

M/A-COM Voltage Variable Absorptive Attenuator

Features

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

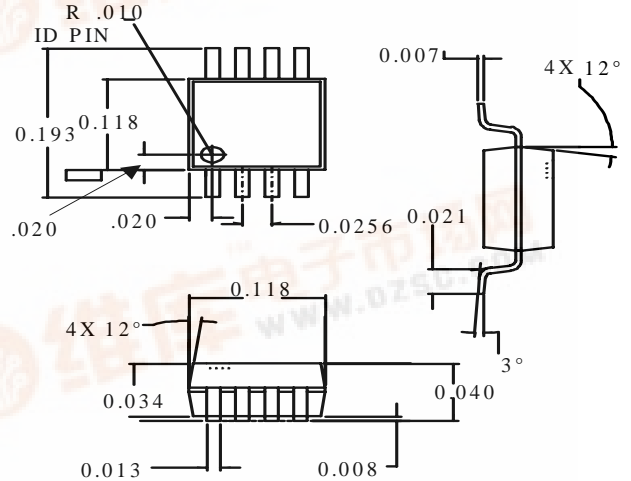
Description

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-8¹



1. Dimensions are in inches.

Ordering Information

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

1. Reference Application Note M513 for reel size information.

Electrical Specifications: $T_A = +25^\circ\text{C}^1$

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		± 0.3	± 0.5
VSWR	0.5 - 3.0 GHz			2:1	
$T_{\text{rise}}, T_{\text{fall}}$	10% to 90% RF, 90% to 10% RF	μS		10	
$T_{\text{on}}, T_{\text{off}}$	50% Control to 90% RF, Control to 10% RF	μS		12	
Transients	In-band	mV		10	

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

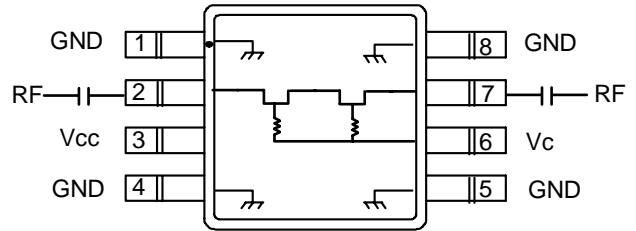


Absolute Maximum Ratings¹

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

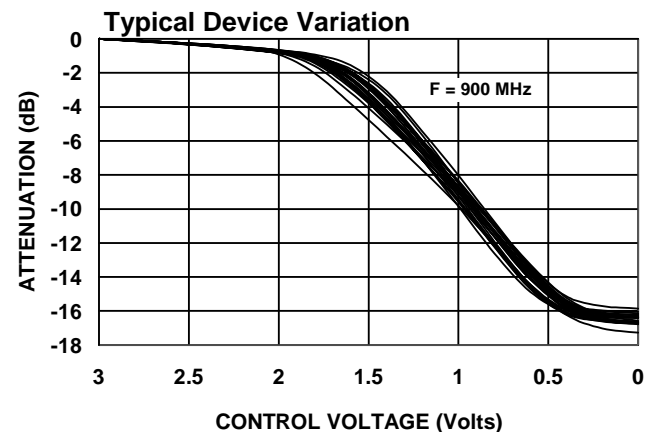
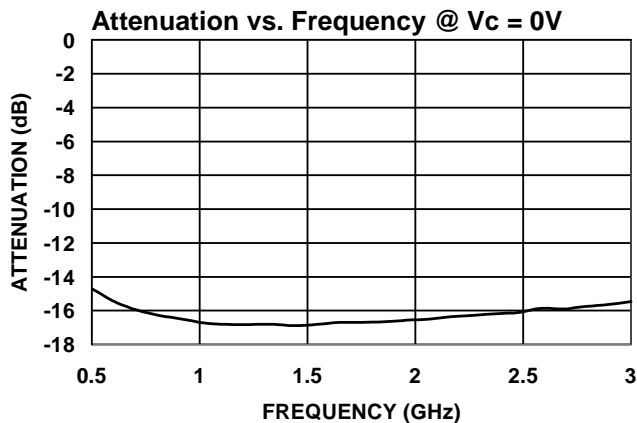
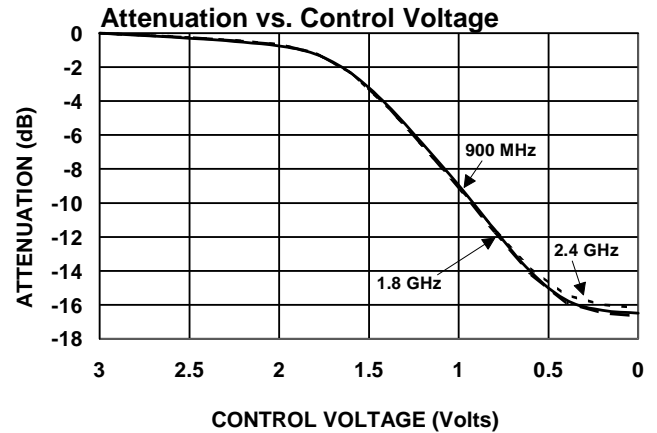
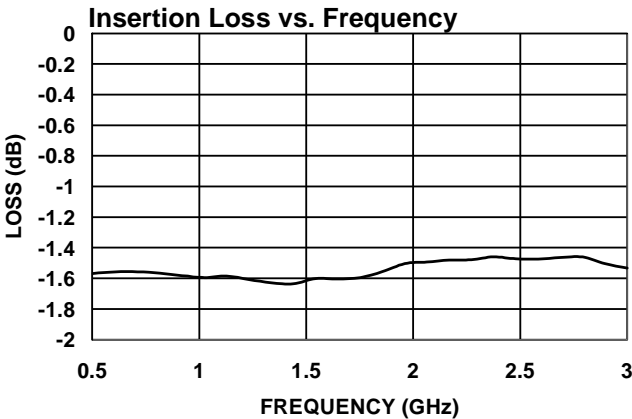
1. Exceeding any one or a combination of these limits may cause permanent damage.

Functional Schematic^{1, 2, 3}



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

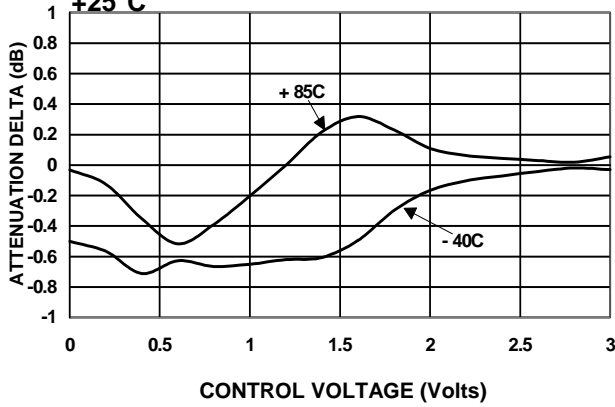
Typical Performance Curves



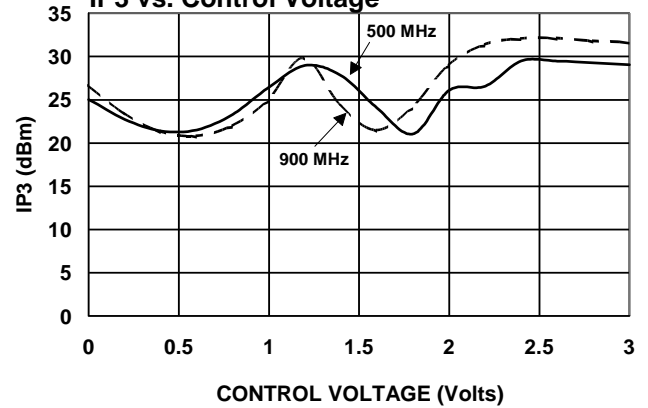
Specifications subject to change without notice.

Typical Performance Curves (Cont'd)

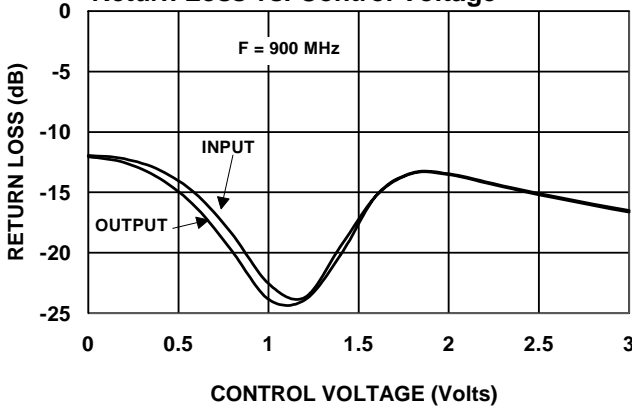
Attenuation vs. Temperature Normalized to +25°C



IP3 vs. Control Voltage



Return Loss vs. Control Voltage



1 dB Compression vs. Control Voltage

