

**Cascadable Amplifier**  
**10 to 500 MHz**

**PA511/SMPA511**

V2

**Features**

- HIGH POWER OUTPUT +24.8 dBm (TYP.)
- HIGH THIRD ORDER IP3 +40 dBm (TYP.)
- MODERATE NOISE FIGURE 4.6 dB (TYP.)

**Description**

The PA511 RF amplifier is a discrete thin film hybrid design, which incorporates the use of thin film manufacturing processes for accurate performance and high reliability.

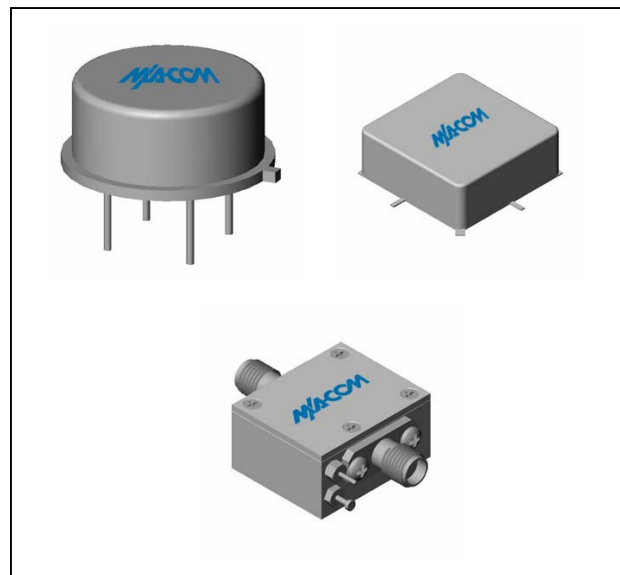
This single stage bipolar transistor feedback amplifier design displays impressive performance over a broadband frequency range. An active DC biasing network is used for temperature-stable performance, in addition to an RF Choke, used for power supply decoupling.

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

**Ordering Information**

| Part Number | Package           |
|-------------|-------------------|
| PA511       | TO-8              |
| SMPA511     | Surface Mount     |
| CPA511      | SMA Connectorized |

**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   | 5-600         | 10-500        | 10-500         |
| Small Signal Gain (min)         | dB    | 12.7          | 11.5          | 11.0           |
| Gain Flatness (max)             | dB    | ±0.4          | ±0.5          | ±0.8           |
| Reverse Isolation               | dB    | 17            |               |                |
| Noise Figure (max)              | dB    | 4.6           | 5.0           | 5.5            |
| Power Output @ 1 dB comp. (min) | dBm   | 24.8          | 23.5          | 23.0           |
| IP3                             | dBm   | +40           |               |                |
| IP2                             | dBm   | +55           |               |                |
| Second Order Harmonic IP        | dBm   | +60           |               |                |
| VSWR Input / Output (max)       |       | 1.3:1 / 1.4:1 | 1.8:1 / 1.8:1 | 2.0:1 / 2.1:1  |
| DC Current @ 15 Volts (max)     | mA    | 118           | 120           | 122            |

**Absolute Maximum Ratings**

| Parameter                              | Absolute Maximum |
|--|------------------|
| Storage Temperature                    | -62°C to +150°C  |
| Case Temperature                       | 85°C             |
| DC Voltage                             | +17 V            |
| Continuous Input Power                 | +17 dBm          |
| Short Term Input power (1 minute max.) | 100 mW           |
| Peak Power (3 µsec max.)               | 0.5 W            |
| "S" Series Burn-In Temperature (case)  | 85°C             |

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

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

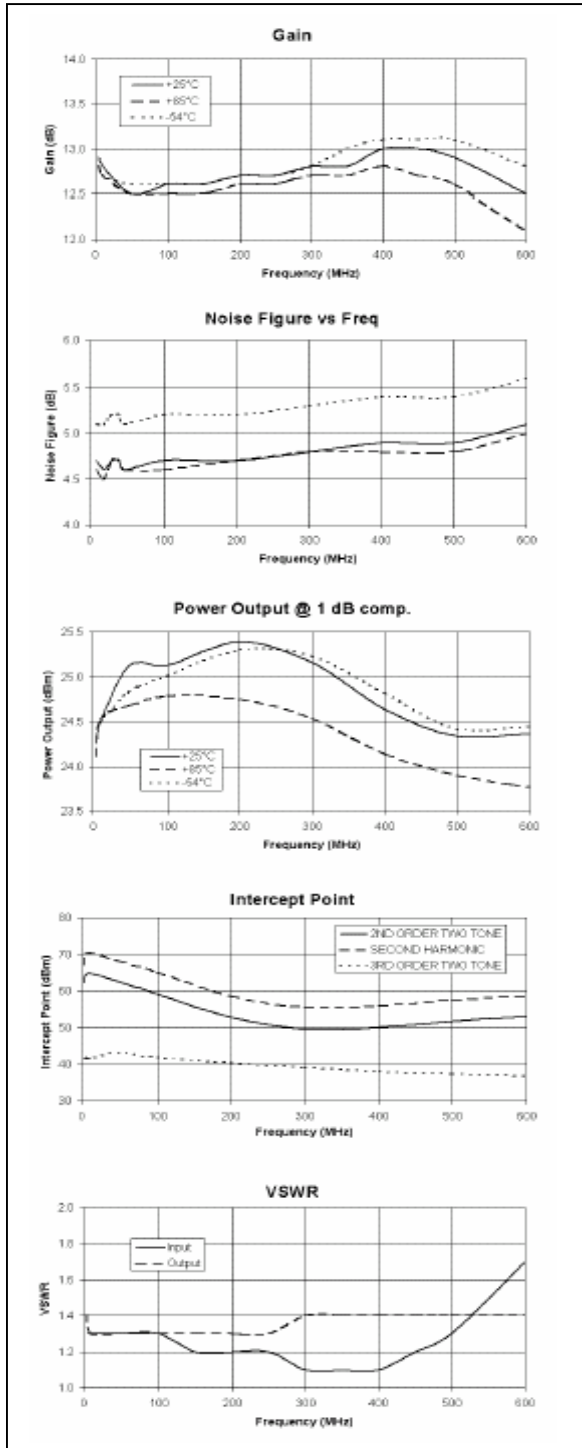
\* Over temperature performance limits for part number CPA511, guaranteed from 0°C to +50°C only.

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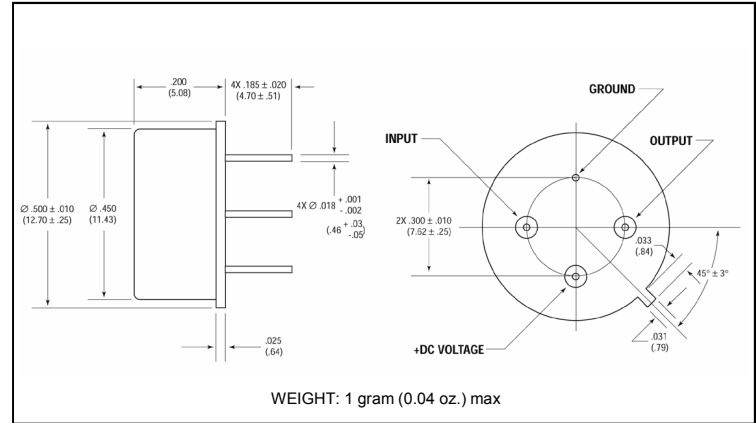
**PA511/SMPA511**

V2

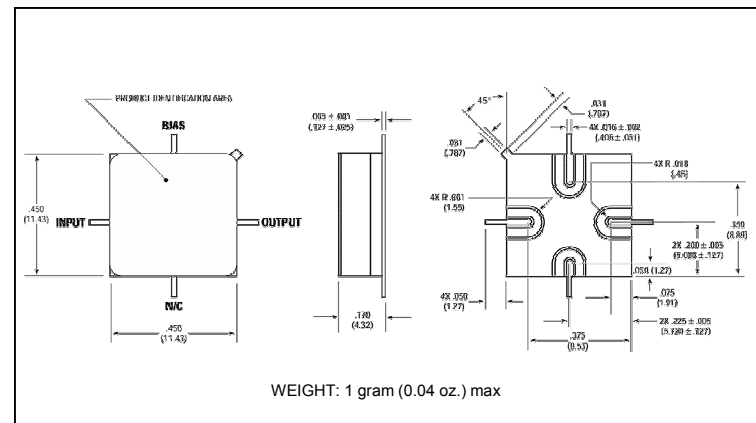
**Typical Performance Curves at +25°C**



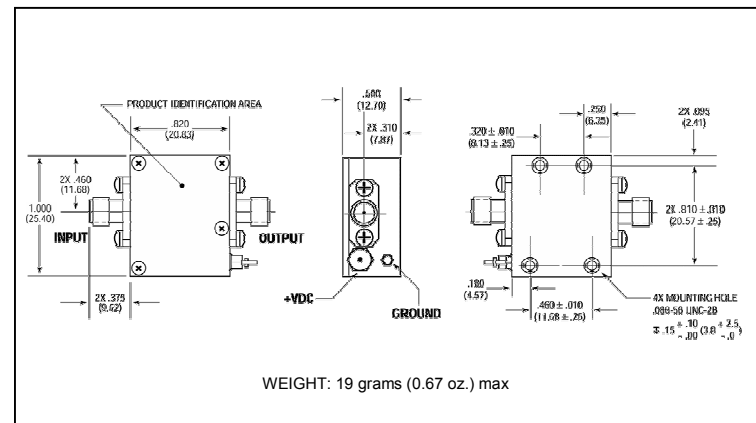
**Outline Drawing: TO-8 \***



**Outline Drawing: Surface Mount \***



**Outline Drawing: SMA Connectorized \***



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

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