

# PIN Diode Based Variable Attenuator, 50 - 1000 MHz

V 5.00

AT10-0019

## 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 500 - 1000 MHz	+24 dBm +30 dBm
Voltages $V_{CC}$ Control Voltage	-1 V to +7.0 V -1 V to +15 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

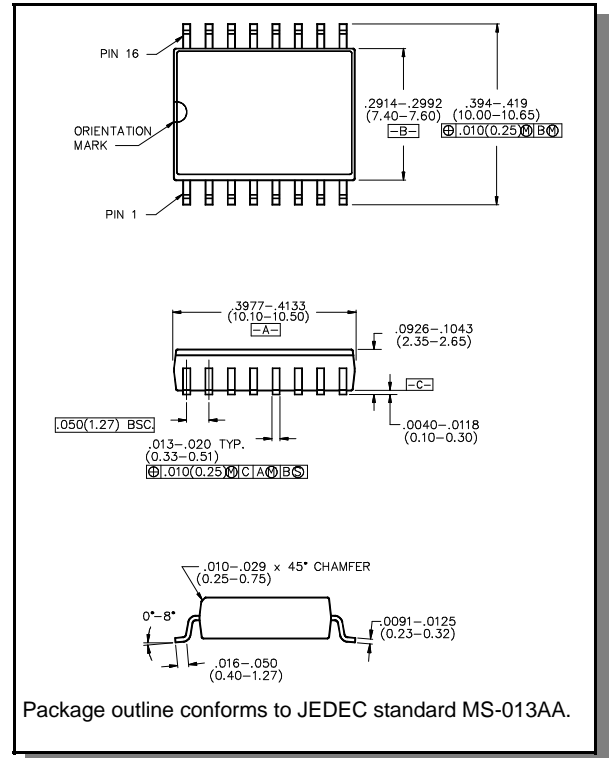
1. Operation of this device above any one of these parameters may cause permanent damage.

## Electrical Specifications<sup>2</sup>: $T_A = 25^\circ\text{C}$

Parameter	Test Conditions	Frequency	Units	Min	Typical	Max
Insertion Loss	$V_{cont.}: +10\text{ V}$	50 - 1000 MHz	dB	—	2.4	2.8
Dynamic Range	$V_{cont.}: 0\text{ V}$	50 - 1000 MHz	dB	33	42	—
Attenuation	Attenuation: 0 to 20 dB	50 - 1000 MHz	dB	—	1.0	1.5
Flatness	Attenuation: 20 to 30 dB	50 - 1000 MHz	dB	—	1.5	2.0
VSWR	$V_{cont.}: 0 - 10\text{ V}$	50 - 1000 MHz	Ratio	—	1.7:1	2.1:1
Trise, Tfall	10%/90%, 90%/10%	—	$\mu\text{S}$	—	10	20
Ton, Toff	50% Cntl to 90%/10% RF	—	$\mu\text{S}$	—	15	25
Transients	In-band	—	mV	—	150	250
1 dB Compression	$V_{cont.}: 0 - 10\text{ V}$	100 MHz 500 MHz 1000 MHz	dBm dBm dBm	10 17 21	13 20 24	— — —
Input $IP_3$	$V_{cont.}: 0 - 10\text{ V}$ Two-tone inputs up to +10 dBm	100 MHz 1000 MHz	dBm dBm	24 34	27 37	— —
$V_{CC}$	—	—	V	+4.75	+5.0	+5.25
$I_{CC}$	$V_{CC} = 5.25\text{ V}$	DC	mA	—	2	2.5
Control Current	—	DC	mA	—	2.7	3.5

2. Unit requires external .01  $\mu\text{F}$  DC Blocks on RF lines.

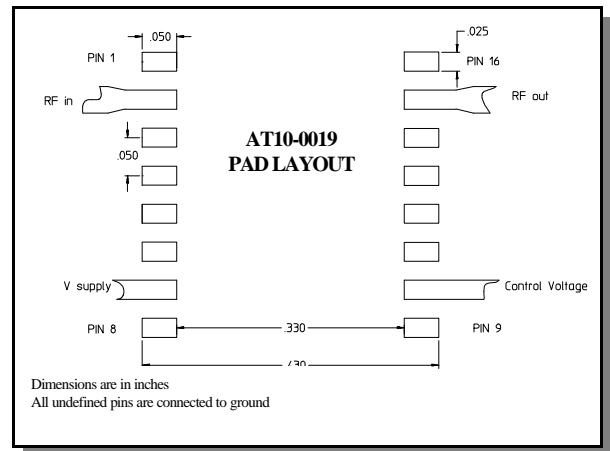
## SOW-16



## Pin Configuration

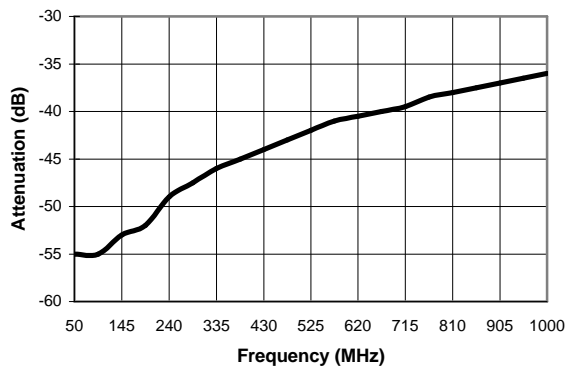
Pin #	Function	Pin #	Function
1	GND	9	GND
2	RF in	10	V control
3	GND	11	GND
4	GND	12	GND
5	GND	13	GND
6	GND	14	GND
7	V Supply	15	RF out
8	GND	16	GND

## Pad Layout

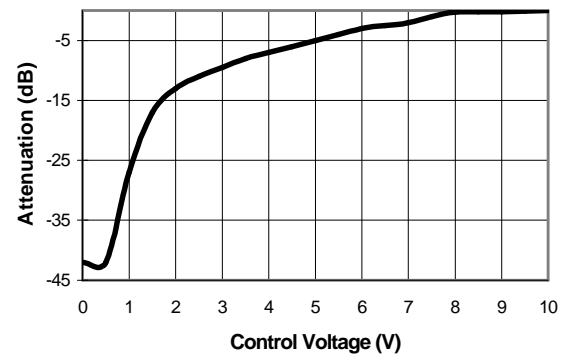


## Typical Performance Curves

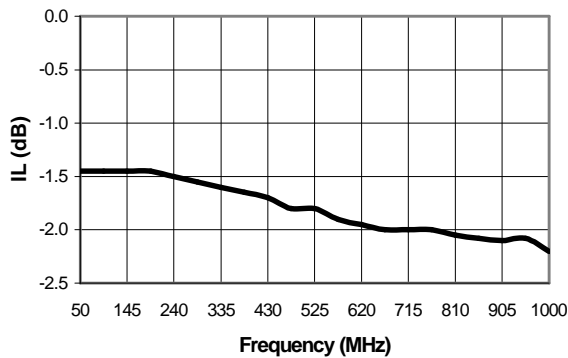
**Attenuation vs. Frequency  
@ Control Voltage = 0V**



**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.

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