

SAC3925



GaAs MMIC Driver Amplifier
26GHz~38GHz

Rev 2.2

Features

- Frequency: 26GHz~38GHz
- Gain: 16dB
- Balanced Amplifier
- PAE:25%@P_{-1dB}, f=35GHz
- Output P_{-1dB}: 26dBm
- Power Supply: +5~+6V
- Die Size: 2.14mm×1.25mm x 0.1mm

Typical Applications

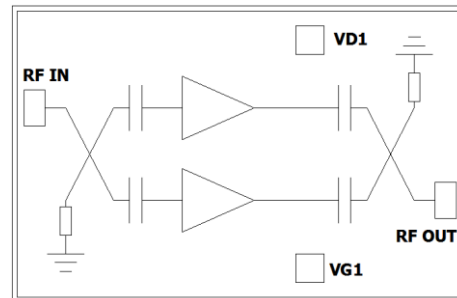
- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

General Description

SAC3925 is a GaAs MMIC driver amplifier which operates between 26GHz~38GHz. The amplifier provides 16dB of gain, 26dBm Output P_{-1dB}.

This amplifier is the perfect alternative to higher cost hybrid amplifiers. And SAC3925 offers full passivation for increased reliability and moisture protection.

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+6V, I_D=300mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	26~38			GHz
Small Signal Gain	—	16	—	dB
Small Signal Gain Flatness	—	2	—	dB
Reverse Isolation	—	-50	—	dB
Input Return Loss	—	-12	—	dB
Output Return Loss	—	-15	—	dB
PAE	—	25	—	%
Output P _{-1dB}	—	26	—	dBm
Supply Voltage	5	—	6	V
Supply Current (I _D)	—	300	600	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	+6.3V	Maximum V _G	-1.2V

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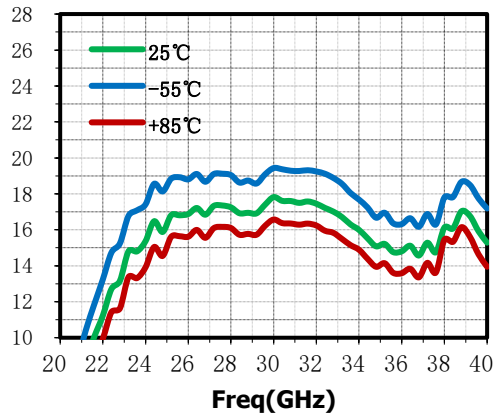
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
 Tel: 1-847-505-8319, 1-847-573-9866
 E-mail: sales@superapexco.com
 Website: www.superapexco.com

Typical Small Signal Performance Curve

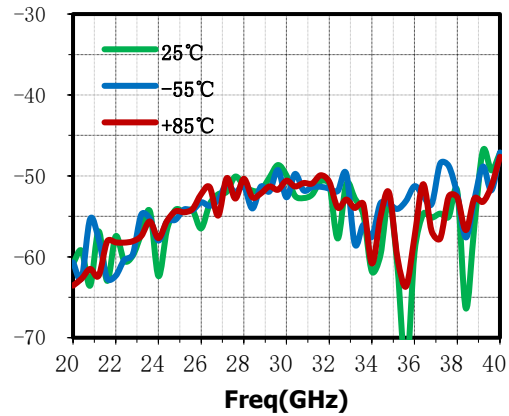
The results captured in the test-jig environment within connector plan

Bias Condition: $V_D = 6V$, $I_D = 300mA$

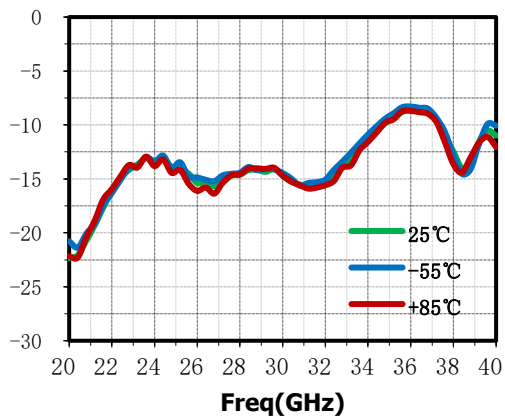
Small Signal Gain (dB) vs. Temperature



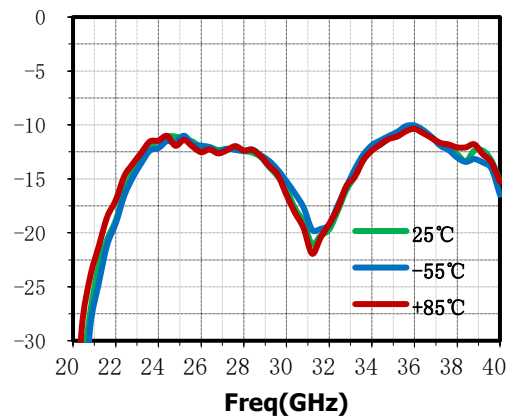
Reverse Isolation (dB) vs. Temperature



Input Return Loss (dB) vs. Temperature



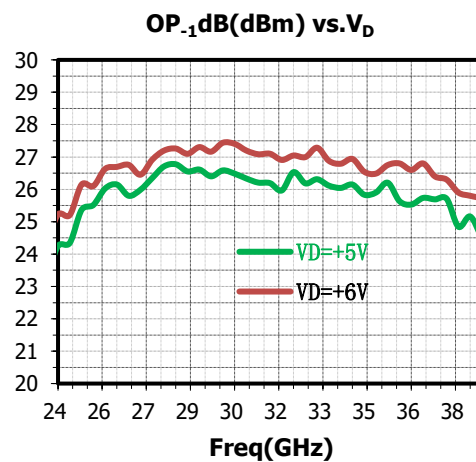
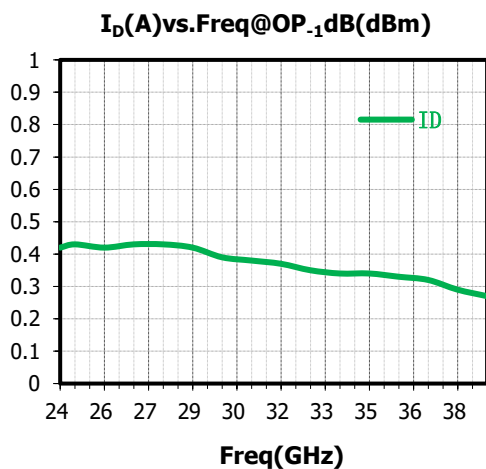
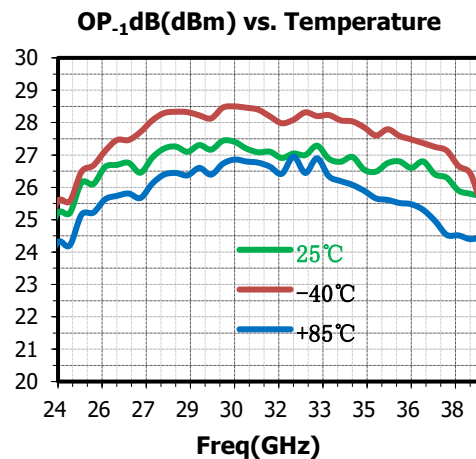
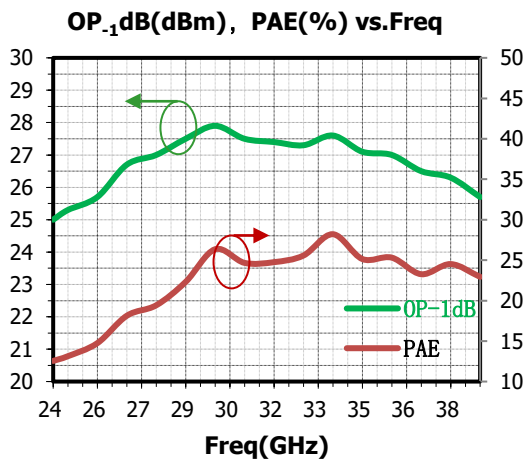
Output Return Loss (dB) vs. Temperature



Typical Large Signal Performance Curve

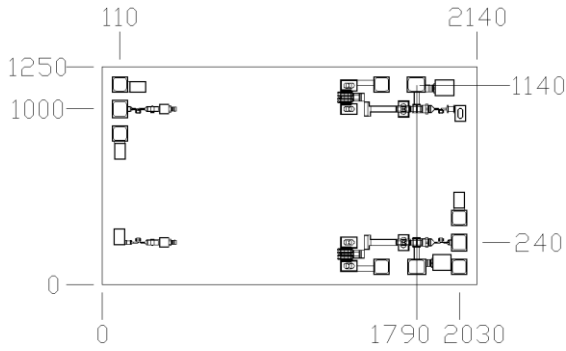
The results captured in the test-jig environment within connector plan

Bias Condition: $V_D = 6V$, $I_D = 300mA$



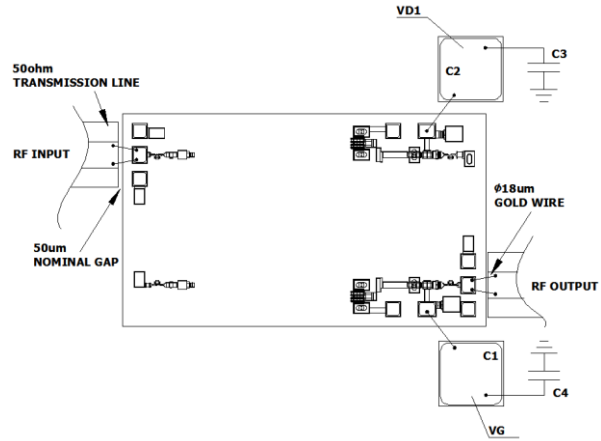
SAC3925

Die Outline (All dimensions in μm)



Bonding pad size: 100x100 μm

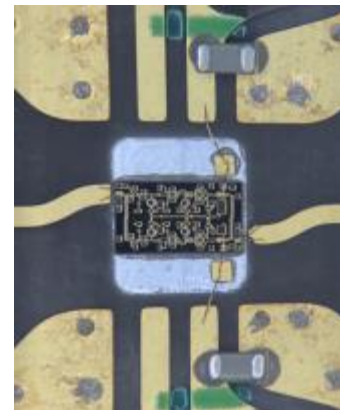
Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C3、C4	1 μF	GRM155R61A105KE15D	Murata	0402
C1、C2	300pF	—	ANY	SLC

Fixture test



Notes

- SAC3925 is biased with a positive drain supply and negative gate supply. The recommended gate voltage is set to -0.4~-0.75V when the drain voltage is set to 6V.
- The back of chip is RF ground.
- RF connections should be made as short as possible to reduce the inductive effect of the bond wire. Use of a 0.8 mil thermosonic wedge bonding is highly recommended as the loop height will be minimized.
- Bypass caps C3, C4 should be placed no farther than 1.8mm from the amplifier.
- GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.

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