SAC3916Q5

GaAs MMIC Driver Amplifier
12GHz~18GHz

Rev 2.4

Features

- Frequency：12GHz~18GHz
- Gain：22dB
- Output P_{-1}dB: 30dBm
- Supply Voltage: +5~+6V
- Output IP3：40dBm
- Package Size：5mm×5mm×1.2mm

Typical Applications

- Microwave radio including point to point communication
- Telecommunication
- SatCom
- Military and Aerospace

General Description

SAC3916Q5 is a GaAs MMIC driver amplifier which operates between 12GHz~18GHz. The amplifier provides 22dB of gain ,30dBm OutputP_{-1}dB while +5V~+6V supply voltage.

SAC3916Q5 QFN 5x5mm surface mount package.

Electrical Performance (T_A=25℃, $V_{D=}$+6V, I_D=1000mA, Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		12~18		GHz
Small Signal Gain	18	22	—	dB
Gain Flatness	—	±2.5	—	dB
Reverse Isolation	—	-65	—	dB
Input Return Loss	—	-14	—	dB
Output IP3	—	40	—	%
Output P_{-1}dB	—	30	—	dBm
Supply Voltage (V_D)	5	—	6	V
Supply Current (I_D)	—	1000	1700	mA

Test condition: Pout/Tone=+22 dBm, fc=16GHz, Δf=5MHz

Absolute Maximum Ratings

Maximum Input Power	+13dBm	Operating Temperature	-55℃~+70℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Maximum V_D	+6.5V	Maximum V_G	-1.2V

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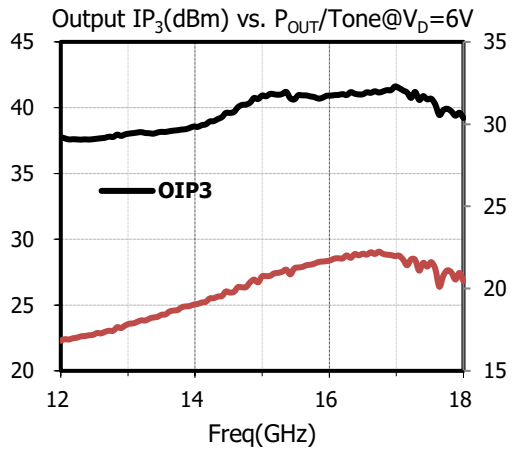
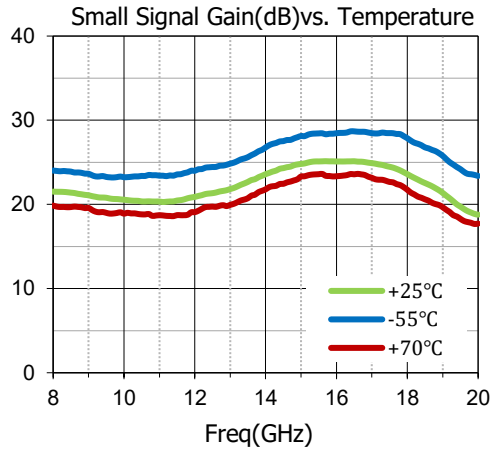
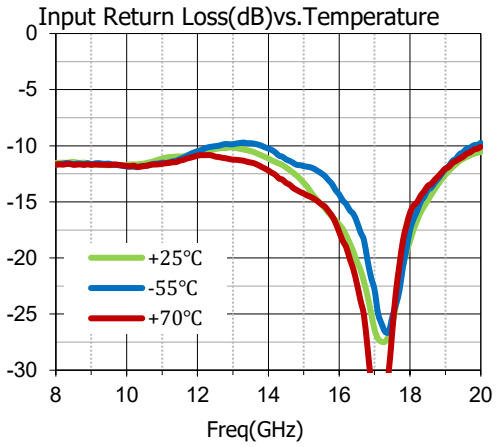
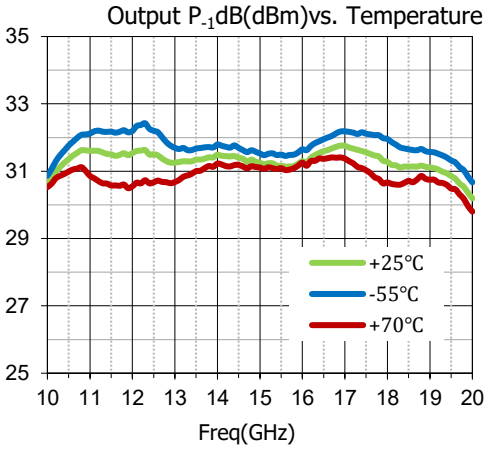
Typical Performance Curve

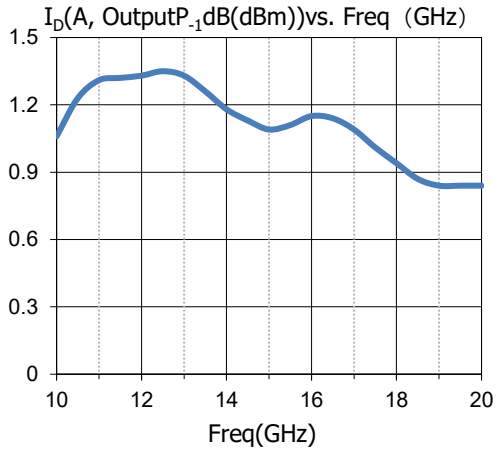
Bias condition: V_D=6V, I_D=1000mA

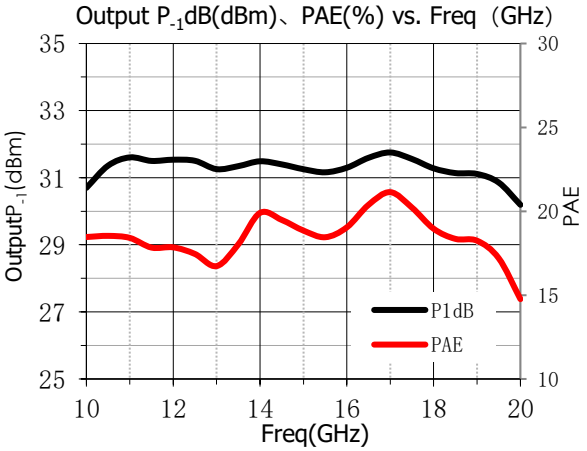




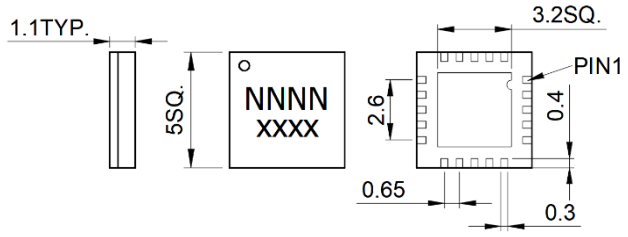




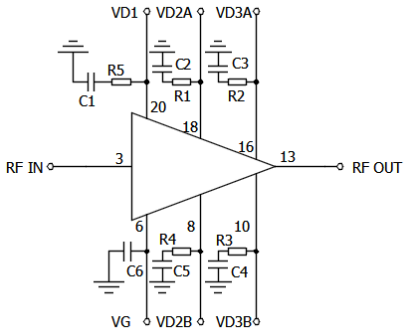




Outline Drawing
(All dimensions in mm)



Application Circuit



Pin Definitions

No.	Function	No.	Function
1	Connect to Ground	11	Connect to Ground
2	Connect to Ground	12	Connect to Ground
3	RF IN	13	RF OUT
4	Connect to Ground	14	Connect to Ground
5	Connect to Ground	15	Connect to Ground
6	VG	16	VD3A
7	Connect to Ground	17	Connect to Ground
8	VD2B	18	VD2A
9	Connect to Ground	19	Connect to Ground
10	VD3B	20	VD1A

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C6	1uF	GRM155R61A105KE15D	Murata	0402
C1~C5	0.47uF	GRM155R61A474KE15D	Murata	0402
R1~R5	2R	-	-	0402

Attention:

1. SAC3916Q5 requires two sets of power supply voltages, the gate is negative and the drain is positive. When the drain voltage is set to 6V, the recommended gate voltage is set to -0.5~-0.75V;
2. The back side of the device is RF grounding and heat dissipation, and the number of grounds vias should be increased as much as possible if the process conditions allow.

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