



## Product Description

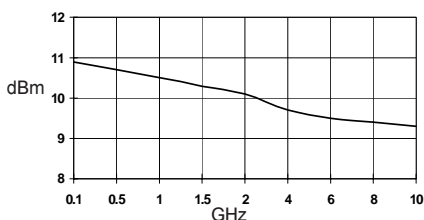
Sirenza Microdevices' SNA-300 is a GaAs monolithic broad-band amplifier (MMIC) in die form. At 1950 MHz, this amplifier provides 22dB of gain when biased at 35mA .

These unconditionally stable amplifiers are designed for use as general purpose 50 ohm gain blocks. Its small size (0.350mm x 0.345mm) and gold metallization make it an ideal choice for use in hybrid circuits. The SNA-300 is 100% DC tested and sample tested for RF performance.

External DC decoupling capacitors determine low frequency response. The use of an external resistor allows for bias flexibility and stability.

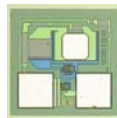
The SNA-300 is supplied in gel paks at 100 devices per pak. Also available in packaged form (SNA-376 & SNA-386)

Output Power vs. Frequency



## SNA-300

### DC-3 GHz, Cascadable GaAs HBT MMIC Amplifier



## Product Features

- Cascadable 50 Ohm Gain Block
- 22dB Gain, +10dBm P1dB
- 1.5:1 Input and Output VSWR
- Operates From Single Supply
- Through wafer via for ground

## Applications

- Broadband Driver Amplifier
- IF Amplifier or gain stage for VSAT, LMDS, WLAN, and Cellular Systems

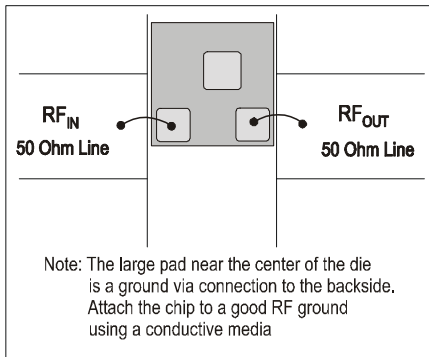
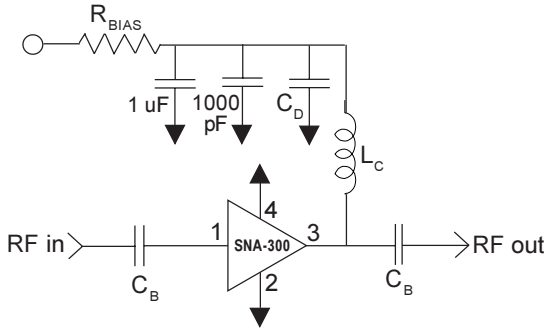
Symbol	Parameter	Units	Frequency	Min.	Typ.	Max.
$G_p$	Small Signal Power Gain [2]	dB	850 MHz		23.0	
		dB	1950 MHz	20.5	22.0	23.5
		dB	2400 MHz	20.0	21.5	23.0
BW3dB	3dB Bandwidth	GHz			3.0	
$P_{1dB}$	Output Power at 1dB Compression [2]	dBm	1950 MHz	8.0	10.0	
$OIP_3$	Output Third Order Intercept Point [2]	dBm	1950 MHz	20.0	23.0	
NF	Noise Figure	dB	1950 MHz		4.0	
RL	Input / Output Return Loss	dB	1950		11.7	
ISOL	Reverse Isolation	dB	0.1-3.0 GHz		20.0	
$V_D$	Device Operating Voltage [1]	V		3.3	3.7	4.1
$I_D$	Device Operating Current [1]	mA		30.0	35.0	40.0
dG/dT	Device Gain Temperature Coefficient	dB/°C			-0.003	
$R_{TH, j-b}$	Thermal Resistance (junction to backside)	°C/W			260.0	

**Test Conditions:**  $V_S = 8V$ ,  $I_D = 35mA$  Typ.  $OIP_3$  Tone Spacing = 1 MHz,  $P_{out}$  per tone = 0  
 $R_{BIAS} = 120$  Ohms  $T_L = 25^\circ C$ ,  $Z_S = Z_L = 50$  Ohms, [1] 100% DC tested, [2] Sample tested

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## Typical Application Circuit



**Suggested Bonding Arrangement**  
(above configuration used for S-parameter data)

## Application Circuit Element Values

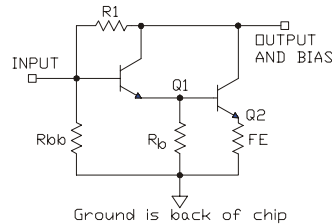
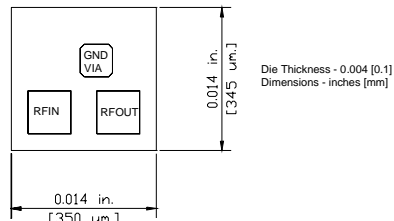
Reference Designator	Frequency (Mhz)				
	500	850	1950	2400	3500
C <sub>B</sub>	220 pF	100 pF	68 pF	56 pF	39 pF
C <sub>D</sub>	100 pF	68 pF	22 pF	22 pF	15 pF
L <sub>C</sub>	68 nH	33 nH	22 nH	18 nH	15 nH

## Recommended Bias Resistor Values for I<sub>b</sub>=35mA

$$R_{BIAS} = (V_S - V_D) / I_D$$

Supply Voltage(V <sub>S</sub> )	5 V	6 V	8 V	10 V
R <sub>BIAS</sub>	36 Ω	68 Ω	120 Ω	180 Ω

Note: R<sub>BIAS</sub> provides DC bias stability over temperature.



**Simplified Schematic of MMIC**

For recommended handling, die attach, and bonding methods, see the following application note at

[www.sirenza.com](http://www.sirenza.com).

## AN-041 (PDF) Handling of Unpackaged Die



### Caution: ESD sensitive

Appropriate precautions in handling, packaging and testing devices must be observed.

## Part Number Ordering Information

Part Number	Gel Pack
SNA-300	100 pcs. per pack