

AM-123 / AMC-123

High Performance Amplifier,
10 dB Gain 5 - 500 MHz

Rev. V3

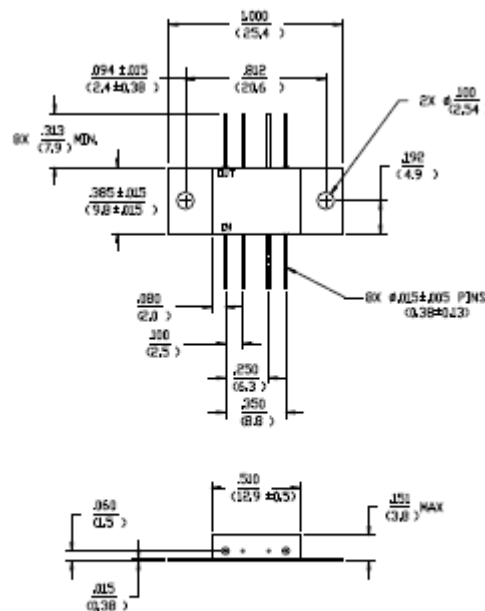
Features

- 3.5 dB Typical Midband Noise Figure
- +42 dBm Typical Midband Intercept

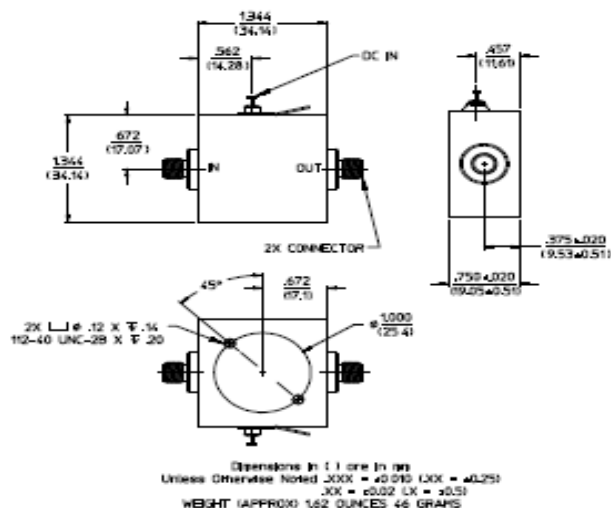
Description

M/A-COM's AM-123 is a coupler feedback amplifier with high intercept and compression points. The use of coupler feedback minimizes noise figure and current in a high intercept amplifier. This amplifier is packaged in a TO-8 package. Due to the internal power dissipation the thermal rise minimized. The ground plane on the PC board should be configured to remove heat from under the package AM-123 is ideally suited for use where a high intercept, high reliability amplifier is required.

FP-7



C-32



Absolute Maximum Ratings ¹

| Parameter | Absolute Maximum |
|-----------------------|------------------|
| Max. Input Power | +23 dBm |
| V _{bias} | +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.

Electrical Specifications: ^{2,3} T_A = -55°C to +85°C Case Temperature

| Parameter | Test Conditions | Frequency | Units | Min. | Typ. | Max. |
|---------------------------------|-------------------------------|-----------------------------|----------------|------------|--------|--------------|
| Gain | @+25°C | 50 MHz | dB | 9.4 | 10.0 | 10.6 |
| Frequency Response | — | 5 - 500 MHz | dB | — | — | ±0.7 |
| Gain Variation with Temperature | — | 5 - 500 MHz | dB | — | — | ±1.0 |
| 1 dB Compression | Output Power | 5 - 500 MHz 10 - 300 MHz | dBm dBm | +16 +19 | — — | — — |
| Noise Figure | — | 5 - 500 MHz 10 - 300 MHz | dB dB | — — | — — | 7.5 5.5 |
| Reverse Transmission | — | 5 - 500 MHz | dB | — | -18 | -15 |
| VSWR | — | 5 - 500 MHz 10 - 400 MHz | Ratio Ratio | — — | — — | 2.5:1 2:1 |
| Output IP ₂ | Two-Tone inputs up to +10 dBm | 5 - 500 MHz 10 - 300 MHz | dBm dBm | +33 +40 | — — | — — |
| Output IP ₃ | Two-Tone inputs up to +10 dBm | 5 - 500 MHz 10 - 300 MHz | dBm dBm | +22 +32 | — — | — — |
| Vbias | — | — | VDC | +14.5 | +15.0 | +15.5 |
| Ibias | Vbias = +15.0 VDC | — | mA | — | 62 | 75 |
| Power Dissipation | @ +15 V Bias | — | mW | — | 930 | — |

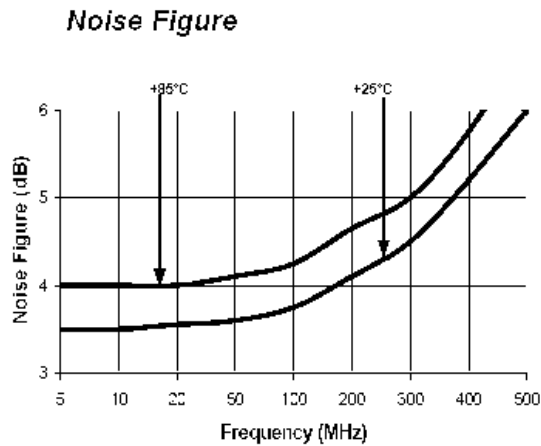
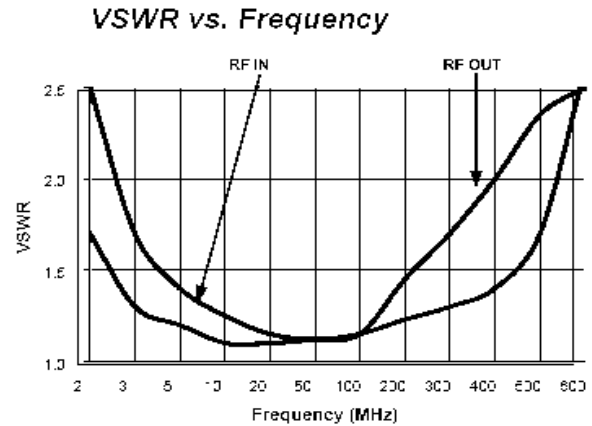
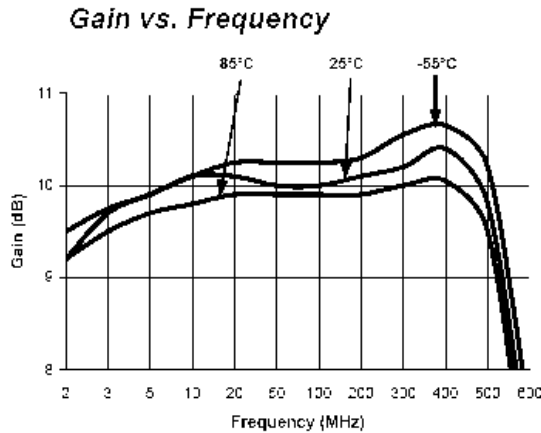
2. All specifications apply when operated at +15 VDC, with 50 ohms source and load impedance.

3. Heat Sinking: Operation at case temperature above 95°C is not recommended. Heat sinking adequate to dissipate 1 W must be provided in use.

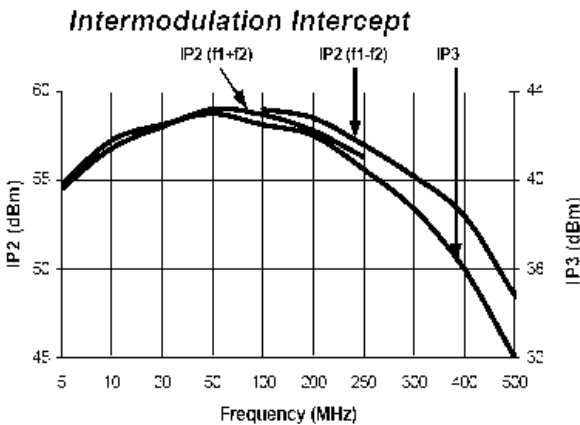
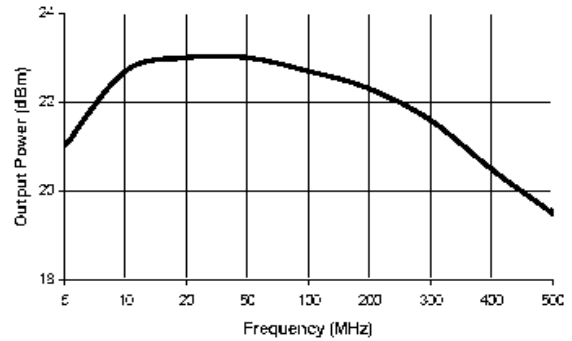
S-Parameter Data

| Frequency (MHz) | S11 MAG/ANG | S21 MAG/ANG | S12 MAG/ANG | S22 MAG/ANG |
|-----------------|-------------|-------------|-------------|-------------|
| 5 | 0.21/-69.9 | 3.15/-158.8 | 0.11/171.3 | 0.15/92.8 |
| 10 | 0.11/-81.5 | 3.17/-172.2 | 0.11/175.0 | 0.06/116.1 |
| 20 | 0.08/-88.5 | 3.18/-178.4 | 0.12/171.7 | 0.04/139.8 |
| 50 | 0.06/-108.4 | 3.17/162.9 | 0.13/159.9 | 0.03/174.7 |
| 100 | 0.05/-122.8 | 3.14/142.8 | 0.13/141.4 | 0.04/-163.9 |
| 200 | 0.05/-141.8 | 3.11/104.8 | 0.13/102.1 | 0.04/-119.4 |
| 300 | 0.07/-155.4 | 3.09/66.9 | 0.12/64.9 | 0.14/-114.6 |
| 400 | 0.15/177.2 | 3.08/26.7 | 0.11/27.3 | 0.22/-153.2 |
| 500 | 0.20/151.3 | 3.05/-21.9 | 0.09/-20.9 | 0.25/83.4 |

Typical Performance Curves



1 dB Compression



Ordering Information

| Part Number | Package |
|-------------|---------------|
| AM-123 PIN | Flatpack |
| AMC-123 SMA | Connectorized |

Pin Configuration

| Part No. | Function | Pin No. | Function |
|----------|----------|---------|----------|
| 1 | RF OUT | 5 | RF IN |
| 2 | GND | 6 | GND |
| 3 | GND | 7 | GND |
| 4 | DC IN | 8 | DC IN |