Infineon technologies

24 - 32 GHz GaAs Low Noise Amplifier MMIC

24 - 32 GHz LNA

Preliminary Data Sheet

- Two-Stage Monolithic Microwave Integrated Circuit (MMIC) HEMT Amplifier (coplanar design)
- Input/Output matched to 50 Ω
- Frequency range: 24 GHz to 32 GHz
- Gain > 18 dB
- Noise Figure < 3 dB
- Chip size: 2.15 mm × 1.45 mm

ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precautions!

Description

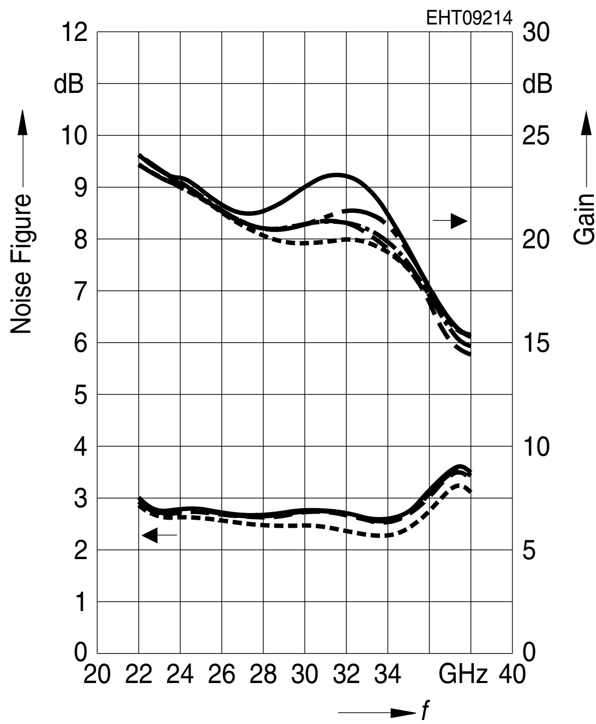
This two-stage GaAs MMIC Low Noise Amplifier is intended for use in radio link applications. It provides a gain of 18 dB with a noise figure of less than 3 dB. The device is fabricated with a 0.13 micron Pseudomorphic InGaAs/AlGaAs/GaAs High Electron Mobility Transistor processing technology.

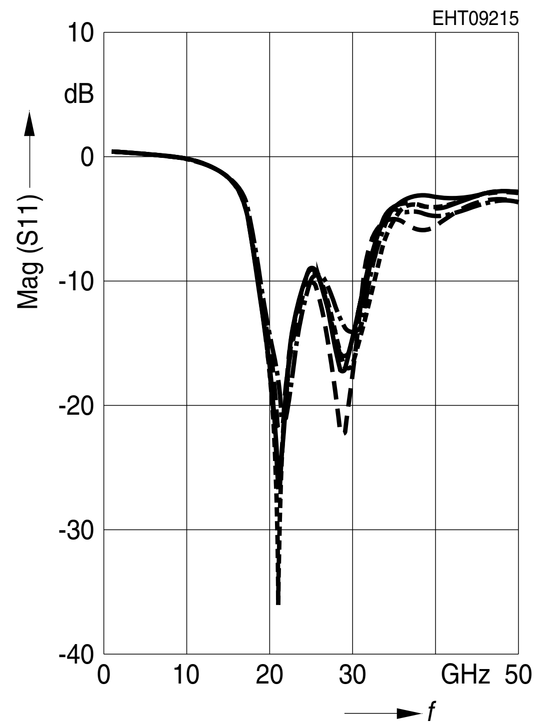
Type	Marking	Ordering Code	Package
24 - 32 GHz LNA	–	on request	Chip

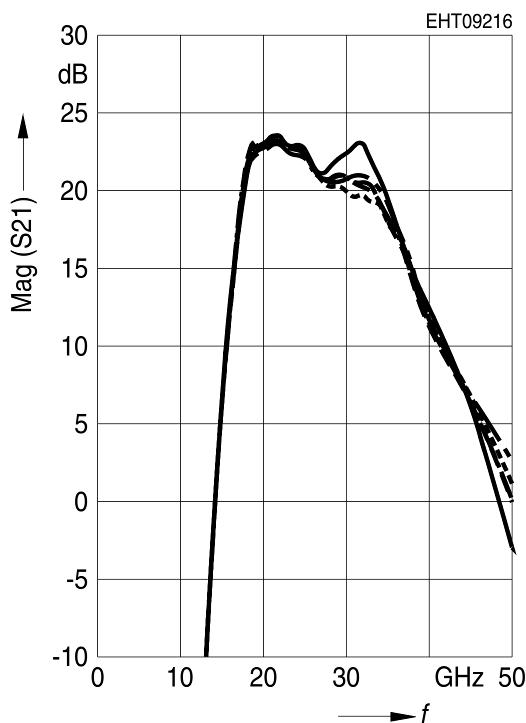
Electrical Specifications (V_G = 0.1 V, V_D = 5 V, I_D = 85 mA)

Parameter	Limit Values			Unit	Test Conditions
	min.	typ.	max.		
Frequency Range	24	–	32	GHz	–
Gain	–	18	–	dB	–
Noise Figure	–	3	–	dB	–
1 dB gain compression	–	12	–	dBm	–
Input Return Loss	–	< – 10	–	dB	–
Output Return Loss	–	< – 10	–	dB	–

Measured Data (on chip measurements)
V_{GS} = 0.1 V, V_{DS} = 5 V, I_{DS} = 85 mA; unless otherwise specified







Maximum Ratings

Parameter	Symbol	Value	Unit
Drain voltage	V_D	5	V
Gate voltage	V_G	– 2 … + 0.8	V

Technology Data

Parameter	Value
Chip thickness	95 µm
Chip size	2.15 mm × 1.45 mm
DC/RF Bond pads	100 µm × 100 µm/90 µm × 60 µm
Bond pad material	Au (plated gold)
Chip passivation	SiN (silicon nitride)

Recommendation of Bonding Conditions

Parameter	Thermocompression Nailhead, without Ultrasonic	Wedge Bonding	Bond Pull Test Mil 883, > 2 g
Table Temp.	250 °C	250 °C	1 : 2.5 g
Tool Temp.	180 °C	150 °C	2 : 3.1 g
Scrub	100 Hz	–	3 : 3.2 g
Bond Force	50 g	25 g	4 : 3.0 g
Wire Diameter	25 µm	17 µm	5 : 2.8 g

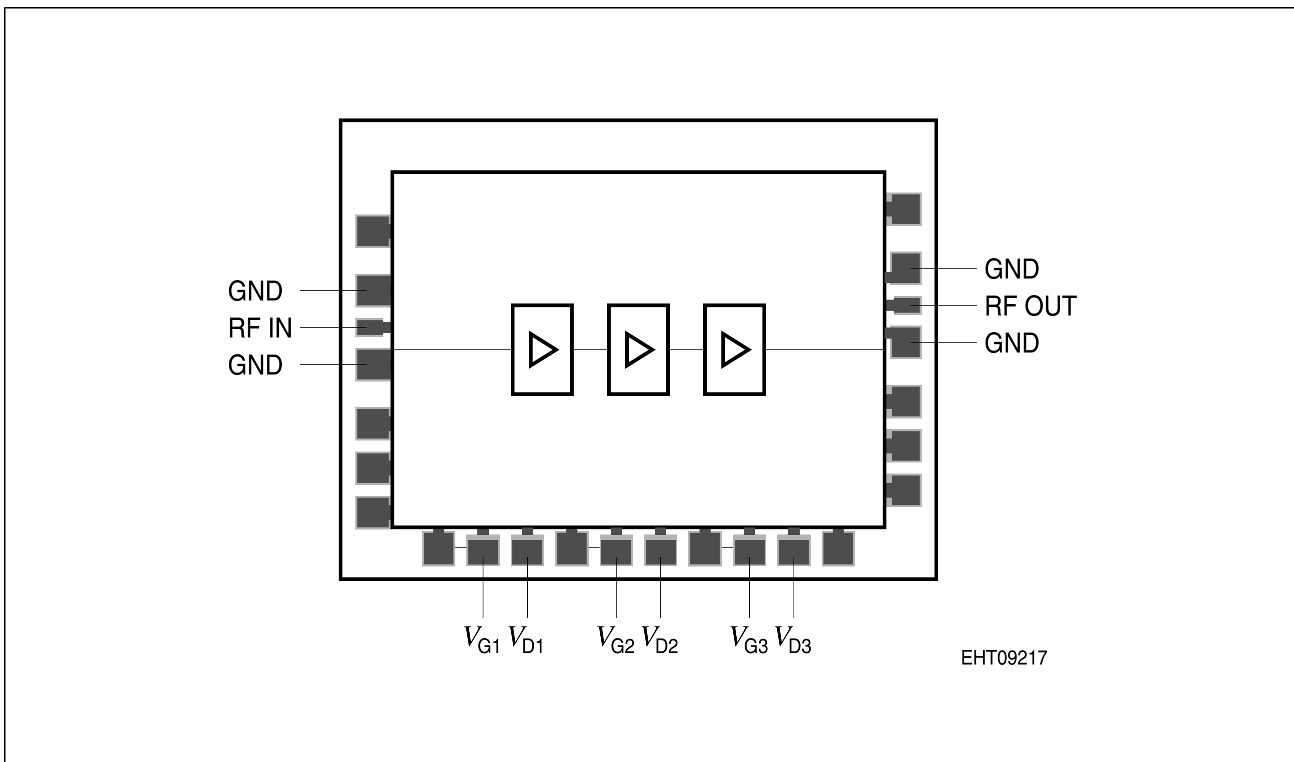


Figure 1 Bond Plan