

## Cascadable Amplifier 20 to 250 MHz

Rev. V3

### Features

- High Reverse Isolation : >30 dBm (TYP.)
- Low Noise: 2.4 dB (TYP.)
- High Gain: 25 dB (TYP.)
- High Level Output: +13.5 dBm (TYP.)

### Description

The A81-1 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

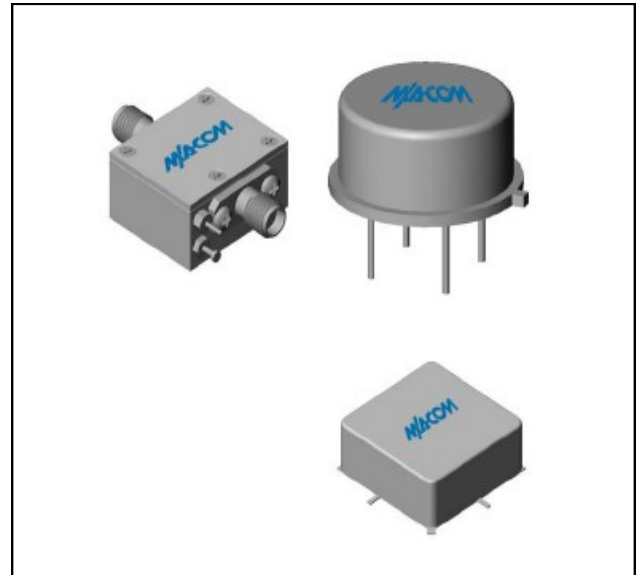
The 2 stage silicon bipolar feedback amplifier design displays impressive performance over a broadband frequency range. An isolation transformer is used in the feedback loop, with the benefit of high reverse isolation. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

### Ordering Information

| Part Number | Package           |
|-------------|-------------------|
| A81-1       | TO-8              |
| SMA81-1     | Surface Mount     |
| CA81-1**    | 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   | 10-300        | 20-250        | 20-250        |
| Small Signal Gain (min)         | dB    | 25.0          | 24.0          | 23.5          |
| Gain Flatness (max)             | dB    | ±0.1          | ±0.5          | ±0.7          |
| Reverse Isolation               | dB    | 31            |               |               |
| Noise Figure (max)              | dB    | 2.5           | 3.3           | 3.8           |
| Power Output @ 1 dB comp. (min) | dBm   | 13.5          | 12.5          | 12.0          |
| IP3                             | dBm   | +27           |               |               |
| IP2                             | dBm   | +33           |               |               |
| Second Order Harmonic IP        | dBm   | +41           |               |               |
| VSWR Input / Output (max)       |       | 1.5:1 / 1.5:1 | 1.9:1 / 1.9:1 | 2.0:1 / 2.0:1 |
| DC Current (max)                | mA    | 25            | 27            | 29            |

### Absolute Maximum Ratings

| Parameter                              | Absolute Maximum |
|--|------------------|
| Storage Temperature                    | -62°C to +125°C  |
| Case Temperature                       | 125°C            |
| DC Voltage                             | +17 V            |
| Continuous Input Power                 | +10 dBm          |
| Short Term Input power (1 minute max.) | 50 mW            |
| Peak Power (3 µsec max.)               | 0.5 W            |
| "S" Series Burn-In Temperature (case)  | 125°C            |

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

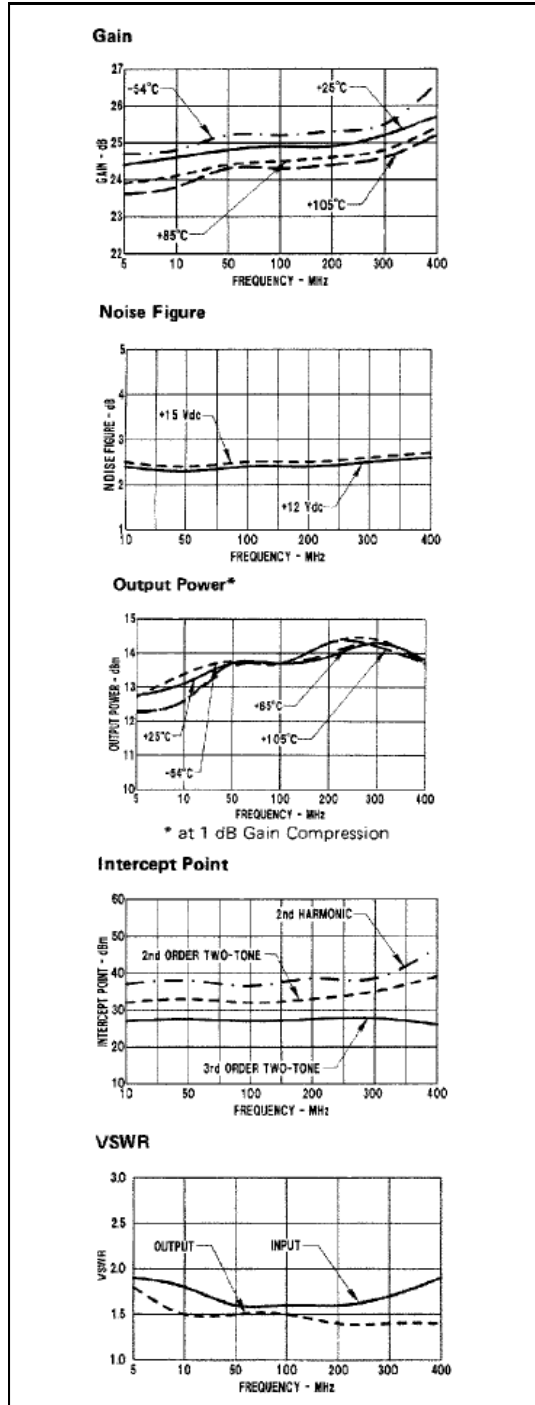
| Parameter                                     | Rating  |
|---|---------|
| Thermal Resistance $\theta_{jc}$              | 171°C/W |
| Transistor Power Dissipation $P_d$            | 0.098 W |
| Junction Temperature Rise Above Case $T_{jc}$ | 17°C    |

1 \* Over temperature performance limits for part number CA81-1, guaranteed from 0°C to +50°C only.

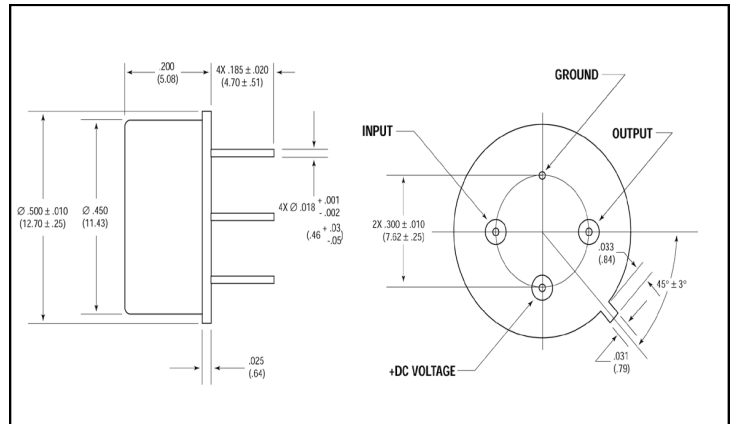
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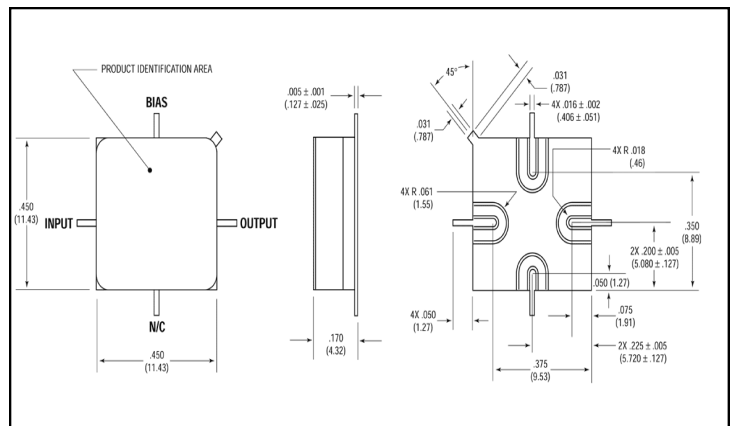
### Typical Performance Curves



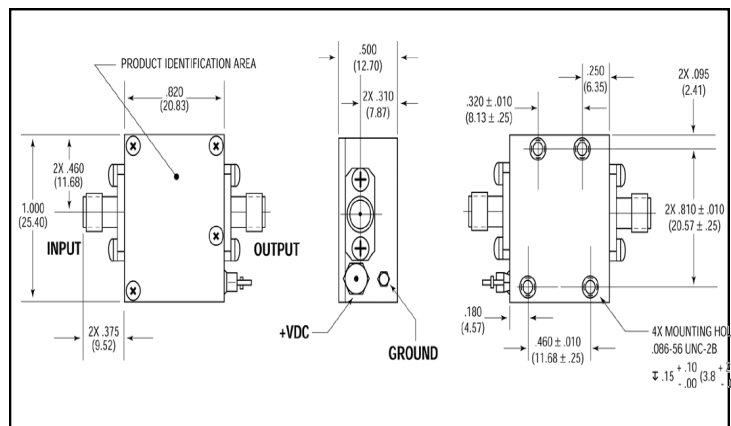
### Outline Drawing: TO-8 \*



### Outline Drawing: Surface Mount



### Outline Drawing: SMA Connectorized



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