



# Voltage Variable Absorptive Attenuator 12 dB, DC-2.0 GHz

AT-250 V4

#### **Features**

- 12 dB Voltage Variable Attenuation
- Low Intermodulation Products
- Low DC Power Consumption: 50 μW
- Single Voltage Control: 0 to -4 Volts
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- SOIC-8 Plastic Package
- Tape and Reel Packaging Available

## **Description**

M/A-COM's AT-250 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOIC 8-lead surface mount plastic package. The AT-250 is ideally suited for use where attenuation fine tuning, fast switching and very low power consumption are required.

Typical applications include radio, cellular, GPS equipment and other automatic gain/level control circuits.

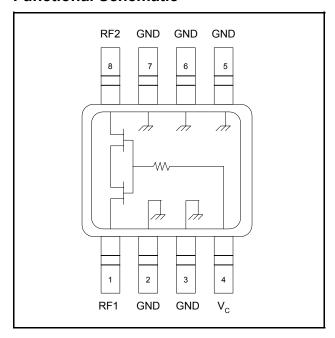
The AT-250 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

## **Ordering Information**

Part Number	Package			
AT-250	SOIC 8-Lead Plastic Package			
AT-250TR	Forward Tape and Reel			

Note: Reference Application Note M513 for reel size information.

#### **Functional Schematic**



### **Pin Configuration**

Pin No.	Function	Pin No.	Function	
1	RF1	5	Ground	
2	Ground	6	Ground	
3	Ground	7	Ground	
4	V <sub>C</sub>	8	RF2	

# Absolute Maximum Ratings <sup>1</sup>

Parameter	Absolute Maximum		
Input Power	+21 dBm		
Control Voltage	+5V, -8.5V		
Operating Temperature	-40°C to +85°C		
Storing Temperature	-65°C to +150°C		

<sup>1.</sup> Exceeding any one or combination of these limits may cause permanent damage to this device.

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Visit www.macom.com for additional data sheets and product information.

<sup>•</sup> North America Tel: 800.366.2266 / Fax: 978.366.2266

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Asia/Pacific Tel: 81.44.844.8296 / Fax: 81.44.844.8298





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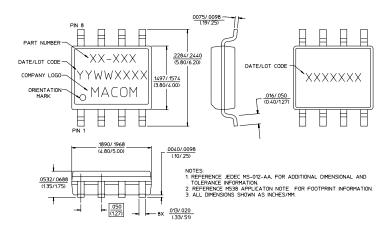
AT-250 V4

## Electrical Specifications: $T_A = 25$ °C, $Z_0 = 50 \Omega$

Parameter	Test Conditions <sup>2</sup>	Units	Min	Тур	Max
Insertion Loss	DC - 0.1 GHz DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz	dB dB dB dB		2.9 3.0 3.2 3.4	3.1 3.2 3.5 3.8
Flatness (Peak to Peak)	DC - 0.1 GHz DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz	dB dB dB dB		± 0.1 ± 0.2 ± 0.5 ± 1.2	± 0.3 ± 0.4 ± 0.8 ± 1.5
VSWR		Ratio	_	2.1:1	_
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	_	3	_
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS	_	5	_
Transients	In Band	mV	_	10	_
Power Handling	Linear Operation Absolute Maximum Input Power	dBm dBm	_	13 21	_
IP <sub>2</sub>	0.05 GHz 0.5 - 2.0 GHz Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	dBm dBm	28 40	34 47	_
IP <sub>3</sub>	0.05 GHz 0.5 - 2.0 GHz Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	dBm dBm	18 18.5	31 <sup>3</sup> 36 <sup>3</sup>	_

- 2. Control voltage: 0 to -4 volts @ 20 µA typical.
- 3. For levels above 6 dB attenuation. For levels below 6 dB, the minimum specification numbers apply.

## SOIC-8



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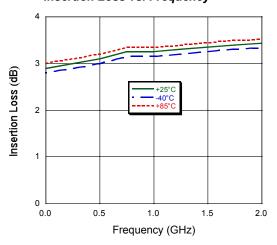


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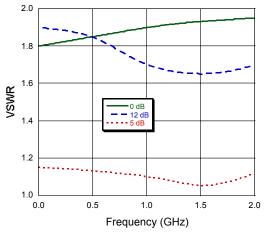
AT-250

### **Typical Performance Curves**

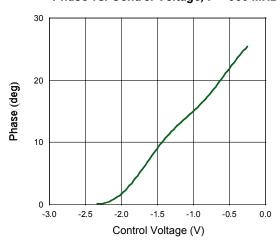
#### Insertion Loss vs. Frequency



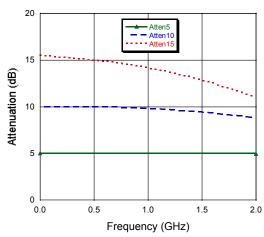
#### VSWR vs. Frequency



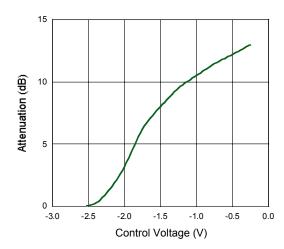
Phase vs. Control Voltage, F = 950 MHz



#### Attenuation vs. Frequency



Attenuation vs. Control Voltage, F = 950 MHz



information.

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