P35-5100

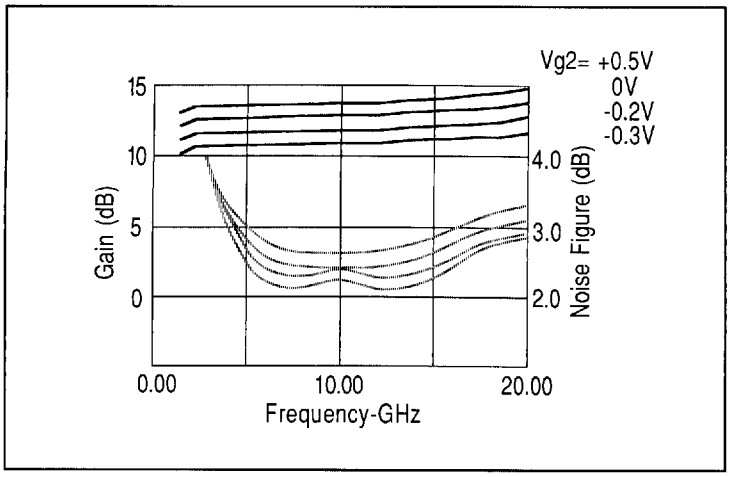
GaAs MMIC LNA FOR 2-20GHz OPERATION

This GaAs MMIC is a low noise amplifier fabricated on the 0.25µm HEMT process. Its broadband performance with flat gain response is ideal for EW and test equipment applications

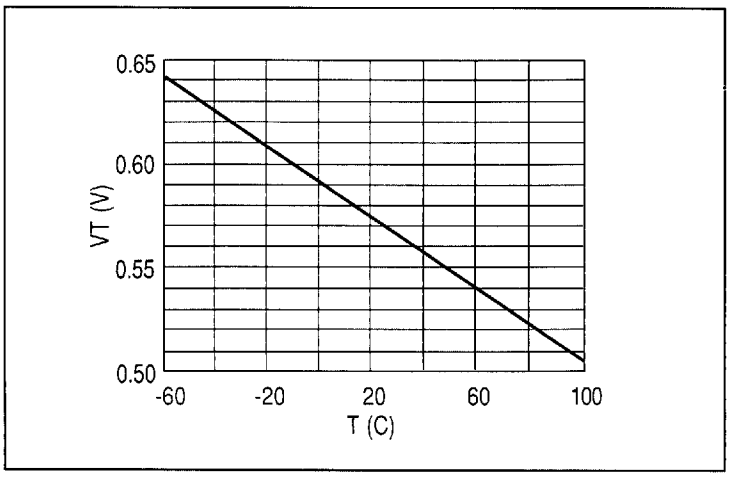
Features

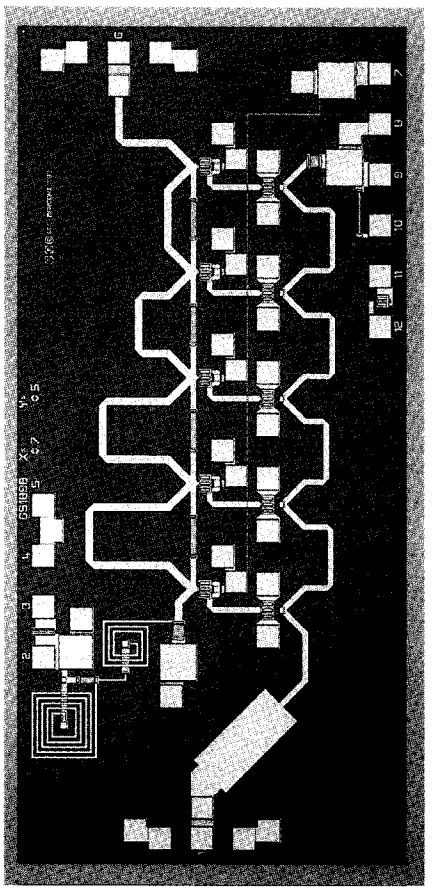
- Cascode configuration
- 0.25µm HEMT technology
- 12dB Gain
- <4dB Noise Figure 2 – 20GHz
- <3dB Noise Figure 6 – 18GHz
- AGC control with gate bias
- –40°C to 95°C Operation
- Temperature Sensing Diode included on Chip

Gain and noise figure vs. frequency



Typical voltage across temperature sensing diode (Vt) vs. temperature If = 100µA





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Specification at +25 °C Frequency Range 2–20GHz

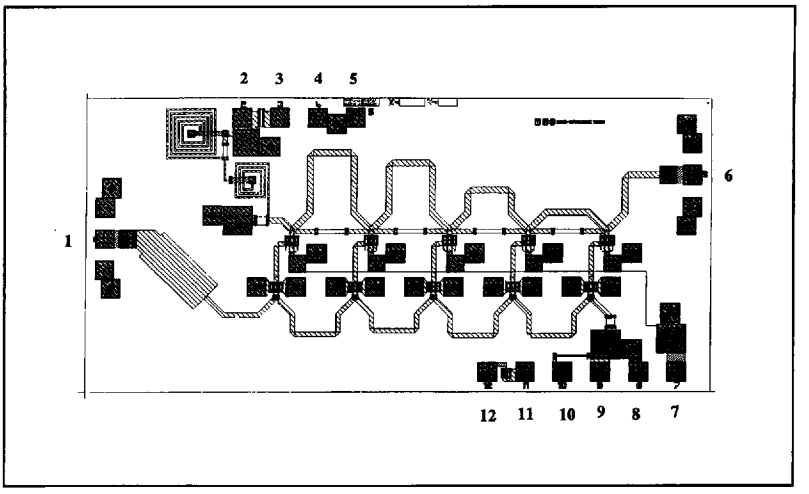
Parameters	Conditions	Min	Typ	Max	Units
Small Signal Gain	3.5V 0.5 Id_{ss}	–	12	–	dB
Gain Flatness	3.5V 0.5 Id_{ss}	–	–	±0.5	dB
Noise Figure	3.5V 0.5 Id_{ss}	–	–	4	dB
Gain Control	3.5V 0.5 Id_{ss}	–7	–	+2	dB
Harmonics at P (–1dB)	3.5V 0.5 Id_{ss}	–	–	–15	dBc
Output Power at 1dB gain compression	3.5V 0.5 Id_{ss}	+10	+12	–	dBm
Input Return Loss	3.5V 0.5 Id_{ss}	10	–	–	dB
Output Return Loss	3.5V 0.5 Id_{ss}	10	–	–	dB
Max Safe Input Power	3.5V 0.5 Id_{ss}	+14			dBm
DC Power Supply	+3.5V		60	100	mA
	Vg1		–0.5		V
	Vg2	–1		+1	V
Operating temperature		–40		+95	°C

Notes:

1. Bias-up arrangement.
   Apply Vdd with Vg1 and Vg2 set to 0V
   Apply Vg1 to set Ids = 50% Id_{ss}
   Apply Vg2 to set required gain
   To bias down reverse procedure
2. The auxiliary common-source bias, Vg1a, is connected to Vg1 via a 1K Ω on-chip resistor. For normal operation Vg1 is used.
3. The input bond wire should ideally be 0.3mm, and the output 0.4mm long.

Bond Pad Configuration

1. R.F. input	
2. Drain bias	Vdd
3. Auxiliary drain bias	
4. Ground	
5. Ground	
6. RF output	
7. Common-gate bias	Vg2
8. Ground	
9. Common-source bias	Vg1
10. Common-source auxiliary bias	Vg1a
11. Temperature sensing diode	Vd
12. Temperature sensing diode	Vd+



Chip Size: 1.956 × 4.064mm