RF path 1-2 and 3-4)




**D-Sub connector**

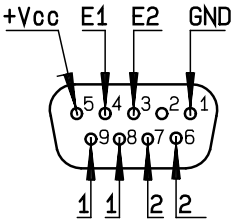



**Solder pins**

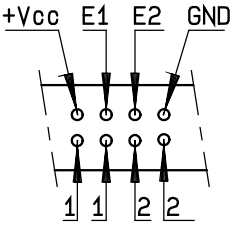
**TTL drive option “2”**

- Connect pin GND to ground.
- Connect pin +Vcc to supply
- 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 2-3 and RF path 4-5 closed and RF path 1-2 and 3-4 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 to open RF path 2-3 and 4-5 and close RF path 1-2 and 3-4).




**D-Sub connector**

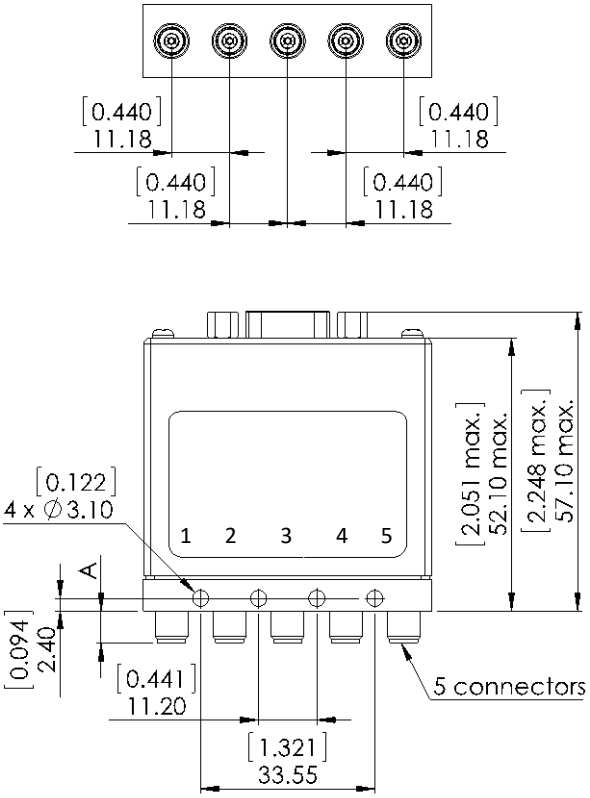


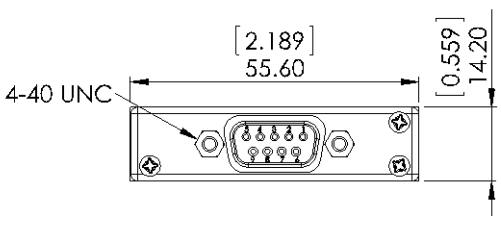

**Solder pins**

This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

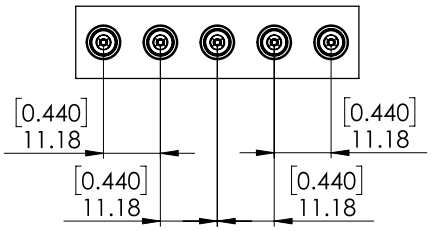
All dimensions are in millimeters [inches].

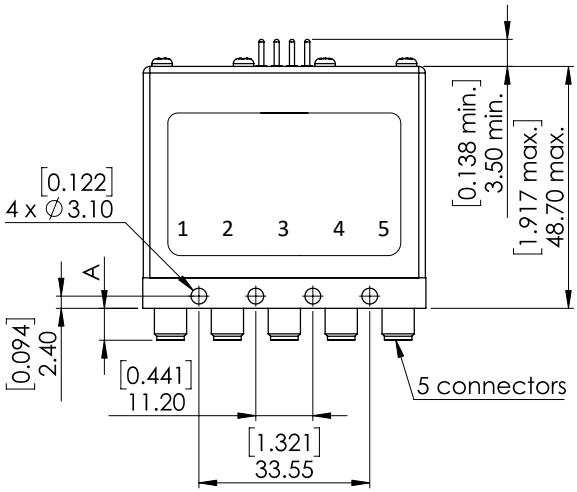
**With D-Sub connector**

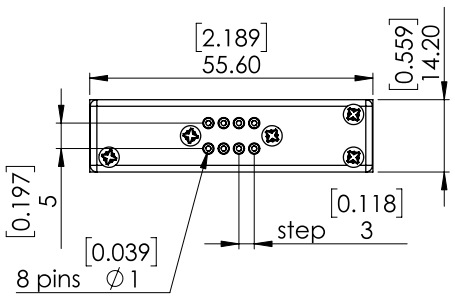



**With solder pins**



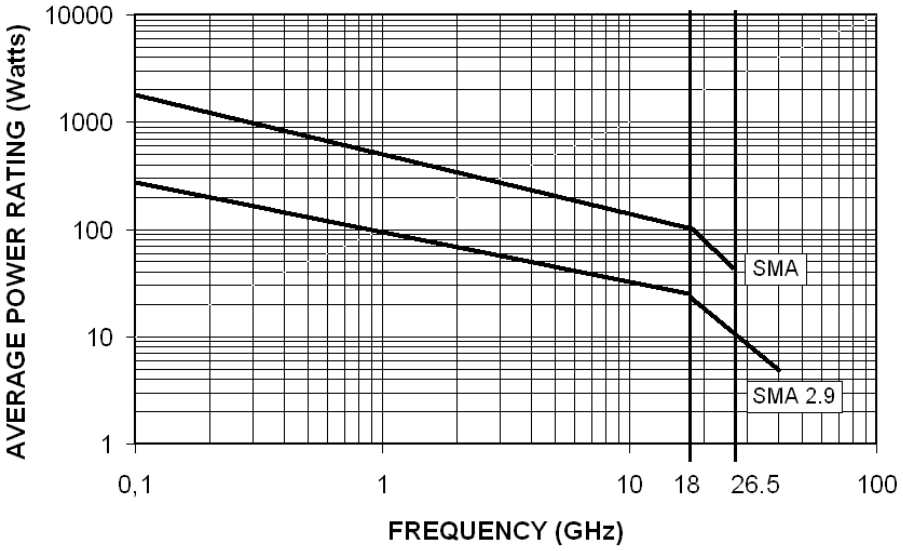




| Connectors | A max mm [inches] |
|---|---|
| SMA up to 26.5GHz | 7.7 [0.303] |
| SMA 2.9 up to 40GHz | 6.7 [0.264] |

This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

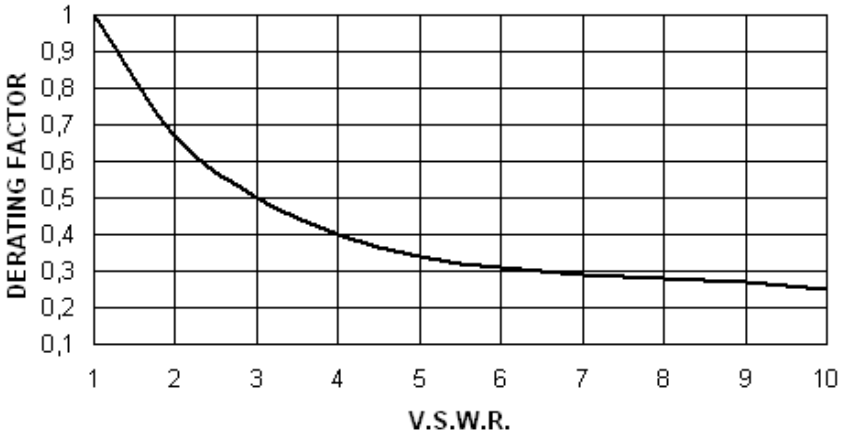
POWER RATING CHART

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 V.S.W.R.

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




This document contains proprietary information and such information shall not be disclosed to any third party for any purpose whatsoever or used for manufacturing purposes without prior written agreement from Radiall. The data defined in this document are given as an indication, in the effort to improve our products; we reserve the right to make any changes judged necessary.

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP