

X=1800 μm Y=730 μm

Product Features

- ◆ RF frequency: 37 to 42 GHz
- ◆ Noise figure: 3.5 dB, typical
- ◆ Linear gain: 22 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	37		42	GHz
Linear Gain	20	22		dB
Noise Figure		3.5	4.5	dB
P1dB	10	12		dBm
Input Return Loss	3	4		dB
Output Return Loss	6	8		dB
Vd		2.5		V
Id		52		mA
Vg		-0.3		V

Applications

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

Description and Application

The ALH310 monolithic HEMT amplifier is a narrow band, three-stage, gain block 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		-5	dBm
Assy. Temperature (60 seconds)		300	deg. C

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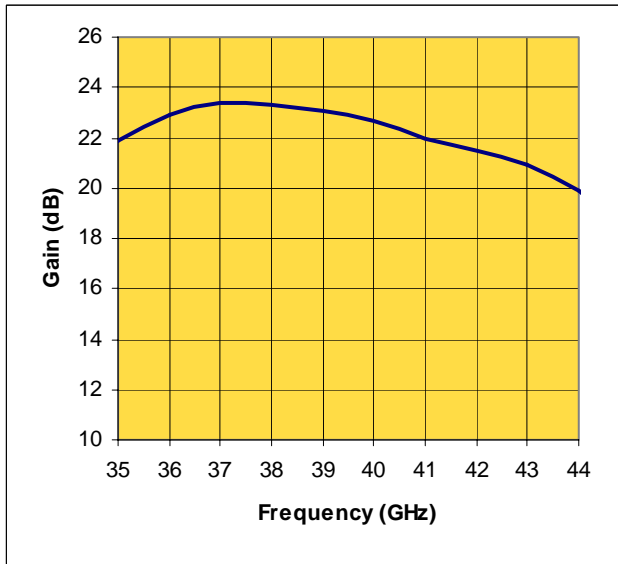


Product Datasheet

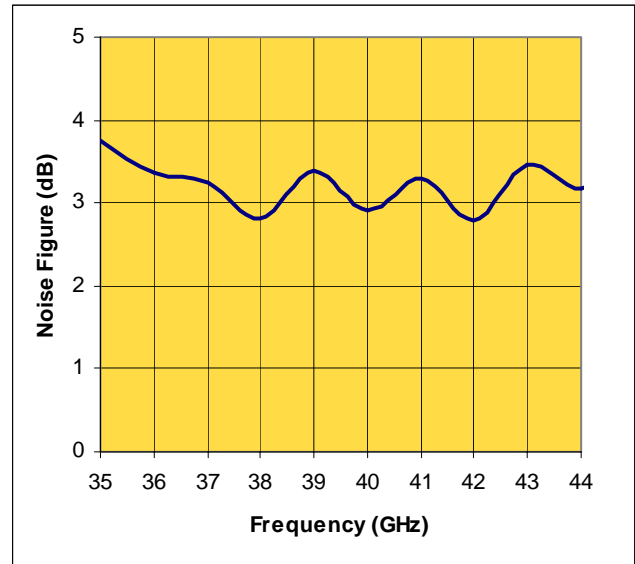
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Measured Performance Characteristics (Typical Performance at 25°C)
Vd = 2.5 V, Id = 52 mA

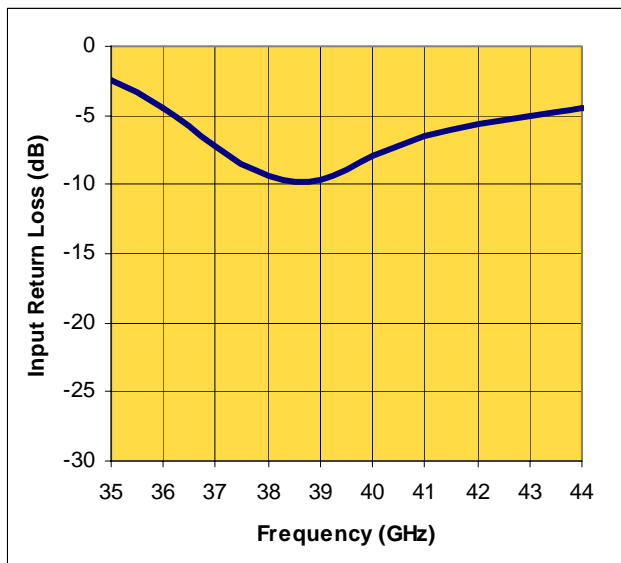
Linear Gain Versus Frequency



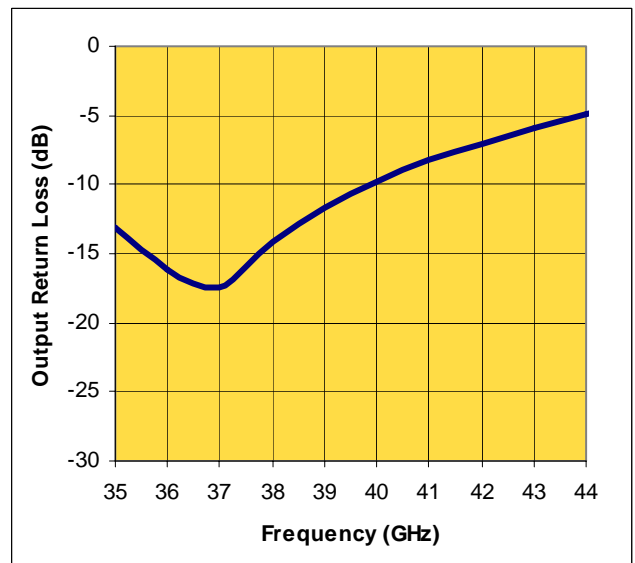
Noise Figure Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



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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	0.801	-124.641	3.426	29.356	0.002	146.948	0.491	141.222
26	0.832	-131.212	2.926	27.563	0.002	91.915	0.443	136.965
27	0.859	-137.294	3.031	14.727	0.002	90.336	0.420	132.242
28	0.870	-143.474	3.402	-0.051	0.002	92.834	0.402	127.986
29	0.885	-148.851	4.005	-15.639	0.003	83.532	0.383	126.512
30	0.899	-156.660	4.741	-31.966	0.003	101.023	0.366	124.422
31	0.913	-165.059	5.712	-49.193	0.003	129.466	0.345	122.081
32	0.914	-53.131	6.921	-68.288	0.005	139.714	0.322	119.912
33	0.894	149.013	8.491	-88.726	0.005	142.610	0.286	116.109
34	0.845	145.518	10.226	-111.498	0.006	145.273	0.252	113.757
35	0.757	137.968	11.896	-136.523	0.007	149.206	0.209	114.398
36	0.610	131.935	13.488	-156.050	0.008	141.258	0.149	128.209
37	0.439	124.437	14.407	132.856	0.010	129.265	0.138	104.010
38	0.329	129.166	14.332	138.369	0.009	112.629	0.200	-50.500
39	0.318	140.176	14.039	113.467	0.010	97.817	0.260	-96.715
40	0.385	144.790	13.366	88.549	0.009	82.971	0.322	-109.344
41	0.462	137.629	12.318	65.402	0.009	62.819	0.384	-53.440
42	0.510	123.466	11.773	41.988	0.008	44.036	0.434	-10.309
43	0.543	103.082	10.974	17.136	0.007	18.751	0.494	58.739
44	0.596	79.344	9.797	-7.431	0.008	-4.025	0.551	141.136
45	0.578	55.849	8.149	-30.958	0.008	-30.951	0.597	151.713

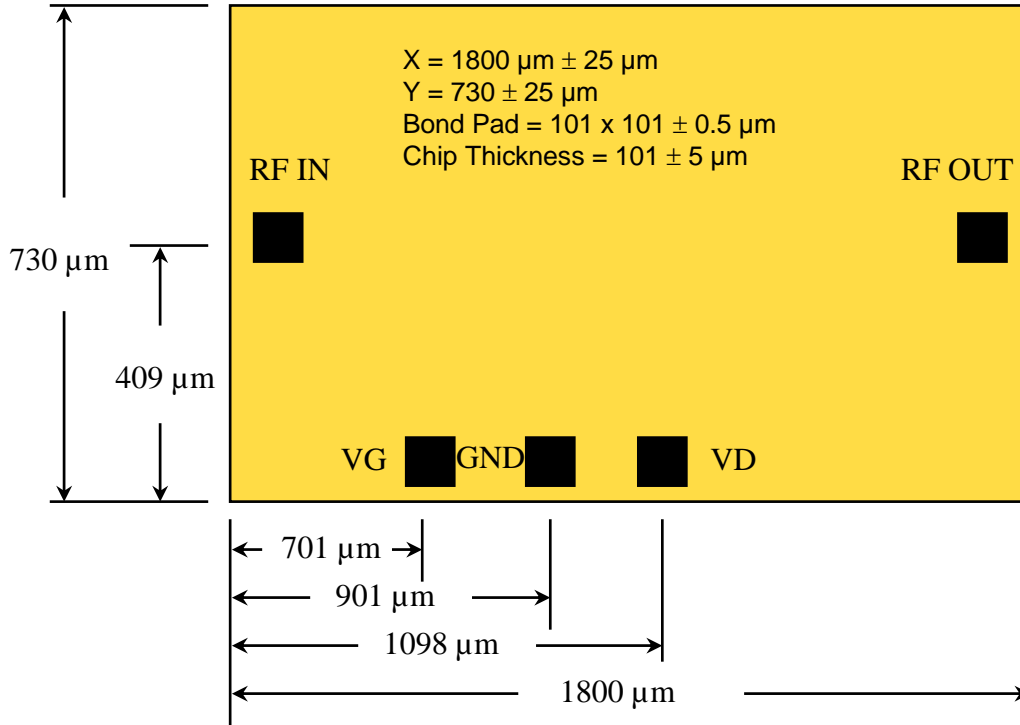
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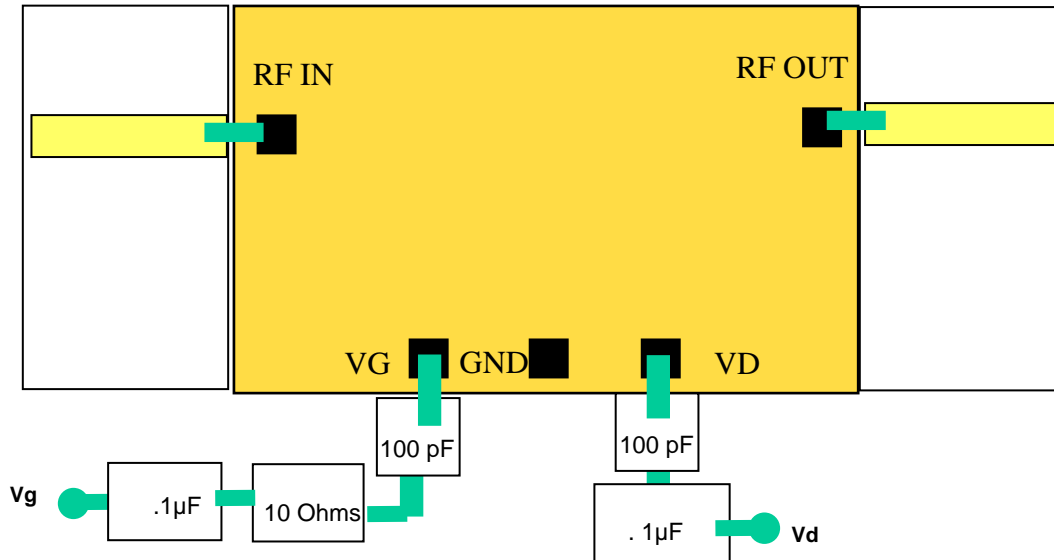
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Die Size and Bond Pad Locations



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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