

# M/A-COM 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
- $\pm 2$  dB Linearity from BSL
- Low DC Power Consumption
- Low Cost SOIC-8 Plastic Package
- Tape and Reel Packaging Available

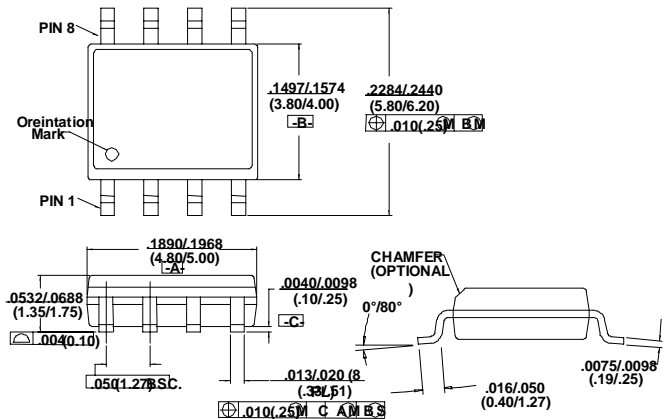
## Description

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<sup>1</sup>



1. Dimensions are in inches/mm.

## Ordering Information

| Part Number | Package                            |
|-------------|------------------------------------|
| AT-113      | SOIC-8 Lead Plastic                |
| AT-113TR    | Forward Tape and Reel <sup>1</sup> |

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

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

| 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            |      | $\pm 0.5$ | $\pm 0.8$ |
|  | 1.0 - 2.0 GHz                            | dB            |      | $\pm 1.2$ | $\pm 1.5$ |
| VSWR                                   |  |               |      | 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 at 1 GHz in a 50 $\Omega$  system unless otherwise specified. The RF ports must be blocked out side of the package from ground or any other voltage.

Specifications subject to change without notice.

■ North America: Tel. (800) 366-2266, Fax (800) 618-8883  
 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298  
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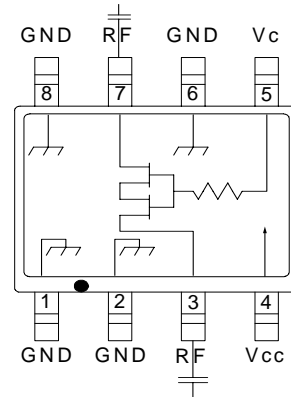
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

**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      |

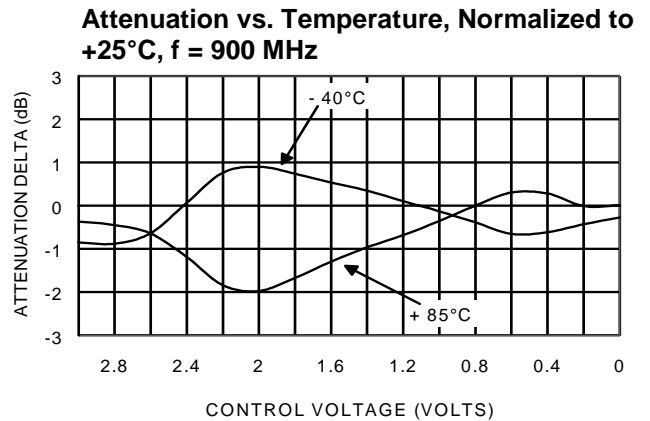
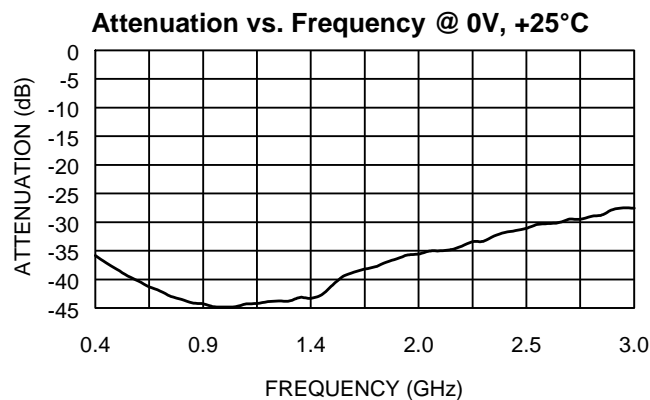
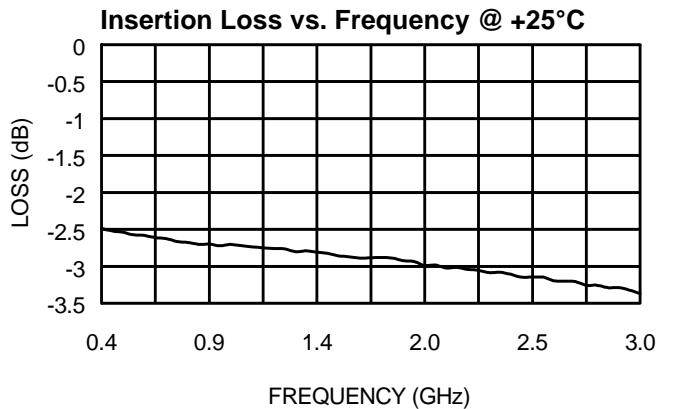
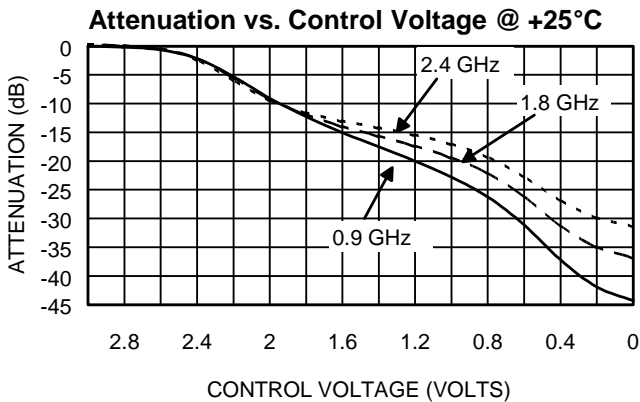
1. Exceeding any one or a combination of these limits may cause permanent damage.

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



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

**Typical Performance Curves**



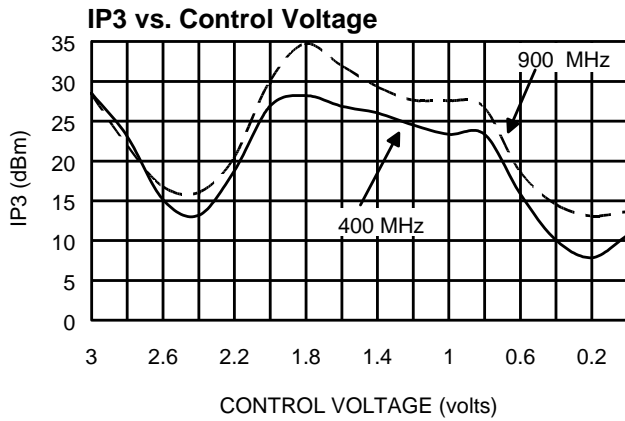
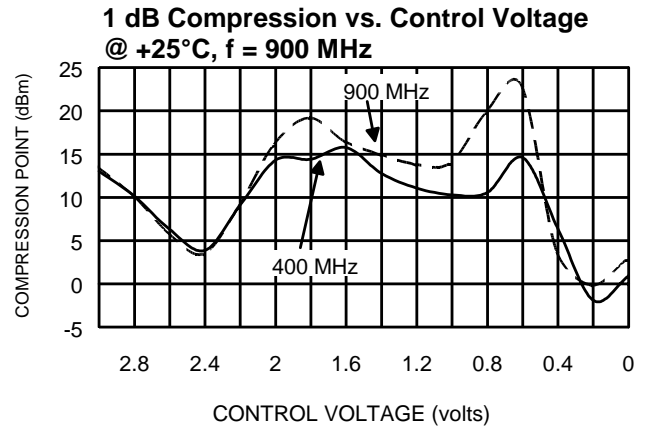
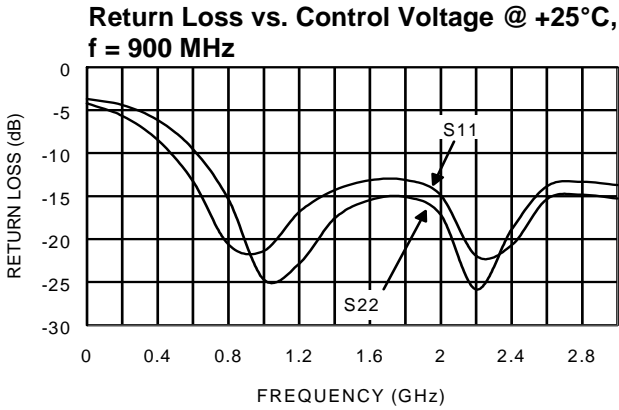
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Typical Performance Curves (Cont'd)



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