

X=1800 μm Y=730 μm

Product Features

- ◆ RF frequency: 22 to 26.5 GHz
- ◆ Noise figure: 3.0 dB, typical
- ◆ Linear gain: 24 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	22		26.5	GHz
Linear Gain	22	25		dB
Noise Figure				
(22 to 24 GHz)		3.5	4	dB
(24 to 26.5 GHz)		3	3.5	dB
P1dB	10	12		dBm
Input Return Loss	8	10		dB
Output Return Loss	11	15		dB
Vd		2.5		V
Id		52		mA
Vg		-0.3		V

Applications

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

Product Description

The ALH311 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)

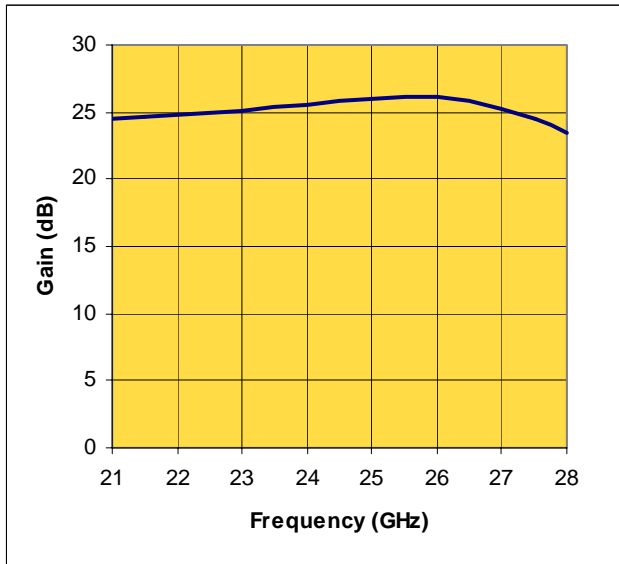
Parameter	Min	Max	Unit
VD		5	V
Vg	-1	+0.3	V
Id		100	mA
Input drive level		-7	dBm
Assy. Temperature (60 seconds)		300	deg. C

Note: The data contained in this document is for information only. Northrop Grumman reserves the right to change without notice the specifications, designs, prices or conditions of sale, as they apply to this product. The product represented by this datasheet is subject to U.S. Export Law as contained in ITAR or the EAR regulations.

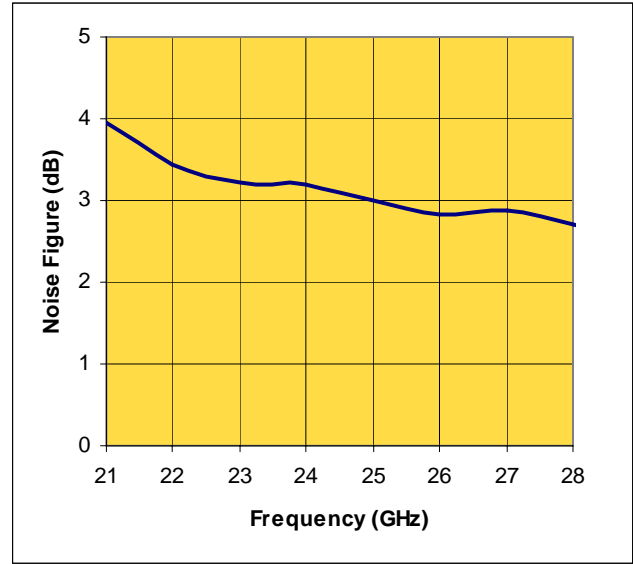


Measured Performance Characteristics (Typical Performance at 25°C)
Vd = 2.5 V, Id = 52 mA

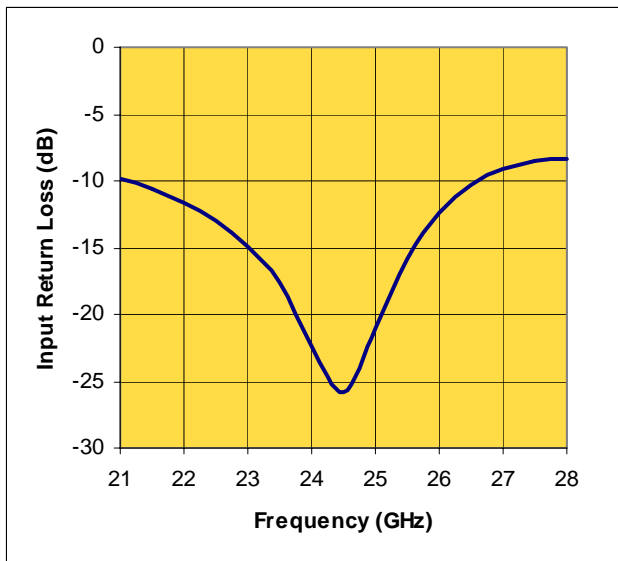
Linear Gain Versus Frequency



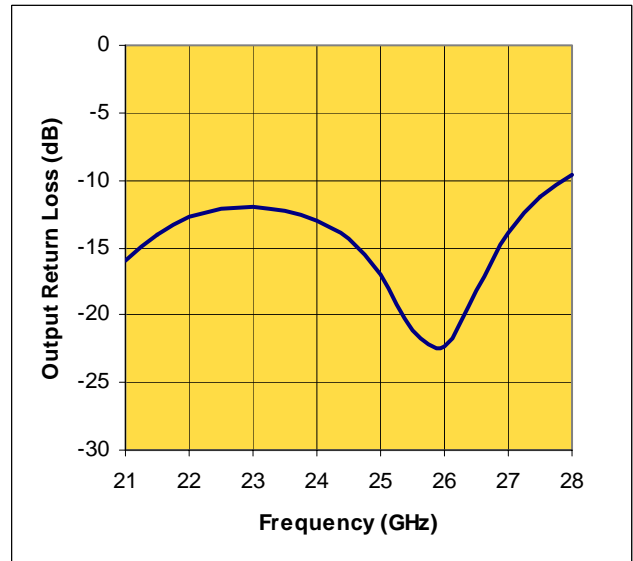
Noise Figure Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



Note: The data contained in this document is for information only. Northrop Grumman reserves the right to change without notice the specifications, designs, prices or conditions of sale, as they apply to this product. The product represented by this datasheet is subject to U.S. Export Law as contained in ITAR or the EAR regulations.



Product Datasheet

Revision: May 2007

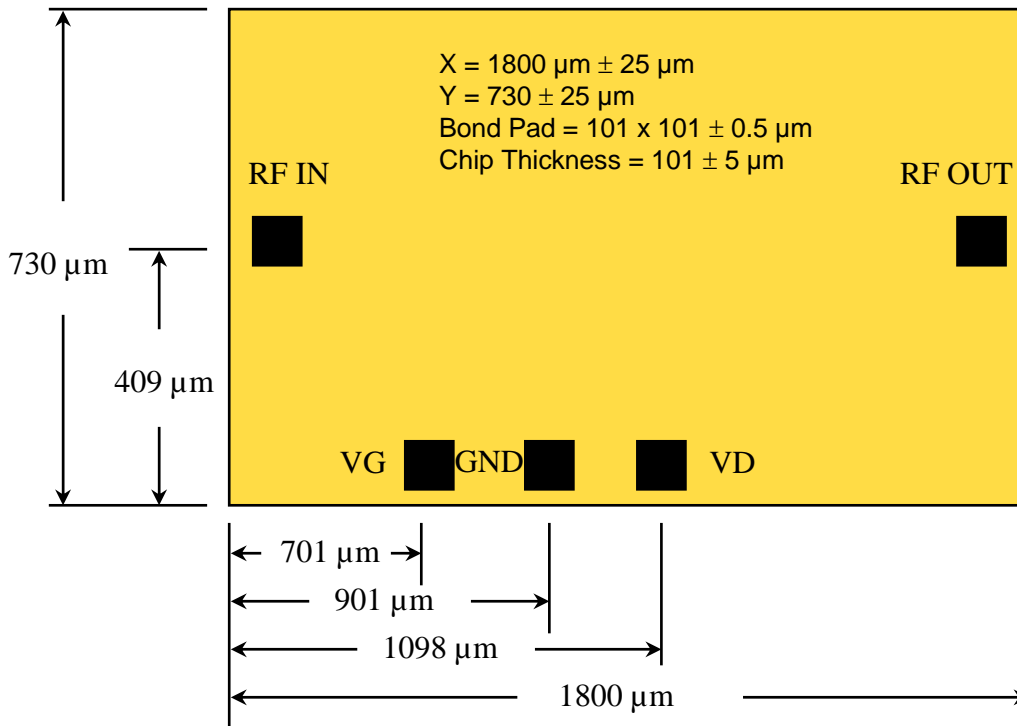
Measured Performance Characteristics (Typical Performance at 25°C)
Vd = 2.5 V, Id = 52 mA

Freq GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
18.0	0.424	159.740	9.609	74.387	0.001	-128.871	0.414	112.462
18.5	0.411	156.747	10.932	59.437	0.001	-131.558	0.353	98.280
19.0	0.396	153.562	12.337	43.506	0.001	-137.211	0.284	80.609
19.5	0.379	150.558	13.745	26.429	0.001	-147.626	0.210	55.277
20.0	0.363	147.549	14.974	8.606	0.001	-155.978	0.150	16.173
20.5	0.345	143.598	15.871	-9.150	0.002	-129.225	0.134	-31.673
21.0	0.322	139.296	16.440	-26.317	0.002	-109.370	0.152	-70.851
21.5	0.294	134.628	16.867	-42.782	0.002	-73.380	0.183	-97.548
22.0	0.264	129.727	17.177	-58.544	0.002	14.756	0.210	-116.947
22.5	0.227	124.071	17.454	-73.670	0.002	87.570	0.224	-131.721
23.0	0.180	118.298	17.831	-88.228	0.002	108.411	0.228	-142.575
23.5	0.133	111.677	18.274	-103.120	0.003	153.078	0.221	-152.687
24.0	0.082	87.156	18.829	-118.222	0.003	158.670	0.203	-159.693
24.5	0.061	-9.822	19.260	-133.838	0.004	158.220	0.173	-152.515
25.0	0.083	-61.807	19.571	-150.077	0.005	150.433	0.128	-128.188
25.5	0.140	-96.912	19.797	-105.784	0.005	140.456	0.081	-79.304
26.0	0.213	-111.672	19.764	32.959	0.006	129.669	0.077	-93.864
26.5	0.269	-125.253	19.039	150.964	0.006	121.344	0.118	-82.826
27.0	0.316	-136.482	17.963	137.644	0.006	109.256	0.189	-80.167
27.5	0.341	-147.192	16.501	121.873	0.007	99.396	0.255	-86.714
28.0	0.353	-156.807	14.818	105.874	0.006	90.334	0.310	-94.692
28.5	0.353	-162.393	13.235	91.386	0.007	81.721	0.362	-101.815
29.0	0.348	-103.167	11.673	77.685	0.007	71.719	0.398	-109.905
29.5	0.335	-18.098	10.220	65.016	0.007	62.684	0.427	-116.820
30.0	0.318	31.992	8.980	53.691	0.006	56.703	0.448	-122.492

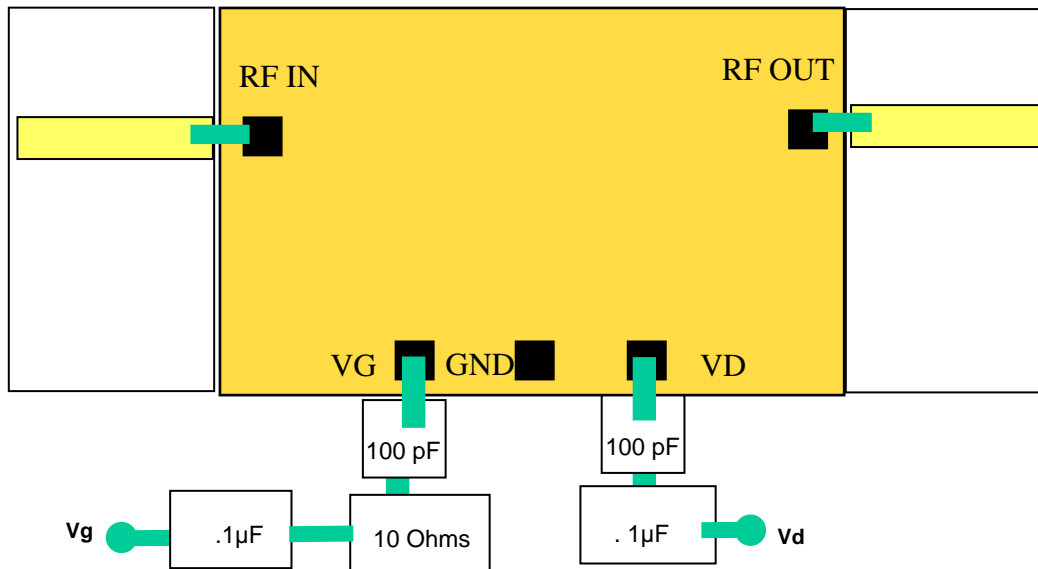
Note: The data contained in this document is for information only. Northrop Grumman reserves the right to change without notice the specifications, designs, prices or conditions of sale, as they apply to this product. The product represented by this datasheet is subject to U.S. Export Law as contained in ITAR or the EAR regulations.



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.

Note: The data contained in this document is for information only. Northrop Grumman reserves the right to change without notice the specifications, designs, prices or conditions of sale, as they apply to this product. The product represented by this datasheet is subject to U.S. Export Law as contained in ITAR or the EAR regulations.