



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0106G7A

Absorptive Digital Control Attenuator 0.1-6GHz



Features

- Ultra Wide Band Operation 0.1-6GHz
- 0.5dB LSB Steps to 63.5dB
- Single Positive Control Line Per Bit
- Customization available upon request

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

Description	PN: RFDAT0106G7A									
	Absorptive Digital Attenuator									
Parameters	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1		0.2	0.2		2.5	2.5		6	GHz
Attenuation Range		60				63.5			63.5	dB
Attenuation Flatness: (Referenced to Insertion Loss)		± 0.5			± 0.8			± 1.0		dB
Control Bits	7									Bit
Control Step size		0.5			0.5			0.5		dB
Insertion Loss		2.5	3.0		3.5	4.5		5.5	7.0	dB
Insertion Loss Temperature Coefficient		0.01				0.01		0.01		dB/°C
Input VSWR (All States)		1.5	1.8		1.3	1.5		1.3	1.5	:1
Output VSWR (All States)		1.5	1.8		1.3	1.5		1.3	1.5	:1
Input 0.1 dB Compression Point		30			30			30		dBm
IP3 Input		54			54			54		dBm
Switching Speed 50% CTRL* to 90% or 10%	150									ns
Weight	1.06									ounces
Impedance	50									Ω
Bias Current (+5V)	20									mA
Input / Output Connectors	SMA - Female									
Interface and Control Connector	MICRO-D15(Female)									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (Optional)									

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Absolute Maximum Ratings

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

Ordering Information

Part No.	ECCN	Description
RFDAT0106G7A	EAR99	0.1-6GHz 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)



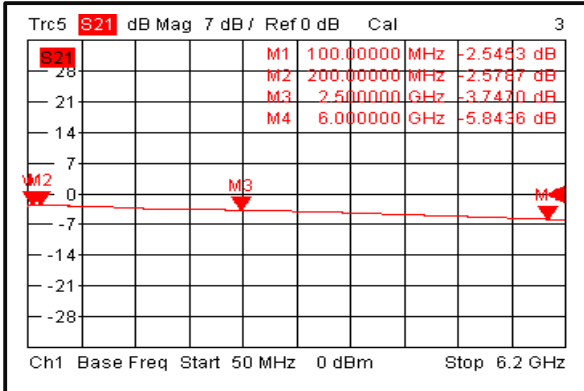
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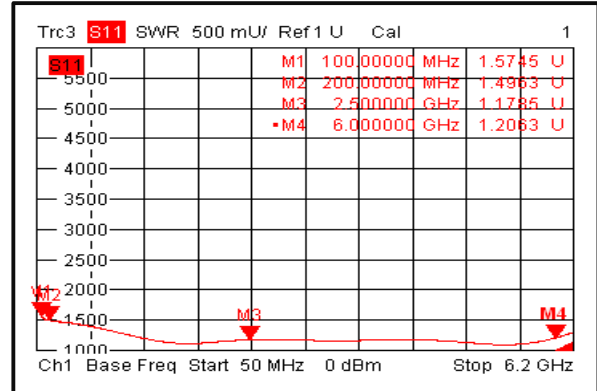
RFDAT0106G7A

Typical Performance Plots

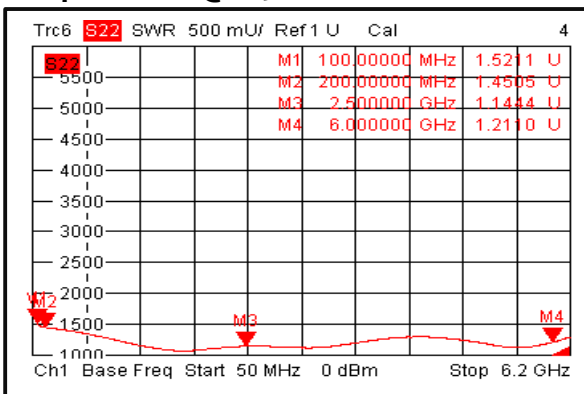
Insertion Loss @+25°C



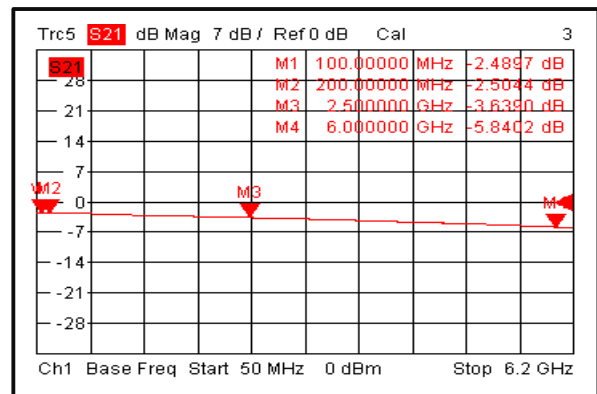
Input VSWR@+25°C



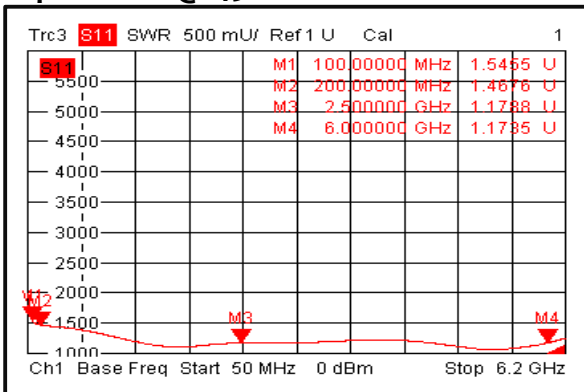
Output VSWR@+25°C



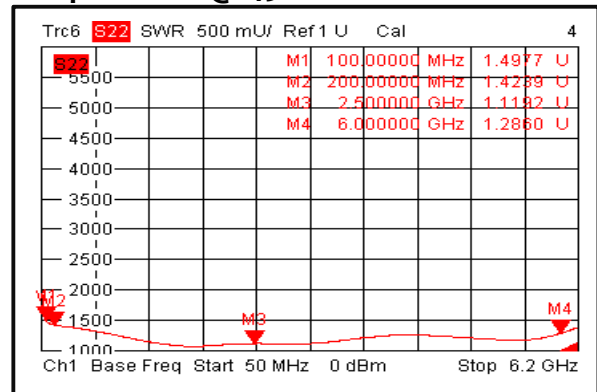
Insertion Loss @-45°C



Input VSWR@-45°C



Output VSWR@-45°C



Absorptive Digital Control Attenuator 0.1-6GHz

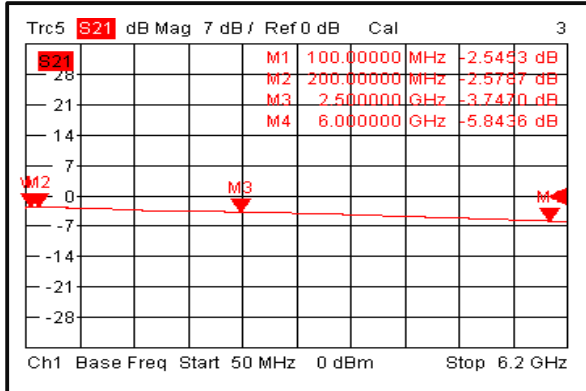


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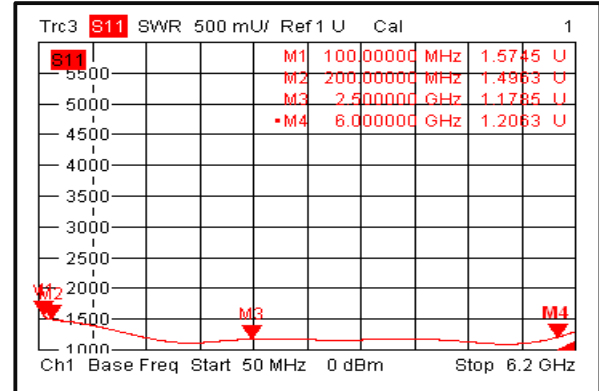
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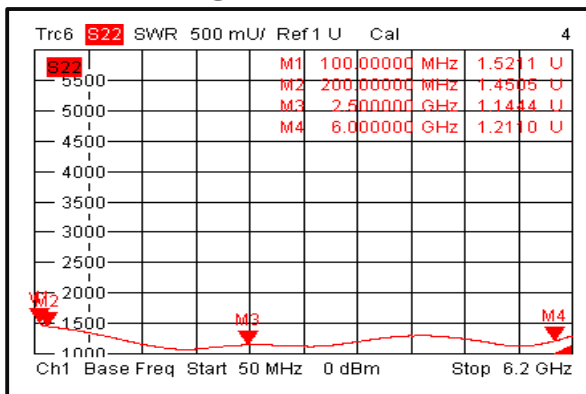
Insertion Loss@+85°C



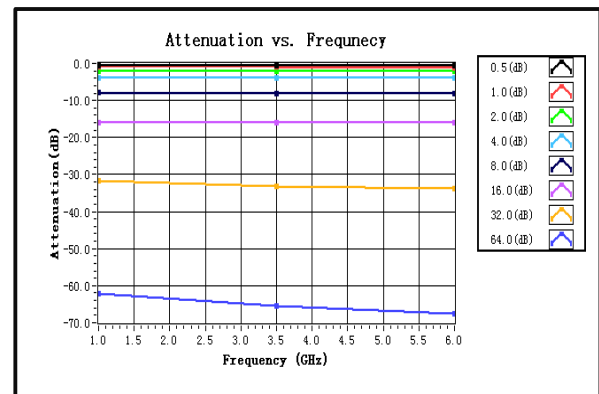
Input VSWR@+85°C



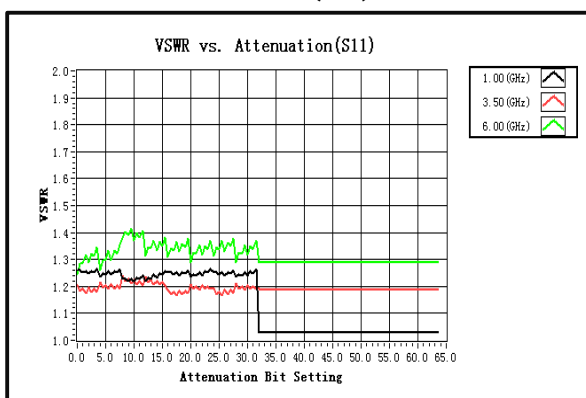
Output VSWR@+85°C



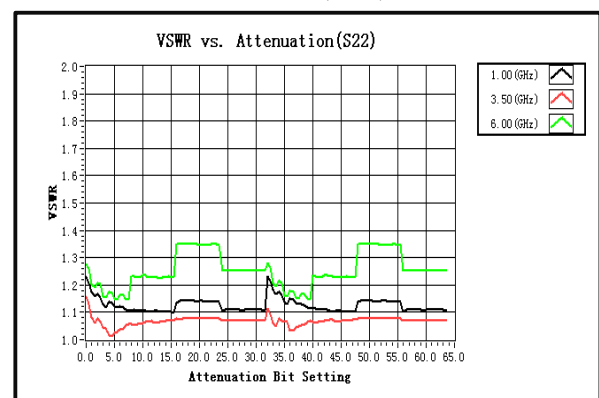
Attenuation vs. Frequency



VSWR vs. Attenuation(S11)



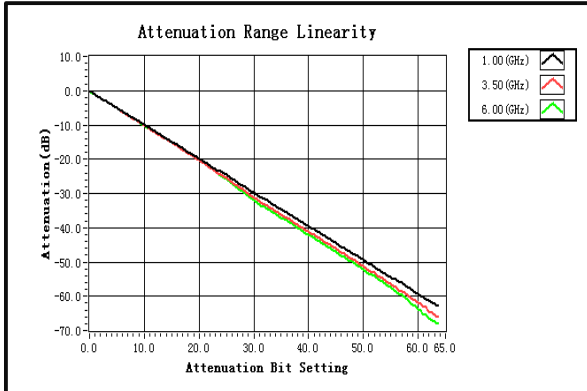
VSWR vs. Attenuation(S22)



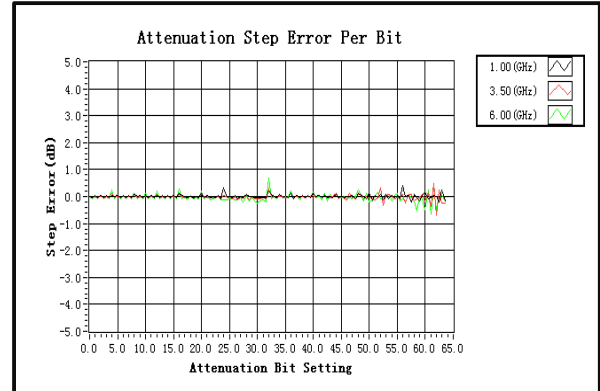
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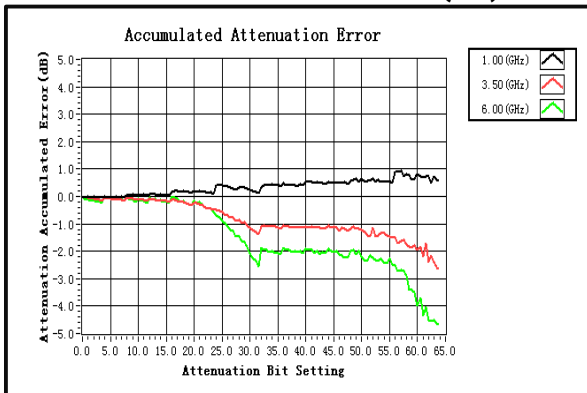
Attenuation Range Linearity



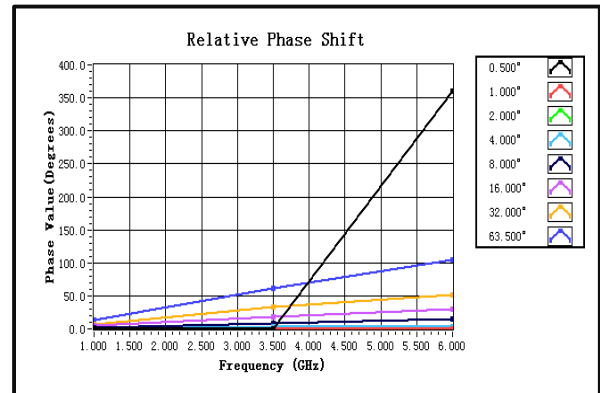
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error(dB)



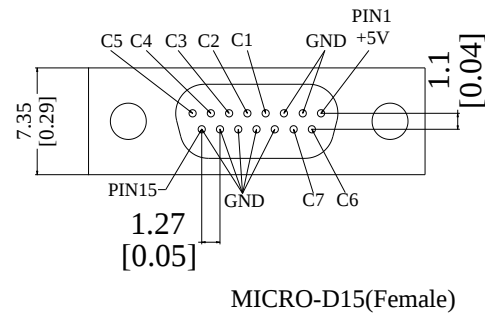
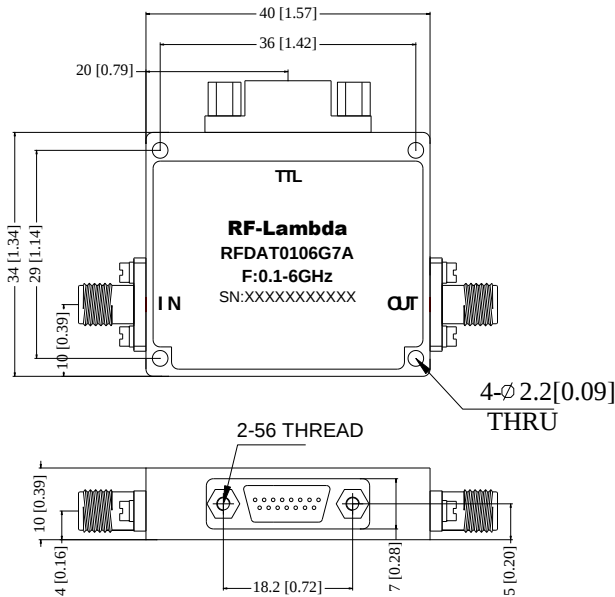
Relative Phase Shift





Outline Drawing:

All Dimensions in mm [inches]



Truth Table

Control Voltage Input							Attenuation State
C7	C6	C5	C4	C3	C2	C1	Reference IL
0	0	0	0	0	0	0	0.5dB
0	0	0	0	0	1	0	1dB
0	0	0	0	1	0	0	2dB
0	0	0	1	0	0	0	4dB
0	0	1	0	0	0	0	8dB
0	1	0	0	0	0	0	16dB
1	0	0	0	0	0	0	32dB
1	1	1	1	1	1	1	63.5dB

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