

**Cascadable Thin Film Amplifier,  
13 dB Gain, 5 - 1000 MHz**

**AM-176/AMC-176  
V3**

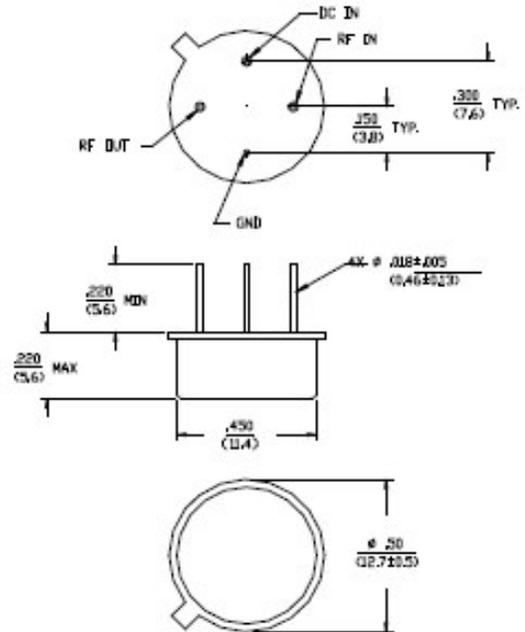
**Features**

- 4.0 dB Typical Noise Figure
- 13.5 dBm Typical Midband 1 dB Compression
- 1.25:1 Typical VSWR

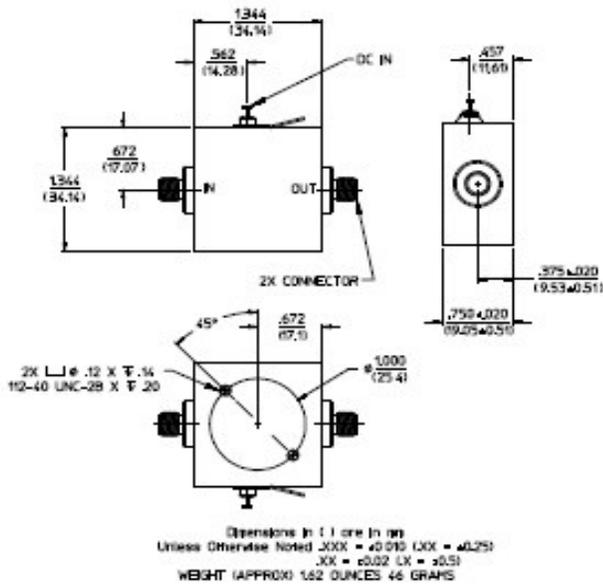
**Description**

M/A-COM's AM-176 is a feedback amplifier with high intercept and compression points. This amplifier is packaged in a TO-8 package. Due to the internal power dissipation the thermal rise should be minimized. The ground plane on the PC board should be configured to remove heat from under the package. AM-176 is ideally suited for use where a high intercept, high reliability amplifier is required.

**TO-8-1**



**C-32**



Dimensions in ( ) are in mm  
Unless Otherwise Noted .XXX = ±0.010 (XX = ±0.25)  
.XX = ±0.02 (X = ±0.5)  
WEIGHT (APPROX) 1.62 OUNCES 46 GRAMS

**Absolute Maximum Ratings<sup>1</sup>**

| Parameter             | Absolute Maximum |
|-----------------------|------------------|
| Max. Input Power      | +10 dBm          |
| V <sub>bias</sub>     | +15.75 V         |
| Operating Temperature | -55°C to +85°C   |
| Storage Temperature   | -65°C to +125°C  |

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

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**Electrical Specifications: <sup>2,3</sup> T<sub>A</sub> = -55°C to +85°C Case Temperature**

| Parameter                       | Test Conditions             | Frequency    | Units | Min.  | Typ.  | Max.  |
|---------------------------------|-----------------------------|--------------|-------|-------|-------|-------|
| Gain                            | @+25°C                      | 500 MHz      | dB    | 12.2  | 13.2  | 14.2  |
| Frequency Response              | —                           | 5 - 1000 MHz | dB    | —     | —     | ±1.0  |
| Gain Variation with Temperature | —                           | 5 - 1000 MHz | dB    | —     | —     | ±1.0  |
| 1 dB Compression                | Output Power                | 5 - 1000 MHz | dBm   | +12   | —     | —     |
| Noise Figure                    | —                           | 5 - 1000 MHz | dB    | —     | —     | 5.0   |
| Reverse Transmission            | —                           | 5 - 1000 MHz | dB    | —     | -17   | -14   |
| VSWR                            | —                           | 5 - 1000 MHz | Ratio | —     | —     | 1.8:1 |
| Output IP <sub>2</sub>          | Two-Tone inputs up to 0 dBm | 5 - 1000 MHz | dBm   | +37   | —     | —     |
| Output IP <sub>3</sub>          | Two-Tone inputs up to 0 dBm | 5 - 1000 MHz | dBm   | +25   | —     | —     |
| Vbias                           | —                           | —            | VDC   | +14.5 | +15.0 | +15.5 |
| Ibias                           | Vbias = +15.0 VDC           | —            | mA    | —     | 38    | 43    |
| Power Dissipation               | @ +15 V Bias                | —            | mW    | —     | 570   | —     |

2. All specifications apply when operated at +15 VDC, with 50 ohms source and load impedance.

3. Heat Sinking: Operation at case temperature above 95°C is not recommended. Heat sinking adequate to dissipate 650 mW must be provided in use.

**S-Parameter Data**

| Frequency (MHz) | S11 MAG/ANG | S21 MAG/ANG | S12 MAG/ANG | S22 MAG/ANG |
|-----------------|-------------|-------------|-------------|-------------|
| 5               | 0.14/151.3  | 4.59/-168.1 | 0.13/-0.9   | 0.12/144.6  |
| 10              | 0.14/168.4  | 4.67/-175.5 | 0.13/0.1    | 0.10/156.3  |
| 20              | 0.14/178.2  | 4.61/-179.6 | 0.13/0.0    | 0.09/166.5  |
| 50              | 0.14/167.9  | 4.61/174.5  | 0.13/-0.1   | 0.09/170.5  |
| 100             | 0.13/161.6  | 4.58/168.6  | 0.13/-1.0   | 0.08/166.8  |
| 250             | 0.12/132.4  | 4.56/10.1   | 0.14/-3.5   | 0.08/149.9  |
| 500             | 0.10/83.9   | 4.57/119.8  | 0.15/-9.0   | 0.07/121.3  |
| 750             | 0.08/39.7   | 4.52/89.1   | 0.16/-17.7  | 0.05/76.1   |
| 1000            | 0.04/-91.4  | 4.39/58.4   | 0.16/-28.4  | 0.07/-9.9   |

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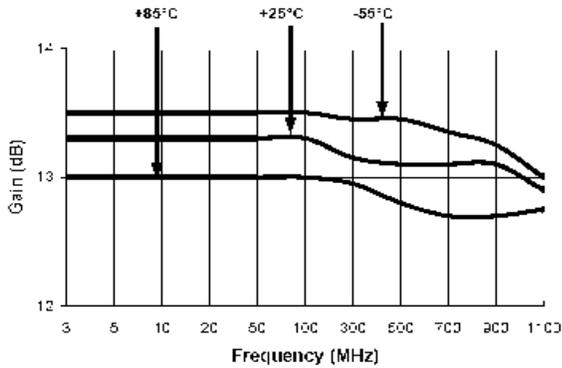
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

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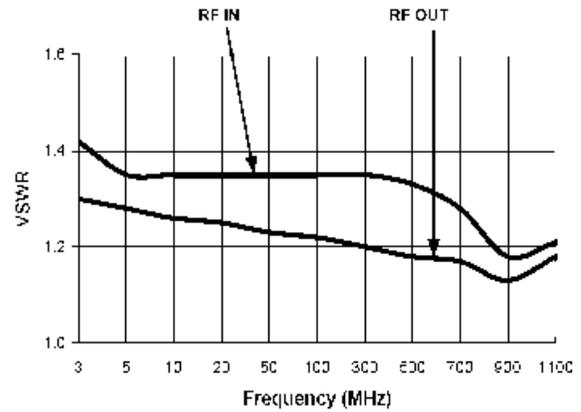
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**Typical Performance Curves**

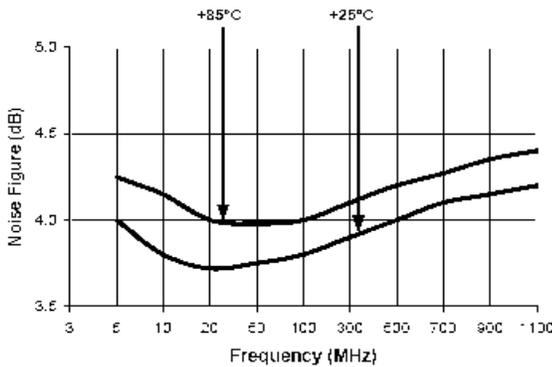
**Gain vs. Frequency**



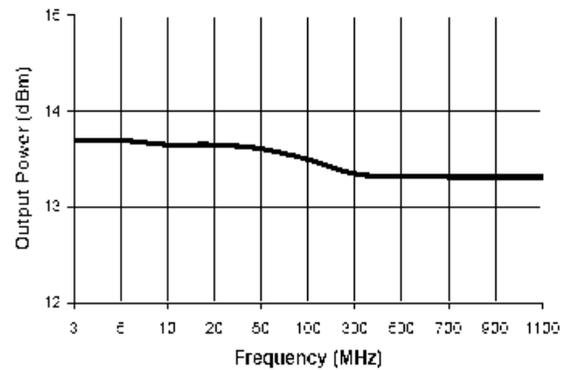
**VSWR vs. Frequency**



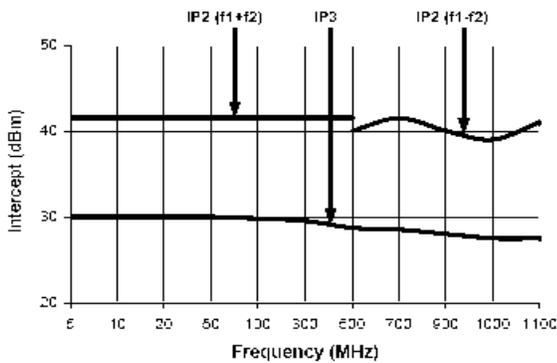
**Noise Figure**



**1 dB Compression**



**Intermodulation Intercept**



**Ordering Information**

| Part Number | Package |
|-------------|---------|
| AM-176 PIN  | TO-8-1  |
| AMC-176 SMA | C-32    |