SAC3074QP3

GaAs MMIC Low Noise Amplifier
20～1000MHz

Rev 1.0

Features

- Frequency：20~1000MHz
- Gain：29dB
- Noise Figure：0.4dB typ. 0.6dB max.
- Single Power Supply:
  +5V/65mA +4V/40mA
- Output IP_3：37dBm@700MHz
- Integrated Gain vs. Temperature Compensation Circuit
- Package Size：3mm×3mm×0.75mm

Typical Applications

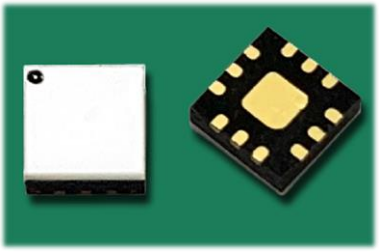
- Radar and ECM
- IF Low Noise Amplifier

General Description

SAC3074QP3 is a GaAs MMIC Low Noise Amplifier chip, which operates between in 20~1000MHz.The amplifier can provide 29dB of gain, 20dBm of output P_{-1}dB and 0.4dB noise figure and from a +5V/65mA supply current.

SAC3074QP3 is assembled in a RoHS-compliant low stress injection molded plastic QFN package.

Picture



Electrical Performance (T_A=25℃, V_D=+5V, I_D=65mA, Z_0=50Ω)

Parameter	Min	Typ.	Max	Units
Frequency Range		20~1000		MHz
Gain	27	29	32	dB
Gain Flatness	—	±0.75	—	dB
Reverse Isolation	—	-30	—	dB
Input/Output VSWR	—	1.5	2.3	: 1
Noise Figure	—	0.4	0.6	dB
Output Power for 1 dB Compression (OP_{-1}dB)	19	20	—	dBm
Output Third Order Intercept (OIP_3)	—	37*	—	dBm
OIP_2	—	42	—	dBm
Supply Current (ID)	—	65	90	mA
Supply Voltage (VD)	4	—	5	V

*Pout/Tone=9dBm Fc=700MHz, △f=1MHz

SuperApex, LLC
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

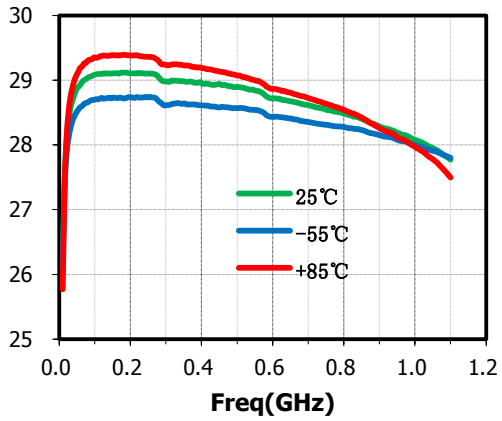
Absolute Maximum Ratings

Maximum Input Power	+20dBm,CW 1min, No damage	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Maximum V_D	7V		

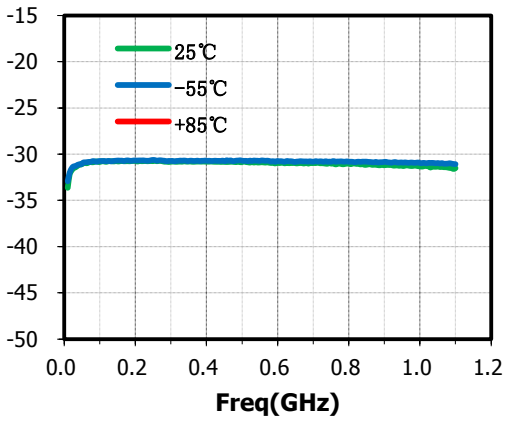
Typical Performance Curve

VD=+5V， IDQ=100mA， Bias Choke: MMZ1608S202ATD25
IDQ/SEL=Floating

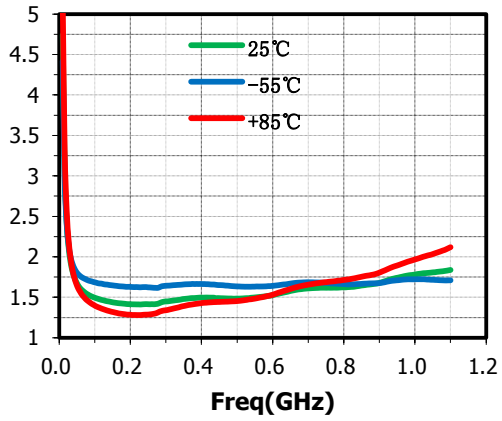
Small Signal Gain(dB) vs. Temperature



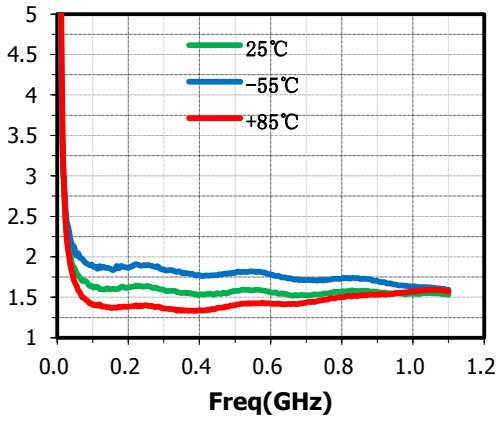
Reverse Isolation(dB) vs. Temperature



Input VSWR(:1) vs. Temperature

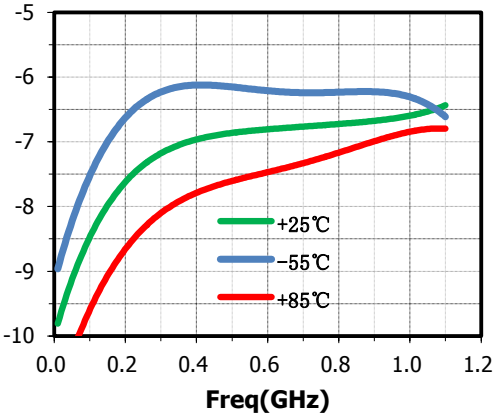


Output VSWR(:1) vs. Temperature

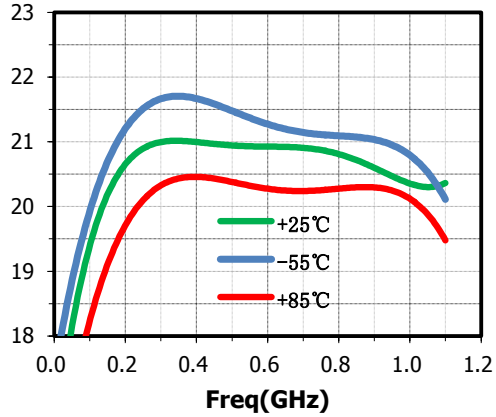


SuperApex, LLC
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

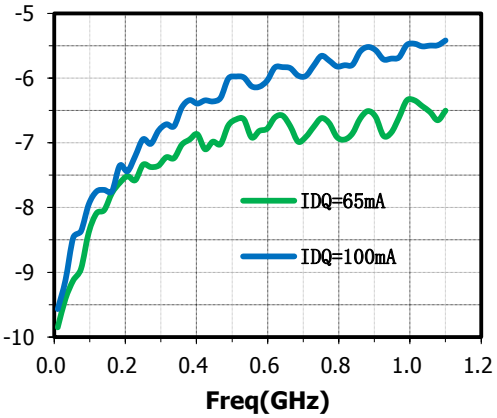
Input P_{-1}dB(dBm)vs. Temperature



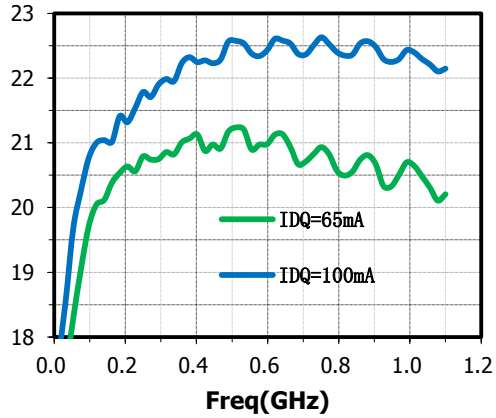
Output P_{-1}dB(dBm)vs. Temperature



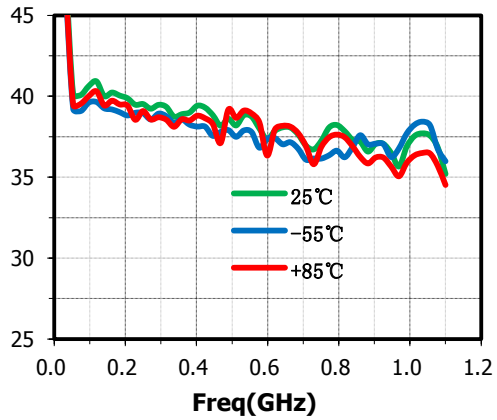
Input P_{-1}dB(dBm) vs.IDQ(mA)



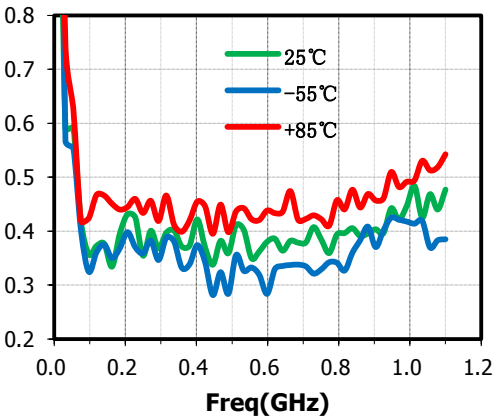
Output P_{-1}dB(dBm) vs.IDQ(mA)



OIP_3(dBm) vs. Temperature



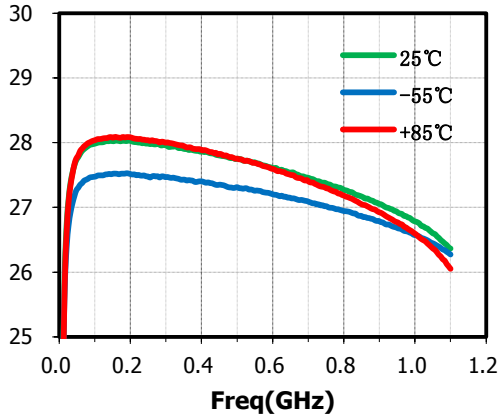
Noise Figure(dB) vs. Temperature



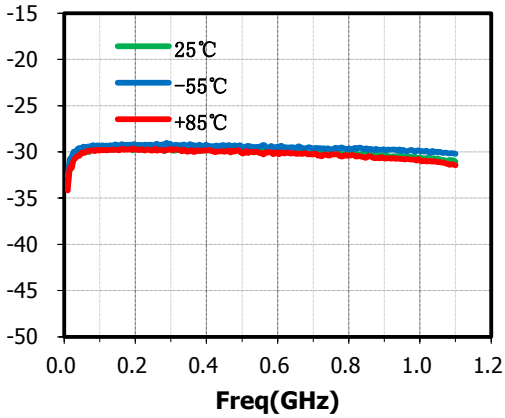
SuperApex, LLC
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

VD=+4V，IDQ=40mA， Bias Choke: MMZ1608S202ATD25，IDQ/SEL=Connect to ground

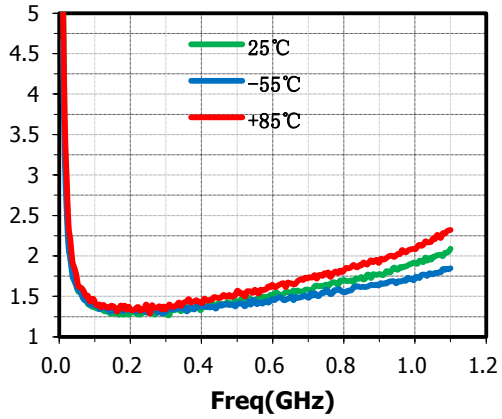
Small Signal Gain(dB) vs. Temperature



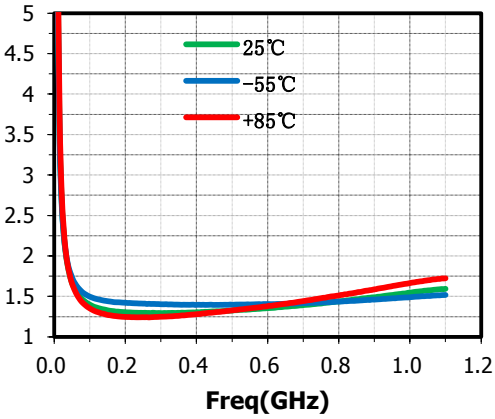
Reverse Isolation(dB) vs. Temperature



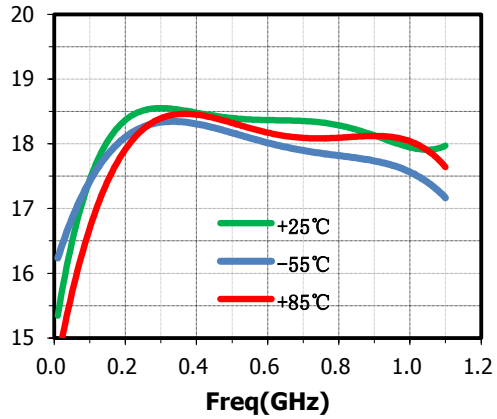
Input VSWR(:1) vs. Temperature



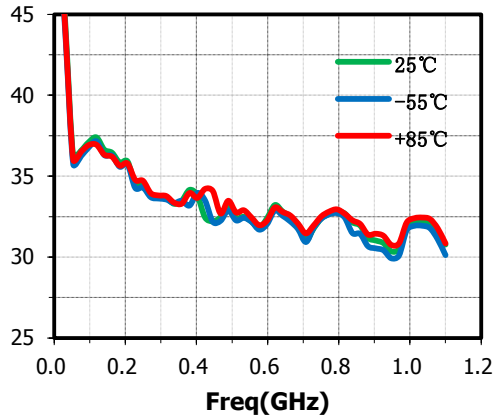
Output VSWR(:1) vs. Temperature



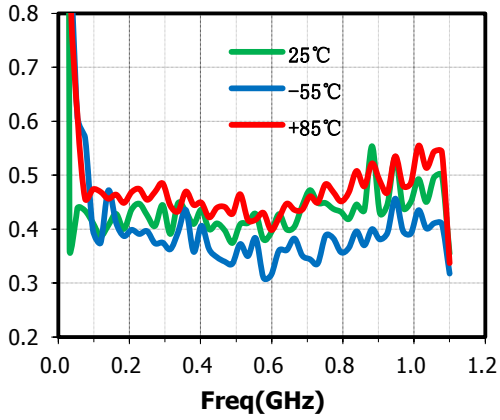
OP$_{-1}$dB(dBm) vs. Temperature



OIP$_3$(dBm) vs. Temperature

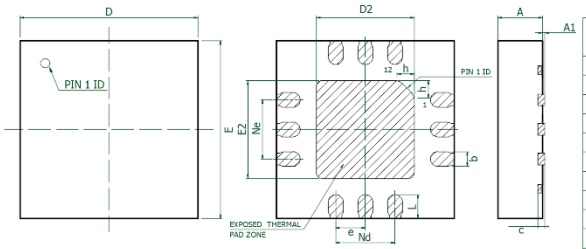


Noise Figure(dB) vs. Temperature



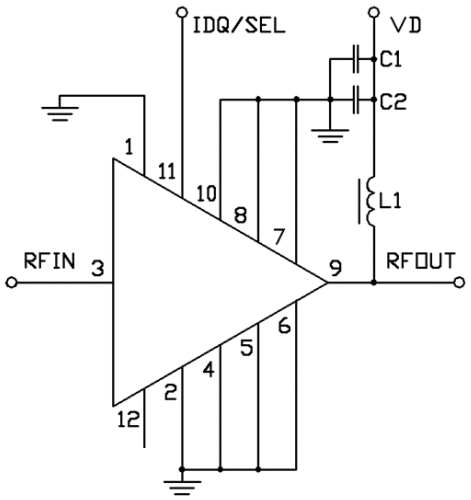
Outline Drawing

(All dimensions in mm)



DIM	MILLIMETER		
	MIN	NOM	MAX
A	0.65	0.75	0.85
A1	—	0.02	0.05
b	0.20	0.25	0.30
c	0.18	0.20	0.25
D	2.90	3.00	3.10
D2	1.55	1.65	1.75
e	0.50BSC		
Ne	1.00BSC		
Nd	1.00BSC		
E	2.90	3.00	3.10
E2	1.55	1.65	1.75
L	0.35	0.40	0.45
h	0.25	0.30	0.35

Assembly Diagram



IDQ/SEL:

** Connected to ground:I_{DQ}=65mA，Floating I_{DQ}=100mA@VD=5V

Connected to ground:I_{DQ}=40mA@VD=4V

SuperApex, LLC
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

Component list

Reference Des.	Value	Part Number	Manuf.	Size
C1	2.2μF	0603YD225KAT2A	Murata	0603
C2	1000pF	ANY	ANY	0603
L1	—	MMZ1608S202ATD25	TDK	0603

Attention:

1. The moisture resistant grade of products is 2a, the storage environment ≤30° C/60% RH，the surrounding workshop life is 4 weeks;
2. After un-packing, it is necessary to bake the parts for 6 hours in 125+/-5 degree environment before soldering;
3. If a device is suspected of being inoperative due to a bad solder joint, it is first suggested that the circuit board and device be reflowed without removing the device. If a solder reflow does not fix the problem, then we recommend replacing the device, this can be done manually on a hot plate.