Absorptive Digital Control Attenuator 1GHz-18GHz

Product Description

RFDAT0118G6A is an absorptive digital control attenuator with a frequency range of 1 to 18GHz.

The power input of this attenuation is 30dBm typical. The insertion loss is 7.0dB with a typical attenuation range of 63dB.

The working temperature of this product is between - 40℃ and + 85℃.

Features

- Absorptive Digital Control Attenuator
- 1dB LSB Steps to 63dB
- Single Positive Control Line Per Bit

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications (T_A=+25ºC) ,Vdd = +5V, Vss = -5V & VCTL = 0 / +5V

Parameter	Min	Typ	Max	Units
Frequency Range	1		18	GHz
Attenuation Range		63		dB
Attenuation Flatness (Referenced to Insertion Loss)		±3		dB
Control Bits		6		Bit
Control Step Size		1		dB
Insertion Loss		7.5	8.2	dB
Insertion Loss Temperature Coefficient		0.005		dB/ °C
Input VSWR (All Atten. States)		1.6	2.0	: 1
Output VSWR (All Atten. States)		1.6	2.0	: 1
Input 0.1dB Compression Point (P0.1dB)		30		dBm
IP3 Input		40		dBm
Switching Speed		150 Max.		ns
Bias Current (+5V/-5V)		130/130 Max.		mA
Weight		0.05 Max.		lbs.
Impedance		50		Ohms
Input / Output Connectors		SMA-Female (Input) – SMA-Female (Output)		
Interface and Control Connector		MICRO-D9 (Female)		
Package		Epoxy Sealed (Standard)		
		Hermetically Sealed (Optional)		

Absolute Maximum Ratings

Parameter	Rating
Biasing Voltage	+5V±10%/-5V±10%
RF Input Power	+30dBm

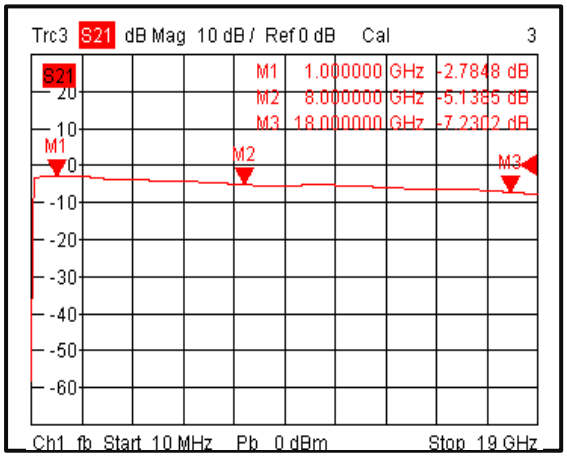
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40ºC to +85ºC (Case Temperature)
Storage Temperature	-50ºC to +105ºC
Thermal Shock	-40ºC → +85ºC (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85ºC 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 (For Hermetically Sealed Units)

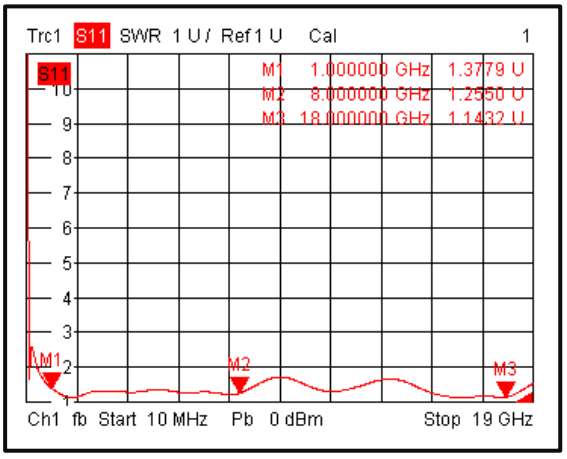
**For vibration testing details please see additional information section.

Typical Performance Plots

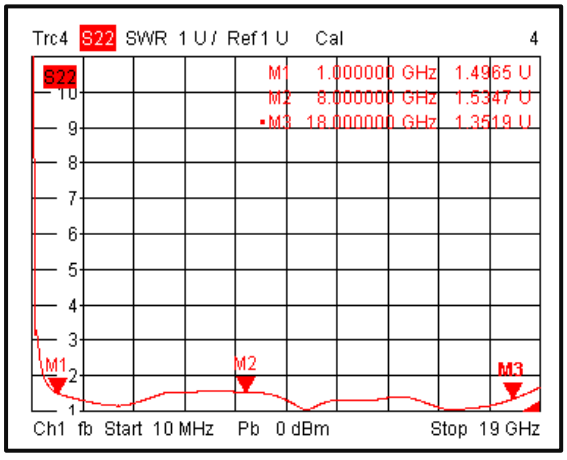
Insertion Loss @+25ºC



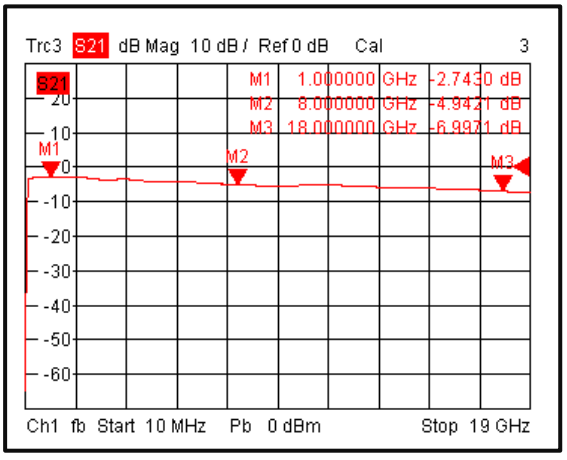
Input VSWR @+25ºC



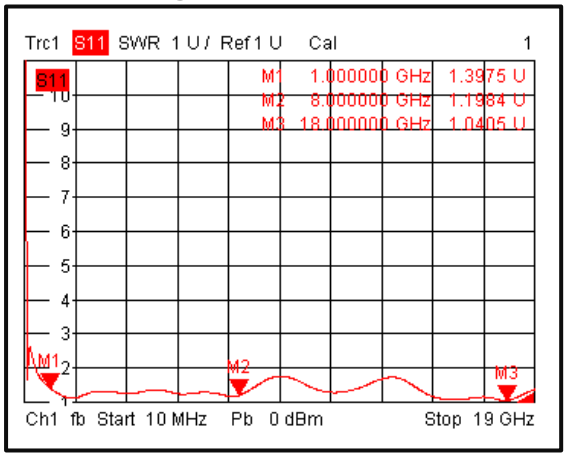
Output VSWR @+25ºC



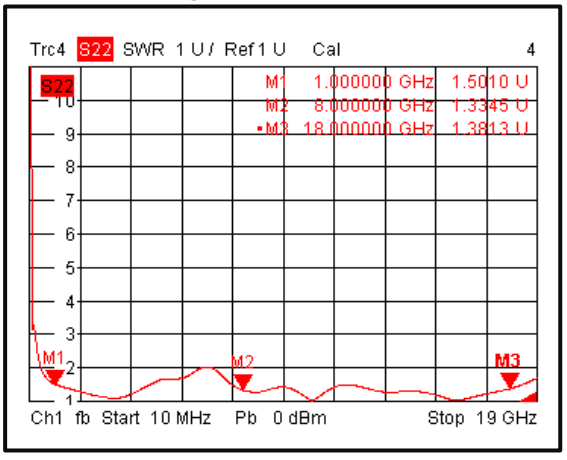
Insertion Loss @-40ºC



Input VSWR @-40ºC

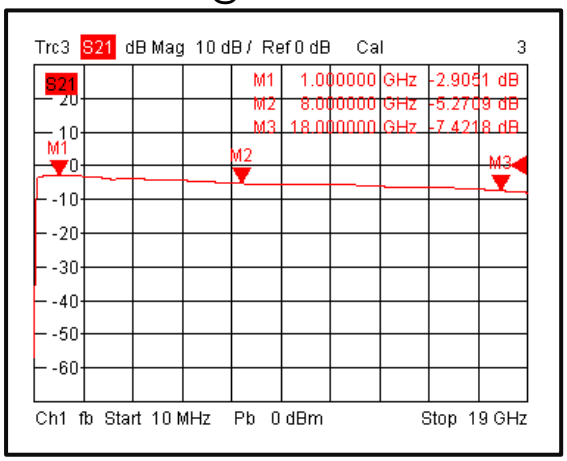


Output VSWR @-40ºC

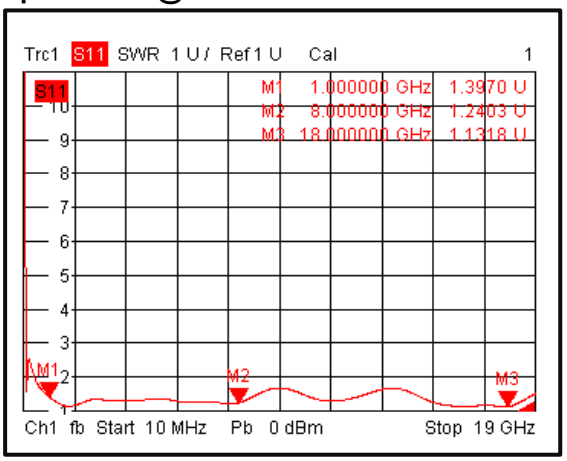


Typical Performance Plots

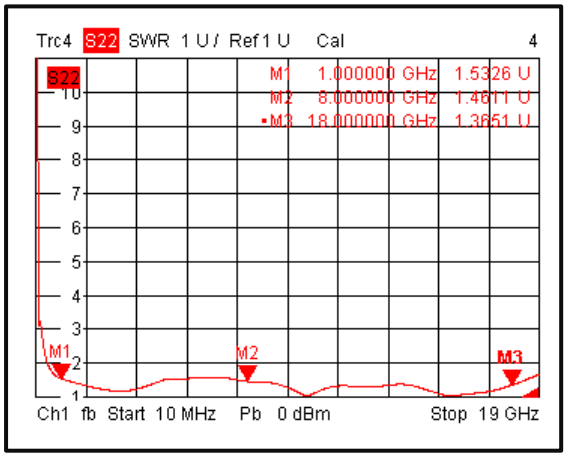
Insertion Loss @+85ºC



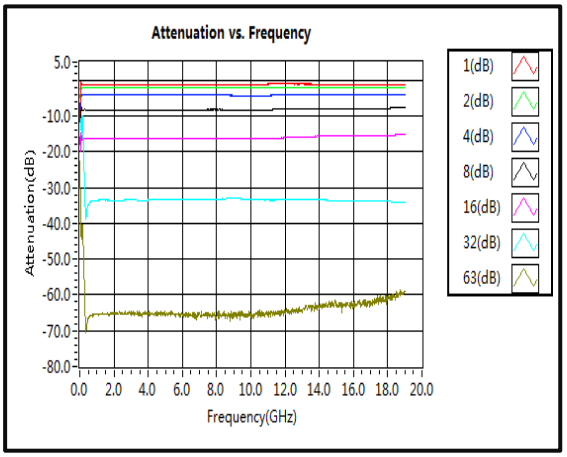
Input VSWR @+85ºC



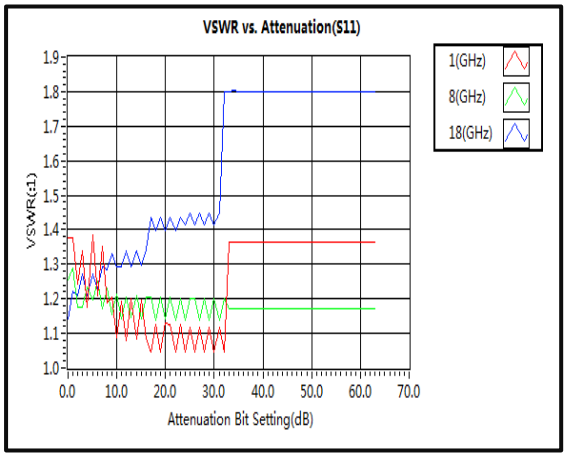
Output VSWR @+85ºC



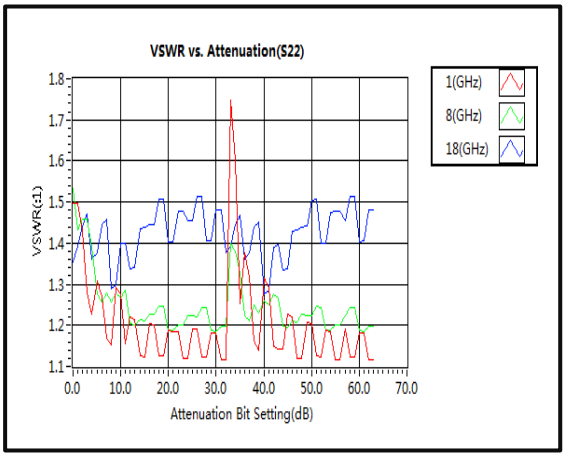
Attenuation vs. Frequency



VSWR vs. Attenuation (S11)

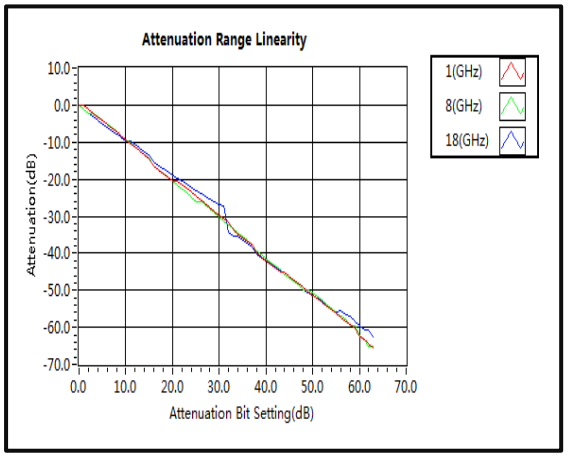


VSWR vs. Attenuation (S22)

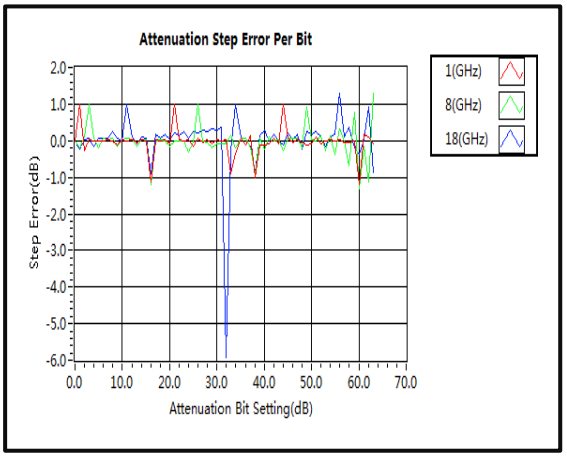


Typical Performance Plots

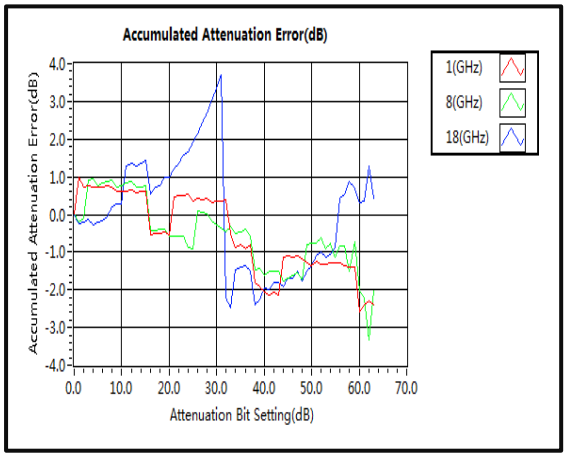
Attenuation Range Linearity



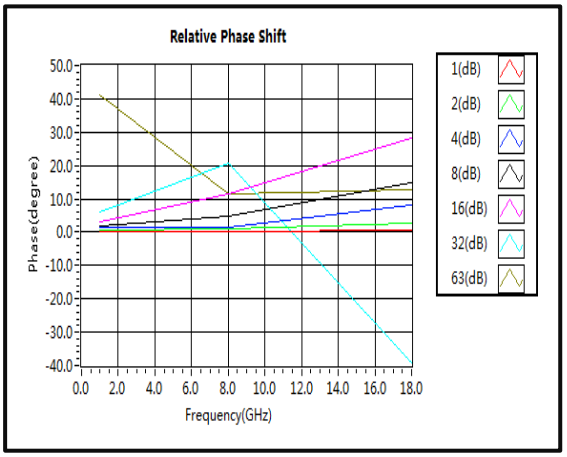
Attenuation Step Error Per Bit (dB)



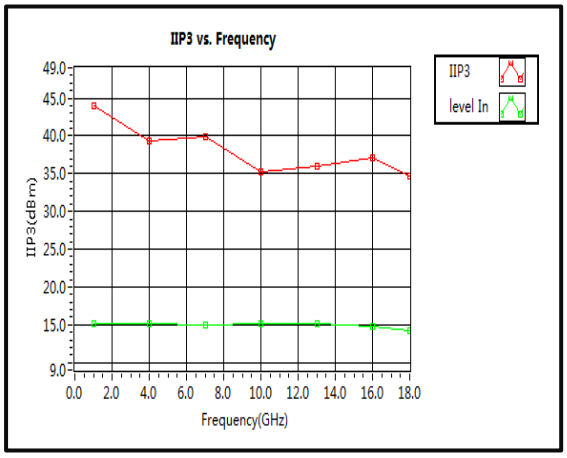
Accumulated Attenuation Error (dB)



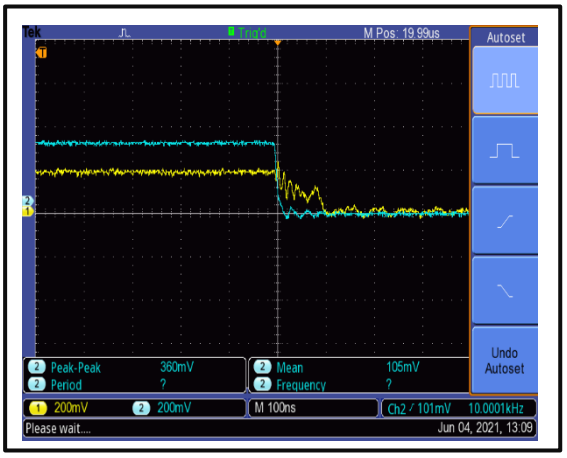
Relative Phase Shift



IIP3

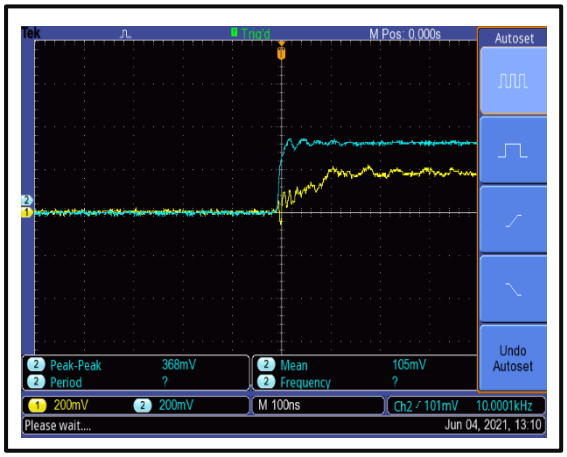


Speed

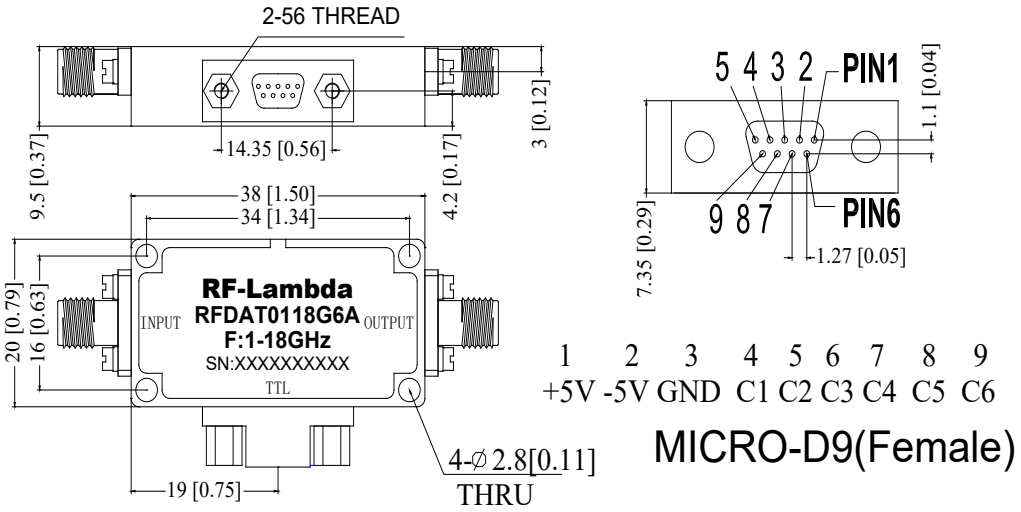


Typical Performance Plots

Speed

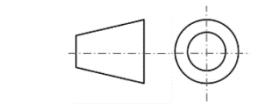


Outline Drawing



Truth Table

TTL Control Voltage THRESHOLD						Low(0)=0~0.8V High(1)=2.8~5V
Control Input TTL						Attenuation State
C6	C5	C4	C3	C2	C1	
1	1	1	1	1	1	Reference IL
1	1	1	1	1	0	1dB
1	1	1	1	0	1	2dB
1	1	1	0	1	1	4dB
1	1	0	1	1	1	8dB
1	0	1	1	1	1	16dB
0	1	1	1	1	1	32dB
0	0	0	0	0	0	63dB



Notes:
1. Package Material: Aluminum
2. Plating: Gold
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ±0.1 [0.004]unless otherwise specified (Excl Heat Sink).
5. Standard torque wrench must be used to secure RF connectors.

Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Connector Torque Specifications	https://www.rflambda.com/pdf/Torque_Specifications.pdf
Random Vibration Test Standard	https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
RFDAT0118G6A	Standard	1-18GHz Digital Control Attenuator

Important Notice

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