

# Cascadable Amplifier 10 to 700 MHz

## Features

- HIGH DYNAMIC RANGE: +117 dBm (1 MHz Band)
- HIGH OUTPUT POWER: +22 dBm (TYP.)
- HIGH THIRD ORDER I.P. + 36 dBm (TYP.)
- WIDE POWER SUPPLY RANGE: +5 TO +15 VOLTS

## Description

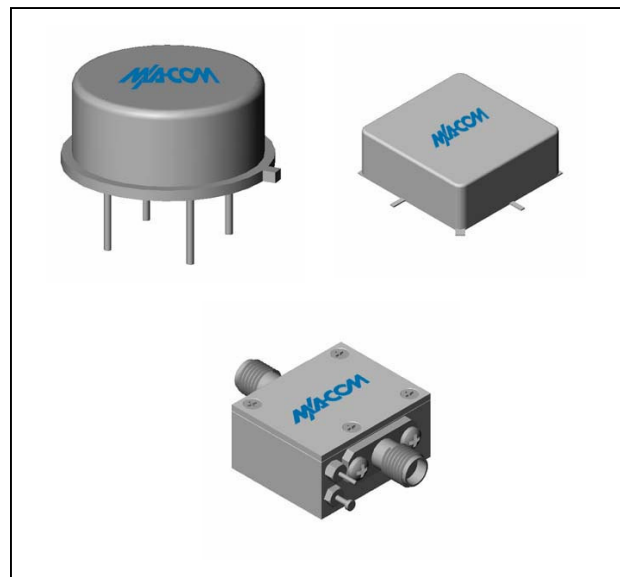
The A59-1 RF amplifier is a discrete thin film hybrid design, which incorporates the use of thin film manufacturing processes for accurate performance and high reliability. This single stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network is used for temperature-stable performance, in addition to an RF Choke, used for power supply decoupling. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

## Ordering Information

| Part Number | Package           |
|-------------|-------------------|
| A59-1       | TO-8              |
| SMA59-1     | Surface Mount     |
| CA59-1 **   | 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   | 2-800         | 10-700        | 10-700         |
| Small Signal Gain (min)            | dB    | 10.5          | 9.5           | 9.0            |
| Gain Flatness (max)                | dB    | ±0.4          | ±0.8          | ±1.0           |
| Reverse Isolation                  | dB    | 16            |               |                |
| Noise Figure (max)                 | dB    | 6.0           | 7.5           | 8.0            |
| Power Output<br>@ 1 dB comp. (min) | dBm   | 22.0          | 20.0          | 20.0           |
| IP3                                | dBm   | +36           |               |                |
| IP2                                | dBm   | +62           |               |                |
| Second Order Harmonic IP           | dBm   | +64           |               |                |
| VSWR Input / Output (max)          |       | 1.5:1 / 1.5:1 | 1.9:1 / 1.9:1 | 2.0:1 / 2.0:1  |
| DC Current @ 15 Volts (max)        | mA    | 88            | 98            | 98             |

## Absolute Maximum Ratings

| Parameter                                 | Absolute Maximum |
|-------------------------------------------|------------------|
| Storage Temperature                       | -62°C to +125°C  |
| Case Temperature                          | +125°C           |
| DC Voltage                                | +17 V            |
| Continuous Input Power                    | 17 dBm           |
| Short Term Input power<br>(1 minute max.) | 100 mW           |
| Peak Power (3 µsec max.)                  | 0.5 W            |
| "S" Series Burn-In<br>Temperature (case)  | +125°C           |

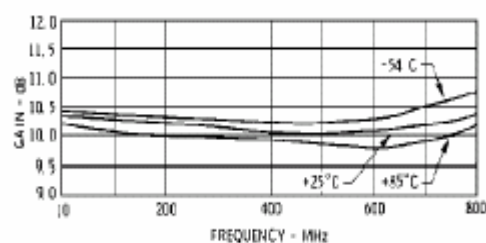
## Thermal Data: $V_{CC} = +15 V_{DC}$

| Parameter                                        | Rating  |
|--------------------------------------------------|---------|
| Thermal Resistance $\theta_{jc}$                 | 45°C/W  |
| Transistor Power Dissipation $P_d$               | 0.814 W |
| Junction Temperature Rise<br>Above Case $T_{jc}$ | 37°C    |

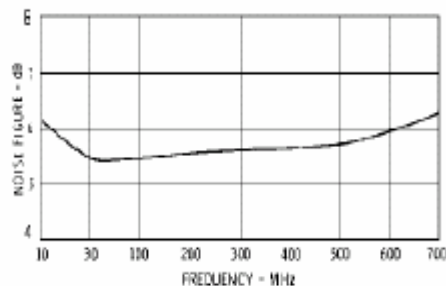
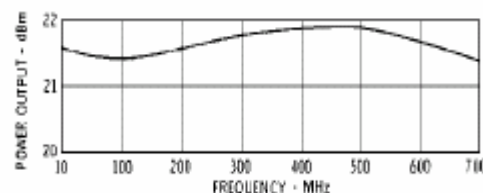
\* Over temperature performance limits for part number CA59-1, guaranteed from 0°C to +50°C only.

### Typical Performance Curves at +25°C

Gain

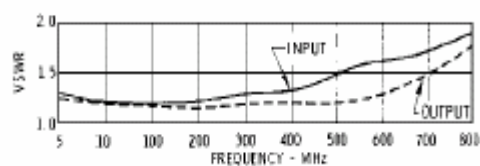


### Noise Figure

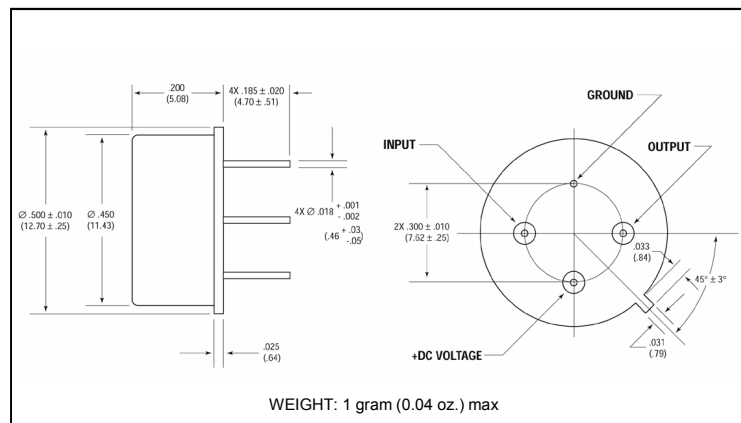
**Power Output\***

\*at 1 dB Gain Compression

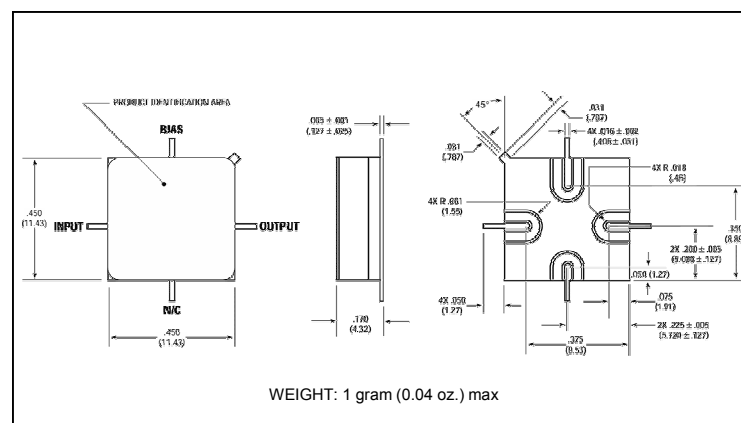
VSWR



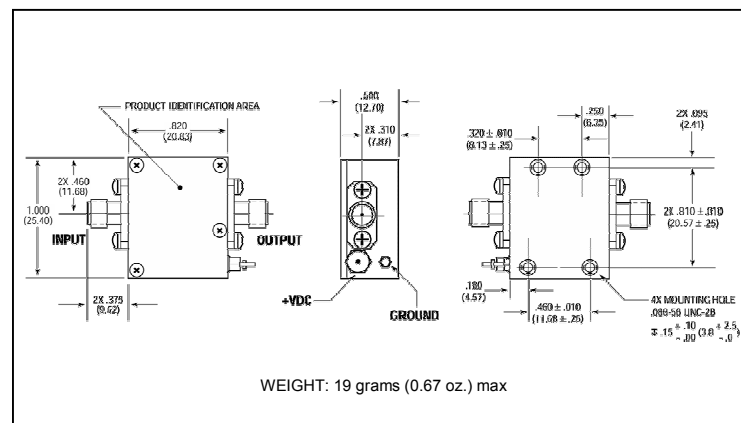
## Outline Drawing: TO-8 \*



## Outline Drawing: Surface Mount \*



### Outline Drawing: SMA Connectorized \*



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