

X=3920 μm Y=1280 μm

Features

- ◆ RF Frequency: 18-20 GHz
- ◆ Linear Gain: 17.5 dB typ.
- ◆ P1dB: 29.5 dBm typ.
- ◆ IP3: 38.5 dBm typ.
- ◆ Die Size: 5.0 sq. mm.
- ◆ DC Power: 5 VDC @ 900 mA

Applications

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

Product Description

The APH478 monolithic HEMT amplifier is a broadband, two-stage power device designed for use in Commercial Digital Radios and VSAT Applications in K-Band. 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	18		20	GHz
Linear Gain	16	17.5		dB
P1dB	28.5	29.5		dBm
IP3		38.5		dBm
Input Return Loss		8		dB
Output Return Loss		5		dB
Vd1, Vd2		5		V
Vg1, Vg2		-0.5		V
Id1		300		mA
Id2		600		mA

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Min	Max	Unit
Vd1, Vd2		5.5	V
Id1		330	mA
Id2		660	mA
Vg1, Vg2	-1	+0.3	V
Input drive level		13	dBm
Assy. Temperature (60 seconds)		300	deg. C

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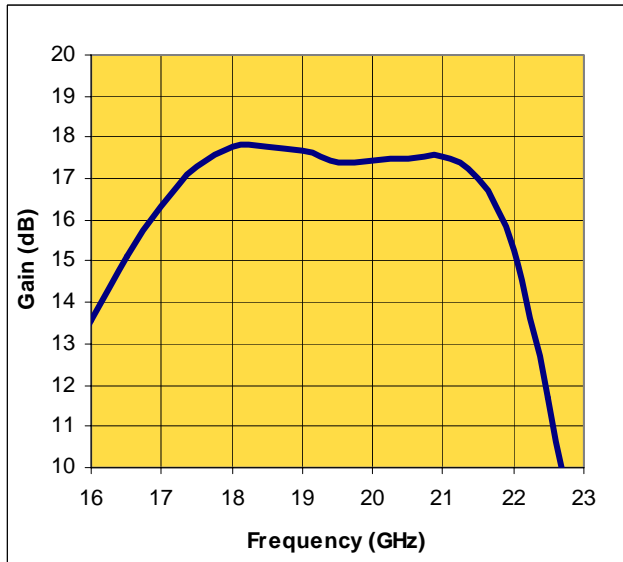


Product Datasheet

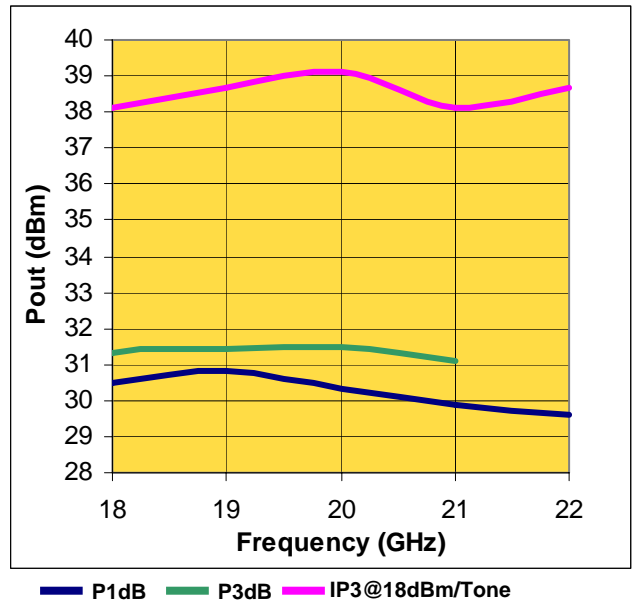
Revision: May 2007

Measured performance characteristics (Typical at 25°C)
 Vd1= 5 V, Id= 300 mA; Vd2= 5V, Id2= 600 mA

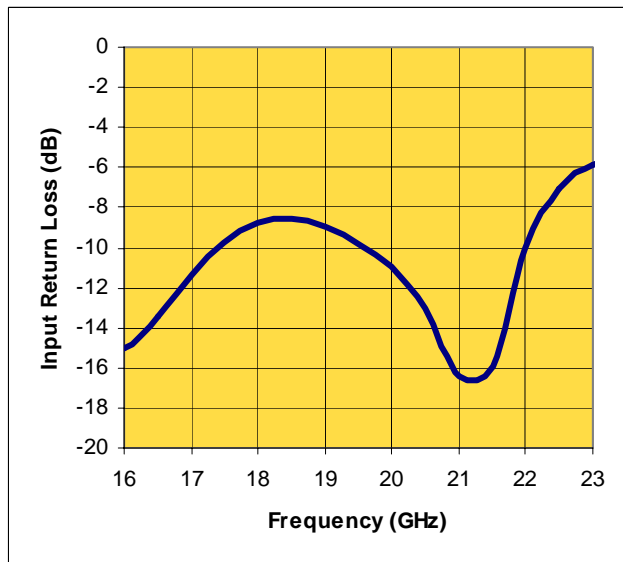
Linear Gain Versus Frequency



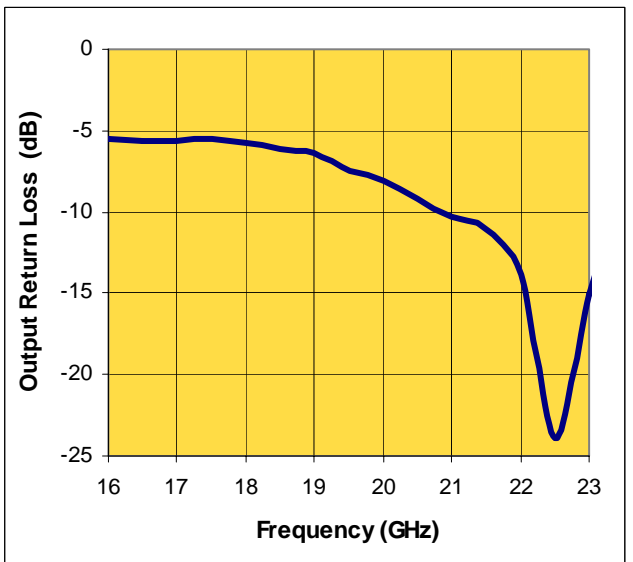
Fixtured Pout Versus Frequency



Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



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Product Datasheet

Revision: May 2007

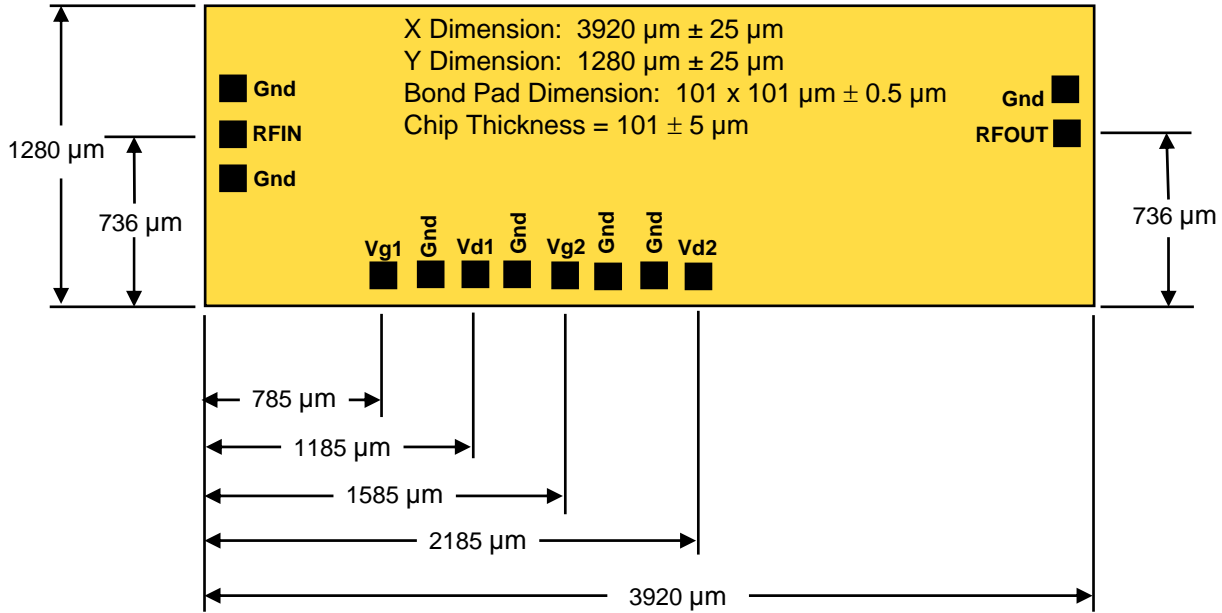
Measured performance characteristics (Typical at 25°C)
 Vd1= 5 V, Id= 300 mA; Vd2= 5V, Id2= 600 mA

Freq (GHz)	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
14.0	0.331	-73.389	2.287	50.128	0.002	31.995	0.608	114.704
14.5	0.278	-75.605	2.781	26.119	0.003	2.884	0.589	105.774
15.0	0.222	-71.483	3.356	1.308	0.001	-26.824	0.568	94.991
15.5	0.180	-60.039	4.036	-25.119	0.001	-33.219	0.552	81.742
16.0	0.172	-40.340	4.853	-53.282	0.001	-179.333	0.537	64.417
16.5	0.214	-25.194	5.763	-83.675	0.001	121.192	0.526	43.787
17.0	0.274	-23.480	6.623	-116.184	0.003	106.798	0.528	19.567
17.5	0.334	-28.186	7.373	-150.317	0.004	85.724	0.540	-9.413
18.0	0.373	-37.431	7.780	173.577	0.004	48.737	0.522	-39.553
18.5	0.381	-48.063	7.772	139.129	0.005	16.151	0.506	-63.936
19.0	0.365	-57.375	7.697	106.062	0.004	-2.716	0.491	-85.455
19.5	0.332	-67.822	7.466	72.947	0.006	-28.915	0.435	-103.822
20.0	0.296	-78.785	7.541	40.462	0.005	-61.716	0.408	-115.338
20.5	0.239	-98.637	7.611	4.660	0.005	-82.958	0.358	-126.867
21.0	0.165	-133.451	7.685	-34.254	0.006	-120.423	0.315	-130.435
21.5	0.164	143.995	7.280	-80.015	0.006	-170.581	0.294	-139.601
22.0	0.314	80.969	5.915	-130.006	0.004	145.741	0.208	-157.381
22.5	0.445	45.603	3.895	-176.313	0.003	109.831	0.042	-127.546
23.0	0.508	23.809	2.330	145.745	0.002	61.405	0.174	-49.539

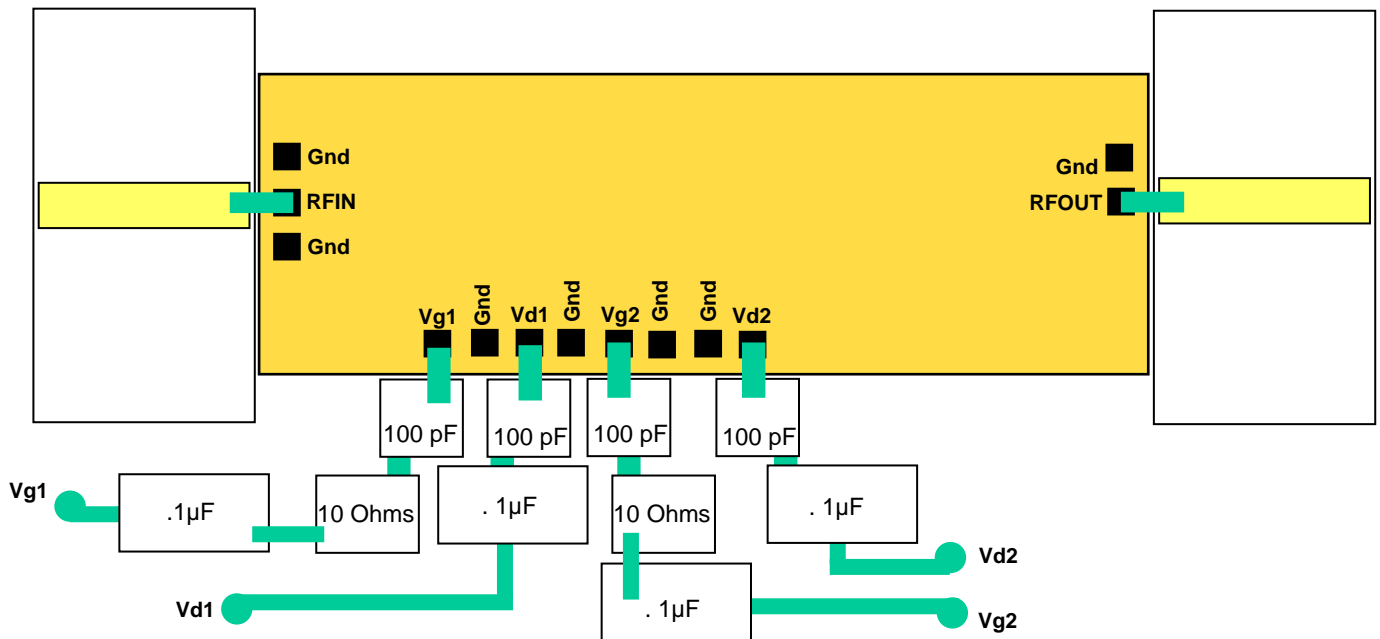
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Die Size and Bond Pad Locations



Suggested Bonding



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