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

Alpha

AT002N5-01, AT002N5-10

Features

- Dual Control Voltages
- Low Insertion Loss
- 7 Lead Hermetic Package
- Capable of Meeting MIL-STD Requirements[5]

Description

The AT002N5-01 is a GaAs IC FET absorptive attenuator. It provides up to 50 dB variable attenuation from DC–3 GHz under non-reflective conditions. This attenuator is recommended for fast response AGC circuits for commercial and high reliability applications. The AT002N5-10 is the gullwing version of this device for surface mount applications.

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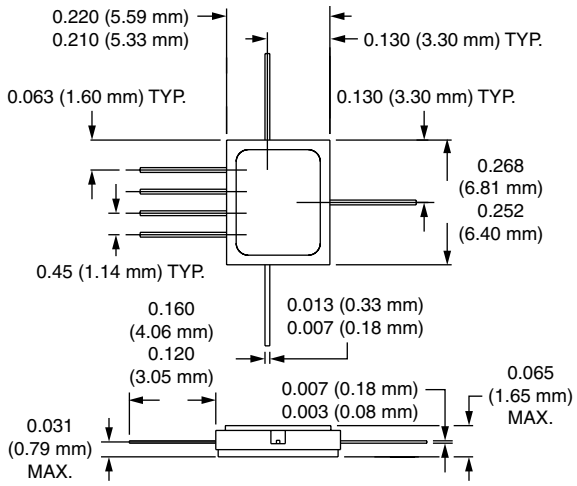


Electrical Specifications at 25°C

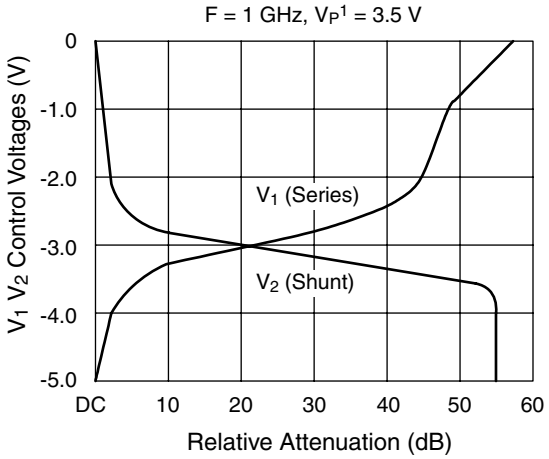
Parameter[1]	Frequency[4]	Min.	Typ.	Max.	Unit
Insertion Loss[2]	DC–1.0 GHz		1.2	1.4	dB
	DC–2.0 GHz		1.4	1.8	dB
	DC–3.0 GHz		1.7	2.0	dB
Attenuation Range	DC–1.0 GHz	50	55		dB
	DC–2.0 GHz	48	52		dB
	DC–3.0 GHz	45	48		dB
VSWR (I/O)	DC–1.0 GHz		1.2:1	1.3:1	
	DC–2.0 GHz		1.4:1	1.5:1	
	DC–3.0 GHz		1.6:1	1.8:1	

Operating Characteristics at 25°C

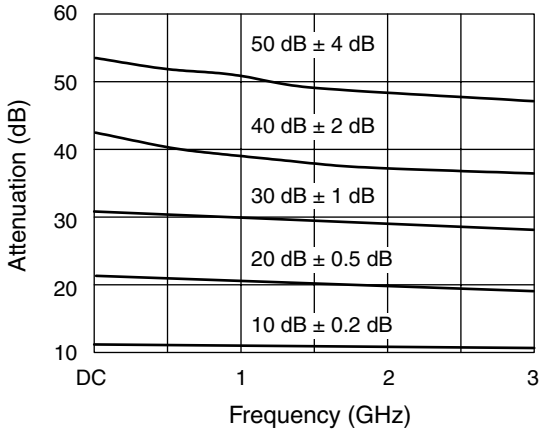
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			15		ns
	Video Feedthru[3]			20		mV
Input Power for 1 dB Compression	For All Attenuation Levels	0.5–3 GHz		0		dBm
		0.05 GHz		-3		dBm
Control Voltages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

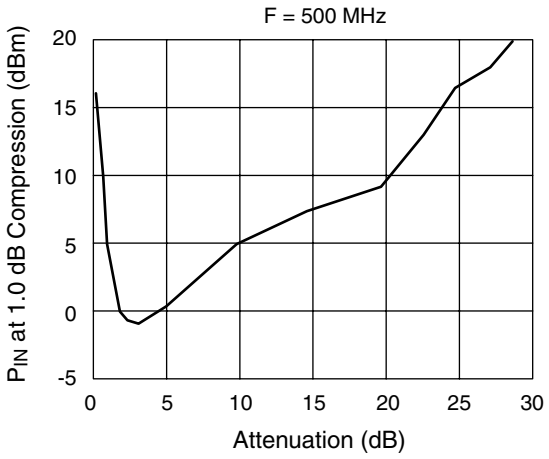


Relative Attenuation vs. Control Voltages



Attenuation (By State) vs. Frequency

1. V_P = FET pinchoff voltage

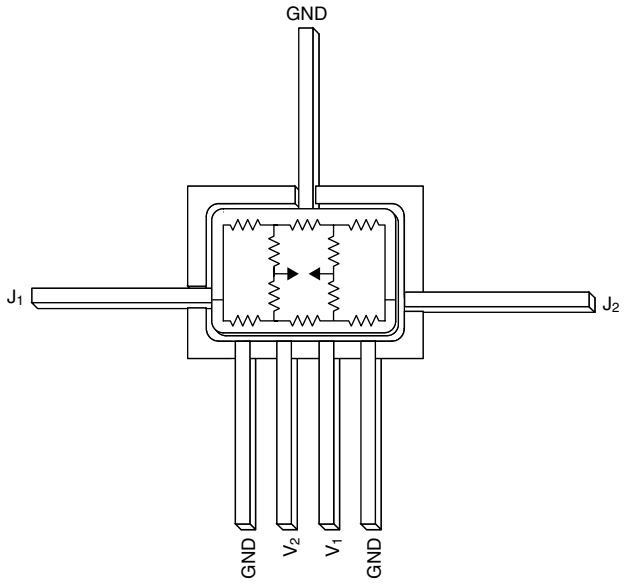


Attenuation vs. 1.0 dB Compression Point

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

Pin Out



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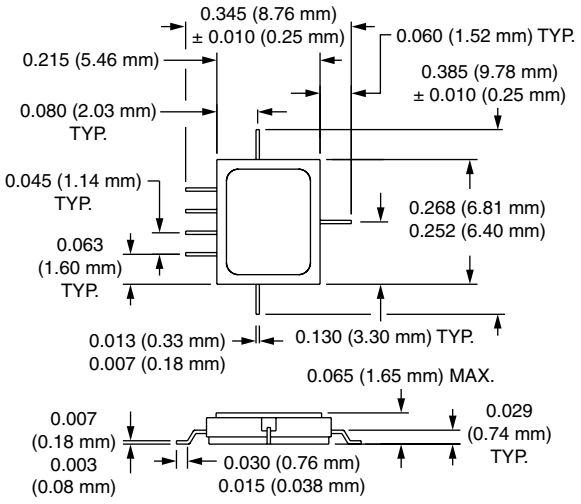

Specifications subject to change without notice. 9/99A