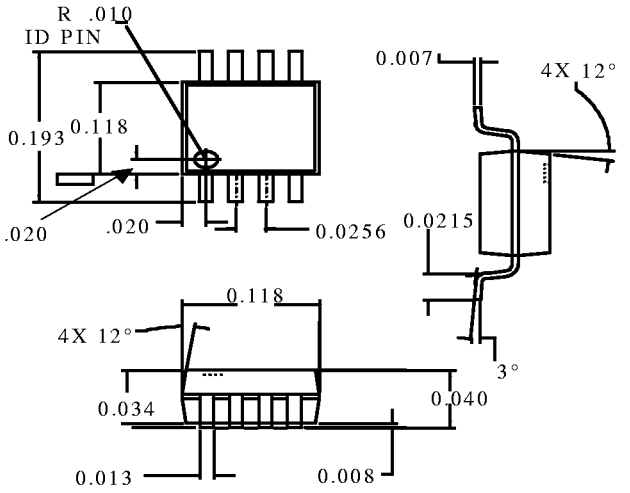
M/A-COM

Voltage Variable Absorptive Attenuator 15 dB, 0.5 - 3 GHz

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

MSOP-8[1]



1. Dimensions are in inches.

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.

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°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_{rise}, T_{fall}	10% to 90% RF, 90% to 10% RF	µS		10	
T_{on}, T_{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 50Ω system unless otherwise specified. Loss varies at 0.003 dB/°C.

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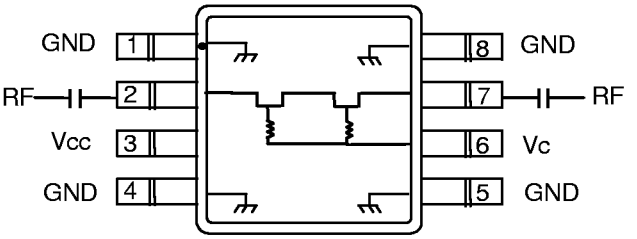
Absolute Maximum Ratings[1]

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.

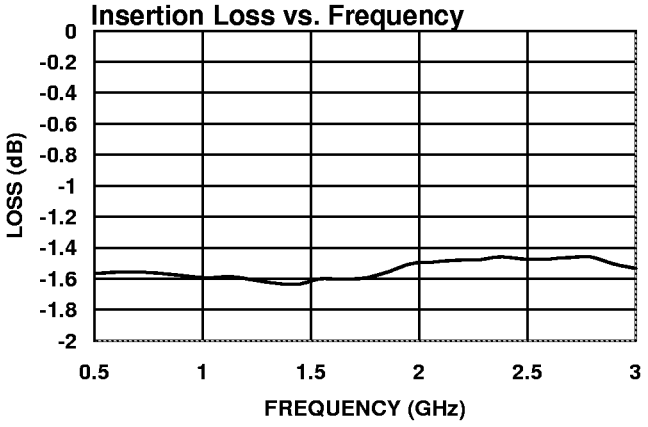
Functional Schematic[1, 2, 3]



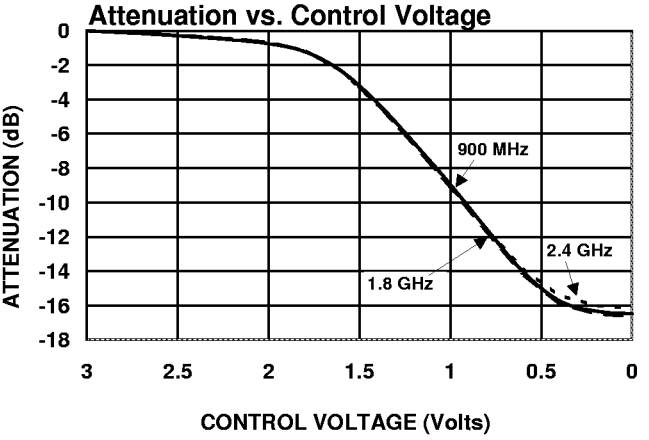
1. V_{CC} = -3 V_{DC} @ 20 µA max.
2. V_C = 0 V_{DC} to +3 V_{DC} @ 75 µA max.
3. External DC blocking capacitors are required on all RF ports.
4. 39 pF used for data measurements.

Typical Performance Curves

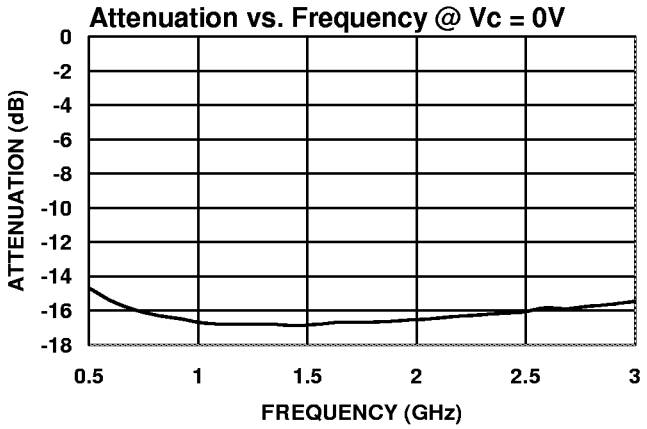
Insertion Loss vs. Frequency



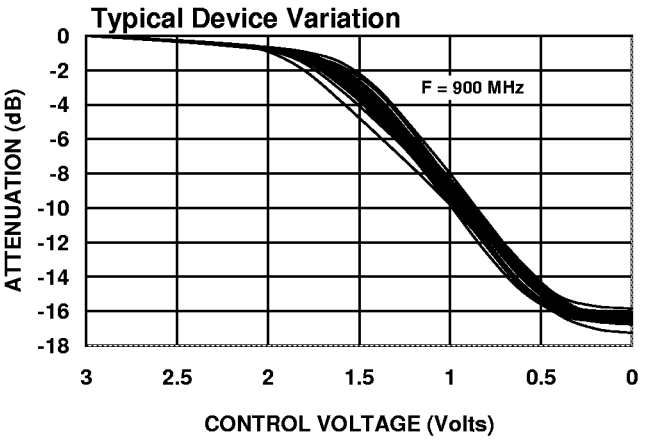
Attenuation vs. Control Voltage



Attenuation vs. Frequency @ Vc = 0V



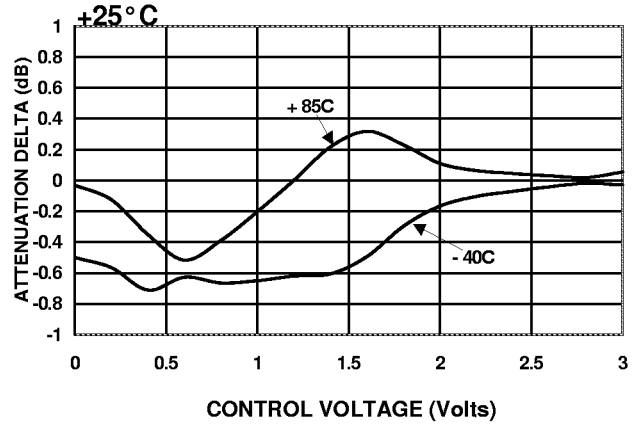
Typical Device Variation



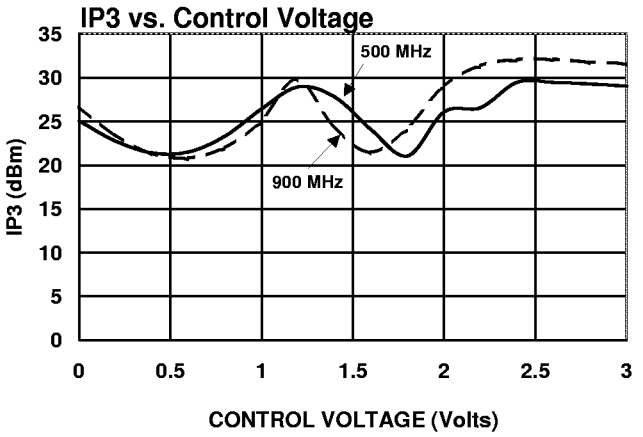
V3.00

Typical Performance Curves (Cont'd)

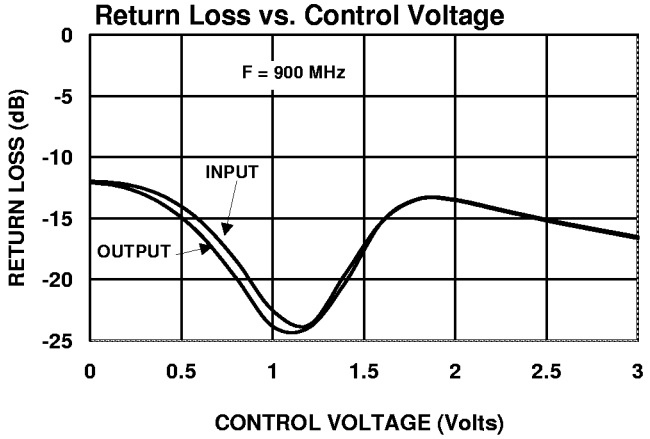
Attenuation vs. Temperature Normalized to +25° C



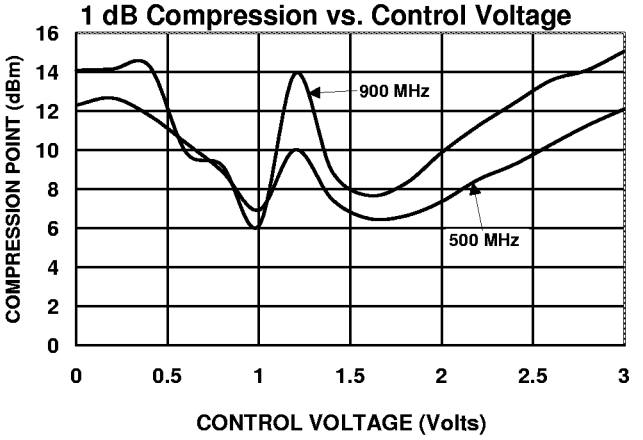
IP3 vs. Control Voltage



Return Loss vs. Control Voltage



1 dB Compression vs. Control Voltage



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