SAC3079

GaAs MMIC Low Noise Amplifier
0.9～4GHz

Rev 1.2

Features

- Frequency：0.9～4GHz
- Gain：30dB
- Noise Figure：0.6dB typ.　1dB max.
- Single Power Supply: +4~5V/65~85mA
- Output P_{-1}dB：16dBm@1.5GHz
- Die Size：1.32mm×1.21mm×0.1mm

Typical Applications

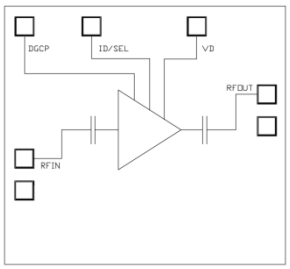
- Radar and ECM
- RF/ Microwave Radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3079 is a GaAs MMIC low noise amplifier die which operates between 0.9～4GHz. The amplifier can provide 30dB gain, 16dBm Output P_{-1}dB and 0.6dB noise figure from an 85mA 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℃, VD=+5V, ID=85mA*, Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		0.9～4		GHz
Gain	28	30	35	dB
Gain Flatness	—	±1.5	±2	dB
Reverse Isolation	—	-45	—	dB
Input VSWR/Output VSWR	—	1.5	2.0	:1
Noise Figure	—	0.6	1	dB
Output P_{-1}dB	13	14	—	dBm
Output IP_3	—	31**	—	dBm
Supply Current(ID)	—	85	100	mA
Supply Voltage(VD)	4	—	5	V

*ID/SEL= Floating

**Pout/Tone=4dBm Fc=1.5GHz,△f=1MHz

Absolute Maximum Ratings

Maximum Input Power	+14dBm，CW，1min	Operating Temperature	-55℃～+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃～+150℃
Supply Voltage	+6V		

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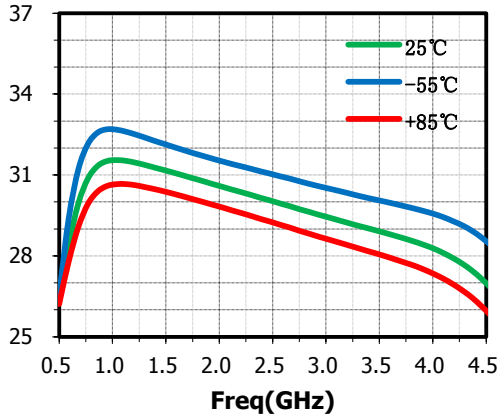
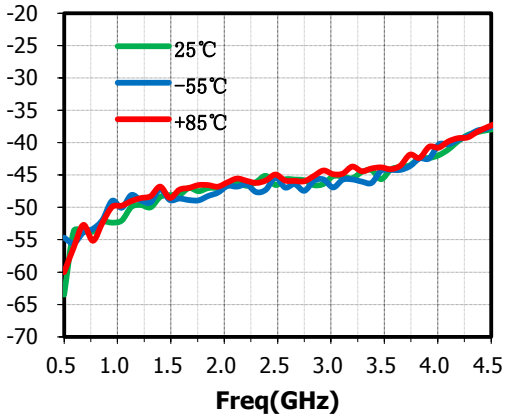
Typical Performance Curve

VD=+4V，IDQ=65mA，ID/SEL= Floating

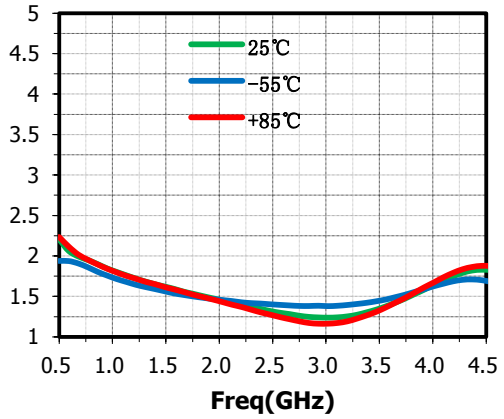
Small Signal Gain(dB) vs. Temperature



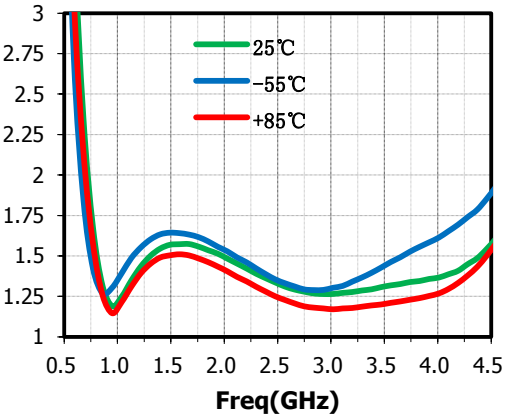
Reverse Isolation(dB) vs. Temperature



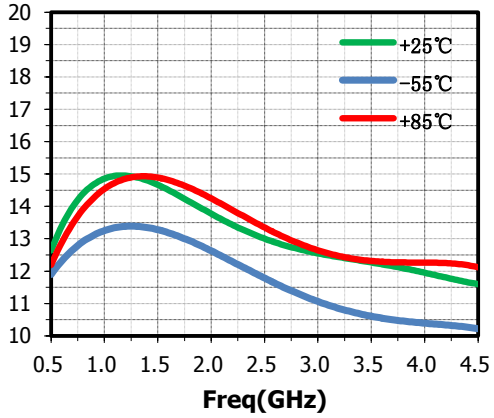
Input VSWR(:1) vs. Temperature



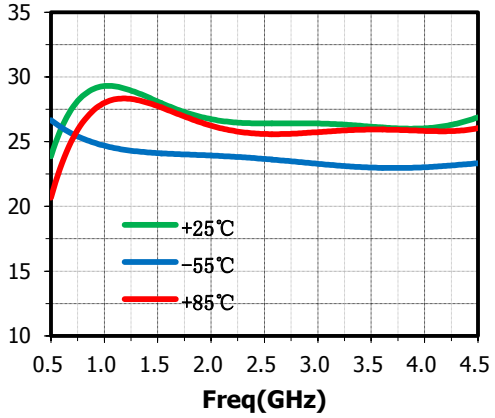
Output VSWR(:1) vs. Temperature



$OP_{-1}dB$(dBm) vs. Temperature



OIP_3(dBm) vs. Temperature



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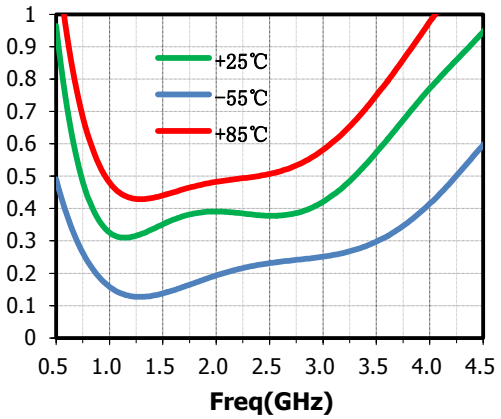
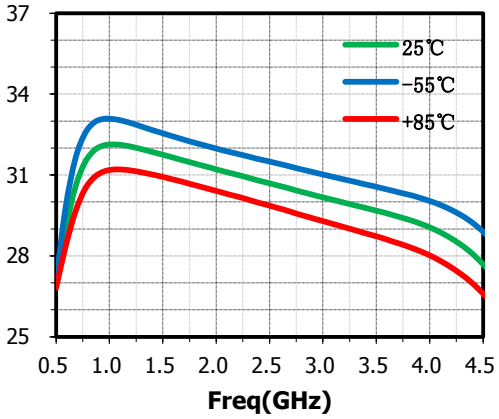
Noise Figure(dB)vs.Temperature

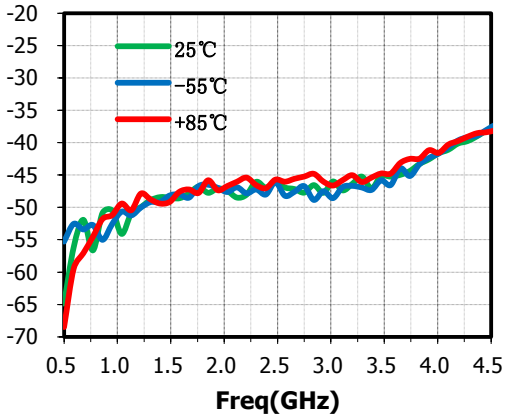


VD=+5V， IDQ=85mA， ID/SEL= Floating

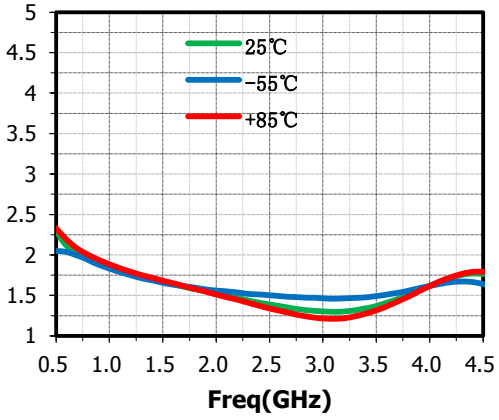
Small Signal Gain(dB) vs. Temperature



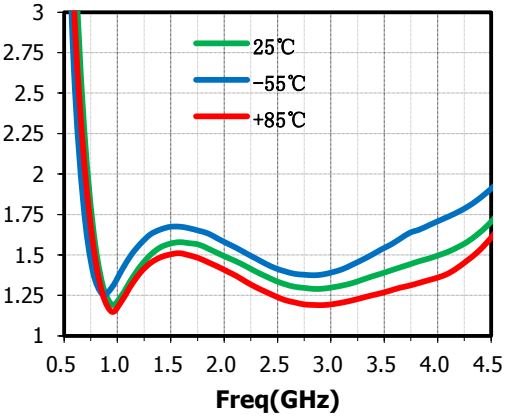
Reverse Isolation(dB) vs. Temperature



Input VSWR(:1) vs. Temperature



Output VSWR(:1) vs. Temperature



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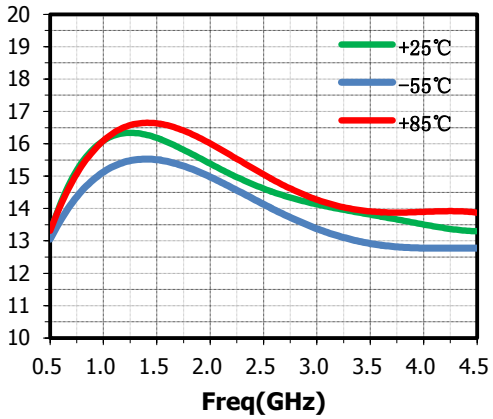
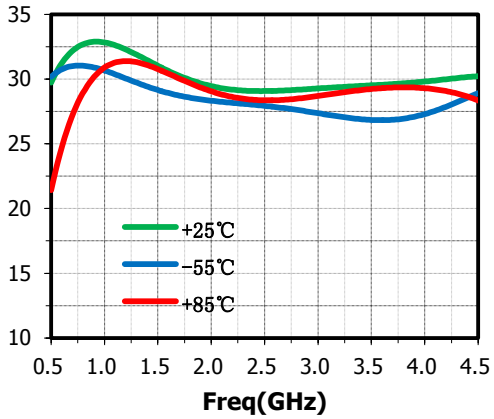
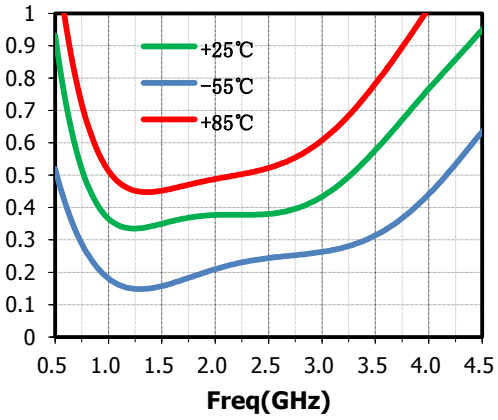
OP$_{-1}$dB(dBm) vs. Temperature



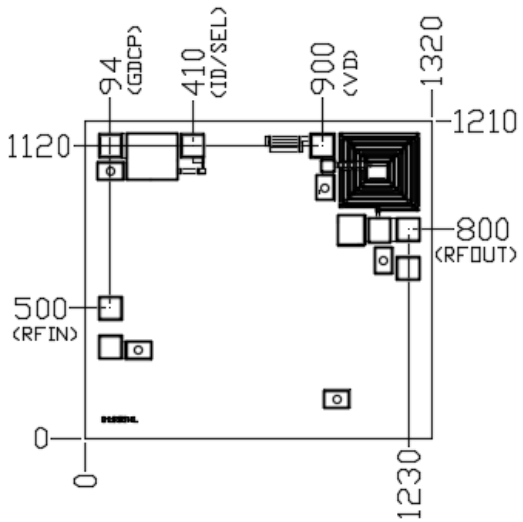
OIP$_3$(dBm) vs. Temperature



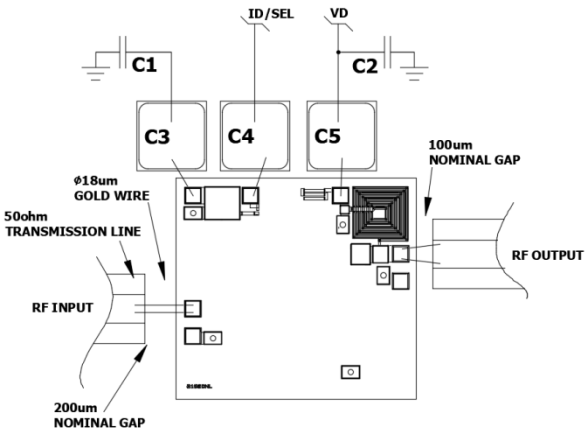
Noise Figure(dB) vs. Temperature



Outline
(All dimensions in μm)



Assembly Diagram



ID/SEL pin is used to regulate the static current. The static current fell about 10~25mA when grounding ID/SEL pin.

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1、C2	2.2μF	—	ANY	0402
C3、C4、C5	220pF	—	ANY	SLC

Attention:

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