# GaAs IC 35 dB Voltage Variable Attenuator Single Positive 3 V Control 0.8–1.0 GHz

**Alpha**

**AV109-73**

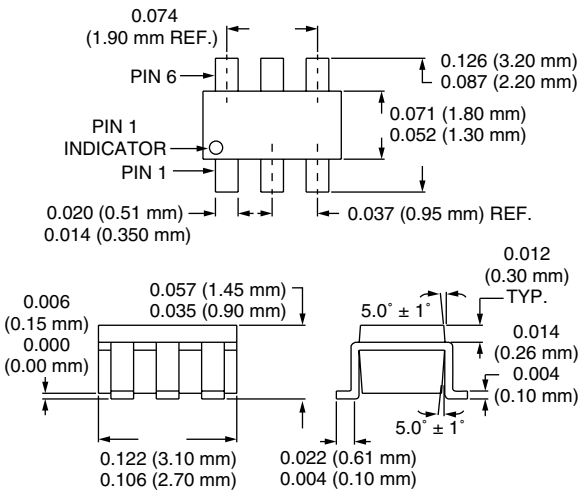
## Features

- 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 V)

| Parameter[1] | Frequency | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Insertion Loss ($V_C$ = 0 V) | 0.8–1.0 GHz | | 3.3 | | dB |
| Maximum Attenuation ($V_C$ = 3 V)[2] | 0.8–1.0 GHz | | 35 | | dB |
| VSWR (I/O)[3] | 0.5–2.5 GHz | | 2.0:1 | | |

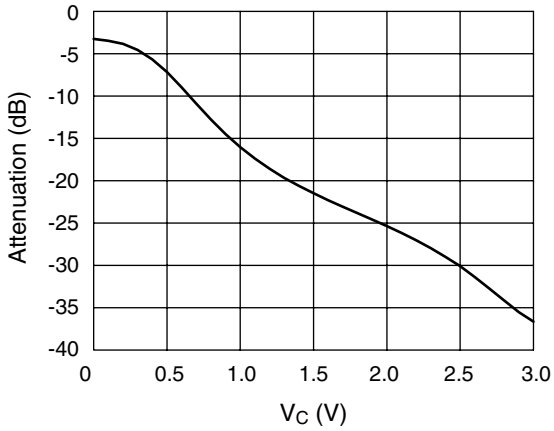
## Operating Characteristics at 25°C ($V_S$ = 3 V)

| Parameter[1] | Condition | Frequency | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Switching Characteristics | Rise, On (10/90% or 50% CTL to 90% RF)<br>Fall, Off (90/10% RF or 50% CTL to 10% RF) | | | 1.0<br>0.3 | | µS<br>µS |
| Intermodulation Intercept Point (IIP3)[3] | For Two-tone Input Power +0 dBm | 0.9 GHz | | 14 | | dBm |
| Control Voltage ($V_C$) | | | 0.0 | | $V_S$ | V |
| Supply Voltage ($V_S$) | | | | 3 | | |
| Control Current ($I_C$) | | | | 0.2 x $V_C$ | | mA |
| Supply Current ($I_S$) | | | | 150 | | µA |

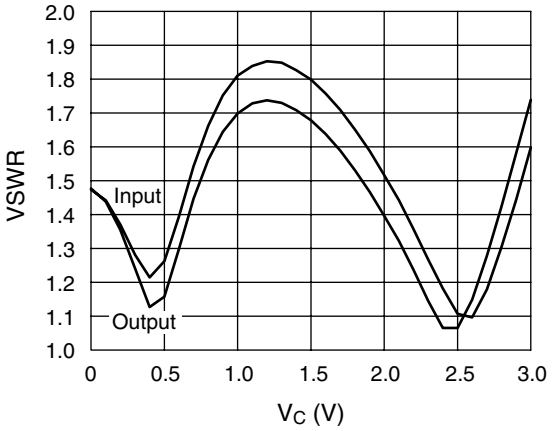
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Maximum attenuation includes insertion loss.
3. For worst case state.

## Typical Performance Data @ 0.9 GHz

**(Unless Otherwise Specified)**




**Attenuation vs. Control Voltage**



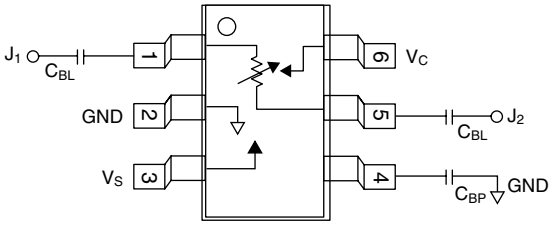

**VSWR vs. Control Voltage**

## 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 |
| $\Theta_{JC}$ | 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. $C_{BL}$ = 25 pF for 900 MHz operation. $C_{BP}$ = 38 pF for 900 MHz operation.