DATA SHEET

AV112-12, AV112-12LF: HIP3™ Variable Attenuator 1.7–2.0 GHz

Features

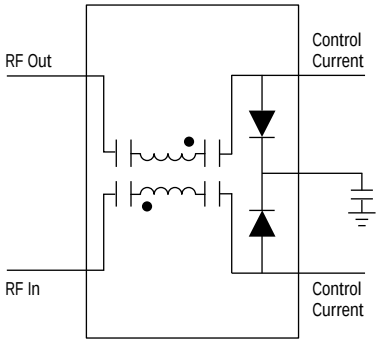
- Specified attenuation: 17.5–25 dB
- Total attenuation: 30 dB typical
- Low insertion loss: < 1.5 dB
- Low distortion: 40 dBm typical
- Low phase shift and delay
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

The AV112-12 is a low-distortion, PIN diode variable attenuator in a small SOIC-8 package. The design is based on Skyworks unique series of HIP3™ components. The AV112-12 consists of a monolithic quadrature hybrid and a matched pair of PIN diodes designed for low-distortion attenuators. AV112-12LF is packaged in a lead (Pb)-free, fully RoHS-compliant SOIC-8 package and is electrically identical to AV112-12.

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

Connection Diagram



Electrical Specifications at 25 °C

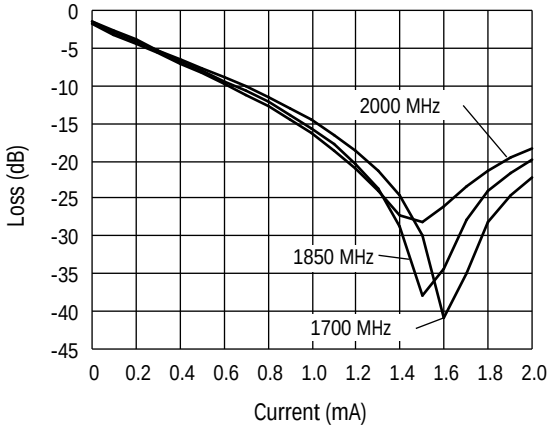
Parameter	Min.	Typ.	Max.	Unit
Frequency	1.7		2	GHz
Insertion loss (0 mA control current)		1	1.5	dB
Attenuation @ 1.2 mA control current (1.85 GHz)	17.5		25	dB
SWR (all ports)		1.5	1.8	
Input 3rd order intercept point	37	40		dBm
Relative phase shift up to 20 dB attenuation		7	10	Deg.
Group delay		0.6	0.9	ns

Operating Characteristics at 25 °C (0, 5 V)

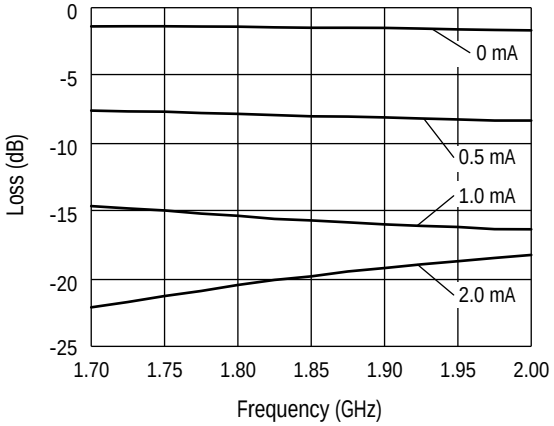
Parameter[1]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics[2] Rise, fall On, off Video feedthru (peak)	 10/90% or 90/10% RF 50% CTL to 90/10% RF				 5 8 5	 µs µs mV
Maximum input power for < 1 dB attenuation variation					15	dBm

1. All measurements made in a 50 Ω system.
2. Driver Pulse — 0–4 mA square wave.

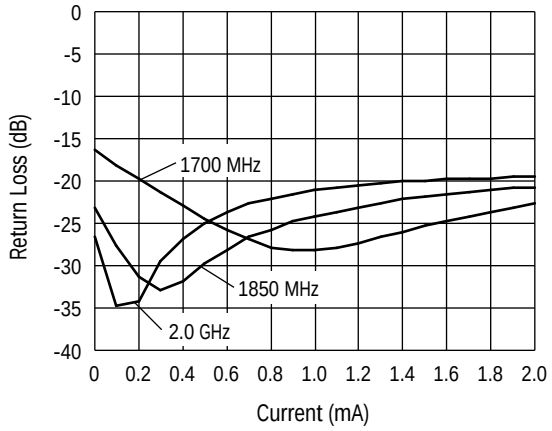
Typical Performance Data



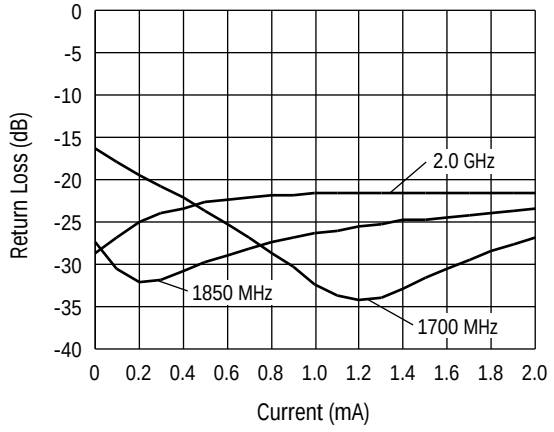
Attenuation vs. Control Current



Attenuation vs. Frequency

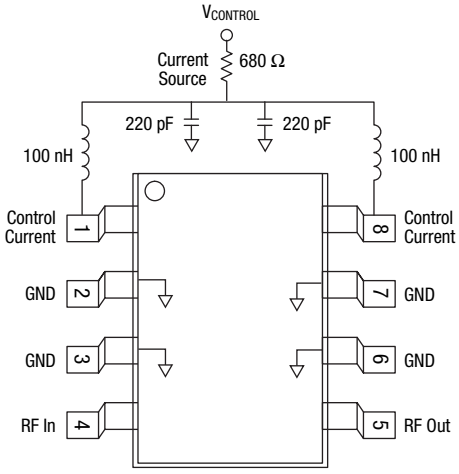


Input Return vs. Current Control

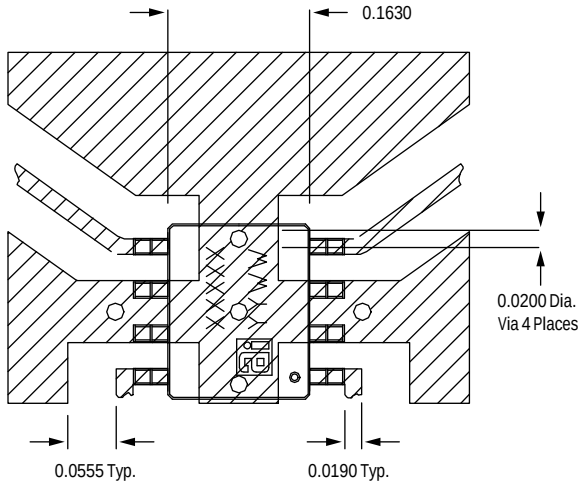


Output Return vs. Current Control

Pin Out



Recommended Board Layout



Material is 10 mil FR4.

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	-100 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.

SOIC-8