



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0125G8A

Absorptive Digital Control Attenuator 0.1 - 2.5GHz



Features

- Wide Band Operation 0.1-2.5GHz
- Functional Bandwidth : 0.1GHz – 3.2GHz
- 0.5dB LSB Steps to 127.5dB
- Single Positive Control Line Per Bit

Typical Applications

- Wireless Infrastructure
- Test and Measurement
- Military and Aerospace

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

Description	PN: RFDAT0125G8A						
	Absorptive Digital Attenuator						
Parameters	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1-2.5			2.5-3.2			GHz
Attenuation Range			127.5			127.5	dB
Attenuation Flatness: (Referenced to Insertion Loss)		±1.5			±1.5		dB
Control Bits			8			8	Bit
Control Step size	0.5			0.5			dB
Insertion Loss		7	7.5		7.8	8.5	dB
Insertion Loss Temperature Coefficient		0.005			0.005		dB/°C
Input VSWR (All States)		1.5	1.9		1.5	1.8	: 1
Output VSWR (All States)		1.5	1.9		1.5	1.8	: 1
Input 0.1 dB Compression Point (Po.1dB)		30			30		dBm
Input IP3		50			48		dBm
Switching Speed	100						ns
Weight	1.76						ounces
Impedance	50						Ω
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)						

Absorptive Digital Control Attenuator 0.1 - 2.5GHz



Absolute Maximum Ratings

Biasing	+5V±10%
TTL Control Voltage	0~0.8V / 2~5V
RF Input Power	+28dBm

Ordering Information

Part No.	ECCN	Description
RFDAT0125G8A	EAR99	0.1-2.5GHz Digital Control Attenuator

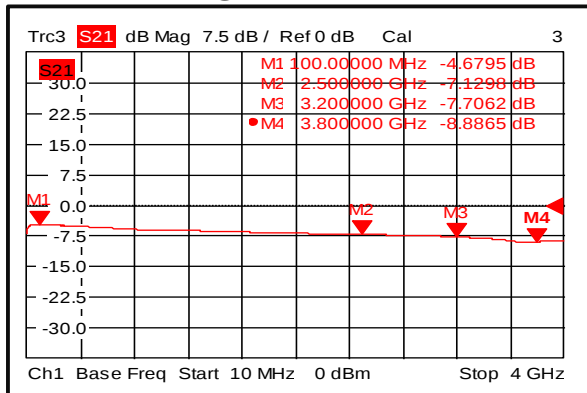
Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-40°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		Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883	MIL-STD-883 (For Hermetically Sealed Units)

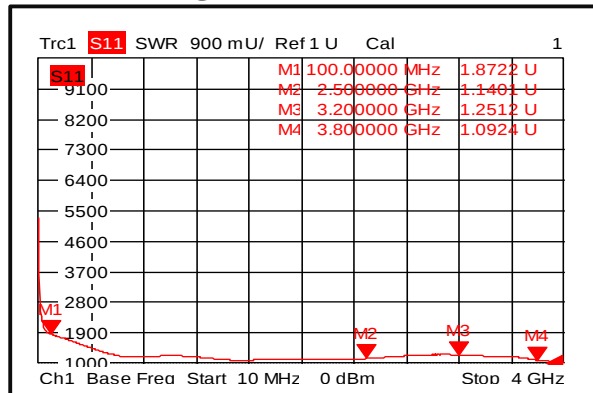


Typical Performance Plots

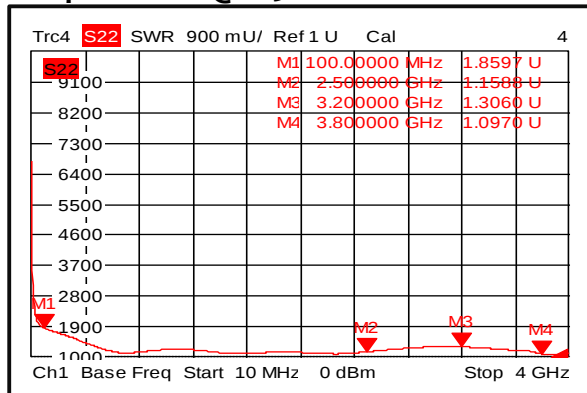
Insertion Loss @+25°C



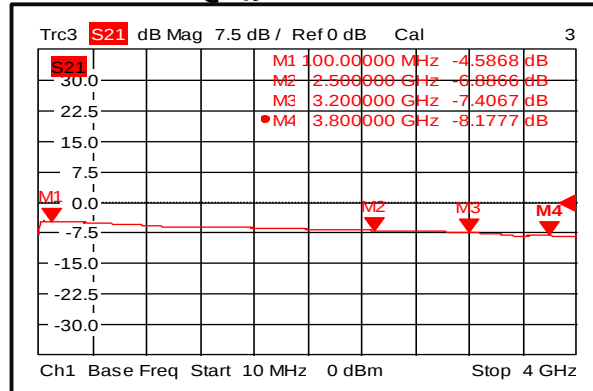
Input VSWR @+25°C



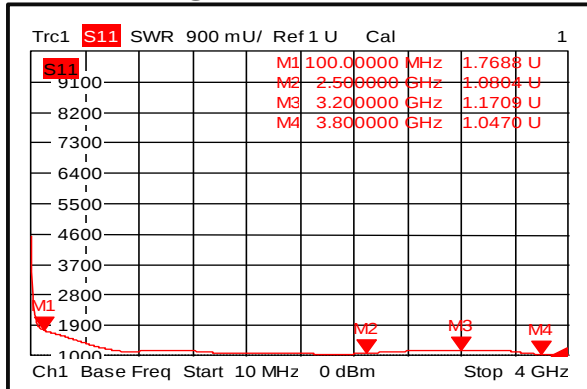
Output VSWR @+25°C



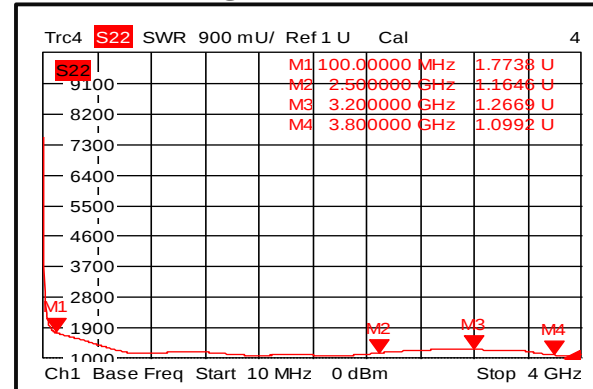
Insertion Loss @-45°C



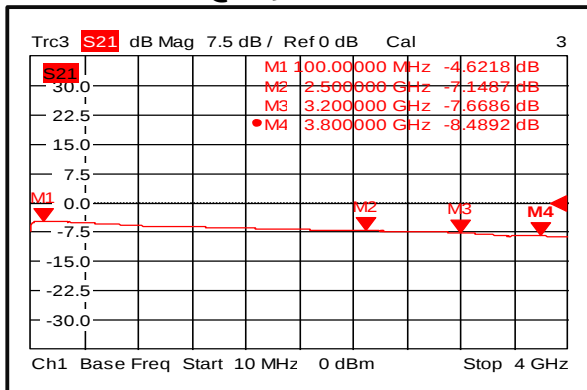
Input VSWR @-45°C



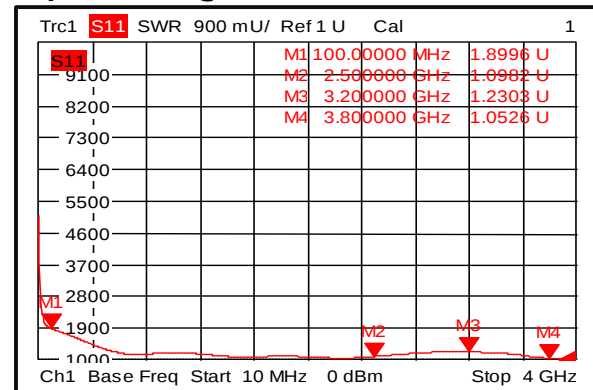
Output VSWR @-45°C



Insertion Loss @+85°C

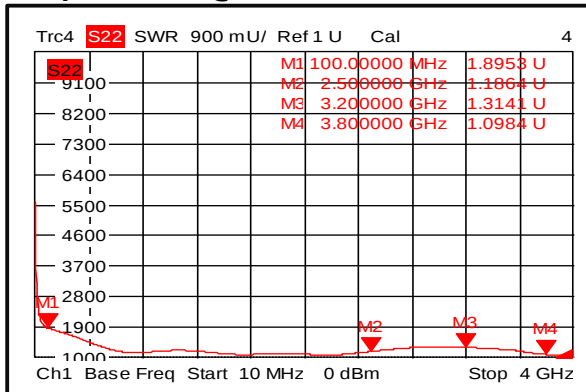


Input VSWR @+85°C

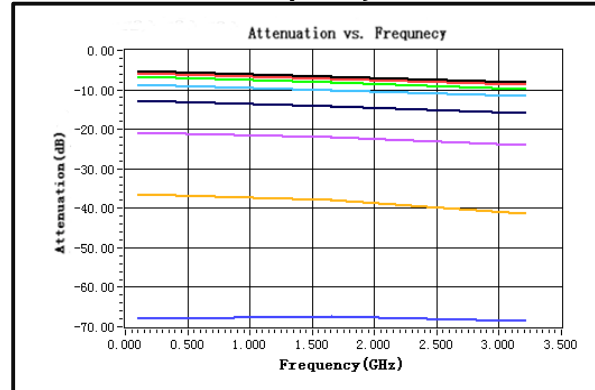




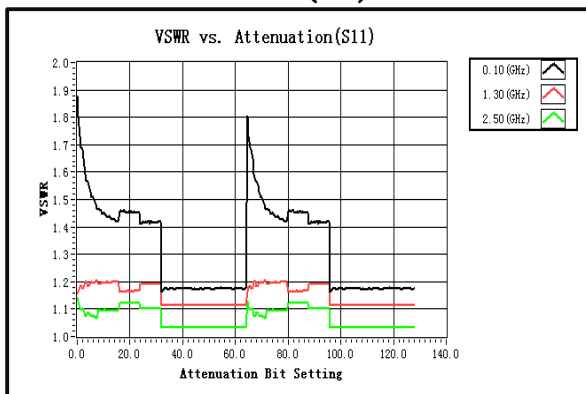
Output VSWR @+85°C



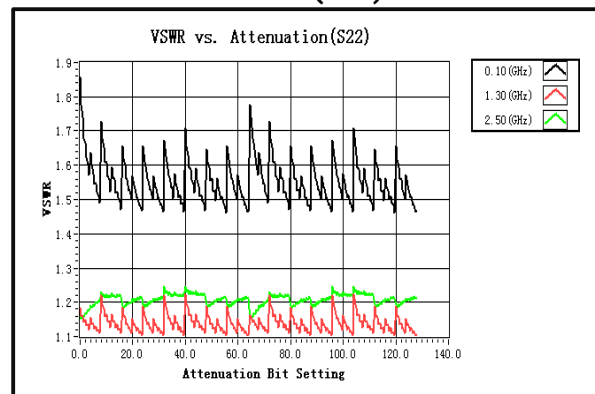
Attenuation vs. Frequency



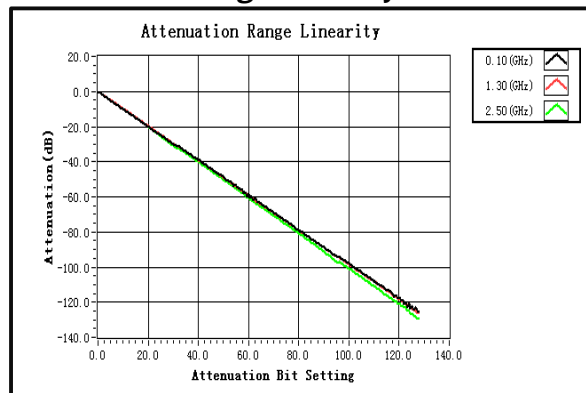
VSWR vs. Attenuation(S11)



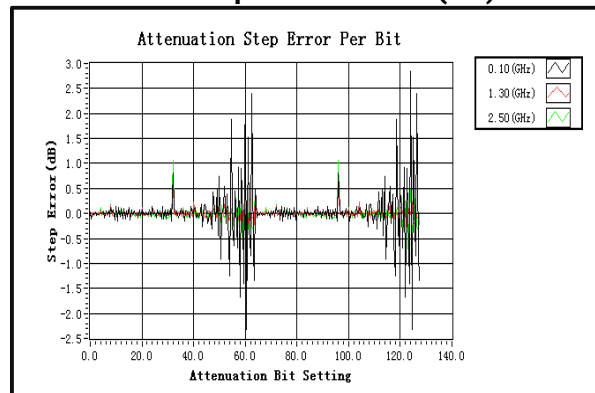
VSWR vs. Attenuation(S22)



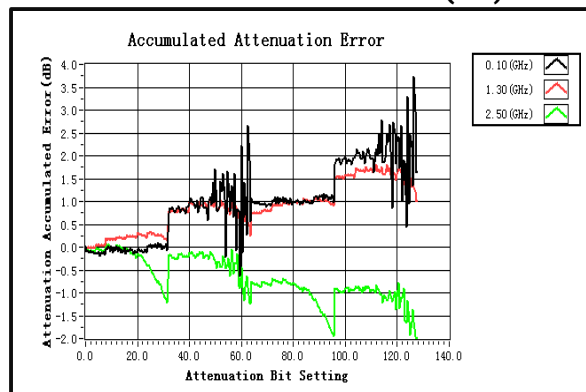
Attenuation Range Linearity



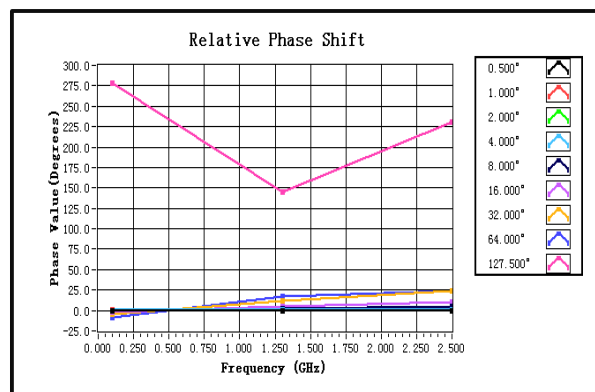
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error(dB)



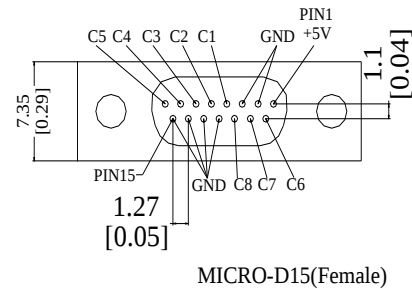
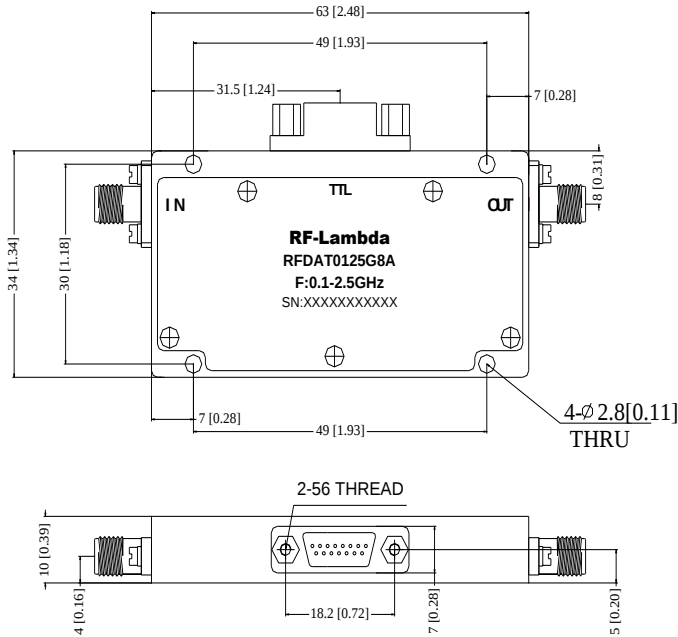
Relative Phase Shift





Outline Drawing:

All Dimensions in mm [inches]



TruthTable

Control Voltage Input								Attenuation state
C8	C7	C6	C5	C4	C3	C2	C1	
1	1	1	1	1	1	1	1	Reference IL
1	1	1	1	1	1	1	0	0.5dB
1	1	1	1	1	1	0	1	1dB
1	1	1	1	1	0	1	1	2dB
1	1	1	1	0	1	1	1	4dB
1	1	1	0	1	1	1	1	8dB
1	1	0	1	1	1	1	1	16dB
1	0	1	1	1	1	1	1	32dB
0	1	1	1	1	1	1	1	64dB
0	0	0	0	0	0	0	0	127.5dB

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