

# Voltage Variable Absorptive Attenuator, 40 dB DC - 2 GHz

## AT-339

V 2.00

### Features

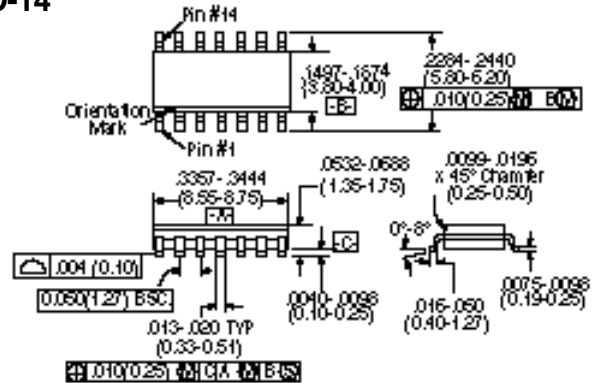
- 40 dB Voltage Variable Attenuation
- Low Intermodulation Products
- Very Low Power Consumption: 50  $\mu$ W
- Dual Voltage Control 0 to -4 Volts
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC14 Plastic Package
- Tape and Reel Packaging Available<sup>1</sup>

### Description

M/A-COM's AT-339 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOIC 14-lead surface mount plastic package. The AT-339 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-339 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-14



14-Lead SOP outline dimensions  
Narrow body .150  
(All dimensions per JEDEC No. MS-012-AB, Issue C)  
Dimensions in ( ) are in mm.  
Unless Otherwise Noted: .xxx =  $\pm 0.10$  (xx =  $\pm 0.25$ )  
.xx =  $\pm 0.02$  (x =  $\pm 0.5$ )

### Ordering Information

Part Number	Package
AT-339 PIN	SOIC 14-Lead Plastic Package
AT-339TR	Forward Tape & Reel
AT-339RTR	Reverse Tape & Reel

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

Parameter	Test Conditions <sup>2</sup>	Unit	Min.	Typ.	Max	
Insertion Loss	DC - 0.1 GHz	dB		0.6	0.9	
				DC - 0.5 GHz	0.8	1.1
				DC - 1.0 GHz	1.2	1.4
				DC - 2.0 GHz	1.3	1.5
Flatness (peak to peak)	DC - 2.0 GHz	dB		20 dB Attenuation	+/-0.5	+/-0.8
				30 dB Attenuation	+/-1.5	+/-1.8
				40 dB Attenuation	+/-5.0	+/-5.5
VSWR (Matched)				1.5:1		
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF 50% Control to 90% RF, 50% Control to 10% RF In Band	nS		18		
				nS	35	
				mV	20	
One dB Compression	Input Power (over atten. range)	dBm		5		
IP <sub>2</sub>	Measured Relative (over atten. range) to Input Power (for two-tone input power up to +5 dBm)	dBm		0.05 GHz	39	
				0.5 - 2.0 GHz	49	
IP <sub>3</sub>	Measured Relative (over atten. range) to Input Power (for two-tone input power up to +5 dBm)	dBm		0.05 GHz	30	
				0.5 - 2.0 GHz	38	

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

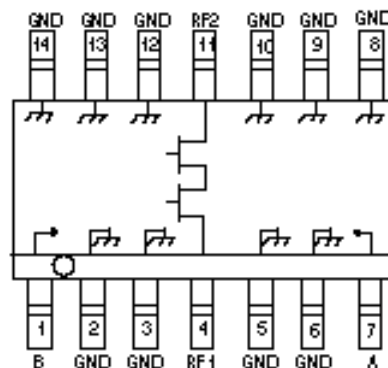
2. All measurements at 1 GHz in a 50  $\Omega$  system, unless otherwise specified. The A and B control voltages vary 0 to -4 volts @ 20  $\mu$ A typ.

## Absolute Maximum Ratings

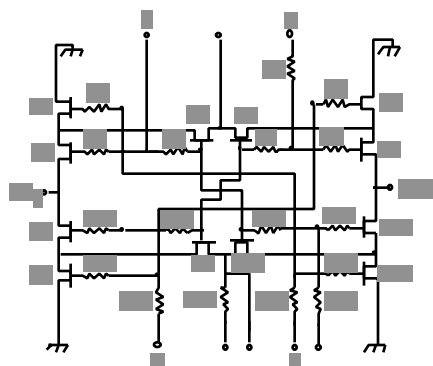
Parameter	Absolute Maximum <sup>1</sup>
Max. Input Power	
50 MHz	+27 dBm
500-2000 MHz	+30 dBm
Control Voltage	+5 V, -8.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

## Functional Schematic



## Electrical Schematic



## Pin Configuration

Pin No.	Description	Pin No.	Description
1	B	8	GND
2	GND	9	GND
3	GND	10	GND
4	RF1	11	RF2
5	GND	12	GND
6	GND	13	GND
7	A	14	GND

## Typical Performance

