

# M/A-COM Voltage Variable Absorptive Attenuator

## Features

- Single Positive Control 0 to 3 Volts
- 15 dB Voltage Variable Attenuation
- $\pm 2$  dB Linearity from BSL
- Positive Control Logic
- Low Cost MSOP-8 Plastic Package

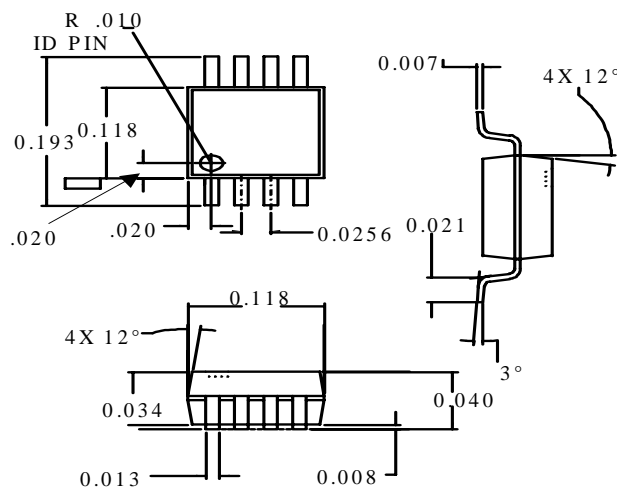
## Description

M/A-COM's AT-118 is a linear GaAs MMIC voltage variable absorptive attenuator in a low cost MSOP-8 surface mount plastic package. The AT-118 is ideally suited for applications where linear attenuation and fine tuning are required.

Typical applications include radio, cellular, GPS equipment and automatic gain/level control circuits.

The AT-118 is fabricated with a mature 1 micron gate length GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

## MSOP-8<sup>1</sup>



1. Dimensions are in inches.

## Ordering Information

Part Number	Package
AT-118 PIN	MSOP 8-Lead Plastic
AT-118TR	Forward Tape and Reel <sup>1</sup>

1. Reference Application Note M513 for reel size information.

## Electrical Specifications: $T_A = +25^\circ\text{C}$ <sup>1</sup>

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.5 - 3.0 GHz	dB		1.6	1.9
Attenuation	0.5 - 1.0 GHz	dB	12	14	
	1.0 - 3.0 GHz	dB	15	16	
Insertion Loss Flatness (Peak-to-Peak)	0.5 - 3.0 GHz	dB		$\pm 0.3$	$\pm 0.5$
VSWR	0.5 - 3.0 GHz			2:1	
$T_{\text{rise}}, T_{\text{fall}}$	10% to 90% RF, 90% to 10% RF	$\mu\text{s}$		10	
$T_{\text{on}}, T_{\text{off}}$	50% Control to 90% RF, Control to 10% RF	$\mu\text{s}$		12	
Transients	In-band	mV		10	

1. All measurements taken at 900 GHz in a 50 $\Omega$  system unless otherwise specified. Loss varies at 0.003 dB/ $^\circ\text{C}$ .

Specifications subject to change without notice.

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 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298  
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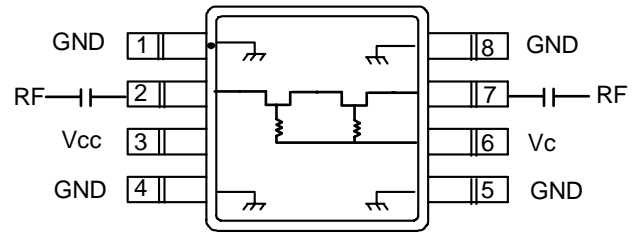
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**Absolute Maximum Ratings<sup>1</sup>**

Parameter	Absolute Maximum
Maximum Input Power	+21 dBm
Supply Voltage $V_{CC}$	-1V, +8V
Control Voltage $V_C$	-1V, $V_{CC} + 0.5V$
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

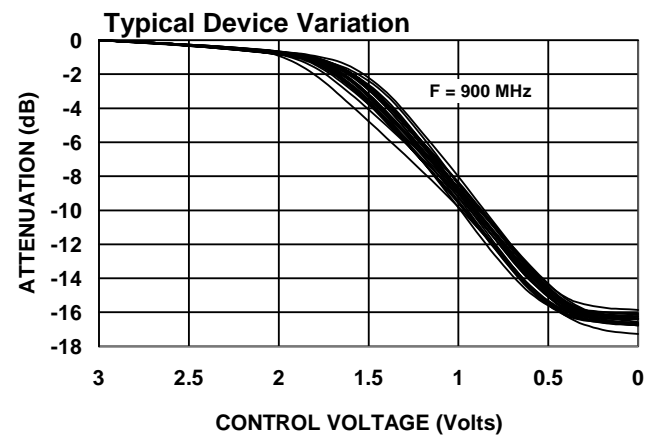
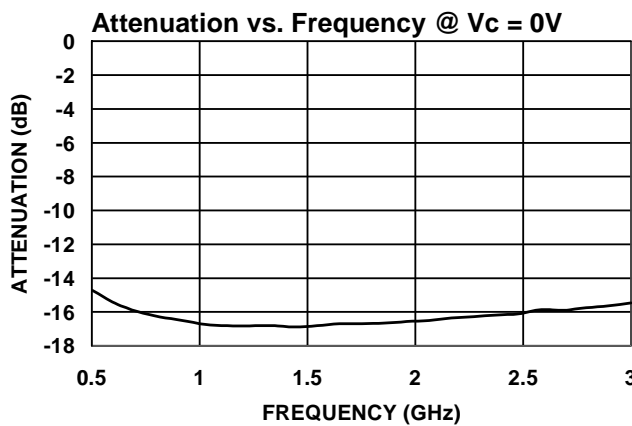
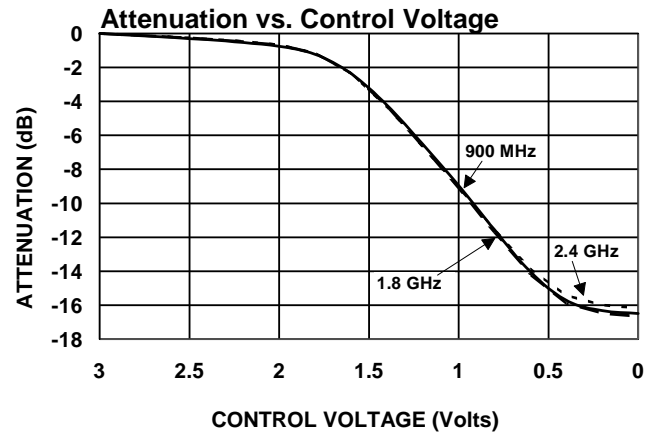
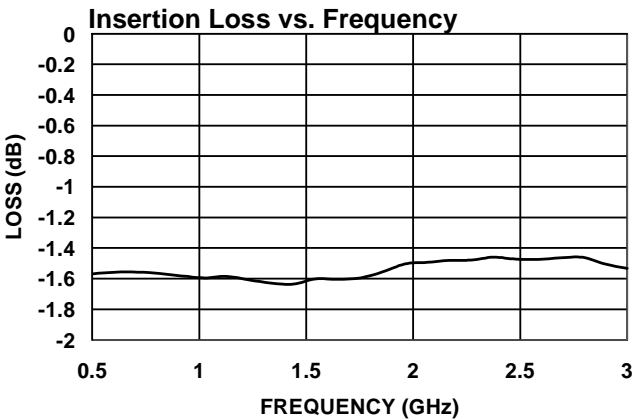
1. Exceeding any one or a combination of these limits may cause permanent damage.

**Functional Schematic<sup>1, 2, 3</sup>**



- $V_{CC} = +3 V_{DC}$  @ 20  $\mu A$  max.
- $V_C = 0 V_{DC}$  to  $+3 V_{DC}$  @ 75  $\mu A$  max.
- External DC blocking capacitors are required on all RF ports.
- 39 pF used for data measurements.

**Typical Performance Curves**



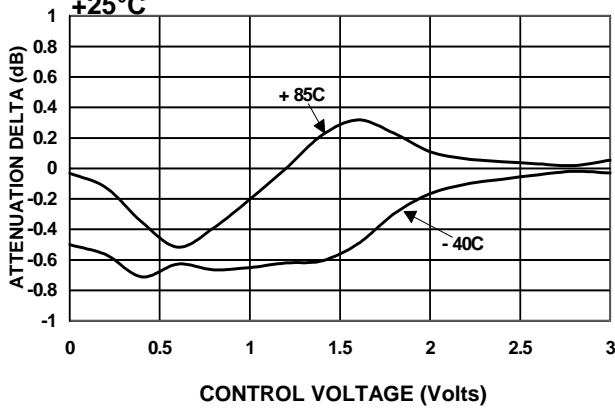
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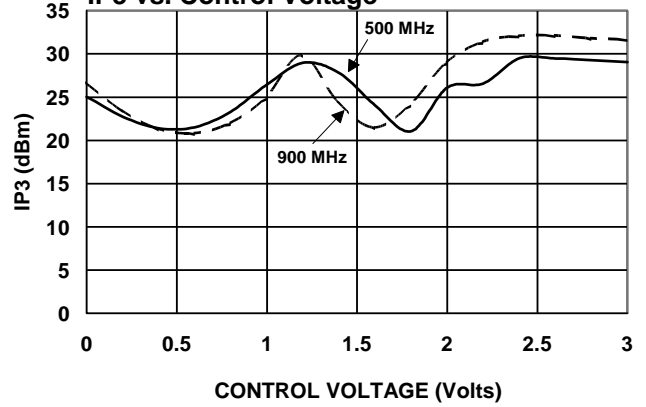
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Typical Performance Curves (Cont'd)

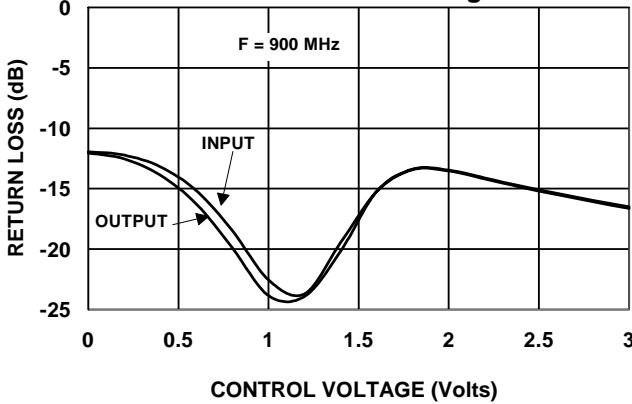
Attenuation vs. Temperature Normalized to +25°C



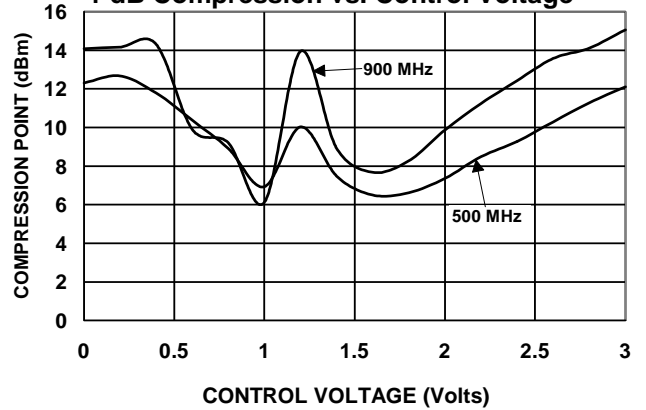
IP3 vs. Control Voltage



Return Loss vs. Control Voltage



1 dB Compression vs. Control Voltage



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