

SAC3160Q6



GaAs MMIC Power Amplifier
5GHz~8GHz 33dBm

Rev 1.1

Features

- Frequency: 5GHz~8GHz
- Small Signal Gain: 23dB
- Output P-1dB: 33dBm CW
- Supply Voltage: +8V/-Vg
- Packaged: QFN6x6

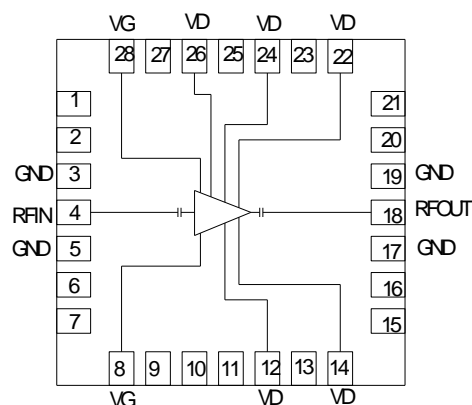
General Description

SAC3160Q6 is a C-band GaAs power amplifier. SAC3160Q6 provides 23 dB of gain, and 33dBm of output power for 1 dB compression (Typ.) from a +8 supply.

Typical Applications

- C-band multifunction radar
- Point-to-Point Radios

Functional Diagram



Electrical Performance

$T_A=25^{\circ}\text{C}$, $V_D=+8\text{V}$, $I_{DQ}=1.1\text{A}$, $Z_0=50\Omega$, CW

Parameter	Min.	Typ.	Max.	Units
Frequency	5	—	8	GHz
Small Signal Gain	15	23	—	dB
Small Signal Gain Flatness	—	± 3	—	dB
Reverse Isolation	—	-70	—	dB
RF input port VSWR	—	1.9	2.5	:1
RF output port VSWR	—	2.0	3.0	:1
Power-Added Efficiency	—	20	—	%
Output P-1dB	31	33	—	dBm
Drain Voltage (V_D)	—	8	—	V
Gate Current	—	10	—	mA
Supply Current (I_D)**	—	1.1	0.65	A
Thermal Resistance	—	3.0	—	$^{\circ}\text{C}/\text{W}$

*Adjust the Vg voltage (-1 ~ -0.65V) so that the I_{DQ} is about 1.1A, and the typical Vg voltage is -0.6V

Absolute Maximum Ratings

Maximum Input Power	+25dBm	Operating Temperature (Backside)	-55 $^{\circ}\text{C}$ ~+85 $^{\circ}\text{C}$
Channel Temperature	165 $^{\circ}\text{C}$	Storage Temperature	-55 $^{\circ}\text{C}$ ~+150 $^{\circ}\text{C}$
Maximum V_D Supply	+9V	V_G Range	-1.4V (Pinch Off) ~-0.5V

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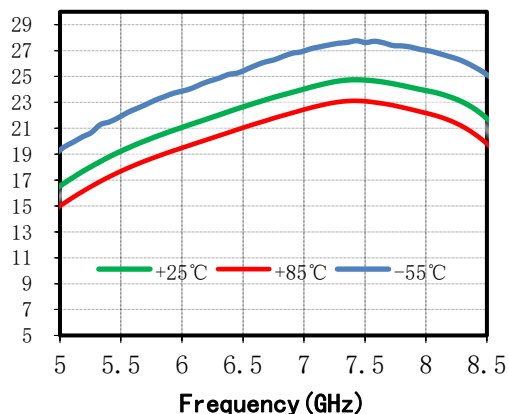
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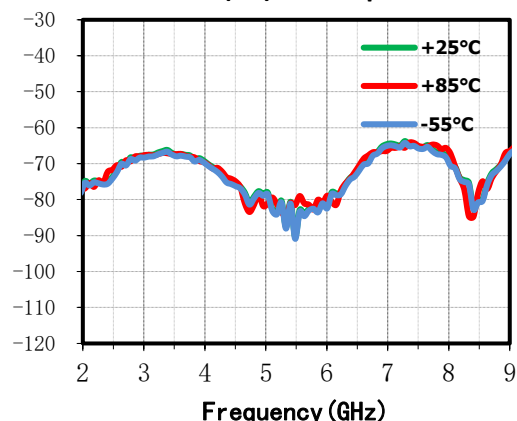
Typical Performance Curve

The following data are obtained by SAC3160Q6 evaluation board test, $V_D = +8V$, $I_{DQ} = 1.1A$, working mode CW, $T_A = +25^\circ C$

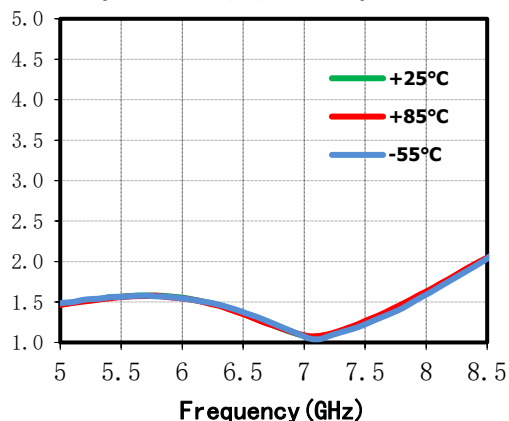
Small Signal Gain(dB) vs. Temperature



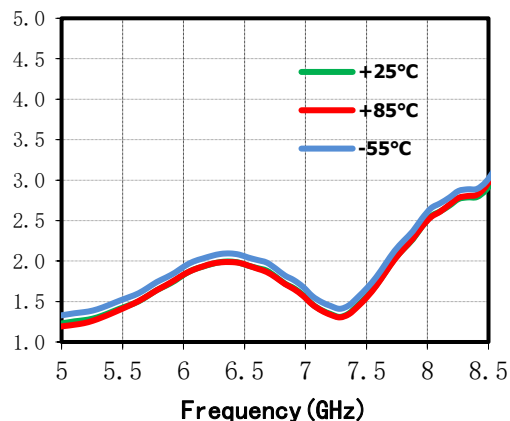
Isolation(dB) vs. Temperature



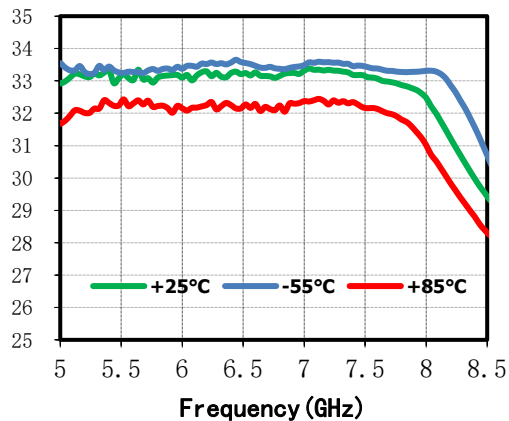
Input VSWR(:1) vs. Temperature



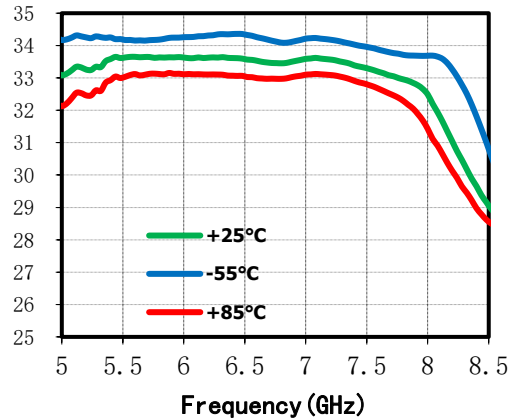
Output VSWR(:1) vs. Temperature



OP-1dB (dBm) vs. Temperature



OP-3dB (dBm) vs. Temperature

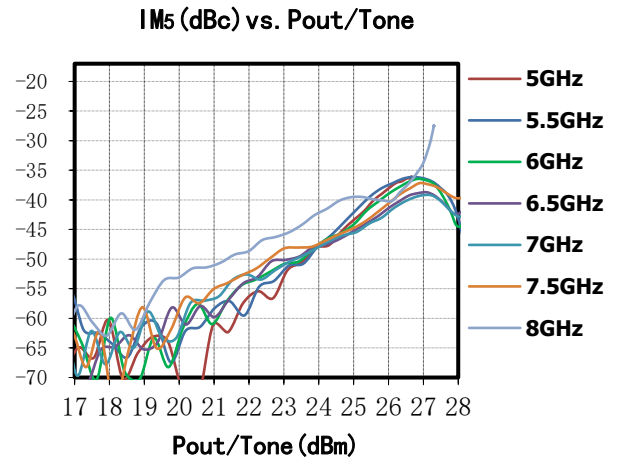
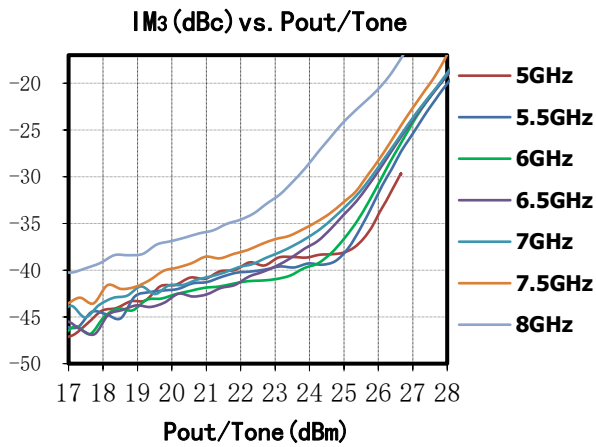


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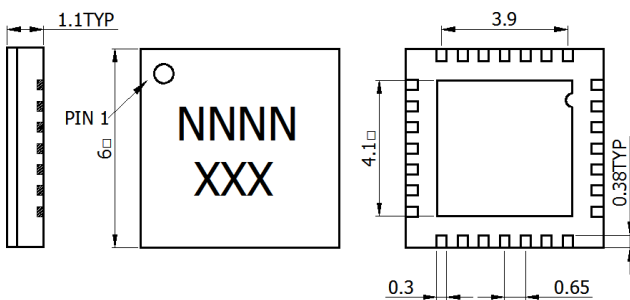
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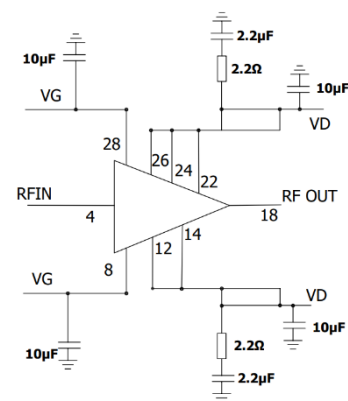


Outline Drawing

(All dimensions in mm)



Assembly Diagram



SAC3160Q6 requires drain positive voltage (VD_x) and grid negative voltage (VG_x) bias. Before applying drain positive voltage, ensure that grid negative voltage has been applied. When closing, ensure that drain positive voltage is turned off before grid negative pressure.

Revision History

Revision	Date	Comment
1.0	APR 03, 2024	First Release
1.1	APR 09, 2024	Example Add IM3 /IM5 data