

## Absorptive Digital Control Attenuator 0.1GHz-3.5GHz



Note: Photo is for illustration purposes only.  
Please refer to outline drawing.

### Product Description

RFDAT0125G8A is an absorptive digital control attenuator with a frequency range of 0.1 to 3.5GHz.

The max power input is 30dBm. The insertion loss is 7.0dB with an attenuation range of 127.5dB.

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

### Features

- Absorptive Digital Control Attenuator
- Wide Band Operation 0.1-3.5GHz
- 0.5dB LSB Steps to 127.5dB
- 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<sub>A</sub>=+25°C) ,V<sub>dd</sub> = +5V, V<sub>CTL</sub> = 0 / +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1		2.5	2.5		3.5	GHz
Attenuation Range		125	127.5		115	127.5	dB
Attenuation Flatness (Referenced to Insertion Loss)		±1.5			±1.5		dB
Control Bits			8				Bit
Control Step Size		0.5			0.5		dB
Insertion Loss		7	7.5		7.5	8.5	dB
Insertion Loss Temperature Coefficient		0.01			0.01		dB/ °C
Input VSWR (All States)		1.5	2.0		1.5	1.8	: 1
Output VSWR (All States)		1.5	2.0		1.5	1.8	: 1
Input Linearity 0.1dB Compression Point (P0.1dB)		30			30		dBm
Input Third-Order Intercept(IP3) @Two-tone input power = 16 dBm/tone, Δf = 1 MHz		50			48		dBm
Switching Speed 50% CTRL* to 90% or 10%			250 Typ.				ns
Bias Current (+5V)			40 Max.				mA
Weight			/ Max.				lbs.
Impedance			50				Ohms
Input / Output Connectors			SMA-Female (Input) – SMA-Female (Output)				
Interface and Control Connector			MICRO-D15(Female)				
Package			Epoxy Sealed (Standard)				
			Hermetically Sealed (Optional)				

**Absolute Maximum Ratings**

Parameter	Rating
Biasing Voltage	+5.5V
RF Input Power	+25dBm

**Environmental Specifications and Test Standards**

Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (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 +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 (For Hermetically Sealed Units)

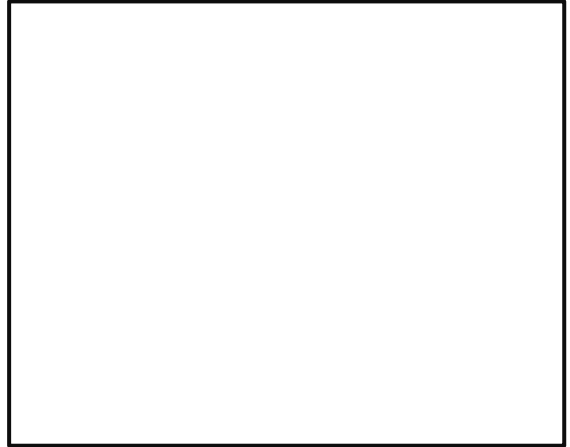
\*\*For vibration testing details please see additional information section.

**Typical Performance Plots**

**Insertion Loss @+25°C**



**Input VSWR @+25°C**



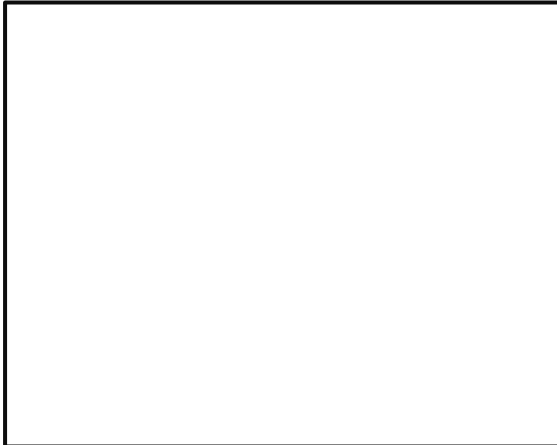
**Output VSWR @+25°C**



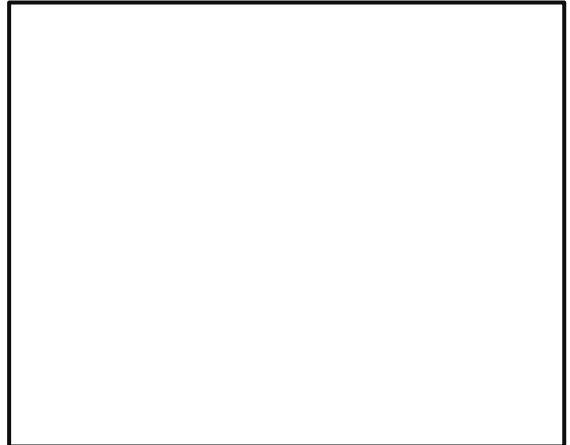
**Insertion Loss @-40°C**



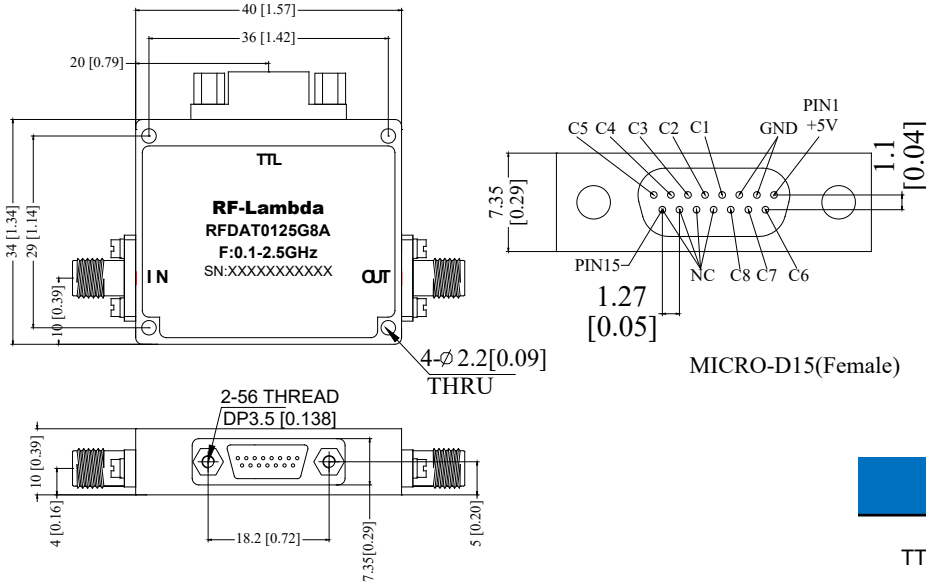
**Input VSWR @-40°C**



**Output VSWR @-40°C**



**Outline Drawing**

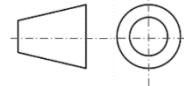


**Truth Table**

TTL Control Voltage THRESHOLD	Low(0)=0~0.8V High(1)=2.8~5V
Control Input TTL	Attenuation State
C8 C7 C6 C5 C4 C3 C2 C1	Reference IL
1 1 1 1 1 1 1 1	0.5dB
1 1 1 1 1 1 0 1	1dB
1 1 1 1 1 0 1 1	2dB
1 1 1 1 0 1 1 1	4dB
1 1 1 0 1 1 1 1	8dB
1 1 0 1 1 1 1 1	16dB
1 0 1 1 1 1 1 1	32dB
0 1 1 1 1 1 1 1	64dB
0 0 0 0 0 0 0 0	127.5dB

Notes:

1. Package Material: Aluminum
2. Plating: Gold
3. All dimensions are in millimeters [inches].
4. Housing Tolerances  $\pm 0.1$  [0.004] unless otherwise specified.
5. Standard torque wrench must be used to secure RF connectors.



Additional Information

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

**Ordering Information**

Part Number	Modification	Description
RFDAT0125G8A	Standard	0.1-3.5GHz Digital Control Attenuator

**Important Notice**

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