

# SAC3935

GaAs MMIC Driver Amplifier  
42~47GHz 20dBm

Rev1.1

## Features

- Frequency: 42~47GHz
- Gain:18dB
- Output P<sub>1dB</sub>: 20dBm Typ. 18dBm Min.
- Supply Voltage: +5V/-Vg
- Output IP<sub>3</sub>: 27dBm@44GHz
- Balanced Amplifier
- Die Size: 2.1mm×1.25mm×0.1mm

## Typical Applications

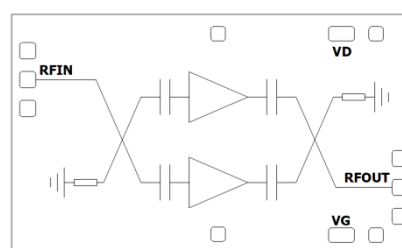
- Wireless infrastructure
- RF/Microwave circuit
- High density MCM components

## 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<sub>1dB</sub> while requiring 200mA from a +5V supply voltage.

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

## Functional Diagram



## Electrical Performance

T<sub>A</sub>=25°C, V<sub>D</sub>=+5V, I<sub>D</sub>=200mA, Z<sub>0</sub>=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 <sub>1dB</sub> )	18	20	—	dBm
Output IP <sub>3</sub>	—	27*	—	dBm
Supply Current(I <sub>b</sub> )	—	200	370	mA
Drain Voltage(V <sub>D</sub> )	5	—	6	V
Thermal Resistance	28			°C/W

\*Pin/Tone=10dBm fc=44GHz, Δf=4MHz

## Absolute Maximum Ratings

Maximum Input Power	+12dBm, CW 1min	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-55°C~+150°C
Maximum V <sub>D</sub>	6.5V		

## SuperApex Corporation

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

# SAC3935

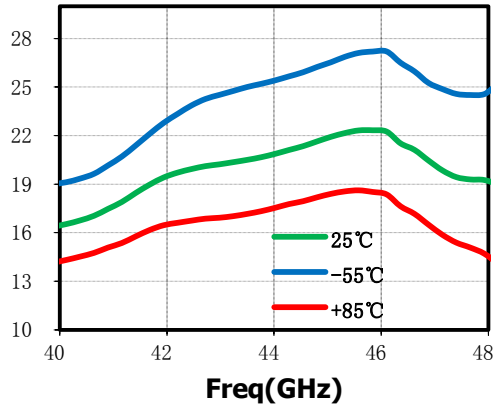
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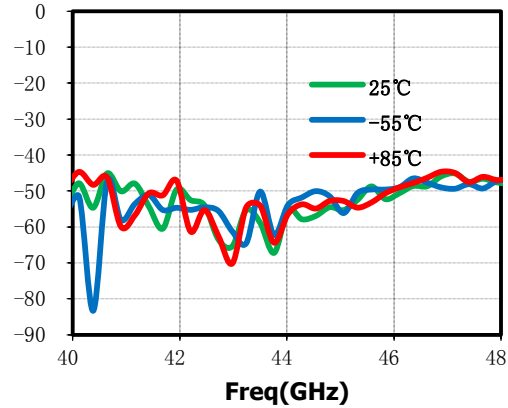
## Typical Small Signal Performance Curve

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

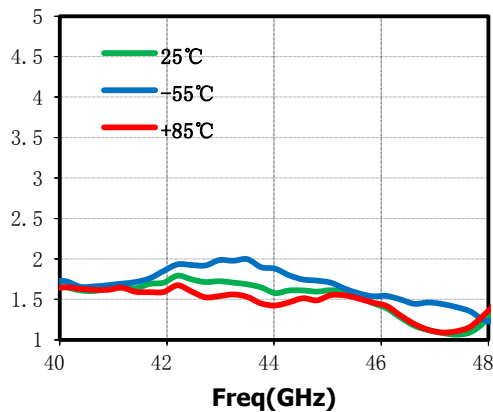
### Small Signal Gain(dB)vs. Temperature



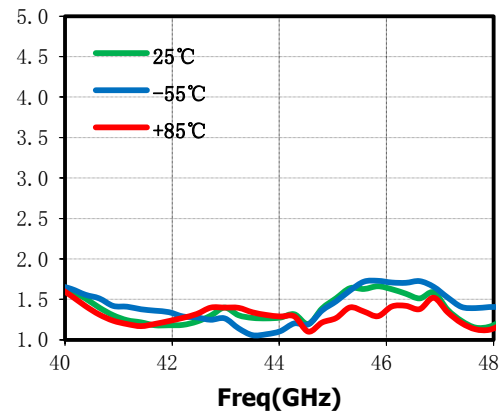
### Reverse Isolation(dB)vs. Temperature



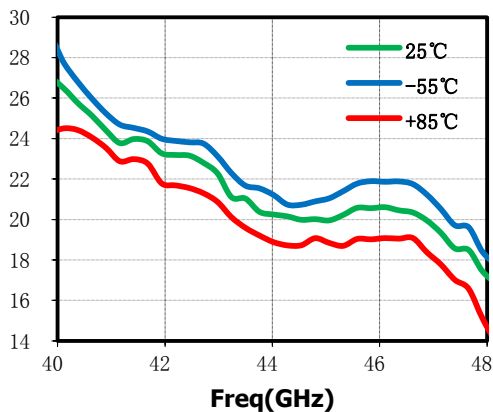
### Input VSWR(:1) vs. Temperature



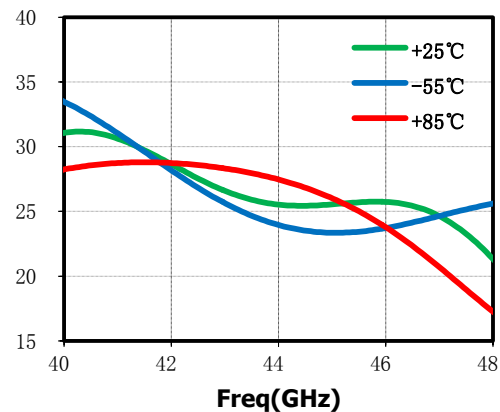
### Output VSWR(:1) vs. Temperature



### OP<sub>1</sub>(dBm)vs. Temperature



### OIP<sub>3</sub>(dBm)vs. Temperature

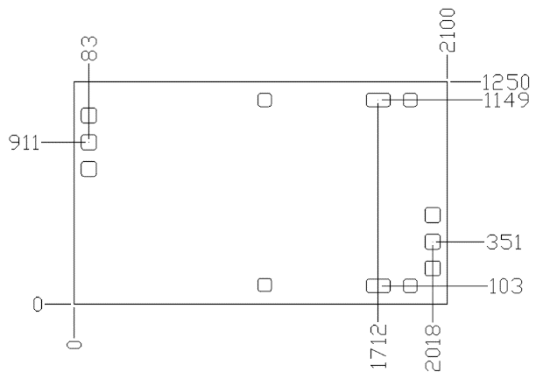


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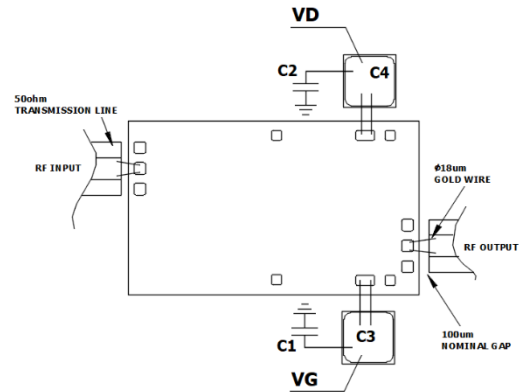
## Die Outline(μm)



RFIN,RFOUT pads size:140x80

VG/VD pads size:80x80

## Assembly Diagram



## 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.