

SAC3045

GaAs pHEMT MMIC LOW NOISE AMPLIFIER
2GHz~20GHz

Rev 2.2

Features

- Frequency: 2GHz~20GHz
- Noise Figure: 3 dB
- Gain: 16dB
- Output P_{-1dB}: 14dBm
- Supply Voltage: +5V
- Die Size: 2.96mm×1.22mm×0.1mm

General Description

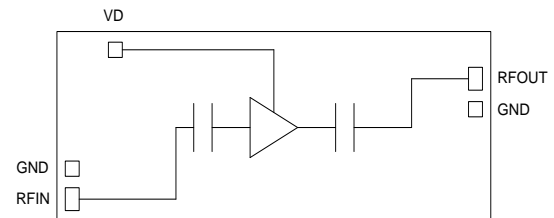
SAC3045 is a wideband GaAs MMIC low noise distributed amplifier which operates between 2GHz~20GHz. The amplifier provides 16dB of gain, 14dBm Output P_{-1dB} power from a +5V supply voltage, making it an ideal driver amplifier.

The backside of the die is both RF and DC ground, simplifying the assembly process and reducing performance variation.

Typical Applications

- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+5V, I_D=60mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	2~20			GHz
Small Signal Gain	-	16	—	dB
Noise Figure	—	3	—	dB
Small Signal Gain Flatness	—	±1.0	—	dB
Reverse Isolation	—	-30	—	dB
Input VSWR	—	1.3	—	:1
Output VSWR	—	1.3	—	:1
Output Power for 1 dB Compression(OP _{-1dB})	—	13	—	dBm
Drain Voltage(V _D)	4	5	6	V
Supply Current(I _D)	—	60	—	mA

Absolute Maximum Ratings

Maximum Input Power	+18dBm	Operating Temperature	-55°C~+125°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Maximum V _D	+6V		

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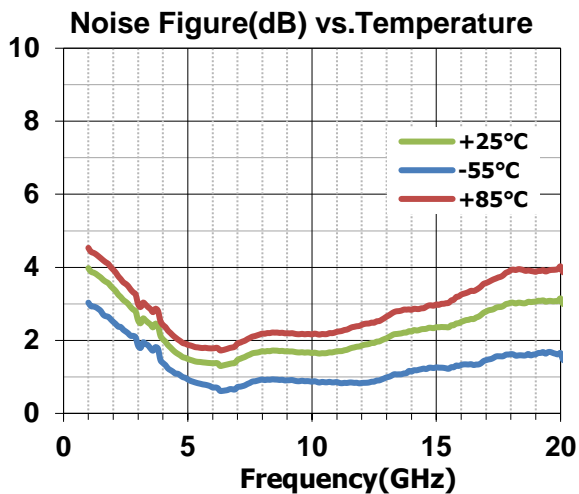
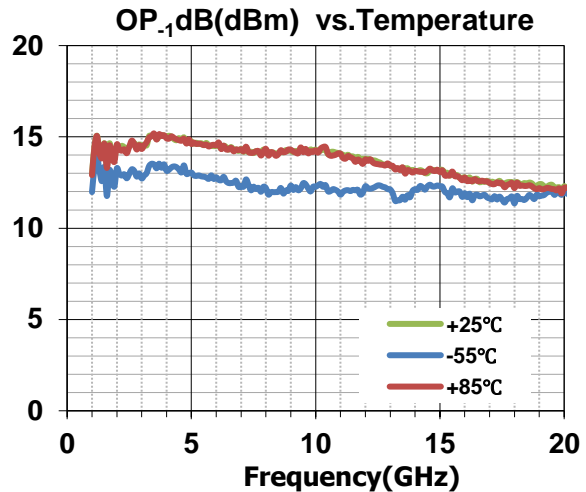
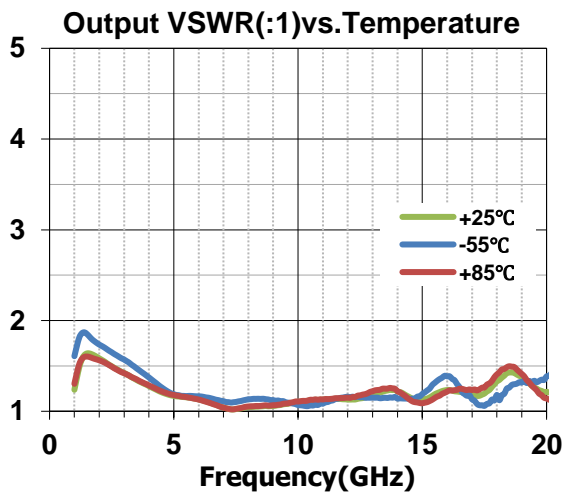
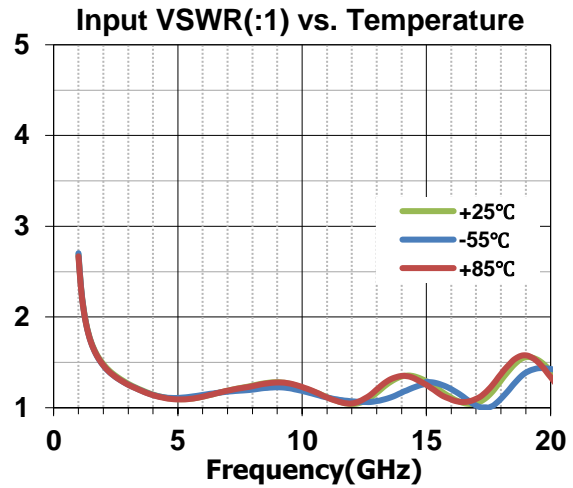
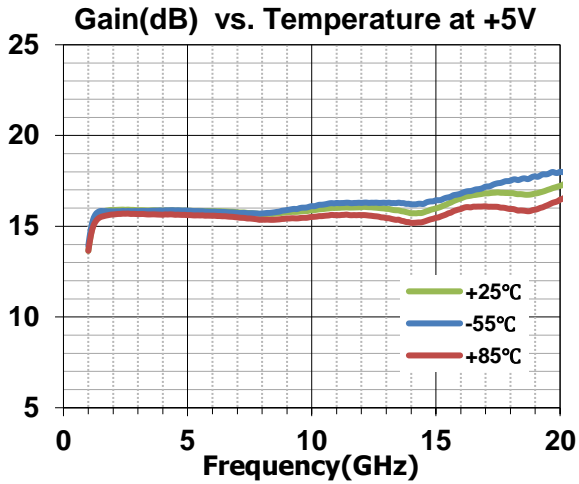
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Typical Performance Curve



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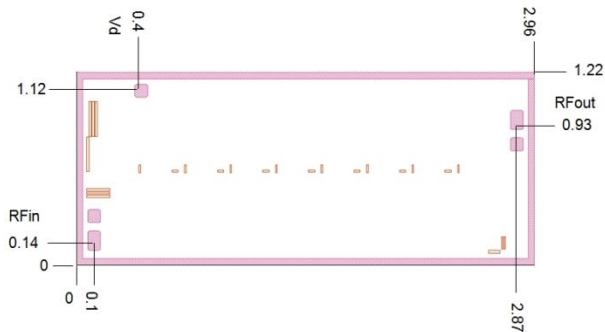
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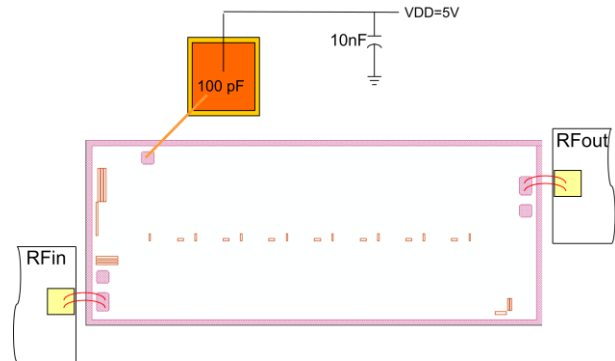
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Die Outline (All dimensions in mm)



Assembly Diagram



Bonding pad size:150x100um

Notes

1. SAC3045 is biased with a single drain voltage 5V.
2. RF connections should be made as short as possible to reduce the inductive effect of the bond wire. Use of a 0.8 mil thermosonic wedge bonding is highly recommended as the loop height will be minimized. The RF input and output require a double bond wire as shown.
3. The backside of SAC3045 is RF ground. Die attach should be accomplished with electrically and thermally conductive epoxy only.