SKYWORKS®

DATA SHEET

AV109-73, AV109-73LF: GaAs IC 35 dB Voltage Variable Attenuator Single Positive 3 V Control 0.8–1 GHz

Features

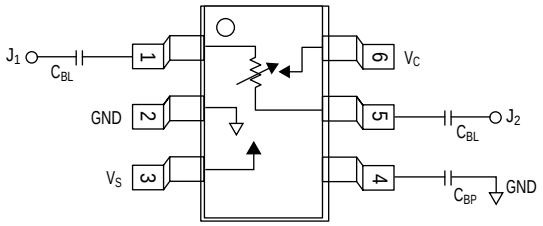
- Single positive 3 V control voltage
- 35 dB attenuation range @ 0.9 GHz
- Excellent linearity performance
- Negative transfer slope
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

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.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.

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.

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		

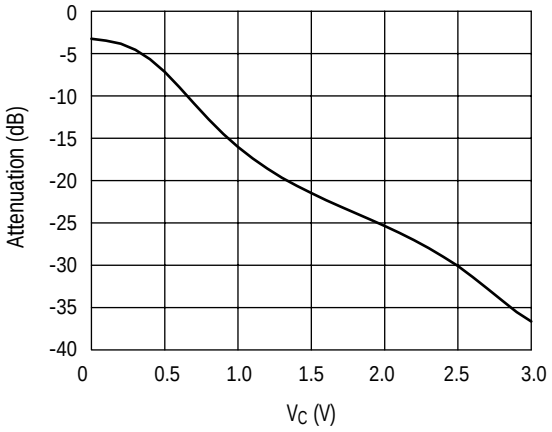
Operating Characteristics at 25 °C (V_S = 3 V)

Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics Rise, on Fall, off	 10/90% or 50% CTL to 90% RF 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		14		dBm
Thermal resistance				25		°C/W
Control voltage (V_C)			0		V_S	V
Supply voltage (V_S)				3		V
Control current (I_C)				0.2 x V_C		mA
Supply current (I_S)				150		µA

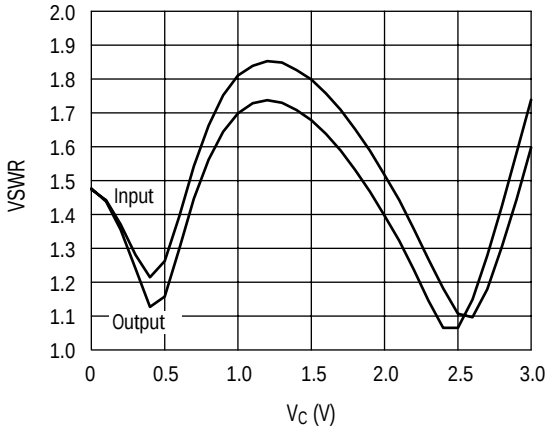
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Maximum attenuation includes insertion loss.
3. For worst-case state.

Typical Performance Data @ 0.9 GHz

(Unless Otherwise Specified)



Attenuation vs. Control Voltage



VSWR vs. Control Voltage

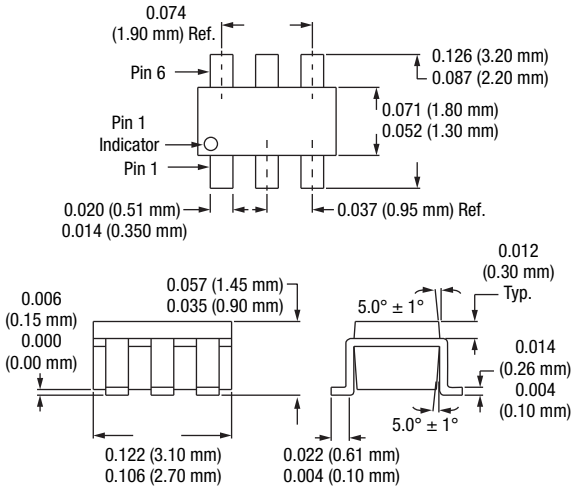
Absolute Maximum Ratings

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

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: *Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.*

SOT-6



Recommended Solder Reflow Profiles

Refer to the *"Recommended Solder Reflow Profile"* Application Note.

Tape and Reel Information

Refer to the *"Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation"* Application Note.