

X=1550 μm Y=730 μm

**Product Features**

- ◆ RF frequency: 57 to 65 GHz
- ◆ Noise figure: 3.8 dB, typical
- ◆ Linear gain: 21 dB, typical
- ◆ P1dB: 12 dBm, typical
- ◆ Single ended design
- ◆ Die size: 1.2 sq. mm
- ◆ DC Power: 2.5 Vdc at 64 mA

**Applications**

- ◆ Short Haul / High Capacity Links
- ◆ Wireless LANs

**Product Description**

The ALH382 is a broadband, four-stage, low noise monolithic HEMT amplifier 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.

**Performance Characteristics (Ta = 25°C)**

Specification	Min	Typ	Max	Unit
Frequency	57		65	GHz
Linear Gain	19	21		dB
Noise Figure		3.8	5.5	dB
Input Return Loss	7	12		dB
Output Return Loss	8	12		dB
P1dB		12		dBm
Vd		2.5		V
Id		64		mA
Vg		-0.3		V

**Absolute Maximum Ratings (Ta = 25°C)**

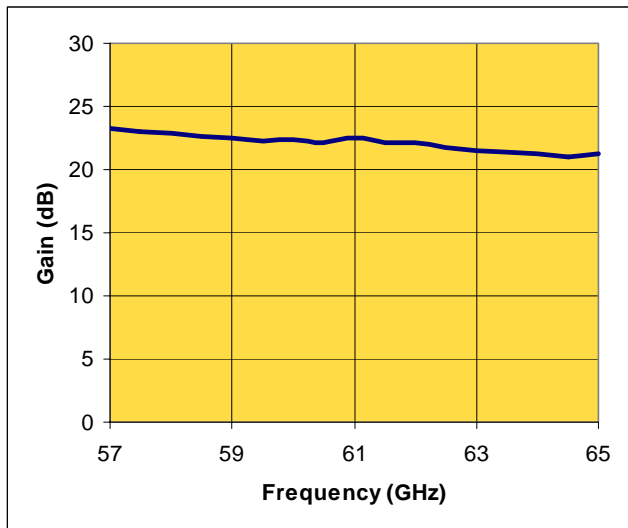
Parameter	Min	Max	Unit
Drain Voltage (Vds)		5.5	V
Gate Voltage (Vgs)	-1	+0.3	V
Drain current		100	mA
Input drive level		-5	dBm
Assy. Temperature (60 seconds)		300	deg. C

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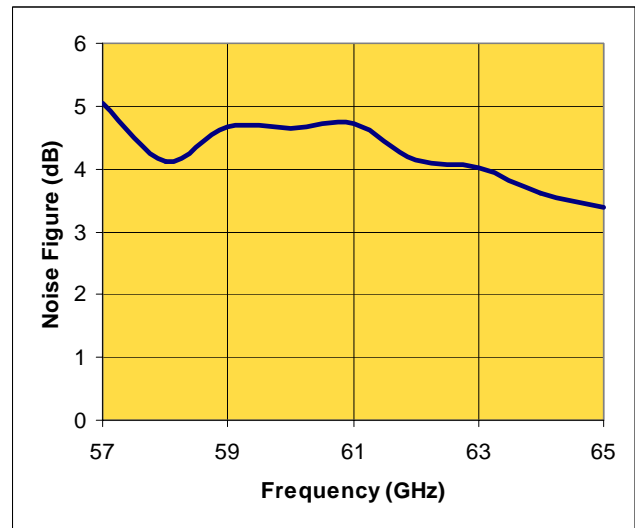


Measured Performance Characteristics (Typical Performance at 25°C)  
Vd = 2.5 V, Id = 64 mA

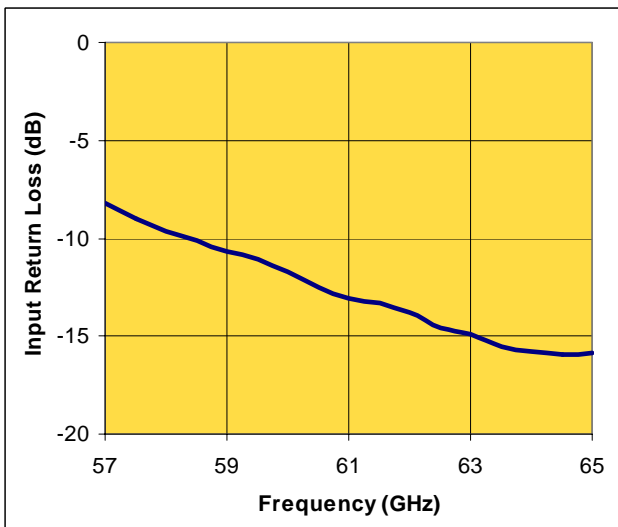
Linear Gain Versus Frequency



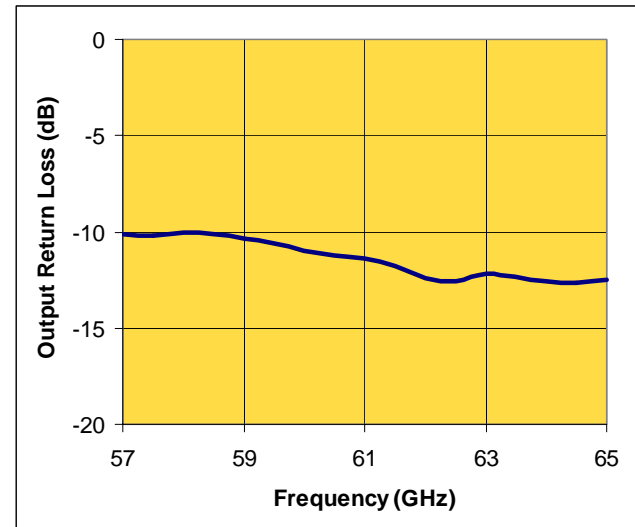
Noise Figure Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



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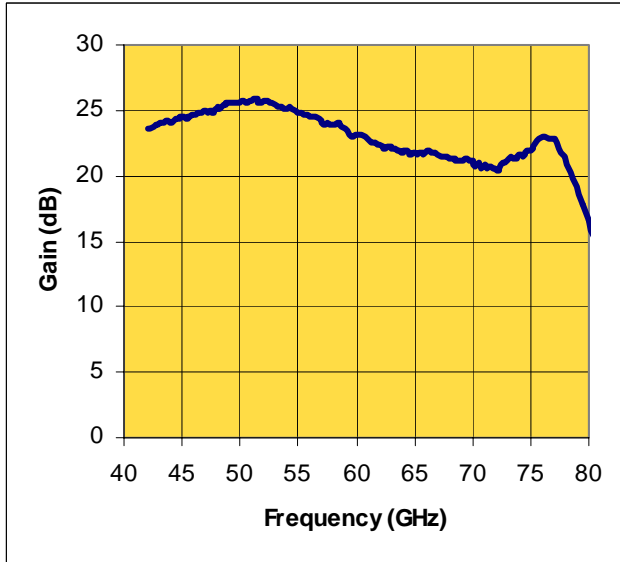


Product Datasheet

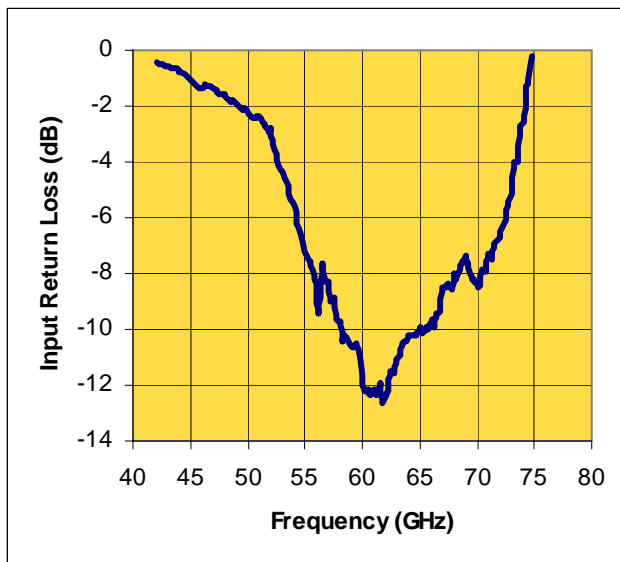
Revision: May 2007

Measured Performance Characteristics (Typical Performance at 25°C)  
Vd = 2.5 V, Id = 64 mA

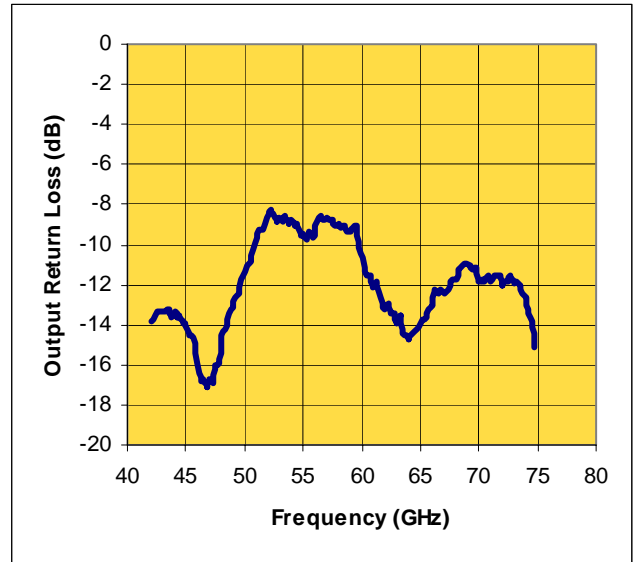
**Wide Band Linear Gain**



**Wide Band Input Return Loss**



**Wide Band Output Return Loss**



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## Product Datasheet

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Measured Performance Characteristics (Typical Performance at 25°C)  
Vd = 2.5 V, Id = 64 mA

Freq GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
57.0	0.386	-94.48	14.11	-35.47	0.013	161.35	0.284	-114.79
57.5	0.354	-100.36	13.77	-45.52	0.014	158.77	0.282	-117.67
58.0	0.325	-106.00	13.71	-52.49	0.012	164.78	0.284	-121.89
58.5	0.301	-110.32	13.29	-63.03	0.015	165.61	0.278	-125.11
59.0	0.274	-118.32	13.12	-69.27	0.015	156.47	0.279	-128.36
59.5	0.259	-123.55	12.94	-78.34	0.014	154.60	0.278	-130.27
60.0	0.234	-133.68	13.19	-84.64	0.013	152.99	0.268	-134.93
60.5	0.205	-139.58	12.83	-92.44	0.014	148.78	0.259	-136.91
61.0	0.186	-147.11	13.26	-99.64	0.015	153.17	0.248	-141.29
61.5	0.171	-154.80	12.71	-109.67	0.017	145.98	0.235	-145.04
62.0	0.153	-164.67	12.75	-113.82	0.016	130.89	0.218	-144.29
62.5	0.134	-171.06	12.41	-123.61	0.015	128.59	0.214	-144.09
63.0	0.13	177.34	12.05	-128.74	0.015	125.43	0.202	-149.64
63.5	0.103	165.85	11.76	-136.65	0.016	117.05	0.194	-149.16
64.0	0.091	167.79	11.55	-143.04	0.013	115.49	0.19	-148.77
64.5	0.099	162.55	11.33	-150.68	0.013	122.76	0.183	-150.61
65.0	0.091	152.90	11.66	-156.54	0.014	112.05	0.175	-149.94

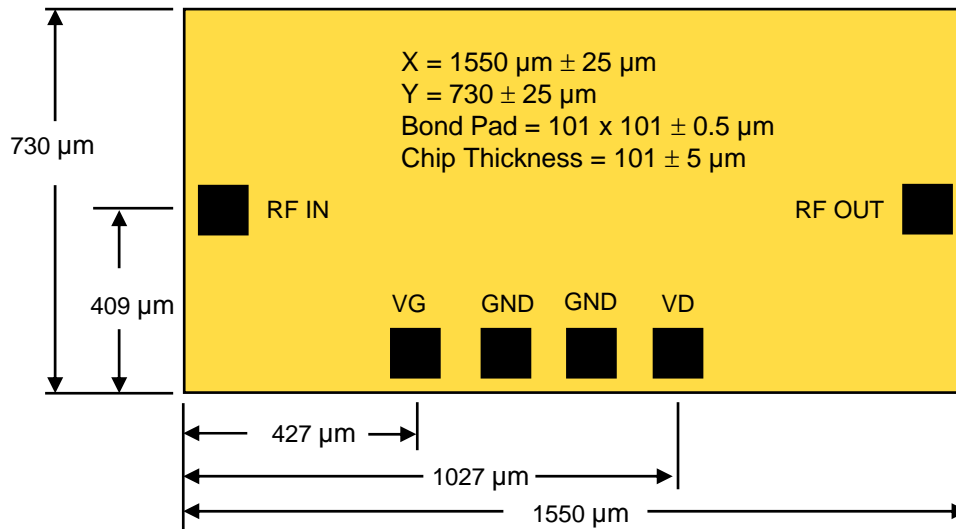
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Product Datasheet

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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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