



X=1800 μm Y=730 μm

Product Features

- ◆ RF frequency: 27 to 33 GHz
- ◆ Noise figure: 3.0 dB, typical
- ◆ Linear gain: 20 dB, typical
- ◆ P1dB: 12 dBm, typical
- ◆ Unconditionally stable
- ◆ 1.3 sq. mm
- ◆ Single ended design
- ◆ DC Power: 2.5 Vdc at 52 mA

Performance Characteristics (Ta = 25°C)

Specification	Min	Typ	Max	Unit
Frequency	27		33	GHz
Linear Gain	18	20		dB
Noise Figure		3	3.5	dB
P1dB	10	12		dBm
Input Return Loss	8	12		dB
Output Return Loss	10	14		dB
Vd		2.5		V
Id		52		mA
Vg		-0.3		V

Applications

- ◆ Point-to-Point Digital Radios
- ◆ Point-to-Multipoint Digital Radios
- ◆ VSAT

Description and Application

The ALH313 monolithic HEMT amplifier is a narrow band, three-stage, low noise device designed for use in commercial digital microwave radios and wireless LANs. The small die size allows for extremely compact packaging. To ensure rugged and reliable operation, HEMT devices are fully passivated. Both bond pad and backside metallization are Ti/Au, which is compatible with conventional die attach, thermocompression and thermosonic wire bonding assembly techniques.

Absolute Maximum Ratings (Ta = 25°C)

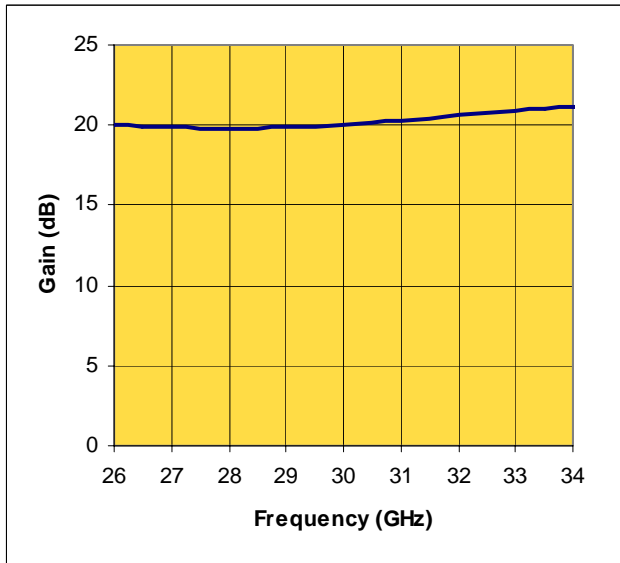
Parameter	Min	Max	Unit
Vd		5	V
Vg	-1	+0.3	V
Id		100	mA
Input drive level		-3	dBm
Assy. Temperature (60 seconds)		300	deg. C

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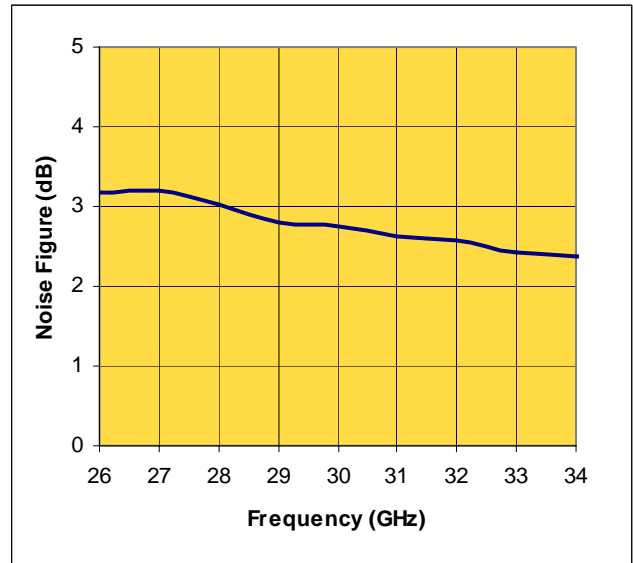


Measured Performance Characteristics (Typical Performance at 25°C)
Vd = 2.5 V, Id = 52 mA

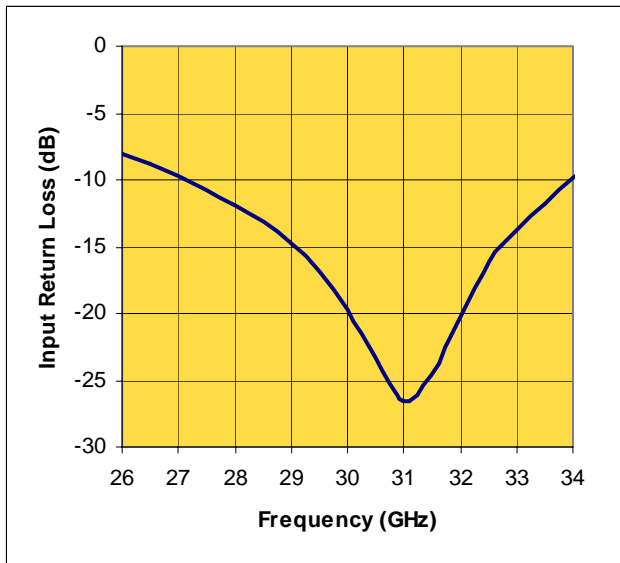
Linear Gain Versus Frequency



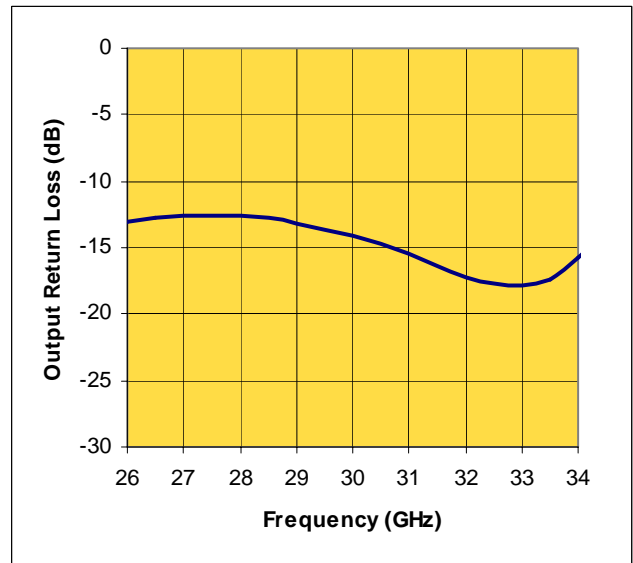
Noise Figure Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



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Product Datasheet

Revision: May 2007

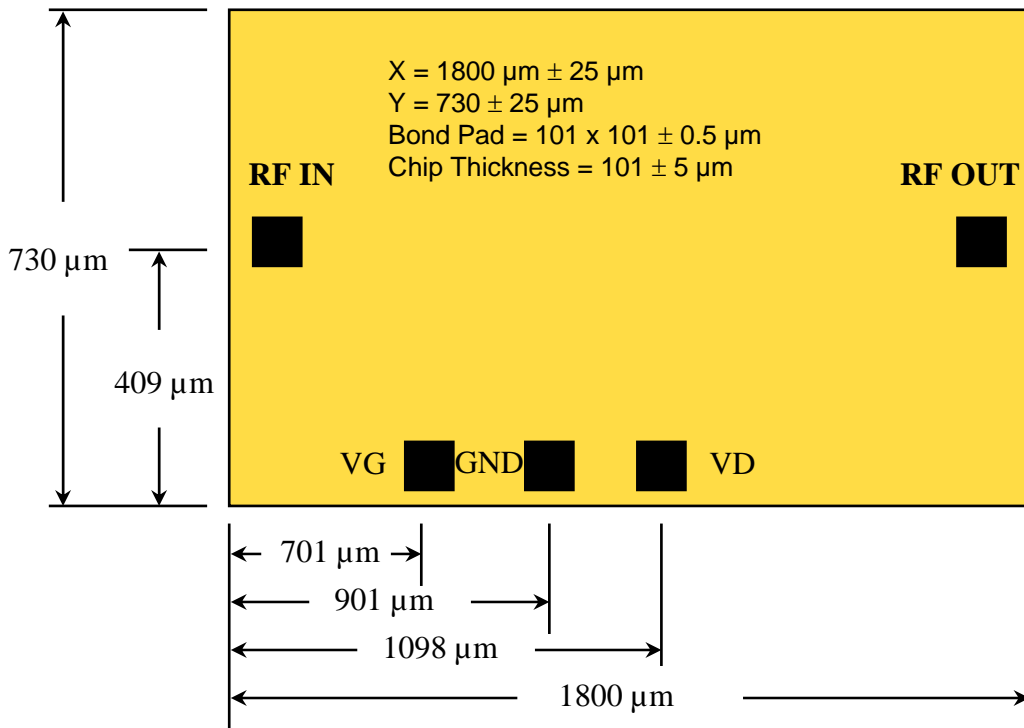
Measured Performance Characteristics (Typical Performance at 25°C)
Vd = 2.5 V, Id = 52 mA

Freq GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
25.0	0.463	141.643	10.379	-38.276	0.001	140.499	0.195	-148.746
25.5	0.436	138.060	10.212	-48.503	0.001	136.631	0.212	-152.156
26.0	0.404	134.399	10.109	-58.273	0.001	130.733	0.220	-154.726
26.5	0.369	131.221	10.050	-68.007	0.001	124.119	0.228	-156.649
27.0	0.333	128.250	9.982	-77.571	0.001	80.840	0.233	-158.945
27.5	0.296	125.081	9.950	-86.918	0.001	69.791	0.234	-160.993
28.0	0.259	122.404	9.945	-96.219	0.001	20.830	0.236	-162.716
28.5	0.224	119.719	9.931	-105.346	0.002	39.383	0.231	-165.152
29.0	0.187	117.246	9.973	-114.277	0.002	69.618	0.222	-166.628
29.5	0.147	114.528	10.055	-123.201	0.002	71.098	0.212	-166.677
30.0	0.108	111.948	10.170	-132.285	0.003	88.650	0.200	-165.913
30.5	0.072	87.386	10.308	-141.506	0.003	89.624	0.188	-164.242
31.0	0.052	6.006	10.457	-150.805	0.003	89.804	0.175	-161.477
31.5	0.062	-58.543	10.642	-159.752	0.004	103.856	0.157	-158.760
32.0	0.098	-87.632	10.887	-133.226	0.004	120.355	0.142	-154.497
32.5	0.152	-96.079	11.116	13.865	0.004	136.715	0.134	-146.753
33.0	0.202	-100.742	11.258	130.999	0.005	143.209	0.130	-136.050
33.5	0.256	-104.798	11.416	156.796	0.005	145.068	0.138	-121.227
34.0	0.316	-110.647	11.511	145.552	0.006	140.413	0.163	-109.931
34.5	0.371	-116.760	11.424	133.404	0.006	137.366	0.197	-104.663
35.0	0.421	-123.073	11.244	121.117	0.007	132.381	0.236	-102.665

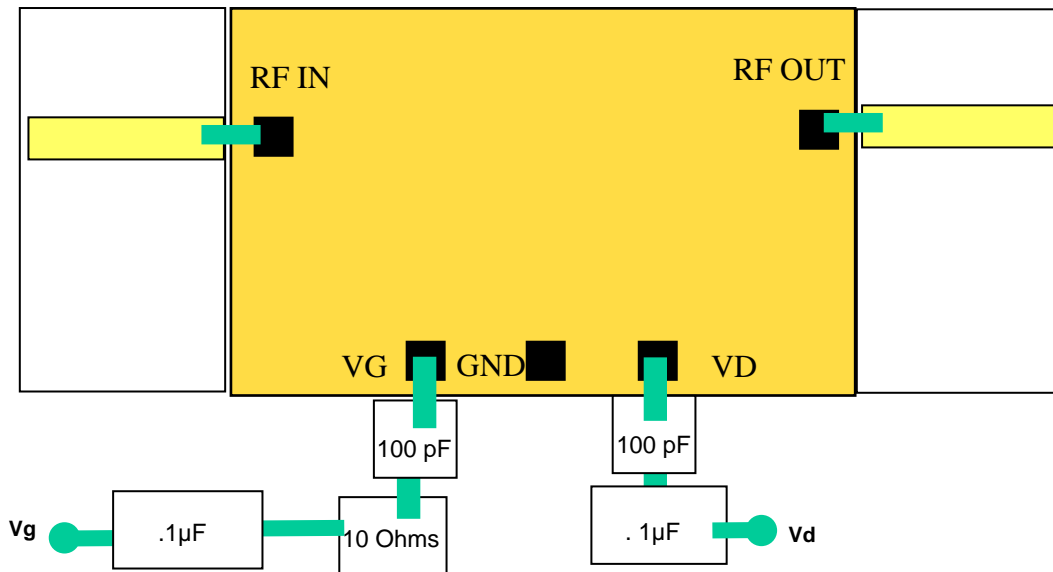
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Die Size and Bond Pad Locations



Suggested Bonding



Recommended Assembly Notes

1. Bypass caps should be 100 pF (approximately) ceramic (single-layer) placed no farther than 30 mils from the amplifier.
2. Best performance obtained from use of <10 mil (long) by 3 by 0.5 mil ribbons on input and output.

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