

### Features

- HIGH GAIN - TWO STAGES: 26.5 dB (TYP.)
- HIGH OUTPUT POWER: +21.5 dBm (TYP.)
- HIGH THIRD-ORDER IP: +35 dBm (TYP.)

### Description

The RA89 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for consistent performance and high reliability.

This 2 stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network insures temperature-stable performance.

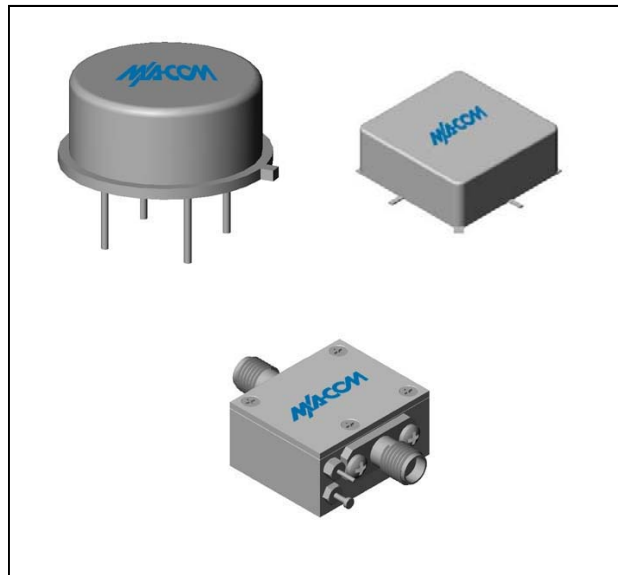
Both TO-8B and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

### Ordering Information

| Part Number | Package           |
|-------------|-------------------|
| RA89        | TO-8B             |
| SMRA89      | Surface Mount     |
| CRA89 **    | SMA Connectorized |

\*\* The connectorized version is not RoHs compliant.

### Product Image



### Electrical Specifications: $Z_0 = 50\Omega$ , $V_{CC} = +15 V_{DC}$

| Parameter                          | Units | Typical       | Guaranteed    |                |
|------------------------------------|-------|---------------|---------------|----------------|
|                                    |       | 25°C          | 0° to 50°C    | -54° to +85°C* |
| Frequency                          | MHz   | 3-700         | 5-500         | 5-500          |
| Small Signal Gain (min)            | dB    | 26.5          | 25.5          | 25.0           |
| Gain Flatness (max)                | dB    | ±0.2          | ±0.7          | ±1.0           |
| Reverse Isolation                  | dB    | 36            |               |                |
| Noise Figure (max)                 | dB    | 3.7           | 4.5           | 5.0            |
| Power Output<br>@ 1 dB comp. (min) | dBm   | 21.5          | 20.5          | 20.0           |
| IP3                                | dBm   | +35           |               |                |
| IP2                                | dBm   | +55           |               |                |
| Second Order Harmonic IP           | dBm   | +65           |               |                |
| VSWR Input / Output (max)          |       | 1.5:1 / 1.5:1 | 1.8:1 / 1.8:1 | 2.0:1 / 2.0:1  |
| DC Current @ 15 Volts (max)        | mA    | 130           | 136           | 139            |

### Absolute Maximum Ratings

| Parameter                                 | Absolute Maximum |
|-------------------------------------------|------------------|
| Storage Temperature                       | -62°C to +125°C  |
| Case Temperature                          | 125°C            |
| DC Voltage                                | +17 V            |
| Continuous Input Power                    | +13 dBm          |
| Short Term Input power<br>(1 minute max.) | 50 mW            |
| Peak Power (3 µsec max.)                  | 0.5 W            |
| "S" Series Burn-In<br>Temperature (case)  | 125°C            |

### Thermal Data: $V_{CC} = +15 V_{DC}$

| Parameter                                        | Rating  |
|--------------------------------------------------|---------|
| Thermal Resistance $\theta_{jc}$                 | 45°C/W  |
| Transistor Power Dissipation $P_d$               | 0.781 W |
| Junction Temperature Rise<br>Above Case $T_{jc}$ | 35°C    |

\* Over temperature performance limits for part number CRA89, guaranteed from 0°C to +50°C only.

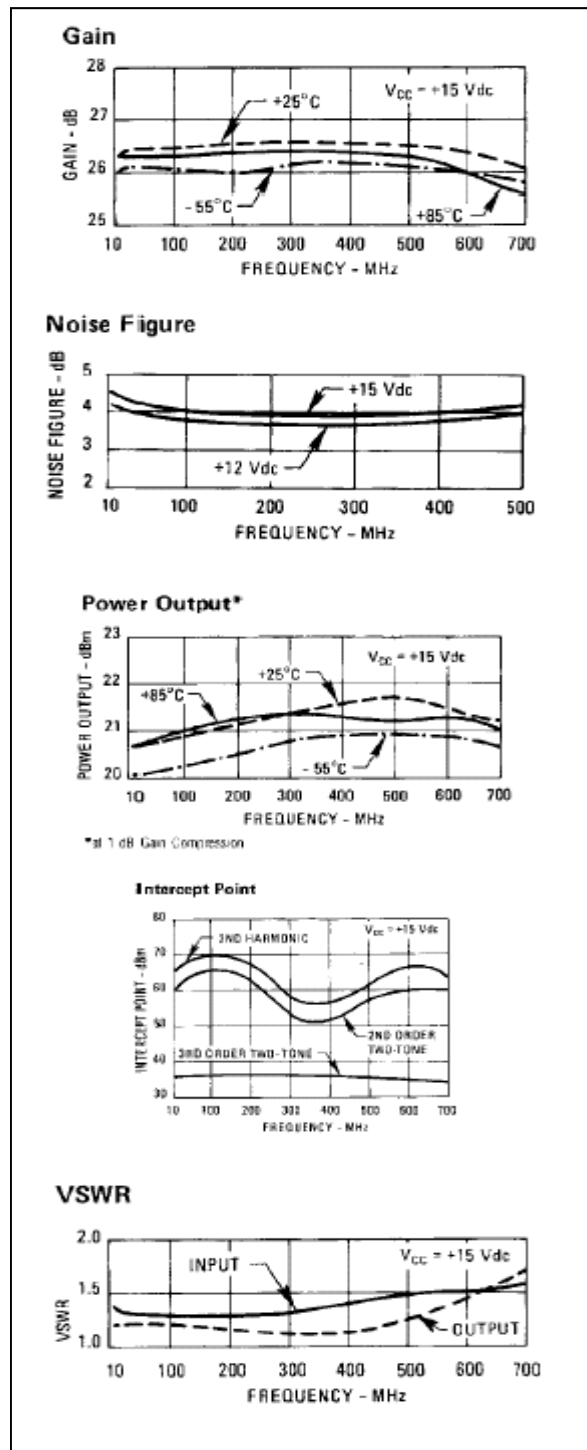
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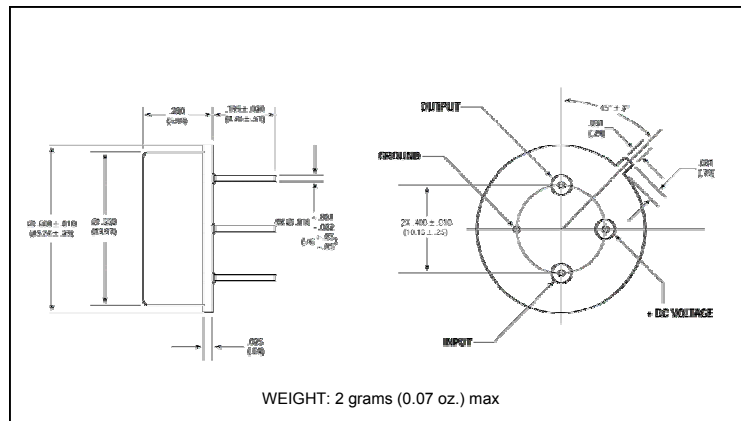
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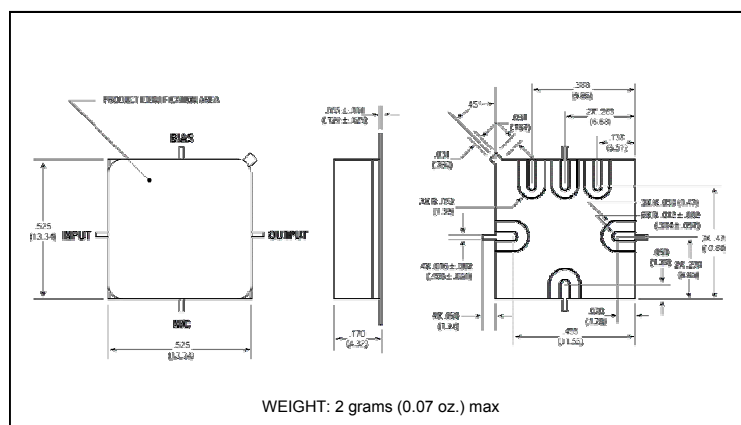
## Typical Performance Curves at +25°C



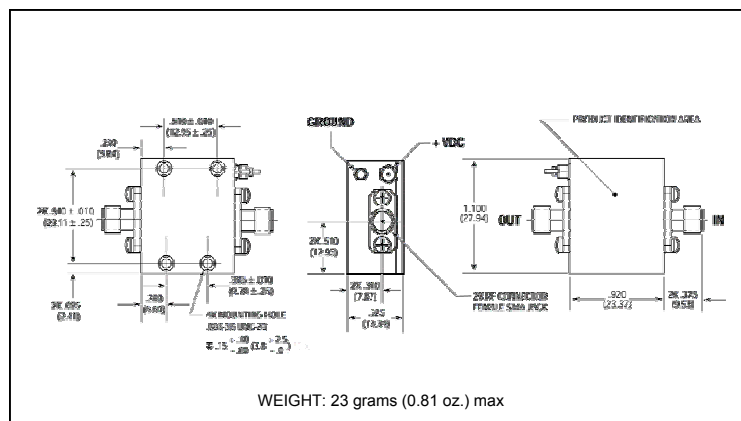
## Outline Drawing: TO-8B \*



## Outline Drawing: Surface Mount \*



## Outline Drawing: SMA Connectorized \*



\* Dimensions are inches (millimeters)  $\pm 0.015$  (0.38) unless otherwise specified.