



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFPSHT450M1D8

Digital 360° Phase Shifter 400 – 500MHz



Features

- Wide Band Operation 400-500MHz
- 8-Bit Phase Shift
- Temperature Range -45°C~+85°C
- Customization available upon request

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test Instrument

Electrical Specifications, TA = +25°C, Vdd = +5V, VCTL = 0 / +5V

Description	PN: RFPSHT450M1D8			
	Digital Phase Shifter			
Parameter	Min	Typ	Max	Units
Frequency Range	400		500	MHz
Phase Range		360		°
Control Bits		8		Bit
Control Step Size		1.4		°
Insertion Loss			5.5	dB
Insertion Loss Temperature Coefficient		0.008		dB/°C
Phase Flatness		±5	±25	°
Input VSWR (All states)		1.5	1.7	: 1
Output VSWR (All states)		1.5	1.7	: 1
Input 1dB Compression Point (P1dB)			30	dBm
Weight	1.06			Ounces
Impedance	50			Ω
Speed	3.5			ms
Bias Current (+5V)	50			mA
Input / Output Connectors	SMA-Female			
Interface and Control Connector	MICRO-D15 (Female)			
Finish	Gold Plated			
Material	Aluminum			
Sealing	Hermetically Sealed (Optional)			

Digital Control Phase Shifter 400 – 500MHz



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Absolute Maximum Ratings

Biasing	+5V±10%
TTL Control Voltage	0~0.8V/2.8~5V

Ordering Information

Part No.	ECCN	Description
RFPSHT450M1D8	EAR99	400-500MHz Digital Phase Shifter

Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45°C~+85°C
Storage Temperature		-55°C~+125°C
Thermal Shock		1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & 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	MIL-STD-883	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)

Digital Control Phase Shifter 400 – 500MHz



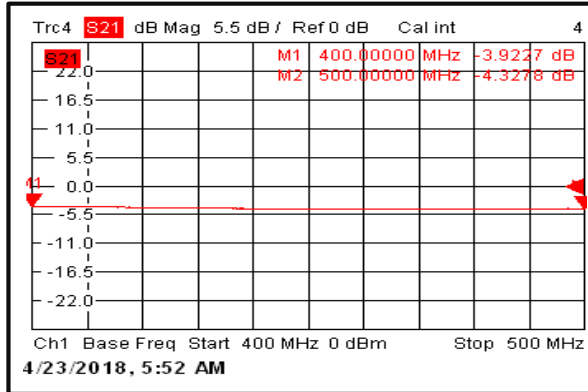
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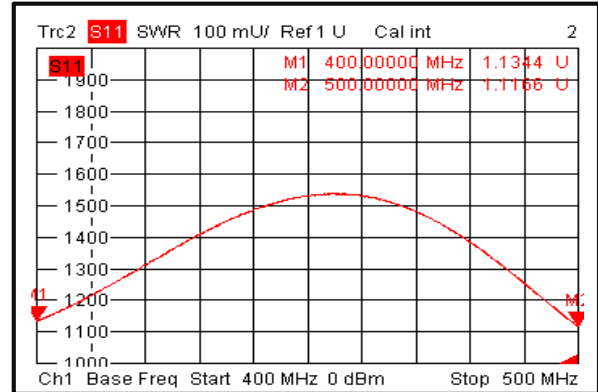
RFPSHT450M1D8

Typical Performance Plots

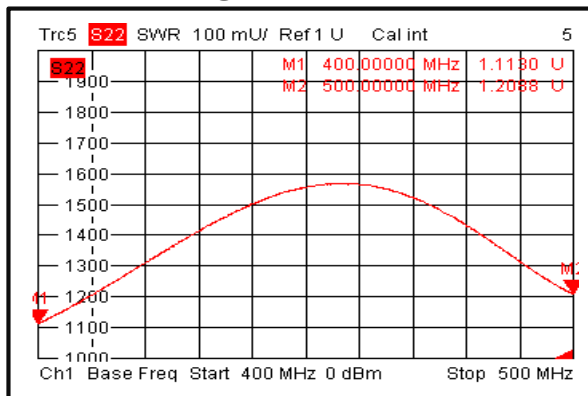
Insertion Loss @+25°C



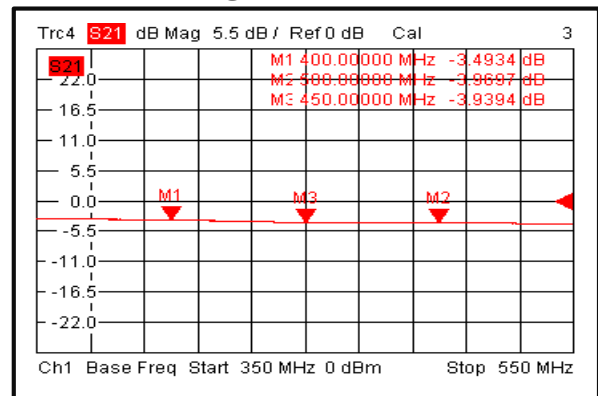
Input VSWR @+25°C



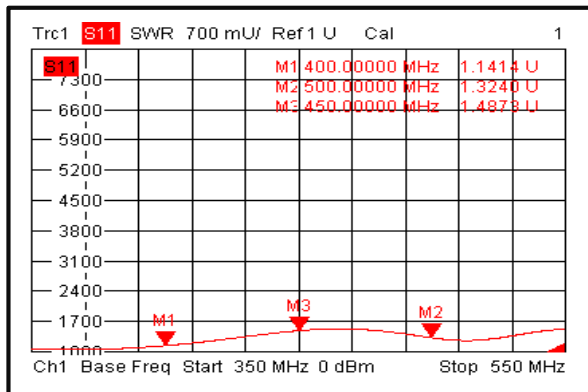
Output VSWR @+25°C



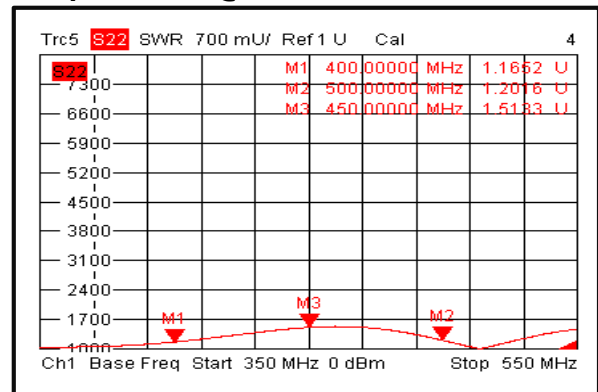
Insertion Loss @-45°C



Input VSWR @-45°C



Output VSWR @-45°C



Digital Control Phase Shifter 400 – 500MHz

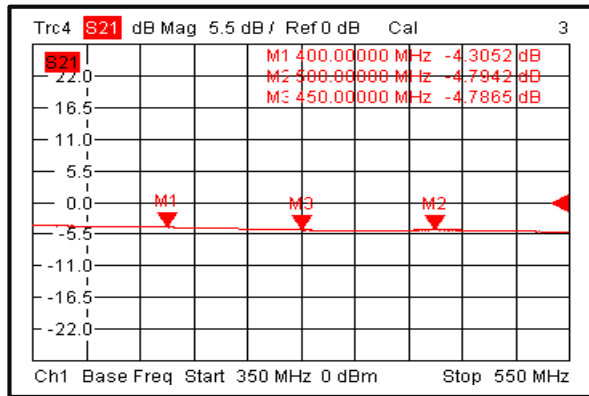


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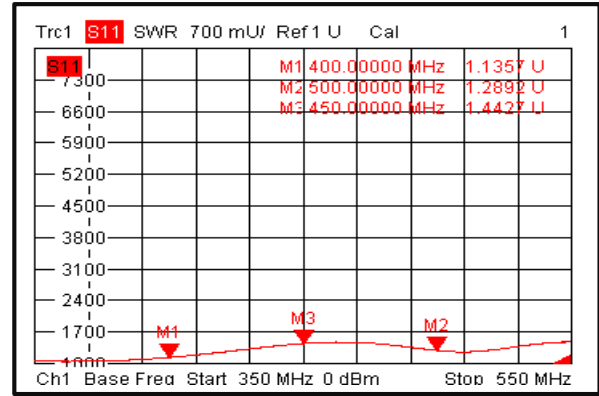
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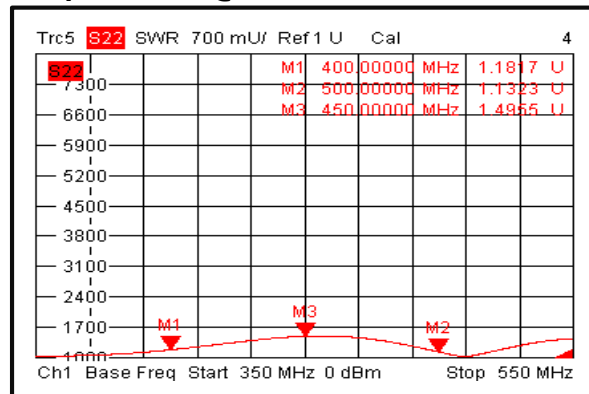
Insertion Loss @+85°C



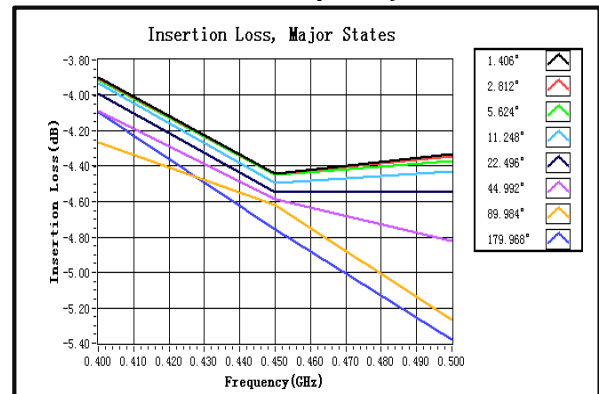
Input VSWR @+85°C



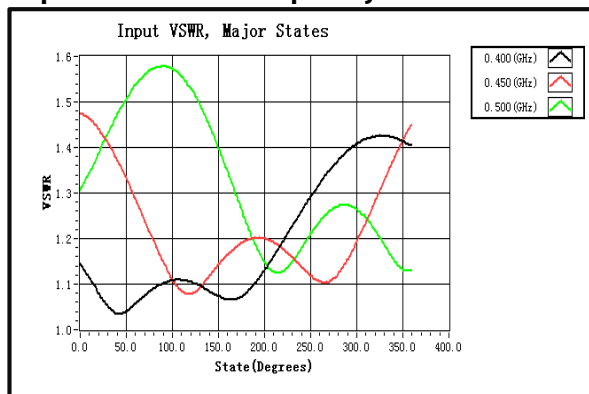
Output VSWR @+85°C



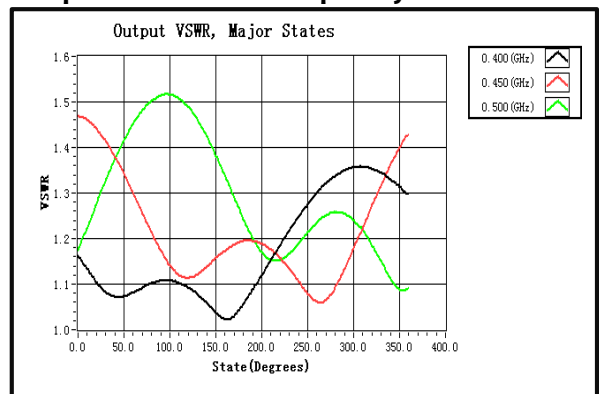
Insertion Loss vs. Frequency



Input VSWR vs. Frequency



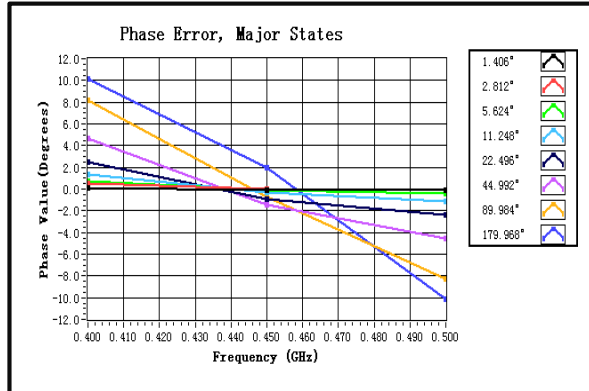
Output VSWR vs. Frequency



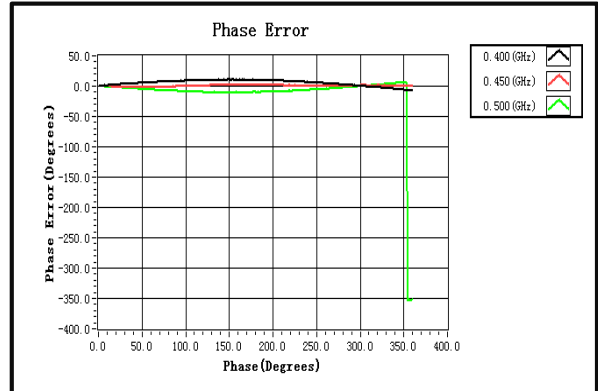
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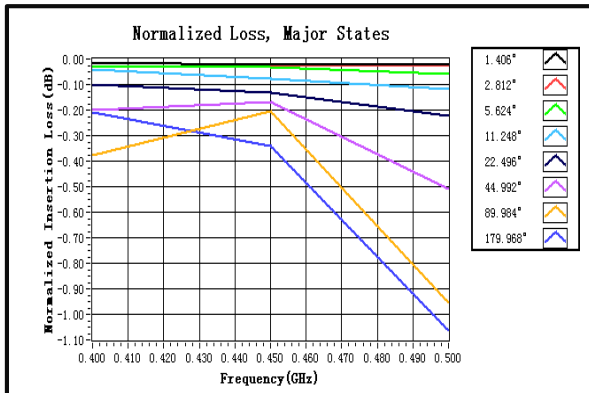
Phase Error vs. Frequency



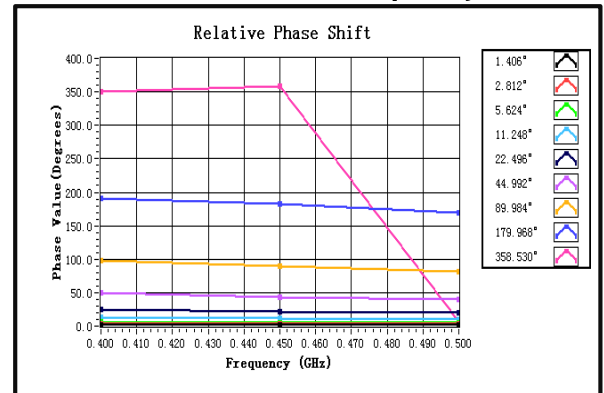
Phase Error vs. State



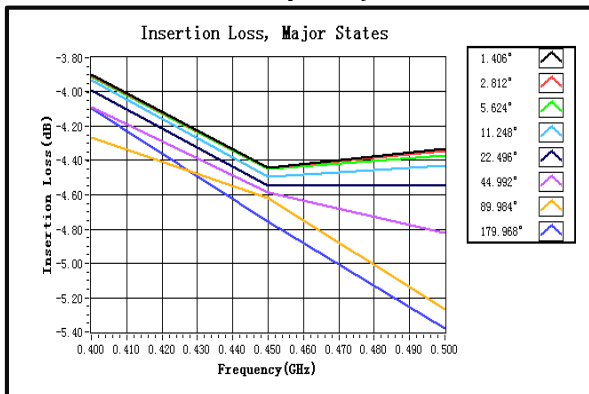
Normalized Loss. All States



Relative Phase Shift vs. Frequency



Attenuation vs. Frequency





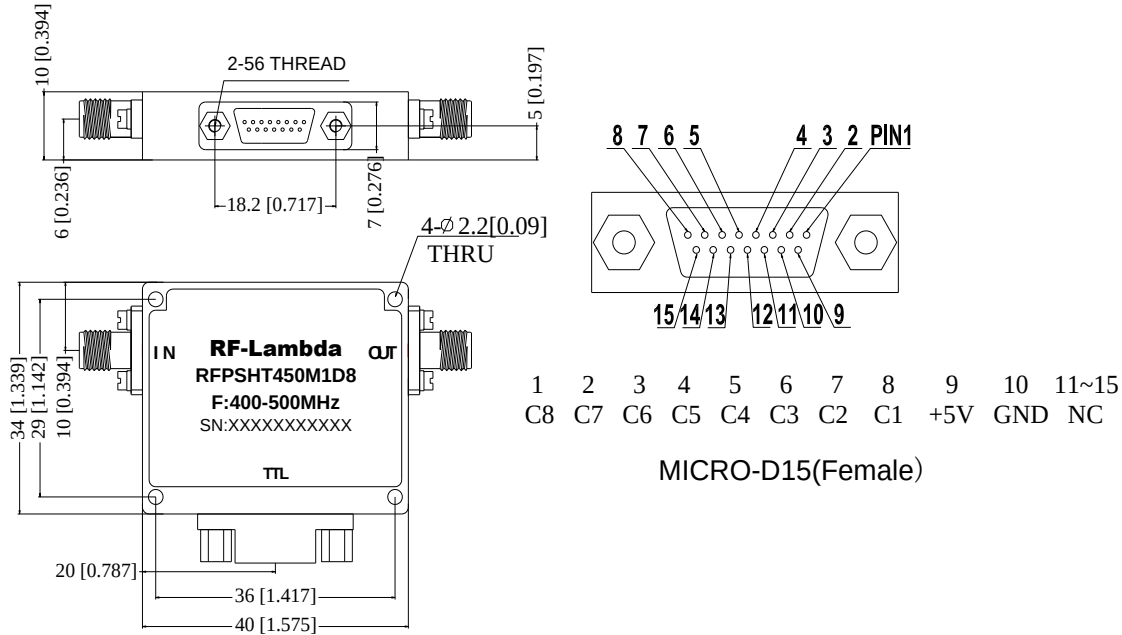
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Outline Drawing:

All Dimensions in mm [inches]



Truth Table

Control Voltage Input								Phase Shift (Degrees)
C8	C7	C6	C5	C4	C3	C2	C1	
1	1	1	1	1	1	1	1	Reference
1	1	1	1	1	1	1	0	1.4
1	1	1	1	1	1	0	1	2.8
1	1	1	1	1	0	1	1	5.625
1	1	1	1	0	1	1	1	11.25
1	1	1	0	1	1	1	1	22.5
1	1	0	1	1	1	1	1	45
1	0	1	1	1	1	1	1	90
0	1	1	1	1	1	1	1	180
0	0	0	0	0	0	0	0	358.594



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