

# GaAs 30 dB IC Voltage Variable Dual Control Attenuator DC–4 GHz

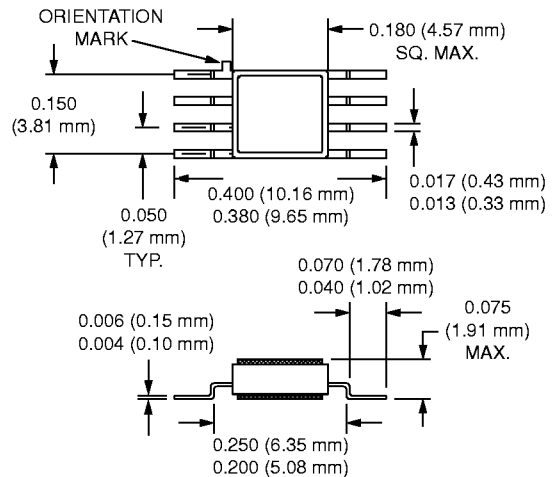


AT004N3-11

## Features

- Dual Control Voltages
- Low Insertion Loss
- 8 Lead Hermetic Surface Mount Package
- Capable of Meeting MIL-STD Requirements<sup>5</sup>

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## Description

The AT004N3-11 is a GaAs IC FET non-reflective bridged “T” attenuator. This device provides over 30 dB of “matched” attenuation with the input and output VSWR less than 1.5:1 under all attenuation values. The applications for these fast attenuators are AGC circuits and variable level control in high reliability and telecommunication systems.

## Electrical Specifications at 25°C

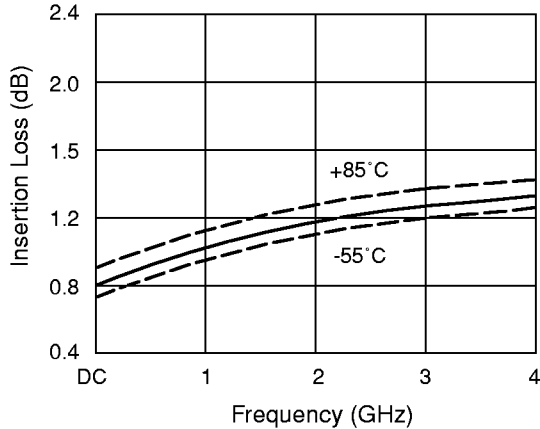
Parameter <sup>1</sup>	Frequency <sup>4</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>2</sup>	DC–1.0 GHz		0.8	1.0	dB
	DC–2.0 GHz		1.0	1.2	dB
	DC–4.0 GHz		1.2	1.4	dB
Attenuation Range	DC–1.0 GHz	30	35		dB
	DC–2.0 GHz	29	33		dB
	DC–4.0 GHz	26	30		dB
VSWR (I/O)	DC–2.0 GHz		1.25:1	1.3:1	
	DC–4.0 GHz		1.40:1	1.5:1	

## Operating Characteristics at 25°C

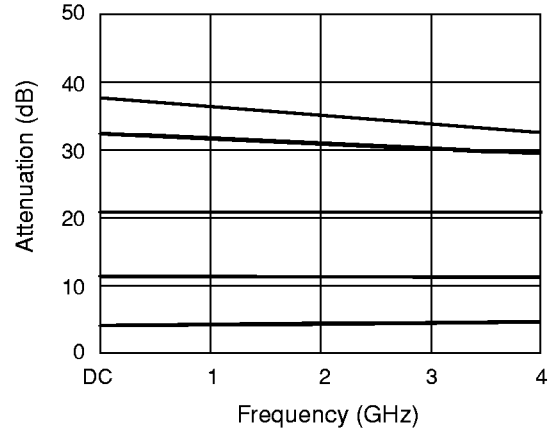
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			7		ns
	On, Off (50% CTL to 90/10% RF)			10		ns
	Video Feedthru <sup>3</sup>			20		mV
Input Power for 1 dB Compression	For All Attenuation Levels	0.5–4 GHz		0		dBm
		0.05 GHz		-3		dBm
Control Voltages	$V_{Low} = 0 \text{ to } -0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = -5 \text{ V @ } 50 \mu\text{A Max.}$					

1. All measurements made in a 50  $\Omega$  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

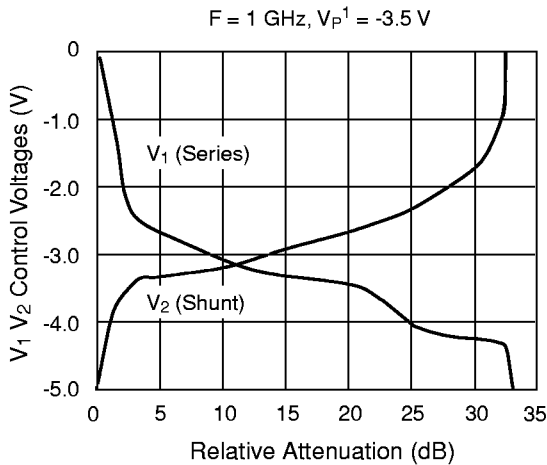


Insertion Loss vs. Frequency

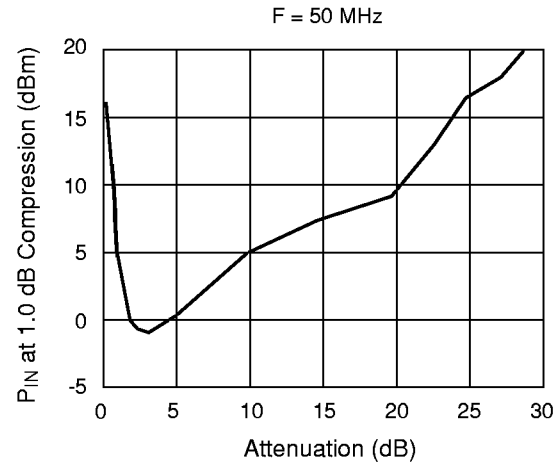


Attenuation (By State) vs. Frequency

Typical Transfer Curve



Relative Attenuation vs. Control Voltages



Attenuation vs. 1.0 dB Compression Point

Absolute Maximum Ratings

Characteristic	Value
RF Input Power (RF In)	10 mW > 500 MHz 4 mW @ 50 MHz
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 ( $\theta_{JC}$ )	25°C/W

Truth Table

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

Pin Out

