Digital 360º Phase Shifter
6GHz-18GHz

Product Description

RFPSHT0618N6 is a digital control phase shifter with a frequency range of 6 to 18GHz.

The phase shifter's adjustment range 360 degrees with control bits of 6 bit. The insertion loss is 10dB with a typical VSWR of 2.0:1.

Phase shifters are devices used to adjust transmission phase in a system. RF-Lambda phase shifters provide low insertion loss, and equal amplitude (or loss) in all phase states.

The working temperature of this product is between - 40℃ and + 85℃.

Features

- Wide Band Operation 6-18GHz
- 6-Bit Phase Shift

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 (T_A=+25ºC), Vdd = +5V, VCTL = 0/ +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	6		12	12		18	GHz
Phase Range		360			360		deg
Control Bits			6			6	Bit
Control Step Size		5.625			5.625		deg
Insertion Loss		9.5	10.5		10	12	dB
Insertion Loss Temperature Coefficient		0.008			0.008		dB/ °C
Phase Flatness		±5	±11		±8	±18	deg
Input VSWR @ Insertion Loss State		1.5	2.5		1.5	2.1	:1
Output VSWR @ Insertion Loss State		2.0	3.0		1.7	2.5	:1
Input 1 dB Compression Point(P1dB)		25			25		dBm
Input IP3		41			41		dBm
Switching Speed		500			500		ns
Bias Current(+5V)			10 Max.				mA
Weight			0.04 Max.				lbs.
Impedance			50				Ohms
Input / Output Connectors			SMA-Female (Input) – SMA-Female (Output)				
Interface and Control Connector			MICRO-D9 (Female)				
Package			Epoxy Sealed (Standard)				
			Hermetically Sealed (Optional)				

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Sales: sales@rflambda.com Technical: support@rflambda.com

Absolute Maximum Ratings

Parameter	Rating
Bias Voltage	+5V±10%
RF Input Power	+30dBm

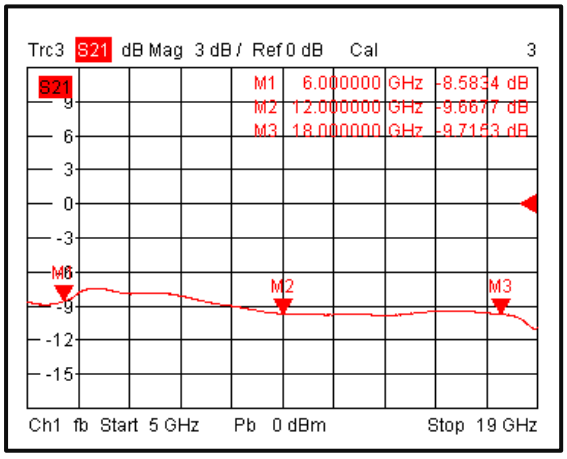
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40ºC to +85ºC (Case Temperature)
Storage Temperature	-50ºC to +105ºC
Thermal Shock	-40ºC → +85ºC (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 +85ºC 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)

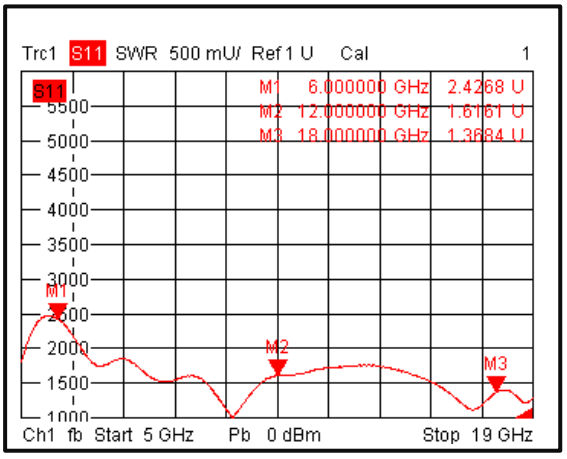
**For vibration testing details please see additional information section.

Typical Performance Plots

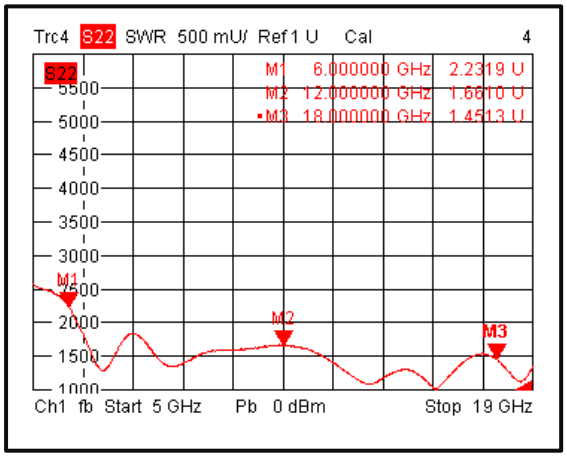
Insertion Loss@+25℃



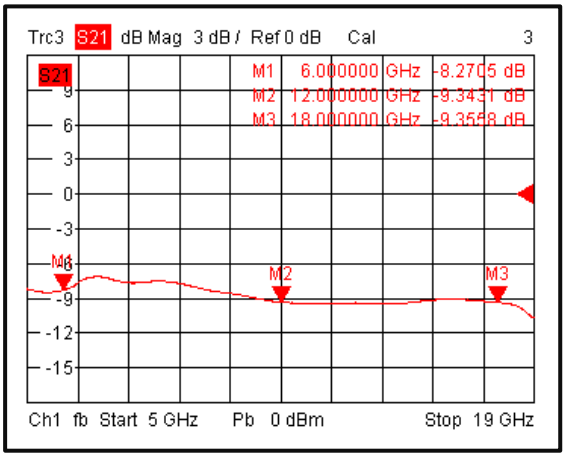
Input VSWR@+25℃



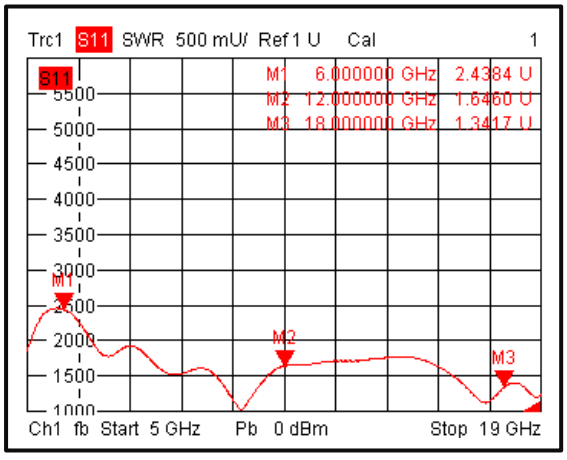
Output VSWR@+25℃



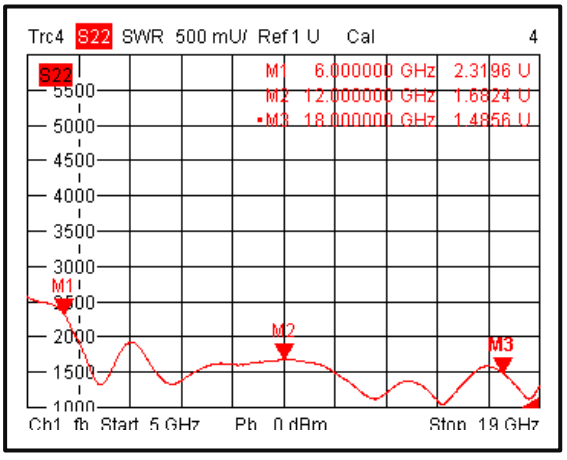
Insertion Loss@-40℃



Input VSWR@-40℃

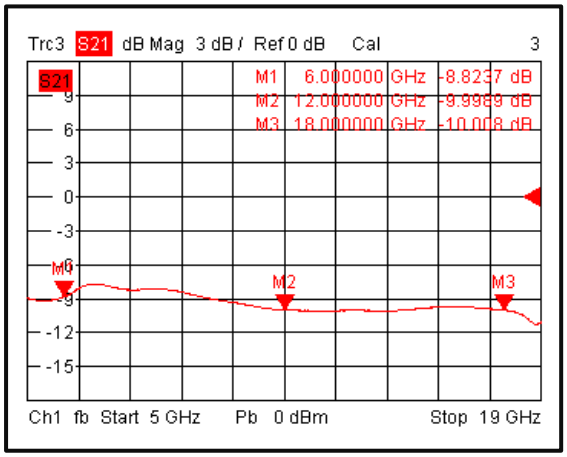


Output VSWR@-40℃

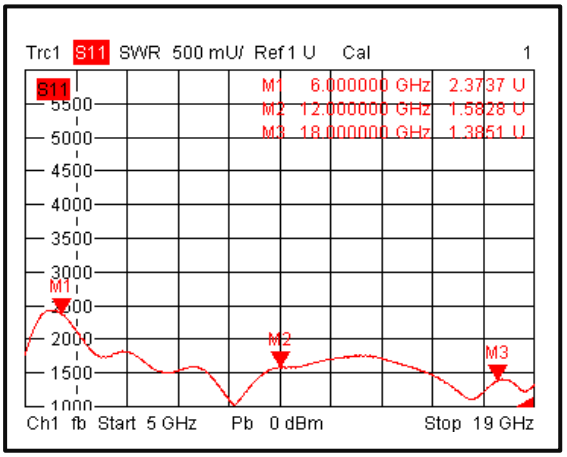


Typical Performance Plots

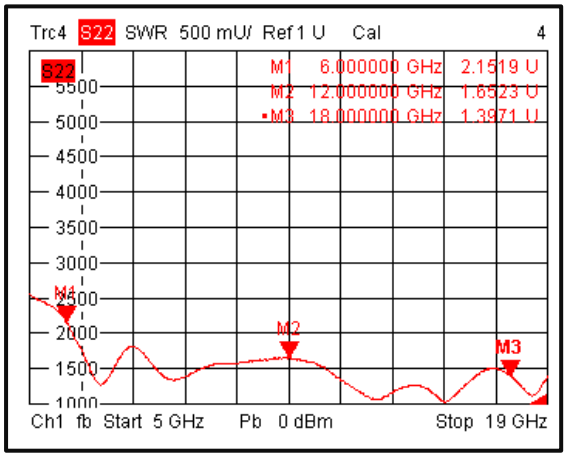
Insertion Loss@+85℃



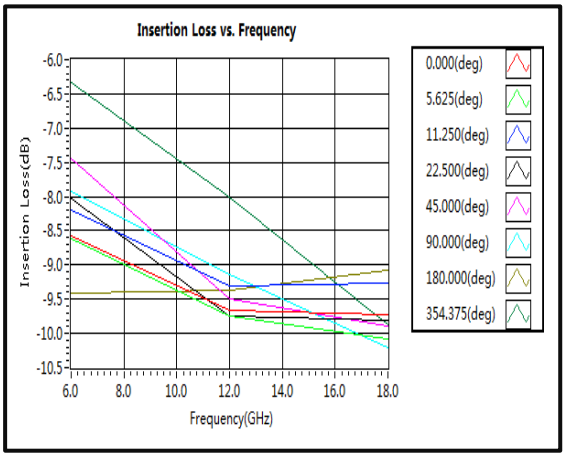
Input VSWR@+85℃



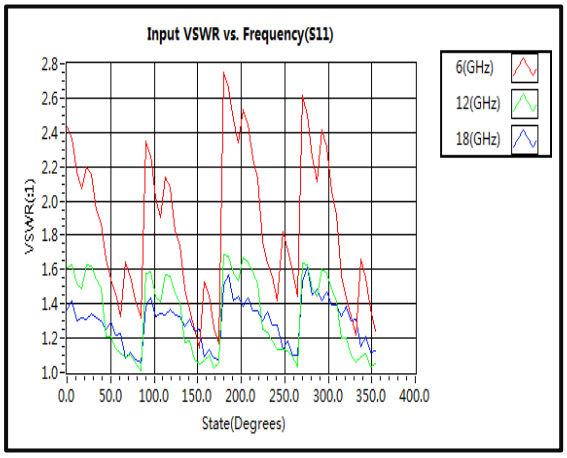
Output VSWR@+85℃



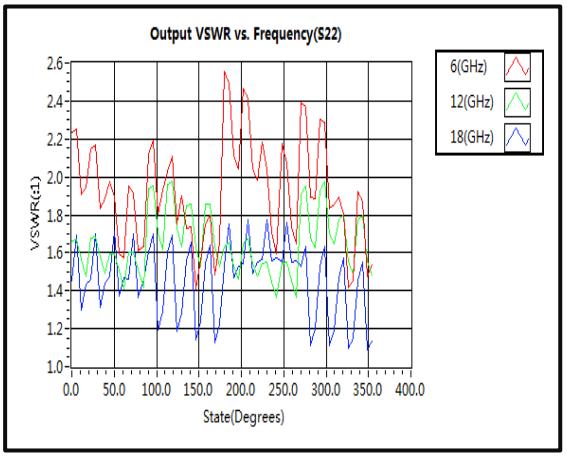
Insertion Loss vs. Frequency



Input VSWR vs. Frequency(s11)

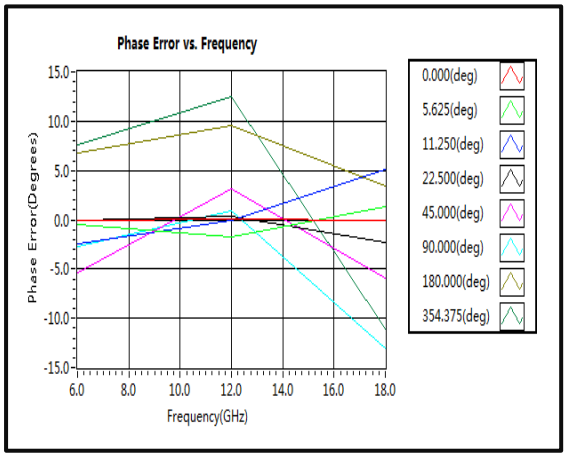


Output VSWR vs. Frequency(s22)

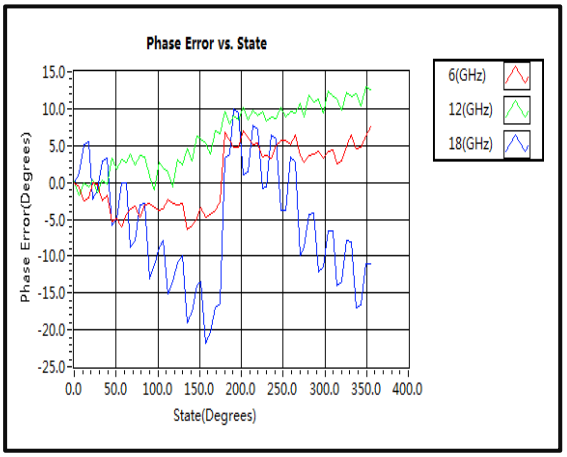


Typical Performance Plots

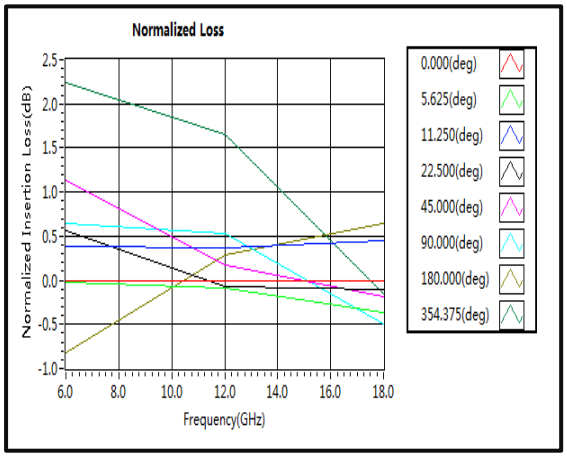
Phase Error vs. Frequency



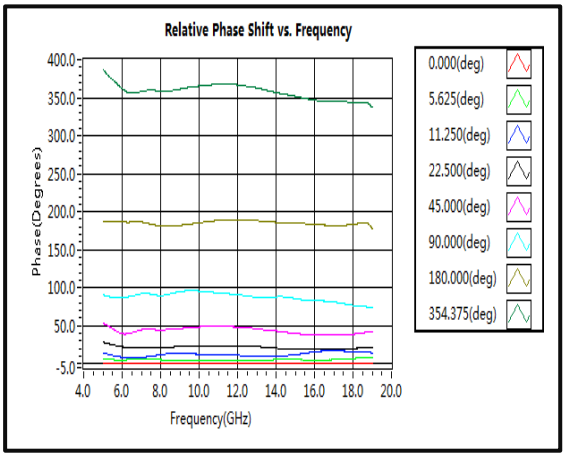
Phase Error vs. State



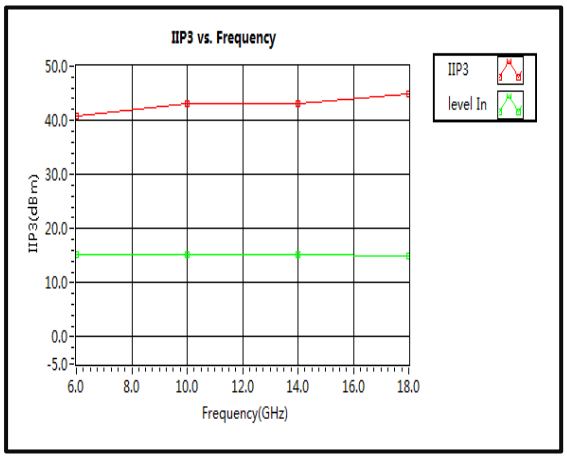
Normalized Loss. All States



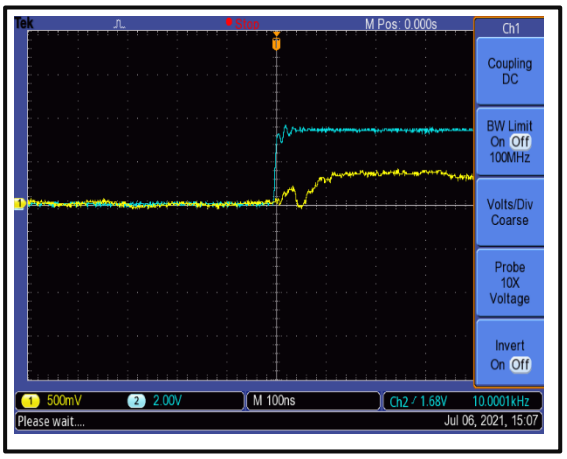
Relative Phase Shift vs. Frequency



IIP3 vs. Frequency

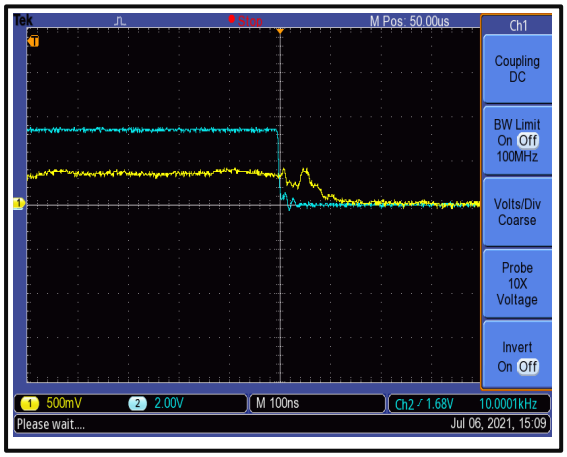


Speed

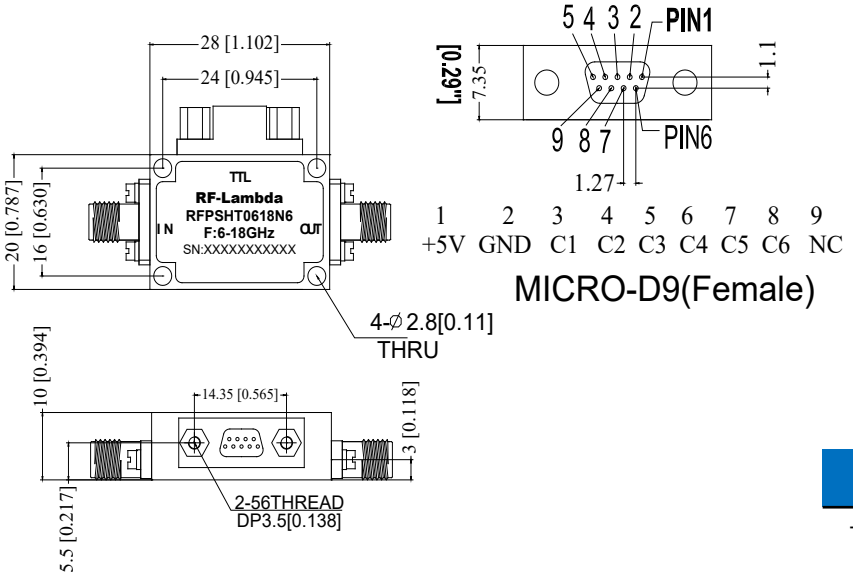


Typical Performance Plots

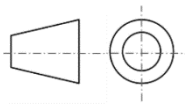
Speed



Outline Drawing



Truth Table						
TTL Control Voltage THRESHOLD						Low(0)=0~0.8V High(1)=2.8~5V
Control Voltage Input						Phase Shift (Degrees)
C6	C5	C4	C3	C2	C1	
0	0	0	0	0	0	Reference
0	0	0	0	0	1	5.625
0	0	0	0	1	0	11.25
0	0	0	1	0	0	22.5
0	0	1	0	0	0	45
0	1	0	0	0	0	90
1	0	0	0	0	0	180
1	1	1	1	1	1	355



Notes:
1. Package Material: Aluminum
2. Plating: Gold
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ±0.1 [0.004]unless otherwise specified.

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
RFPSHT0618N6	Standard	6-18GHz Digital Control Phase Shifter

Important Notice

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