

SAC3003

GaAs MMIC Low Noise Amplifier
0.2GHz~0.6GHz

Rev 2.0

Features

- Frequency: 0.2GHz~0.6GHz
- Gain: 38dB
- Noise Figure: 0.8dB
- Supply Voltage: +5V@75mA
- Die Size: 1.3mm×1.25mm×0.1mm

Typical Applications

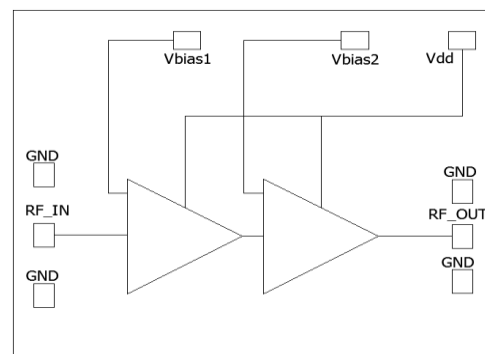
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3003 is a GaAs MMIC Low Noise Amplifier die which operates between 0.2GHz~0.6GHz. The amplifier can provide 38dB gain, 17dBm OutputP₁dB, 0.8dB noise figure from a 75mA supply current.

The chip offers full passivation for increased reliability and moisture protection. This amplifier is the perfect alternative to higher cost hybrid amplifiers.

Functional Diagram



Electrical Performance (T_A=25°C, V_D= +5V, I_D=75mA, Z₀=50Ω)

| Parameter | Min. | Typ. | Max. | Units |
|--|---------|------|------|-------|
| Frequency Range | 0.2~0.6 | | | GHz |
| Gain | — | 38 | — | dB |
| Gain Flatness | — | 0.3 | — | dB |
| Reverse Isolation | — | -55 | — | dB |
| Input/Output VSWR | — | 1.6 | — | :1 |
| Noise Figure | — | 0.8 | — | dB |
| Output Power for 1 dB Compression (OP ₁ dB) | — | 17 | — | dBm |
| Output Third Order Intercept (OIP ₃) | — | 28 | — | dBm |
| Supply Current(I _D) | — | 75 | — | mA |

Absolute Maximum Ratings

| | | | |
|---------------------|--------|-----------------------|--------------|
| Maximum Input Power | +18dBm | Operating Temperature | -55°C~+85°C |
| Channel Temperature | +150°C | Storage Temperature | -65°C~+150°C |

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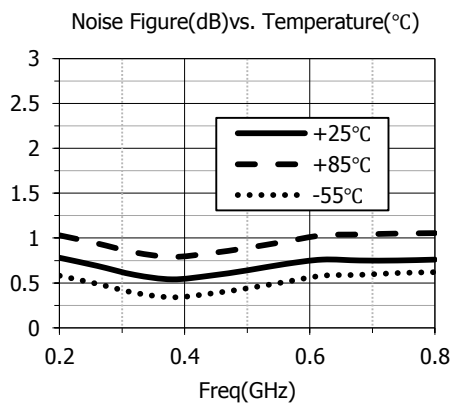
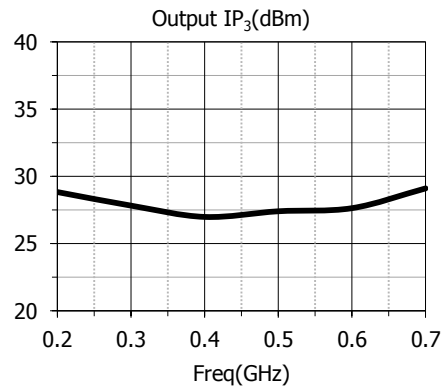
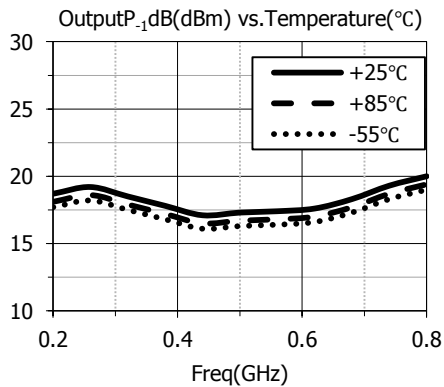
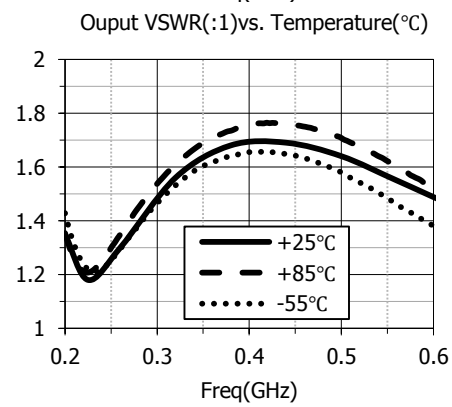
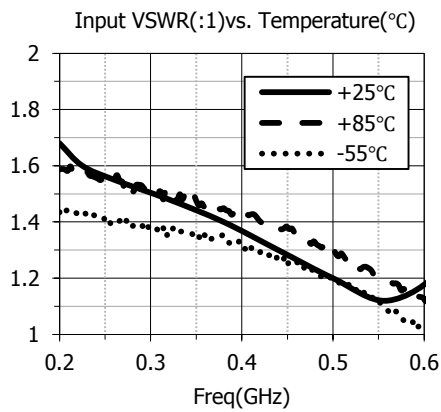
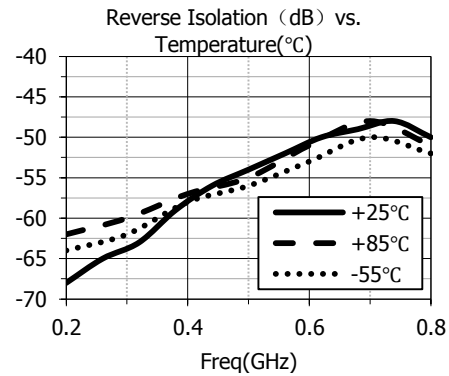
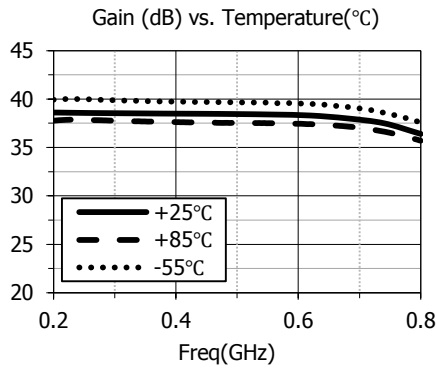
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Typical Performance Curve



SuperApex, LLC

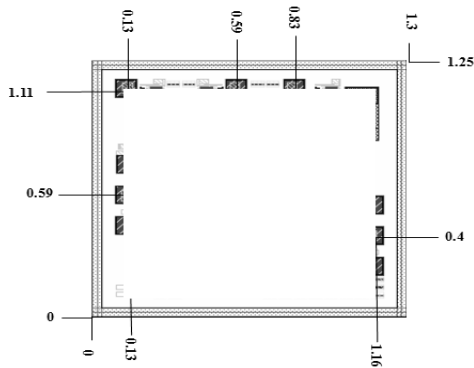
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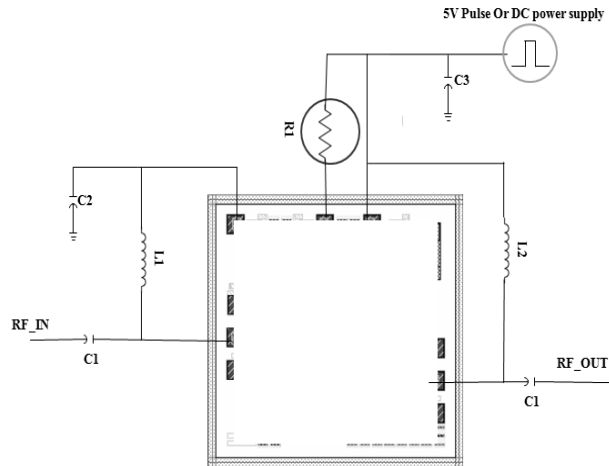
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Die Outline
(All dimensions in mm)



Assembly Diagram



Components List

| Reference Des. | Value | Part Number | Manuf. | Size |
|----------------|-------|--------------------|-----------|------|
| C1 | 51pF | GRM1555C1H510JZ01D | MURATA | 0402 |
| C2 | 300pF | GRM1555C1H301JA01D | MURATA | 0402 |
| C3 | 10nF | GRM155R71H103KA88D | MURATA | 0402 |
| C4 | 15pF | GRM1555C1H150JZ01D | MURATA | 0402 |
| L1 | 68nH | 0402CS-68NXGE | COILCRAFT | 0402 |
| L2 | 68nH | 0402CS-68NXGE | COILCRAFT | 0402 |
| R1 | 0Ω | — | — | 0402 |

Attention:

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.