

Voltage Variable Absorptive Attenuator, 1700 - 2000 MHz

**MAAV-007090-000100
V1**

Features

- Input IP3: +31 dBm Min (Full Attenuation Range)
- Input IP3 is **15 -20 dB** Better than GaAs
- Linear Operation: +20 dBm Typ.
- 35 dB Dynamic Range (With 30 mA Bias Current)
- Single Control Voltage
- 50 ohm Impedance
- Linear Driver, MADR-007098-000100, Available
- Test Boards are Available
- Tape and Reel Packaging Available
- Lead-Free SOW-16 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of AT10-0017

Description

M/A-COM's MAAV-007090-000100 is a PIN diode based voltage variable attenuator. This device is in a SOW-16, wide body plastic surface mount package. These attenuators have linear operating power and input intercept point levels 15 - 20 dB better than GaAs FET MMIC voltage variable attenuators. They are ideally suited for use where low distortion, high linear operating power and high dynamic range are required. These devices are optimized for the PCS frequency band, but exhibit excellent performance and repeatability over the entire specified frequency band. The MAAV-007090-000100 is ideally suited for wireless communications systems.

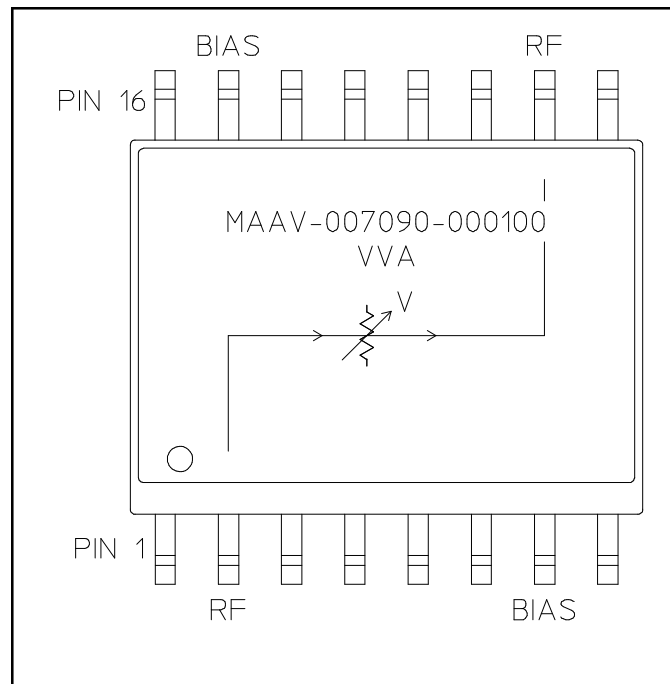
Ordering Information

| Part Number | Package |
|--------------------|--------------------------------|
| MAAV-007090-000100 | Tube |
| MAAV-007090-0001TR | 1000 piece reel |
| MAAV-007090-0001TB | Unit Mounted on Test Board |
| MAAV-007090-DR01TB | Unit with Driver on Test Board |

Note: Reference Application Note M513 for reel size information.

Note: Die quantity varies.

Functional Schematic



Pin Configuration

| Pin No. | Function | Pin No. | Function |
|---------|-------------------|---------|-------------------|
| 1 | GND | 9 | GND |
| 2 | RF | 10 | RF |
| 3 | GND | 11 | GND |
| 4 | GND | 12 | GND |
| 5 | GND | 13 | GND |
| 6 | GND | 14 | GND |
| 7 | BIAS ¹ | 15 | BIAS ¹ |
| 8 | GND | 16 | GND |

1. Bias currents may be applied to pin 7 or 15. The unused pins should be isolated.

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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Electrical Specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 50\Omega$

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
|-----------------------------|----------------------------------|-----------------|---------------|-----|-------|-------|
| Insertion Loss | 0 volts | 1700-2000 MHz | dB | — | — | 3.5 |
| | | 1930 - 1990 MHz | dB | — | 2.5 | 3.0 |
| Attenuation (Above Loss) | 10 mA bias current | 1700-2000 MHz | dB | 28 | — | — |
| | | 1930 - 1990 MHz | dB | 30 | 35 | — |
| Attenuation Flatness | 0 to 30 dB attenuation | 1700-2000 MHz | dB | — | 1.5 | 2.0 |
| | | 1930 - 1990 MHz | dB | — | 0.4 | 0.6 |
| VSWR | 0 to 30 dB attenuation | 1700-2000 MHz | Ratio | — | 1.6:1 | 1.8:1 |
| | | 1930 - 1990 MHz | Ratio | — | 1.5:1 | 1.7:1 |
| Switching Speed | 50% Control to 90%/10% RF | 1700-2000 MHz | μs | — | — | 3.0 |
| Linear Operation | — | 1700-2000 MHz | dBm | — | +20 | — |
| Input IP_3 | Two-tone inputs up to +10 dBm | 1700-2000 MHz | dBm | +31 | — | — |
| I _{Control} | — | 1700-2000 MHz | mA | — | — | 30 |

Absolute Maximum Ratings^{2,3}

| Parameter | Absolute Maximum |
|-------------------------------------|------------------|
| Max. Input Power 1700 - 2000 MHz | +27 dBm |
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -65°C to +125°C |

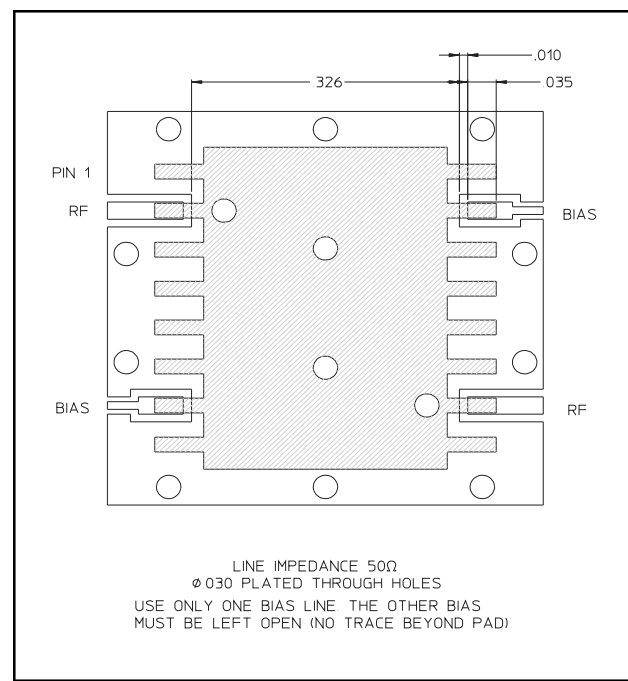
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

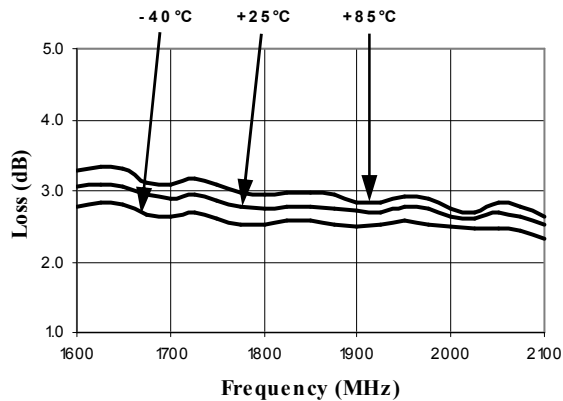
Recommended PCB Configuration


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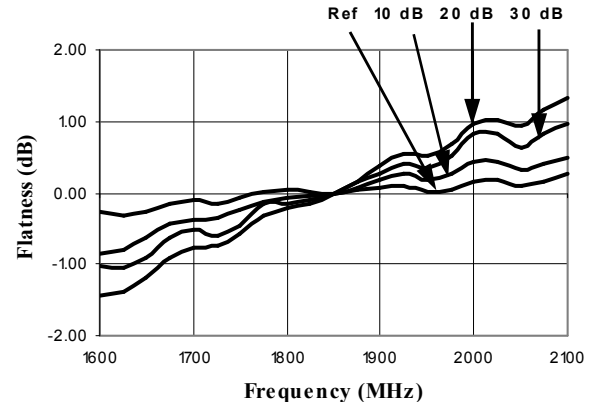
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Typical Performance Curves

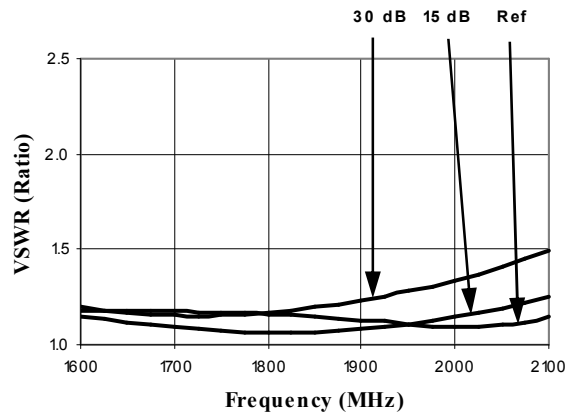
Insertion Loss



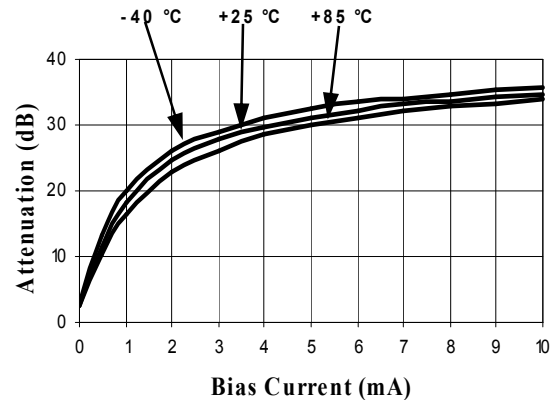
Attenuation Flatness (dB) @ +25°C



Typical VSWR @ +25°C



**Attenuation vs. Bias Current,
Frequency = 2000 MHz**



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