

# Voltage Variable Attenuator, 900 - 2500 MHz

AT65-0008

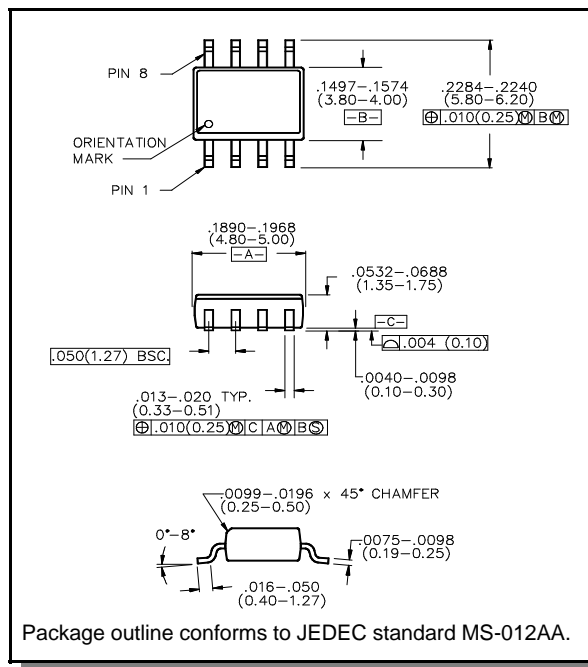
## Features

- High Third Order Intercept Point
- Surface Mount Package
- 25 dB Dynamic Range
- $\pm 5\%$  Operating Bandwidth
- PIN Diode Based
- Single Control Voltage

## Description

M/A-COM's AT65-0008 is a PIN diode based voltage variable attenuator. It is packaged in an 8 lead small outline narrow body plastic, surface mount package. The attenuator has linear operating power and intercept point levels higher than GaAs FET MMIC based voltage variable attenuators. The VVA is suited for use where low distortion and high linear operating power are required. The device operating frequency is selected in the 900 to 2500 MHz frequency band by defining the length of the T/4 (a quarter wave transmission line at the operating frequency) connected to pins 5 and 6.

## SO-8



## Electrical Specifications: $T_A = 25^\circ\text{C}$ , Frequency: $\pm 5\%$ Bandwidth, 900-2500 MHz

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	2V	dB	—	1.2	1.5
VSWR	0 to 10 dB	Ratio	—	1.6:1	2.0:1
VSWR	10 to 20 dB	Ratio	—	1.8:1	2.0:1
Attenuation	0V	dB	25	28	—
Attenuation Flatness vs Frequency	to 10 dB	dB	—	0.1	0.2
	to 20 dB	dB	—	0.15	0.3
	to 30 dB	dB	—	1.2	1.5
Switching Speed	50% Control to 90%/10% RF	$\mu\text{Sec}$	—	2	5
Linear Operation	0 to 20 dB	dBm	—	+17	+15
Input $IP_3$	Two-tone inputs to +5 dBm	dBm	+40	—	—

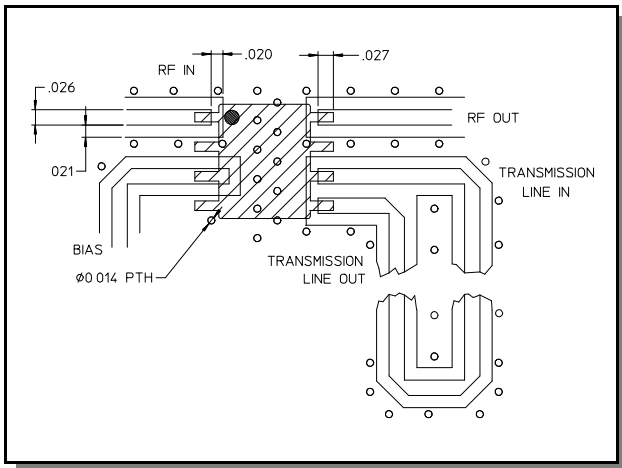
### Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF Input	5	Transmission Line Out
2	GND	6	Transmission Line In
3	Bias Input	7	GND
4	GND	8	RF Output

### Absolute Maximum Ratings

Parameter	Absolute Maximum
Max. Input Power	+27 dBm
Operating Voltage	+ 10 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

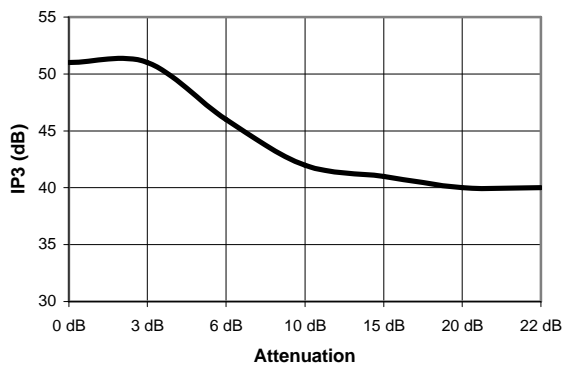
### Recommended PCB Configuration



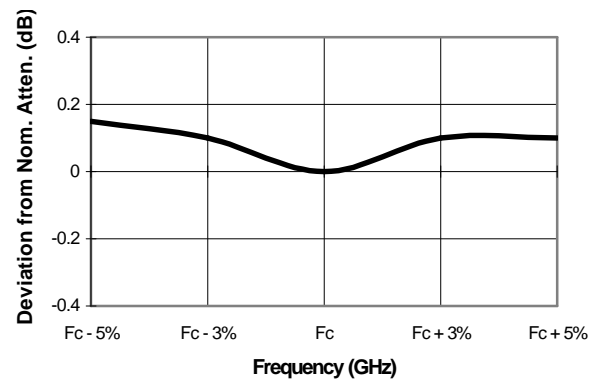
1. Circuit Material - GETEK, .014 Thick
2. 90° of length consists of printed transmission line plus effective length of internal circuitry and lead length.

### Typical Performance Curves

**IP3 vs. Attenuation**



**Attenuation Flatness, 3 dB**



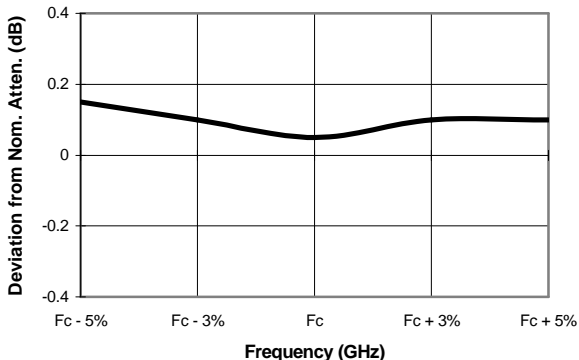
Specifications subject to change without notice.

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

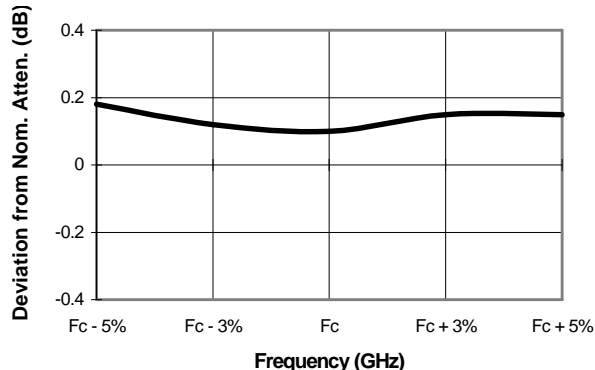
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

Typical Performance Curves

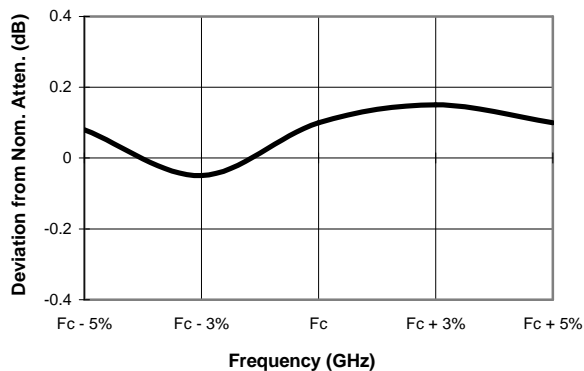
Attenuation Flatness, 6 dB



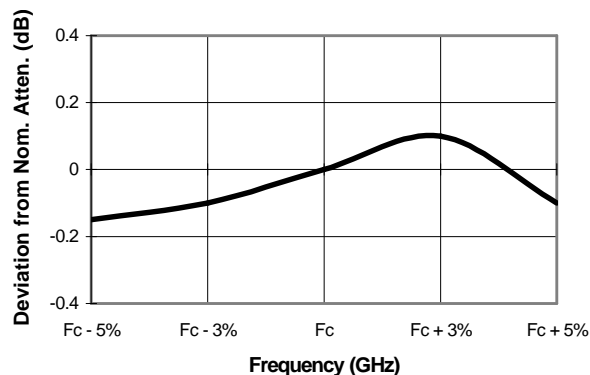
Attenuation Flatness, 10 dB



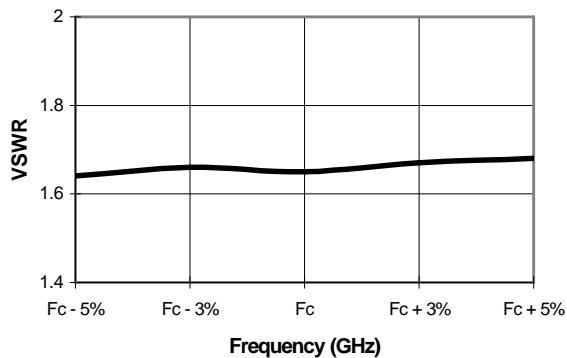
Attenuation Flatness, 15 dB



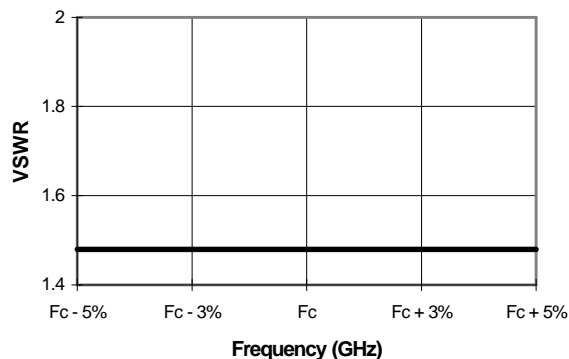
Attenuation Flatness, 20 dB



RF Input VSWR vs. Freq, Ins. Loss



RF Input VSWR vs. Freq, 3 dB



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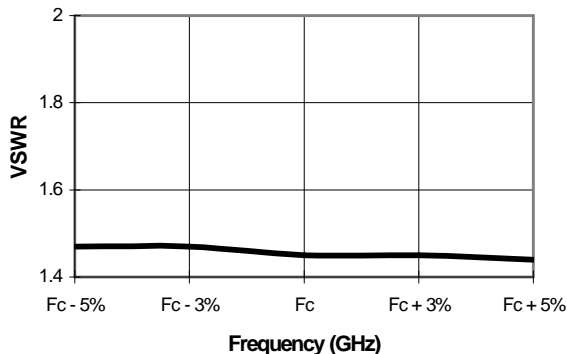
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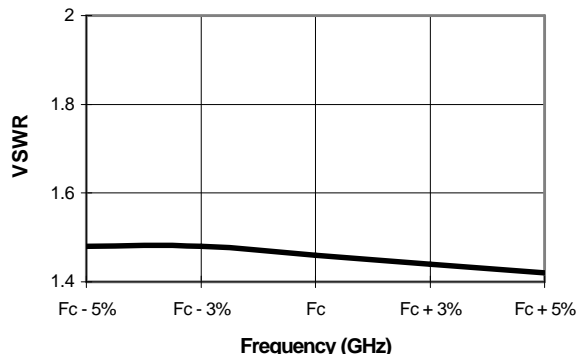


Typical Performance Curves

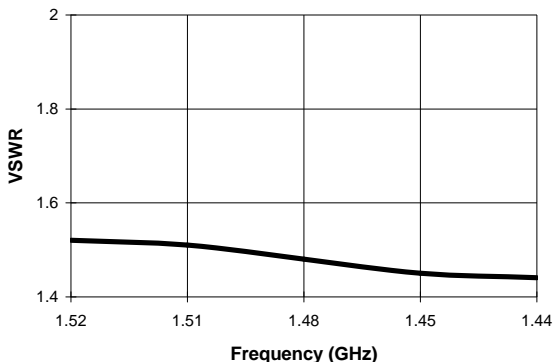
RF Input VSWR vs. Freq, 6 dB



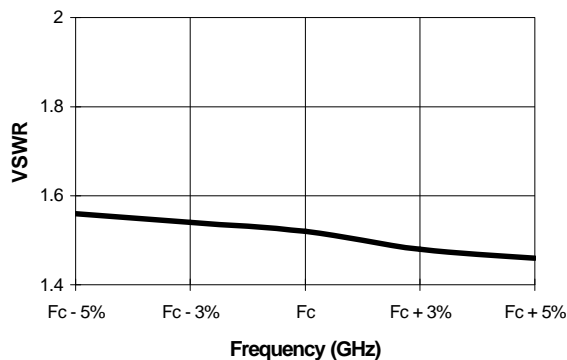
RF Input VSWR vs. Freq, 10 dB



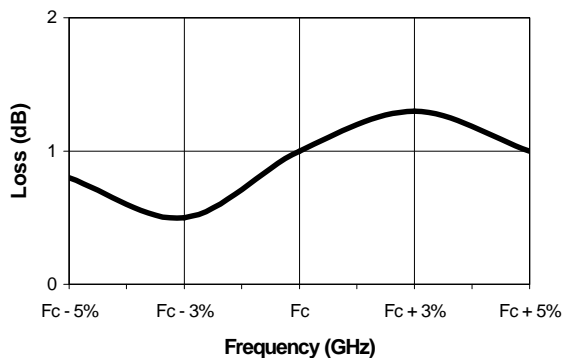
RF Input VSWR vs. Freq, 15 dB



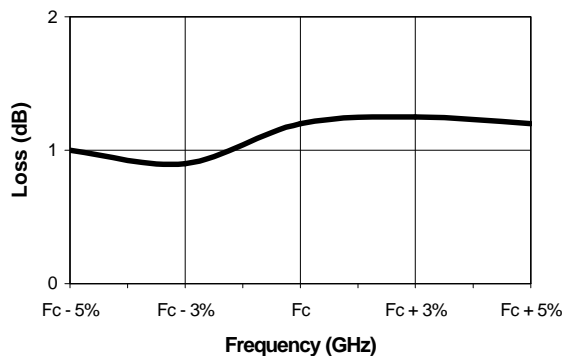
RF Input VSWR vs. Freq, 20 dB



Typical Insertion Loss @ +25°C



Typical Insertion Loss @ -40°C



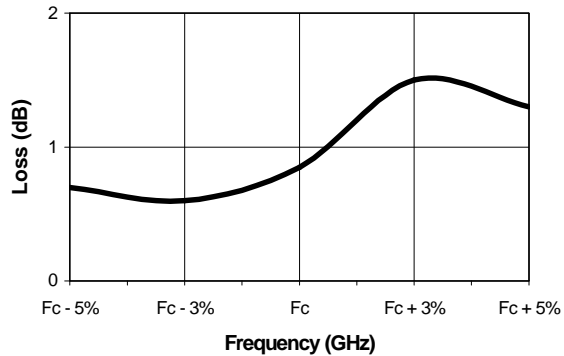
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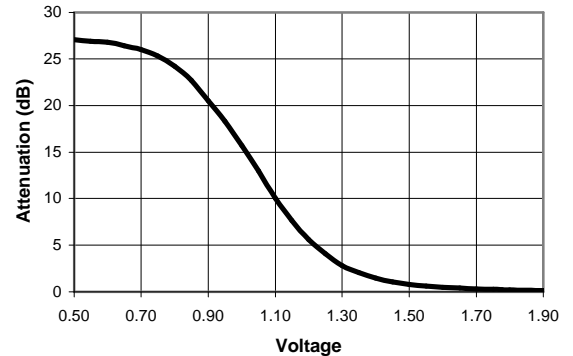
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## Typical Performance Curves

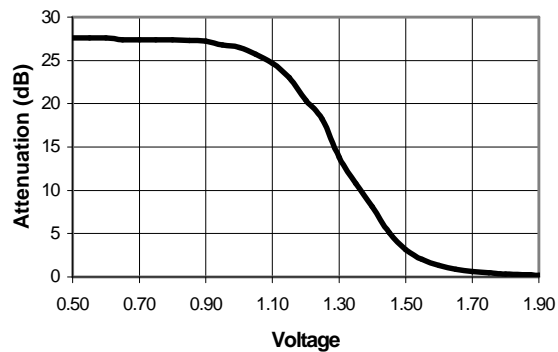
*Typical Insertion Loss @ +85°C*



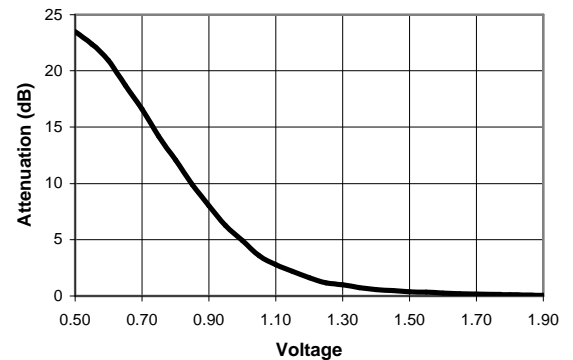
*Attenuation vs. Voltage at Fc +25°C*



*Attenuation vs. Voltage at Fc -40°C*



*Attenuation vs. Voltage at Fc +85°C*



## Ordering Information

Part Number	Package
AT65-0008	Bulk Packaging
AT65-0008TR	Tape and Reel (1K Reel)
AT65-0008-TB	Units Mounted on Test Board

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