



AG603

InGaP HBT Gain Block

The Communications Edge™

Preliminary Product Information

Product Features

- DC - 2700MHz
- +18.5 dBm P1dB at 900MHz
- +33.5 dBm OIP3 at 900MHz
- 17.6 dB Gain at 900MHz
- Single Voltage Supply
- SOT-89 SMT Package
- Internally matched to 50 Ω

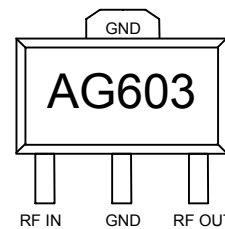
Product Description

The AG603 is a general-purpose buffer amplifier that offers high dynamic range in a low-cost surface-mount package. At 900 MHz, the AG603 typically provides 17.6 dB of gain, +33.5 dBm Output IP3, and +18.5 dBm P1dB. The device combines dependable performance with consistent quality to maintain MTBF values exceeding 100 years at mounting temperatures of +85°C and is housed in a SOT-89 industry standard SMT package.

The AG603 consists of Darlington pair amplifiers using the high reliability InGaP/GaAs HBT technology process technology and only requires DC-blocking capacitors, a bias resistor, and an inductive RF choke for operation.

The broadband MMIC amplifier can be directly applied to various current and next generation wireless technologies such as GPRS, GSM, CDMA, W-CDMA, and UMTS. In addition, the AG603 will work for other various applications within the DC to 2.7 GHz frequency range such as CATV and fixed wireless.

Functional Diagram



AG603-89

Specifications

| Parameters ¹ | Units | Min | Typ | Max |
|--------------------------|-------|-----|---------|-----|
| Frequency Range | MHz | | DC-2700 | |
| S21 - Gain | dB | | 17.6 | |
| S11 - Input Return Loss | dB | | -15 | |
| S22 - Output Return Loss | dB | | -12 | |
| Output P1dB | dBm | | +18.5 | |
| Output IP3 | dBm | | +33.5 | |
| Noise Figure | dB | | 4.5 | |
| Device Voltage | V | | 4.9 | |
| Device Current | mA | | 75 | |

Test conditions unless otherwise noted

1. T = 25°C, Supply Voltage = +6 V, R_{bias} = 10 Ω, Frequency = 900MHz, 50 Ω System.

2. 3OIP measured with two tones at an output power of 0 dBm/tone separated by 10MHz. The suppression on the largest IM3 product is used to calculate the 3OIP using a 2:1 rule.

Typical Parameters

| Parameter ¹ | Units | Typical | |
|------------------------|-------|---------|-------|
| Frequency | MHz | 900 | 1900 |
| S21 | dB | 17.6 | 16 |
| S11 | dB | -20 | -25 |
| S22 | dB | -15 | -15 |
| Output P1dB | dBm | +18.5 | +18.1 |
| Output IP3 | dBm | +33.5 | +32.3 |
| Noise Figure | dB | 4.5 | 4.5 |
| Supply Voltage | V | 6 | 6 |
| Device Current | mA | 75 | 75 |

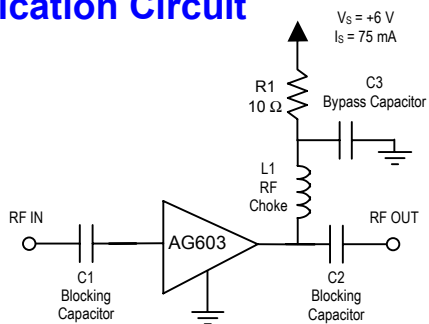
1. Data represents typical performance in an application board with T = 25°C, V_s = +6 V, and R_{bias} = 10 Ω in a 50 Ω system.

Absolute Maximum Ratings

| Parameters | Rating |
|----------------------------|----------------|
| Operating Case Temperature | -40 to +85 °C |
| Storage Temperature | -40 to +125 °C |

Operation of this device above any of these parameters may cause permanent damage

Application Circuit



Ordering Information

| Part No. | Description |
|-------------|--|
| AG603-89 | InGaP HBT Gain Block SOT-89 Style Package (Available in Tape & Reel) |
| AG603-89PCB | Fully Assembled Application Board |

This document contains information on a new product. Specifications and information are subject to change without notice



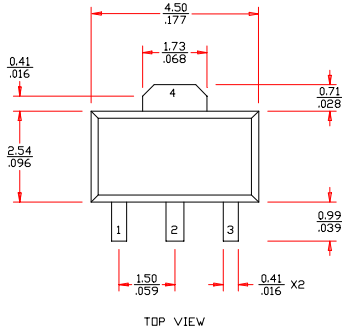
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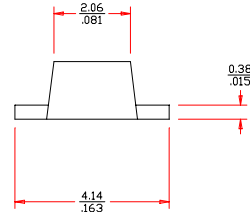
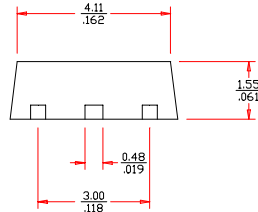
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AG603-89 Package Information

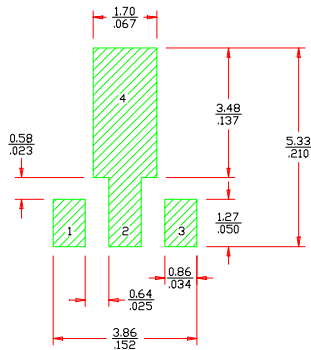
Outline Drawing



mm
inch

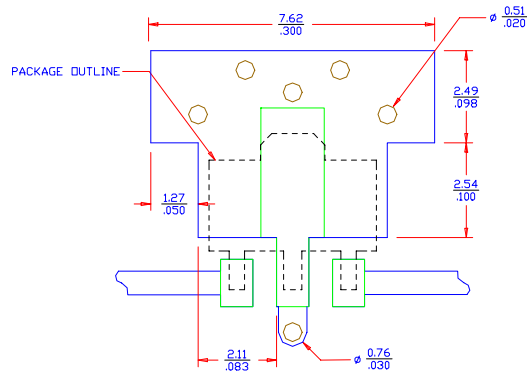


Land Pattern



| FUNCTION | PIN NO. |
|---------------|---------|
| INPUT | 1 |
| GROUND | 2 |
| OUTPUT (BIAS) | 3 |
| GROUND | 4 |

Mounting Configuration



- Notes: 1. Ground vias are critical for thermal and RF grounding considerations.
- 2. Two 2-56 screws with washers should be used for thermal grounding to the main chassis.
- 3. Ground plane on the backside should extend past the holes for the 2-56 screws as a minimum.
- 4. No soldermask should be applied to the backside where heat sink area contacts the main chassis.
- 5. Holes for the 2-56 screws should be plated through.
- 6. Keepout diameter for the 2-56 screw is to allow good thermal contact for the screw and washer.
- 7. Trace width depends on PC board.
- 8. A minimum of 1 oz. / 1 oz. copper should be used.

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