GaAs IC 35 dB Voltage Variable Attenuator Single Positive 3 V Control 0.5–2.5 GHz

Alpha

AV107-59

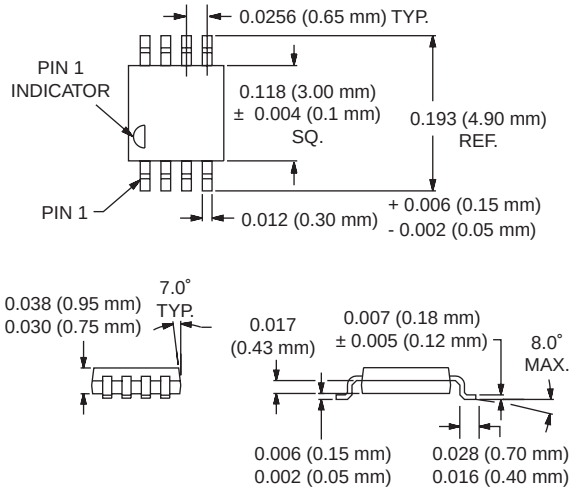
Features

- Single Positive +3 V Control Voltage
- 35 dB Attenuation Range @ 0.9 GHz
- Miniature Low Cost MSOP-8 Package

Description

The AV107-59 GaAs IC FET voltage variable attenuator provides 35 dB attenuation range at 900 MHz controlled by a single positive voltage. The VVA has a linear transfer curve of 12 dB/V slope, with input and output VSWR better than 2:1 over all states. Its attenuation range at 1900 MHz is 25 dB. It operates with supply voltage of +3 V and control voltage of 0 V to +3 V in a low cost MSOP-8 package. The RF ports require 25 pF DC blocking capacitors. In addition an external grounding capacitor is required.

MSOP-8



Electrical Specifications at 25°C (V_S = 3 V)

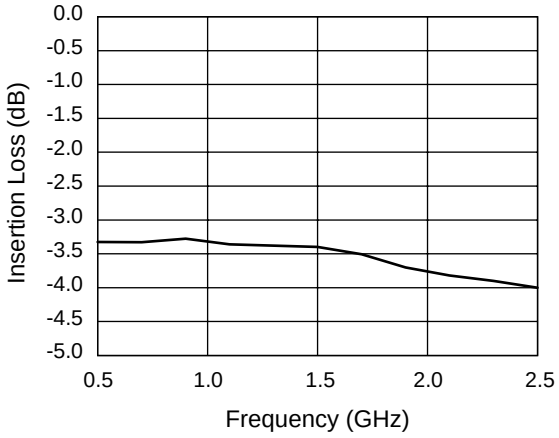
Parameter[1]	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss (V_C = 0 V)	0.5–1.0 GHz 1.0–2.0 GHz 2.0–2.5 GHz		3.4 3.5 3.8	3.8 4.0 4.3	dB dB dB
Maximum Attenuation (V_C = 3 V)[2]	0.5–0.8 GHz 0.8–1.0 GHz 1.0–1.7 GHz 1.7–2.0 GHz 2.0–2.5 GHz	22 30 22 17 15	25 33 25 20 19		dB dB dB dB dB
VSWR (I/O)[3]	0.5–2.5 GHz		1.8:1	2.0:1	

Operating Characteristics at 25°C (V_S = 3 V)

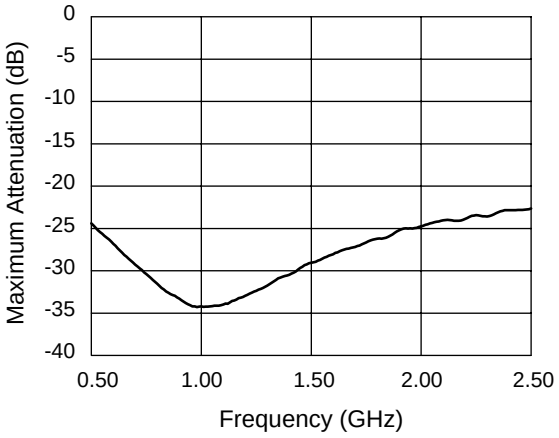
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, On (10/90% or 50% CTL to 90% RF) Fall, Off (90/10% RF or 50% CTL to 10% RF)			1.0 0.3		µS µS
Intermodulation Intercept Point (IIP3)[3]	For Two-tone Input Power +0 dBm	0.9 GHz		15		dBm
Control Voltage (V_C)			0.0		V_S	V
Supply Voltage (V_S)			2.7	3		V
Control Current (I_C)				0.2 x V_C		mA
Supply Current (I_S)				150		µA

1. All measurements made using 40 pF RF bypass capacitor.
2. Maximum attenuation includes insertion loss.
3. For worst case state.

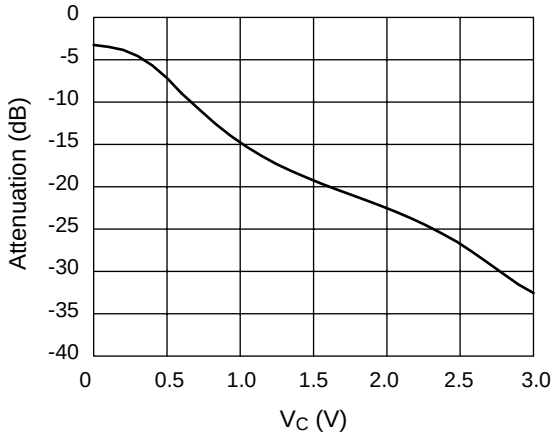
Typical Performance Data @ 0.9 GHz
(Unless Otherwise Specified)



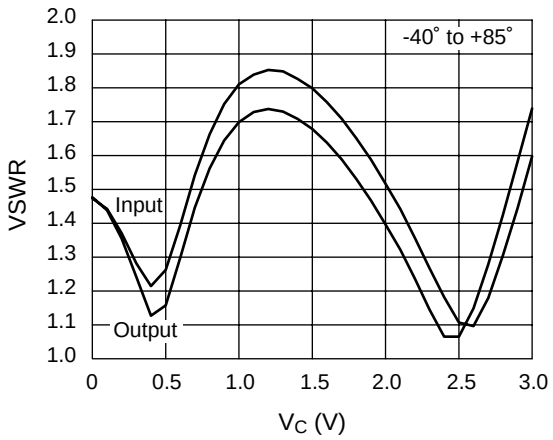
Insertion Loss vs. Frequency



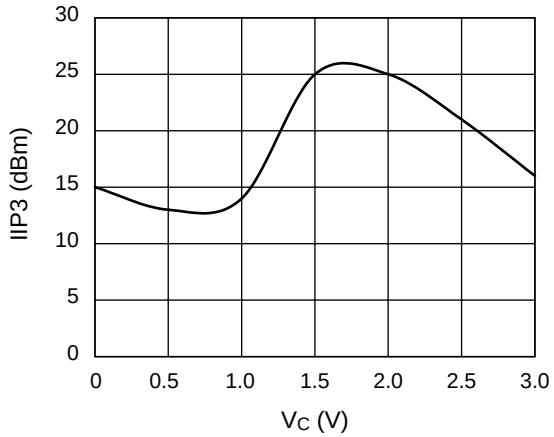
Maximum Attenuation vs. Frequency



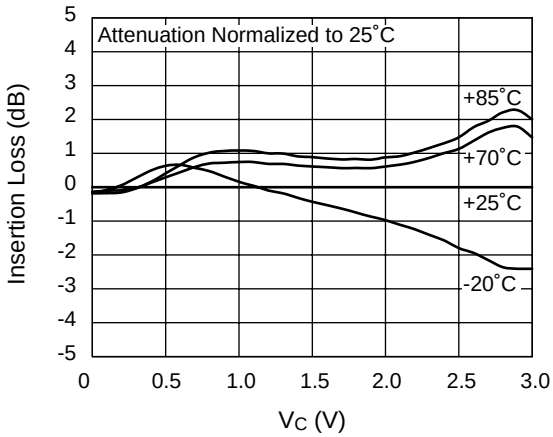
Attenuation vs. Control Voltage



VSWR vs. Control Voltage



Input IP3 vs. Control Voltage



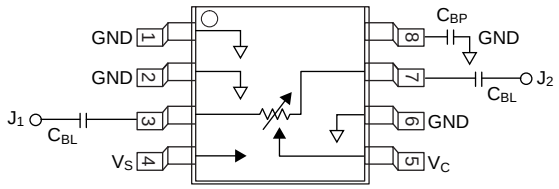
Attenuation vs. Control Voltage Over Temperature

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	50 mW > 500 MHz
Supply Voltage	+7 V
Control Voltage	+3.3 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	25°C/W

Note: Exceeding these parameters may cause irreversible damage.

Pin Out



DC blocking capacitors (C_{BL}) and RF bypass capacitors (C_{BP}) supplied externally.
C_{BP} = 40 pF for 900 MHz operation.
C_{BL} = 25 pF for 900 MHz operation.

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