

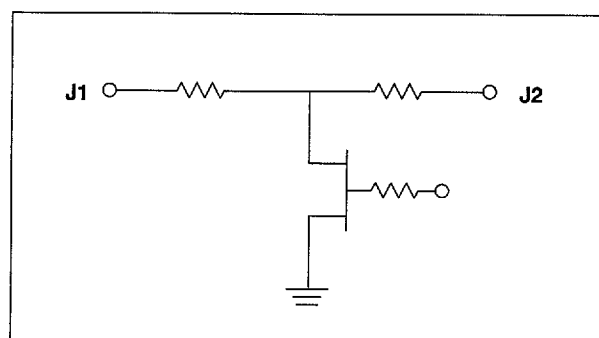
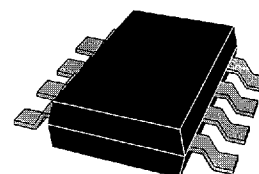
GaAs 15 dB MMIC FET Voltage Variable Attenuator DC–2 GHz

Alpha

AF002N2–12

Features

- Single Voltage Control
- Low Cost
- 15 dB Range
- Very Low DC Dissipation
- Easily Adapted for Positive Control
- Non-Reflective



Description

The AF002N2–12 is a single control non-reflective VVA in a SOIC 8 package. It is ideal for AGC applications. Its low DC drain characteristic and size make it suitable for the PCN and portable cellular markets. A positive control voltage may be used by adding 2 DC blocking capacitors (C_{BL}) and 1 bypass capacitor (C_{BP}).

Absolute Maximum Ratings

RF Input Power: 10mW > 500 MHz 0/–8V
4mW @ 50 MHz 0/–8V

Control Voltages: +0.2V

Operating Temperature: –40 to 85°C

Storage Temperature: –65 to 150°C

Θ_{JC} : 25°C/W

(Note: Operating this device above any of these parameters may cause irreversible damage.)

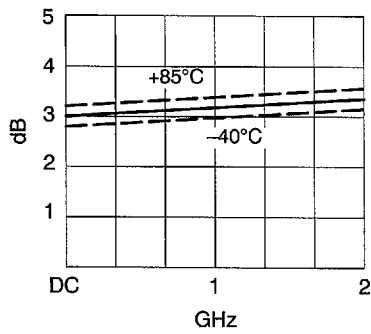
Electrical Specifications at 25°C

Insertion Loss	DC – 0.5 GHz	3.1	dB	Max
	DC – 1 GHz	3.3	dB	Max
	DC – 2 GHz	3.8	dB	Max
Attenuation	DC – 0.5 GHz	15	dB	Min
	DC – 1 GHz	11	dB	Min
	DC – 2 GHz	7	dB	Min
VSWR	DC – 2 GHz	2.0:1	dB	Max

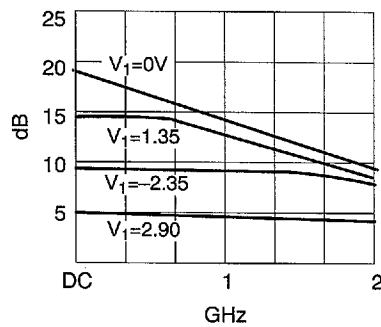
Operating Characteristics at 25°C

Impedance	50 Ohms Nominal		
Switching Characteristics			
RISE, FALL (10/90% or 90/10% RF)	7	ns	Typ
ON, OFF (50% CTL to 90/10% RF)	10	ns	Typ
Video Feedthru	20	mV	Typ
Control Voltage			
V ₁ (Low)	0 to – 0.2V @ 20 μA Typ		
V ₁ (High)	–5V @ 25 μA Typ		

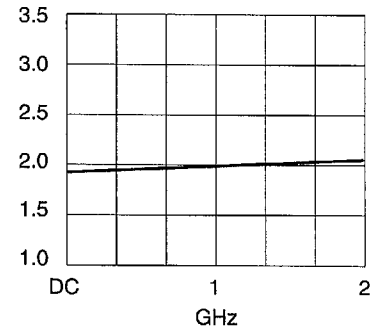
Typical Performance Data



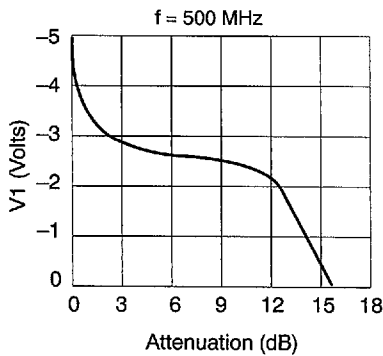
Insertion Loss vs. Frequency



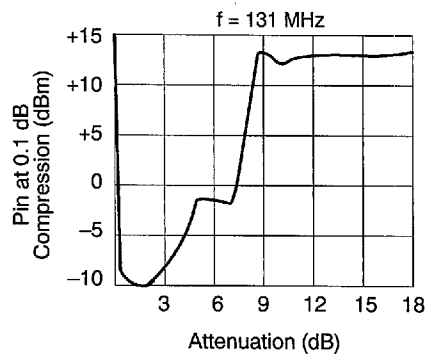
Attenuation States vs. Frequency



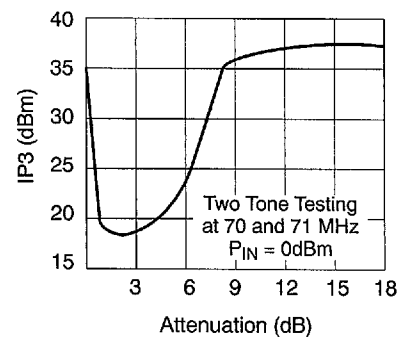
VSWR vs. Frequency



Attenuation vs. Bias

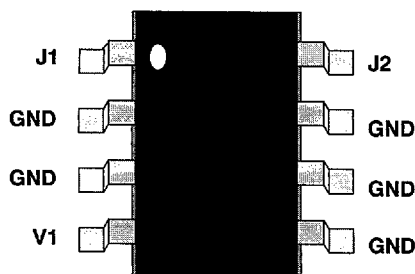


Attenuation vs. 0.1 dB Compression Point



Attenuation vs. IP3

Pin Out

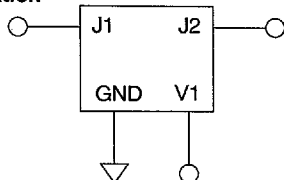


Truth Table

Negative Voltage Operation	
V1	State
-5	Insertion Loss
0	Full Attenuation
Positive Voltage Operation	
+5	Full Attenuation
0	Insertion Loss

Bias Configurations

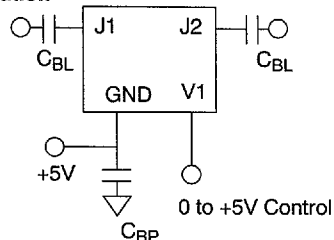
Negative Voltage Operation



$$C_{BL} \geq 0.01 \mu\text{F}$$

$$C_{BP} \geq 1000 \text{ pF}$$

Positive Voltage Operation



RF GaAs MMIC Products in Metal Packages

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