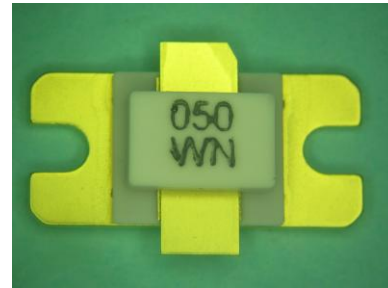


DESCRIPTION

AMCOM's AM050WN-CU-R is part of the CU series of GaN/SiC HEMTs. This part has a total gate width of 5mm. The AM050WN-CU-R is designed for high power microwave applications, operating up to 6GHz. 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 6 GHz
- High Gain & High Power, $P_{5dB}=43$ dBm @ 2GHz
- Low Cost Ceramic Package.
- Copper Tungsten Carrier Effective Heat Removal

APPLICATIONS

- High dynamic receiver
- Cellular Radio Base Stations
- Wideband and narrowband amplifiers
- Radar
- Test Instrumentation
- Military
- Jammers

RF PERFORMANCE @ 2 GHz

($V_{ds} = 28V$, $I_{dq} = 0.75A$)

Parameters	MIN	TYP
P_{5dB} (dBm)	42	43
PAE @ P_{5dB}	45%	55%
Drain eff @ P_{5B}	50%	62%
Small Signal Gain (dB)	14.5	16.5
Optimum load reflection coeff.	-	$0.68 \angle 174^\circ$

* Power typically remains the same as frequency changes.

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Drain-Source Voltage (V)	V_{ds}	40
Gate-Source Voltage (V)	V_{gs}	-6
Drain Current (A)	I_{ds}	2000
Continuous Dissipation At Room Temp. (W)	P_t	82.9
Operating Temp. ($^\circ C$)	T_A	-55 to +85
Max. Channel Temp. ($^\circ C$)	T_{ch}	+200

DC PARAMETERS

Parameters	Conditions	MIN	TYP	MAX
Saturation Current I_{dss} (A)	$V_{ds}=10V$, $V_{gs}=0V$	2500	4000	5700
Pinch-off Voltage V_p (V)	$V_{ds}=10V$, $I_{ds}=2.5\% I_{dss}$	-3.9	-2.9	-1.9
Drain to Gate Breakdown Voltage BV_{gd} (V)	$I_{dg} = 1$ mA/mm	90	120	-
Thermal Resistance ($^\circ C/W$)		-	2.11	-

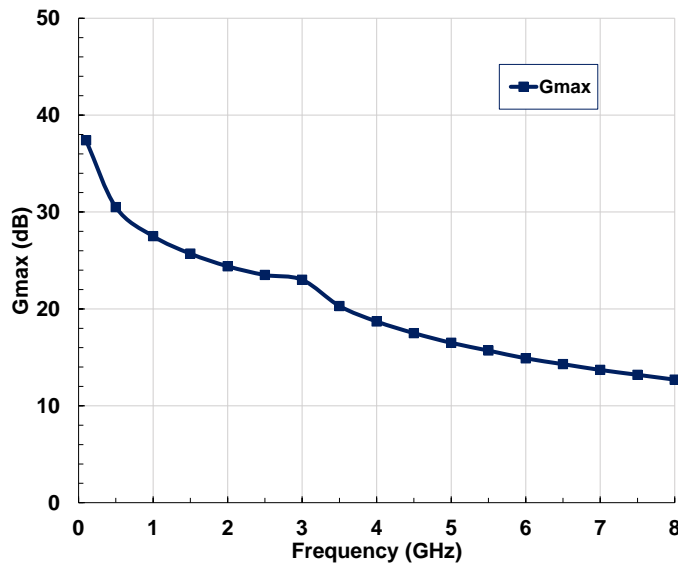
SMALL SIGNAL MEASUREMENTS

S-Parameters* @ $V_{ds} = 28V, I_{dq} = 750mA$

Freq(GHz)	MAG(S11)	ANG(S11)	MAG(S21)	ANG(S21)	MAG(S12)	ANG(S12)	MAG(S22)	ANG(S22)
0.1	0.955	-58.321	38.988	144.12	0.007	56.968	0.311	-143.66
0.5	0.88	-141.49	14.431	91.048	0.013	8.159	0.536	-161.28
1	0.878	-162.2	7.423	66.228	0.013	-11.192	0.595	-164.25
1.5	0.883	-170.83	4.932	48.249	0.013	-23.453	0.646	-165.5
2	0.886	-176.59	3.717	32.834	0.013	-32.76	0.69	-167.35
2.5	0.885	178.52	3.055	18.769	0.013	-40.175	0.724	-169.66
3	0.878	173.71	2.701	5.259	0.013	-46.349	0.747	-172.18
3.5	0.862	168.5	2.551	-8.445	0.014	-51.909	0.76	-174.72
4	0.832	162.34	2.569	-23.21	0.016	-57.668	0.766	-177.27
4.5	0.778	154.42	2.753	-40.149	0.019	-64.806	0.765	-179.91
5	0.678	143.18	3.125	-60.916	0.025	-75.225	0.759	176.92
5.5	0.487	125.03	3.688	-88.084	0.034	-91.901	0.735	172.19
6	0.141	75.501	4.224	-125.03	0.045	-118.68	0.643	165.72
6.5	0.396	-88.885	3.993	-170.63	0.051	-154.87	0.457	170.26
7	0.75	-122.64	2.901	147.17	0.044	171.36	0.456	-163.45
7.5	0.897	-141.98	1.88	115.7	0.034	147.26	0.61	-156.19
8	0.949	-153.51	1.226	93.019	0.026	130.94	0.732	-158.8

* S2P file downloadable from the web: <http://www.amcomusa.com/products/rftrans.html>

MAXIMUM AVAILABLE GAIN (28V ,0.75A)



POWER MEASUREMENTS

OPTIMUM LOAD (28V/0.75A)*

Freq (GHz)	MAG(Γ_L)	ANG(Γ_L)
1	0.62	174
1.5	0.65	173
2	0.68	174
2.5	0.7	175
3	0.71	177
3.5	0.71	179
4	0.71	-178
4.5	0.68	-177
5	0.64	-177
5.5	0.59	-179
6	0.57	176

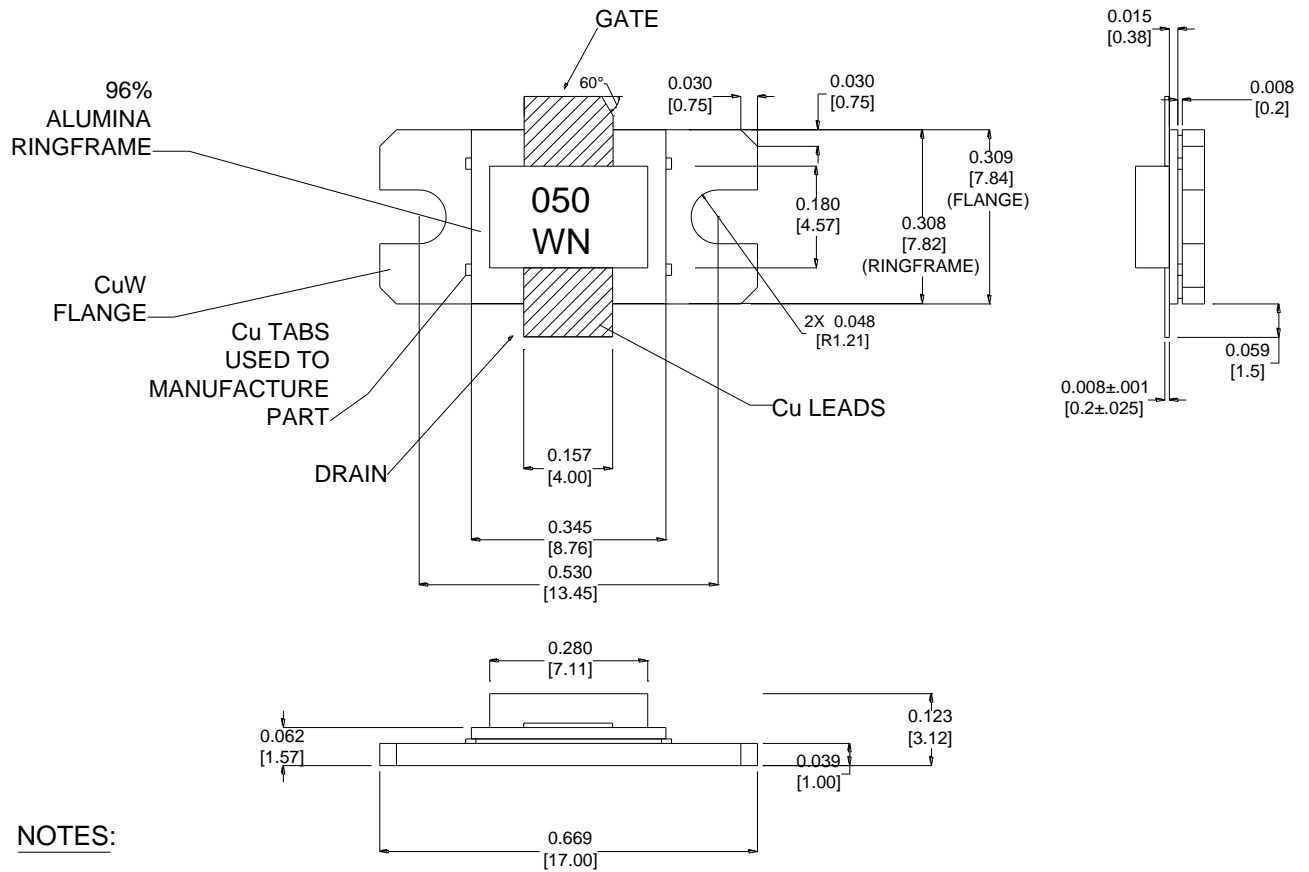
* Reference line is at the edge of the package.

Evaluation boards power measurements (CW)

($V_{ds} = 28V$, $I_{dq} = 0.75A$)

Parameters	2 GHz		4.6 GHz	
	MIN	TYP	MIN	TYP
P_{5dB} (dBm)	42	43	42	43
PAE @ P_{5dB}	45%	55%	-	45%
Drain eff @ P_{5B}	50%	62%	-	49%
Small Signal Gain (dB)	14.5	16.5	12.5	14.5
Input RL (dB)	-	14	-	9

CU PACKAGE OUTLINE

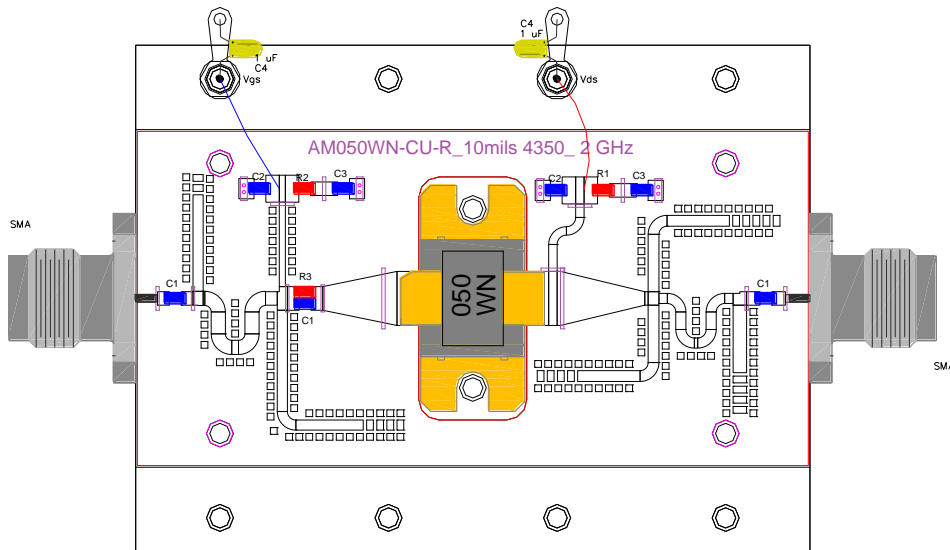
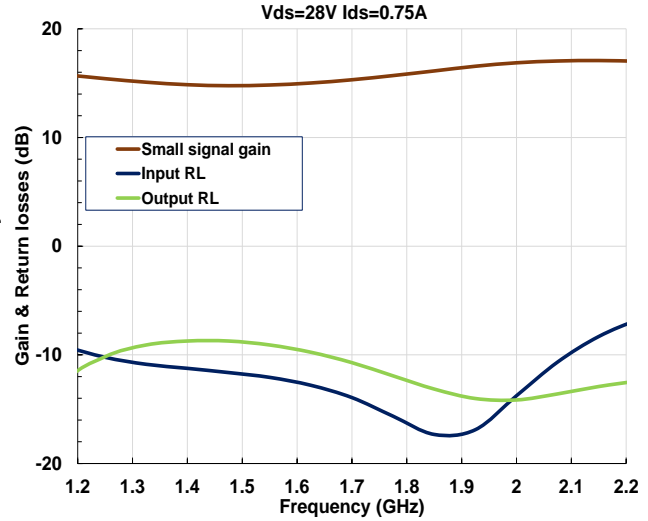
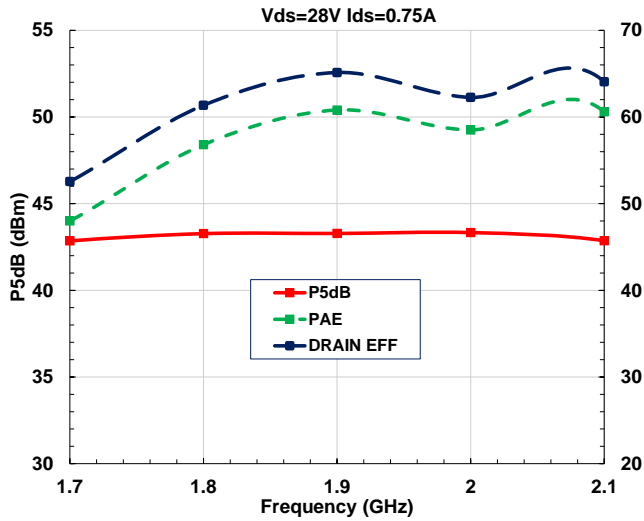


NOTES:

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

TEST CIRCUITS

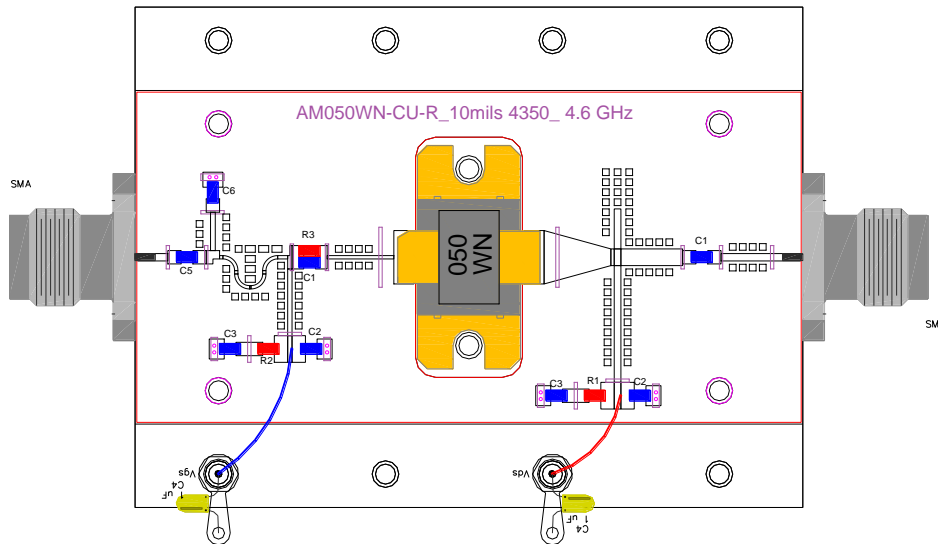
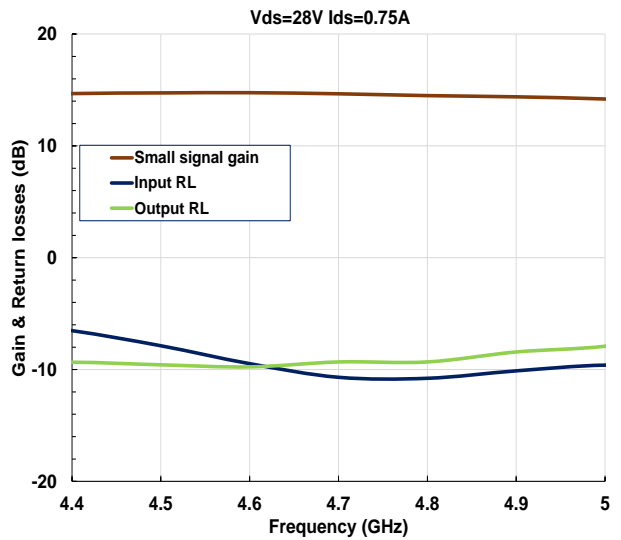
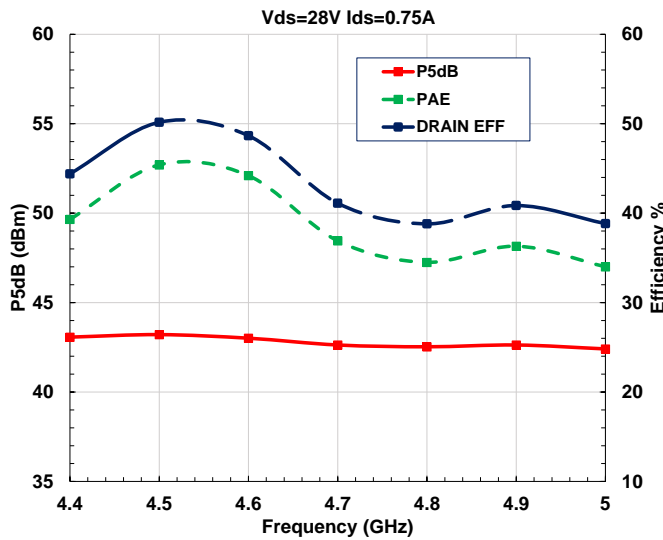
1) 1.7 GHz to 2.1 GHz



Notes:

- 1- 10mils Rogers 4350 Material (LoPro)
- 2- Ckt is for 5mm mask71 @ 2GHz
- 3- C1=6.8pF, C2=22pF, C3=1000pF, C4=1uF
R1=5.1ohms, R2=51ohms, R3=10ohms
- 4- All SMT Caps & Resistors are 0603 size

2) 4.4 GHz to 5 GHz



Notes:

- 1- 10mils Rogers 4350 Material (LoPro)
- 2- Ckt is for 5mm mask71 @ 4.6 GHz
- 3- C1=10pF, C2=5.6pF, C3=1000pF, C4=1uF, C5=1pF, C6=18pF
R1=5.1ohms, R2=51ohms, R3=43ohms
- 4- All SMT Caps & Resistors are 0603 size