



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT1545G7A

Absorptive Digital Control Attenuator 1.5 – 4.5GHz



Features

- Wide Band Operation 1.5-4.5GHz
- 0.25dB LSB Steps to 31.75dB
- Single Positive Control Line Per Bit

Typical Applications

- Aerospace and military applications
- LMDS multi-carrier operation
- Test and Measurement

Electrical Specifications, $T_A = +25^\circ\text{C}$, $V_{dd} = +5\text{V}/-5\text{V}$ & $V_{CTL} = 0 / +5\text{V}$

Description	PN: RFDAT1545G7A			
	Absorptive Digital Attenuator			
Parameters	Min	Typ	Max	Units
Frequency Range	1.5		4.5	GHz
Attenuation Range			31.75	dB
Attenuation Flatness: (Referenced to Insertion Loss)		± 1.0		dB
Control Bits			7	Bit
Control Step size	0.25			dB
Insertion Loss		2.7	3	dB
Insertion Loss Temperature Coefficient		0.005		dB/°C
Input VSWR (All States)		1.3	1.5	: 1
Output VSWR (All States)		1.3	1.5	: 1
Input 0.1dB Compression Point (Po.1dB)		30		dBm
Input IP3		54		dBm
Switching Speed		150	250	ns
Weight	1.41			ounces
Impedance	50			Ω
Bias Current (+5V/-5V)	50/50			mA
Input / Output Connectors	SMA - Female			
Interface and Control Connector	MICRO-D15 (Female)			
Finishing	Gold Plating			
Material	Aluminum			
Sealing	Hermetically Sealed (Optional)			

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Absolute Maximum Ratings

Biasing	+5V/-5V±10%
TTL Control Voltage	0~0.8/ 2.8~5V
RF Input Power	+25dBm

Ordering Information

Part No.	ECCN	Description
RFDAT1545G7A	EAR99	1.5-4.5GHz Digital Control Attenuator

Environmental Specifications and Test Standards

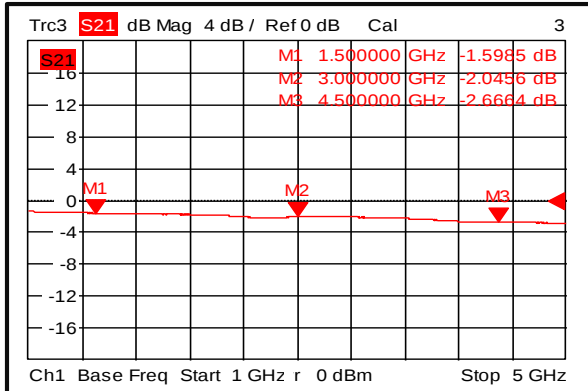
Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45°C~+85°C
Storage Temperature		-50°C~+125°C
Thermal Shock		1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85°C for 72 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)

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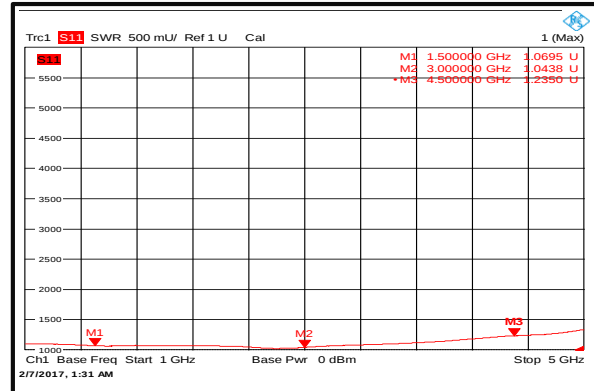


Typical Performance Plots

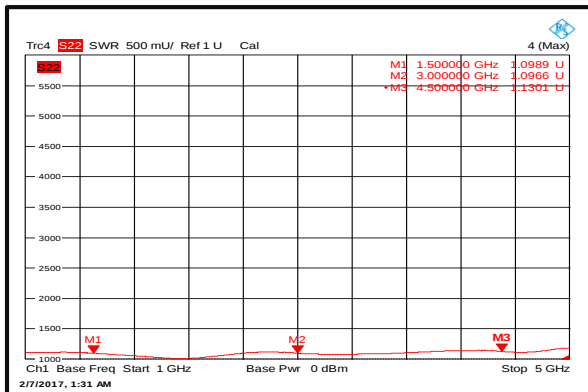
Insertion Loss



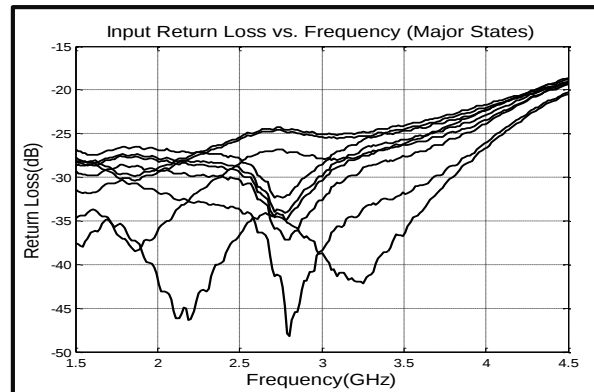
Input VSWR



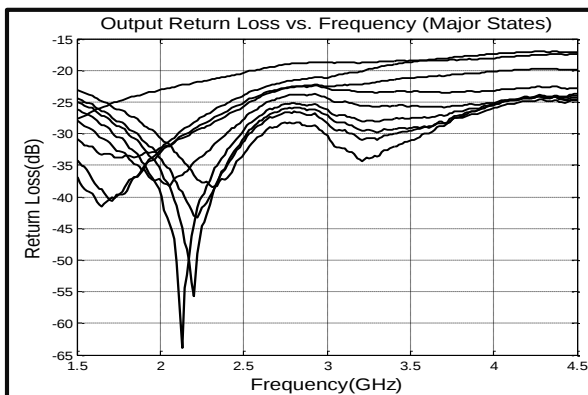
Output VSWR



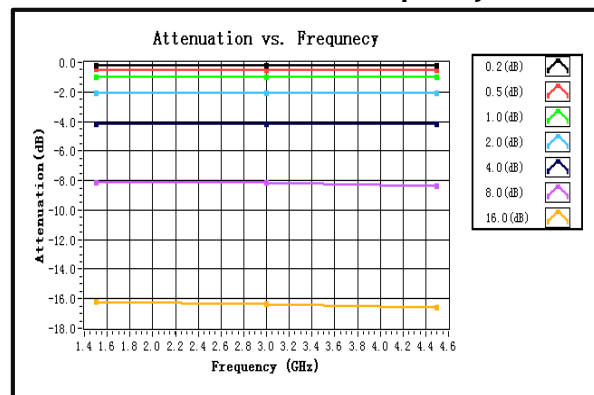
Input Return Loss vs. Frequency



Output Return Loss vs. Frequency

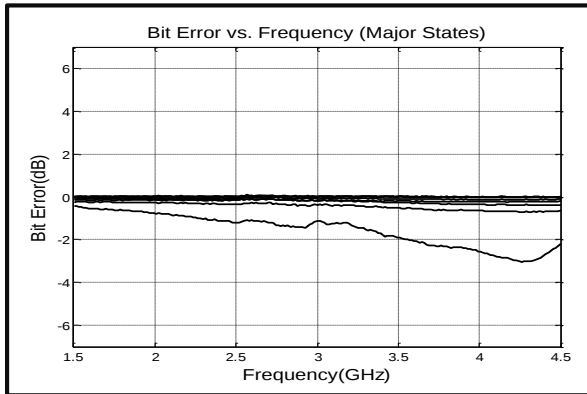


Attenuation Flatness vs. Frequency

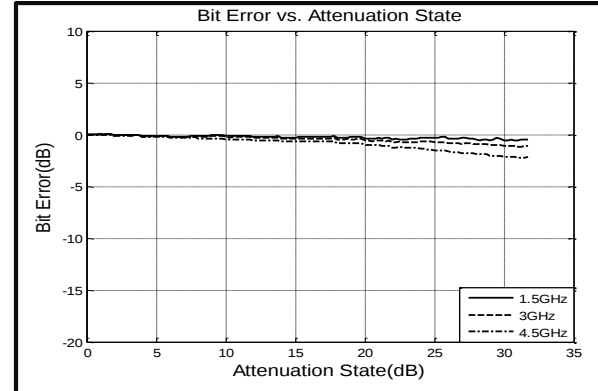




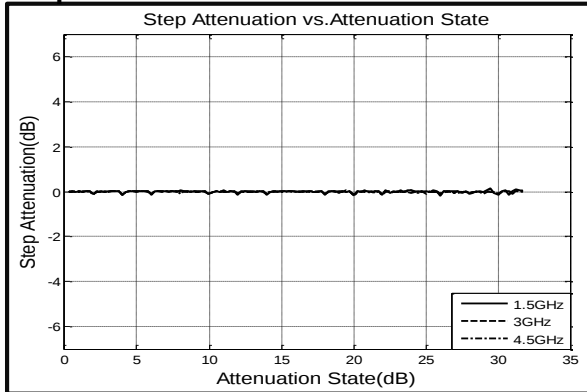
Bit Error vs. Frequency



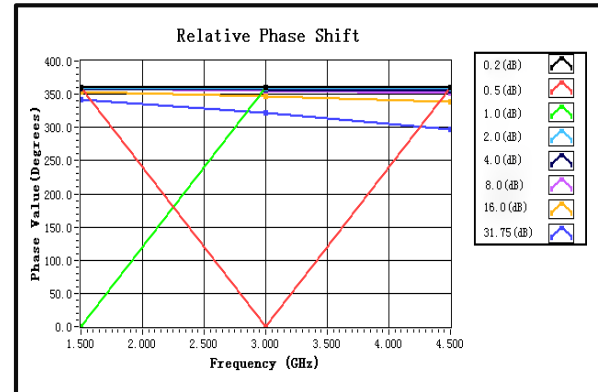
Bit Error vs. Attenuation State



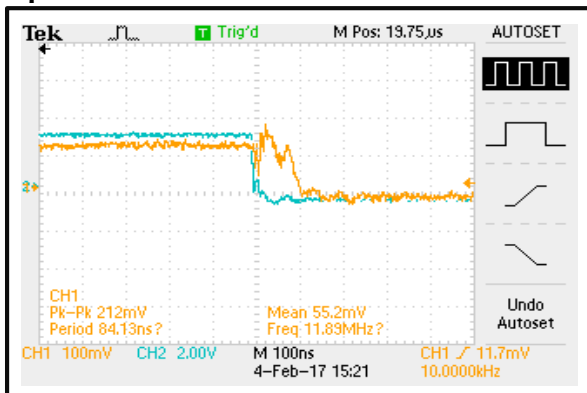
Step Attenuation vs. Attenuation State



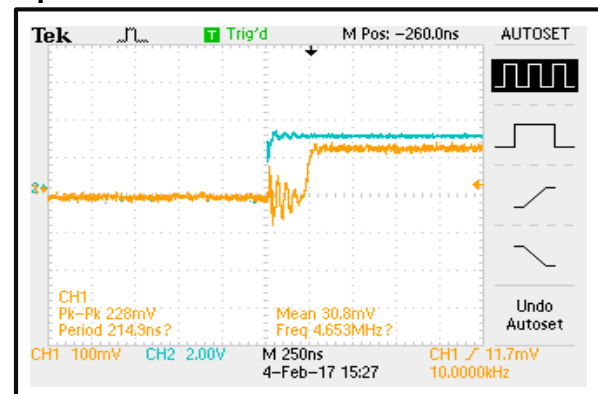
Relative Phase Shift



Speed



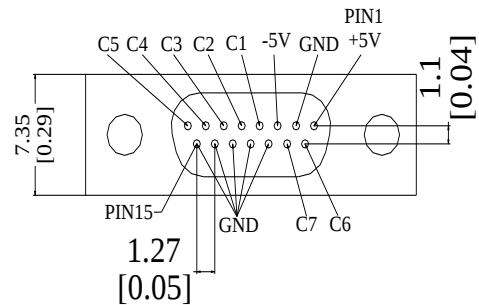
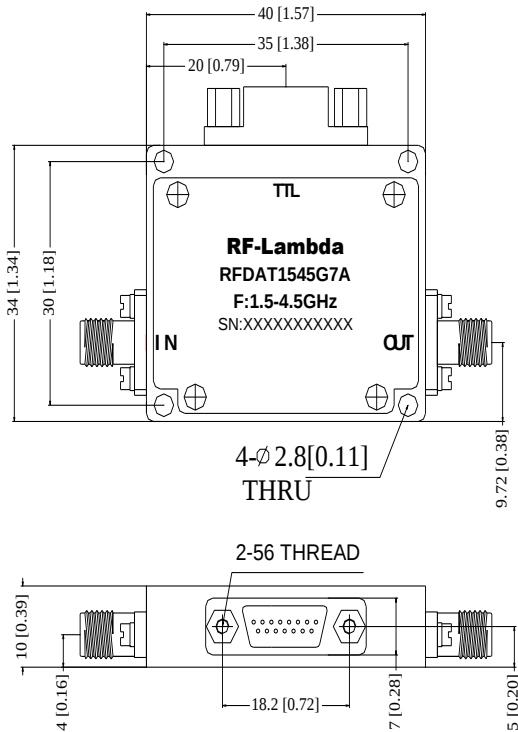
Speed





Outline Drawing:

All Dimensions in mm [inches]



MICRO-D15 (Female)

Truth Table

Control Voltage Input							Attenuation state
C7	C6	C5	C4	C3	C2	C1	
1	1	1	1	1	1	1	Reference IL
1	1	1	1	1	1	0	0.25dB
1	1	1	1	1	0	1	0.5dB
1	1	1	1	0	1	1	1dB
1	1	1	0	1	1	1	2dB
1	1	0	1	1	1	1	4dB
1	0	1	1	1	1	1	8dB
0	1	1	1	1	1	1	16dB
0	0	0	0	0	0	0	31.75dB



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