

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



- Attenuation: 12 dB at 1 GHz
- 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
- SOT-143 Plastic Package
- Tape and Reel Packaging Available

#### Description

M/A-COM's AT-259 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOT-143 4-Lead surface mount plastic package. The AT-259 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.

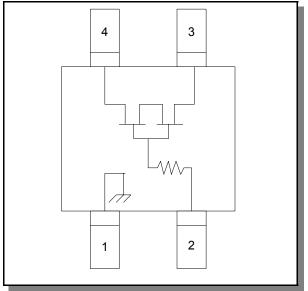
The AT-259 is fabricated with a monolithic GaAs MMIC using a mature 1 micron process. The process features full chip passivation for increased performance and reliability.

## **Ordering Information**

Part Number	Package			
AT-259	SOT 4-Lead Plastic Package			
AT-259TR	Forward Tape and Reel			

Note: Reference Application Note M513 for reel size information.

# Functional Schematic



#### Pin Configuration

Pin No.	Function	Pin No.	Function
1	Ground	3	RF2
2	Vc	4	RF1

## 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		
Storage Temperature	-65°C to +150°C		

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

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

AT-259 **V4** 

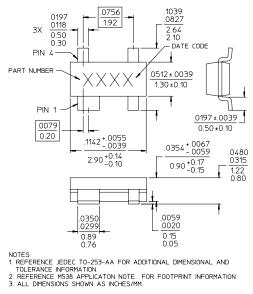
## Electrical Specifications: $T_A = 25^{\circ}C$ , $Z_0 = 50 \Omega$

Parameter	Test Conditions <sup>2</sup>	Frequency	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)	5 dB Attenuation 10 dB Attenuation 15 dB Attenuation	DC - 2.0 GHz DC - 2.0 GHz DC - 2.0 GHz	dB dB dB		<u>+</u> 0.2 <u>+</u> 2.3 <u>+</u> 7.0	<u>+</u> 0.4 <u>+</u> 2.5 <u>+</u> 7.5
Output Impedance	_	—	Ohms	—	50	—
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>	Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	0.05 GHz 0.5 - 2.0 GHz	dBm dBm	_	34 47	—
IP <sub>3</sub>	Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	0.05 GHz 0.5 - 2.0 GHz	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.

#### SOT-143



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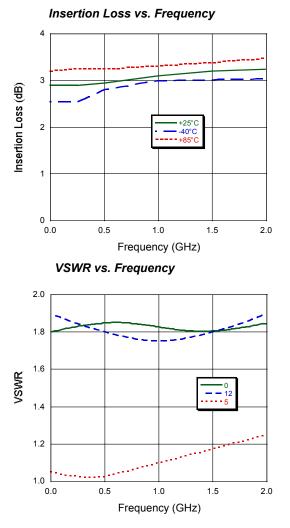


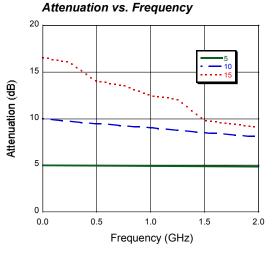


## **Voltage Variable Absorptive Attenuator** 12 dB, DC-2.0 GHz

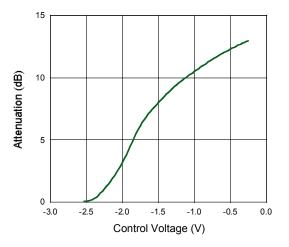
AT-259 **V4** 

# **Typical Performance Curves**





Attenuation vs. Control Voltage, F = 950 MHz



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