

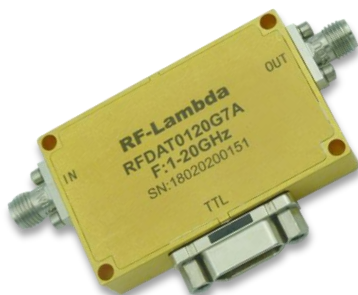


RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0120G7A

Absorptive Digital Control Attenuator 1 - 20GHz



Features

- Ultra Wide Band Operation 1-20GHz
- 0.5dB LSB Steps to 63.5dB
- Single Positive Control Line Per Bit
- Customization available upon request

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test Instrument

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

Description	PN: RFDAT0120G7A									
	Absorptive Digital Attenuator									
Parameters	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	1		6	6		12	12		20	GHz
Attenuation Range			63.5			63.5			63.5	dB
Attenuation Flatness: (Referenced to Insertion Loss)		± 1.5			± 1.0			± 1.5		dB
Control Bits	7									Bit
Control Step Size	0.5			0.5			0.5			dB
Insertion Loss		4.5	6.5		6.0	8.0		7.0	9.0	dB
Insertion Loss Temperature Coefficient			0.01			0.01		0.01		dB/ $^{\circ}\text{C}$
Input VSWR (All States)		1.8	2.3		1.8	2.0		1.8	2.3	: 1
Output VSWR (All States)		1.8	2.3		1.8	2.0		1.8	2.3	: 1
Input 0.1 dB Compression Point		27			27			27		dBm
IP3 Input		48			48			48		dBm
Switching Speed 50% CTRL* to 90% or 10%	150									ns
Weight	1.06									ounces
Impedance	50									Ω
Bias Current (+5V/-5V)	120/70									mA
Input / Output Connectors	SMA - Female									
Interface and Control Connector	MICRO-D15 (Female)									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (Optional)									

Absorptive Digital Control Attenuator 1-20GHz



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RFDAT0120G7A

Absolute Maximum Ratings

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

Ordering Information

Part No.	ECCN	Description
RFDAT0120G7A	EAR99	1-20GHz 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)

Absorptive Digital Control Attenuator 1-20GHz



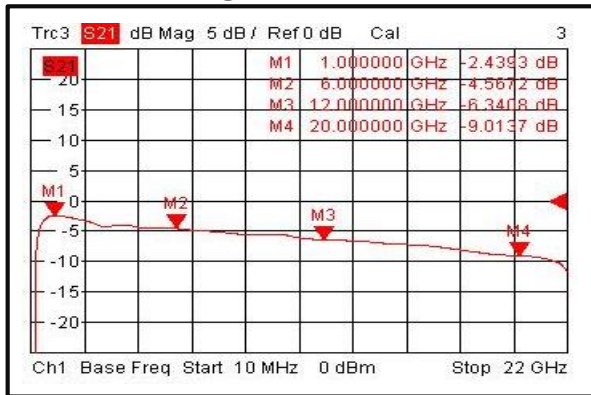
RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

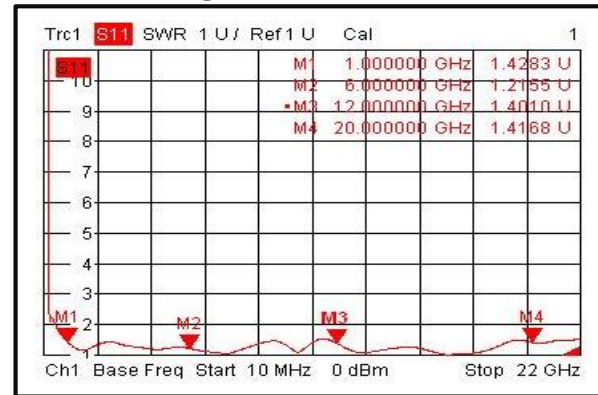
RFDAT0120G7A

Typical Performance Plots

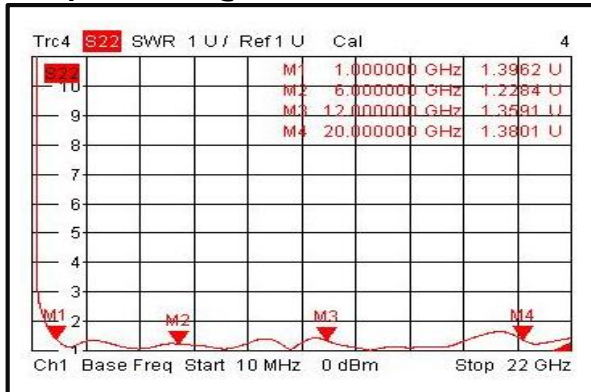
Insertion Loss @+25°C



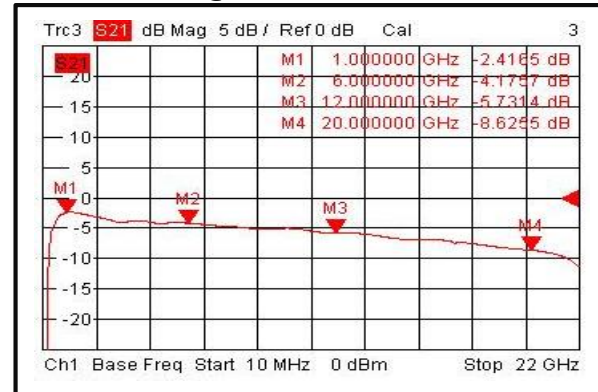
Input VSWR @+25°C



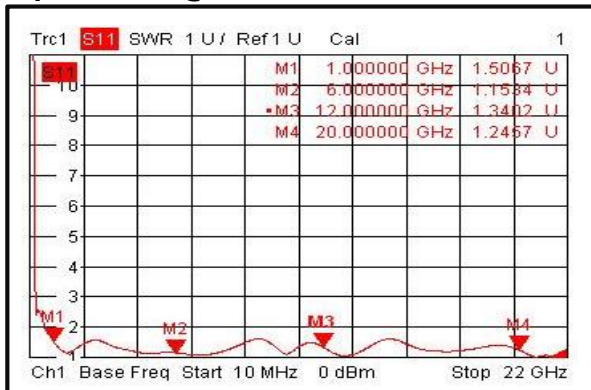
Output VSWR @+25°C



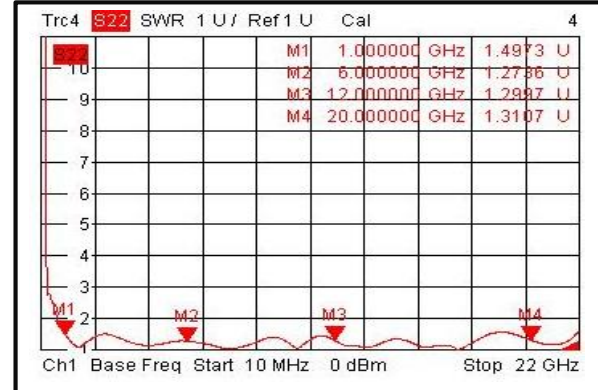
Insertion Loss @-45°C



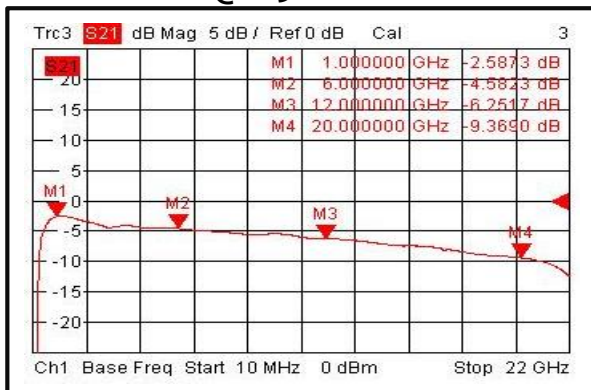
Input VSWR @-45°C



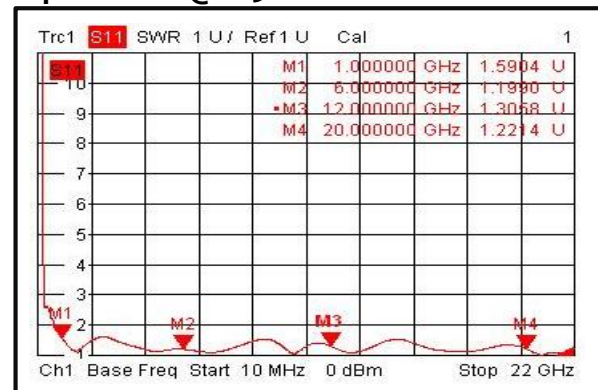
Output VSWR @-45°C



Insertion Loss @+85°C



Input VSWR @+85°C



Absorptive Digital Control Attenuator 1-20GHz

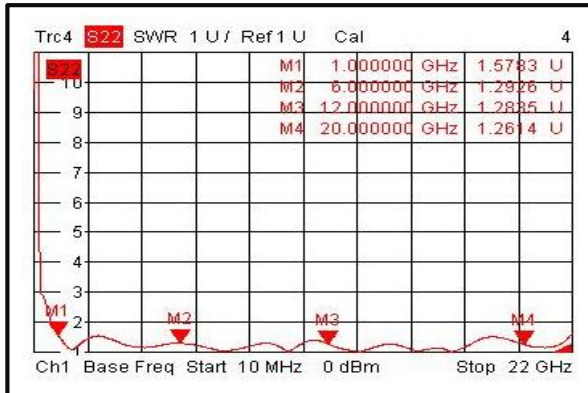


RF-LAMBDA

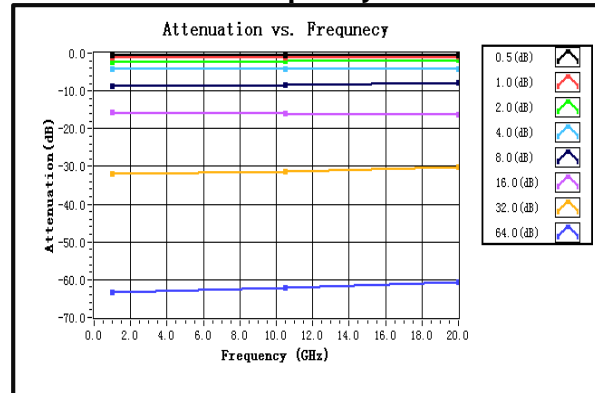
LEADER OF RF BROADBAND SOLUTIONS

RFDAT0120G7A

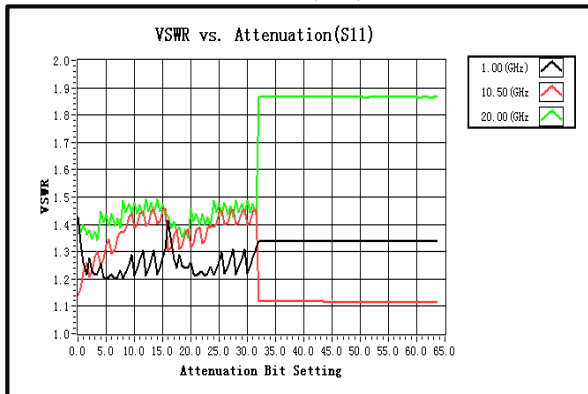
Output VSWR @+85°C



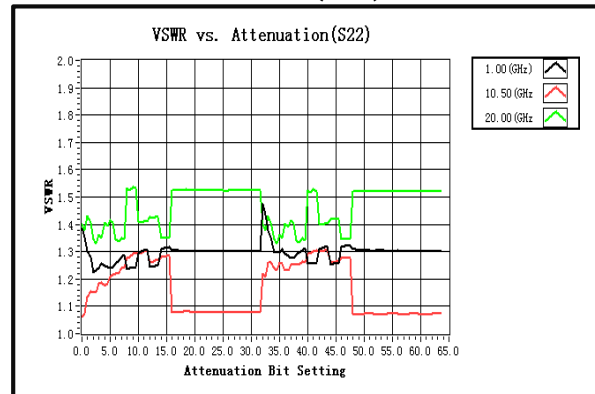
Attenuation vs. Frequency



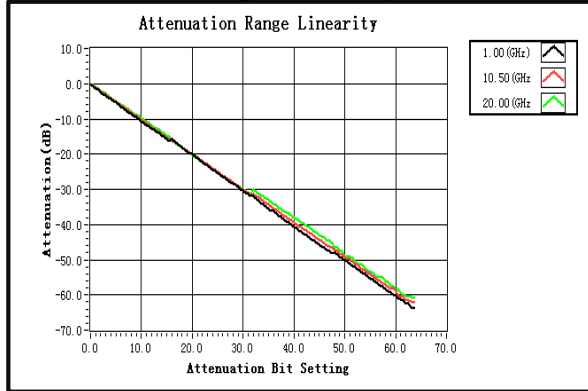
VSWR vs. Attenuation(S11)



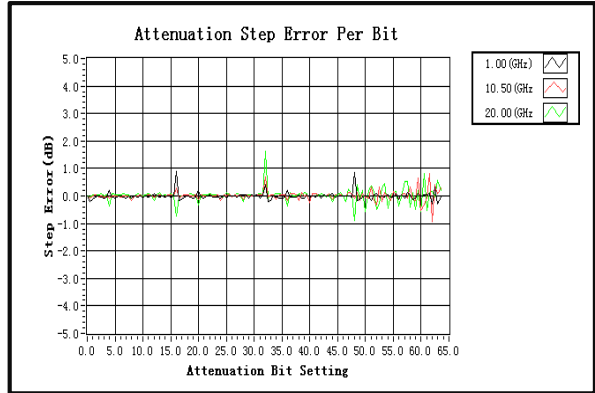
VSWR vs. Attenuation(S22)



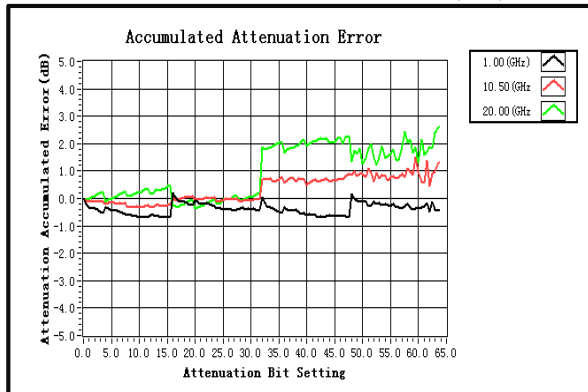
Attenuation Range Linearity



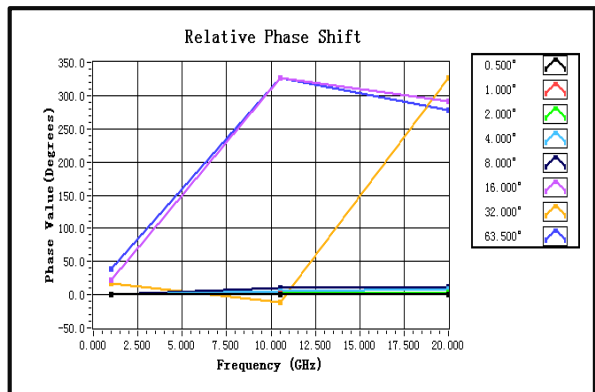
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error (dB)



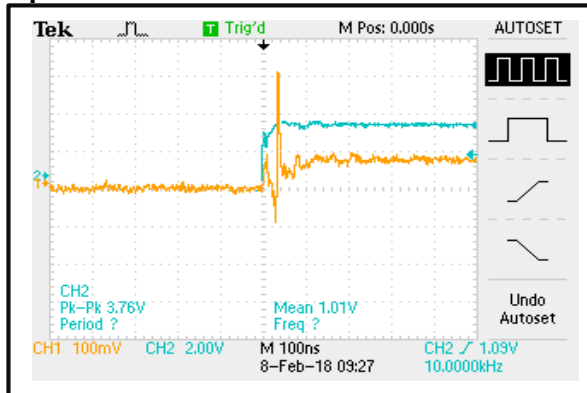
Relative Phase Shift



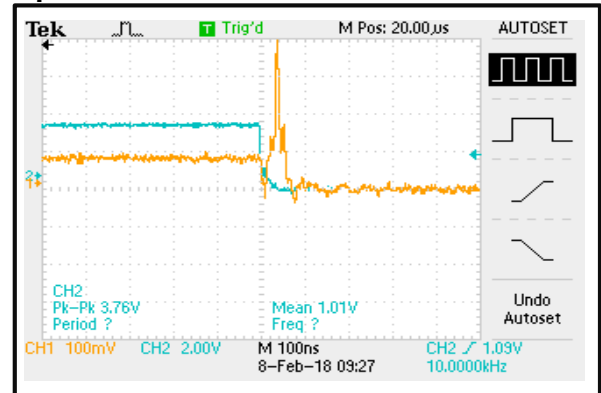
Absorptive Digital Control Attenuator 1-20GHz



Speed

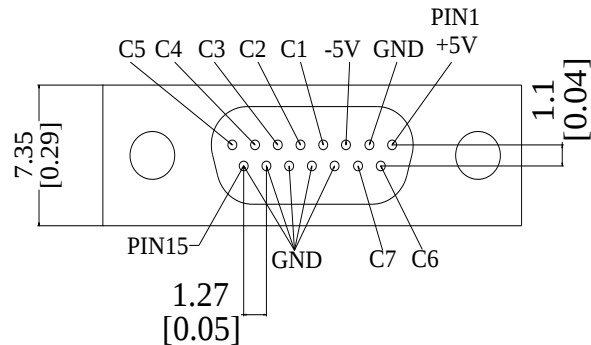
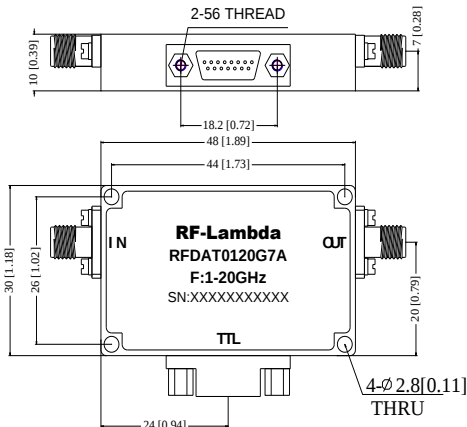


Speed



Outline Drawing:

All Dimensions in mm [inches]



MICRO-D15(Female)

Truth Table

Control Voltage Input							Attenuation State
C7	C6	C5	C4	C3	C2	C1	
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



Important Notice

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information. RF-Lambda products are not warranted or authorized for use as critical components in medical, life-saving, or life sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.