DATA SHEET

AV101-12, AV101-12LF: HIP3™ Variable Attenuator 0.7–1 GHz

Features

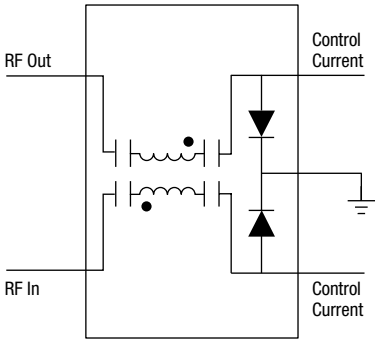
- 50 dBm IP3 typical
- Low loss 1 dB typical
- Attenuation 30 dB typical
- Good VSWR <1.5:1 typical
- Small SOIC-8 package
- Available lead (Pb)-free, RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

The AV101-12 is a current controlled, variable attenuator from Skyworks series of HIP3™ components. It is designed to meet the wide dynamic range required in spread spectrum, wireless base station applications. A monolithic quadrature hybrid is teamed with a silicon PIN diode pair in a plastic surface mount package, reducing size and assuring consistency from part to part.

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

Connection Diagram



Electrical Specifications at 25 °C

Parameter	Frequency	Min.	Typ.	Max.	Unit
Input Signal Frequency		0.7		1	GHz
Insertion loss (0 mA control current)	0.8–1.0 GHz		1	1.5	dB
Attenuation @ 3.0 mA control current	900 MHz	18.5		25	dB
VSWR all ports	0.8–1.0 GHz		1.5	1.8	
Input 3rd order intercept		47	50		dBm
Group delay			0.9	1.2	ns

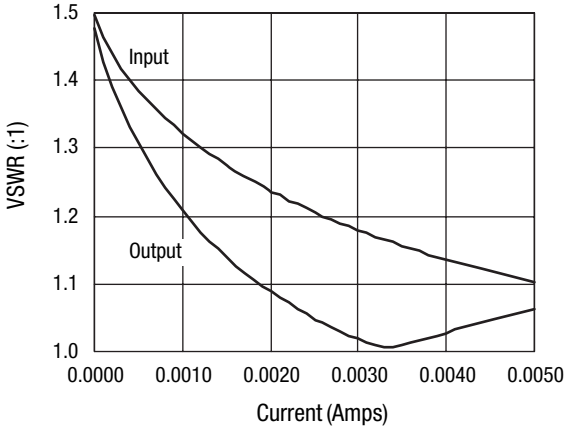
Operating Characteristics at 25 °C

Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics[2] Rise, fall On, off Video feedthru (peak)	 10/90% or 90/10% RF 50% CTL to 90/10% RF				 5 8 5	 µs µs mV
Maximum input power for <1 dB attenuation variation				15		dBm

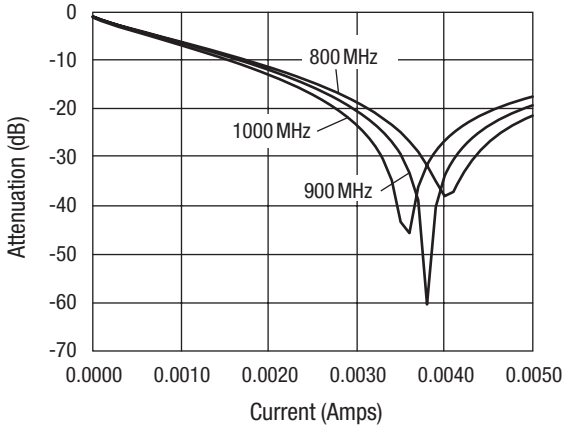
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. 0–4 mA square wave total control current.

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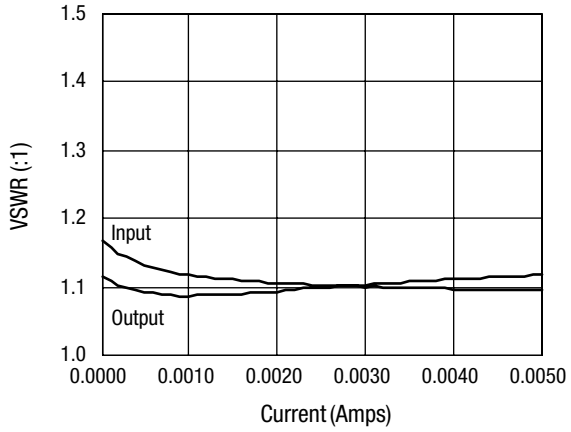
Typical Performance Data



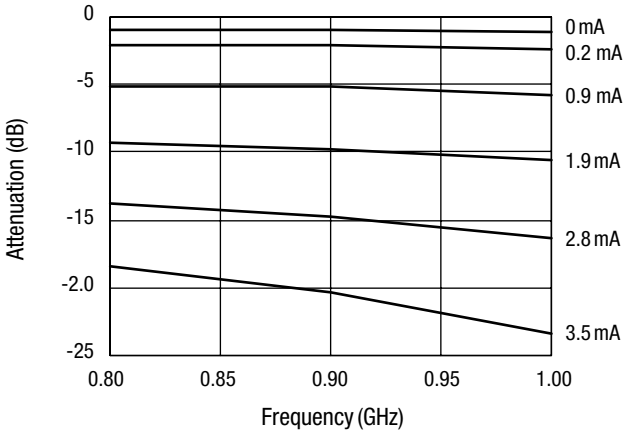
Input/Output VSWR vs. Current @ 800 MHz



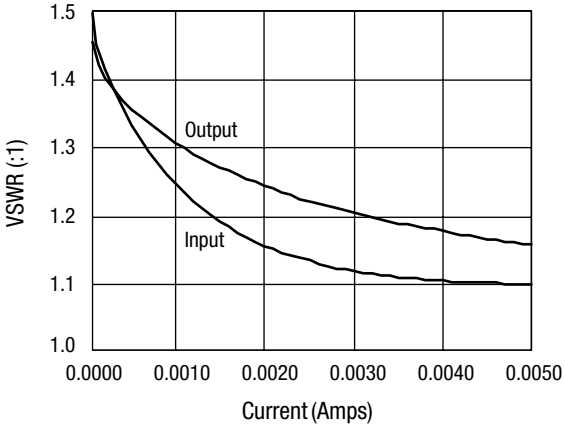
Attenuation vs. Current



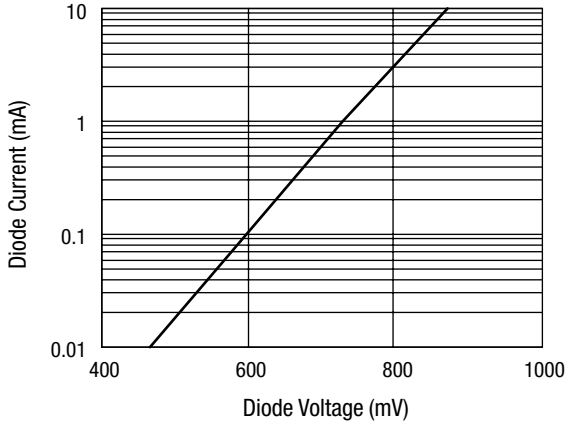
Input/Output VSWR vs. Current @ 900 MHz



Attenuation vs. Frequency



Input/Output VSWR vs. Current @ 1000 MHz



Typical PIN Diode Current vs. Voltage

Absolute Maximum Ratings

Characteristic	Value
RF input power	0.5 W CW, 4 W @ 12.5% duty cycle
Control current	50 mA per diode
Operating temperature	-40 °C to +85 °C
Storage temperature	-65 °C to +150 °C
Maximum reverse diode voltage	-10 V
Electrostatic discharge	125 V

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.*

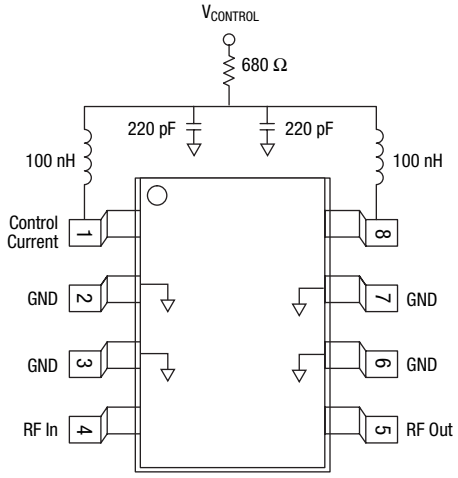
Recommended Solder Reflow Profiles

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

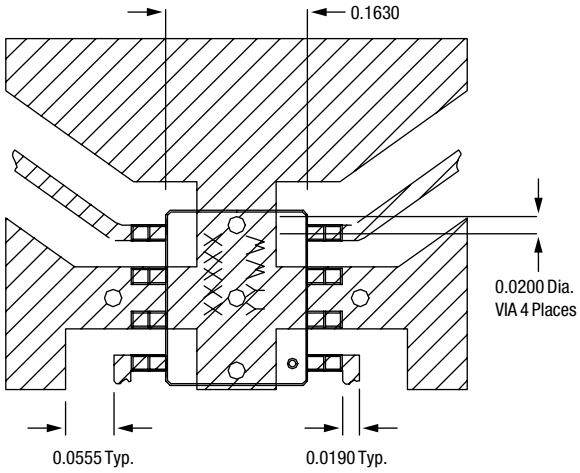
Tape and Reel Information

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

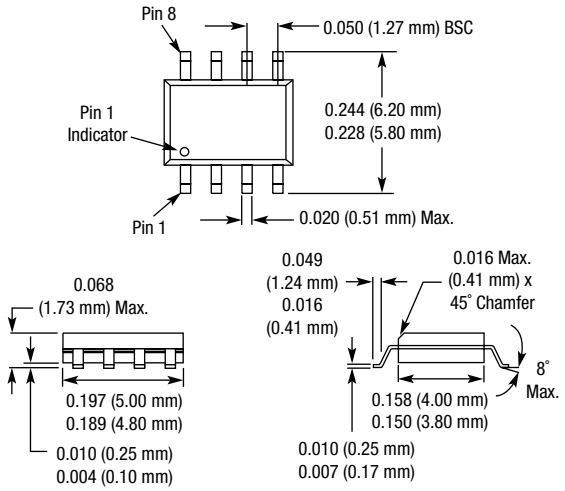
Pin Out



Recommended Board Layout



SOIC-8



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