

X=1800µm Y=730µm

Features

- ◆ RF frequency: 27 to 30 GHz
- ◆ Noise figure: 3.0 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	27		30	GHz
Linear Gain	20	22		dB
Noise Figure		3	3.5	dB
P1dB	10	12		dBm
Input Return Loss	10	12		dB
Output Return Loss	16	18		dB
Vd		2.5		V
Id		52		mA
Vg		-0.3		V
Thermal Resistance				
Stage 1				C/W
Stage 2				C/W
Stage 3				C/W

Applications

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

Product Description

The ALH312C 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
Drain Voltage (Vds)		5	V
Gate Voltage (Vgs)	-1	+0.3	V
Drain-gate Voltage (Vdg)		6	V
Drain current		100	mA
Input drive level		-5	dBm
Assy. Temperature (60 seconds)		300	deg. C

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Product Datasheet **Discontinued 6/12/2006**

Revision: June 2006

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
27	0.175	-177.455	14.101	-93.333	0.003	-136.179	0.066	-167.199
27.25	0.179	-171.364	14.245	-99.088	0.002	93.02	0.067	-159.557
27.5	0.165	-168.038	14.16	-104.278	0.008	154.579	0.041	-158.11
27.75	0.169	-165.009	14.129	-109.196	0.006	143.385	0.061	-169.334
28	0.167	-159.736	14.278	-114.44	0.001	-172.75	0.051	175.859
28.25	0.156	-153.017	14.497	-119.25	0.005	170.22	0.053	161.7
28.5	0.156	-153.841	14.709	-124.703	0.009	-132.249	0.064	147.383
28.75	0.165	-150.747	14.734	-130.635	0.003	-18.248	0.054	161.527
29	0.177	-145.213	14.702	-135.706	0.005	108.755	0.036	144.466
29.25	0.199	-141.516	14.735	-140.629	0.006	-141.755	0.041	101.803
29.5	0.205	-137.384	15.168	-145.529	0.003	-102.136	0.047	95.2
29.75	0.221	-130.117	15.492	-151.244	0.005	90.897	0.045	71.541
30	0.225	-128.509	15.742	-157.316	0.008	-172.974	0.056	63.58
30.25	0.226	-125.632	15.91	-163.13	0.003	76.79	0.069	38.065
30.5	0.247	-126.607	16.082	-168.692	0.005	160.635	0.105	35.505
30.75	0.27	-119.528	16.337	-174.395	0.006	127.381	0.111	25.287
31	0.281	-127.679	16.853	179.286	0.008	-150.697	0.152	24.479
31.25	0.329	-125.735	17.226	172.822	0.003	123.919	0.156	14.844
31.5	0.34	-122.869	17.623	165.157	0.011	179.16	0.193	9.883
31.75	0.363	-126.393	17.729	157.816	0.007	-173.75	0.233	3.894
32	0.397	-129.239	17.887	150.31	0.007	148.122	0.255	-3.428

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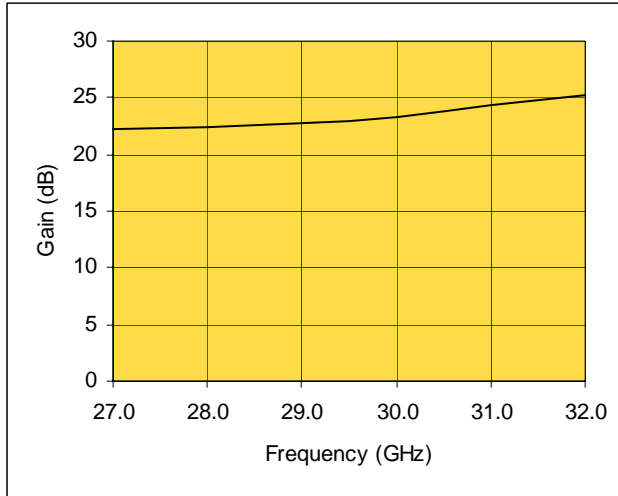


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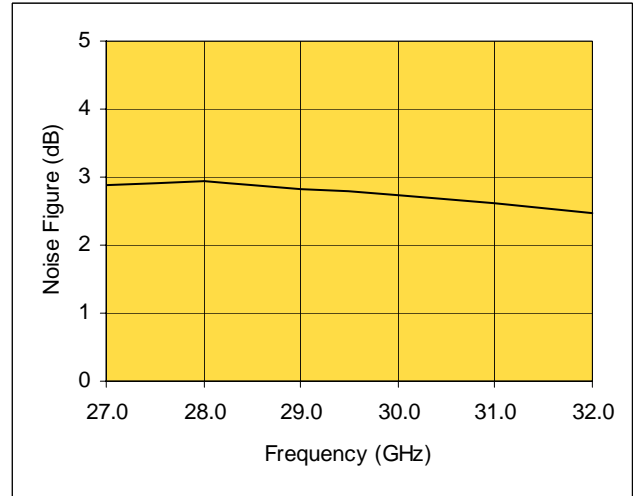
Revision: June 2006

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

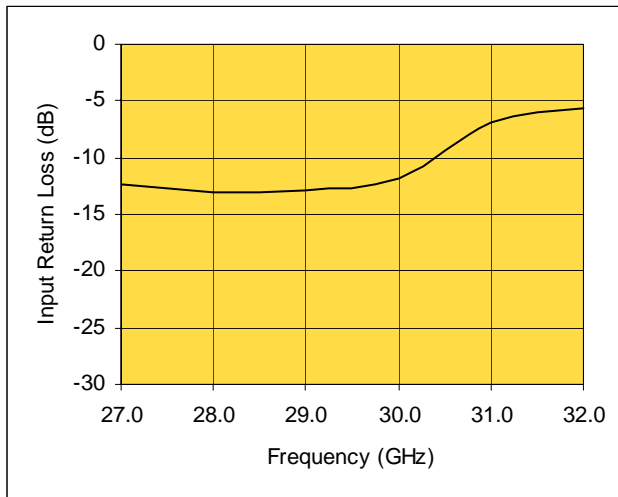
Linear Gain Versus Frequency



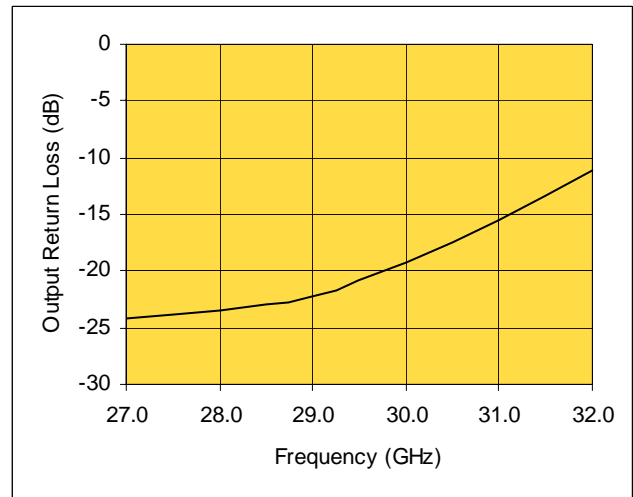
Noise Figure Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



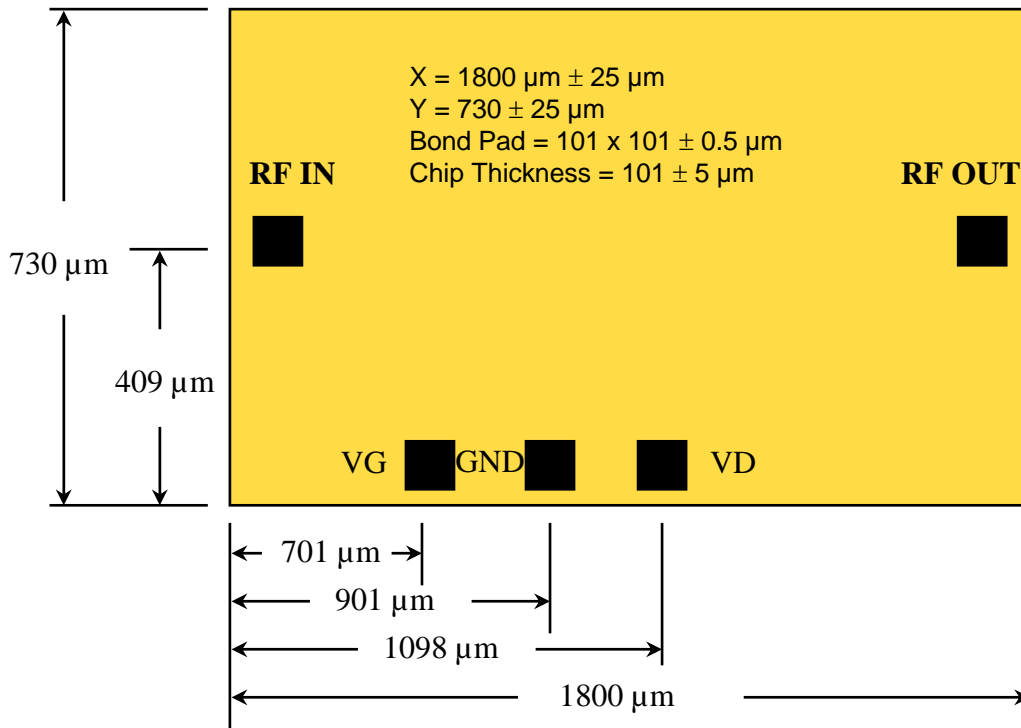
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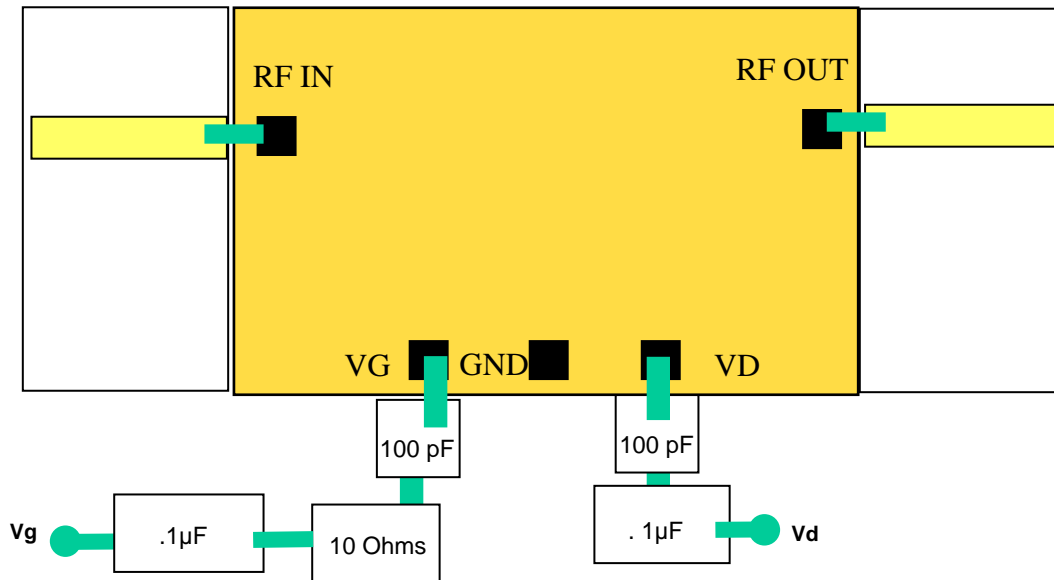
Product Datasheet **Discontinued 6/12/2006**

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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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