tyco Electronics

RoHS Compliant

MACOM

# Cascadable Amplifier 10 to 2000 MHz

# A31-1/ SMA31-1

V3

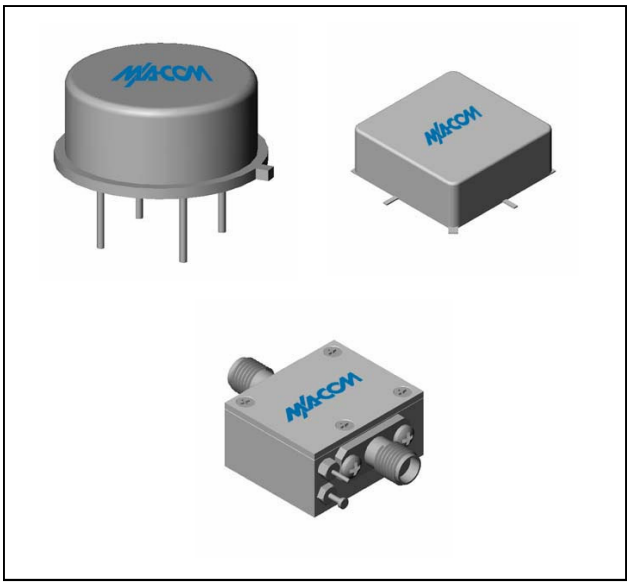
## Features

- LOW NOISE: <3.5 dB (TYP.)
- LOW VSWR: 1.5:1 (TYP.)

## Description

The A31-1 RF amplifier is a discrete hybrid design, which uses 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. Both TO-8 and Surface Mount packages are Hermetically sealed, and MIL-STD-883 environmental screening is available.

## Product Image



## Ordering Information

| Part Number | Package |
|---|---|
| A31-1 | TO-8 |
| SMA31-1 | Surface Mount |
| CA31-1 ** | SMA Connectorized |

** The connectorized version is not RoHs compliant.

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

| Parameter | Units | Typical | Guaranteed | |
|---|---|---|---|---|
| | | 25ºC | 0º to 50ºC | -54º to +85ºC* |
| Frequency | MHz | 1-2050 | 10-2000 | 10-2000 |
| Small Signal Gain (min) | dB | 11.5 | 11.0 | 10.5 |
| Gain Flatness (max) | dB | ±0.4 | ±0.7 | ±1.0 |
| Reverse Isolation | dB | 17 | | |
| Noise Figure (max) | dB | 3.5 | 4.0 | 4.5 |
| Power Output @ 1 dB comp. (min) | dBm | -2.0 | -4.0 | -4.5 |
| IP3 | dBm | +9 | | |
| IP2 | dBm | +10 | | |
| Second Order Harmonic IP | dBm | +15 | | |
| VSWR Input / Output (max) | | 1.5:1 / 1.3:1 | 2.0:1 / 2.0:1 | 2.0:1 / 2.0:1 |
| DC Current @ 15 Volts (max) | mA | 9 | 11 | 12 |

* Over temperature performance limits for part number CA31-1, guaranteed from 0°C to +50°C only.

## Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|---|---|
| Storage Temperature | -62ºC to +125ºC |
| Case Temperature | +125ºC |
| DC Voltage | +18 V |
| Continuous Input Power | 13 dBm |
| Short Term Input power (1 minute max.) | 50 mW |
| Peak Power (3 µsec max.) | 0.5 W |
| "S" Series Burn-In Temperature (case) | +125ºC |

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

| Parameter | Rating |
|---|---|
| Thermal Resistance $\theta_{jc}$ | 185ºC/W |
| Transistor Power Dissipation $P_d$ | 0.050 W |
| Junction Temperature Rise Above Case $T_{jc}$ | +9ºC |



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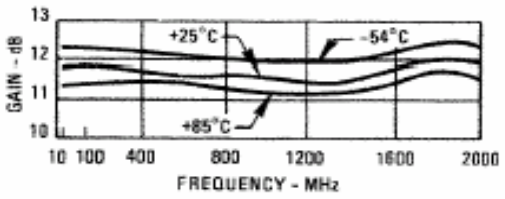
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# 10 to 2000 MHz

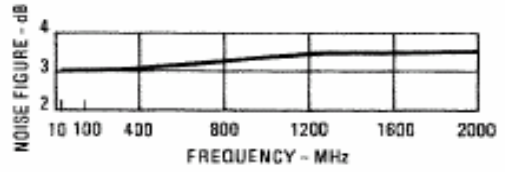
## A31-1/ SMA31-1
V3

## Typical Performance Curves at +25°C

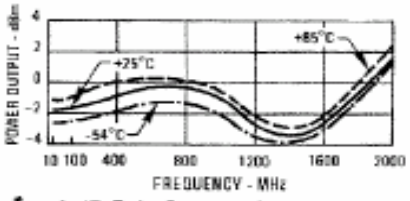
### Gain




### Noise Figure

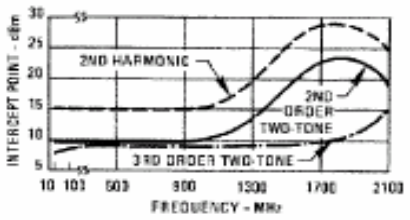



### Power Output*

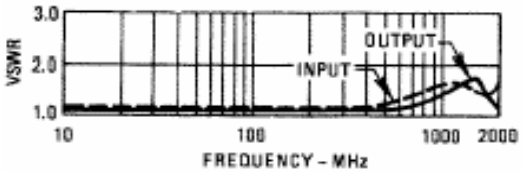



* at 1 dB Gain Compression

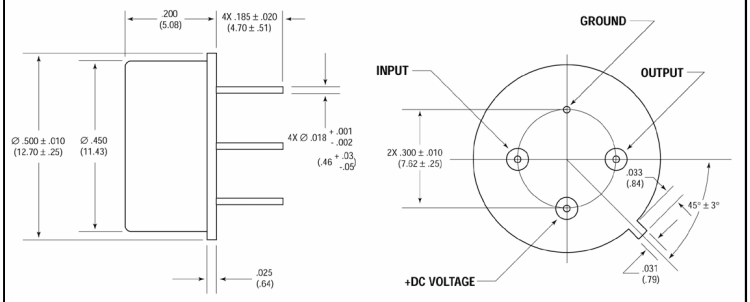
### Intercept Point




### VSWR

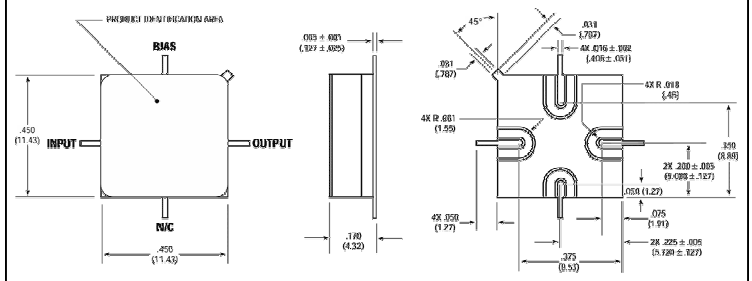



## Outline Drawing: TO-8 *



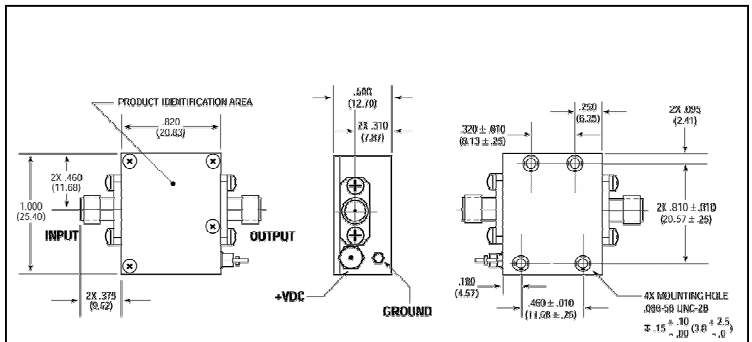

WEIGHT: 1 gram (0.04 oz.) max

## Outline Drawing: Surface Mount *




WEIGHT: 1 gram (0.04 oz.) max

## Outline Drawing: SMA Connectorized *




WEIGHT: 19 grams (0.67 oz.) max

* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.



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