

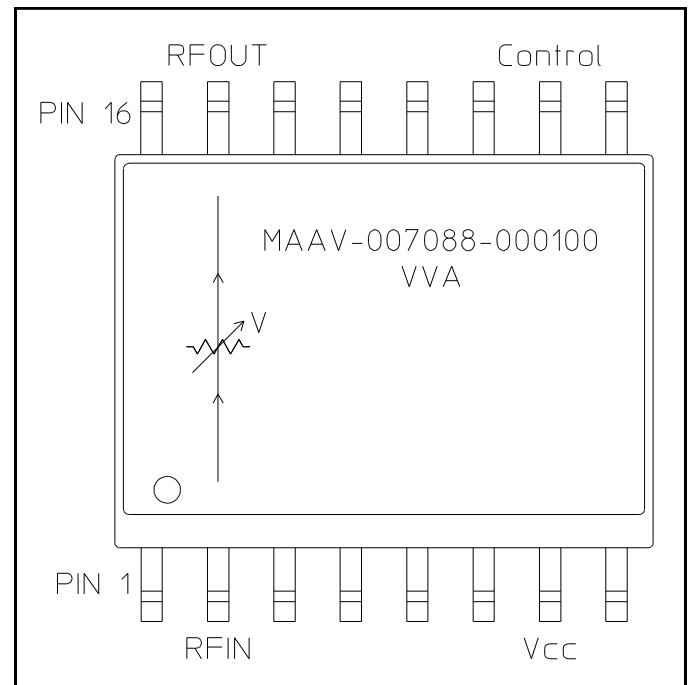
Features

- High Dynamic Range: 42dB Typical
- Flat Attenuation vs. Frequency
- High P1dB Compression
- Operates on a Single +5V Supply:
- 50 Ohm Nominal Impedance
- Lead-Free SOW-16 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of AT10-0019

Description

M/A-COM's MAAV-007088-000100 is a Voltage Controlled PIN diode based π attenuator packaged in a low cost, 16 lead wide body plastic SMT package. The PIN diode design makes this part well suited for applications where low distortion or high linear operating power levels are required. These attenuators are ideal for gain control in multi-channel digital communications systems.

Functional Schematic



Ordering Information

| Part Number | Package |
|--------------------|-------------------|
| MAAV-007088-000100 | Bulk Packaging |
| MAAV-007088-0001TR | 1000 piece reel |
| MAAV-007088-0001TB | Sample Test Board |

Note: Reference Application Note M513 for reel size information.

Pin Configuration

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

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

PIN Diode Based Variable Attenuator, 50 - 1000 MHz

Rev. V2

Electrical Specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 50\Omega^1$

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
|---|---|---------------|---------------|-------|-------|-------|
| Insertion Loss | Vcont.: +10 V | 50 - 1000 MHz | dB | — | 2.4 | 2.8 |
| Dynamic Range | Vcont.: 0 V | 50 - 1000 MHz | dB | 33 | 42 | — |
| Attenuation Flatness | Attenuation: 0 to 20 dB Attenuation: 20 to 30 dB | 50 - 1000 MHz | dB | — | 1.0 | 1.5 |
| | | 50 - 1000 MHz | dB | — | 1.5 | 2.0 |
| VSWR | Vcont.: 0 - 10V | 50 - 1000 MHz | Ratio | — | 1.7:1 | 2.1:1 |
| Trise, Tfall Ton, Toff Transients | 10%/90%, 90%/10% 50% Cntl to 90%/10% RF In-band | — | μs | — | 10 | 20 |
| | | — | μs | — | 15 | 25 |
| | | — | mV | — | 150 | 250 |
| 1 dB Compression | Vcont.: 0 - 10V | 100 MHz | dBm | 10 | 13 | — |
| | | 500 MHz | dBm | 17 | 20 | — |
| | | 1000 MHz | dBm | 21 | 24 | — |
| Input IP ₃ | Vcont.: 0 - 10V Two-tone inputs up to +10 dBm | 100 MHz | dBm | 24 | 27 | — |
| | | 1000 MHz | dBm | 34 | 37 | — |
| V _{CC} | — | — | V | +4.75 | +5.0 | +5.25 |
| I _{CC} | V _{CC} = 5.25 V | DC | mA | — | 2 | 2.5 |
| Control Current | — | DC | mA | — | 2.7 | 3.5 |

- Unit requires external .01 μF DC Blocks on RF lines.

Absolute Maximum Ratings ^{2,3}

| Parameter | Absolute Maximum |
|--|---------------------------------|
| Max. Input Power 50 - 500 MHz 500 - 1000 MHz | +24 dBm +30 dBm |
| Voltages V _{CC} Control Voltage | -1 V to +7.0 V -1 V to +15 V |
| 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.

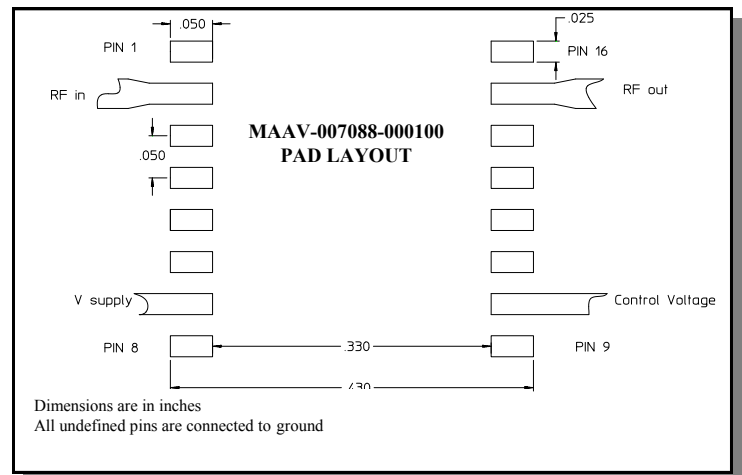
Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

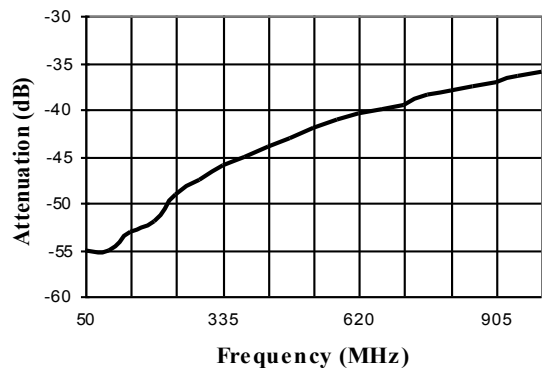
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Pad Layout

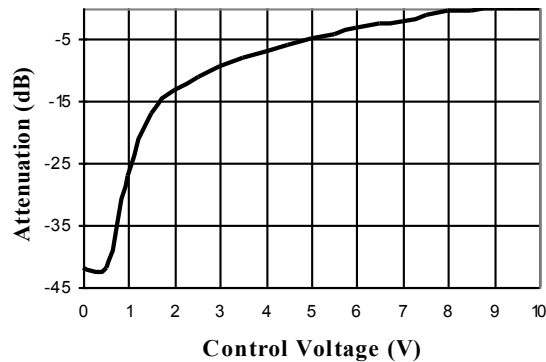


Typical Performance Curves

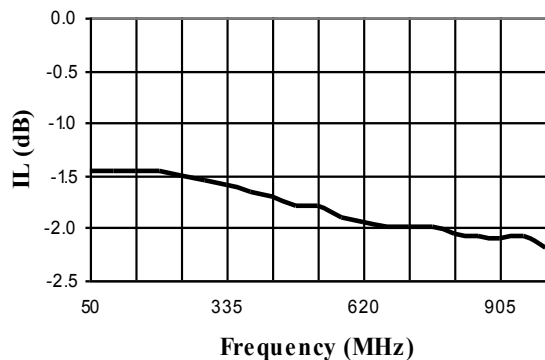
Attenuation vs. Frequency @ Control Voltage = 0V



Attenuation vs. Control Voltage @ 500 MHz



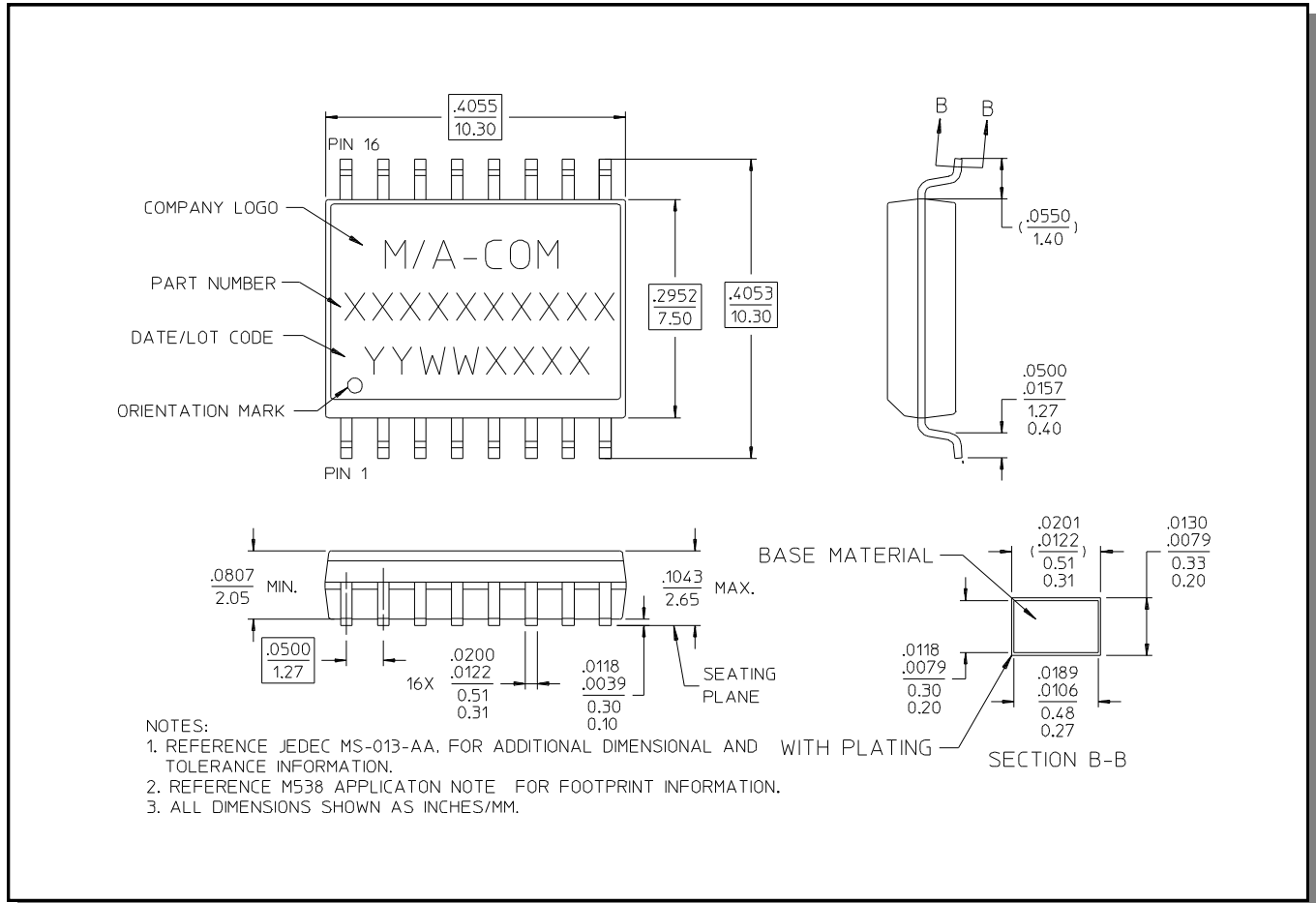
Insertion Loss vs. Frequency @ Control Voltage = 10V



PIN Diode Based Variable Attenuator, 50 - 1000 MHz

Rev. V2

Lead-Free, SOW-16[†]



[†] Reference Application Note M538 for lead-free solder reflow recommendations.

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