



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0840G7A

Absorptive Digital Control Attenuator 8 - 40GHz



Features

- Wide Band Operation 8-40GHz
- 0.5dB LSB Steps to 63.5dB
- Single Positive Control Line Per Bit
- Customization available upon request

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

Description	PN: RFDAT0840G7A									
	Absorptive Digital Attenuator									
Parameters	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	8-18			18-26.5			26.5-40			GHz
Attenuation Range			63.5			63.5			63.5	dB
Attenuation Flatness: (Referenced to Insertion Loss)		± 2.0	± 2.5		± 2.5	± 3.0		± 3.0	± 4.0	dB
Control Bits			7			7			7	Bit
Control Step Size	0.5			0.5			0.5			dB
Insertion Loss		14.0	15.0		15.0	17.0		20.0	23.0	dB
Insertion Loss Temperature Coefficient			0.01			0.01		0.01		dB/ $^{\circ}\text{C}$
Input VSWR (All States)		1.8	2.2		2.0	2.3		2.2	2.5	: 1
Output VSWR (All States)		1.8	2.2		2.0	2.3		2.2	2.5	: 1
Input 0.1 dB Compression Point		25			25			25		dBm
IP3 Input		45			43			43		dBm
Switching Speed 50% CTRL* to 90% or 10%	150									ns
Weight	1.06									ounces
Impedance	50									Ω
Bias Current (+5V/-5V)	70/50									mA
Input / Output Connectors	2.92mm - 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%/-5V±10%
TTL Control Voltage	0~0.8V / 2.8~5V
RF Input Power	+27dBm

Ordering Information

Part No.	ECCN	Description
RFDAT0840G7A	EAR99	8-40GHz Digital Control Attenuator

Environmental Specifications and Test Standards

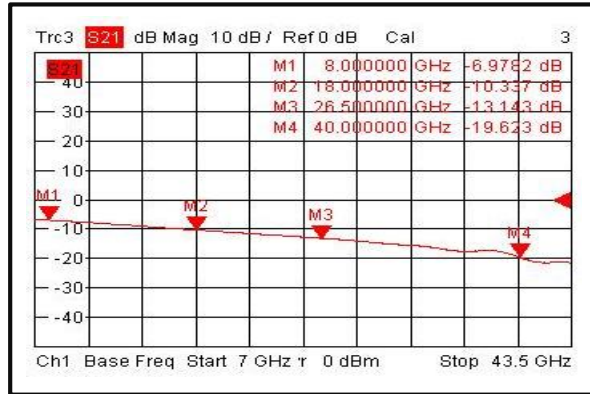
Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-40°C~+85°C
Storage Temperature		-55°C~+125°C
Thermal Shock		1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85°C for 72 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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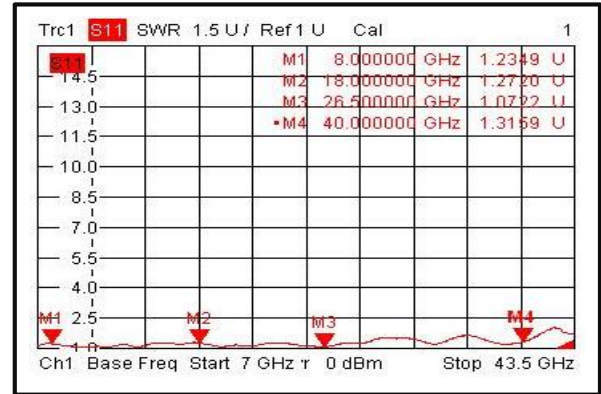


Typical Performance Plots

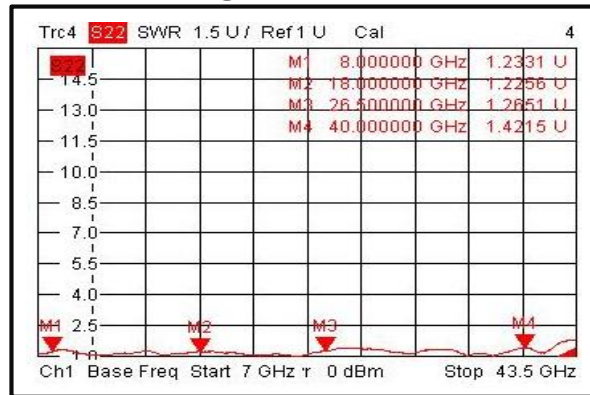
Insertion Loss@+25°C



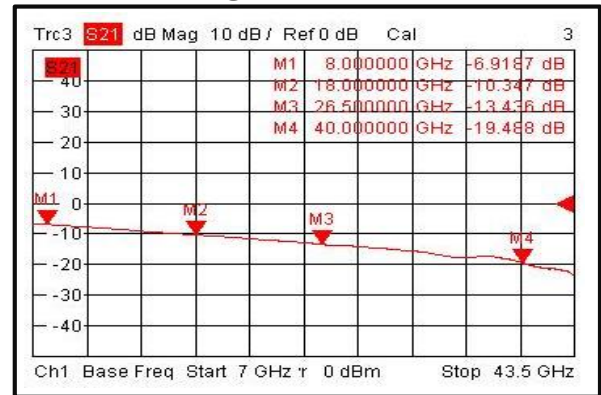
Input VSWR@+25°C



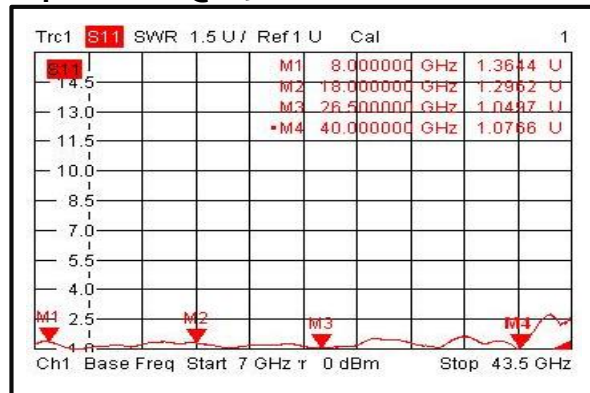
Output VSWR @+25°C



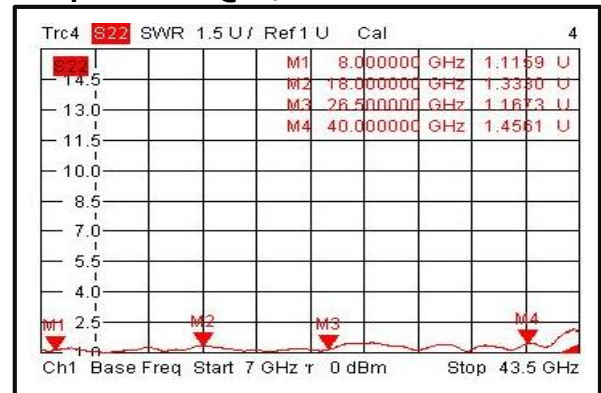
Insertion Loss @-45°C



Input VSWR @-45°C

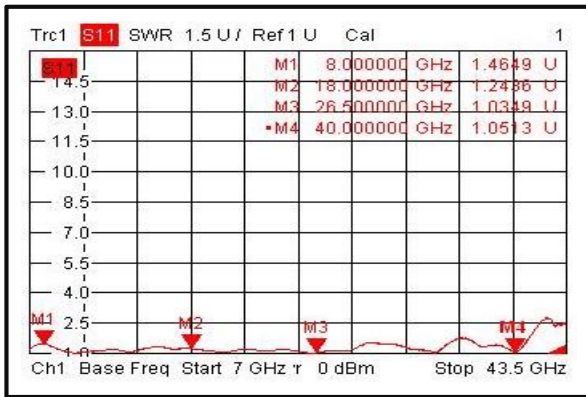


Output VSWR @-45°C

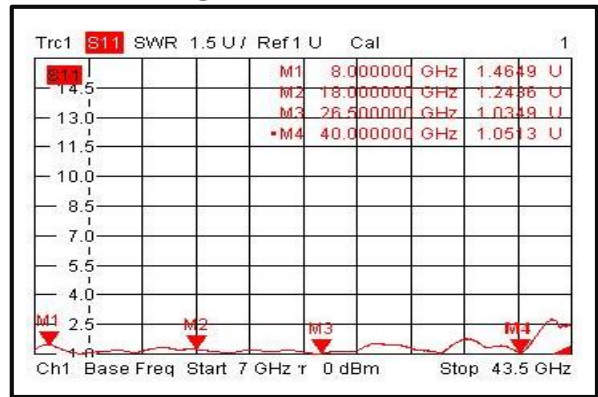




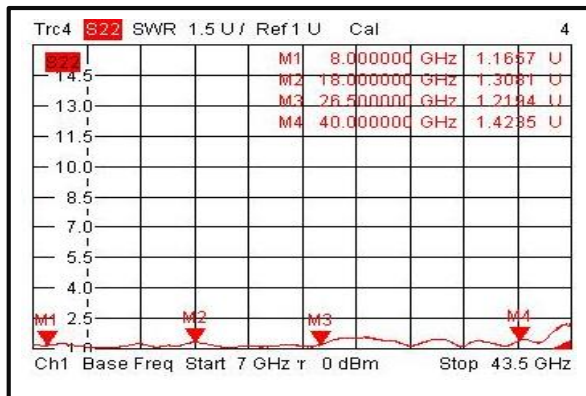
Insertion Loss @+85°C



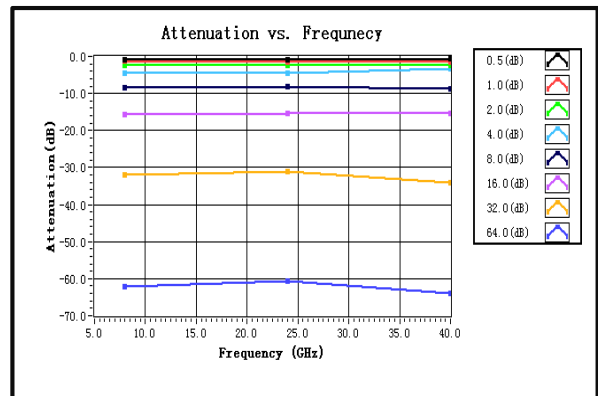
Input VSWR @+85°C



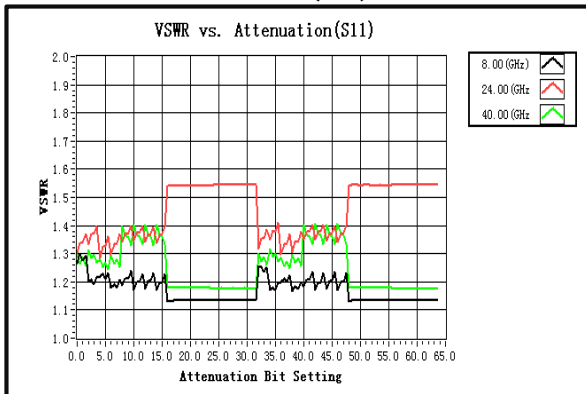
Output VSWR @+85°C



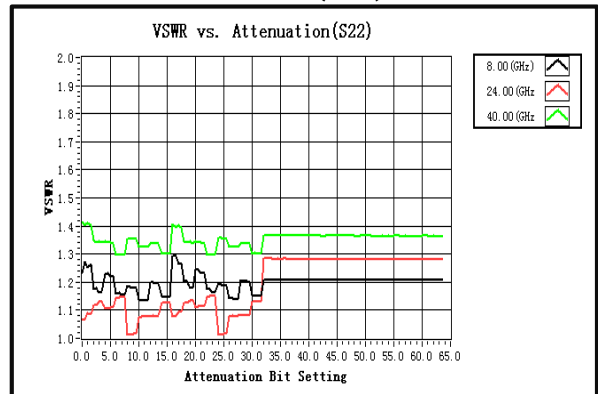
Attenuation vs. Frequency



VSWR vs. Attenuation(S11)

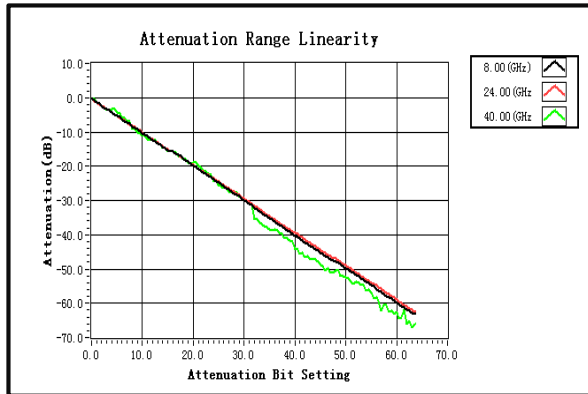


VSWR vs. Attenuation(S22)

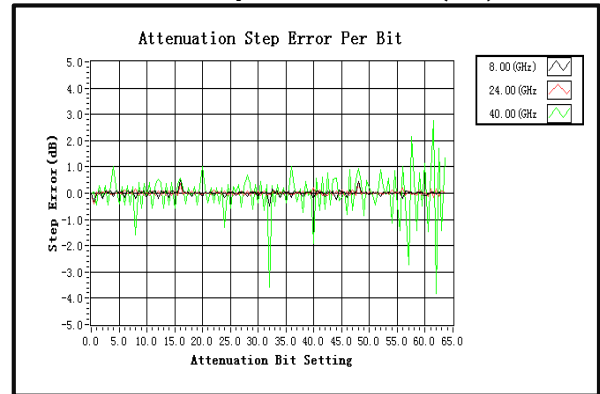




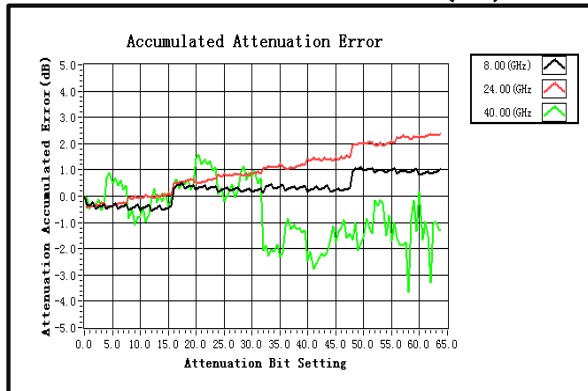
Attenuation Range Linearity



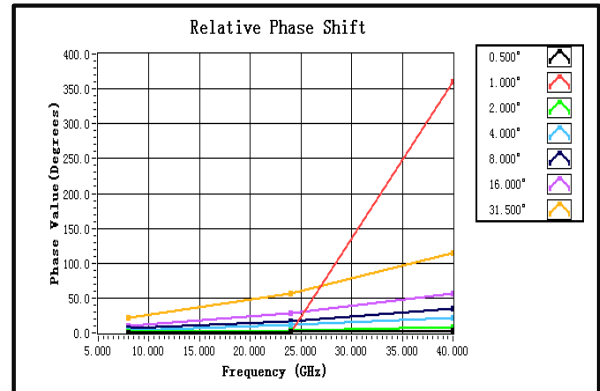
Attenuation Step Error Per Bit (dB)



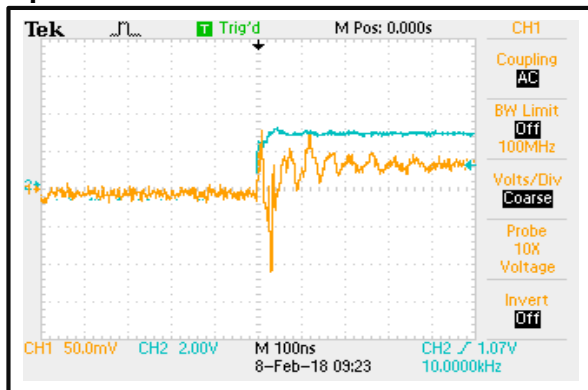
Accumulated Attenuation Error (dB)



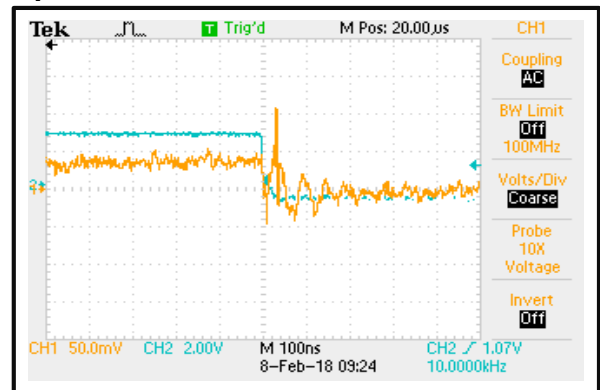
Relative Phase Shift



Speed



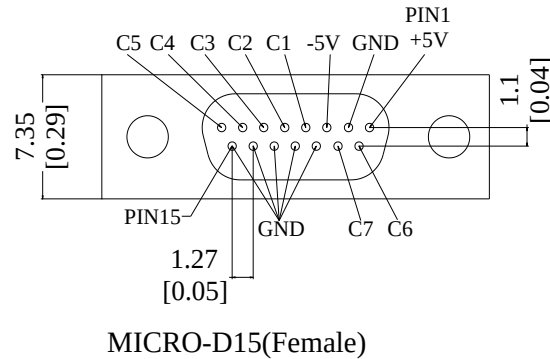
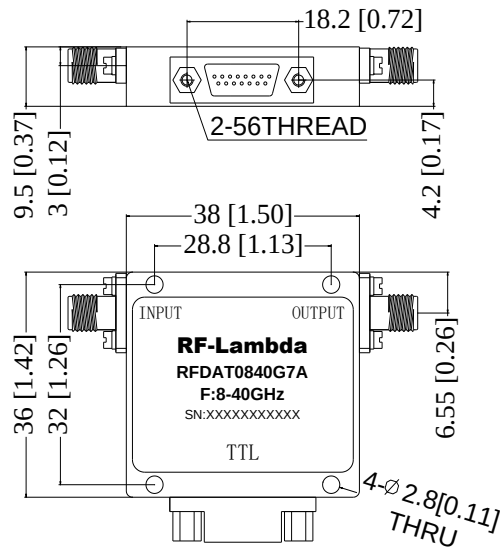
Speed





Outline Drawing:

All Dimensions in mm [inches]



Truth Table

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



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