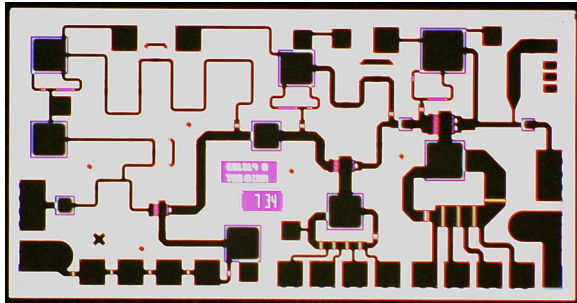


Ka Band Low Noise Amplifier

TGA1319B-EPU



Chip Dimensions 2.237 mm x 1.144 mm

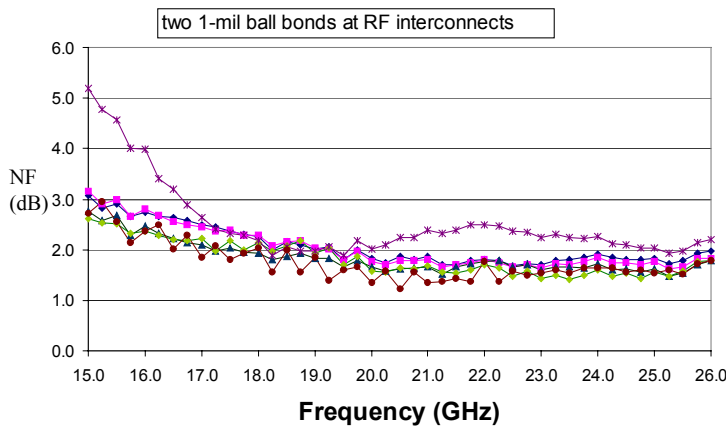
Key Features and Performance

- 0.15um pHEMT Technology
- 21-27 GHz Frequency Range
- 1.75 dB Nominal Noise Figure
- 19 dB Nominal Gain
- 8dBm Pout
- 3V, 45 mA Self -biased

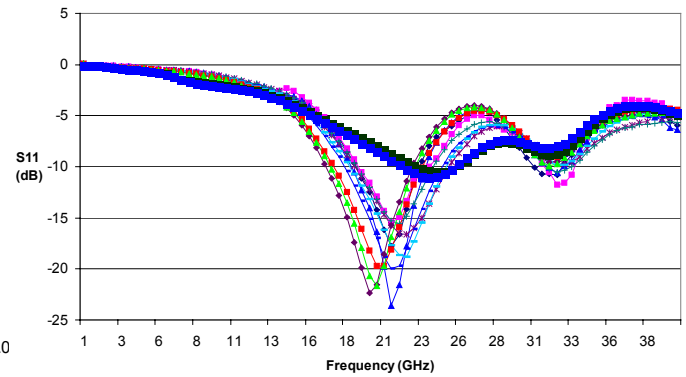
Primary Applications

- Point-to-Point Radio
- Point-to-Multipoint Communications

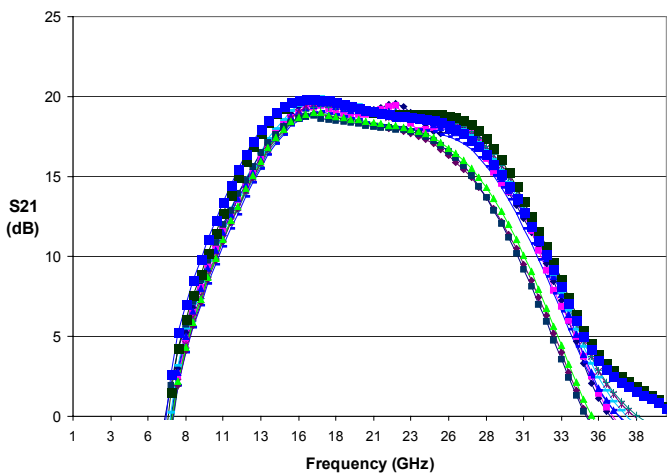
Preliminary Data, 6-10 Fixtured samples @ 25C



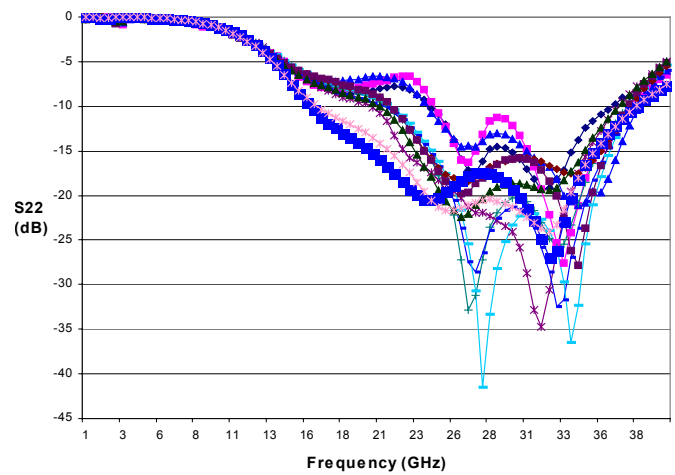
NF @ 25C



S11 @ 25C



Gain @ 25C



S22 @ 25C

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications subject to change without notice

MAXIMUM RATINGS

SYMBOL	PARAMETER ^{4/}	VALUE	NOTES
V ⁺	POSITIVE SUPPLY VOLTAGE	5 V	
I ⁺	POSITIVE SUPPLY CURRENT	60 mA	<u>1/</u>
I ⁻	NEGATIVE GATE CURRENT	5.28 mA	
P _{IN}	INPUT CONTINUOUS WAVE POWER	15 dBm	
P _D	POWER DISSIPATION	.3 W	
T _{CH}	OPERATING CHANNEL TEMPERATURE	150 °C	<u>2/</u> <u>3/</u>
T _M	MOUNTING TEMPERATURE (30 SECONDS)	320 °C	
T _{STG}	STORAGE TEMPERATURE	-65 to 150 °C	

- 1/ Total current for all stages.
- 2/ These ratings apply to each individual FET.
- 3/ Junction operating temperature will directly affect the device median time to failure (T_M). For maximum life, it is recommended that junction temperatures be maintained at the lowest possible levels.
- 4/ These ratings represent the maximum operable values for the device.

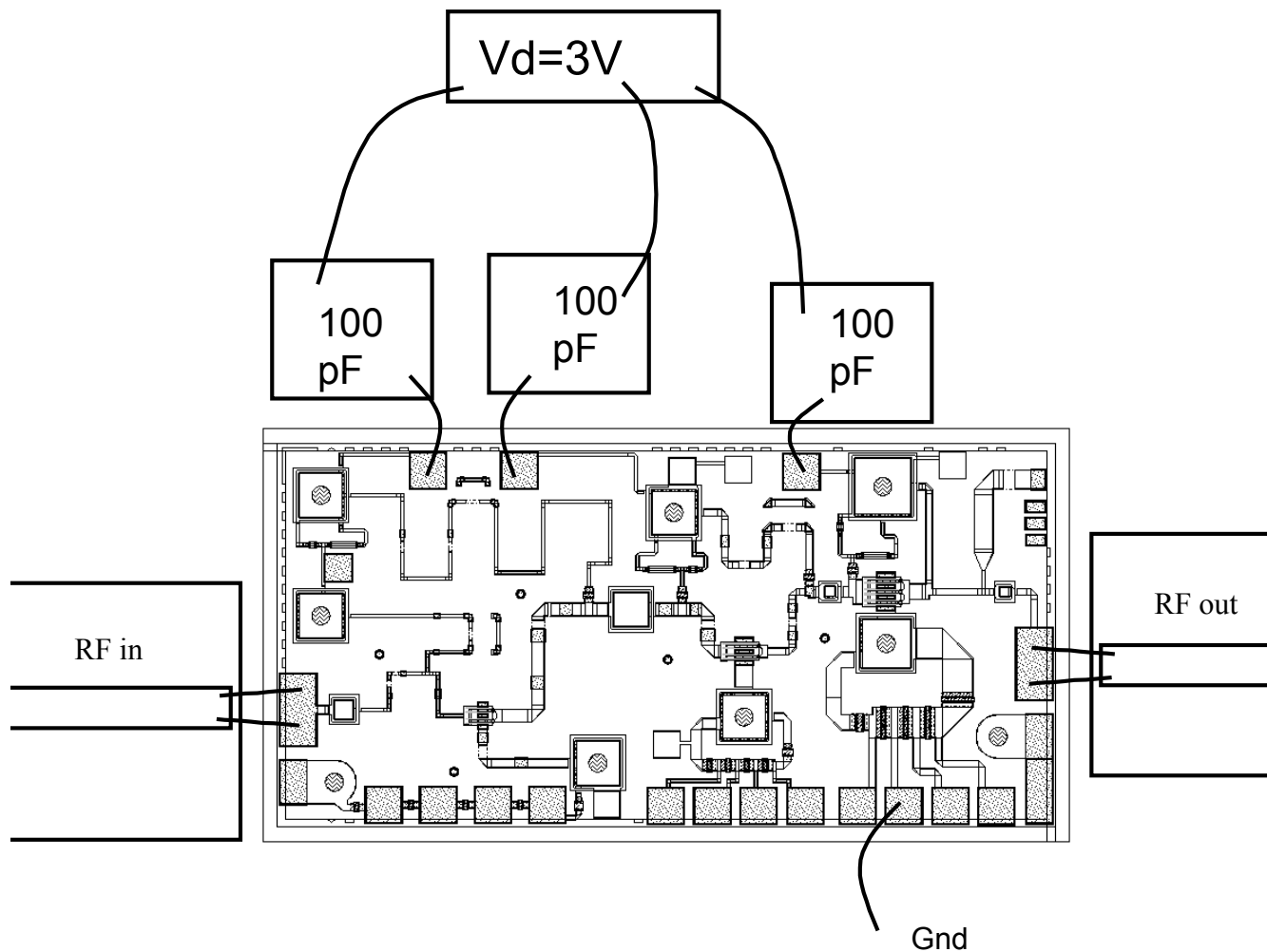
ON-WAFER RF PROBE CHARACTERISTICS

(T_A = 25 °C ± 5°C)

V_d = 3 V

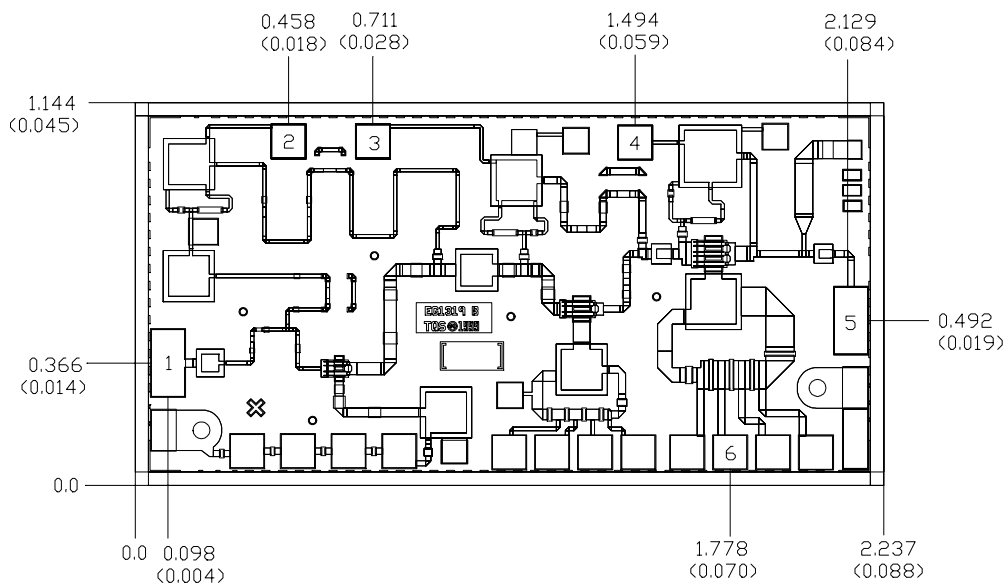
Symbol	Parameter	Test Condition	Limit			Units
			Min	Typ	Max	
Gain	Small Signal Gain	F = 21 – 26 GHz	18.5		---	dB
		F = 27 GHz	17		---	
NF	Noise Figure	F = 21 – 26.5 GHz	---		2	dB
PWR	Output Power @ P1dB	F = 21 GHz	5		---	dBm
		F = 22 GHz	6		---	
		F = 23 – 24 GHz	7		---	
		F = 25 – 26 GHz	8		---	
		F = 27 GHz	10		---	

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications subject to change without notice



TGA1319B - Recommended Assembly Drawing

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications subject to change without notice



Units: millimeters (inches)

Thickness: 0.1016 (0.004)

Chip edge to bond pad dimensions are shown to center of bond pad

Chip size tolerance: +/- 0.051 (0.002)

Bond Pad #1 (RF Input)	0.100 x 0.200 (0.004 x 0.008)
Bond Pad #2 (Vd1)	0.100 x 0.100 (0.004 x 0.004)
Bond Pad #3 (Vd2)	0.100 x 0.100 (0.004 x 0.004)
Bond Pad #4 (Vd3)	0.100 x 0.100 (0.004 x 0.004)
Bond Pad #5 (RF Output)	0.100 x 0.200 (0.004 x 0.008)
Bond Pad #6 (GND)	0.100 x 0.100 (0.004 x 0.004)

Mechanical Drawing

Note: Devices designated as EPU are typically early in their characterization process prior to finalizing all electrical and process specifications. Specifications subject to change without notice

Assembly Process Notes

Reflow process assembly notes:

- AuSn (80/20) solder with limited exposure to temperatures at or above 300°C
- alloy station or conveyor furnace with reducing atmosphere
- no fluxes should be utilized
- coefficient of thermal expansion matching is critical for long-term reliability
- storage in dry nitrogen atmosphere

Component placement and adhesive attachment assembly notes:

- vacuum pencils and/or vacuum collets preferred method of pick up
- avoidance of air bridges during placement
- force impact critical during auto placement
- organic attachment can be used in low-power applications
- curing should be done in a convection oven; proper exhaust is a safety concern
- microwave or radiant curing should not be used because of differential heating
- coefficient of thermal expansion matching is critical

Interconnect process assembly notes:

- thermosonic ball bonding is the preferred interconnect technique
- force, time, and ultrasonics are critical parameters
- aluminum wire should not be used
- discrete FET devices with small pad sizes should be bonded with 0.0007-inch wire
- maximum stage temperature: 200°C

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.

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