

SAC3915Q3



GaAs pHEMT MMIC Driver Amplifier
6GHz~18GHz

Rev 1.3

Features

- Frequency: 6GHz~18GHz
- Gain: 18dB
- Output P_{-1dB}: 18dBm
- Supply Voltage: +4~+6V
- Package Size: 3mm×3mm×1.2mm

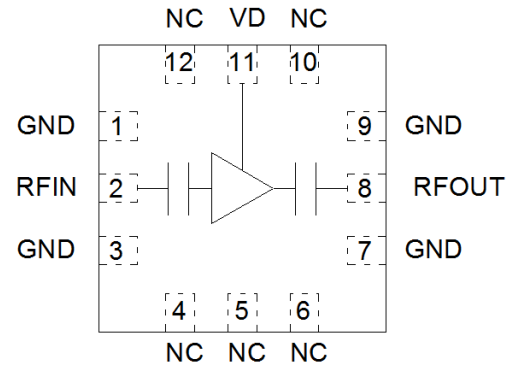
General Description

SAC3915Q3 is a wideband GaAs MMIC driver amplifier which operates between 6GHz~18GHz. The amplifier provides 18dB of gain, 18dBm OP_{-1dB} power from a +4~+6V supply voltage which make it an ideal driver amplifier for high efficiency applications.

Typical Applications

- Point-to-Point Radios
- SATCOM
- Test and Measurement
- Radar

Functional Diagram



Electrical Performance

T_A=25°C, V_D=+5V, Z₀=50Ω

Parameter	Min.	Typ.	Max.	Units
Frequency Range	6~18			GHz
Small Signal Gain	—	18	—	dB
Small Signal Gain Flatness	—	±1	—	dB
Reverse Isolation	—	-40	—	dB
Input VSWR	—	1.6	—	:1
Output VSWR	—	1.5	—	:1
Output Power for 1 dB Compression (OP _{-1dB})	—	18	—	dBm
Drain Voltage (V _D)	4	—	6	V
Supply Current (I _D)	—	80	—	mA

Absolute Maximum Ratings

Maximum Input Power	+17dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Maximum V _D	+6.5V		

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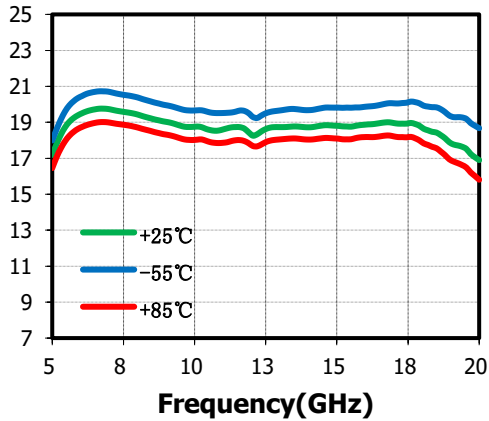


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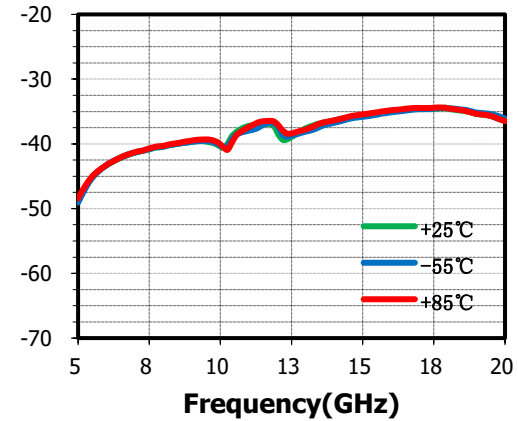
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Typical Performance Curve

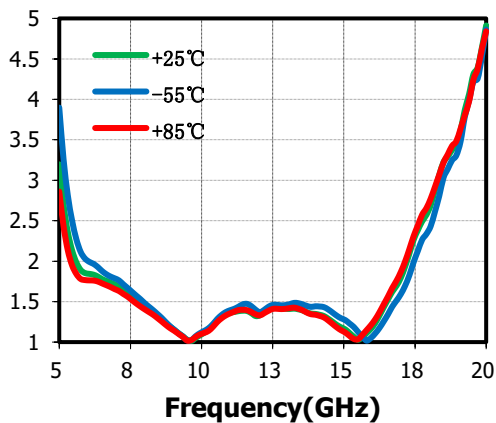
Small Signal Gain(dB) vs.Temperature



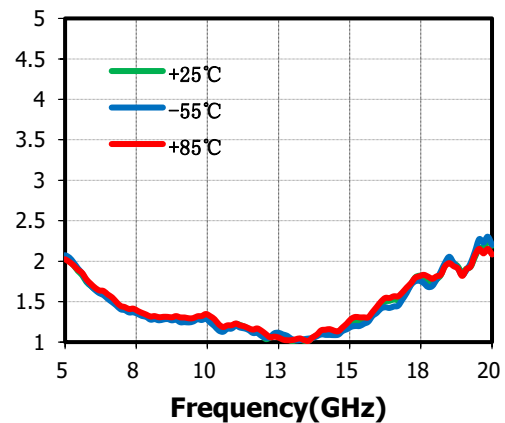
Reverse Isolation(dB) vs.Temperature



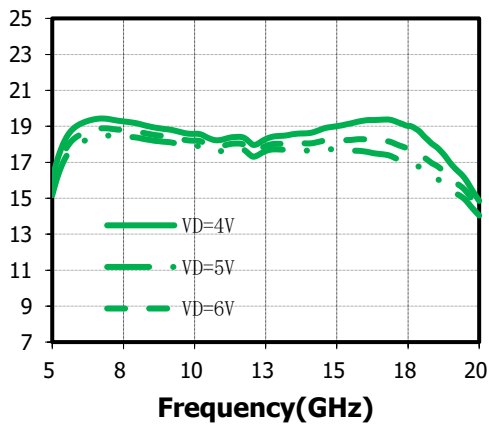
Input VSWR(:1) vs.Temperature



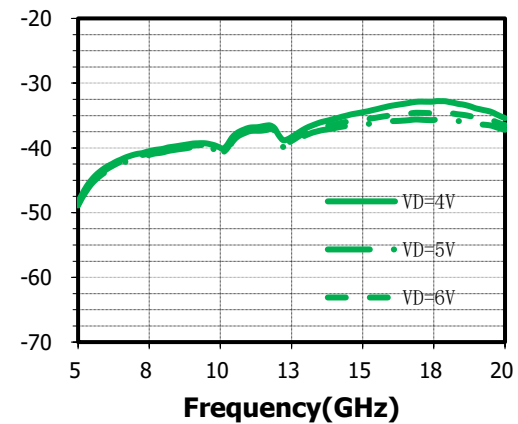
Output VSWR(:1) vs.Temperature



Small Signal Gain(dB) vs.VD



Reverse Isolation(dB) vs.VD



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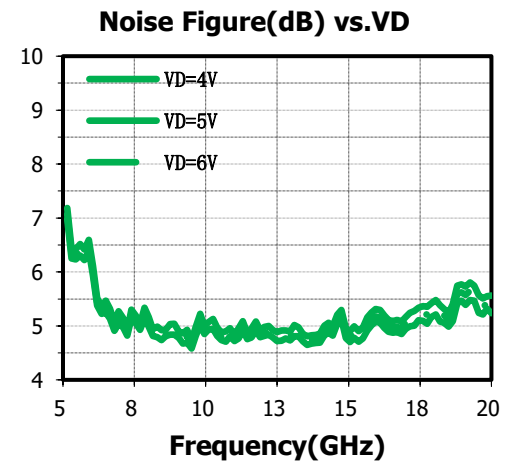
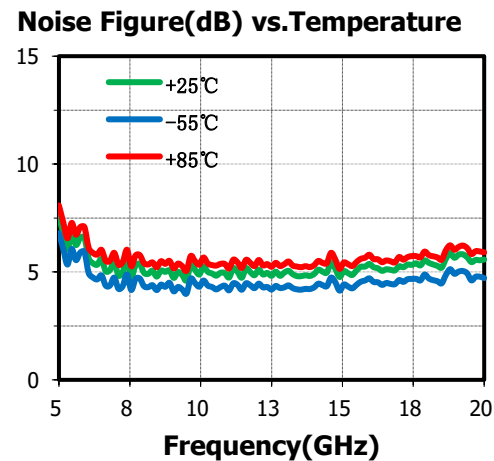
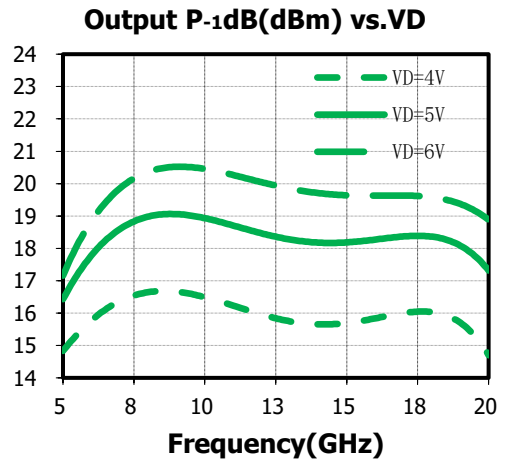
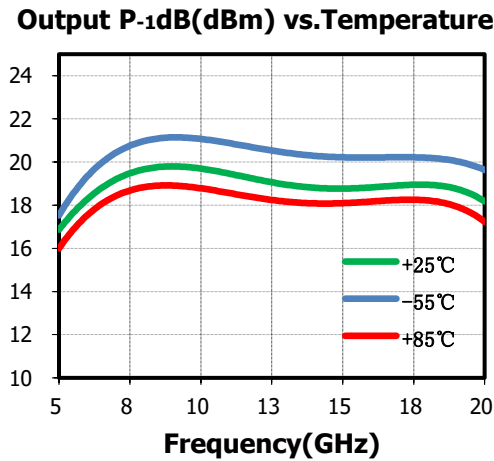
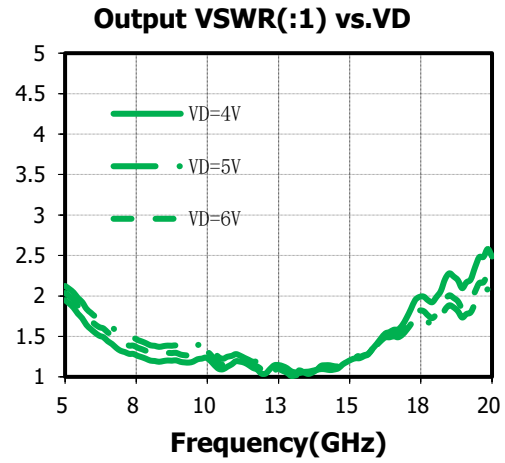
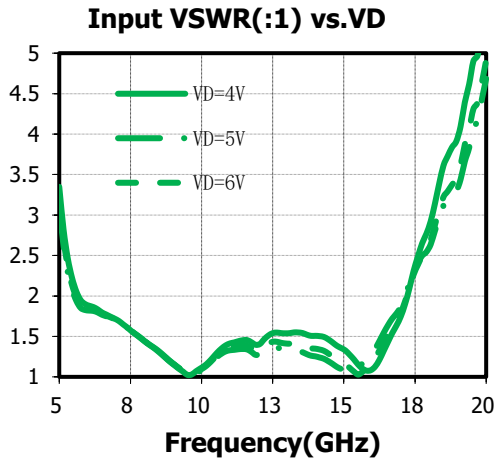
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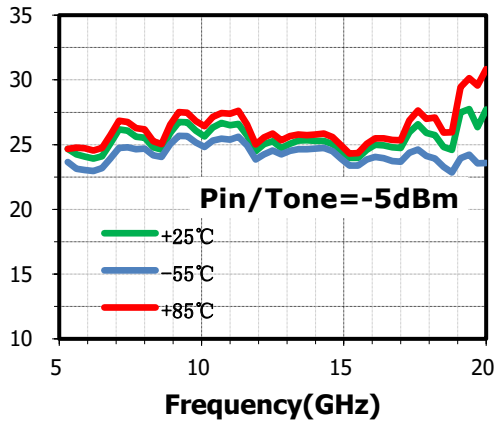
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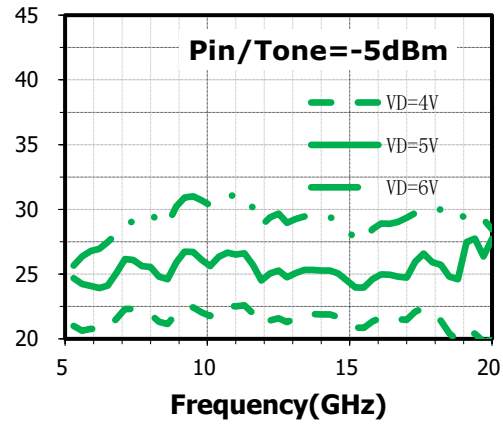
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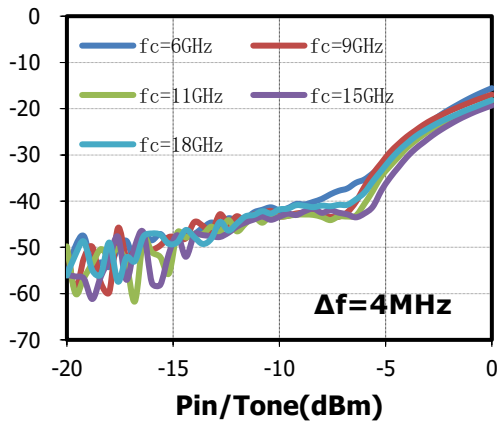
Output IP₃(dBm) vs. Temperature



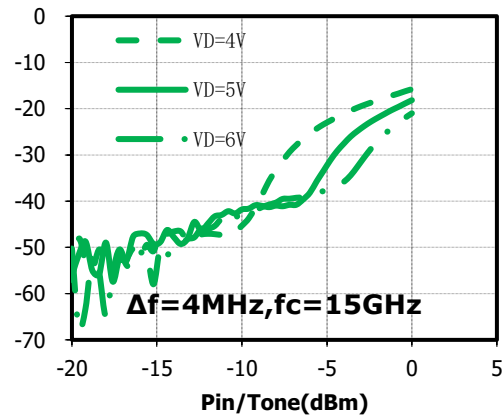
Output IP₃(dBm) vs. VD



IM₃(dBc) vs. Pin/Tone

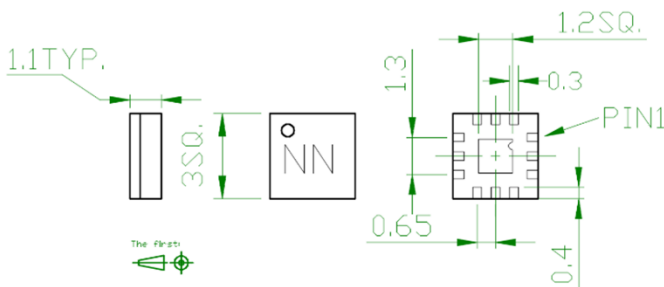


IM₃(dBc) vs. VD

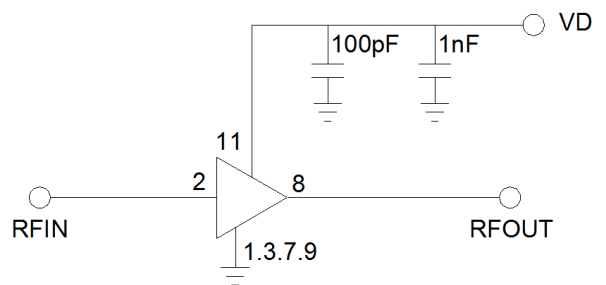


Outline Drawing

(All dimensions in mm)



Application Circuit



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Pin Function

Pin No.	Description	Pin No.	Description
1	Connect to ground	7	Connect to ground
2	RF input, AC Coupled	8	RF output, AC Coupled
3	Connect to ground	9	Connect to ground
4	Connect to ground	10	Connect to ground
5	Connect to ground	11	VD
6	Connect to ground	12	Connect to ground

Attention:

1. The moisture resistant grade of SAC3915Q3 is 2a, the storage environment $\leq 30^{\circ}\text{C}/60\% \text{ RH}$, the surrounding workshop life is 4 weeks,
2. After un-packing, it is necessary to bake the parts for 6 hours in $125\pm 5^{\circ}\text{C}$ environment before soldering,
3. GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test,
4. The RF input and RF output ports withstand voltage is 12V,
5. Ultrasonic cleaning is prohibited.

Revision History

Revision	Date	Comment
1.0	Mar 22, 2019	First Release
1.3	Nov 08, 2023	Added more test data