

# Voltage Variable Absorptive Attenuator, 35 dB 0.5 - 2 GHz AT-109

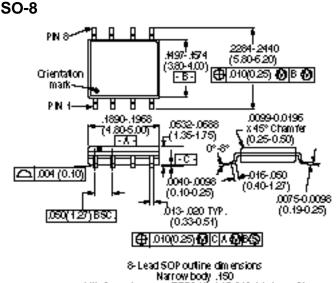
### Features

- Single Positive Voltage Control 0 to +5 Volts
- 35 dB Attenuation Range at 0.9 GHz
- ±2 dB Linearity from BSL
- Low DC Power Consumption
- Temperature Range: -40°C to +85°C
- Low-Cost SOIC 8 Plastic Package
- Tape and Reel Packaging Available

# Description

M/A-COM's AT-109 is a GaAs MMIC voltage variable absorptive attenuator in a low-cost SOIC 8-lead surface mount plastic package. The AT-109 is more linear than the higher attenuation range AT-108. The AT-109 is ideally suited for use where linear attenuation fine tuning and very low power comsumption are required. Typical applications include radio, cellular, GPS equipment and automatic gain/level control circuits.

The AT-109 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.



V 2.00

Narrow body .150 (All dimensions per JEDEC No. MS-012-AA, Issue C) Dimensions in () are in mm. Unless Otherwise Noted:  $poor = \pm 0.010 (por = \pm 0.25)$  $poor = \pm 0.02 (por = \pm 0.5)$ 

#### **Ordering Information**

Part No.	rt No. Package	
AT-109	SOIC 8-Lead Plastic Package	
AT-109TR	Forward Tape & Reel*	
AT-109RTR	Reverse Tape & Reel*	

 If specific reel size is required, consult factory for part number assignment.

Parameter	Test Conditions <sup>1</sup>	Unit	Min.	Тур.	Max
Insertion Loss	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB		2.5 3.2	2.7 3.5
Attenuation	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB	35 30		
Flatness (Peak-to-Peak)	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB		±0.5 ±1.2	±0.8 ±1.5
VSWR				2:1	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF 50% Control to 90% RF, Control to 10% RF In-band	μS μS mV		25 35 12	

Electrical Specifications<sup>1</sup>, T<sub>A</sub> = +25°C

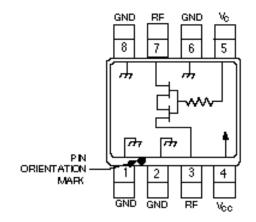
1. All measurements at 1 GHz in a 50- $\Omega$  system, unless otherwise specified. The RF ports must be blocked outside of the package from ground or any other voltage.

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

	_				
Parameter		Absolute Maximum			
	Maximum Input Power	+21 dBm			
	Supply Voltage V <sub>CC</sub>	-1 V, +8 V			
	Control Voltage V <sub>CC</sub>	-1 V, V <sub>CC</sub> + 0.5 V			
	Operating Temperature	-40°C to +85°C			
	Storage Temperature	-65°C to +150°C			

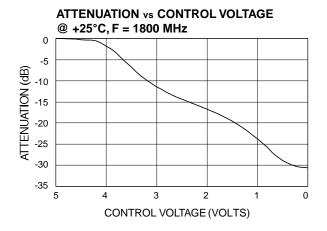
1. Operation of this device above any one of these parameters may cause permanent damage.

#### **Functional Schematic**

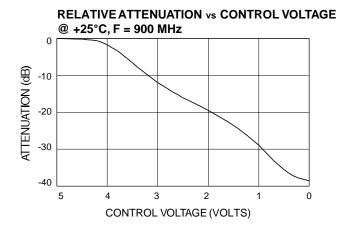


 $V_{CC}$  = +5 VDC ±0.5 VDC @ 50  $\mu A$  max.  $V_C$  = 0 VDC to +5 VDC @ 50  $\mu A$  max. External DC blocking capacitors are required on all RF ports.

# **Typical Performance**



INSERTION LOSS vs FREQUENCY



#### ATTENUATION vs TEMPERATURE, NORMALIZED TO +25°C, F = 900 MHz

