

Voltage Variable Absorptive Attenuator, 20 dB DC - 2 GHz

AT-309

V 2.00

Features

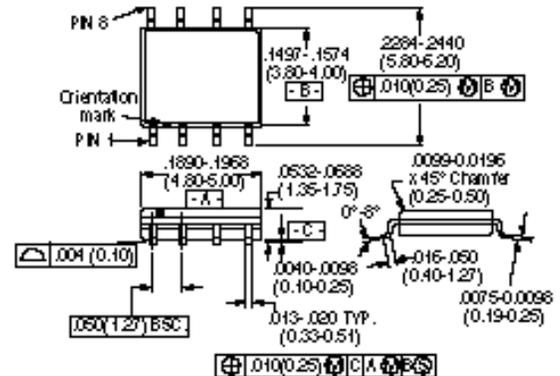
- 20 dB Voltage Variable Attenuation
- Very Low Power Consumption: 50 μ W
- Low Intermodulation Products
- Dual Voltage Control 0 to -4 Volts
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC8 Plastic Package
- Tape and Reel Packaging Available¹

Description

M/A-COM's AT-309 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOIC 8-lead surface mount plastic package. The AT-309 is ideally suited for use where attenuation fine tuning, fast switching and very low power consumption are required. Typical applications include radio, cellular, and GPS equipment and other Automatic Gain/Level Control circuits.

The AT-309 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

SO-8



8-Lead SOP outline dimensions
Narrow body .150
(All dimensions per JEDEC No. MS-012-AA, Issue C)
Dimensions in () are in mm.
Unless Otherwise Noted: .xxx = ± 0.10 (xxx = ± 0.25)
 xxx = ± 0.02 (x = ± 0.5)

Ordering Information

Part Number	Package
AT-309 PIN	SOIC 8-Lead Plastic Package
AT-309TR	Forward Tape & Reel
AT-309RTR	Reverse Tape & Reel

Electrical Specifications, $T_A = +25^\circ\text{C}$

Parameter	Test Conditions ²	Unit	Min.	Typ.	Max
Insertion Loss	DC - 0.1 GHz	dB		0.7	0.9
	DC - 0.5 GHz	dB		0.8	1.0
	DC - 1.0 GHz	dB		0.9	1.2
	DC - 2.0 GHz	dB		1.2	1.4
Flatness (Peak to Peak)	DC - 0.1 GHz	dB		+/-0.5	+/-0.8
	DC - 0.5 GHz	dB		+/-0.5	+/-0.8
	DC - 1.0 GHz	dB		+/-0.8	+/-1.0
	DC - 2.0 GHz	dB		+/-1.0	+/-1.2
VSWR (Matched)				1.4:1	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF	nS		6	
	50% Control to 90% RF, 50% Control to 10% RF	nS		8	
	In Band	mV		10	
One dB Compression	Input Power (Over Attenuation Range)	dBm		5	
IP ₂	Measured Relative (Over Attenuation Range) to Input Power (Over Attenuation Range) (for two-tone input power up to +5 dbm)	0.05 GHz 0.5 - 2.0 GHz	dBm dBm	47 40	
	Measured Relative (Over Attenuation Range) to Input Power (Over Attenuation Range) (for two-tone input power up to +5 dbm)	0.05 GHz 0.5 - 2.0 GHz	dBm dBm	39 32	

1. Refer to "Tape and Reel Packaging" Section, or contact factory.

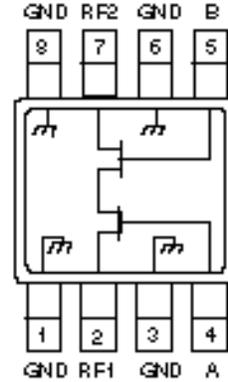
2. All measurements at 1 GHz in a 50 Ω system, unless otherwise specified. The A and B control voltages vary 0 to -4V @ 20 μ A typ.

Absolute Maximum Ratings¹

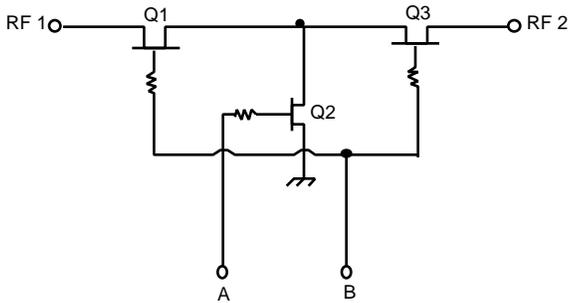
Parameter	Absolute Maximum
Max. Input Power	
50 MHz	+27 dBm
500-2000 MHz	+30 dBm
Control Voltage	+5V, -8.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Functional Schematic



Electrical Schematic



Pin Configuration

Pin No.	Description
1	GND
2	RF1
3	GND
4	A
5	B
6	GND
7	RF2
8	GND

Typical Performance

