

Wide Band Coaxial DPDT Switch DC - 18GHz



Product Description

RFDPDTADC18G is a wide band double pole double throw switch with a frequency range of DC to 18GHz.

The maximum input power of this switch is 40dBm. The insertion loss is 2.2dB with a typical isolation of 45dB.

The product features fast switching speed, low insertion loss and high isolation.

The working temperature of this product is between - 40°C and + 85°C

Features

- TTL compatible driver included
- Fast Switching Speed
- High Power Cold Switching
- Insertion Loss 2.2dB
- Isolation 45dB Typical
- 50 Ohm Matched

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications(TA = +25°C), Vdd = +5V, TTL = 0 / +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range (Note 1)		DC-6			6-12			12-18		GHz
Insertion Loss		1.5	2.2		2.2	3.0		3.5	4.0	dB
Insertion Loss Temperature Coefficient		0.015			0.015			0.015		dB/ °C
Isolation	40	45		40	45		40	45		dB
Input VSWR		1.3	1.8		1.6	1.8		1.6	2.0	: 1
Output VSWR		1.3	1.8		1.7	1.8		1.6	2.0	: 1
Max RF Input power (Note 2)			40			40			40	dBm
DC Power Dissipation		0.8			0.8			0.8		W
0.1dB Compression Point (P0.1dB)		34			35			32		dBm
IIP3		48			48			48		dBm
Switching Speed					600 Typ.					ns
Bias Current (+5V)					150 Typ.					mA
Weight					0.41 Max.					lbs
Impedance					50					Ω
Input / Output Connectors	SMA-Female(Input) – SMA-Female(Output)									
Package	Epoxy Sealed (Standard)									
	Hermetically Sealed (Optional)									

Notes:

1. The part does not have DC blocks however it does not require blocking capacitors. The input and output connections do not have any DC voltage and can be connected to DC ground through a short or resistive load.
2. Please note that below 100MHz the power handling capability is reduced by 6dB and the NF will increase above IL.

Absolute Maximum Ratings

Parameter	Rating
Biasing	+5V±10%

- TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.
- Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could be damaged.

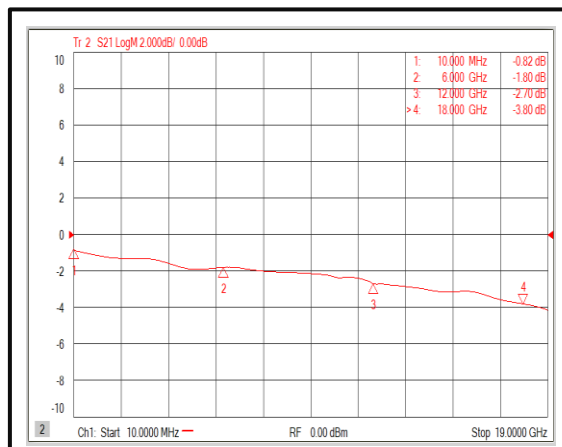
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

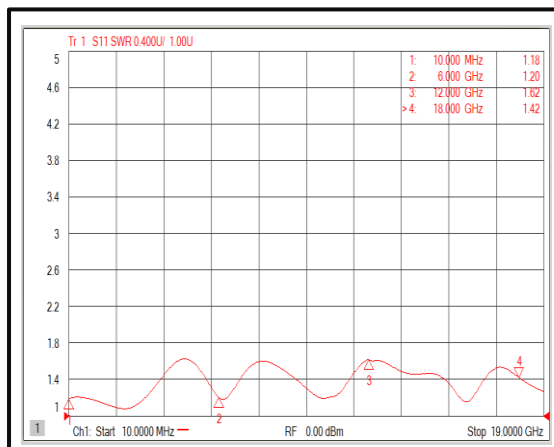
** For vibration testing details please see additional information section.

Typical Performance Plots

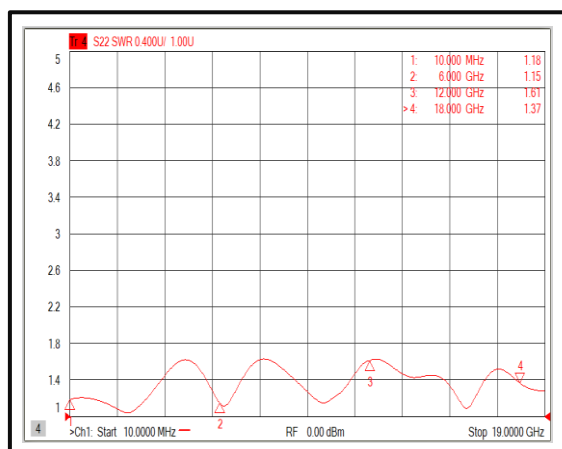
Insertion Loss @+25°C



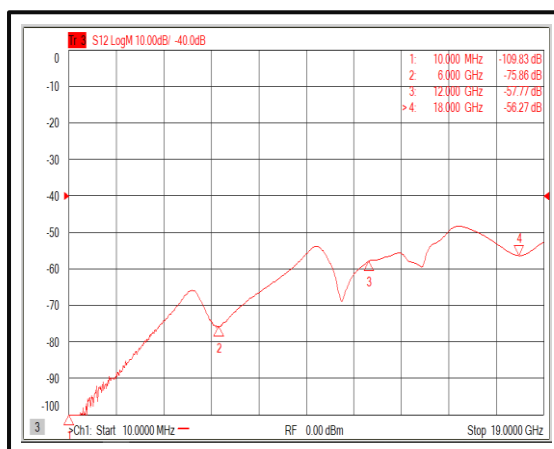
Input VSWR @+25°C



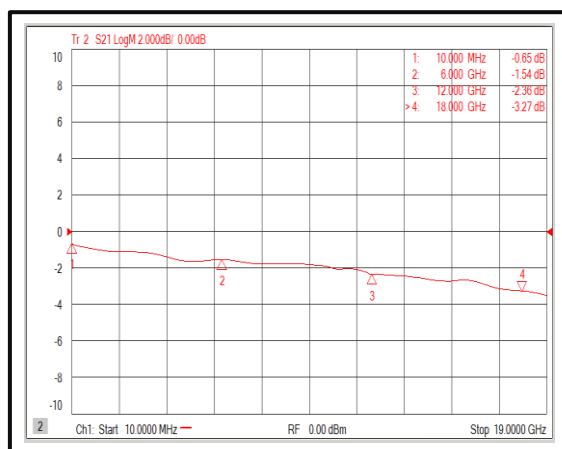
Output VSWR @+25°C



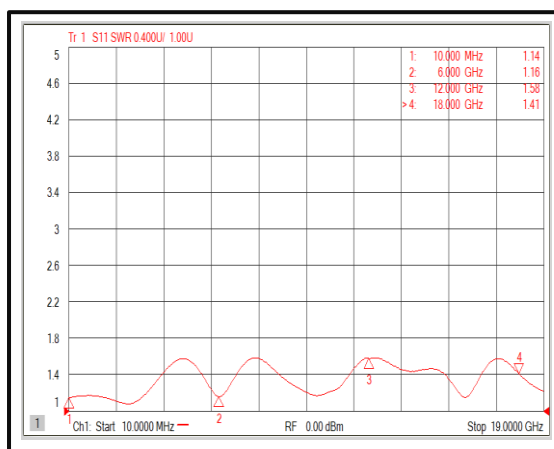
Isolation @+25°C



Insertion Loss @-40°C

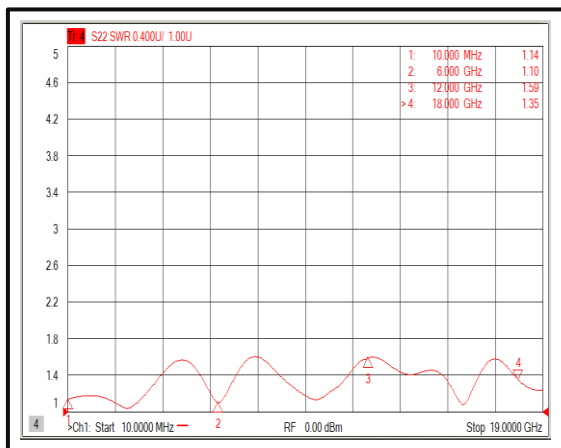


Input VSWR @-40°C

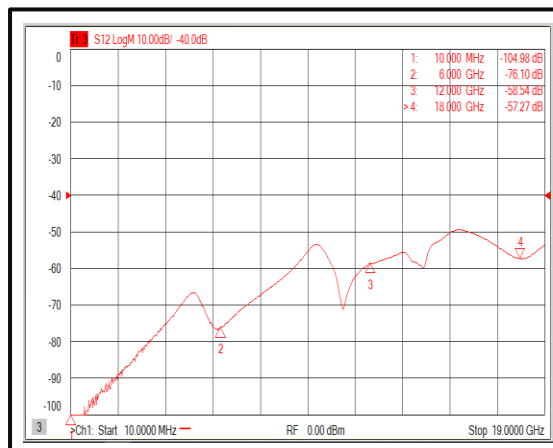


Typical Performance Plots

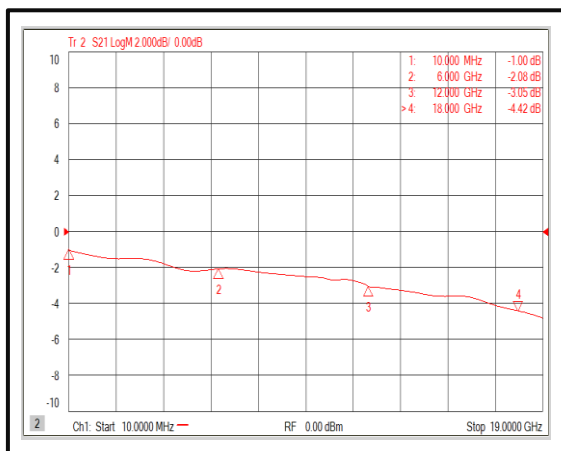
Output VSWR @-40°C



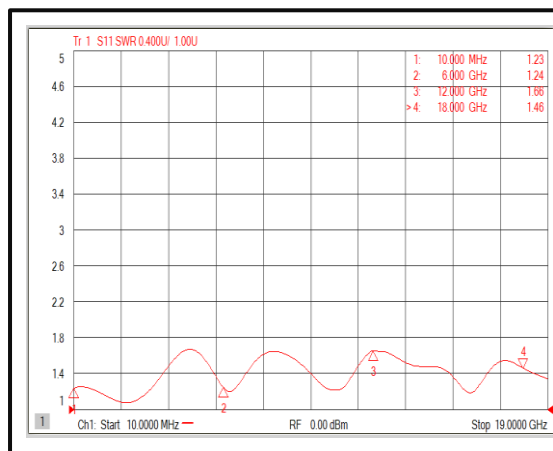
Isolation @-40°C



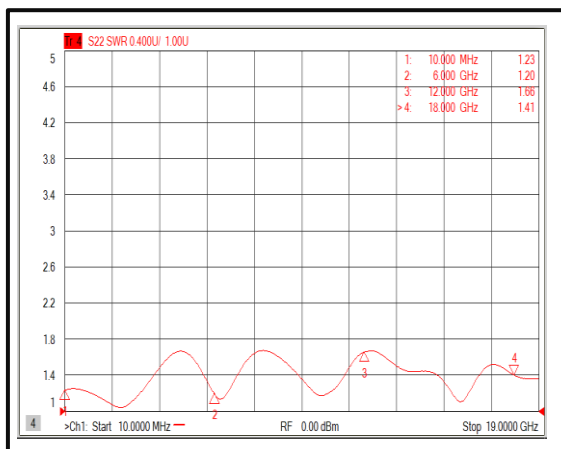
Insertion Loss @+85°C



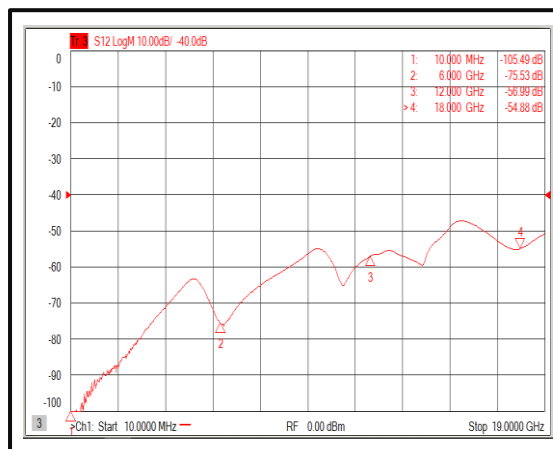
Input VSWR @+85°C



Output VSWR @+85°C

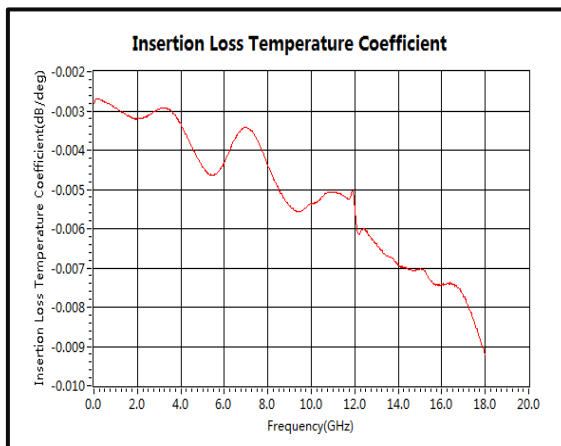


Isolation @+85°C

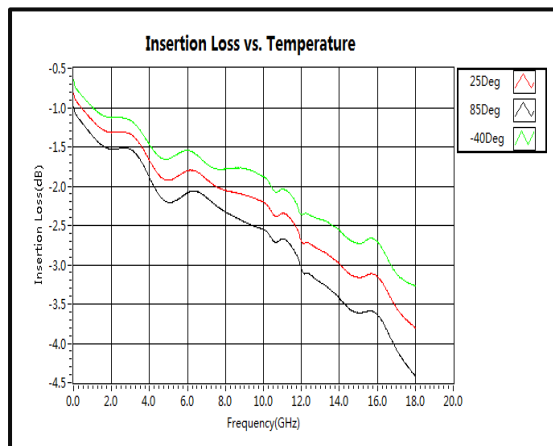


Typical Performance Plots

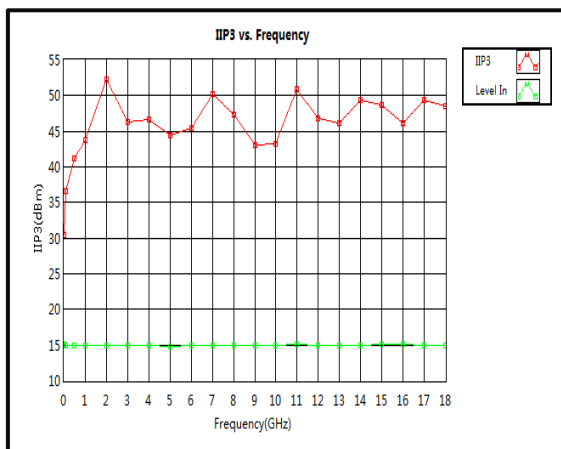
Insertion Loss Temperature Coefficient



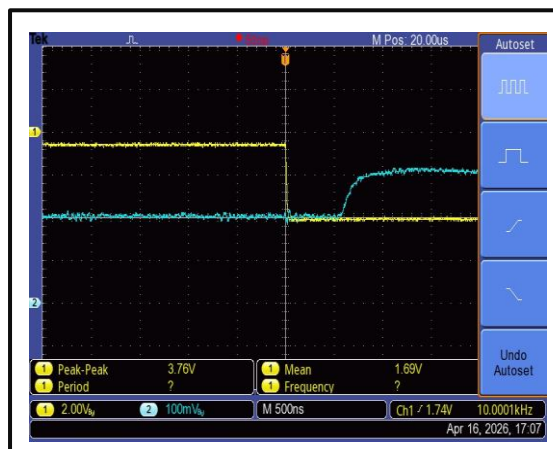
Insertion Loss vs. Temperature



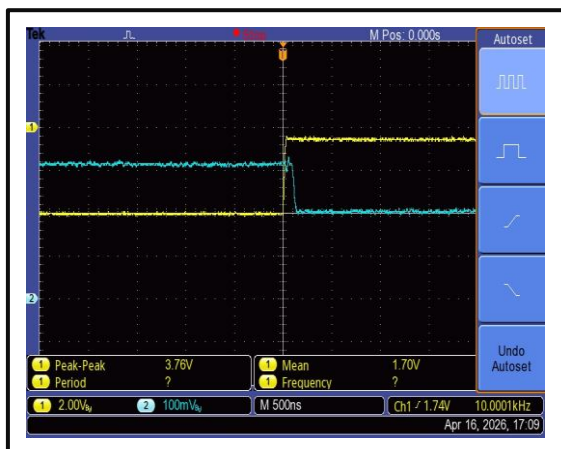
IIP3



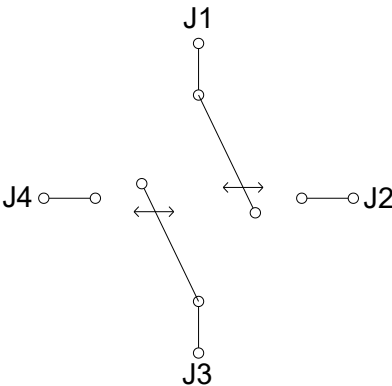
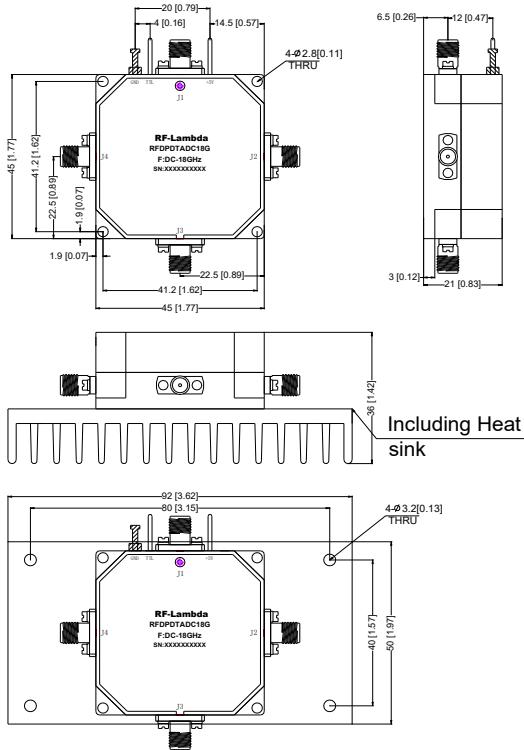
Switching Speed



Switching Speed

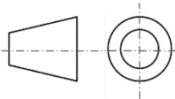


Outline Drawing



Truth Table		
TTL Control Voltage	Low(0)=0~0.8V	
THRESHOLD	High(1)=2.8~5V	
Control Input TTL	Signal Path State	
0	J1-J2(IL state) J3-J4(IL state)	J1-J4(ISO state) J2-J3(ISO state)
1	J1-J2(ISO state) J3-J4(ISO state)	J1-J4(IL state) J2-J3(IL state)
Control Pin Customization available upon request		

- Notes:
1. Package Material: Aluminum and Copper
 2. Finish: Gold Plated
 3. All dimensions are in millimeters [inches].
 4. Housing Tolerances ± 0.1 [0.004] unless otherwise specified (Excl Heat Sink).
 5. Heatsink Included - Mandatory for Operation .
 6. Heatsink NOT Included - Mandatory for Operation.
 7. Heat sink required during operation (sold separately). Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
 8. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Connector Torque Specifications	https://www.rflambda.com/pdf/Torque_Specifications.pdf
Random Vibration Test Standard	https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
RFD PDTADC18G	Standard	DPDT DC-18GHZ PIN Diode Switch

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