

# HIP3™ Variable Attenuator

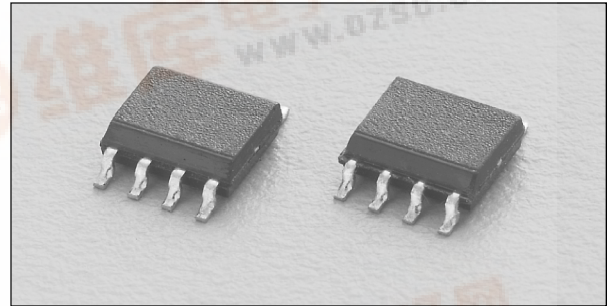
## 1.70–2.00 GHz

**Alpha**

AV102-12

### Features

- +50 dBm IP3 Typical
- Low Loss 1 dB Typical
- Attenuation 30 dB Typical
- Good VSWR <1.5:1 Typical
- Small SOIC-8 Package



### Description

The AV102-12 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	1.70		2.00	GHz
Insertion Loss (0 mA Control Current)		1	1.5	dB
Attenuation @ 3.0 mA Control Current (1850 MHz)	18.5		25.0	dB
VSWR All Ports		1.5	1.8	
Input 3rd Order Intercept	+47	+50		dBm
Group Delay		0.6	1.0	ns

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

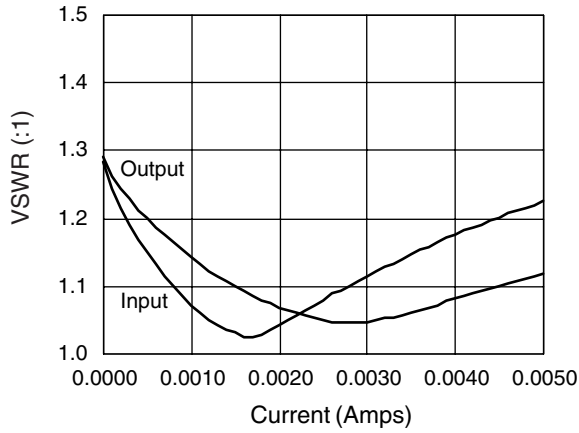
Parameter <sup>1</sup>	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>2</sup>	Rise, Fall (10/90% or 90/10% RF)				5	µs
	On, Off (50% CTL to 90/10% RF)				8	µs
	Video Feedthru (Peak)				2	mV
Maximum Input Power for <1 dB Attenuation Variation				+15		dBm

1. All measurements made in a 50 Ω system, unless otherwise specified.

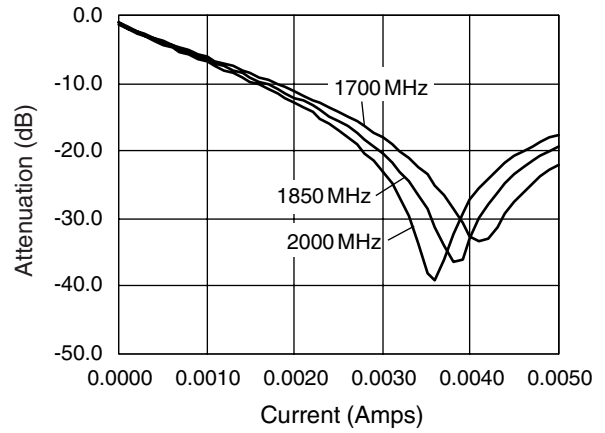
2. 0–4 mA square wave total control current.



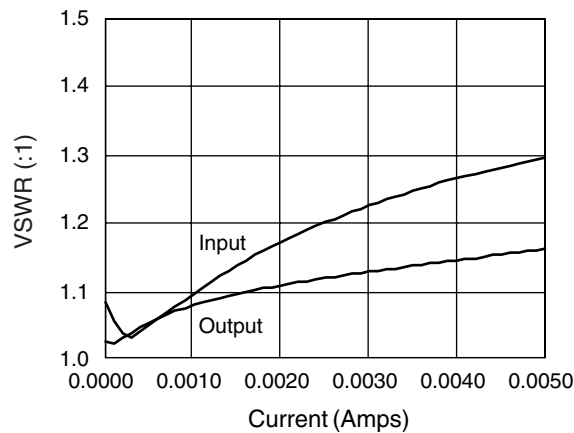
**Typical Performance Data**



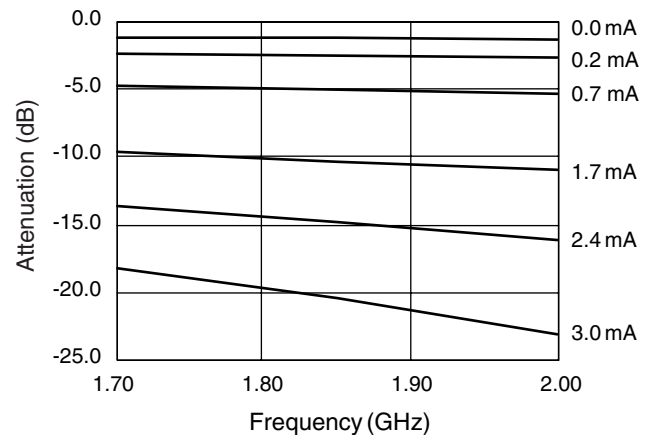
**Input/Output VSWR vs. Current @ 1700 MHz**



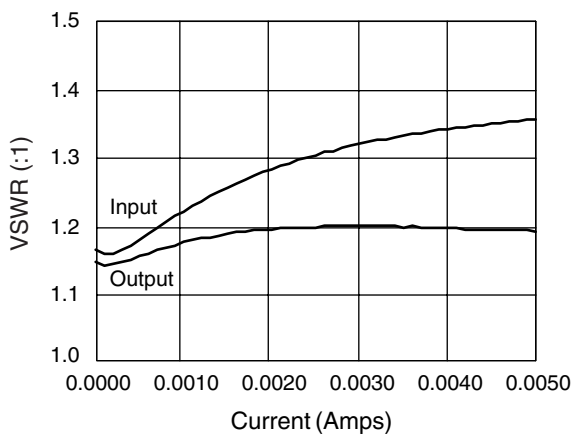
**Attenuation vs. Current**



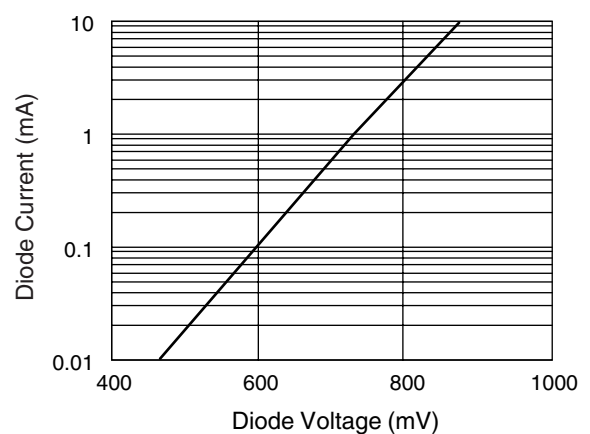
**Input/Output VSWR vs. Current @ 1850 MHz**



**Attenuation vs. Frequency**

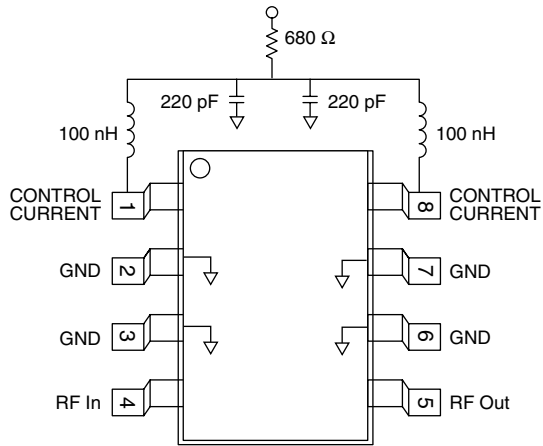


**Input/Output VSWR vs. Current @ 2000 MHz**

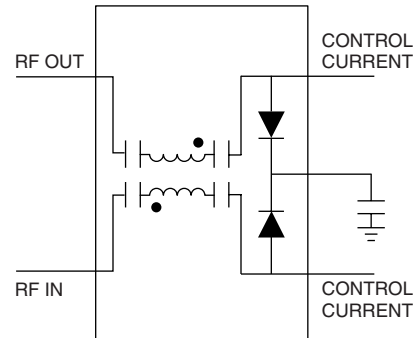


**Typical PIN Diode Current vs. Voltage**

**Pin Out**



**Connection Diagram**

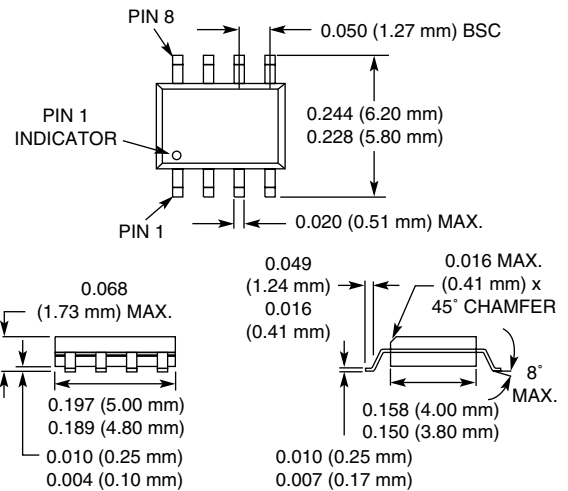


**Absolute Maximum Ratings**

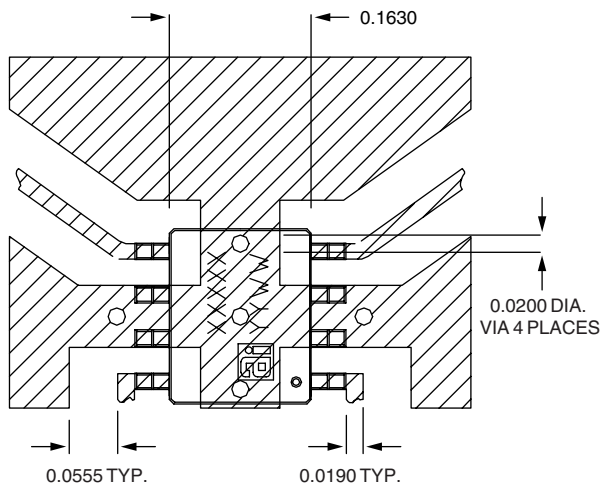
Characteristic	Value
RF Input Power	.5 W CW, 4 W @ 12.5% Duty Cycle
Control Current	50 mA Each Diode
Operating Temperature	-40 to +85°C
Storage Temperature	-40 to +85°C
Maximum Reverse Diode Voltage	-10 V
Electrostatic Discharge	+125 V

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

**SOIC-8**



**Recommended Board Layout**



Material is 10 mil FR4.