

X=2650 μm Y=1600 μm

Product Features

- ◆ RF Frequency: 71 to 76 GHz
- ◆ Linear Gain: 24 dB typ.
- ◆ Psat: 20 dBm typ.
- ◆ P1dB: 18 dBm typ.
- ◆ Die Size: 4.3 sq. mm.
- ◆ 2 mil substrate
- ◆ DC Power: 4 VDC @ 160 mA

Performance Characteristics (Ta = 25°C)

Specification	Min	Typ	Max	Unit
Frequency	71		76	GHz
Linear Gain	21	24		dB
Input Return Loss		7		dB
Output Return Loss		4		dB
Psat		20		dBm
P1dB		18		dBm
VD1, VD2		4		V
VG1		-0.1		V
VG2		-0.1		V
Id1		80		mA
Id2		80		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 AUH318 monolithic HEMT amplifier is a broadband, three-stage power device, designed for use in commercial digital radios and wireless LANs. 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		100	mA
Id2		100	mA
Vg12, Vg34	-0.8	0.3	V
Input drive level		3	dBm
Assy. Temperature (60 seconds)		300	deg. C

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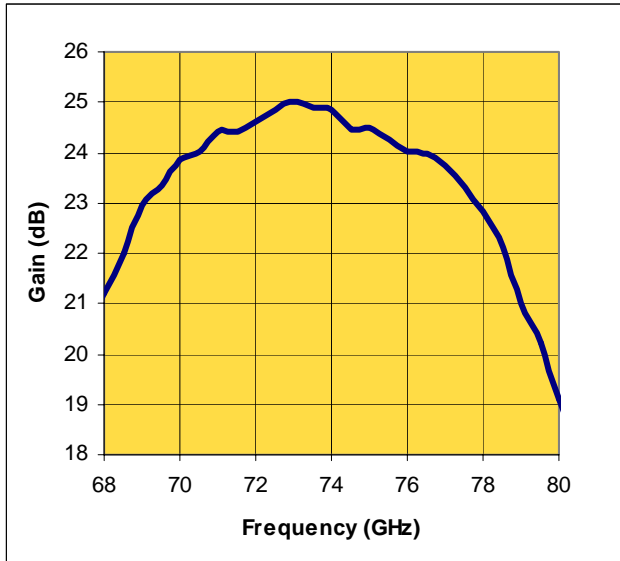
Preliminary Datasheet

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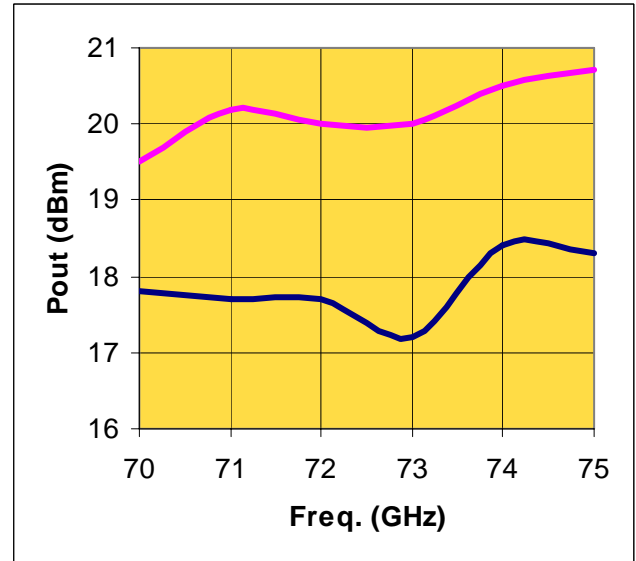
Measured Performance Characteristics (Typical Performance at 25°C)

VD1 = VD2 = 4.0 V, Id1 = 80 mA, Id2 = 80 mA

Linear Gain Versus Frequency

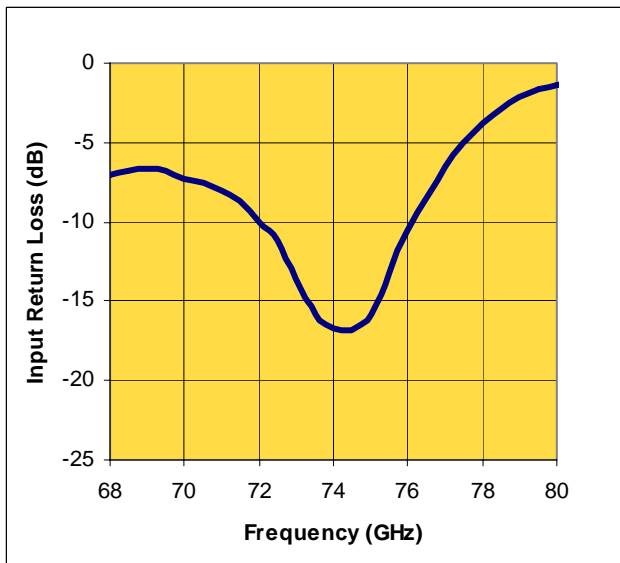


Fixture Output Power Versus Frequency

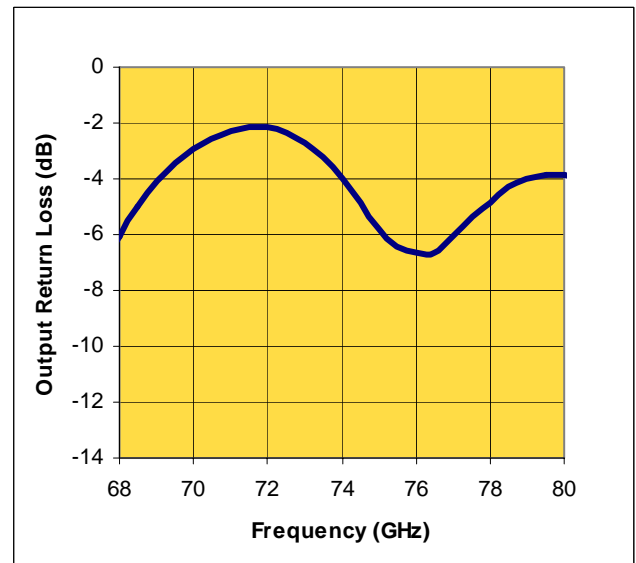


P1dB — Psat

Input Return Loss Versus Frequency



Output Return Loss Versus Frequency



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Measured Performance Characteristics (Typical Performance at 25°C)

Vd3 = 2V, Id3 = 25 mA

Freq. (GHz)	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
69.0	0.491	76.390	14.259	152.117	0.002	54.277	0.625	-169.724
69.5	0.484	72.822	15.136	135.048	0.004	53.516	0.672	-178.488
70.0	0.466	69.937	16.049	120.082	0.002	39.330	0.706	173.014
70.5	0.448	67.176	16.403	102.641	0.002	44.051	0.741	164.593
71.0	0.434	65.166	17.185	86.677	0.003	-6.800	0.761	156.060
71.5	0.389	60.003	17.286	70.835	0.006	58.367	0.773	149.123
72.0	0.351	55.045	17.619	56.758	0.004	47.549	0.772	140.401
72.5	0.315	56.766	17.897	39.232	0.007	37.868	0.768	133.997
73.0	0.266	51.401	18.133	22.755	0.009	19.683	0.739	126.069
73.5	0.193	53.759	17.857	6.787	0.007	-9.675	0.681	119.687
74.0	0.154	70.405	17.596	-8.319	0.007	24.468	0.646	116.513
74.5	0.125	87.758	16.735	-23.146	0.006	-2.774	0.581	112.377
75.0	0.112	115.058	16.741	-37.749	0.006	-29.439	0.523	111.200
75.5	0.138	138.143	16.435	-51.934	0.007	-43.854	0.475	112.415
76.0	0.216	152.396	16.024	-66.686	0.006	-75.726	0.465	116.426
76.5	0.286	151.937	16.007	-81.423	0.005	-71.798	0.462	118.210
77.0	0.368	154.106	15.762	-97.585	0.006	-77.737	0.474	121.864
77.5	0.460	148.882	15.399	-114.268	0.005	-96.230	0.519	122.297
78.0	0.547	143.852	14.814	-131.166	0.005	-117.012	0.560	120.314
78.5	0.634	137.936	14.105	-148.264	0.004	-149.659	0.601	116.038
79.0	0.712	131.712	12.843	-165.818	0.002	-147.824	0.626	111.501
79.5	0.773	125.377	11.924	177.524	0.002	-173.320	0.651	105.550
80.0	0.813	118.915	10.714	160.936	0.003	126.693	0.656	99.394
80.5	0.839	113.229	9.592	145.056	0.002	111.614	0.655	92.648
81.0	0.862	108.077	8.273	129.373	0.003	94.891	0.629	86.353

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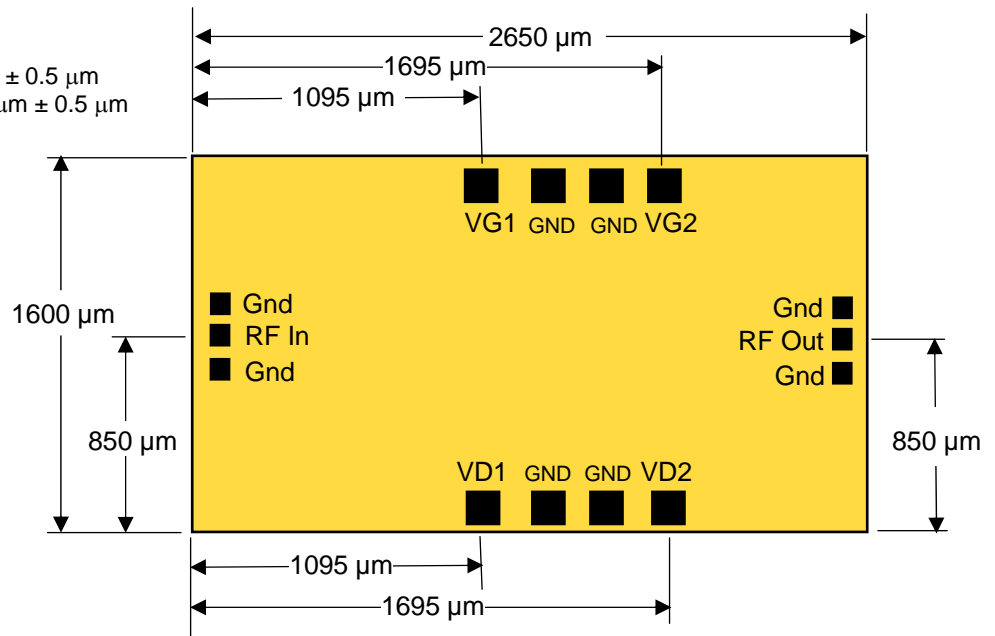


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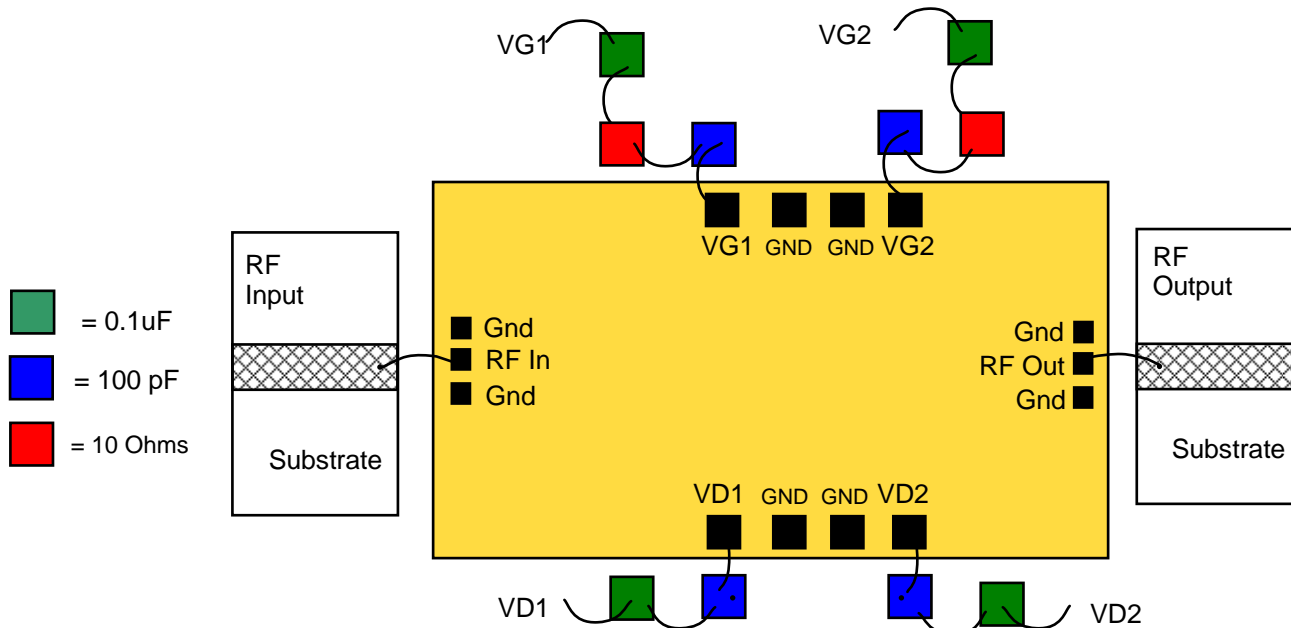
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Die Size and Bond Pad Locations

X Dimension: $2650 \pm 25 \mu\text{m}$
 Y Dimension: $1600 \pm 25 \mu\text{m}$
 RF Bond Pad Dimension: $50 \times 50 \mu\text{m} \pm 0.5 \mu\text{m}$
 DC Bond Pad Dimension: $101 \times 101 \mu\text{m} \pm 0.5 \mu\text{m}$
 Chip Thickness = $50 \pm 5 \mu\text{m}$



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 <6 mil (long) by 1.5 by 0.5 mil ribbons on input and output.

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