3 Volt Voltage Variable Absorptive Attenuator 40 dB, 0.5 - 2.0 GHz

Features

- Single Positive Voltage Control 0 to +3 Volts
- 40 dB Attenuation Range at 0.9 GHz
- ± 2 dB Linearity from BSL
- Low DC Power Consumption
- Low Cost SOIC-8 Plastic Package
- Tape and Reel Packaging Available

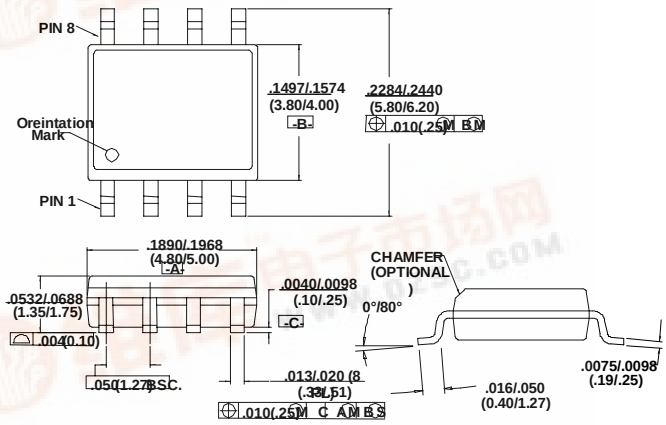
Description

M/A-COM's AT-113 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOIC 8-lead surface mount plastic package. The AT-113 is ideally suited for use where linear attenuation fine tuning and very low power consumption are required.

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

The AT-113 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

SOIC-8[1]



1. Dimensions are in inches/mm.

Ordering Information

Part Number	Package
AT-113	SOIC-8 Lead Plastic
AT-113TR	Forward Tape and Reel[1]

1. If specific reel size is required, consult factory for part number assignment.

Electrical Specifications: T_A = +25°C[1]

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.5 - 1.0 GHz	dB		2.7	3.0
	1.0 - 2.0 GHz	dB		3.0	3.5
Attenuation	0.5 - 1.0 GHz	dB	40		
	1.0 - 2.0 GHz	dB	35		
Insertion Loss Flatness (Peak-to-Peak)	0.5 - 1.0 GHz	dB		±0.5	±0.8
	1.0 - 2.0 GHz	dB		±1.2	±1.5
VSWR				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 at 1 GHz in a 50Ω system unless otherwise specified. The RF ports must be blocked out side of the package from ground or any other voltage.

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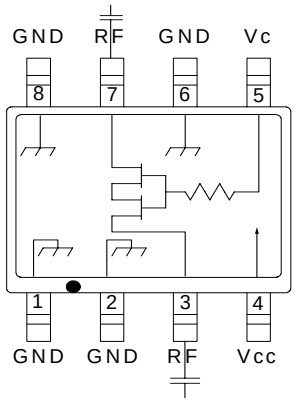
Absolute Maximum Ratings[1]

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.

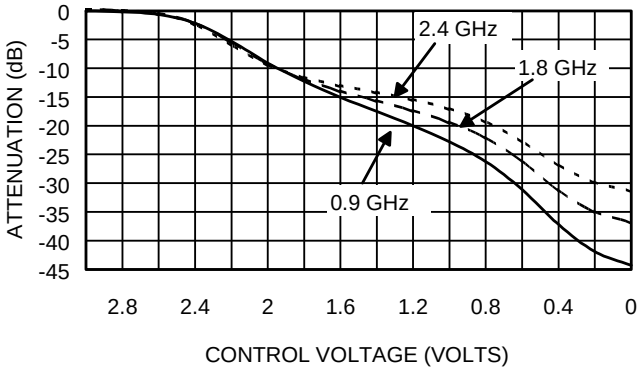
Functional Schematic[1, 2, 3]



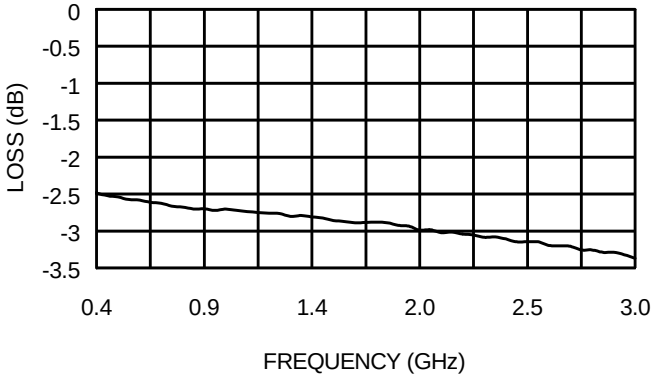
1. V_{CC} = +3 V_{DC} @ 50 µA max.
2. V_C = 0 V_{DC} to +3 V_{DC} @ 50 µA max.
3. External DC blocking capacitors are required on all RF ports.
4. 39pF used for data measurements.

Typical Performance Curves

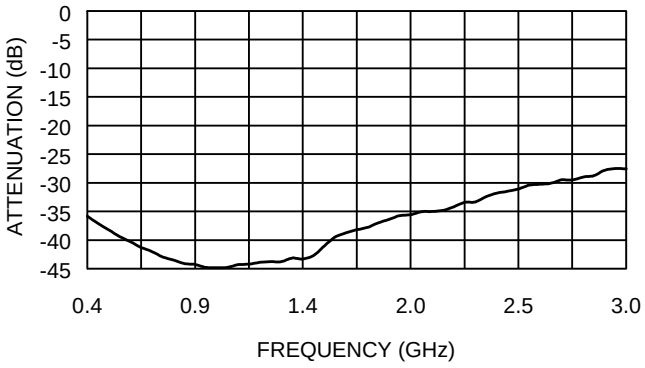
Attenuation vs. Control Voltage @ +25°C



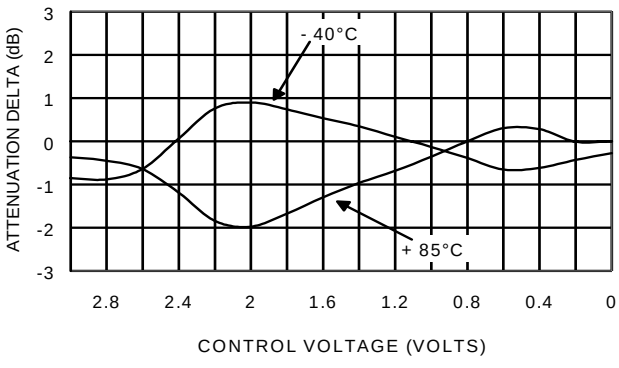
Insertion Loss vs. Frequency @ +25°C



Attenuation vs. Frequency @ 0V, +25°C



Attenuation vs. Temperature, Normalized to +25°C, f = 900 MHz



Specifications subject to change without notice.

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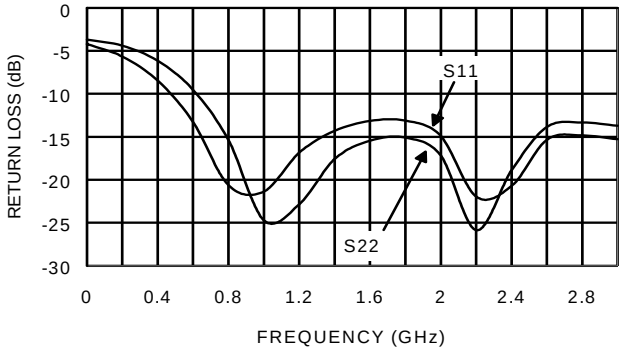
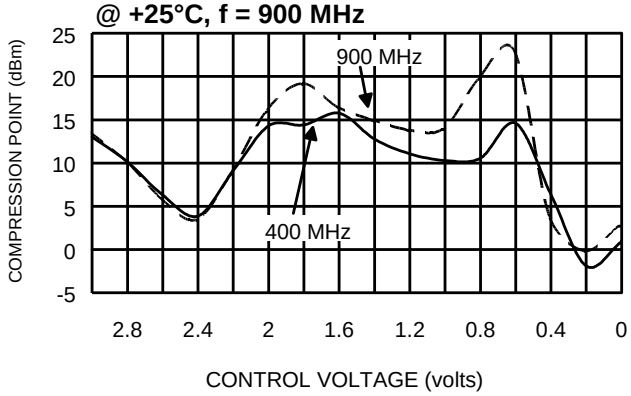
Typical Performance Curves (Cont'd)

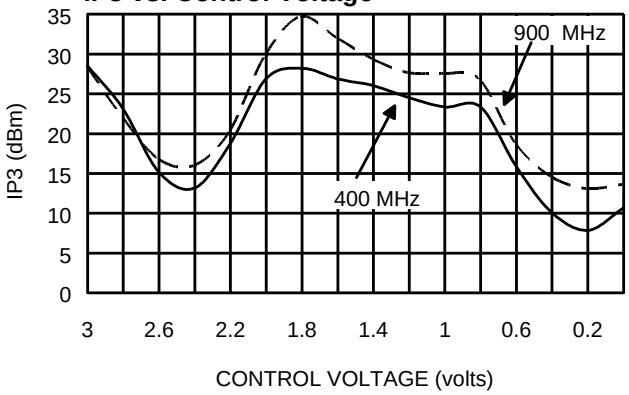
Return Loss vs. Control Voltage @ +25°C, f = 900 MHz



1 dB Compression vs. Control Voltage @ +25°C, f = 900 MHz



IP3 vs. Control Voltage



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