

## GaAs MMIC Power Amplifier 2.0 - 6.0 GHz

Rev. V7

### Features

- Saturated Output Power: 30.5 dBm Typical
- Gain: 20 dB Typical
- Power Added Efficiency: 30% Typical
- On-Chip Bias Network
- DC Decoupled RF Input and Output
- Lead-Free High Performance Ceramic Package
- RoHS\* Compliant and 260°C Reflow Compatible

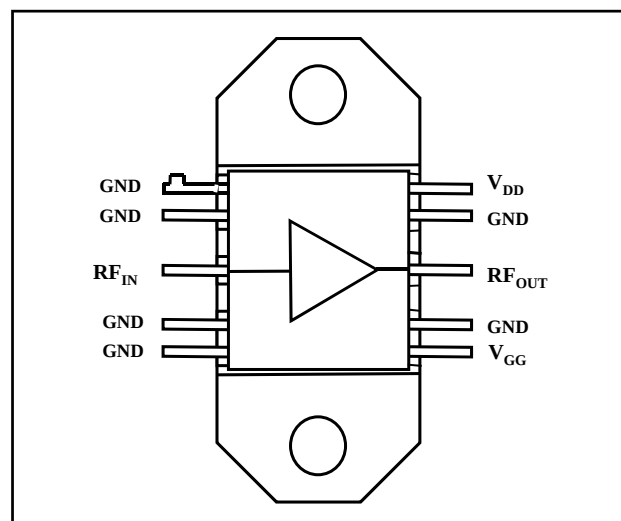
### Description

The MAAM26100-P1 is a GaAs MMIC two stage high efficiency power amplifier in a lead-free high performance bolt down ceramic package. The MAAM26100-P1 is a fully monolithic design which eliminates the need for external circuitry in 50-ohm systems.

The MAAM26100-P1 is ideally suited for driver amplifiers and transmitter outputs in UMTS applications, test equipment, electronic warfare jammers, missile subsystems and phased array radars.

The MAAM26100-P1 is fabricated using a mature 0.5-micron gate length GaAs process. The process features full passivation for increased performance reliability.

### Functional Diagram



### Pin Configuration

| Pin No. | Function         | Pin No. | Function          |
|---------|------------------|---------|-------------------|
| 1       | GND              | 6       | V <sub>DD</sub>   |
| 2       | GND              | 7       | GND               |
| 3       | RF <sub>IN</sub> | 8       | RF <sub>OUT</sub> |
| 4       | GND              | 9       | GND               |
| 5       | GND              | 10      | V <sub>DD</sub>   |

### Ordering Information

| Part Number  | Package           |
|--------------|-------------------|
| MAAM26100-P1 | Ceramic Bolt Down |

### Absolute Maximum Ratings<sup>1,2</sup>

| Parameter                            | Absolute Maximum |
|--------------------------------------|------------------|
| V <sub>DD</sub>                      | +9 V             |
| V <sub>GG</sub>                      | -6 V to -3 V     |
| RF Input Power                       | +17 dBm          |
| Channel Temperature                  | 150°C            |
| Storage Temperature                  | -65°C to +150°C  |
| Thermal Resistance (Channel to Case) | 15°C/W           |

1. Exceeding any one or combination of these limits may cause permanent damage to this device and will void product warranty.
2. M/A-COM does not recommend sustained operation near these survivability limits.

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

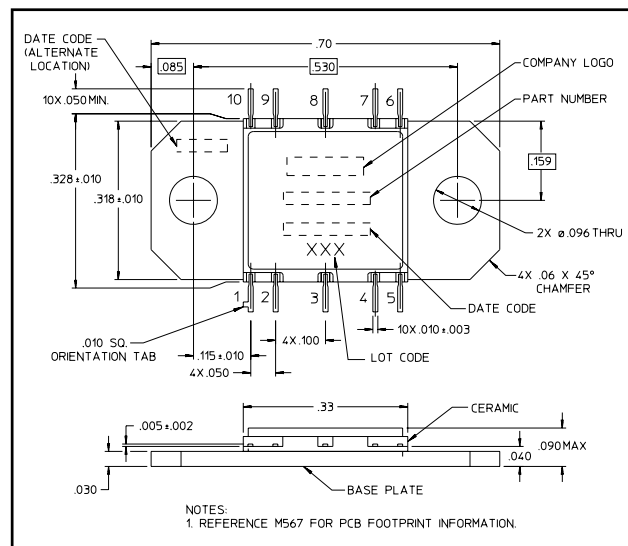
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• **North America** Tel: 800.366.2266 • **Europe** Tel: +353.21.244.6400  
• **India** Tel: +91.80.43537383 • **China** Tel: +86.21.2407.1588

Visit [www.macomtech.com](http://www.macomtech.com) for additional data sheets and product information.

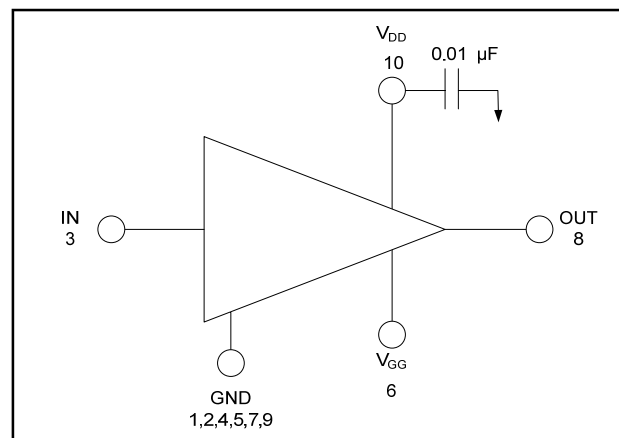
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## Lead-Free CR-15<sup>†</sup>



<sup>†</sup> Reference Application Note M538 for lead-free solder reflow recommendations.  
Meets JEDEC moisture sensitivity level 1 requirements.

## Functional Schematic<sup>3,4</sup>



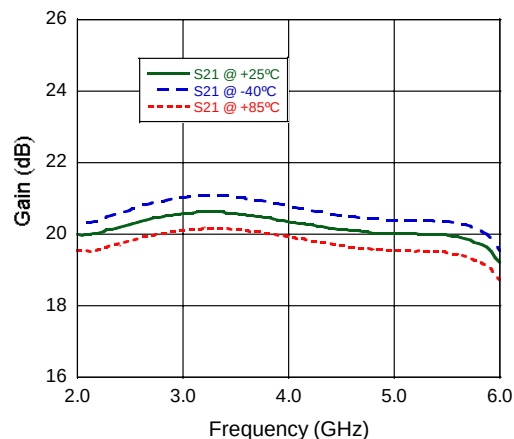
- Nominal bias is obtained by first connecting -5 volts to pin 6 (V<sub>GG</sub>), followed by connecting +8 volts to pin 10 (V<sub>DD</sub>). Note sequence.
- RF ground and thermal interface is the flange (case bottom). Adequate heat sinking is required.

## Electrical Specifications: T<sub>A</sub> = 25°C, V<sub>DD</sub> = +8 V, V<sub>GG</sub> = -5 V

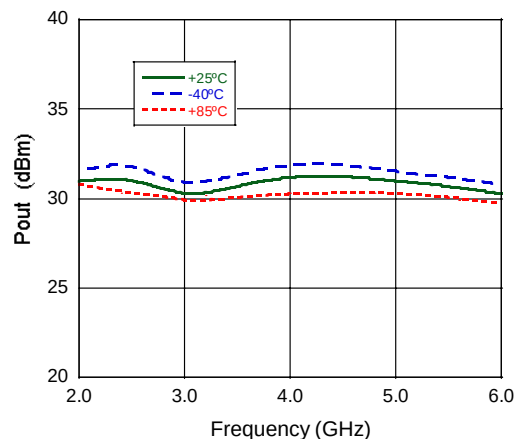
| Parameter              | Test Conditions        | Units | Min. | Typ.  | Max.  |
|------------------------|------------------------|-------|------|-------|-------|
| Small Signal Gain      | Pin ≤ -10 dBm, 2-6 GHz | dB    | —    | 20    | —     |
| Input VSWR             | Pin ≤ -10 dBm, 2-6 GHz | Ratio | —    | 1.8:1 | 2.1:1 |
| Output VSWR            | Pin ≤ -10 dBm, 2-6 GHz | Ratio | —    | 2.2:1 | —     |
| Output Power           | Pin = +14 dBm, 2-6 GHz | dBm   | 29   | 30.5  | —     |
| P1dB                   | 2-6 GHz                | dBm   | —    | 28    | —     |
| Power Added Efficiency | Pin = +14 dBm, 2-6 GHz | %     | —    | 30    | —     |
| Output IP3             | 2-6 GHz                | dBm   | —    | 40    | —     |
| IDS                    | Pin = +14 dBm, 2-6 GHz | mA    | —    | 475   | 650   |

## Typical Performance Curves

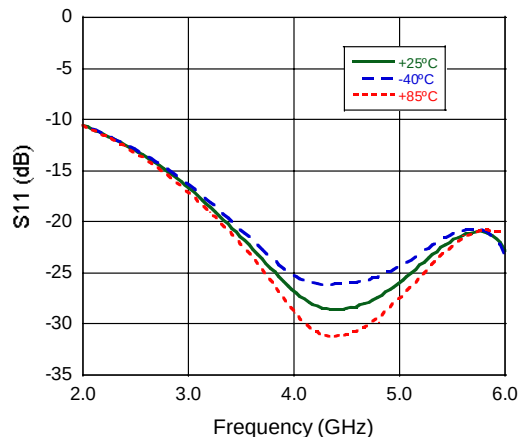
**Gain**



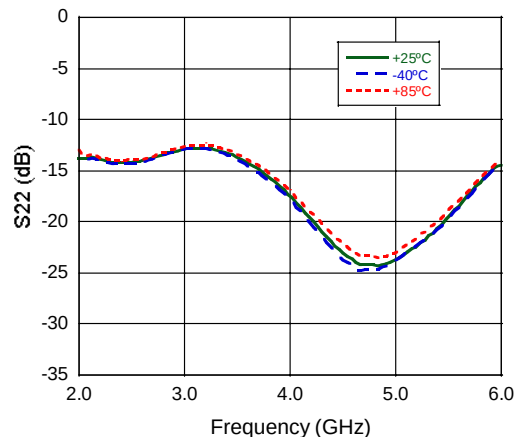
**Pout**



**Input Return Loss**



**Output Return Loss**



**Power Added Efficiency**

