

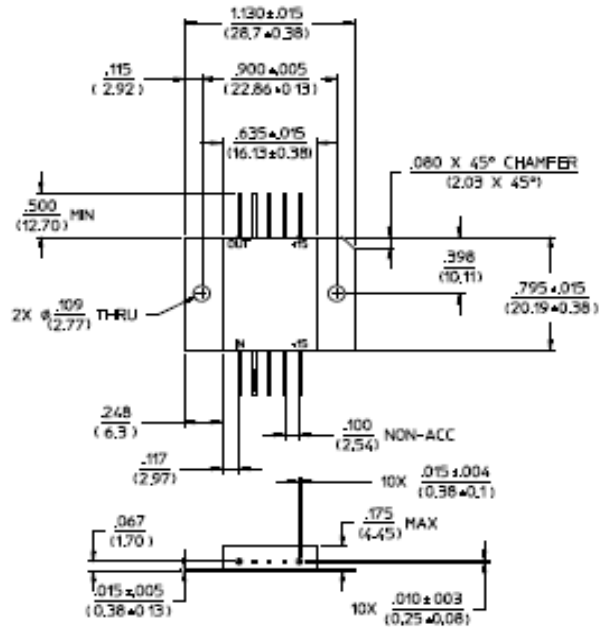
## Features

- 4 dB Typical Midband Noise Figure
- +38 dBm Typical Midband Third Order Intercept
- +24 dBm Typical Midband 1 dB Compression

## Description

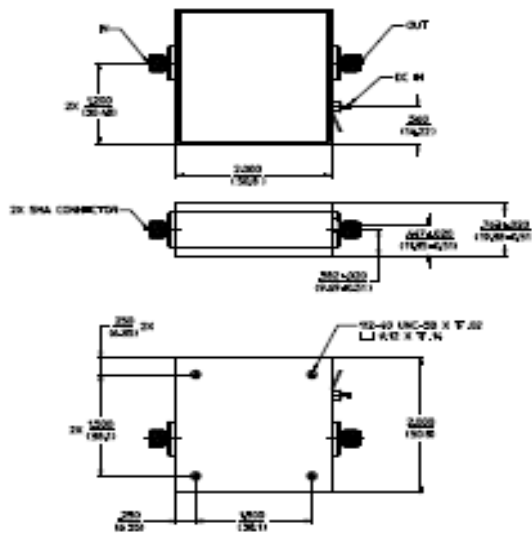
M/A-COM's AM-146 is a coupler feedback amplifier with high intercept and compression points. The use of coupler feedback minimizes current in a high intercept amplifier. This amplifier is packaged in a flatpack with flanges. Due to the metal flatpack the thermal rise minimized. The ground plane on the PC board should be configured to remove heat from under the package. AM-146 is ideally suited for use where a high intercept, high reliability amplifier is required.

## FP-9



Dimensions in ( ) are in mm  
Unless Otherwise Noted: .XXX - ±0.010 (.XX - ±0.25)  
.XX - ±0.02 (.X - ±0.5)  
WEIGHT (APPROX): 0.18 OUNCES 5 GRAMS

## C-25



Dimensions in ( ) are in mm  
Unless Otherwise Noted: .XXX - ±0.010 (.XX - ±0.25)  
.XX - ±0.02 (.X - ±0.5)  
WEIGHT (APPROX): 0.2 OUNCES 5 GRAMS

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

| Parameter             | Absolute Maximum |
|-----------------------|------------------|
| Max. Input Power      | +10 dBm          |
| Vbias                 | +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.

## Pin Configuration

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | RF OUT   | 6       | RF IN    |
| 2       | GND      | 7       | GND      |
| 3       | GND      | 8       | GND      |
| 4       | GND      | 9       | GND      |
| 5       | VDC      | 10      | VDC      |

**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                        | 50 MHz                       | dB       | 20.3   | 21.0   | 21.7       |
| Frequency Response              | —                             | 10 - 500 MHz                 | dB       | —      | —      | ±1.0       |
| Gain Variation with Temperature | —                             | 10 - 500 MHz                 | dB       | —      | —      | +0.8, -1.2 |
| 1 dB Compression                | Output Power                  | 10 - 500 MHz                 | dBm      | +20.0  | —      | —          |
| Noise Figure                    | —                             | 10 - 500 MHz<br>10 - 300 MHz | dB<br>dB | —<br>— | —<br>— | 7.0<br>5.5 |
| Reverse Transmission            | —                             | 10 - 500 MHz                 | dB       | —      | -35    | -30.0      |
| VSWR                            | —                             | 10 - 500 MHz                 | Ratio    | —      | —      | 2:1        |
| Output IP <sub>2</sub>          | Two-Tone inputs up to +10 dBm | 10 - 500 MHz                 | dBm      | +40    | —      | —          |
| Output IP <sub>3</sub>          | Two-Tone inputs up to +10 dBm | 10 - 500 MHz                 | dBm      | +30    | —      | —          |
| Vbias                           | —                             | —                            | VDC      | +14.5  | +15.0  | +15.5      |
| Ibias                           | Vbias = +15.0 VDC             | —                            | mA       | —      | 130    | 140        |
| Power Dissipation               | @ +15 V Bias                  | —                            | mW       | —      | 2      | —          |

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

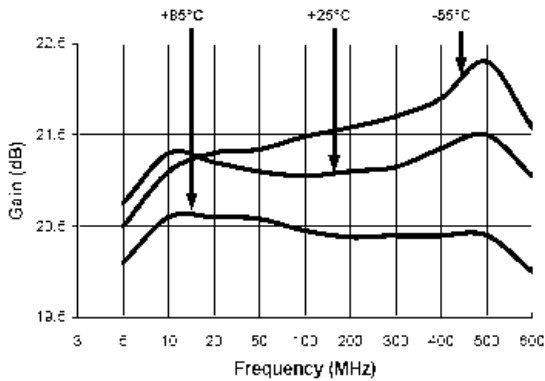
3. Heat Sinking: Operation at case temperature above 95°C is not recommended. Heat sinking adequate to dissipate 2 W must be provided in use.

## S-Parameter Data

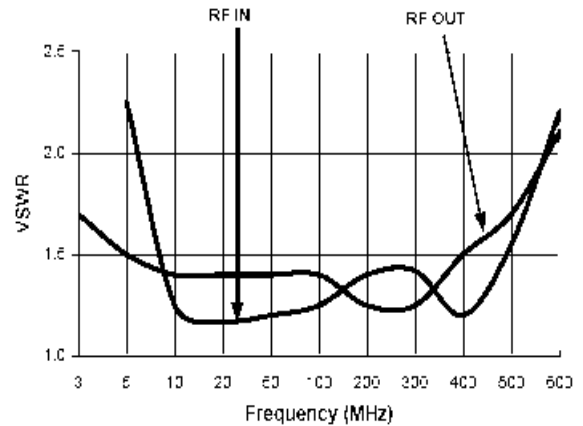
| Frequency (MHz) | S11 MAG/ANG | S21 MAG/ANG  | S12 MAG/ANG | S22 MAG/ANG |
|-----------------|-------------|--------------|-------------|-------------|
| 10              | 0.13/-118.5 | 11.44/16.8   | 0.02/7.1    | 0.14/164.6  |
| 20              | 0.12/-144.0 | 11.63/-1.0   | 0.02/-4.0   | 0.16/168.2  |
| 50              | 0.13/-175.5 | 11.56/-27.1  | 0.02/-25.3  | 0.15/155.9  |
| 75              | 0.14/169.0  | 11.49/-44.3  | 0.02/-41.3  | 0.13/143.8  |
| 100             | 0.15/163.8  | 11.45/-59.9  | 0.02/-55.7  | 0.08/132.5  |
| 200             | 0.16/121.4  | 11.24/-120.3 | 0.02/-113.3 | 0.05/160.6  |
| 300             | 0.18/86.3   | 11.34/176.4  | 0.02/-170.1 | 0.07/167.7  |
| 400             | 0.20/55.2   | 11.33/110.4  | 0.02/133.3  | 0.12/159.2  |
| 500             | 0.23/13.1   | 10.84/31.1   | 0.01/75.6   | 0.23/174.8  |

## Typical Performance Curves

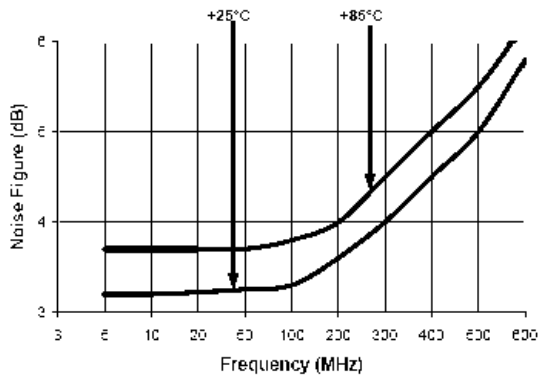
Gain vs. Frequency



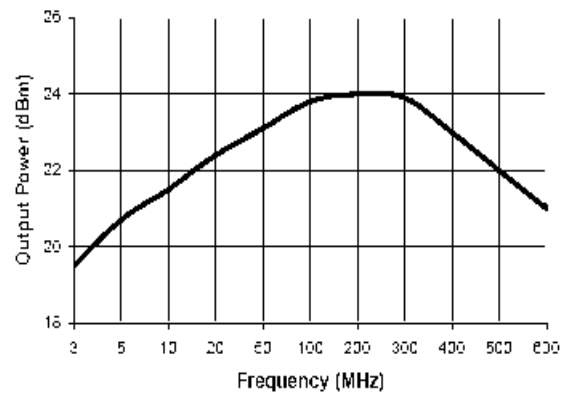
VSWR vs. Frequency



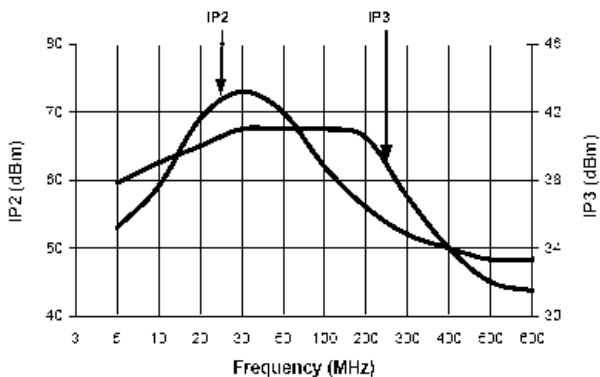
Noise Figure



1 dB Compression



Intermodulation Intercept



## Ordering Information

| Part Number | Package       |
|-------------|---------------|
| AM-146 PIN  | Flatpack      |
| AMC-146 SMA | Connectorized |

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