SAC3913Q5

GaAs MMIC Driver Amplifier
8GHz~13GHz

Rev 2.4

Features

- Frequency：8GHz~13GHz
- Gain：19dB
- Output P_{-1}dB: 32dBm
- Supply Voltage: +5~+6V
- PAE: 32%
- Package Size：5mm×5mm×1.2mm

Typical Applications

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

General Description

SAC3913Q5 is a GaAs MMIC driver amplifier which operates between 8GHz ~ 13GHz. The amplifier provides 19dB of gain, 32dBm OutputP_{-1}dB while requiring 650mA from a +5V ~ +6V supply voltage.

Electrical Performance (T_A=25℃, V_D=+6V, I_D=650mA, Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		8~13		GHz
Small Signal Gain	—	19	—	dB
Gain Flatness	—	±2	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-10	—	dB
Output Return Loss	—	-12	—	dB
PAE	—	30	—	%
Output P_{-1}dB	—	32	—	dBm
Supply Voltage (V_D)	5	—	6	V
Supply Current (I_D)	—	650	730	mA

Absolute Maximum Ratings

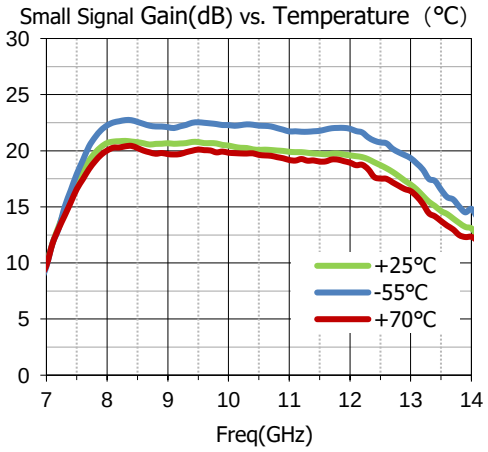
Maximum Input Power	+17dBm	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Maximum V_D	+6.3V	Maximum V_G	-1.2V(Pinch-off)

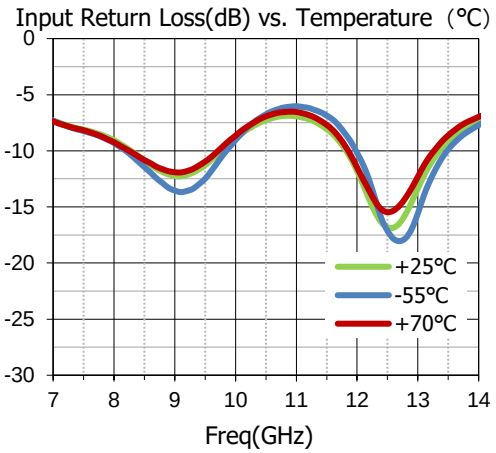
SuperApex, LLC
1580 S. Milwaukee Ave., Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

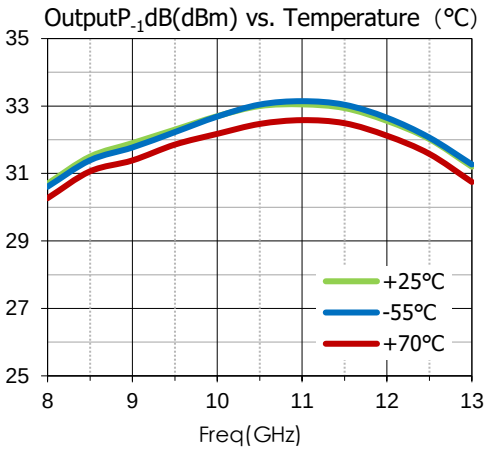
Typical Performance Curve

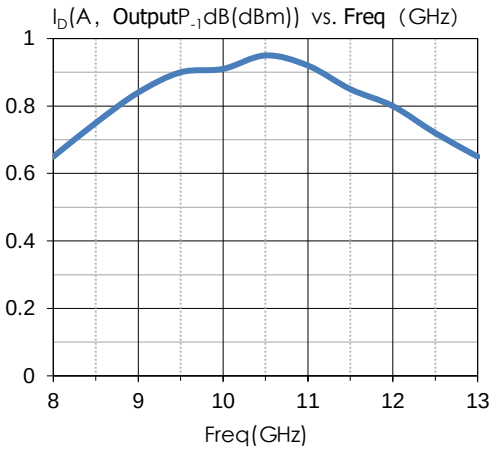
All data are measured from fixture, including connector and PCB loss

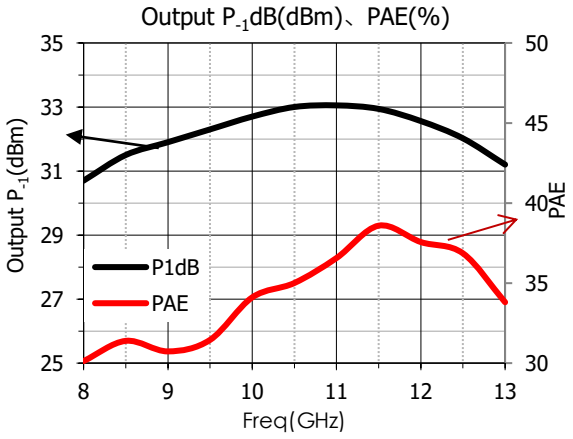
Bias condition: V_D=6V, I_D=650mA



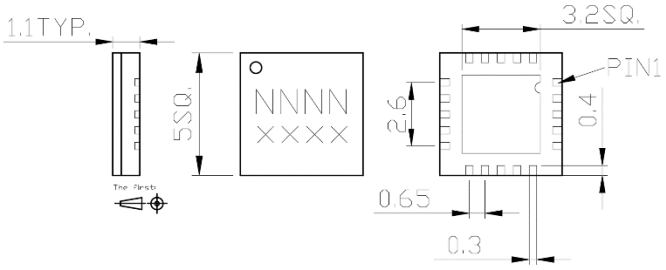




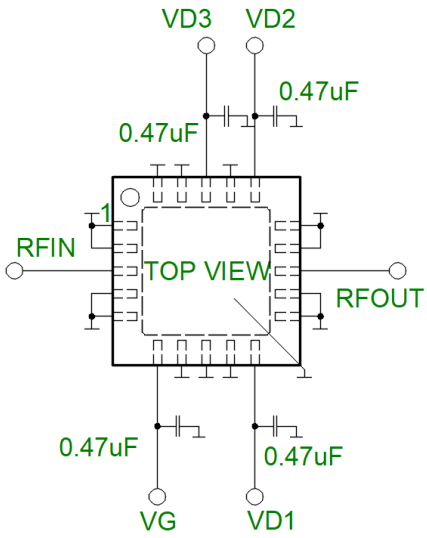




Outline Drawing
(All dimensions in mm)



Assembly Diagram



Pin Descriptions

Pin No.	function	Pin No.	function
1	Connect to GND	12	Connect to GND
2	Connect to GND	13	RFOUT，AC coupled
3	RFIN，AC coupled	14	Connect to GND
4	Connect to GND	15	Connect to GND
5	Connect to GND	16	VD2 Bias
6	VG Bias	17	Connect to GND
7	Connect to GND	18	VD3 Bias
8	Connect to GND	19	Connect to GND
9	Connect to GND	20	Connect to GND
10	VD1 Bias		
11	Connect to GND		

Notes:

1. SAC3913Q5 requires Gate bias and Drain bias，
Turn-on: Apply Gate bias, Apply Drain bias,
Turn-off: Decrease Gate bias to -1.5 V(pinch-off), Decrease Drain bias to 0 V;
2. The moisture resistant grade of products is 2a, the storage environment ≤30° C/60% RH，the surrounding workshop life is 4 weeks;
3. After un-packing, it is necessary to bake the parts for 6 hours in 125+/-5° environment before Soldering;
4. GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly, and test;
5. The bottom center pad of SAC3913Q5 is used for RF grounding and heat dissipation. For best heat dissipation, copper-filled vias are highly recommended;
6. Ultrasonic cleaning is prohibited.

Revision History

Revision	Date	Comment
1.0	Jun 08, 2017	First Release
2.4	Nov 07,2023	Change Package from Lamated to QFN

SuperApex, LLC
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