

X=3580 μm Y=1790 μm

Product Features

- ◆ RF frequency: 71 to 76 GHz
- ◆ Linear gain: > 6 dB
- ◆ P1dB: ~20 dBm
- ◆ Unconditionally stable
- ◆ DC Power: 4 Vdc at 320 mA
- ◆ Die Size: < 6.5 sq. mm

Performance Characteristics (Ta = 25°C)

Specification	Min	Typ	Max	Unit
Frequency	71		76	GHz
Linear Gain	6	7		dB
Input Return Loss		12		dB
Output Return Loss		5		dB
P1dB		20		dBm
Vd1 and Vd2		4		V
Vg		-0.2		V
Id1		160		
Id2		160		mA

Applications

- ◆ New FCC E-Band Communication Systems @ 71-76 GHz Frequency Band
- ◆ Short-Haul / High Capacity Links
- ◆ Enterprise Wireless LAN
- ◆ Wireless Fiber Replacement

Product Description

The APH581 monolithic HEMT is a broadband, two-stage, power amplifier. 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)

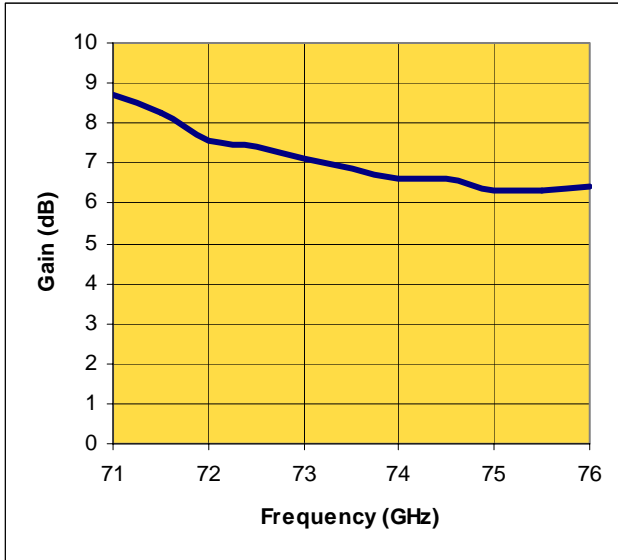
Parameter	Min	Max	Unit
Vd1, Vd2		4.5	V
Id1		200	mA
Id2		200	mA
Vg1, Vg2	-0.8	0.3	V
Input drive level		17	dBm
Assy. Temperature (60 seconds)		300	deg. C

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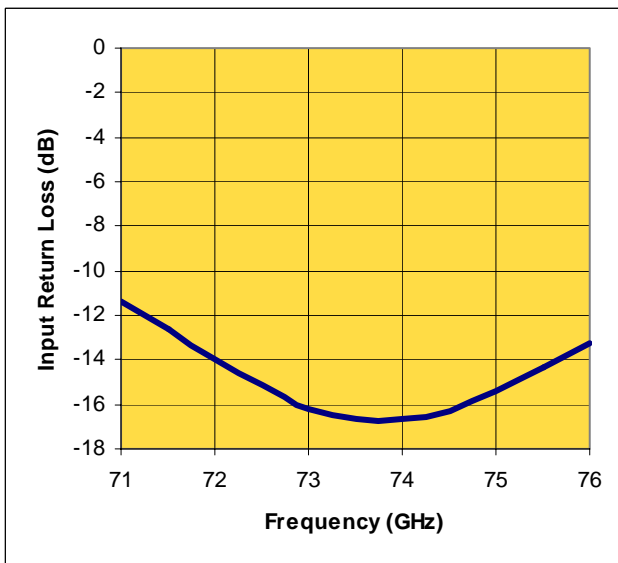


Measured Performance Characteristics (Typical Performance at 25°C)  
 $V_{d1} = V_{d2} = 4V$  and  $I_{d1} = 160mA$  and  $I_{d2} = 160mA$

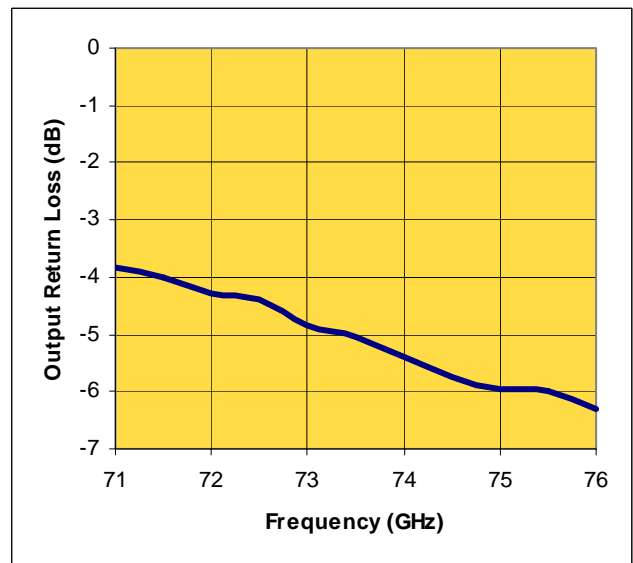
**Linear Gain Versus Frequency**



**Input Return Loss Versus Frequency**



**Output Return Loss Versus Frequency**

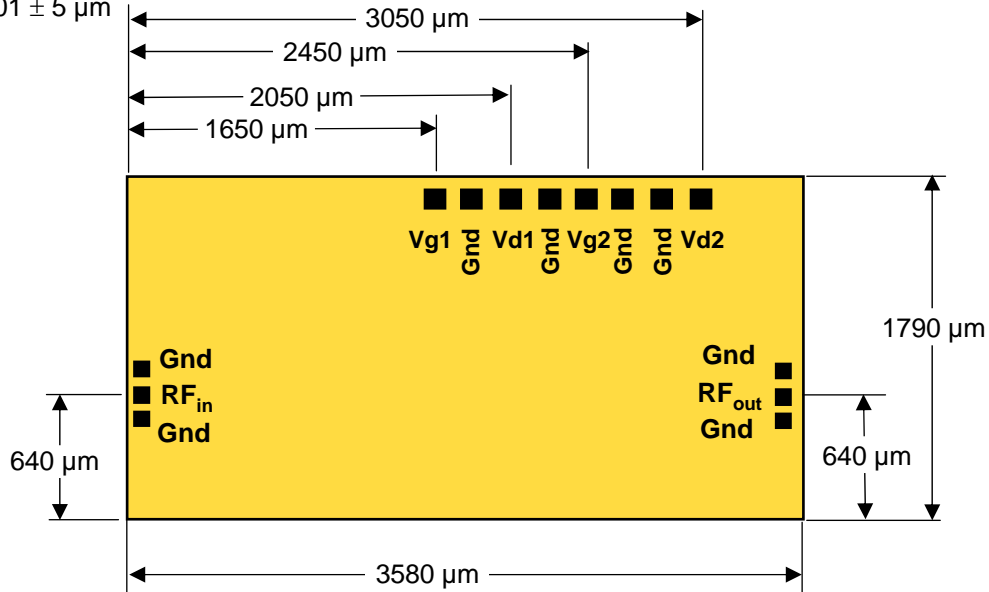


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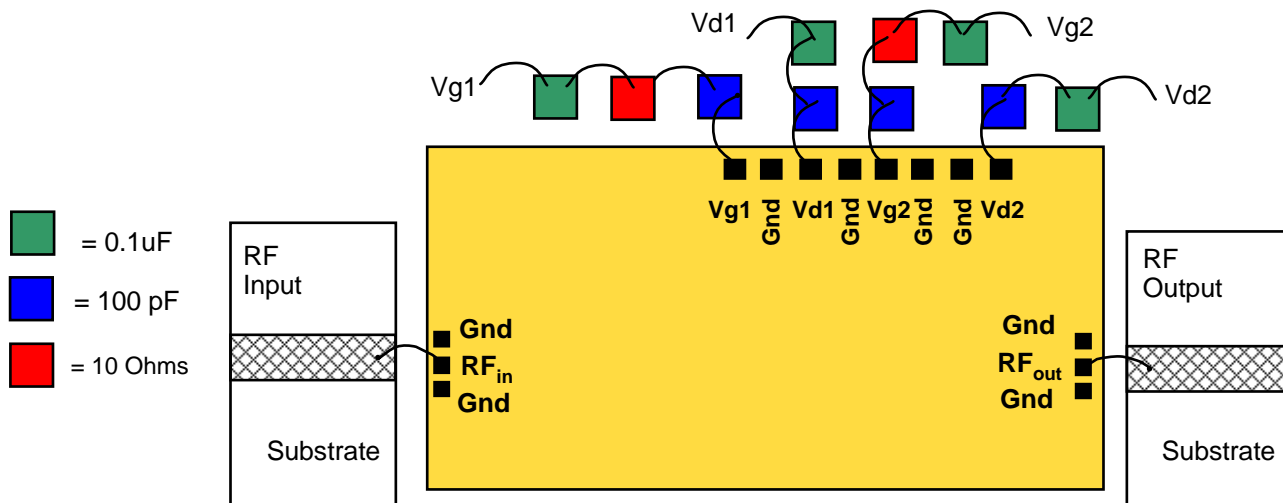


Die Size and Bond Pad Locations

X Dimension: 3580 ± 25 μm  
 Y Dimension: 1790 ± 25 μm  
 RF Bond Pad Dimension: 50 x 50 μm ± 0.5 μm  
 DC Bond Pad Dimension: 101 x 101 μm ± 0.5 μm  
 Chip Thickness = 101 ± 5 μm



Suggested Bonding Arrangement



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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