SAC3075

GaAs MMIC Low Noise Amplifier
6~8.5GHz

Rev 1.2

Features

- Frequency：6~8.5GHz
- Gain：24dB
- Noise Figure：0.7 dB typ.　0.85dB max.
- Single Power Supply: +4V/55mA
- Output P_{-1}dB：15dBm@8GHz
- Die Size：1.5mm×1.24mm×0.1mm

Typical Applications

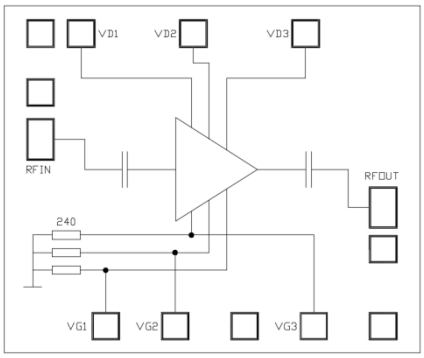
- Radar and ECM
- RF/ Microwave Radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3075 is a GaAs MMIC low noise amplifier die which operates between 6~8.5GHz. The amplifier can provide 24dB gain, 15dBm Output P_{-1}dB and 0.7dB noise figure from a 55mA 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℃,V_D=+4V,I_D=55mA,Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		6~8.5		GHz
Gain	22	24	27	dB
Gain Flatness	—	±0.75	—	dB
Reverse Isolation	—	-50	—	dB
Input VSWR/ Output VSWR	—	1.5	2	： 1
Noise Figure	—	0.7	0.85	dB
Output P_{-1}dB	13	15	—	dBm
Output IP_3	—	22*	—	dBm
Supply Current(I_D)	—	40	70	mA
Supply Voltage(V_D)	3	—	4	V

*Pout/Tone=0dBm Fc=8GHz,△f=1MHz

Absolute Maximum Ratings

Maximum Input Power	+13dBm，CW，1min	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Supply Voltage	5V		

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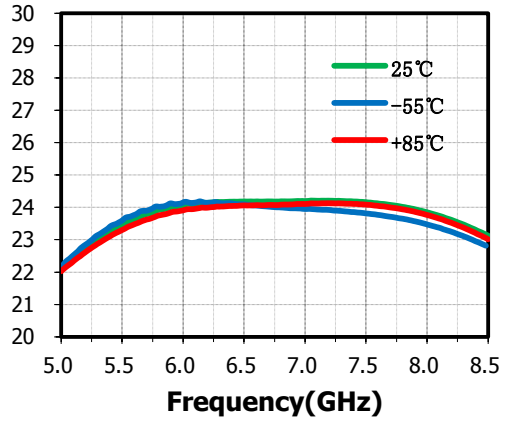
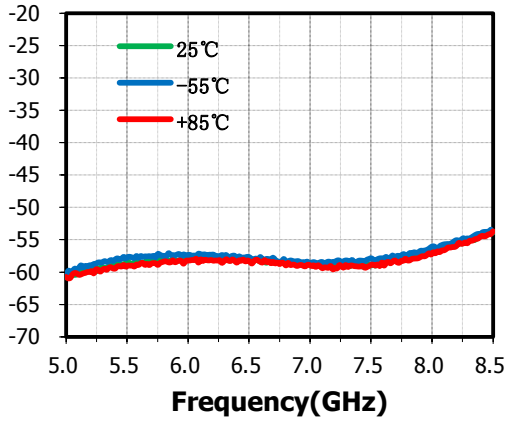
Typical Performance Curve

VD=+3V，IDQ=45mA

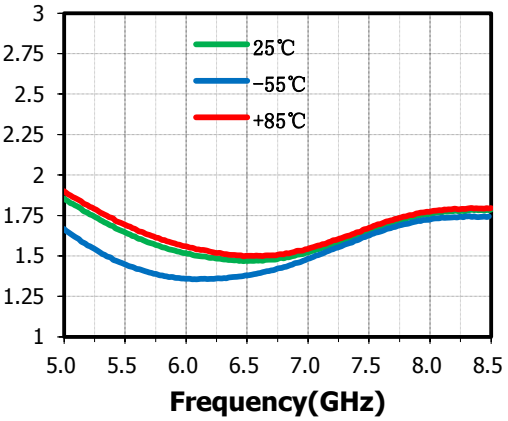
Small Signal Gain(dB) vs.Temperature



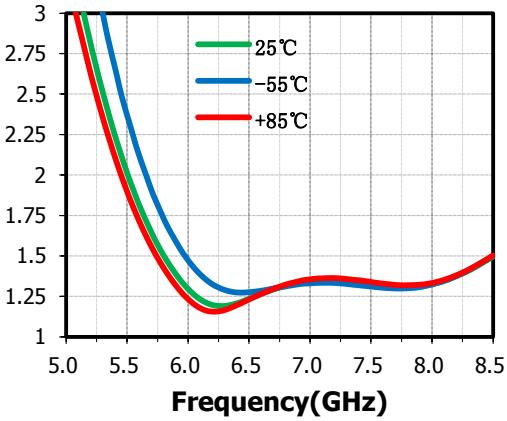
Reverse Isolation(dB) vs.Temperature



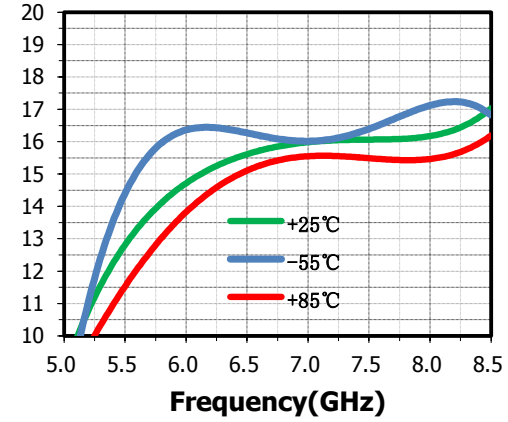
Input VSWR(:1) vs.Temperature



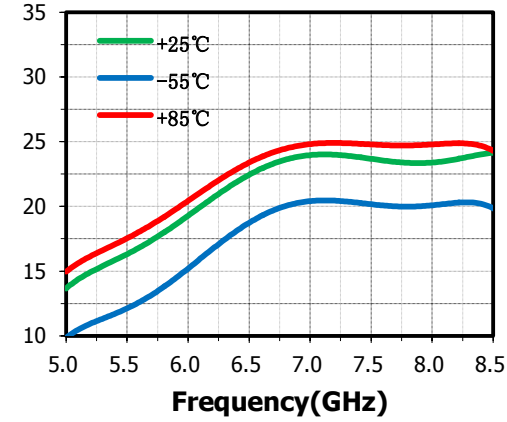
Output VSWR(:1) vs.Temperature



Output P-1dB(dBm) vs.Temperature



Output IP3(dBm) vs.Temperature



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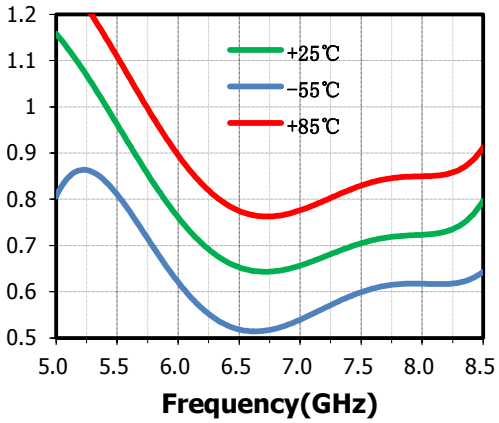
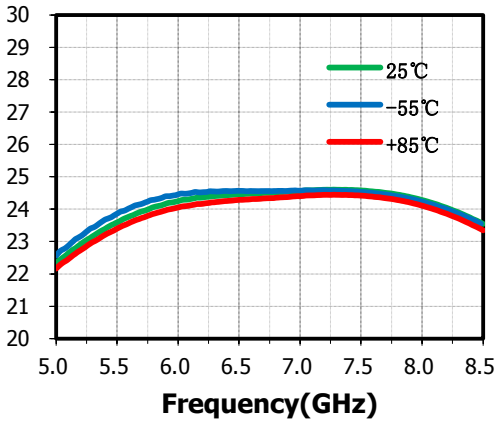
Noise figure(dB) vs.Temperature

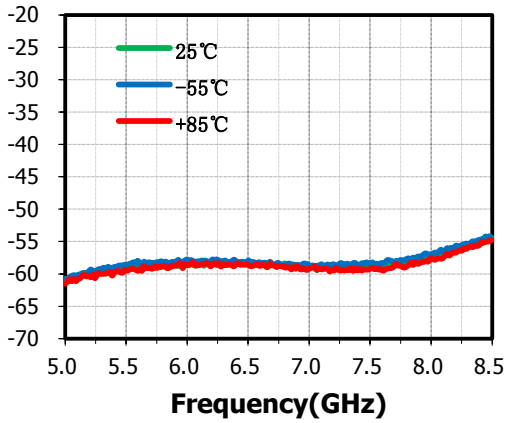


VD=+4V， IDQ=55mA

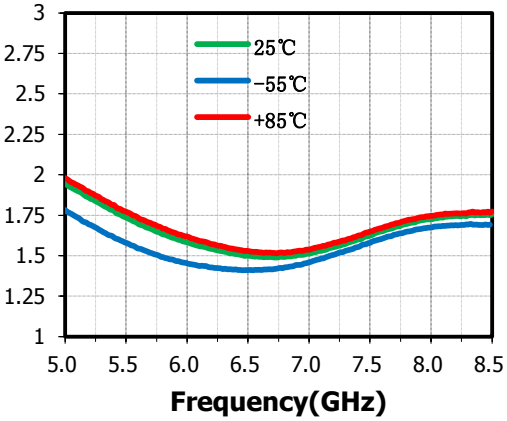
Small Signal Gain(dB) vs.Temperature



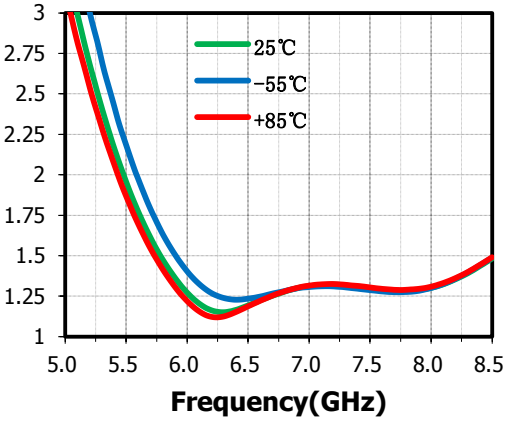
Reverse Isolation(dB) vs.Temperature



Input VSWR(:1) vs.Temperature



Output VSWR(:1) vs.Temperature



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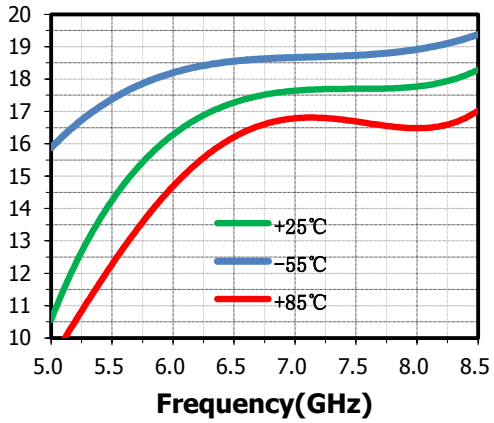
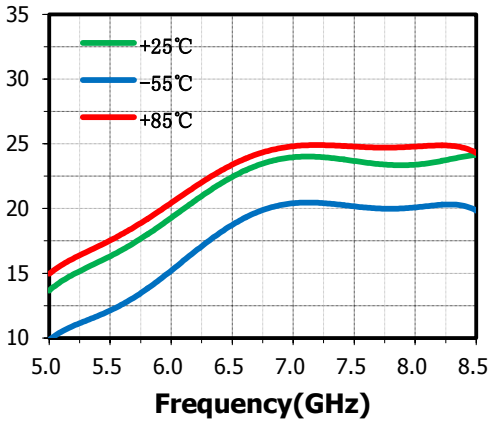
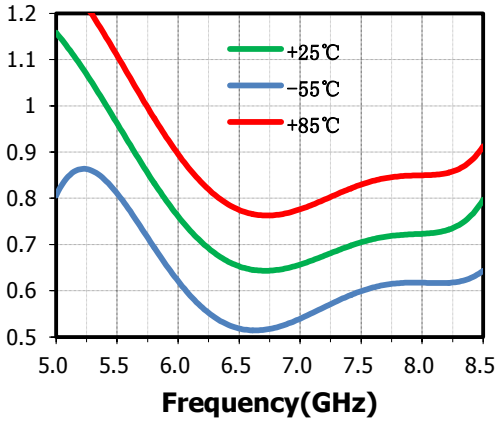
Output P-1dB(dBm) vs.Temperature



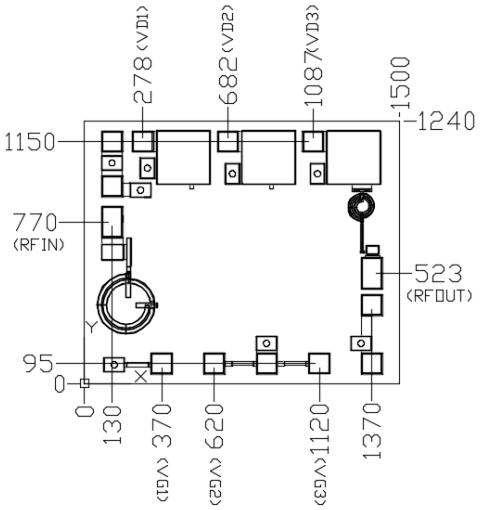
Output IP3(dBm) vs.Temperature



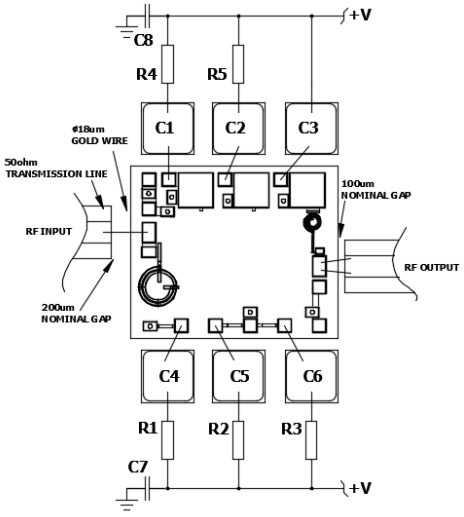
Noise figure(dB) vs.Temperature



Outline
(All dimensions in μm)



Assembly Diagram



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Pads Size: VD1~VD3, VG1~VG3 90*90μm
RFIN, RFOUT:90*130μm

Components List

Reference Des.	Value	Part Number	Manuf.	Size
R1~R3	1K	—	ANY	0603
C1~C6	100pF	SLC	ANY	—
C7~C8	2.2uF	—	ANY	0603
R4	22R	—	ANY	0603
R5	2.2R	—	ANY	0603

Attention:

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