



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0102G6A

Absorptive Digital Control Attenuator 1 - 2GHz



Features

- Wide Band Operation 1-2GHz
- 1dB LSB Steps to 63dB
- Single Positive Control Line Per Bit
- Customization available upon request

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test & Measurement

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

Description	PN: RFDAT0102G6A			
	Absorptive Digital Attenuator			
Parameters	Min	Typ.	Max	Units
Frequency Range	1		2	GHz
Attenuation Range		63		dB
Attenuation Flatness: (Referenced to Insertion Loss)		± 1.0	± 2.0	dB
Control Bits			6	Bit
Control Step size	1			dB
Insertion Loss		2	2.5	dB
Insertion Loss Temperature Coefficient		0.003		dB/ $^{\circ}\text{C}$
Input VSWR (All Atten. States)			1.5	: 1
Output VSWR (All Atten. States)			1.5	: 1
Input 0.1 dB Compression Point (Po.1dB)		27		dBm
IP3 Input		45		dBm
Switching Speed		100		ns
Weight		0.71		ounces
Impedance		50		Ω
Bias Current (+5V/-5V)		150/80		mA
Input /Output Connectors	SMA-Female			
Interface and control connertor	MICRO-D9 (Female)			
Finish	Gold Plated			
Material	Aluminum			
Sealing	Hermetically Sealed (Optional)			

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Absolute Maximum Ratings

Biasing	+5V±10%/-5V±10%
TTL Control Voltage	0~0.8V/2~5V
RF Input Power	+27dBm

Ordering Information

Part No.	ECCN	Description
RFDAT0102G6A	EAR99	1-2GHz Digital Control Attenuator

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		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)



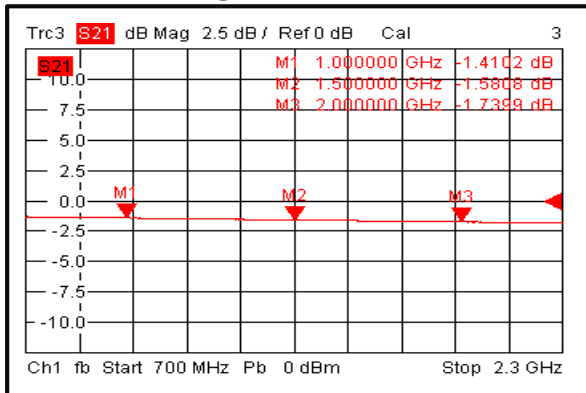
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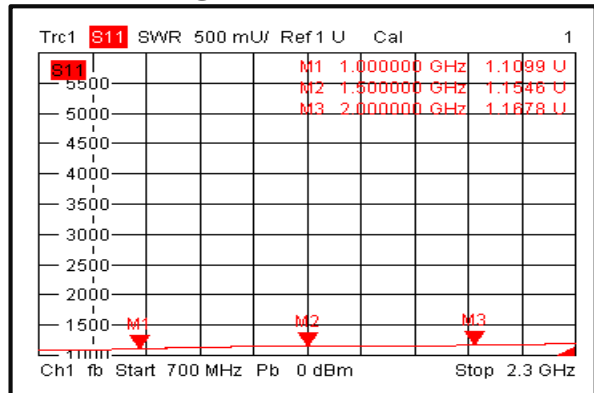
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Typical Performance Plots

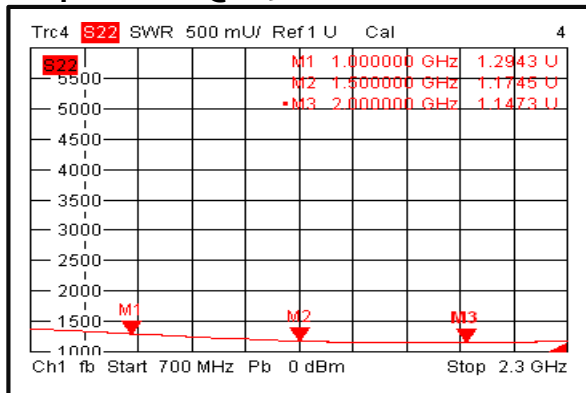
Insertion Loss @+25°C



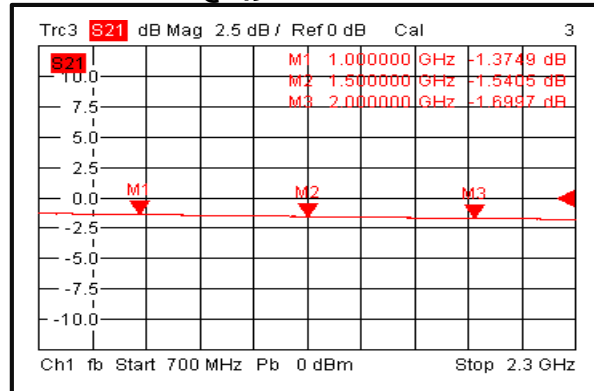
Input VSWR @+25°C



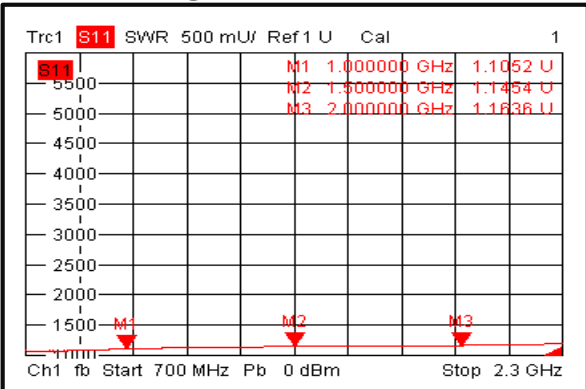
Output VSWR @+25°C



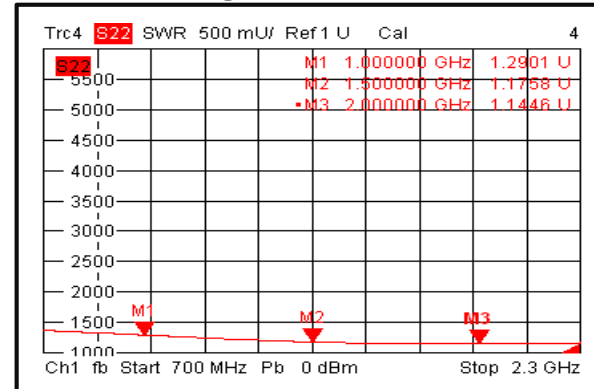
Insertion Loss @-45°C



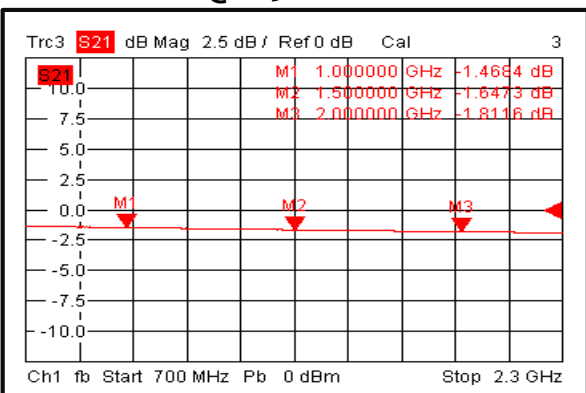
Input VSWR @-45°C



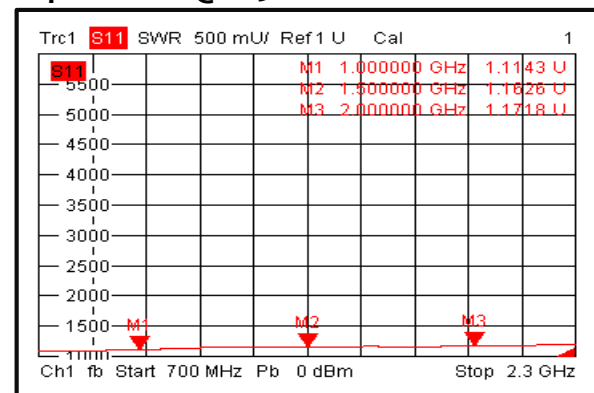
Output VSWR @-45°C



Insertion Loss @+85°C



Input VSWR @+85°C



Absorptive Digital Control Attenuator 1 - 2GHz

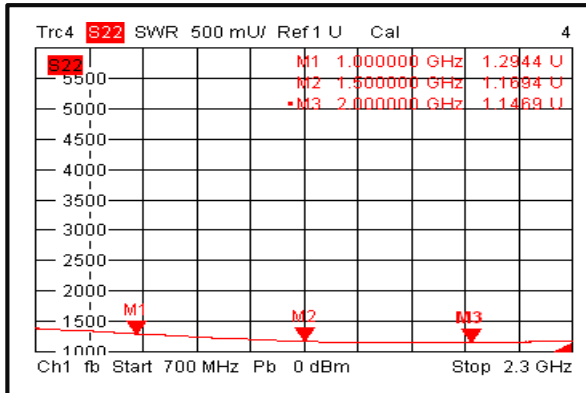


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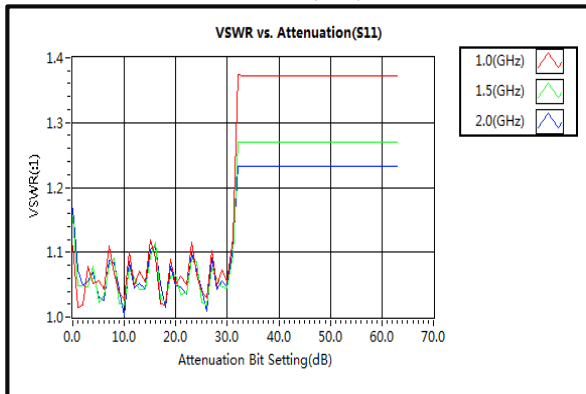
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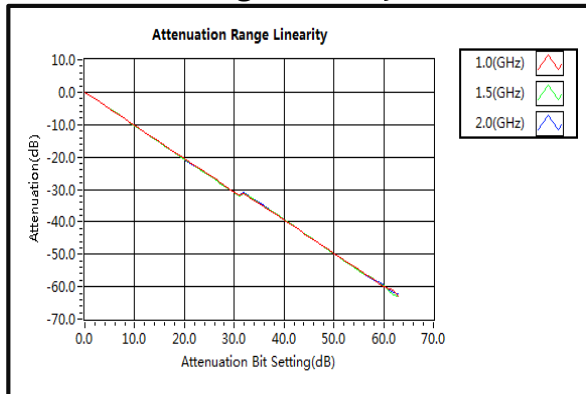
Output VSWR @+85°C



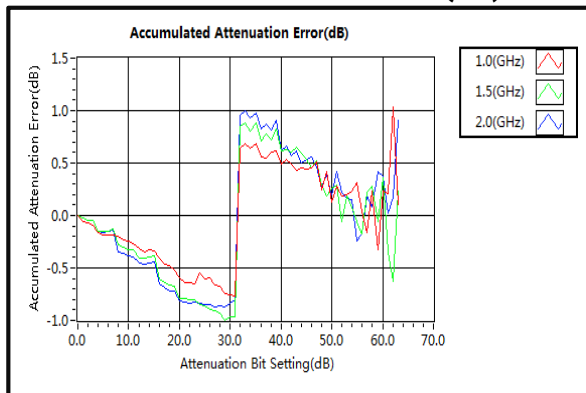
VSWR vs. Attenuation(S11)



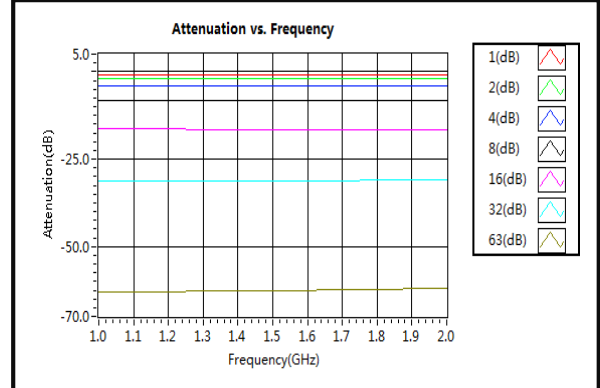
Attenuation Range Linearity



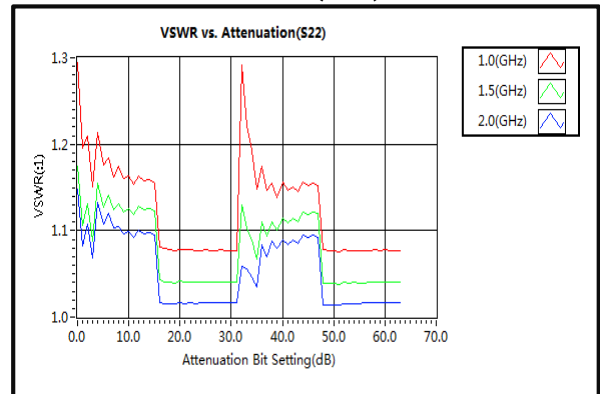
Accumulated Attenuation Error(dB)



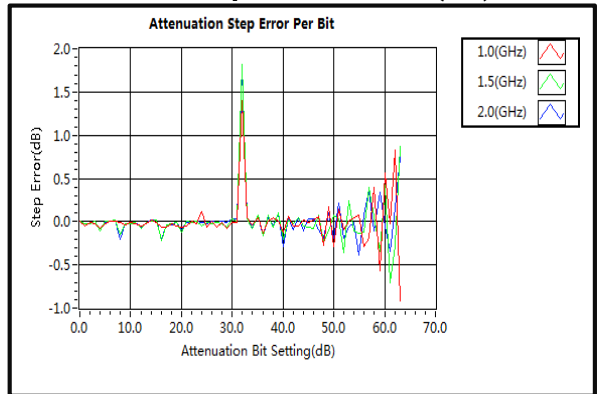
Attenuation vs. Frequency



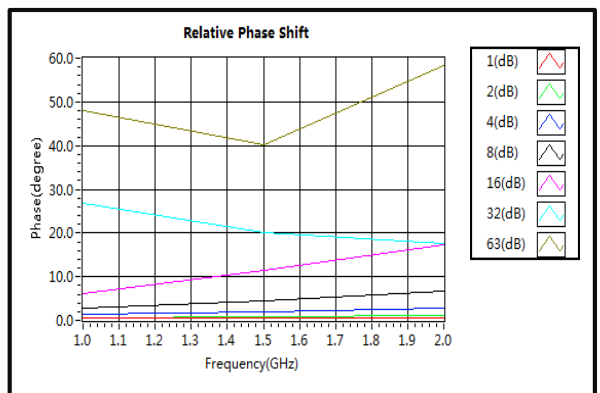
VSWR vs. Attenuation(S22)



Attenuation Step Error Per Bit (dB)



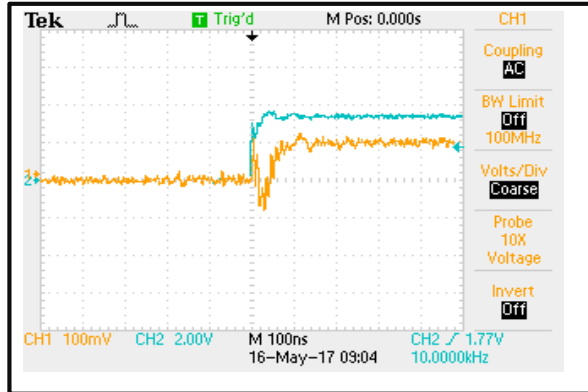
Relative Phase Shift



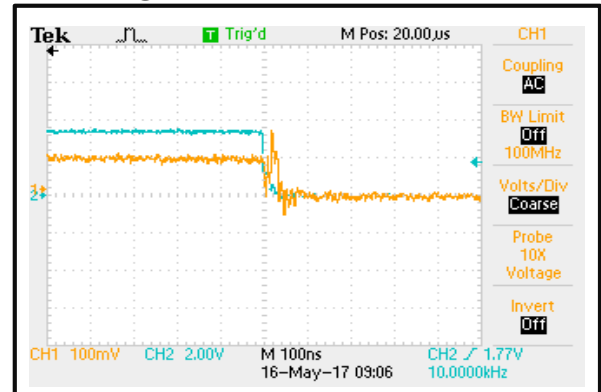
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Switching Speed

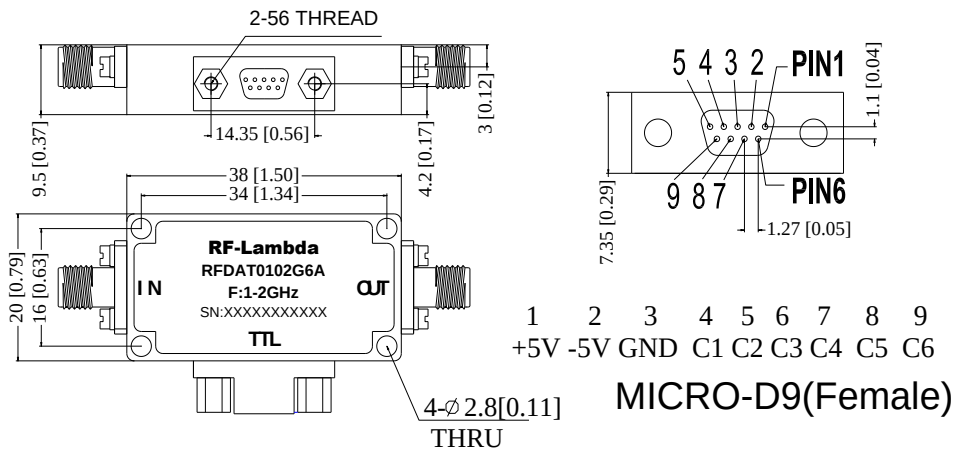


Switching Speed



Outline Drawing:

All Dimensions in mm [inches]



Truth Table

Control Voltage Input						Attenuation state
C6	C5	C4	C3	C2	C1	
0	0	0	0	0	0	Reference IL
0	0	0	0	0	1	1dB
0	0	0	0	1	0	2dB
0	0	0	1	0	0	4dB
0	0	1	0	0	0	8dB
0	1	0	0	0	0	16dB
1	0	0	0	0	0	32dB
1	1	1	1	1	1	63dB

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