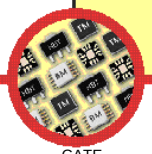
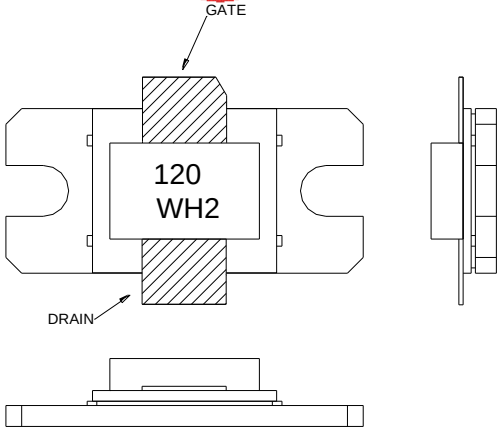
HiFET
High Voltage GaAs FET
DC-12 GHz

AM120WH2-CU-R
April 2014
Rev 0





DESCRIPTION

AMCOM's AM120WH2-CU-R is a part of the CU series of GaAs HiFETs.The HiFET is a partially matched patented device configuration for high voltage, high power and broadband applications. This part has a total device periphery of 24mm. The AM120WH2-CU-R is designed for medium power microwave applications, operating up to 12 GHz. It is also an ideal driver for larger power devices. The CU series is a specially designed ceramic package with straight leads and flange in a drop-in mounting style.The flange at the bottom of the package serves simultaneously as DC ground, RF ground, and thermal path. This part is RoHS compliant.

FEATURES

- High Frequency Operation up to 12 GHz
- High Gain & High Power, P_{1dB}=39 dBm @3.5GHz
- Surface Mountable
- Bottom ground for Effective Heat Removal

APPLICATIONS

- Wireless Local Loop Network
- Cellular Radio Communications
- WLAN, Repeaters & HYPERLAN
- C-Band VSAT
- Radar

RF PERFORMANCE @ 3.5 GHz, (V_{dd} = 14V, I_{dq} = 1.8A)

Parameters	MIN	TYP
P_{1dB}* (dBm)	37	39
Eff @ P_{1dB}	35%	45%
Small Signal Gain (dB)	14.5	16
IP3 (dBm)	-	48

* Power typically remains the same as frequency changes.

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Drain-Source Voltage (V)	V_{dd}	18
Gate-Source Voltage (V)	V_{gs}	-5
Drain Current (A)	I_{ds}	4.8
Continuous Dissipation At Room Temp. (W)	P_t	33.2
Operating Temp. (^oC)	T_A	-55 to +85
Max. Channel Temp. (^oC)	T_{ch}	+175

DC PARAMETERS

Parameters	Conditions	MIN	TYP	MAX
Saturation Current I_{dss} (A)	V_{dd}=6V, Vgs=0V	2.4	3.6	4.8
Pinch-off Voltage V_p (V)	V_{dd}=6V, Ids=2.5% Idss	-2.2	-1.7	-1.2
Drain to Gate Breakdown Voltage BV_{gd} (V)	I_{dg} = 1mA/mm	22	30	
Thermal Resistance ($^oC/W$)			4.3	

*Note: There is an internal DC resistor from output to ground,therefore leakage gate current should be measured only at input lead.

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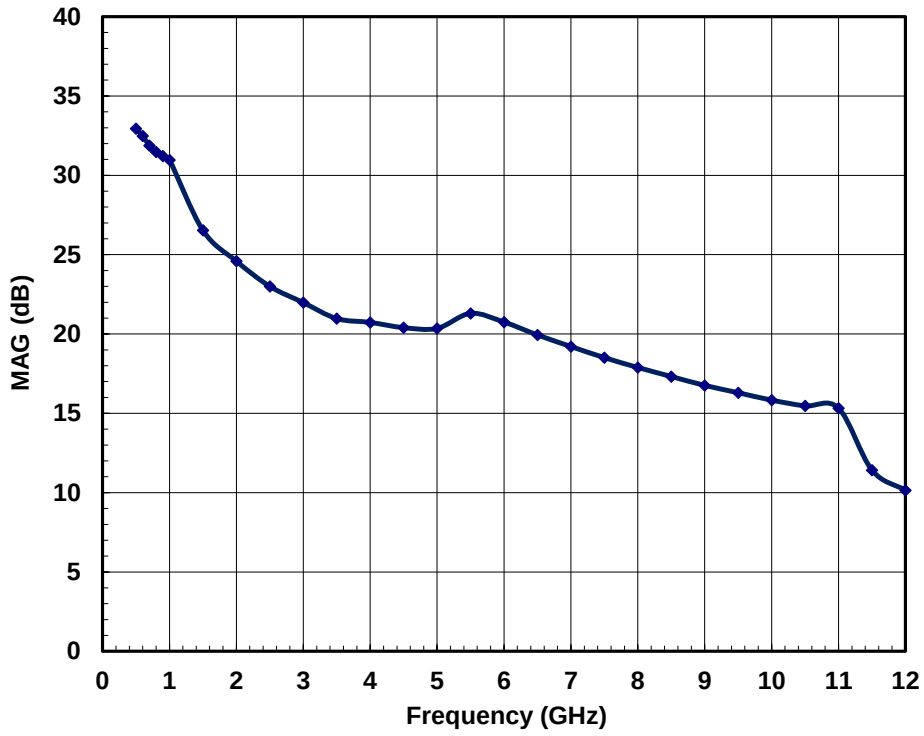
S- Parameters for AM120WH2-CU-R @ 12V / 1.2A(S2P file downloadable from the Web)

Freq(GHz)	MAG(S11)	ANG(S11)	MAG(S21)	ANG(S21)	MAG(S12)	ANG(S12)	MAG(S22)	ANG(S22)
0.5	0.924	-169.46	11.943	85.42	0.006	-3.43	0.589	-179
0.6	0.925	-172.57	10.223	80.3	0.006	-9.27	0.570	-178.46
0.7	0.927	-174.89	8.869	75.34	0.006	-12.87	0.560	-178.06
0.8	0.930	-176.67	7.842	70.07	0.006	-15.74	0.560	-176.53
0.9	0.932	-178.09	7.036	64.73	0.005	-18.60	0.566	-174.11
1	0.934	-179.45	6.323	59.35	0.005	-21.56	0.575	-172.02
1.5	0.938	175.85	4.276	37.01	0.004	-27.31	0.653	-164.9
2	0.937	171.59	3.301	19.10	0.003	-21.75	0.734	-165.39
2.5	0.930	165.71	2.703	3.1	0.003	-10.06	0.787	-169.14
3	0.919	158.63	2.356	-9.77	0.004	0.59	0.821	-173.69
3.5	0.902	151.22	2.121	-23.23	0.004	8.07	0.848	-178.42
4	0.877	142.52	2.042	-36.84	0.006	10.13	0.865	177.52
4.5	0.815	130.55	2.177	-53.07	0.009	3.54	0.873	173.87
5	0.687	109.71	2.566	-74.35	0.014	-10.74	0.878	169.96
5.5	0.424	59.44	3.183	-106.64	0.021	-33.82	0.885	164.75
6	0.405	-51.06	3.355	-147.53	0.028	-70.13	0.879	155.71
6.5	0.668	-104.31	2.988	177.22	0.030	-100.58	0.820	143.51
7	0.812	-127.7	2.693	148.55	0.032	-124.53	0.703	127.78
7.5	0.896	-142.43	2.552	118.68	0.036	-149.12	0.482	102.52
8	0.956	-155.13	2.302	83.25	0.037	179.54	0.155	22.63
8.5	0.982	-166.69	1.737	47.27	0.032	147.09	0.409	-98.45
9	0.980	-175.45	1.176	18.01	0.025	120.85	0.693	-129.49
9.5	0.973	178.09	0.801	-2.72	0.019	102.01	0.829	-147.55
10	0.962	172.4	0.587	-18.38	0.015	87.32	0.894	-159.16
10.5	0.946	166.49	0.469	-31.64	0.013	72.84	0.926	-167.43
11	0.923	159.71	0.400	-43.68	0.012	57.75	0.944	-174.17
11.5	0.904	152.29	0.358	-54.80	0.010	43.42	0.954	-179.8
12	0.895	144.04	0.338	-65.98	0.008	34.18	0.959	174.78

* Download S-parameters file from website: http://www.amcomusa.com

Note: The device is conditional stable at high frequencies, please pay attention when using drain voltage above 12 V for amplifier design.

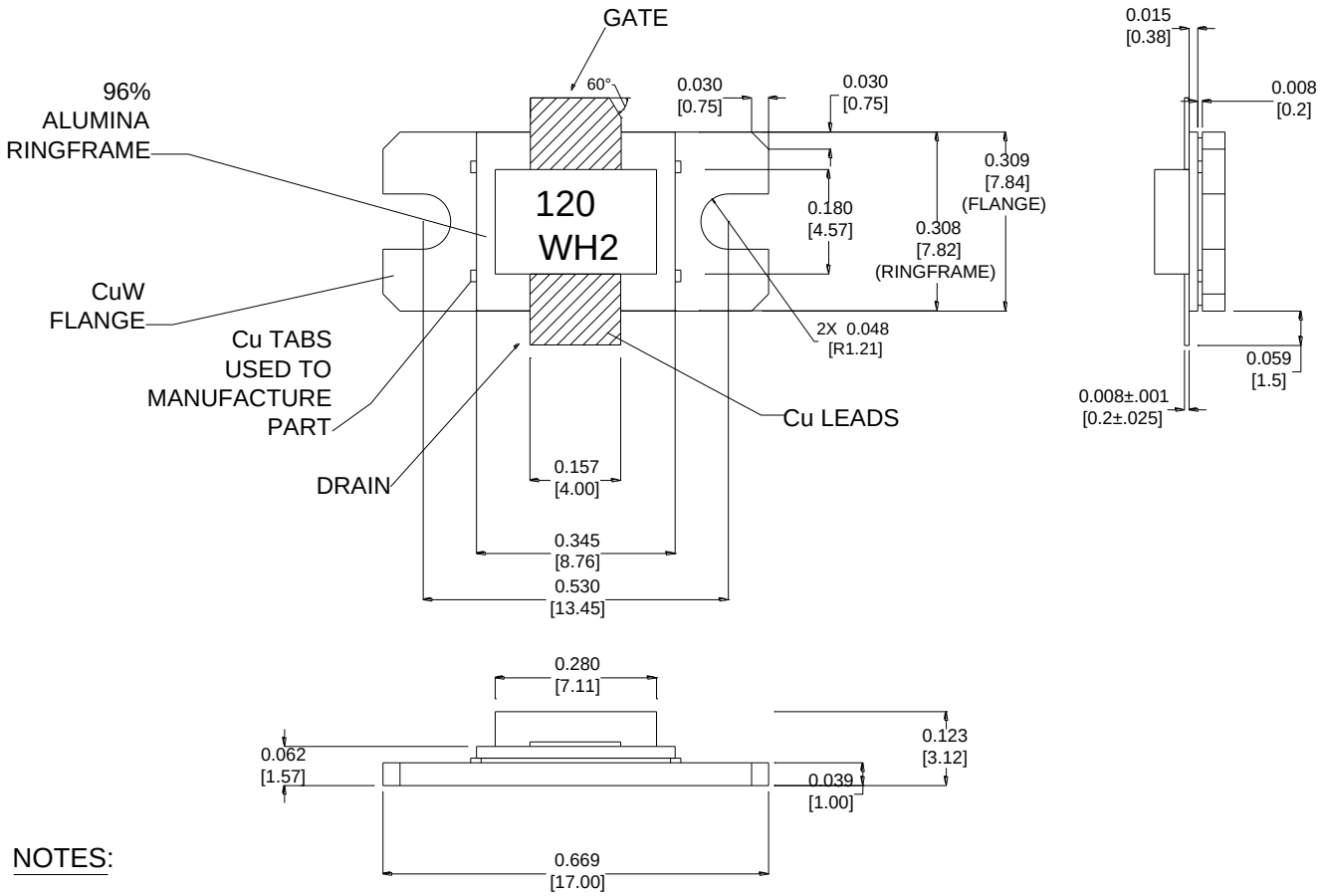
MAXIMUM AVAILABLE GAIN (12V,1.2A)



Optimum Load (14V,1.8A)

Freq (GHz)	MAG(Γ_L)	ANG(Γ_L)
0.1	0.747	-179.85
0.2	0.748	-179.71
0.3	0.748	-179.57
0.4	0.748	-179.42
0.5	0.748	-179.28
0.6	0.748	-179.13
0.7	0.748	-178.98
0.8	0.747	-178.83
0.9	0.747	-178.68
1	0.747	-178.53
1.5	0.746	-177.73
2	0.744	-176.86
2.5	0.741	-175.91
3	0.736	-174.88
3.5	0.729	-173.76
4	0.718	-172.58
4.5	0.704	-171.36
5	0.684	-170.19
5.5	0.659	-169.15
6	0.628	-168.46

CU PACKAGE OUTLINE:



NOTES:

1. ALL DIMENSIONS AND TOLERANCE BOX IN INCHES (mm IN PARENTHESIS).