SAC3935

GaAs MMIC Driver Amplifier
42~47GHz 20dBm

Rev 1.1

Features

- Frequency: 42~47GHz
- Gain:18dB
- Output P_{-1}dB: 20dBm Typ. 18dBm Min.
- Supply Voltage: +5V/-Vg
- Output IP_3: 27dBm@44GHz
- Balanced Amplifier
- Die Size: 2.1mm×1.25mm×0.1mm

Typical Applications

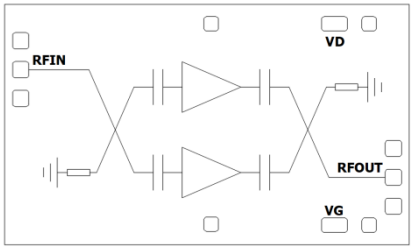
- Wireless infrastructure
- RF/Microwave circuit
- High density MCM components

General Description

SAC3935 is a balanced GaAs MMIC driver amplifier, which operates between in 42~47GHz. SAC3935 provides 18dB of gain, and 20dBm of Output P_{-1}dB while requiring 200mA from a +5V supply voltage.

The chip offers full passivation for increased reliability and moisture protection.

Functional Diagram



Electrical Performance

T_A=25℃, V_D=+5V, I_D=200mA, Z_0=50Ω

Parameter	Min.	Typ.	Max.	Units
Frequency Range		42~47		GHz
Small Signal Gain	15	18	24	dB
Small Signal Gain Flatness	—	—	±2	dB
Reverse Isolation	—	-45	—	dB
Input/ Output VSWR	—	1.6	2.5	:1
Noise Figure	—	9	12	dB
Output Power for 1 dB Compression (OP_{-1}dB)	18	20	—	dBm
Output IP_3	—	27*	—	dBm
Supply Current (I_D)	—	200	370	mA
Drain Voltage (V_D)	5	—	6	V
Thermal Resistance		28		℃/W

*Pin/Tone=10dBm fc=44GHz, △f=4MHz

Absolute Maximum Ratings

Maximum Input Power	+12dBm，CW 1min	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-55℃~+150℃
Maximum V_D	6.5V		

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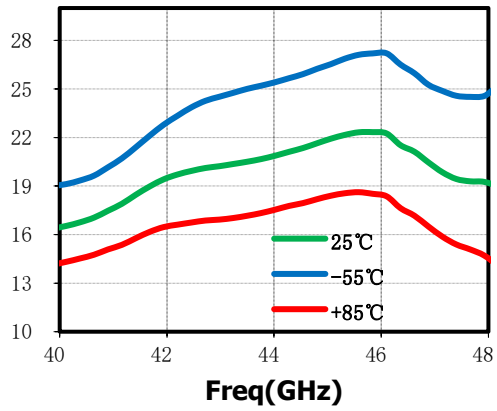
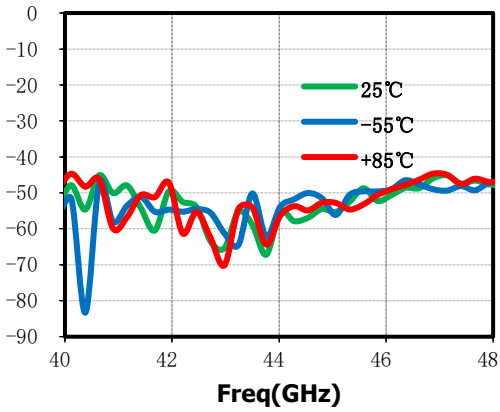
Typical Small Signal Performance Curve

V_D=+5V, I_{DQ}=200mA, the following curves are taken from SAC3935 evaluation board.

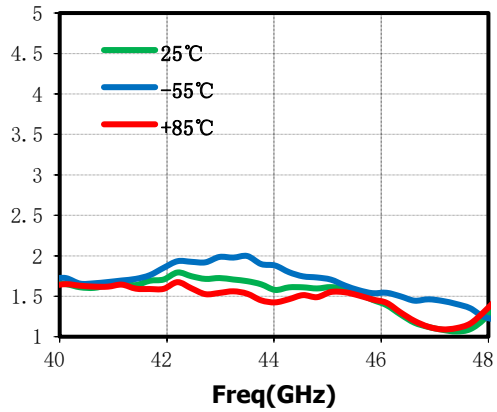
Small Signal Gain(dB)vs. Temperature



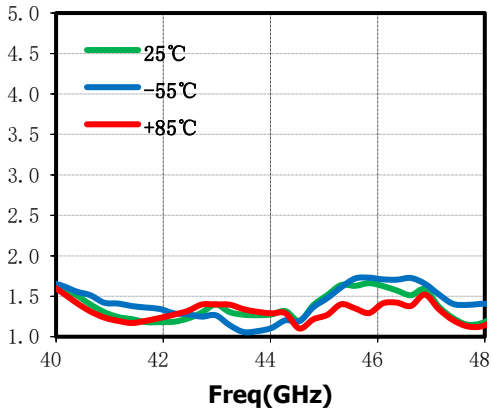
Reverse Isolation(dB)vs.Temperature



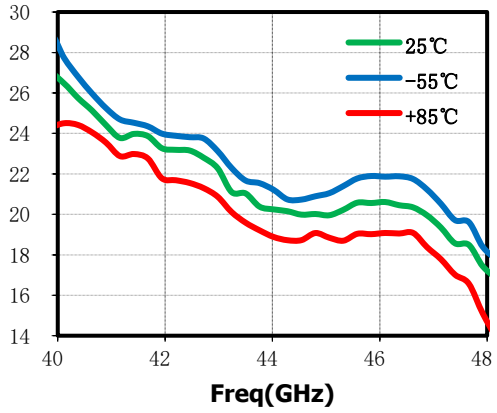
Input VSWR(:1) vs. Temperature



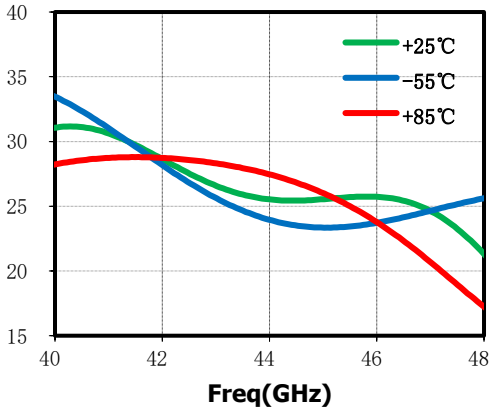
Output VSWR(:1) vs. Temperature



OP$_{-1}$dB(dBm)vs. Temperature



OIP$_3$(dBm)vs. Temperature



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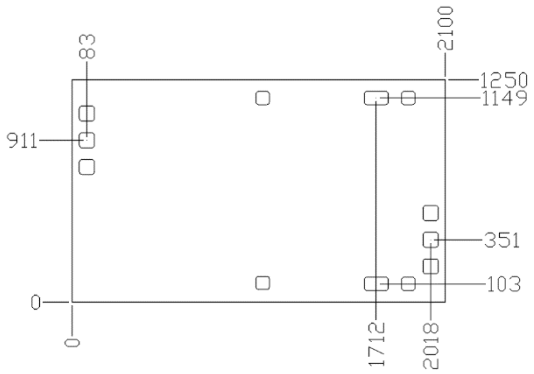
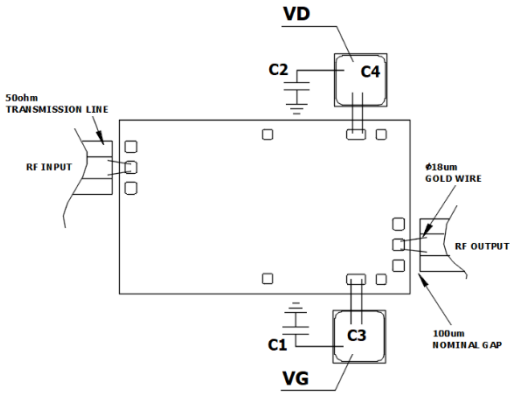
Die Outline (μm)



Assembly Diagram



RFIN, RFOUT pads size:140x80

VG/VD pads size:80x80

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1、C2	2.2uF	—	ANY	0603
C3、C4	10pF	—	ANY	SLC

Attention:

GaAs MMIC devices are susceptible to damage from electrostatic discharge. Proper precautions should be observed during handling, assembly and test.

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