

X=5000µm Y=2500µm

**Product Features**

- ◆ RF Frequency: 35 to 40 GHz
- ◆ Linear gain: 16 dB, typical
- ◆ P1dB: 23 dBm, typical
- ◆ IP3: 32 dBm, typical
- ◆ Built-in output power detector
- ◆ Unconditionally stable
- ◆ DC Power: 5.0 Vdc at 630 mA

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

Specification	Min	Typ	Max	Unit
Frequency	35		40	GHz
Linear Gain	12.5	16		dB
P1dB	22	23		dBm
IP3		32		dBm
Input Return Loss		8		dB
Output Return Loss		15		dB
Vd1, Vd2, Vd3b, Vd4b		5		V
Vg1, Vg2, Vg3, Vg3a		-0.2		V
Id1		90		mA
Id2B		180		mA
Id3b + Id4b		360		mA
Thermal Resistance	Stage 1	216		C/W
	Stage 2	90		
	Stage 3	57		

**Applications**

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

**Product Description**

The APH131C monolithic HEMT amplifier, a broadband, three-stage power device, is designed for use in commercial digital radios and wireless LANs. The balanced design provides unconditional stability as well as excellent input and output VSWR. The amplifier features a built-in power detector coupled to the output port for easy monitoring of output power. 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
Vd1, Vd2, Vd3b, Vd4b		6	V
Id1		100	mA
Id2		200	mA
Id3b + Id4b		400	mA
Vg1, Vg2, Vg3, Vg3a	-1	+0.3	V
Input drive level		12	dBm
Assy. Temperature (60 seconds)		300	deg. C

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Product Datasheet **Discontinued 06/12/2006**

Revision: June 2006

Measured Performance Characteristics (Typical Performance at 25°C)  
Vd = 5.0 V, Id = 610 mA

Freq GHz	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
35.0	0.56	99.68	5.45	-9.61	0.00	-69.23	0.04	-125.38
35.3	0.56	98.47	5.61	-23.62	0.00	-79.80	0.05	-137.44
35.5	0.55	97.42	5.79	-37.54	0.01	-63.59	0.05	-158.95
35.8	0.55	95.88	5.95	-51.49	0.00	-100.04	0.05	-165.29
36.0	0.55	94.14	6.10	-65.64	0.00	-103.67	0.05	-179.71
36.3	0.54	92.87	6.27	-79.90	0.01	-126.80	0.05	170.88
36.5	0.54	90.85	6.47	-93.99	0.00	-106.82	0.05	153.10
36.8	0.54	89.04	6.68	-108.55	0.00	-138.00	0.05	134.76
37.0	0.54	87.51	6.93	-123.26	0.01	-94.55	0.05	131.56
37.3	0.54	84.84	7.10	-138.21	0.00	-142.16	0.05	103.86
37.5	0.53	82.04	7.32	-153.28	0.00	-153.87	0.05	83.02
37.8	0.53	79.46	7.54	-168.43	0.01	-115.62	0.06	67.01
38.0	0.52	75.74	7.70	176.03	0.00	177.43	0.05	48.96
38.3	0.51	72.50	7.91	160.59	0.00	-177.17	0.05	34.62
38.5	0.49	68.71	8.12	144.55	0.01	127.68	0.04	0.49
38.8	0.48	66.01	8.27	128.12	0.00	116.79	0.06	3.65
39.0	0.46	62.59	8.40	111.56	0.00	129.85	0.07	-9.87
39.3	0.45	59.08	8.53	94.55	0.01	45.17	0.06	-22.15
39.5	0.44	55.13	8.50	78.07	0.00	93.71	0.07	-37.08
39.8	0.42	49.84	8.53	61.12	0.00	112.60	0.08	-45.66
40.0	0.40	43.69	8.50	43.93	0.01	-132.03	0.10	-54.80

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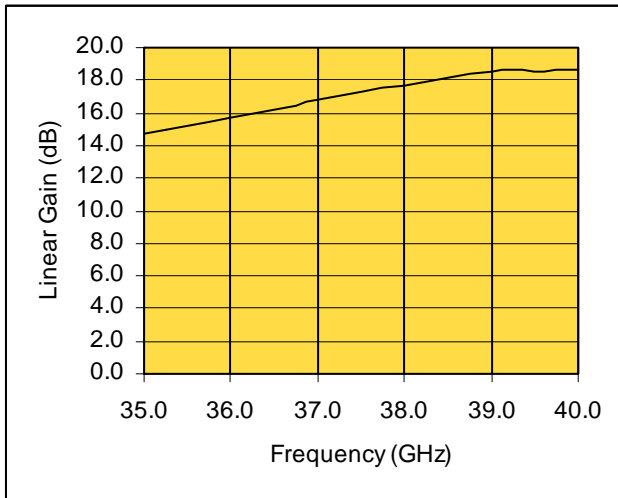


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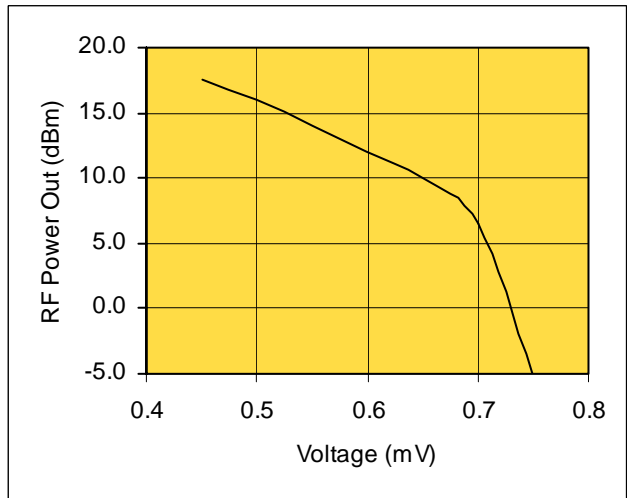
Revision: June 2006

Measured Performance Characteristics (Typical Performance at 25°C)  
Vd = 5.0 V, Id = 610 mA

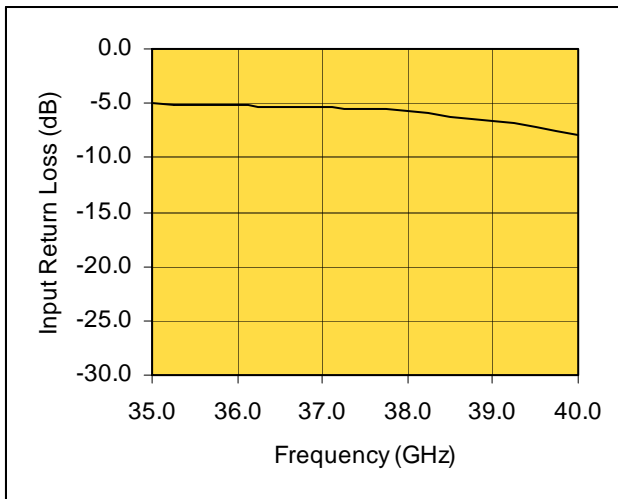
**Pulsed Gain Versus Frequency**



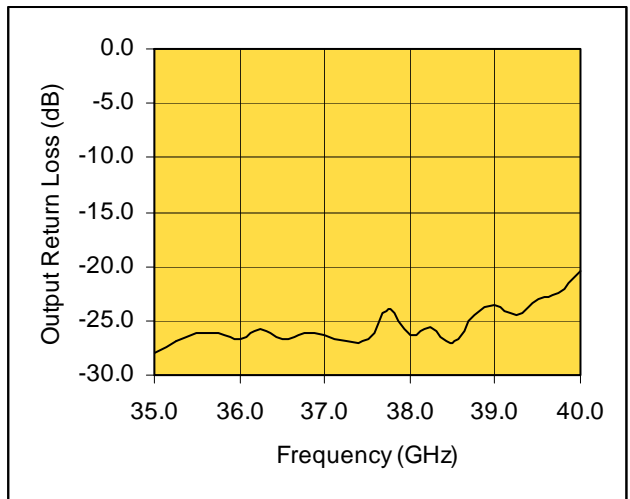
**Detector Output Voltage Versus Output Power**



**Input Return Loss Versus Frequency**



**Output Return Loss Versus Frequency**

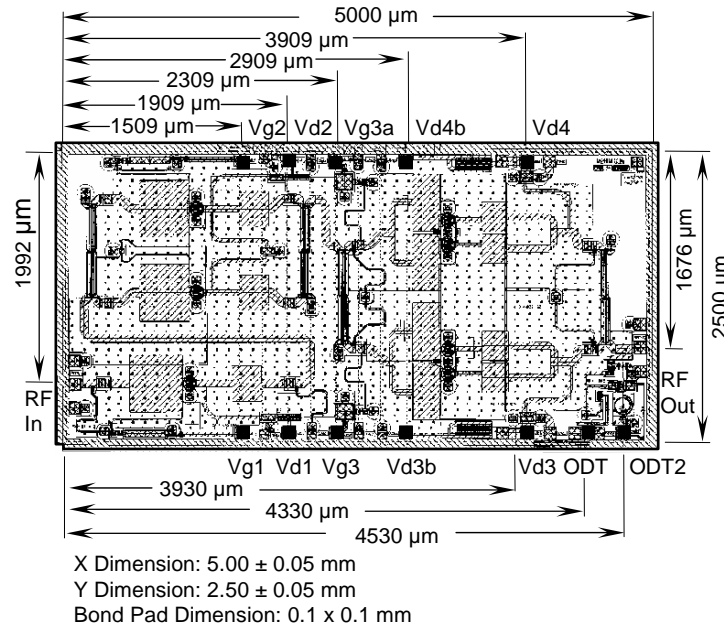


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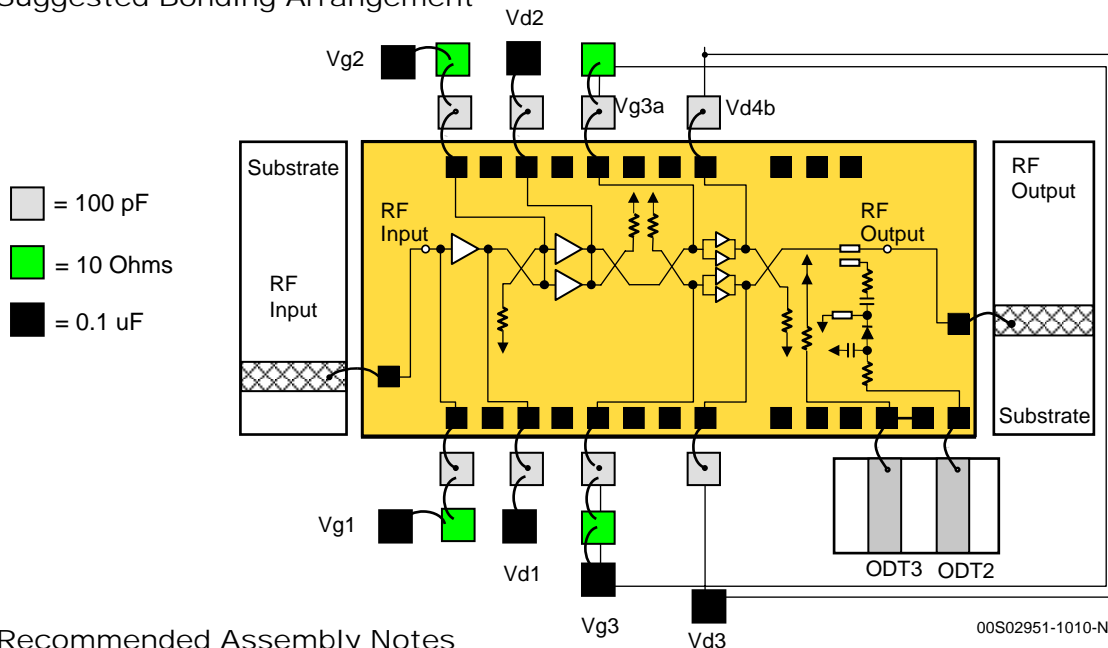
Product Datasheet **Discontinued 06/12/2006**

Revision: June 2006

Die Size and Bond Pad Locations



Suggested Bonding Arrangement



Recommended Assembly Notes

1. Bypass caps should be 100 pF ceramic (single-layer) placed no further 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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