



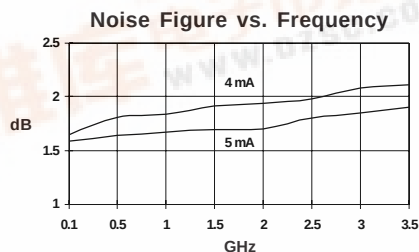
Product Description

Stanford Microdevices' SLN-286 is a high performance gallium arsenide heterojunction bipolar transistor MMIC housed in a low-cost surface mount plastic package. A Darlington configuration is used for broadband performance from DC-3.5 GHz.

The SLN-286 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. For broadband applications, it may be biased at 4mA with minimal effect on noise figure and gain.

The SLN-286 is available in tape and reel at 1000, 3000 and 5000 devices per reel.



SLN-286

DC-3.5 GHz, 3Volt 50 Ohm LNA MMIC Amplifier



Product Features

- Patented, Reliable GaAs HBT Technology
- Low Noise Figure: 1.7 dB from 0.1 to 1.5 GHz
- High Associated Gain: 27 dB Typ. at 2.0 GHz
- True 50 Ohm MMIC : No External Matching Required
- Low Current Draw : Only 5 mA at 3V
- Low Cost Surface Mount Plastic Package

Applications

- AMPS, PCS, DECT, Handsets
- Tri-Band & Broadband Receivers

Low Noise MMICs

Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions	Units	Min.	Typ.	Max.
NF 50 Ohm	Noise Figure in 50 Ohms: Vds = 3.0 V, Ids = 5 mA	f = DC-1.5 GHz dB f = 1.5-3.5 GHz dB		1.7 2.2	2.1
S ₂₁	50 Ohm Gain: Vds = 3.0 V, Ids = 5 mA	f = DC-1.5 GHz dB f = 1.5-3.5 GHz	22	25 23	
VSWR	50 Ohm Match(Input and Output): Vds = 3.0 V, Ids = 5 mA	f = DC-1.5 GHz - f = 1.5-3.5 GHz		1.8:1 2.5:1	
NF 50 Ohm	Noise Figure in 50 Ohms: Vds = 2.8 V, Ids = 4 mA	f = DC-1.5 GHz dB f = 1.5-3.5 GHz dB		1.9 2.4	2.3
S ₂₁	50 Ohm Gain: Vds = 2.8 V, Ids = 4 mA	f = DC-1.5 GHz dB f = 1.5-3.5 GHz	19	22 20	
VSWR	50 Ohm Match(Input and Output): Vds = 2.8 V, Ids = 4 mA	f = DC-1.5 GHz - f = 1.5-3.5 GHz		1.4:1 2.0:1	
P _{1dB}	Output Power at 1dB Compression: f = DC-3.5 GHz	Vd = 3.0V, Id = 5 mA dBm Vd = 2.8V, Id = 4 mA dBm		-12 -14	
IP ₃	Third Order Intercept Point: f = DC-3.5 GHz	Vd = 3.0V, Id = 5 mA dBm Vd = 2.8V, Id = 4 mA		+3 +1	

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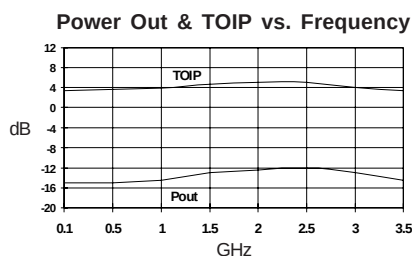
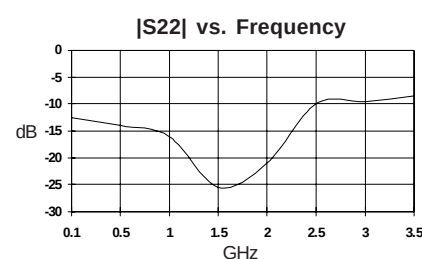
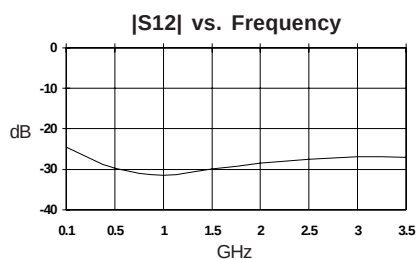
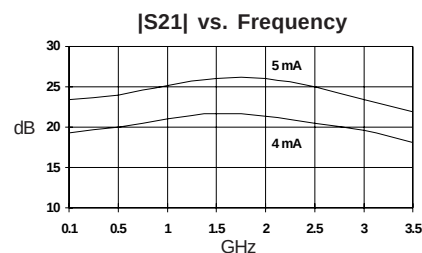
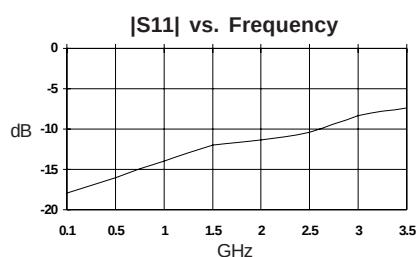
<http://www.stanfordmicro.com>





SLN-286 DC-3.5 GHz LNA MMIC Amplifier

Typical Performance at 25° C ($V_{ds} = 3.0V$, $I_{ds} = 5mA$)



Low Noise MMICs

Typical S-Parameters $V_{ds} = 3.0V$, $I_{ds} = 5mA$

Freq GHz	S11	S11 Ang	S21	S21 Ang	S12	S12 Ang	S22	S22 Ang
.100	0.074	-124	11.02	-4	.039	13	.201	-50
.250	0.083	-113	11.12	-8	.033	9	.215	-26
.500	0.079	-98	11.45	-47	.032	-17	.210	-48
1.00	0.178	-168	12.49	-100	.035	-34	.153	-109
1.50	0.290	89	12.68	-160	.033	-51	.038	-175
2.00	0.372	22	12.91	140	.037	80	.133	-60
2.50	0.427	-47	11.02	73	.040	-103	.255	-145
3.00	0.437	-117	9.22	18	.045	-134	.350	141
3.50	0.414	180	7.45	-38	.051	-158	.365	-79
4.00	0.393	126	5.53	-84	.053	177	.377	23

(S-Parameters include the effects of two 1.0 mil diameter bond wires, each 30 mils long, connected to the gate and drain pads on the die)



SLN-286 DC-3.5 GHz LNA MMIC Amplifier

Absolute Maximum Ratings

Parameter	Absolute Maximum
Device Current	50mA
Power Dissipation	440mW
RF Input Power	100mW
Junction Temperature	+200C
Operating Temperature	-45C to +85C
Storage Temperature	-65C to +150C

Notes:

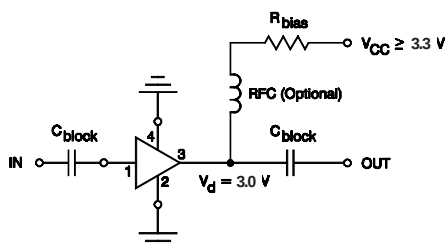
1. Operation of this device above any one of these parameters may cause permanent damage.

Part Number Ordering Information

Part Number	Devices Per Reel	Reel Size
SLN-286-TR1	1000	7"
SLN-286-TR2	3000	13"
SLN-286-TR3	5000	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

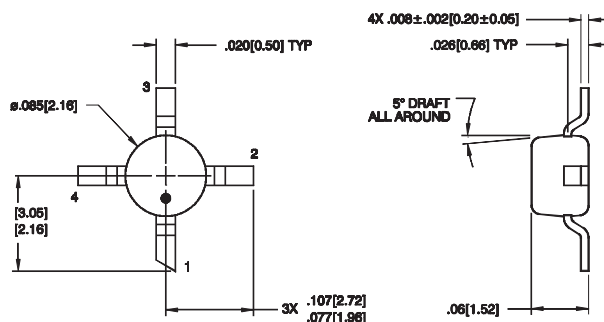


Typical Biasing Configuration

Device Pinout

Pin	Function
1	RF Input
2	Ground
3	RF Output and Bias
4	Ground

Device Outline



Low Noise MMICs