



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

Radiall's PLATINUM SERIES switches are optimised 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 595** . . . . .

**RF Connectors :**  
3 : SMA up to 6 GHz  
4 : SMA up to 20 GHz  
F : SMA up to 26.5 GHz

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

**Actuator Voltage :**  
3 : 24 Vdc  
7 : 15 Vdc

**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)

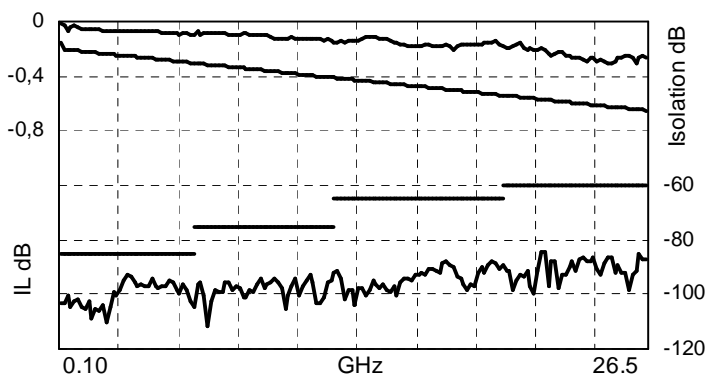
**Switch model :**  
1 : Non terminated SPDT switch  
2 : Terminated SPDT switch  
3 : Terminated 4 port bypass switch  
4 : Non terminated 5 port DP3T switch

**PICTURE**



**RF PERFORMANCES**

PART NUMBER	R5953-----	R5954-----	R595F-----
Frequency Range GHz	DC to 6	DC to 20	DC to 26.5
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 6 to 12.4 GHz : 75 12.4 to 20 GHz : 65	DC to 6 GHz : 85 6 to 12.4 GHz : 75 12.4 to 20 GHz : 65 20 to 26.5 GHz : 60
V.S.W.R. (Maximum)	1.15	DC to 6 GHz : 1.15 6 to 12.4 GHz : 1.25 12.4 to 18 GHz : 1.30 18 to 20 GHz : 1.60	DC to 6 GHz : 1.15 6 to 12.4 GHz : 1.25 12.4 to 18 GHz : 1.30 18 to 26.5 GHz : 1.60
Repeatability (Up to 10 million cycles measured at 25°C)	0.03 dB maximum	0.03 dB maximum	0.03 dB maximum

**TYPICAL RF PERFORMANCES****Insertion Loss and Isolation****V.S.W.R.**

**ADDITIONAL SPECIFICATIONS**

Operating mode		Latching	
Nominal operating voltage (across operating temperature) Vdc			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		RF path    Cold switching : see Power Rating Chart on page 12 Hot switching : 1 Watt CW	
		Internal terminations    1 Watt average into 50 Ω	
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)		10 million cycles	
Connectors		SMA	
Actuator terminals		D-Sub 9 pin female 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-202F , 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)





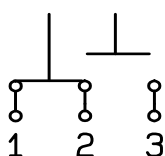
**HIGH PERFORMANCE DP3T - SPDT SWITCHES**

**SWITCH MODEL 1 : NON TERMINATED SPDT SWITCH**

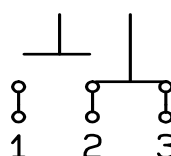
The non terminated SPDT switch is a single pole double throw switch. This switch is "break before make".

**RF SCHEMATIC DIAGRAM**

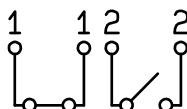
**POSITION E1**



**POSITION E2**



**POSITION INDICATORS**



**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).

**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**



**D-Sub connector**



**Solder pins**





All dimensions are in inches/millimetres.

With D-Sub connector



With solder pins





**HIGH PERFORMANCE DP3T - SPDT SWITCHES**

**SWITCH MODEL 2 : TERMINATED SPDT SWITCH**

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

**RF SCHEMATIC DIAGRAM**



**POSITION INDICATORS**



**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).

**TTL drive option "2"**

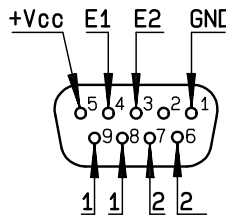
- Connect pin GND to ground.
- Connect pin +Vcc to supply
- Select (close) desired RF path by applying TTL "High" to the corresponding "drive" pin (Ex: apply TTL "High" to pin E1 to switch to position E1. RF path 1-2 closed and RF path 2-3 open).
- To open desired path and close the new RF path, apply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



**D-Sub connector**



**Solder pins**





All dimensions are in inches/millimetres.

With D-Sub connector

With solder pins





**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 INDICATORS**



**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 and RF path 3-4 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 3-4 and close RF path 2-3).

**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 and 3-4 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 3-4 and close RF path 2-3).



**D-Sub connector**



**Solder pins**



**D-Sub connector**



**Solder pins**





All dimensions are in inches/millimetres.

With D-Sub connector

With solder pins





**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 INDICATORS**



**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 2-3 and RF path 4-5 closed and RF path 1-2 and RF path 3-4 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).

**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**



**D-Sub connector**



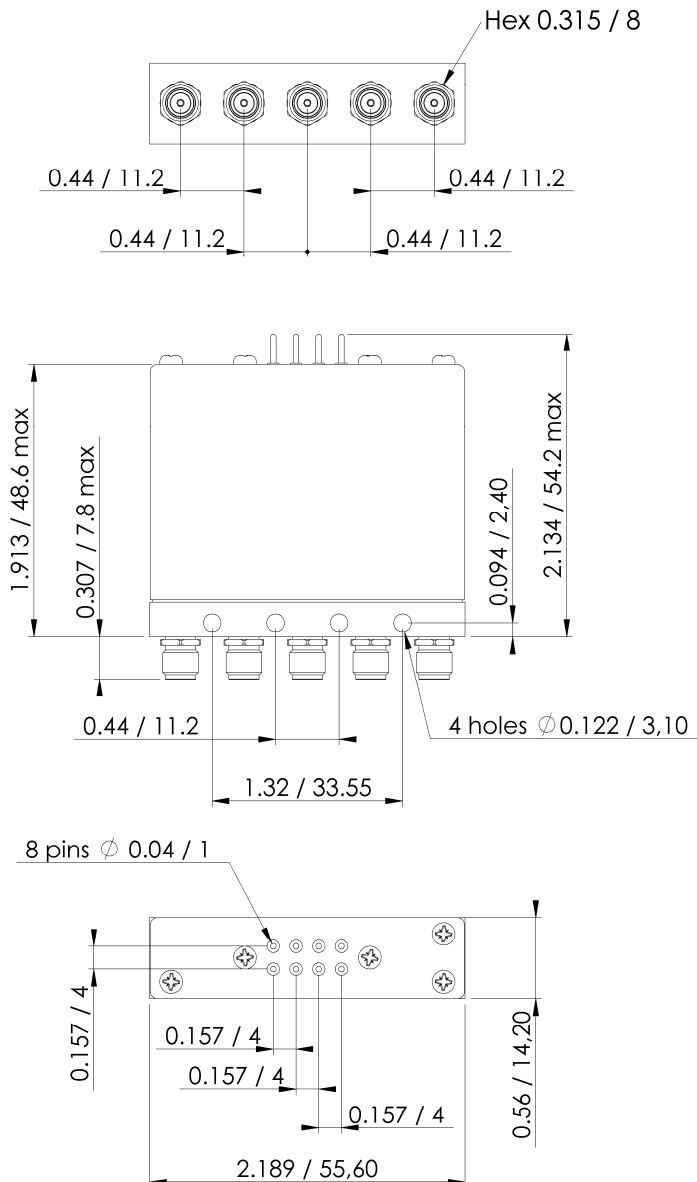
**Solder pins**



All dimensions are in inches/millimetres.

With D-Sub connector

With solder pins





**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



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



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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