

# GaAs IC 35 dB Voltage Variable Attenuator

## Single Positive 3 V Control 0.8–1.0 GHz



AV109-73

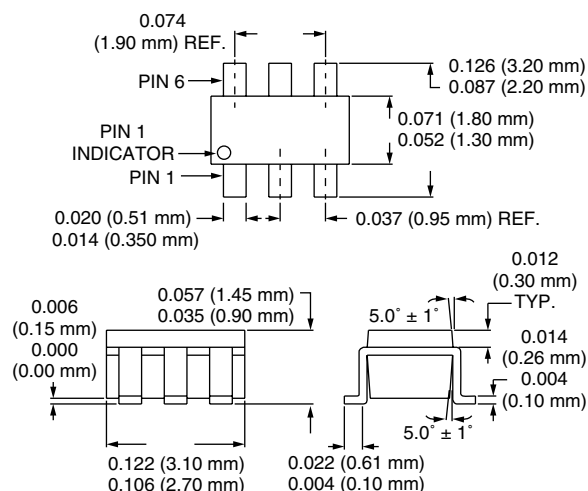
### Features

- Single Positive 3 V Control Voltage
- 35 dB Attenuation Range @ 0.9 GHz
- Excellent Linearity Performance

### Description

The AV109-73 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. It operates with supply voltage of +3 V and control voltage of 0 V to +3 V in a low cost SOT-6 package. The RF ports require 25 pF DC blocking capacitors. In addition, an external grounding capacitor is required.

### SOT-6



### Electrical Specifications at 25°C ( $V_S = 3\text{ V}$ )

Parameter <sup>1</sup>	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss ( $V_C = 0\text{ V}$ )	0.8–1.0 GHz		3.3		dB
Maximum Attenuation ( $V_C = 3\text{ V}$ ) <sup>2</sup>	0.8–1.0 GHz		35		dB
VSWR (I/O) <sup>3</sup>	0.5–2.5 GHz		2.0:1		

### Operating Characteristics at 25°C ( $V_S = 3\text{ V}$ )

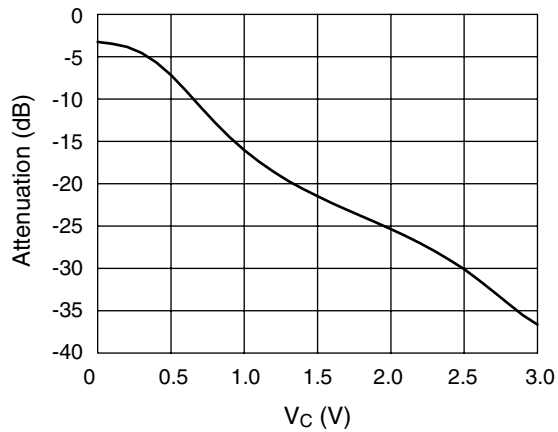
Parameter <sup>1</sup>	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, On (10/90% or 50% CTL to 90% RF)			1.0		$\mu\text{S}$
	Fall, Off (90/10% RF or 50% CTL to 10% RF)			0.3		$\mu\text{S}$
Intermodulation Intercept Point (IIP3) <sup>3</sup>	For Two-tone Input Power +0 dBm	0.9 GHz		14		dBm
Control Voltage ( $V_C$ )			0		$V_S$	V
Supply Voltage ( $V_S$ )				3		
Control Current ( $I_C$ )				$0.2 \times V_C$		mA
Supply Current ( $I_S$ )				150		$\mu\text{A}$

1. All measurements made in a 50  $\Omega$  system, unless otherwise specified.

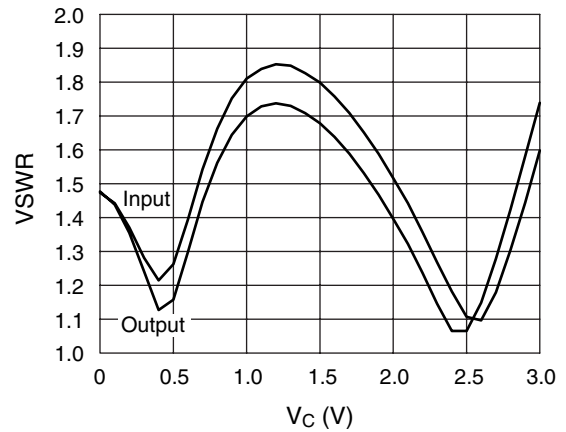
2. Maximum attenuation includes insertion loss.

3. For worst case state.

## Typical Performance Data @ 0.9 GHz (Unless Otherwise Specified)



Attenuation vs. Control Voltage



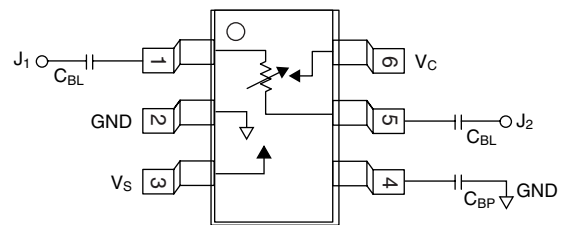
VSWR vs. Control Voltage

## 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 <sub>JC</sub>	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.  $C_{BL} = 25$  pF for 900 MHz operation.  $C_{BP} = 38$  pF for 900 MHz operation.



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