

## Features

- High Dynamic Range: 42dB Typical
- Flat Attenuation vs. Frequency
- High P1dB Compression
- Operates on a Single +5V Supply:
- SOW-16, Wide Body Package
- 50 Ohm Nominal Impedance

## Description

M/A-COM's AT10-0019 is a Voltage Controlled PIN diode based  $\pi$  attenuator packaged in a low cost, 16 lead wide body plastic SMT package. The PIN diode design makes this part well suited for applications where low distortion or high linear operating power levels are required. These attenuators are ideal for gain control in multi-channel digital communications systems.

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

Parameter	Absolute Maximum
Max. Input Power 50 - 500 MHz	+24 dBm
500 - 1000 MHz	+30 dBm
Voltages	
V <sub>CC</sub>	-1 V to +7.0 V
Control Voltage	-1 V to +15 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

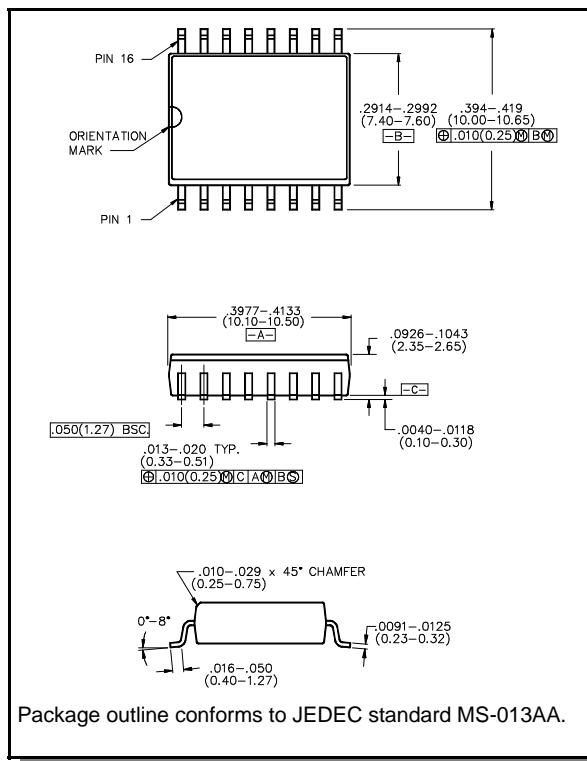
1. Operation of this device above any one of these parameters may cause permanent damage.

## Electrical Specifications<sup>2</sup>: T<sub>A</sub> = 25°C

Parameter	Test Conditions	Frequency	Units	Min	Typical	Max
Insertion Loss	V <sub>cont.</sub> : +10 V	50 - 1000 MHz	dB	—	2.4	2.8
Dynamic Range	V <sub>cont.</sub> : 0 V	50 - 1000 MHz	dB	33	42	—
Attenuation Flatness	Attenuation: 0 to 20 dB Attenuation: 20 to 30 dB	50 - 1000 MHz	dB	—	1.0	1.5
		50 - 1000 MHz	dB	—	1.5	2.0
VSWR	V <sub>cont.</sub> : 0 - 10V	50 - 1000 MHz	Ratio	—	1.7:1	2.1:1
Trise, Tfall Ton, Toff Transients	10%/90%, 90%/10% 50% Cntl to 90%/10% RF In-band	—	μS	—	10	20
		—	μS	—	15	25
		—	mV	—	150	250
1 dB Compression	V <sub>cont.</sub> : 0 - 10V	100 MHz	dBm	10	13	—
		500 MHz	dBm	17	20	—
		1000 MHz	dBm	21	24	—
Input IP <sub>3</sub>	V <sub>cont.</sub> : 0 - 10V Two-tone inputs up to +10 dBm	100 MHz	dBm	24	27	—
		1000 MHz	dBm	34	37	—
V <sub>CC</sub>	—	—	V	+4.75	+5.0	+5.25
I <sub>CC</sub>	V <sub>CC</sub> = 5.25 V	DC	mA	—	2	2.5
Control Current	—	DC	mA	—	2.7	3.5

2. Unit requires external .01 μF DC Blocks on RF lines.

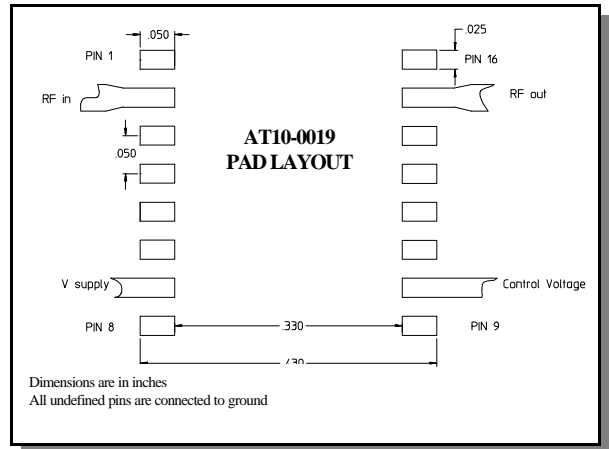
## SOW-16



Pin Configuration

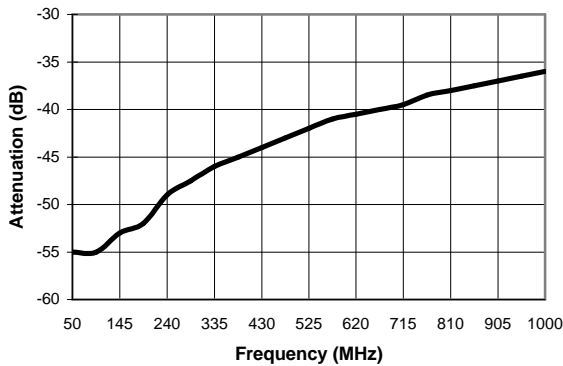
Pin #	Function	Pin #	Function
1	GND	9	GND
2	RF in	10	V control
3	GND	11	GND
4	GND	12	GND
5	GND	13	GND
6	GND	14	GND
7	V Supply	15	RF out
8	GND	16	GND

Pad Layout

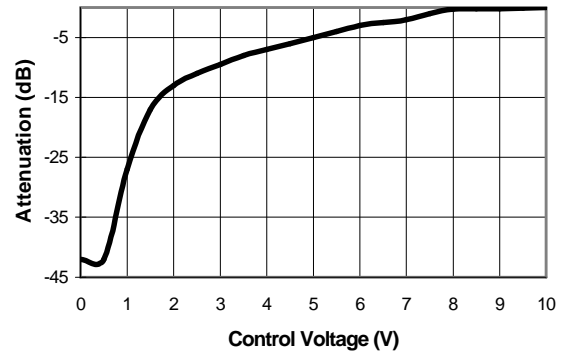


Typical Performance Curves

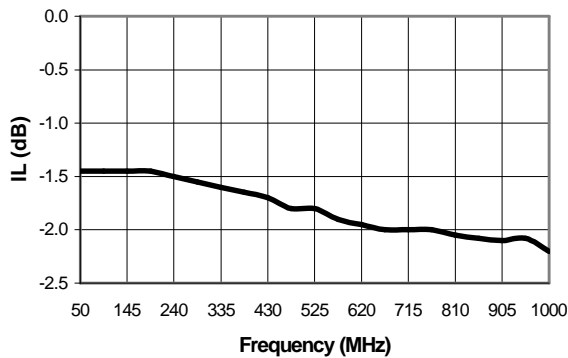
Attenuation vs. Frequency  
@ Control Voltage = 0V



Attenuation vs. Control Voltage  
@ 500 MHz



Insertion Loss vs. Frequency  
@ Control Voltage = 10V



Ordering Information

Part Number	Package
AT10-0019	Bulk Packaging
AT10-0019TR	Tape and Reel (1K Reel)
AT10-0019-TB	Unit Mounted on Test Board

Specifications subject to change without notice.

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.