SAC3128Q6

GaAs Power Amplifier
26GHz~32GHz 32dBm

Rev 1.3

Features

- Frequency: 26GHz~32GHz
- Gain:17dB
- Output P_{-1}dB: 32dBm
- Output IP_3 : 36dBm
- Supply Voltage: +6V
- Power-Added Efficiency: 23%
- Package Size: 6mm×6mm×1.1mm

Typical Applications

- Point-to-Point Radio
- Satellite Communication

General Description

SAC3128Q6 is a GaAs power amplifier in QFN surface mount package. SAC3128Q6 provides 17 dB of gain, and 32dBm of output power for 1 dB compression and 23% PAE from a +6V supply voltage.

SAC3128Q6 is assembled in a lead-free 6mm x 6mm 28-lead AQFN plastic package.

Picture

Electrical Performance

T_A=25℃, V_D=+6V, I_D=1000mA, Z_0=50Ω

Parameter	Min.	Typ.	Max.	Units
Frequency Range		26~32		GHz
Small Signal Gain	15	17	—	dB
Small Signal Gain Flatness	—	±2.5	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-7	—	dB
Output Return Loss	—	-7	—	dB
Power-Added Efficiency	—	23	—	%
Output Power for 1 dB Compression (OP_{-1}dB)	31.5	32	—	dBm
OIP_3**	—	36	—	dBm
Supply Voltage (V_D)	5	—	6	V
Supply Current (I_D)	—	1000	1600	mA
Thermal Resistance*	—	7	—	℃/W

* The device is soldered on RO4350b t=0.254mm, with 81 filled metal vias for grounding.

** Pout / Tone = 28dBm, fc= 30GHz, Δf=1MHz

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Absolute Maximum Ratings

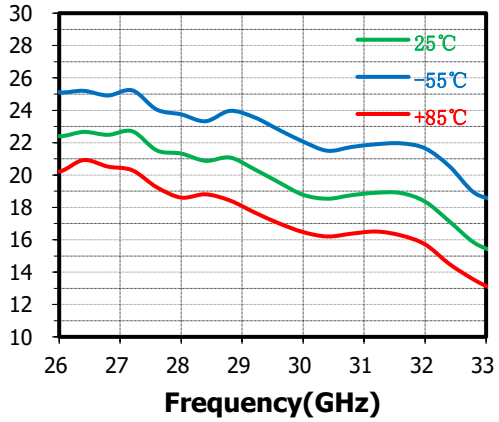
Maximum Input Power	+20dBm	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Maximum V_D	+6.5V	Maximum V_G	-1.2V

Typical Small Signal Performance Curve

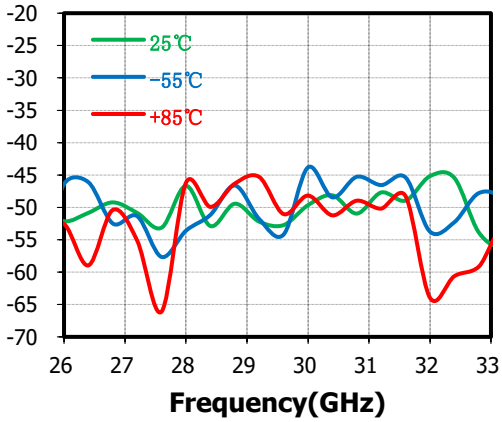
All data is taken with the device in a 50ohm test fixture

V_D=+6V I_D=1000mA

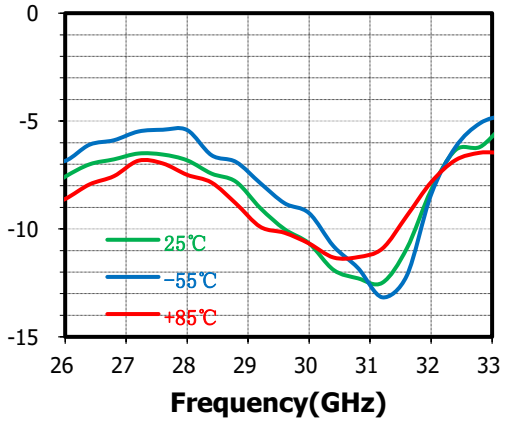
Small Signal Gain(dB) vs.Temperature



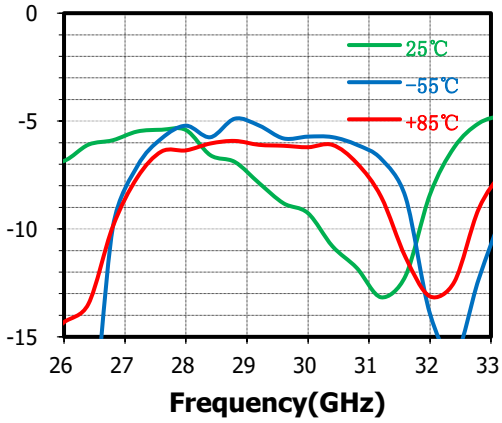
Reverse Isolation(dB) vs.Temperature



Input Return Loss(dB) vs.Temperature



Output Return Loss(dB) vs.Temperature



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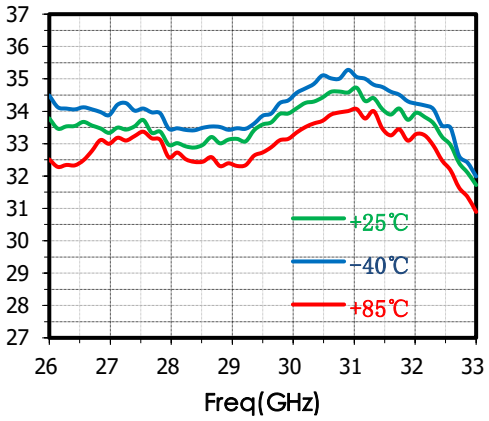
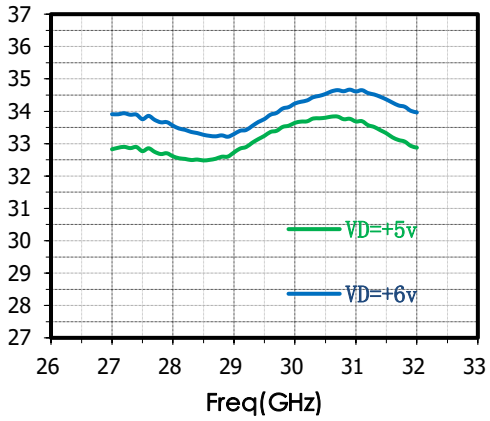
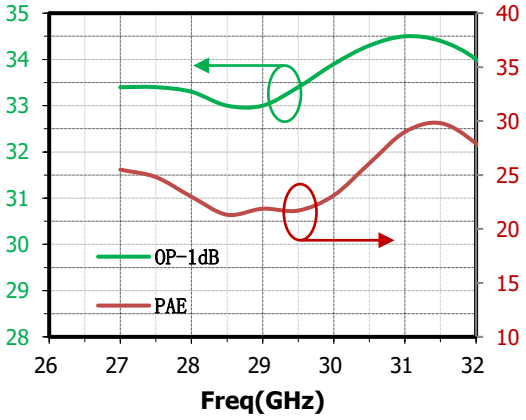
OP$_{-1}$dB(dBm) vs. Temperature



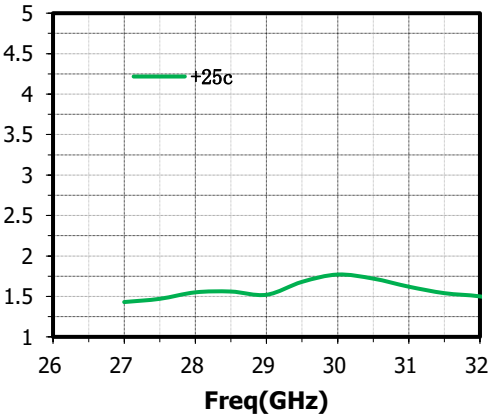
OP$_{-1}$dB(dBm) vs.V$_D$



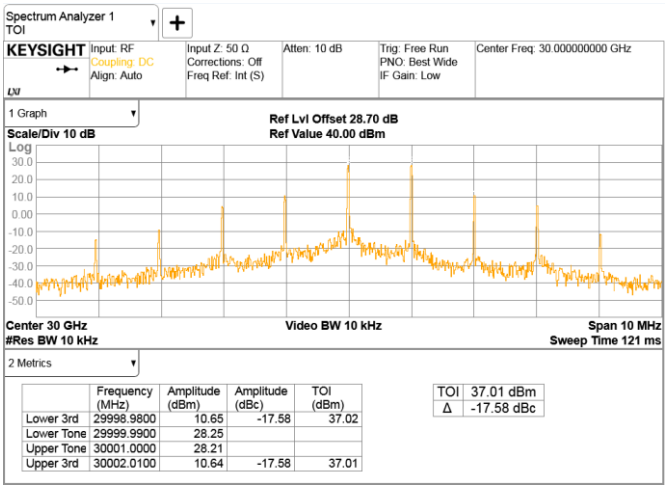
OP$_{-1}$dB(dBm)、PAE（%）@T$_A$=25°C



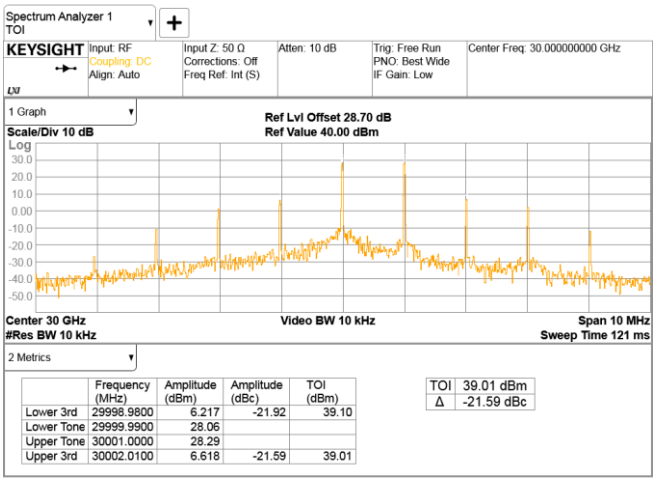
I$_D$(Amps) @ OP$_{-1}$dB@T$_A$=25°C



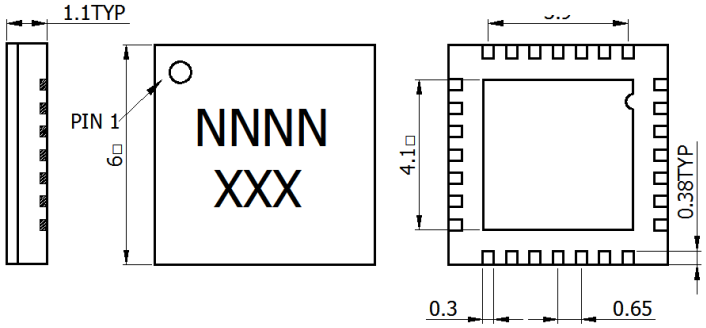
IM$_3$@fc=30GHz Pout=28dBm/Tone I$_{DQ}$=1A



IM3@fc=30GHz Pout=28dBm/Tone I_{DQ}=1.4A



Outline Drawing
(all dimensions in mm)



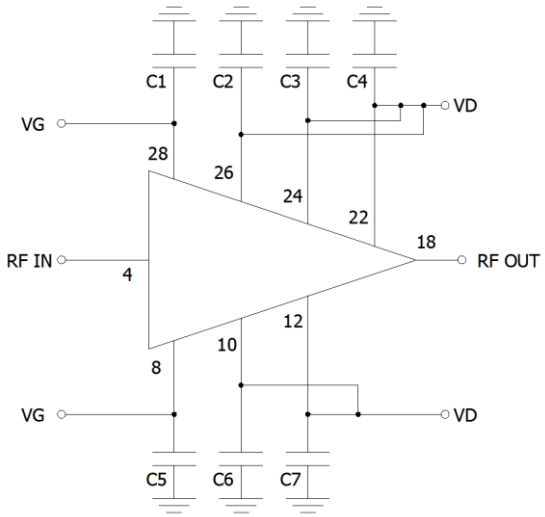
Pin Descriptions

Pin No.	Function	Pin No.	Function
1	GND	16	GND
2	GND	17	GND
3	GND	18	RF Output, DC blocked
4	RF Input, Internal grounding	19	GND
5	GND	20	GND
6	GND	21	GND
7	GND	22	Drain 3
8	Gate 1A	23	GND
9	GND	24	Drain 2B
10	Drain 1A	25	GND
11	GND	26	Drain 1B
12	Drain 2A	27	GND
13	GND	28	Gate 1B
14	GND		
15	GND		

BOM

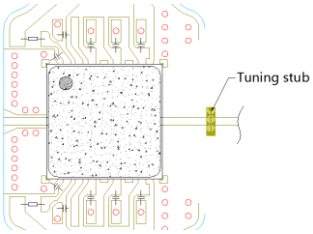
Reference Des.	Value	Part Number	Manuf.	Size
C1，C5	4.7μF	GRM155R61A475KE15D	Murata	0402
C2~C4，C6~C7	0.01μF	GRM155R61A103KE15D	ANY	0402

Application Circuit

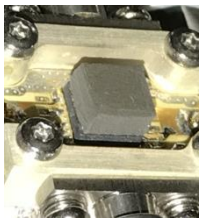


Recommended use of this chip with special attention

1. It is highly recommended to reserve a micro-strip line at the output of device and it will be used for fine tune of output power, etc.

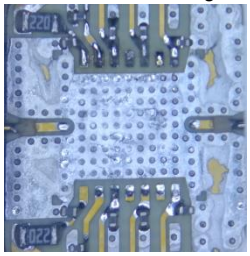


2.If there is resonance, try to put some absorbing material at the top of the device.



3.Put all de-coupling capacitors as closer as possible to the device.

4.In order to prevent the device to be destroyed by bad heat dissipation, make sure most of the grounding vias be filled with solder paste once device soldering work has been done.



5.Use thin PCB board to shorten the thermal dissipation path.

Attention:

1. The moisture resistant grade of products is 2A with the storage environment ⩽30° C/60% RH and the surrounding workshop lifetime is 4 weeks.

2. After being unpacked, it is necessary to bake the parts for 6 hours in 125+/-5-degree environment before soldering.

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