

Cascadable Amplifier 10 to 500 MHz

Rev. V3

Features

- HIGH LINEARITY IP3: +30 dBm (TYP.)
IP2: +50 dBm (TYP.)
- HIGH GAIN: 20 dB (TYP.)
- LOW VSWR: 1.4:1 (TYP.)

Description

The A513 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

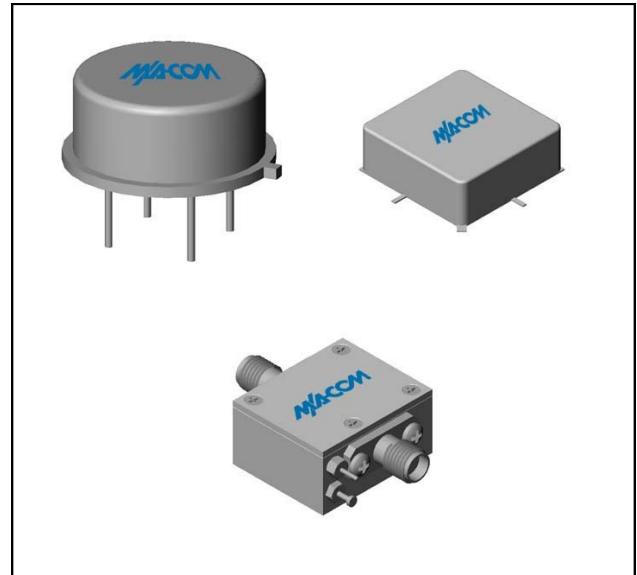
| Part Number | Package |
|-------------|-------------------|
| A513 | TO-8 |
| SMA513 | Surface Mount |
| CA513 ** | SMA Connectorized |

** The connectorized version is not RoHs compliant.

Electrical Specifications: $Z_0 = 50\Omega$, $V_{CC} = +12 V_{DC}$

| Parameter | Units | Typical | Guaranteed | |
|---------------------------------|-------|---------------|---------------|----------------|
| | | 25°C | 0° to 50°C | -54° to +85°C* |
| Frequency | MHz | 10-500 | 10-500 | 10-500 |
| Small Signal Gain (min) | dB | 20.0 | 17.0 | 17.0 |
| Gain Flatness (max) | dB | ±0.3 | ±0.5 | ±1.0 |
| Reverse Isolation | dB | 25 | | |
| Noise Figure (max) | dB | 5.5 | 6.0 | 6.5 |
| Power Output @ 1 dB comp. (min) | dBm | 18.0 | 17.5 | 17.0 |
| IP3 | dBm | +30 | | |
| IP2 | dBm | +50 | | |
| Second Order Harmonic IP | dBm | +56 | | |
| VSWR Input / Output (max) | | 1.4:1 / 1.4:1 | 1.6:1 / 1.6:1 | 1.6:1 / 1.6:1 |
| DC Current @ 12 Volts (max) | mA | 120 | 130 | 130 |

Product Image



Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|--|------------------|
| Storage Temperature | -62°C to +125°C |
| Case Temperature | 125°C |
| 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) | 125°C |

Thermal Data: $V_{CC} = +12 V_{DC}$

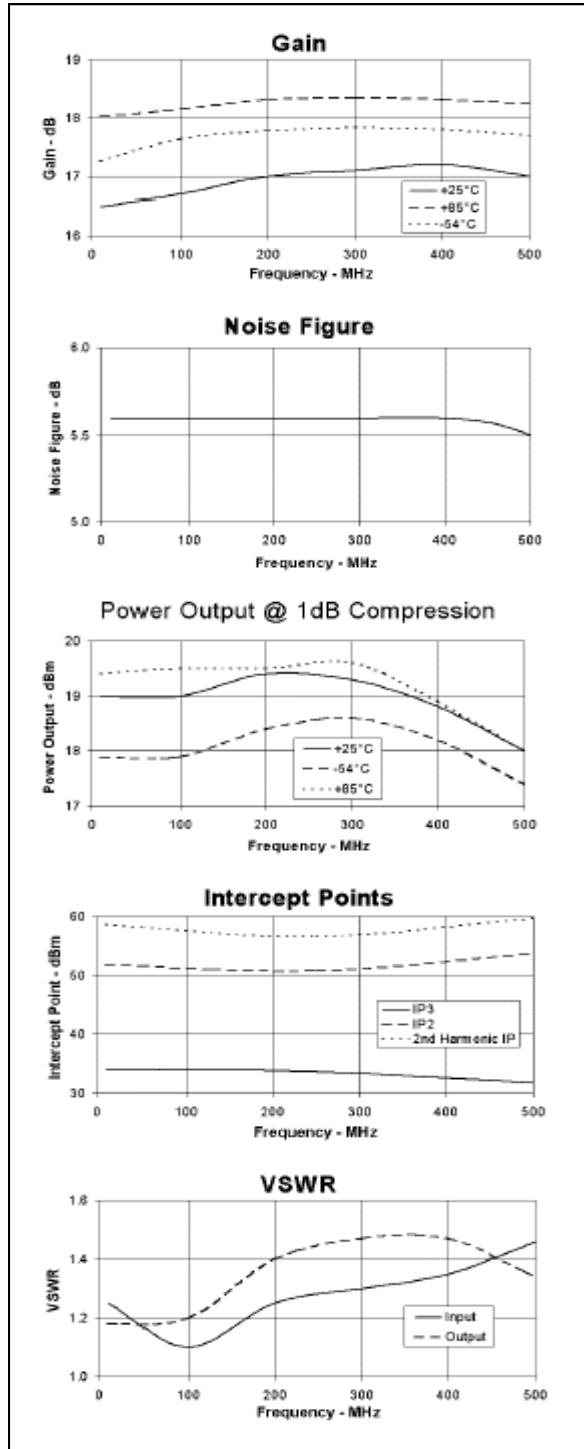
| Parameter | Rating |
|---|--------|
| Thermal Resistance θ_{jc} | 55°C/W |
| Transistor Power Dissipation P_d | 1.0 W |
| Junction Temperature Rise Above Case T_{jc} | 55°C |

1 * Over temperature performance limits for part number CA513, guaranteed from 0°C to +50°C only.

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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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