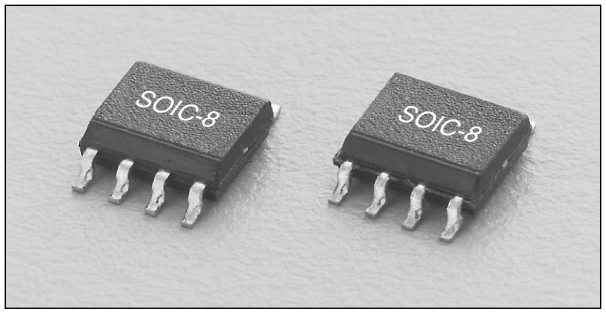
HIP3™ Variable Attenuator
0.80–1.00 GHz

Alpha

AV111-12

Features

- +40 dBm IP3 Typical
- Low Loss 1 dB Typical
- Attenuation 30 dB Typical
- Good VSWR <1.5:1 Typical
- Low Phase Shift



Description

The AV111-12 is a current controlled variable attenuator from Alpha's 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.

Electrical Specifications at 25°C

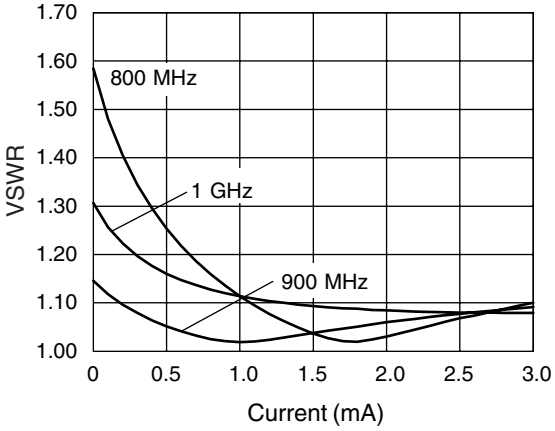
Parameter	Min.	Typ.	Max.	Unit
Frequency	0.80		1.0	GHz
Insertion Loss (0 mA Control Current)		1.0	1.5	dB
Attenuation @ 1.2 mA Control Current (900 MHz)	17.5		21.5	dB
VSWR All Ports		1.5	1.8	
Input 3rd Order Intercept	+37	+40		dBm
Relative Phase Shift Up to 20 dB Attenuation[1]		7	10	Deg.
Group Delay		0.4	0.9	ns

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

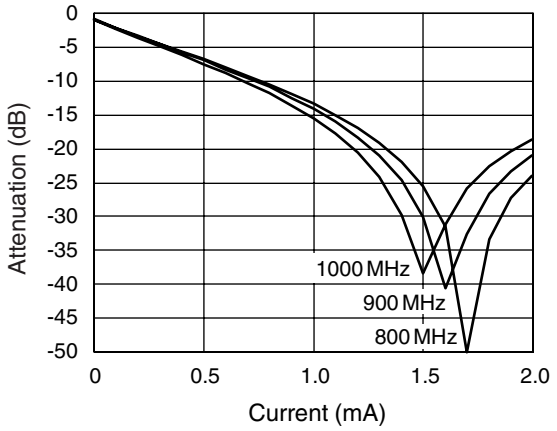
Parameter[2]	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[3]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru (Peak)				5 8 5	µs µs mV
Maximum Input Power for <1 dB Attenuation Variation					+15	dBm

1. When built with external components as shown in the Pin Out diagram.
2. All measurements made in a 50 Ω system, unless otherwise specified.
3. 0–4 mA square wave total control current.

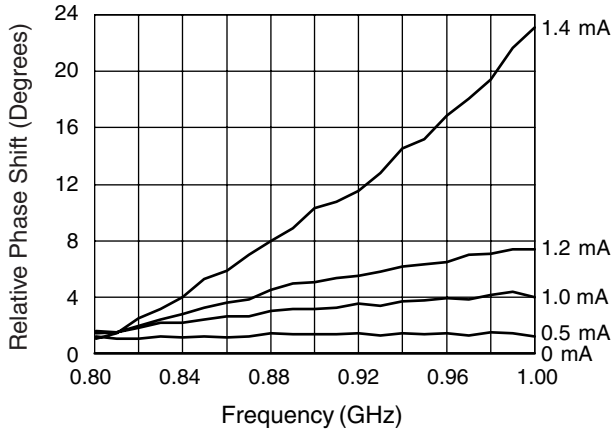
Typical Performance Data



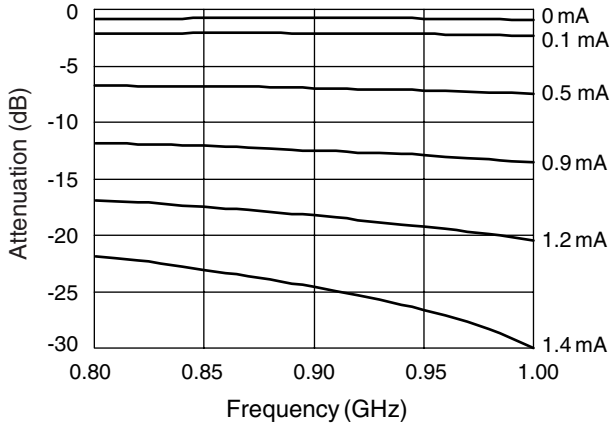
Input/Output VSWR vs. Current



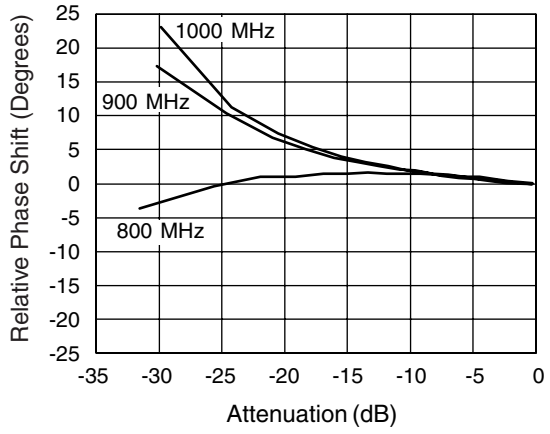
Attenuation vs. Current



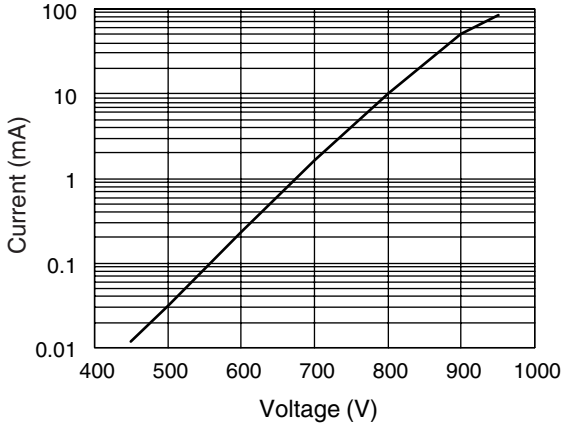
Relative Phase vs. Frequency



Attenuation vs. Frequency

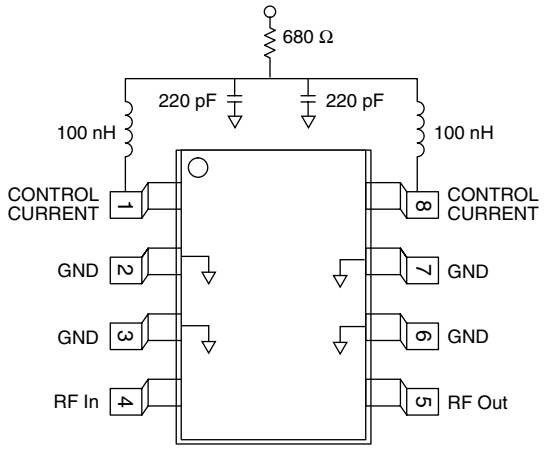


Relative Phase vs. Attenuation



Typical PIN Diode Current vs. Voltage

Pin Out

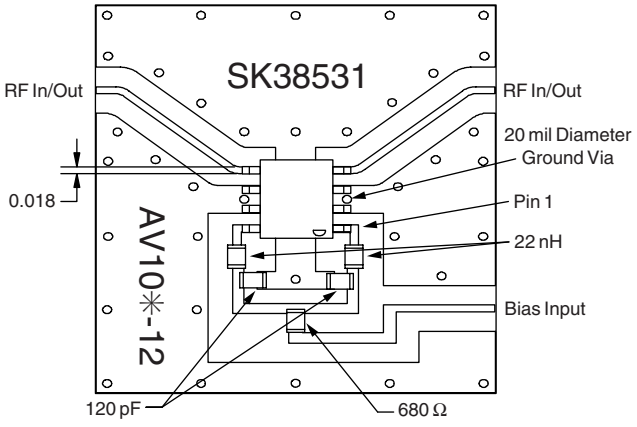


Absolute Maximum Ratings

Characteristic	Value
RF Input Power	0.5 W CW, 4 W @ 12.5% Duty Cycle
Control Current	50 mA per Diode
Operating Temperature	-65 to +125°C
Storage Temperature	-65 to +125°C
Maximum Reverse Diode Voltage	-100 V
Electrostatic Discharge	+125 V

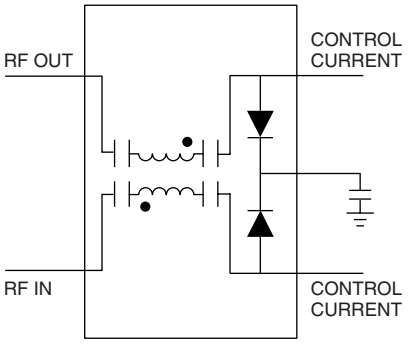
Note: Operating this device above any of these parameters may cause irreversible damage.

Recommended Board Layout



Material is 10 mil FR4.

Connection Diagram



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