

# GaAs IC 30 dB Voltage Variable Attenuator

## Single Positive 3 V Control 1.7–2.5 GHz



AV110-73

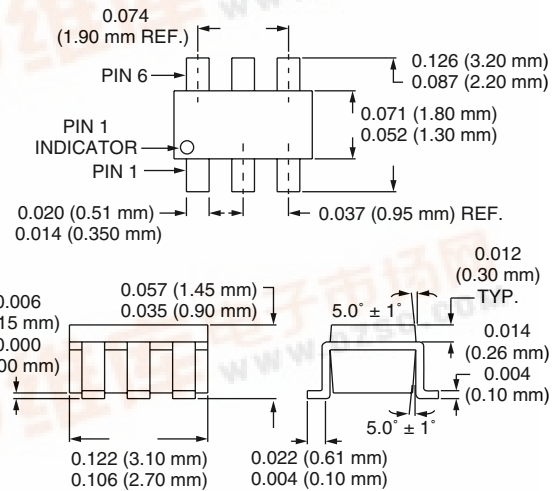
### Features

- Single Positive 3 V Control Voltage
- 33 dB Attenuation Range @ 1.9 GHz
- Excellent Linearity Performance

### Description

The AV110-73 GaAs IC FET voltage variable attenuator provides 33 dB attenuation range at 1900 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.

### SOT-6



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

| Parameter <sup>1</sup>                          | Frequency                  | Min. | Typ.       | Max. | Unit |
|-------------------------------------------------|----------------------------|------|------------|------|------|
| Insertion Loss ( $V_C = 0$ V)                   | 1.7–2.0 GHz<br>2.0–2.5 GHz |      | 3.5<br>3.8 |      | dB   |
| Maximum Attenuation ( $V_C = 3$ V) <sup>2</sup> | 1.7–2.0 GHz<br>2.0–2.5 GHz |      | 33<br>28   |      | dB   |
| VSWR (I/O) <sup>3</sup>                         | 1.7–2.5 GHz                |      | 2.0:1      |      |      |

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

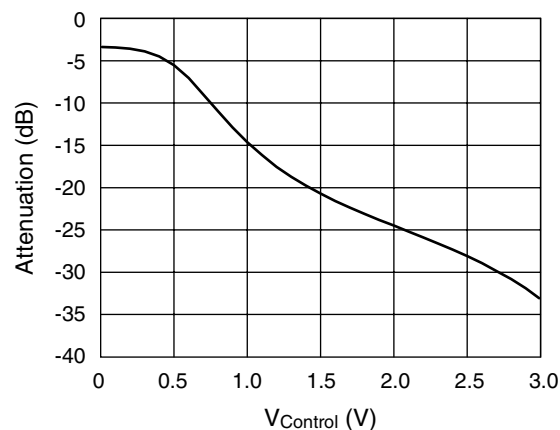
| Parameter <sup>1</sup>                              | Condition                                                                            | Frequency | Min. | Typ.             | Max.  | Unit               |
|-----------------------------------------------------|--------------------------------------------------------------------------------------|-----------|------|------------------|-------|--------------------|
| 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       |       | $\mu$ S<br>$\mu$ S |
| Intermodulation Intercept Point (IIP3) <sup>3</sup> | For Two-tone Input Power +0 dBm                                                      | 0.9 GHz   |      | 12               |       | dBm                |
| Control Voltage ( $V_C$ )                           |                                                                                      |           | 0.0  |                  | $V_S$ | V                  |
| Supply Voltage ( $V_S$ )                            |                                                                                      |           |      | 3                |       |                    |
| Control Current ( $I_C$ )                           |                                                                                      |           |      | $0.2 \times V_C$ |       | mA                 |
| Supply Current ( $I_S$ )                            |                                                                                      |           |      | 150              |       | $\mu$ A            |

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

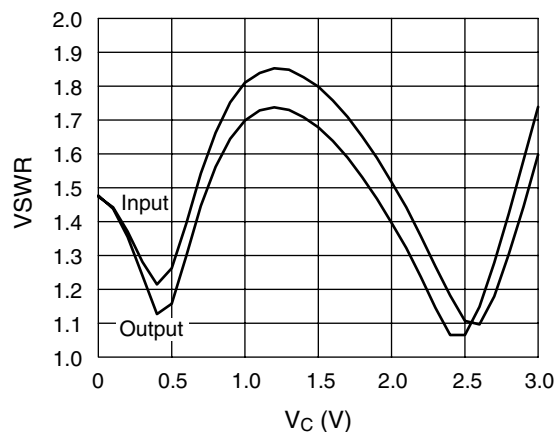
2. Maximum attenuation includes insertion loss.

3. For worst case state.

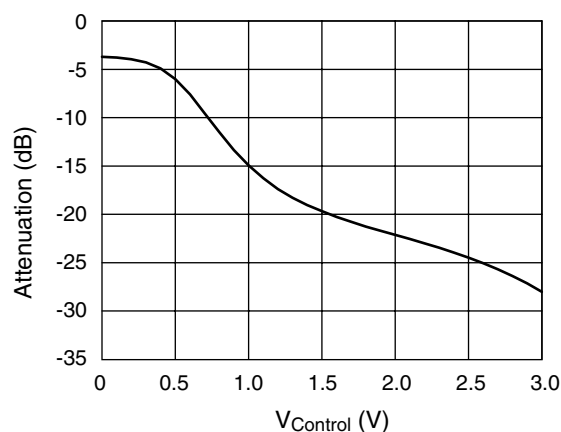
**Typical Performance Data @ 1.9 GHz**  
(Unless Otherwise Specified)



**Attenuation vs. Control Voltage  
@ 1900 MHz**



**VSWR vs. Control Voltage**



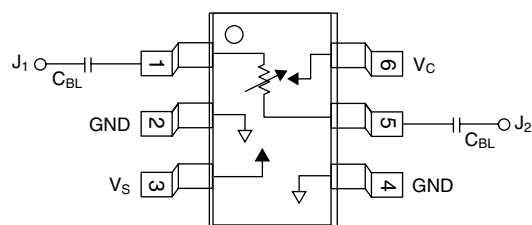
**Attenuation vs. Control Voltage  
@ 2400 MHz**

**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<sub>BL</sub>) supplied externally.  
C<sub>BL</sub> = 25 pF for 1900 MHz operation.