

GaAs 50 dB IC Voltage Variable Dual Control Attenuator DC–3 GHz

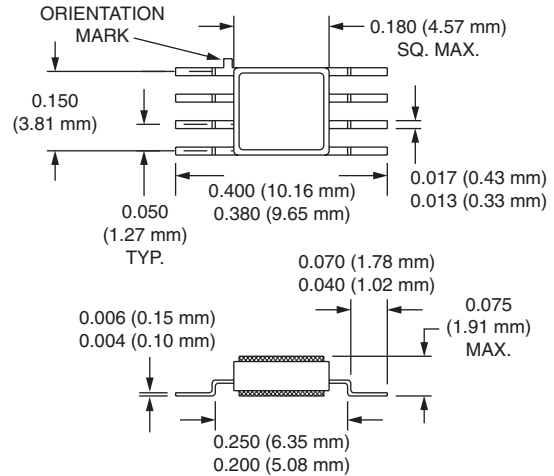


AT002N5-11

Features

- Dual Control Voltages
- Low Insertion Loss
- 8 Lead Hermetic Surface Mount Package
- Capable of Meeting MIL-STD Requirements⁵

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Description

The AT002N5-11 is a GaAs IC FET absorptive attenuator. This device provides up to 50 dB variable attenuation from DC–3 GHz. Attenuation can be controlled by varying each of the two control bias voltages from 0 to -5 V. This attenuator is recommended for fast response AGC circuits in commercial and high reliability applications.

Electrical Specifications at 25°C

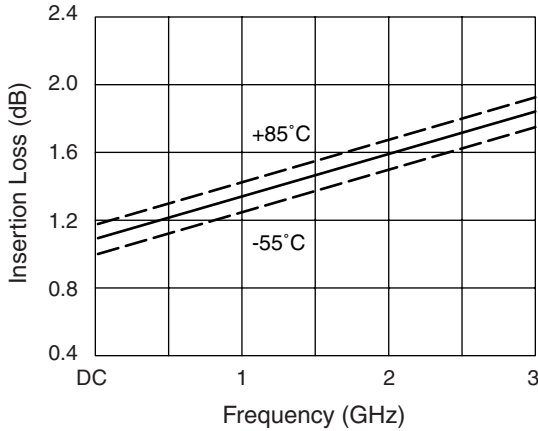
Parameter ¹	Frequency ⁴	Min.	Typ.	Max.	Unit
Insertion Loss ²	DC–1.0 GHz		1.2	1.4	dB
	DC–2.0 GHz		1.4	1.8	dB
	DC–3.0 GHz		1.7	2.0	dB
Attenuation Range	DC–1.0 GHz	50	52		dB
	DC–2.0 GHz	45	48		dB
	DC–3.0 GHz	40	42		dB
VSWR (I/O)	DC–1.0 GHz		1.2:1	1.3:1	
	DC–2.0 GHz		1.4:1	1.5:1	
	DC–3.0 GHz		1.6:1	1.8:1	

Operating Characteristics at 25°C

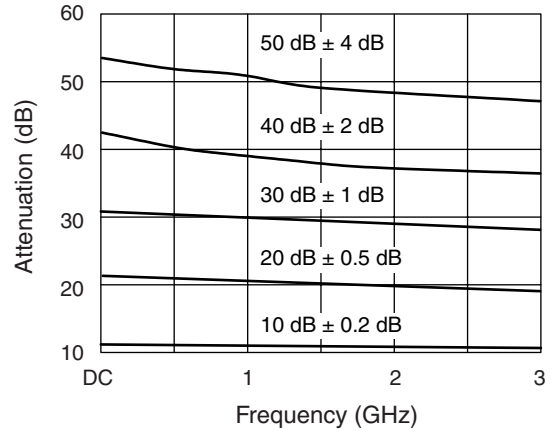
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			15		ns
	Video Feedthru ³			20		mV
Input Power for 1 dB Compression	For All Attenuation Levels	0.5–3 GHz		0		dBm
		0.05 GHz		-3		dBm
Control Voltages	$V_{Low} = 0$ to -0.2 V @ 20 μ A Max. $V_{High} = -5$ V @ 100 μ A Max.					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.
4. DC = 300 kHz.
5. See Quality/Reliability section.

Typical Performance Data

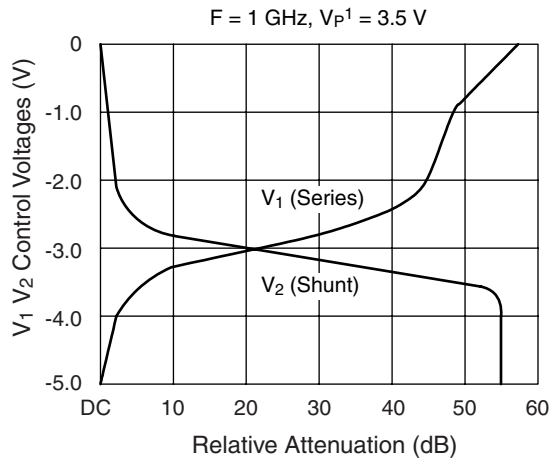


Insertion Loss vs. Frequency

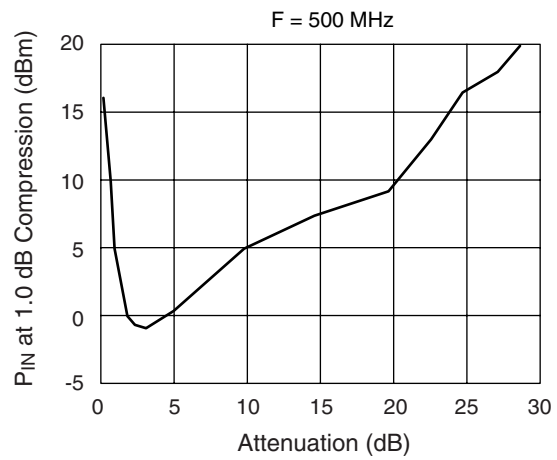


Attenuation (By State) vs. Frequency

Typical Transfer Curve



Relative Attenuation vs. Control Voltages



Attenuation vs. 1.0 dB Compression Point

1. V_P = FET pinchoff voltage.

Absolute Maximum Ratings

Characteristic	Value
RF Input Power (RF In)	10 mW > 500 MHz 0/-8 V Control 4 mW 50 MHz -8 V Control
Control Voltage (V_C)	+0.2 V, -10 V
Operating Temperature (T_{OP})	-55°C to +125°C
Storage Temperature (T_{ST})	-65°C to +150°C
Thermal Resistance (Θ_{JC})	25°C/W

Truth Table

V_1	V_2	Attenuation J_1-J_2
0	-5	Insertion Loss
-5	0	Full Attenuation

Pin Out

