



## Voltage Variable Absorptive Attenuator 800 - 1000 MHz



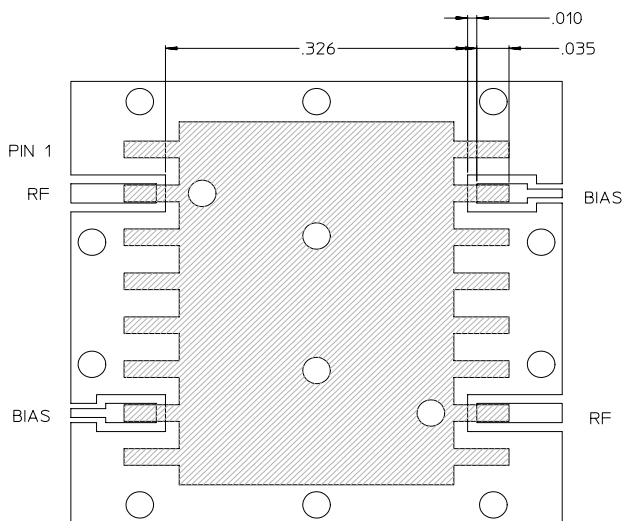
### Features

- Input IP3: +31 dBm Min. (Full Attenuation Range)
- Input IP3 is **15 - 20 dB** Better Than GaAs
- Linear Operation: +20 dBm Min.
- Plastic SOIC, Wide Body, SMT Package
- 38 dB Dynamic Range (With 30 mA Bias Current)
- Single Control Voltage
- 50 ohm Impedance
- Linear Driver, DR65-0002, Available
- Test Boards are Available
- Tape and Reel Packaging Available

### Description

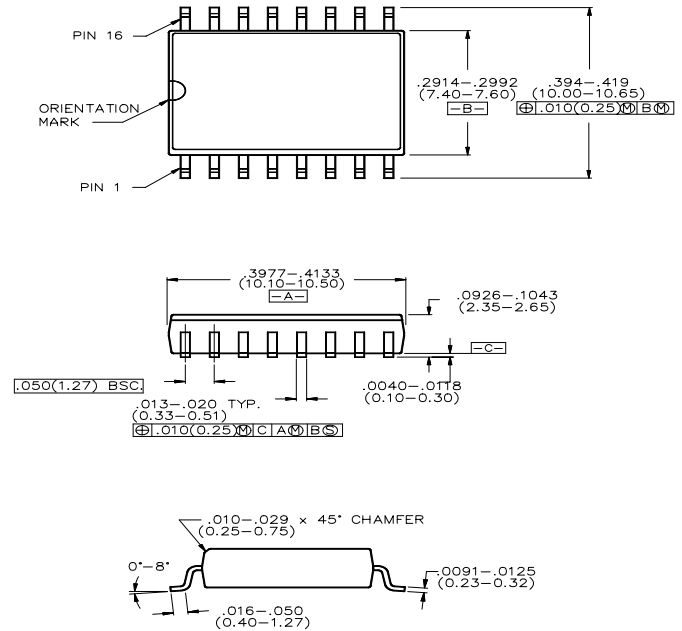
M/A-COM's AT10-0009 is a PIN diode based voltage variable attenuator. This device is in a SOIC-16, wide body plastic surface mount package. These attenuators have linear operating power and input intercept point levels 15 - 20 dB better than GaAs FET MMIC voltage variable attenuators. They are ideally suited for use where low distortion, high linear operating power and high dynamic range are required. These devices are optimized for the GSM frequency band, but exhibit excellent performance and repeatability over the entire specified frequency band. The AT10-0009 is ideally suited for wireless communications systems.

### Recommended PCB Layout



LINE IMPEDANCE 50Ω  
Ø.030 PLATED THROUGH HOLES  
USE ONLY ONE BIAS LINE. THE OTHER BIAS  
MUST BE LEFT OPEN (NO TRACE BEYOND PAD)

### SOW-16



Package outline conforms to JEDEC standard MS-013AA.

### Ordering Information

| Part Number   | Package                        |
|---------------|--------------------------------|
| AT10-0009     | Bulk Packaging                 |
| AT10-0009TR   | Tape and Reel <sup>1</sup>     |
| AT10-0009-TB  | Unit Mounted on Test Board     |
| DR65-0002-TBG | Unit with Driver on Test Board |

1. Check with factory for available quantities and reel size.

### Pin Configuration

| Pin # | Function          | Pin # | 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 <sup>2</sup> | 15    | Bias <sup>2</sup> |
| 8     | GND               | 16    | GND               |

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

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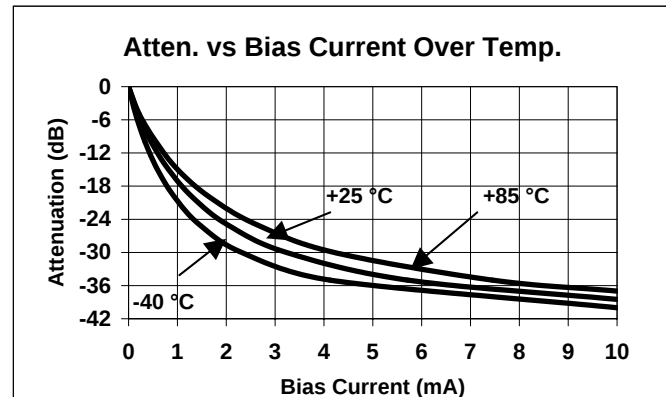
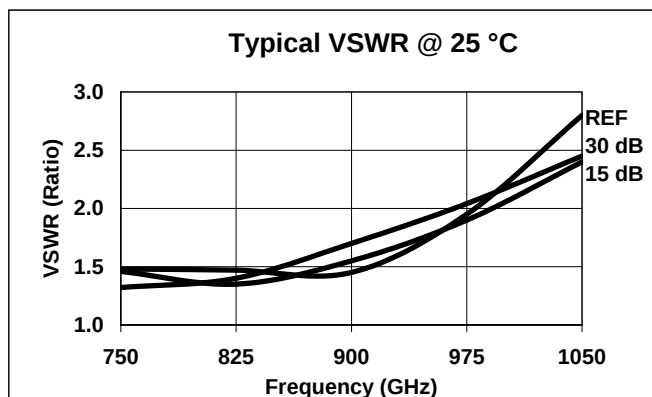
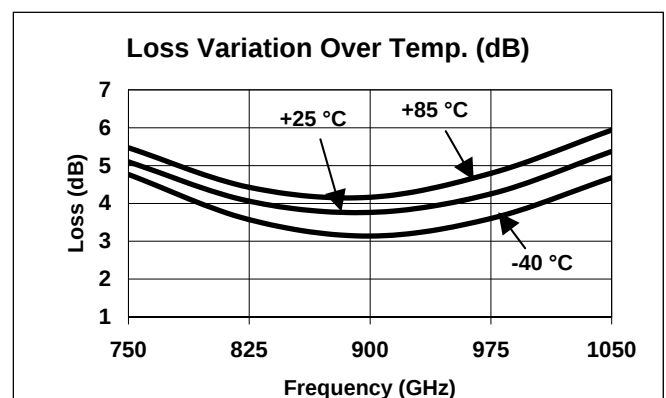
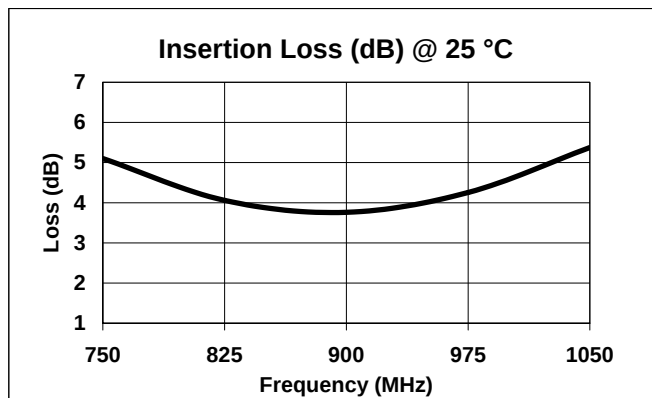
**Electrical Specifications**  $T_A = +25^\circ\text{C}$ 

| Parameter                   | Test Conditions               | Frequency     | Units         | Min | Typical | Max   |
|-----------------------------|-------------------------------|---------------|---------------|-----|---------|-------|
| Insertion Loss              | 0 volts                       | 800-1000 MHz  | dB            | —   | -       | 6.0   |
|                             |                               | 925 - 960 MHz | dB            | —   | 3.9     | 4.4   |
| Attenuation<br>(Above Loss) | 12 mA bias current            | 800-1000 MHz  | dB            | 30  | -       | —     |
|                             |                               | 925 - 960 MHz | dB            | 33  | 38      | —     |
| Frequency<br>Flatness       | 0 to 30 dB attenuation        | 800-1000 MHz  | dB            | —   | 1.2     | 1.6   |
|                             |                               | 925 - 960 MHz | dB            | —   | 0.3     | 0.9   |
| VSWR                        | 0 to 30 dB attenuation        | 800-1000 MHz  | Ratio         | —   | 1.7:1   | 2.4:1 |
|                             |                               | 925 - 960 MHz | Ratio         | —   | 1.6:1   | 2.0:1 |
| Switching Speed             | 50% Control to 90%/10% RF     | 800-1000 MHz  | $\mu\text{S}$ | —   | —       | 10.0  |
| Linear Operation            | —                             | 800-1000 MHz  | dBm           | —   | +20     | —     |
| Input $IP_3$                | Two-tone inputs up to +10 dBm | 800-1000 MHz  | dBm           | +35 | +40     | —     |
| $I_{\text{Control}}$        | —                             | 800-1000 MHz  | mA            | —   | —       | 30    |

**Absolute Maximum Ratings**<sup>3</sup>

| Parameter             | Absolute Maximum |
|-----------------------|------------------|
| Max. Input Power      | +33 dBm          |
| Operating Temperature | -40°C to +85°C   |
| Storage Temperature   | -65°C to +125°C  |

3. Operation of this device above any one of these parameters may cause permanent damage.



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