



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0418G8H

Hermetically Sealed Absorptive Digital Control Attenuator 4 - 18GHz



Features

- Wide Band Operation 4-18GHz
- 0.25dB LSB Steps to 64dB
- 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: RFDAT0418G8H						
	Absorptive Digital Attenuator						
Parameters	Min	Typ.	Max	Min	Typ.	Max	Units
Frequency Range	4-12			12-18			GHz
Attenuation Range			64			64	dB
Attenuation Flatness (Referenced to Insertion Loss)		± 1.0	± 3.0		± 3.0	± 6.0	dB
Control Bits	8						Bit
Control Step size		0.25			0.25		dB
Insertion Loss		5.5	7.0		7.0	8.0	dB
Insertion Loss Temperature Coefficient		0.01			0.01		dB/ $^{\circ}\text{C}$
Input VSWR (All Atten. States)		1.6	2.0		1.6	2.0	: 1
Output VSWR (All Atten. States)		1.6	2.0		1.6	2.0	: 1
Input 0.1 dB Compression Point ($P_{0.1\text{dB}}$)		25			25		dBm
Input IP_3		43			43		dBm
Weight	2.12						ounces
Impedance	50						Ω
Bias Current (+5V/-5V)	140 / 140						mA
Input / Output Connectors	SMA - Female						
Finish	Gold Plated						
Material	Aluminum						
Sealing	Hermetically Sealed (Laser Sealed)						

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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
RFDAT0418G8H	EAR99	4-18GHz 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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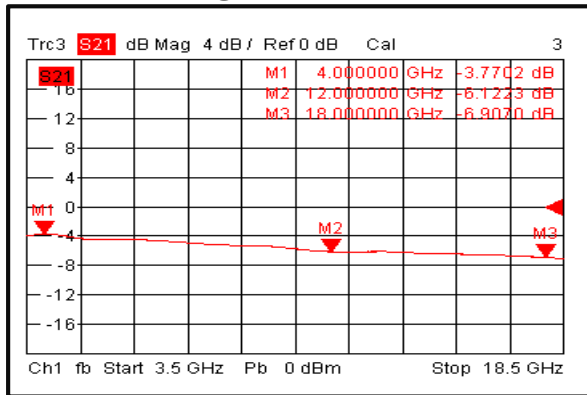
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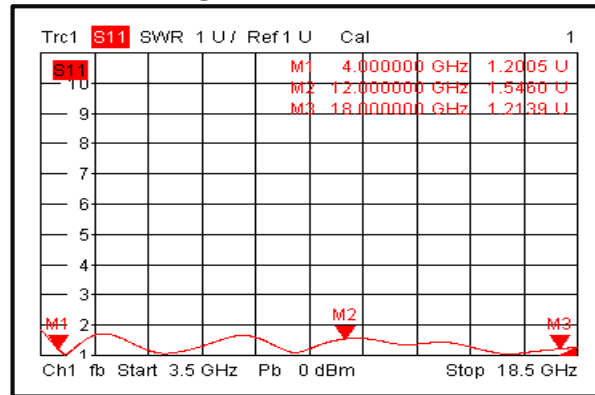
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Typical Performance Plots

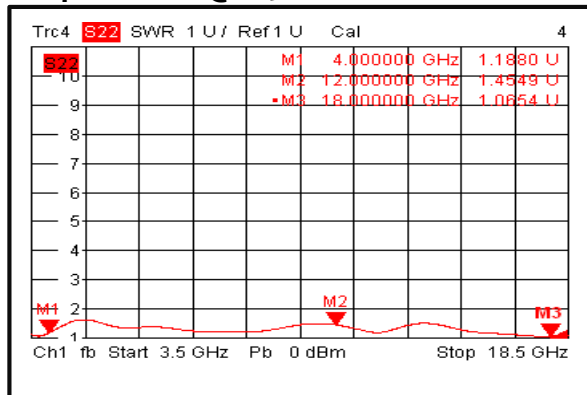
Insertion Loss @+25°C



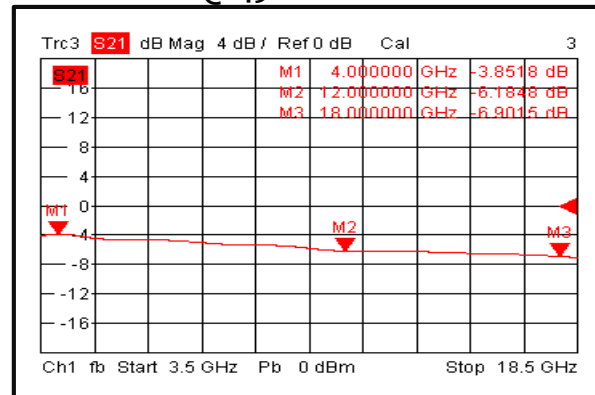
Input VSWR @+25°C



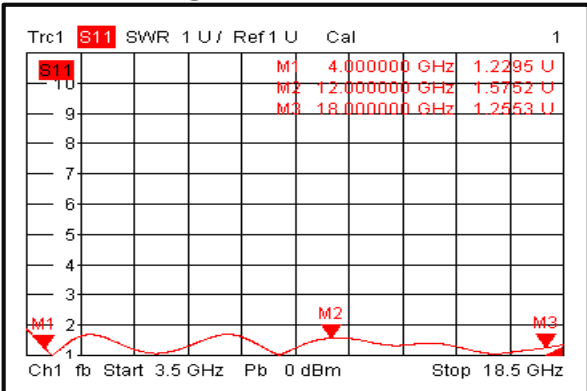
Output VSWR @+25°C



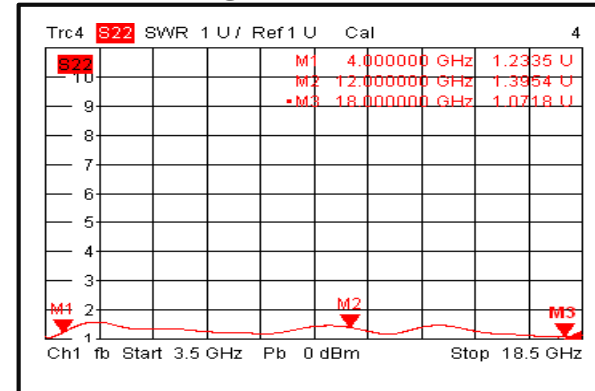
Insertion Loss @-45°C



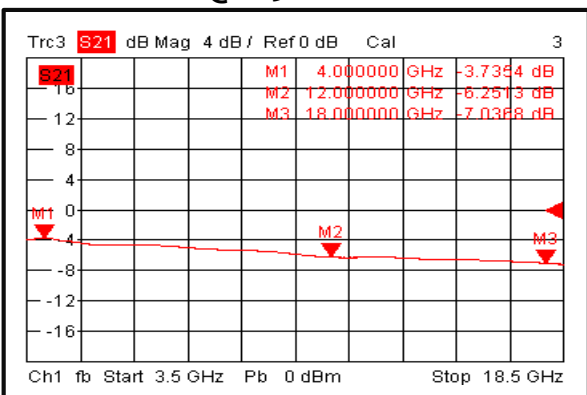
Input VSWR @-45°C



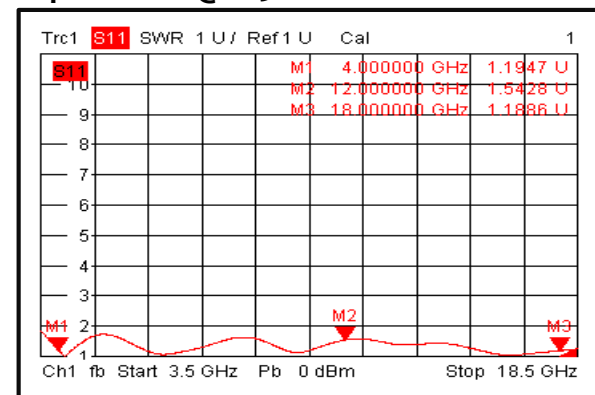
Output VSWR @-45°C



Insertion Loss @+85°C



Input VSWR @+85°C



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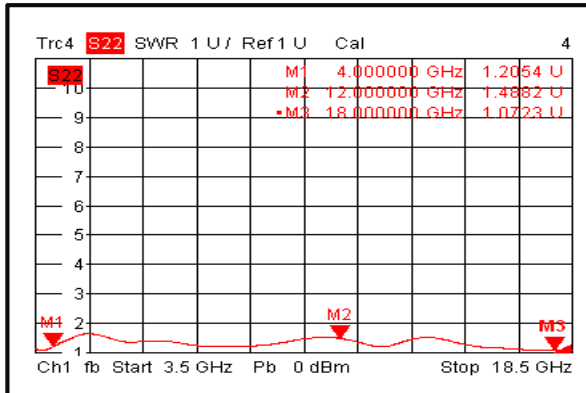


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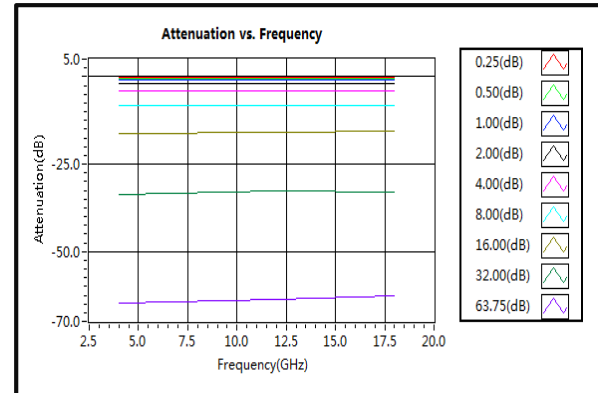
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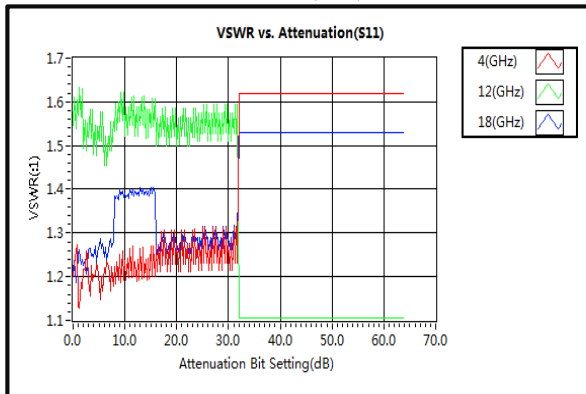
Output VSWR @+85°C



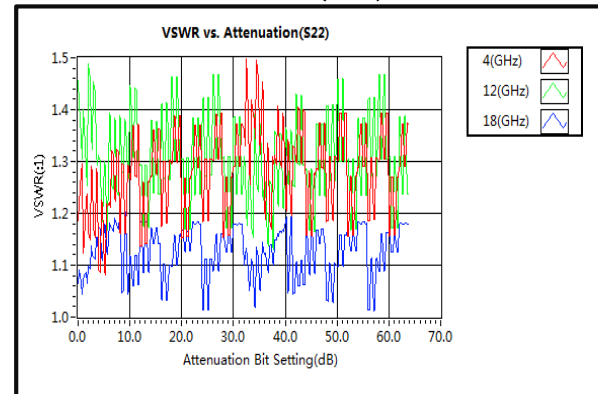
Attenuation vs. Frequency



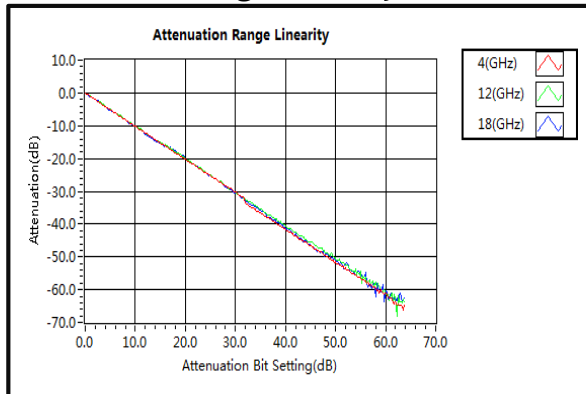
VSWR vs. Attenuation(S11)



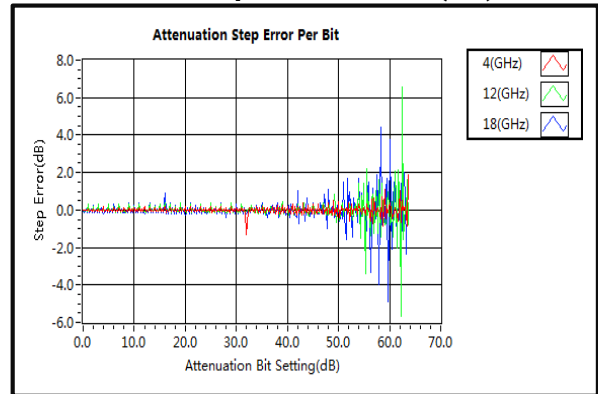
VSWR vs. Attenuation(S22)



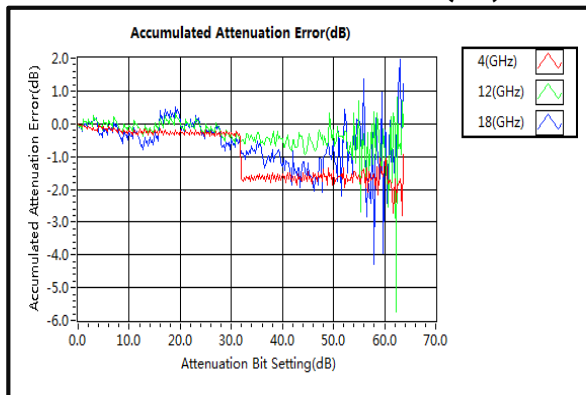
Attenuation Range Linearity



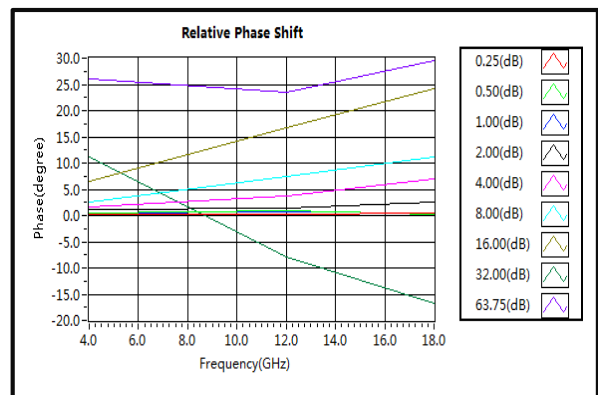
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error(dB)



Relative Phase Shift



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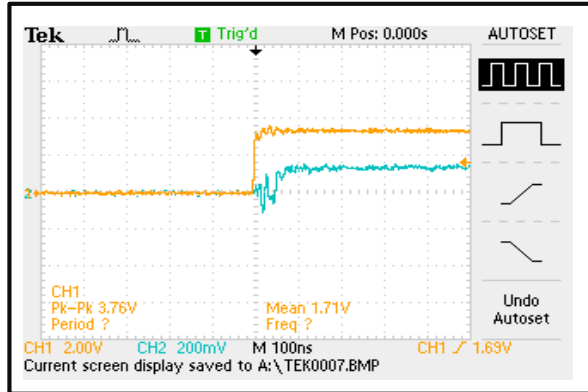


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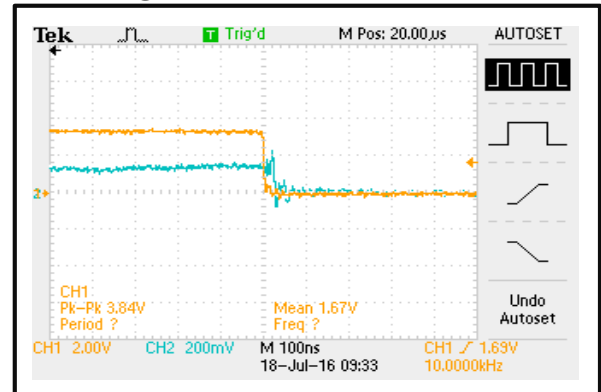
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Switching Speed



Switching Speed

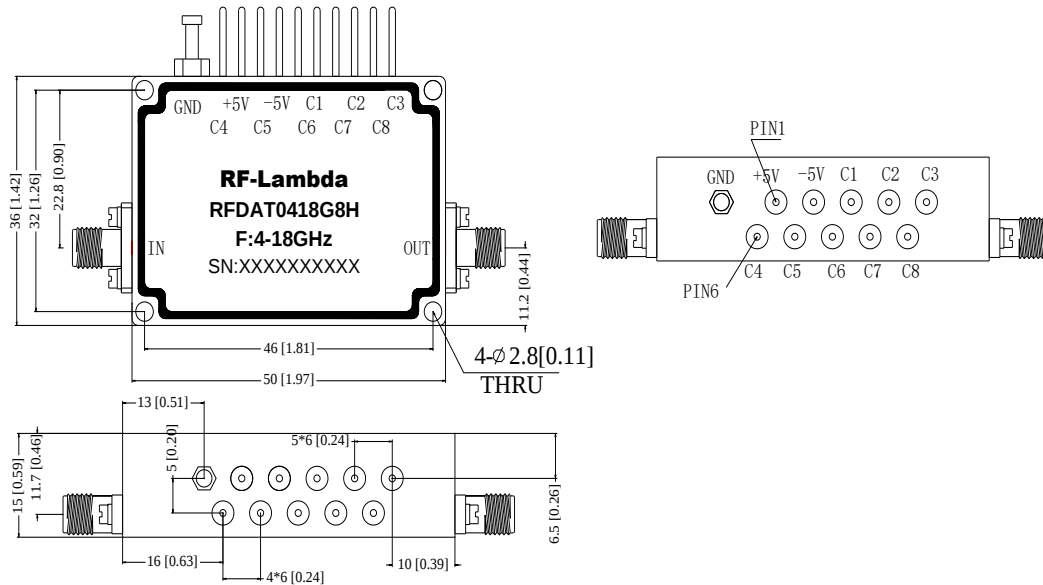


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Outline Drawing:

All Dimensions in mm [inches]



Truth Table

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	0.25dB
1	1	1	1	1	1	0	1	0.5dB
1	1	1	1	1	0	1	1	1dB
1	1	1	1	0	1	1	1	2dB
1	1	1	0	1	1	1	1	4dB
1	1	0	1	1	1	1	1	8dB
1	0	1	1	1	1	1	1	16dB
0	1	1	1	1	1	1	1	32dB
0	0	0	0	0	0	0	0	64dB



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