

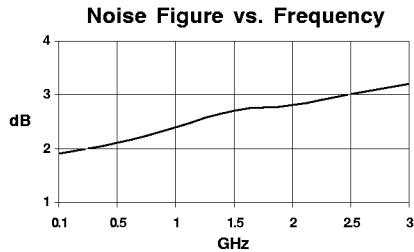
## Product Description

Stanford Microdevices' SLN-507 is a high performance GaAs Heterojunction Bipolar Transistor (HBT) MMIC housed in a low-cost surface mount MSOP8 plastic package. Heterojunction technology is utilized for ultra-linear performance with typical third order intercept at +5dBm. Darlington pair topology is used for flat broadband performance to 2.5 GHz, ideal for dual or tri-band applications.

The SLN-507 needs only 2 DC-Blocking capacitors and a bias resistor for operation. Noise figure may be optimized by using 2-element matching at the input to yield <2.0 dB noise figure.

This 50 Ohm LNA requires only a single supply voltage and draws only 5mA at +3V which makes it an ideal choice for wireless subscriber equipment including cellular, PCS, CDPD, wireless data and pagers.

These low noise amplifiers are available on tape and reel for high-volume, automated assembly formats.



### Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions $Z_0 = 50 \text{ Ohms}, I_d = 5 \text{ mA}$	Units	Min.	Typ.	Max.
NF 50 Ohm	Noise Figure in 50 Ohms	f = DC-1.0 GHz dB f = 1.0-2.5 GHz		1.9 2.5	2.4
$S_{21}$	50 Ohm Gain	f = DC-2.5 GHz	20	23	
VSWR	Input VSWR	f = DC-1.0 GHz f = 1.0-2.5 GHz		1.5:1 2.5:1	
VSWR	Output VSWR	f = DC-1.0 GHz f = 1.0-2.5 GHz		1.5:1 2.5:1	
$S_{12}$	Isolation	f = DC-1.0 GHz dB f = 1.0-2.5 GHz		35 25	
$P_{1dB}$	Output Power at 1dB Compression	f = DC-1.0 GHz dBm f = 1.0-2.5 GHz		-13 -14	
$IP_3$	Third Order Intercept Point:	f = DC-1.0 GHz dBm f = 1.0-2.5 GHz		+5 +4	
Vd	Device Voltage	$I_d = 5 \text{ mA}$	V	2.7	3.0

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## SLN-507

### DC-2.5 GHz 50 Ohm LNA MMIC Amplifier



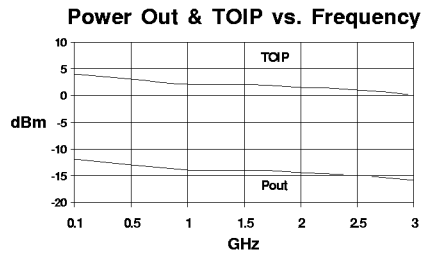
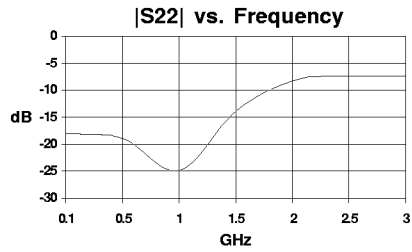
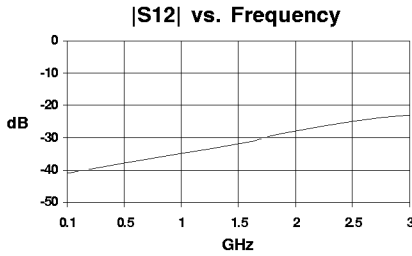
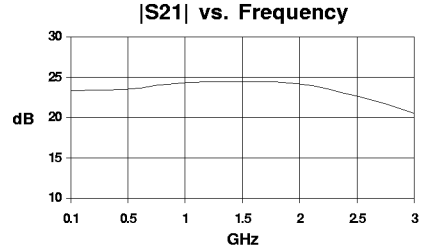
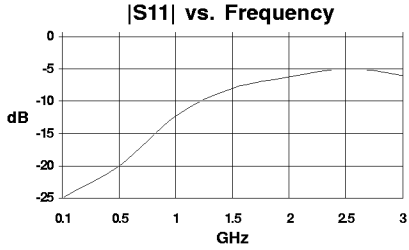
### Product Features

- Patented Reliable GaAs HBT Technology
- Low Noise Figure : 2.6dB at 1.9GHz
- Broadband Performance : +/-0.8dB Gain Flatness from DC-2.5 GHz
- True 50 Ohm MMIC : No External Matching Required
- Low Power Consumption : Only 5mA at 3V

### Applications

- Cellular, PCS, CDPD, Wireless Data
- Pagers

Low Noise MMICs

**SLN-507 DC-2.5 GHz LNA MMIC Amplifier**
*Typical Performance at 25° C (V<sub>ds</sub> = 3V, I<sub>ds</sub> = 5mA)*

**LOW NOISE MMICs**
**Typical S-Parameters V<sub>ds</sub> = 3.0V, I<sub>d</sub> = 5mA**

Freq. GHz	S <sub>11</sub>	S <sub>11</sub> Ang	S <sub>21</sub>	S <sub>21</sub> Ang	S <sub>12</sub>	S <sub>12</sub> Ang	S <sub>22</sub>	S <sub>22</sub> Ang
.100	0.103	-175	18.985	-11	0.015	42	0.106	159
.250	0.109	-171	19.015	-28	0.020	0	0.115	105
.500	0.114	-164	19.910	-47	0.029	-34	0.113	-45
1.00	0.296	136	23.388	-98	0.028	-39	0.189	-138
1.50	0.591	66	28.238	-161	0.031	-52	0.209	14
2.00	0.783	-14	27.897	121	0.040	-76	0.430	-67
2.50	0.676	-86	17.805	50	0.047	-106	0.468	-150
3.00	0.533	-144	12.177	2	0.045	-139	0.455	140

(S-Parameters include the effects of two 1.0 mil diameter bond wires, each 20 mils long, connected to the gate and drain pads on the die)

## SLN-507 DC-2.5 GHz LNA MMIC Amplifier

### Absolute Maximum Ratings

Parameter	Absolute Maximum
Device Current	70mA
Power Dissipation	415mW
RF Input Power	100mW
Junction Temperature	+200C
Operating Temperature	-45C to +85C
Storage Temperature	-65C to +150C

### Notes:

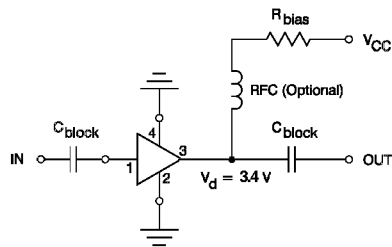
1. Operation of this device above any one of these parameters may cause permanent damage.

### Part Number Ordering Information

Part Number	Devices Per Reel	Reel Size
SLN-507-TR1	1000	7"
SLN-507-TR2	2500	13"

### Recommended Bias Resistor Values

Supply Voltage(Vs)	3.3V	5V	7.5V	9V	12V	15V	20V
Rbias (Ohms)	60	400	900	1200	1800	2400	3400

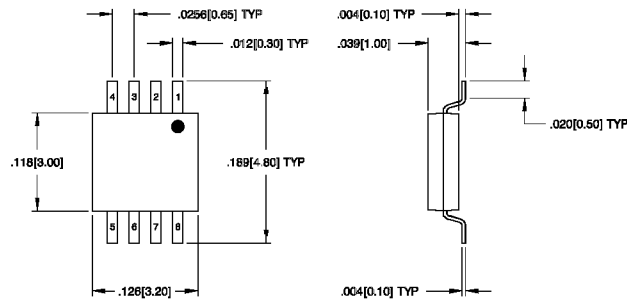


Typical Biasing Configuration

### Device Pinout

Pin	Function
1	RF Input
2	Ground
3	Ground
4	Ground
5	RF Output and Bias
6	Ground
7	Ground
8	Ground

### Device Outline



Dimensions are in inches [mm]

Low Noise MMICs