Product Description

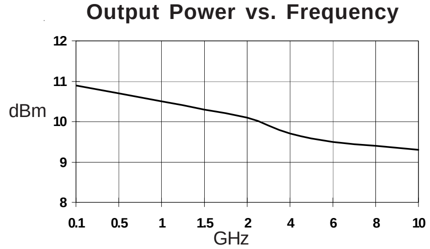
Sirenza Microdevices' SNA-300 is a GaAs monolithic broadband amplifier (MMIC) in die form. At 1950 MHz, this amplifier provides 22dB of gain when biased at 35mA .

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

OBSOLETE
Last Time Buy Date: 6-May-2007
Final Shipment Date: 6-Nov-2007

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 MHz		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 = 8 V I_D = 35 mA Typ. OIP_3 Tone Spacing = 1.2 MHz, Pout per tone = 0
R_{BIAS} = 120 Ohms T_L = 25ºC, Z_S = Z_L = 50 Ohms, [1] 100% DC tested, [2] Sample tested

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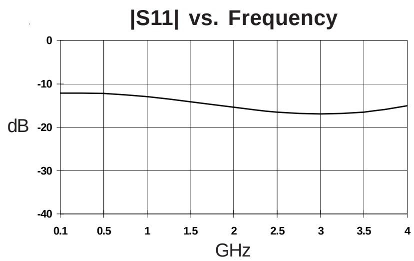
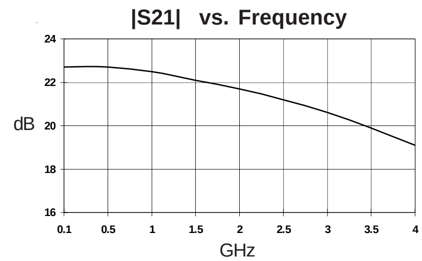
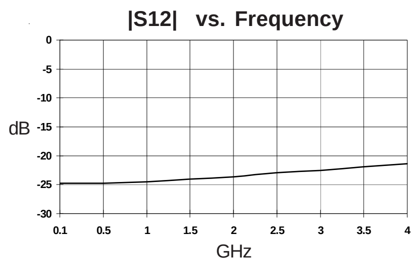
Broomfield, CO 80021
Phone: (800) SMI-MMIC
http://www.sirenza.com

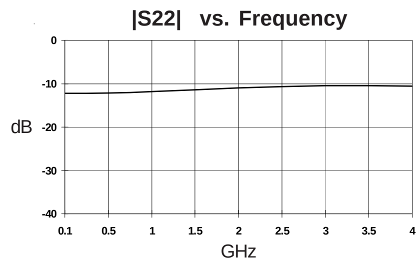
Typical Performance at 25° C (Vds =3.7V, Ids = 35mA)

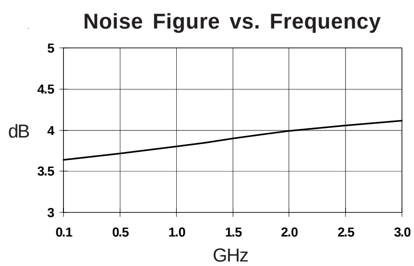
(data includes bond wires)

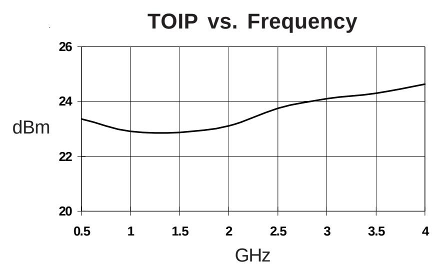












Absolute Maximum Ratings

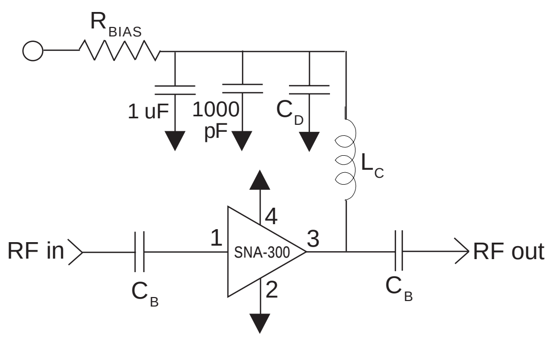
Parameter	Absolute Limit
Max. Device Current (I_D)	75 mA
Max. Device Voltage (V_D)	6 V
Max. RF Input Power	+20 dBm
Max. Junction Temp. (T_J)	+200°C
Operating Temp. Range (T_L)	-40°C to +85°C
Max. Storage Temp.	+150°C

Operation of this device beyond any one of these limits may cause permanent damage. For reliable continous operation, the device voltage and current must not exceed the maximum operating values specified in the table on page one.

Bias Conditions should also satisfy the following expression:

$I_D V_D < (T_J - T_L) / R_{TH}$, j-l

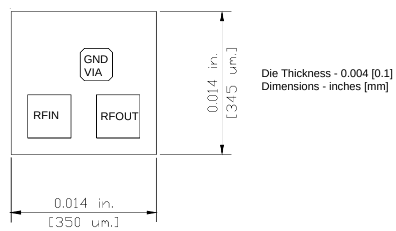
Typical Application Circuit

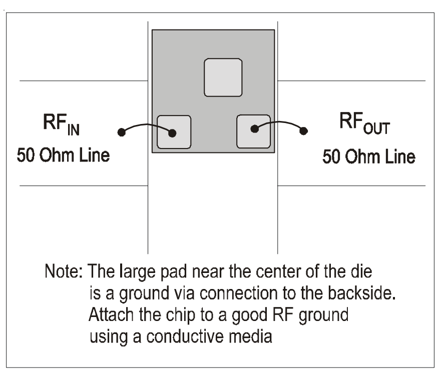


Application Circuit Element Values

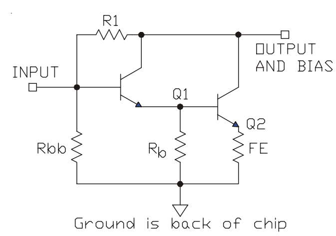
Reference Designator	Frequency (Mhz)				
	500	850	1950	2400	3500
C_B	220 pF	100 pF	68 pF	56 pF	39 pF
C_D	100 pF	68 pF	22 pF	22 pF	15 pF
L_C	68 nH	33 nH	22 nH	18 nH	15 nH

Recommended Bias Resistor Values for I_D=35mA $R_{BIAS}=(V_S-V_D)/I_D$				
Supply Voltage(V_S)	5 V	6 V	8 V	10 V
R_{BIAS}	36 Ω	68 Ω	120 Ω	180 Ω
Note: R_{BIAS} provides DC bias stability over temperature.				





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



Simplified Schematic of MMIC

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

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