

Product Features

- Up to 15 GHz Operation
- 10.0 dB Typical Small Signal Gain at 8.15GHz
- 20 W Typical Psat at 8.15GHz
- 28V Operation
- High Breakdown Voltage
- High Efficiency
- Reliability Monitoring Supporting

Applications

- U/VHF Amplifiers
- Broadband Amplifiers
- Base Station Communication
- Drone, UAV
- WiMAX, LTE, WCDMA, GSM
- WPT, V2X
- Radar Application



WP28015020

Absolute Maximum Rating (not simultaneous) at 25°C

Parameter	Symbol	Typical Value	Units	Conditions
Threshold voltage @ Id=1mA/mm, Vd=10V	V _{to}	-3.2	V	25°C
Breakdown voltage @ Id=1mA/mm	V _{DG}	>100	V	25°C
Drain-source current, Id @ Vd=10V, Vg=0	I _{dss}	880	mA/mm	25°C
Operating Junction Temperature	T _J	225	°C	
Storage Temperature	T _{STG}	-65, +150	°C	
Thermal Resistance, Junction to Case (packaged)	R _{θJC}		°C/W	
Thermal Resistance, Junction to Case (die only)	R _{θJC}		°C/W	
Mounting Temperature (30 seconds)	T _S	320	°C	30 seconds

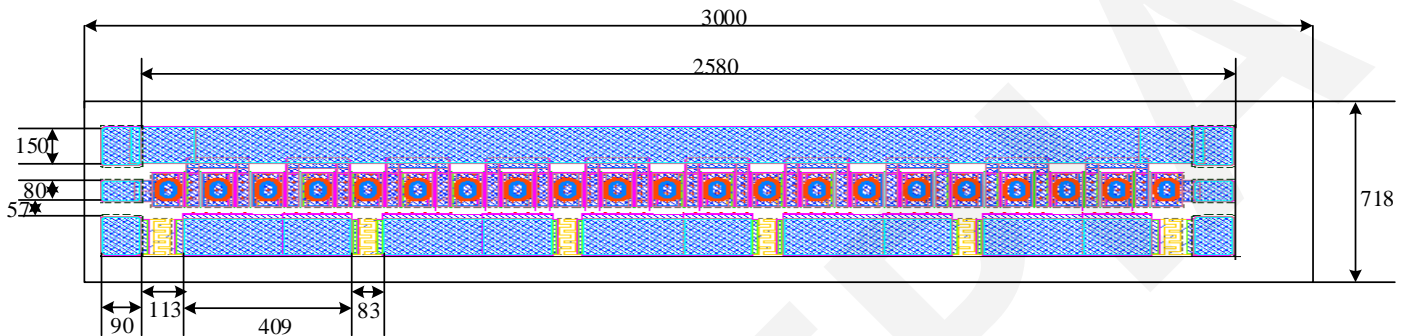
DC Characteristics (Frequency= 8.15GHz unless otherwise stated; TA=25°C)

Parameter	Symbol	Typical Value	Units	Conditions
Ohmic contact resistance	RC	0.4	Ohm-mm	25°C
Maximum Drain-source current, Id @ Vd=10V, Vg=1V (1X125µm device)	I _{dmax}	1050	mA/mm	25°C
Max. trans-conductance, @ Vd=10V, Vg=-4V ~ -1V (1X125µm device)	GM_PEAK	340	mS/mm	25°C

RF Characteristics (Frequency= 8.15GHz unless otherwise stated; TA=25°C)

Parameter	Symbol	Typical Value	Units	Conditions
Small Signal Gain	G _{SS}	>10	dB	V _{DD} =28V, I _{DQ} =300mA
Saturated Power Output	P _{SAT}	20	W	V _{DD} =28V, I _{DQ} =300mA
Drain Efficiency	η	>40	%	V _{DD} =28V, I _{DQ} =300mA
Intermodulation Distortion	IM3	<-30	dBc	V _{DD} =28V, I _{DQ} =300mA
Output Mismatch Stress	v _{SWR}	10:1	ψ	

Die Dimensions (Units in microns)

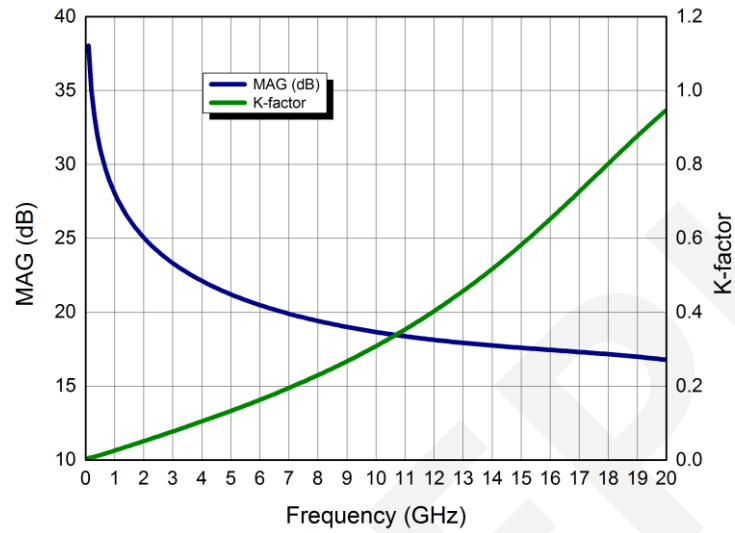


Overall die size 3000 x 718 (+0/-50) microns, die thickness 100 (+/- 10) microns.
All Gate and Drain pads must be wire bonded for electrical connection.

Assembly Notes

- Recommended solder is AuSn (80/20) solder. Refer to Wavepia's guide for the Eutectic Die Bond Procedure.
- Vacuum collet is the preferred method of pick-up.
- The backside of the die is the Source (ground) contact.
- Die back side gold plating is 5 microns thick minimum.
- Thermosonic ball or wedge bonding are the preferred connection methods.
- Gold wire must be used for connections.

Simulated Maximum Available Gain (MAG) and K Factor of the WP28015020
 VDD=28V, IDQ=300mA



Intrinsic die parameters - reference planes at centers of gate and drain bonding pads. No wire bonds assumed.

Simulated Minimum Noise Figure of the WP28015020
 VDD=28V, IDQ=300mA

Will be Updated

Small Signal Performance

VDS=28V, IDQ=300mA, magnitude / angle

Frequency	Mag S11	Ang S11	Mag S21	Ang S21	Mag S12	Ang S12	Mag S22	Ang S22
1000MHz	0.925398	-164.813	10.73122	87.98501	0.01682	-0.10401	0.627075	-165.471
1100MHz	0.925542	-166.078	9.744127	86.46256	0.016795	-1.43146	0.630076	-165.861
1200MHz	0.925761	-167.127	8.916816	85.0491	0.016761	-2.65002	0.633092	-166.124
1300MHz	0.926042	-168.01	8.213213	83.72121	0.016719	-3.78302	0.636164	-166.29
1400MHz	0.926372	-168.762	7.607314	82.46215	0.01667	-4.84714	0.639315	-166.385
1500MHz	0.926747	-169.409	7.079918	81.25967	0.016615	-5.85458	0.642557	-166.426
1600MHz	0.927159	-169.972	6.616541	80.1046	0.016556	-6.81446	0.645897	-166.425
1700MHz	0.927605	-170.464	6.206057	78.98999	0.016491	-7.73371	0.649336	-166.393
1800MHz	0.928081	-170.899	5.839783	77.91046	0.016423	-8.61769	0.652871	-166.339
1900MHz	0.928584	-171.285	5.510841	76.86178	0.01635	-9.47058	0.656501	-166.267
2000MHz	0.929111	-171.629	5.213716	75.84064	0.016274	-10.2957	0.660218	-166.183
2100MHz	0.929661	-171.939	4.943933	74.84436	0.016194	-11.0956	0.664017	-166.091
2200MHz	0.930232	-172.219	4.697826	73.87078	0.01611	-11.8726	0.667892	-165.995
2300MHz	0.93082	-172.472	4.472359	72.91813	0.016024	-12.6283	0.671834	-165.896
2400MHz	0.931426	-172.703	4.265001	71.98496	0.015935	-13.3642	0.675837	-165.797
2500MHz	0.932046	-172.915	4.073622	71.07008	0.015843	-14.0814	0.679893	-165.699
2600MHz	0.93268	-173.109	3.896417	70.17246	0.015748	-14.7809	0.683995	-165.604
2700MHz	0.933326	-173.288	3.731848	69.29126	0.015651	-15.4637	0.688135	-165.513
2800MHz	0.933982	-173.454	3.578595	68.42576	0.015552	-16.1303	0.692306	-165.426
2900MHz	0.934648	-173.608	3.435518	67.57533	0.015451	-16.7814	0.696501	-165.345
3000MHz	0.935321	-173.751	3.301629	66.73944	0.015348	-17.4175	0.700713	-165.269
3100MHz	0.936002	-173.885	3.176066	65.91762	0.015243	-18.0391	0.704937	-165.2
3200MHz	0.936687	-174.011	3.058074	65.10945	0.015136	-18.6465	0.709165	-165.137
3300MHz	0.937378	-174.129	2.946988	64.31458	0.015028	-19.2401	0.713392	-165.08
3400MHz	0.938072	-174.241	2.842222	63.53267	0.014919	-19.8202	0.717613	-165.03
3500MHz	0.938768	-174.346	2.743255	62.76342	0.014808	-20.387	0.721823	-164.987
3600MHz	0.939466	-174.446	2.649623	62.00656	0.014697	-20.9409	0.726015	-164.95
3700MHz	0.940165	-174.541	2.560911	61.26185	0.014584	-21.4821	0.730187	-164.92
3800MHz	0.940863	-174.632	2.47675	60.52905	0.01447	-22.0107	0.734334	-164.896
3900MHz	0.94156	-174.719	2.396804	59.80794	0.014356	-22.527	0.738453	-164.878
4000MHz	0.942256	-174.802	2.320774	59.09831	0.014241	-23.0312	0.742538	-164.867
4100MHz	0.942949	-174.882	2.248385	58.39998	0.014125	-23.5234	0.746589	-164.861
4200MHz	0.94364	-174.958	2.179393	57.71274	0.014009	-24.0038	0.7506	-164.861
4300MHz	0.944326	-175.032	2.113571	57.03642	0.013892	-24.4726	0.754571	-164.867
4400MHz	0.945009	-175.103	2.050714	56.37085	0.013775	-24.9299	0.758497	-164.877
4500MHz	0.945686	-175.172	1.990637	55.71585	0.013658	-25.3758	0.762378	-164.893
4600MHz	0.946359	-175.239	1.933168	55.07125	0.013541	-25.8106	0.766212	-164.914
4700MHz	0.947026	-175.304	1.878149	54.43689	0.013424	-26.2344	0.769996	-164.939
4800MHz	0.947687	-175.367	1.825435	53.81261	0.013306	-26.6472	0.773729	-164.968

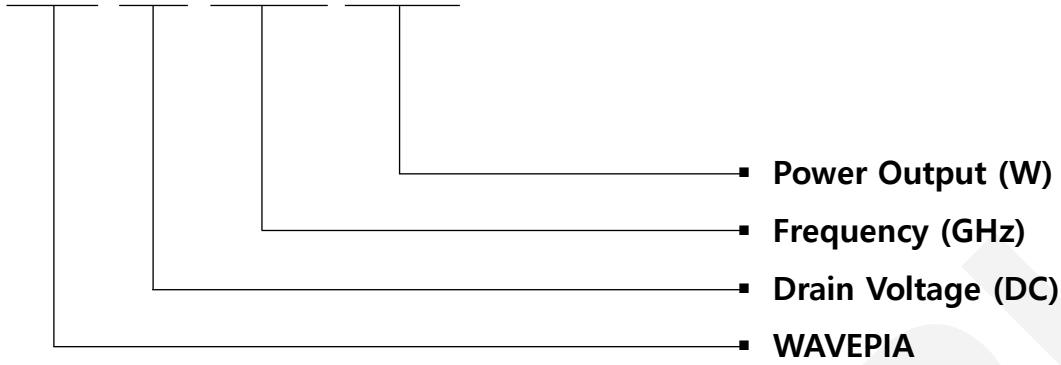
Small Signal Performance

VDS=28V, IDQ=300mA, magnitude / angle

Frequency	Mag S11	Ang S11	Mag S21	Ang S21	Mag S12	Ang S12	Mag S22	Ang S22
4900MHz	0.948341	-175.428	1.774895	53.19825	0.013189	-27.0494	0.77741	-165.002
5000MHz	0.948989	-175.488	1.726403	52.59366	0.013072	-27.4408	0.781038	-165.039
5100MHz	0.94963	-175.546	1.679847	51.99868	0.012955	-27.8218	0.784612	-165.08
5200MHz	0.950264	-175.603	1.635121	51.41315	0.012839	-28.1925	0.788132	-165.125
5300MHz	0.95089	-175.659	1.592128	50.83693	0.012722	-28.5529	0.791596	-165.173
5400MHz	0.951508	-175.713	1.550776	50.26987	0.012606	-28.9032	0.795004	-165.223
5500MHz	0.952119	-175.767	1.51098	49.71181	0.012491	-29.2435	0.798356	-165.277
5600MHz	0.952721	-175.819	1.472662	49.16262	0.012376	-29.574	0.801652	-165.334
5700MHz	0.953315	-175.87	1.435748	48.62214	0.012261	-29.8948	0.804892	-165.393
5800MHz	0.953901	-175.921	1.40017	48.09023	0.012147	-30.206	0.808075	-165.454
5900MHz	0.954479	-175.97	1.365861	47.56674	0.012033	-30.5076	0.811202	-165.517
6000MHz	0.955048	-176.019	1.332763	47.05155	0.01192	-30.7999	0.814273	-165.583
6100MHz	0.955609	-176.067	1.300818	46.5445	0.011808	-31.083	0.817289	-165.65
6200MHz	0.956161	-176.114	1.269973	46.04545	0.011696	-31.3569	0.820249	-165.719
6300MHz	0.956705	-176.161	1.240178	45.55428	0.011585	-31.6218	0.823155	-165.79
6400MHz	0.95724	-176.207	1.211386	45.07084	0.011475	-31.8778	0.826006	-165.862
6500MHz	0.957766	-176.252	1.183552	44.595	0.011366	-32.125	0.828803	-165.935
6600MHz	0.958284	-176.296	1.156634	44.12662	0.011257	-32.3635	0.831547	-166.01
6700MHz	0.958794	-176.34	1.130593	43.66558	0.011149	-32.5934	0.834238	-166.086
6800MHz	0.959295	-176.384	1.105391	43.21175	0.011042	-32.8148	0.836877	-166.162
6900MHz	0.959787	-176.427	1.080993	42.765	0.010935	-33.0279	0.839465	-166.24
7000MHz	0.960271	-176.469	1.057366	42.3252	0.01083	-33.2326	0.842003	-166.318
7100MHz	0.960747	-176.511	1.034477	41.89223	0.010725	-33.4292	0.84449	-166.398
7200MHz	0.961215	-176.552	1.012296	41.46596	0.010621	-33.6177	0.846929	-166.477
7300MHz	0.961674	-176.593026	0.990796	41.04628	0.010518	-33.7982	0.849319	-166.557
7400MHz	0.962126	-176.633436	0.969948	40.63306	0.010416	-33.9707	0.851661	-166.638
7500MHz	0.962569	-176.673398	0.949728	40.22619	0.010315	-34.1355	0.853957	-166.719
7600MHz	0.963005	-176.713	0.930111	39.82556	0.010214	-34.2925	0.856207	-166.801
7700MHz	0.963432	-176.752026	0.911072	39.43105	0.010115	-34.4419	0.858412	-166.882
7800MHz	0.963852	-176.790715	0.892591	39.04254	0.010016	-34.5838	0.860573	-166.964
7900MHz	0.964265	-176.829	0.874647	38.65994	0.009918	-34.7181	0.86269	-167.046
8000MHz	0.96467	-176.866895	0.857218	38.28312	0.009821	-34.845	0.864764	-167.128
8100MHz	0.965067	-176.904406	0.840286	37.91199	0.009725	-34.9646	0.866797	-167.21
8200MHz	0.965458	-176.941541	0.823833	37.54644	0.00963	-35.077	0.868789	-167.292
8300MHz	0.965841	-176.97831	0.807841	37.18637	0.009536	-35.1822	0.87074	-167.374
8400MHz	0.966217	-177.014719	0.792293	36.83167	0.009443	-35.2802	0.872652	-167.456
8500MHz	0.966586	-177.050777	0.777174	36.48226	0.00935	-35.3712	0.874525	-167.538
8600MHz	0.966948	-177.086491	0.762468	36.13802	0.009259	-35.4552	0.876361	-167.62
8700MHz	0.967304	-177.122	0.748161	35.79888	0.009168	-35.5323	0.87816	-167.701

Part Number System

W P 2 8 0 1 5 0 2 0



Parameter	Value	Units
Drain Voltage	28	V
Lower Frequency	DC	GHz
Upper Frequency	15	GHz
Output Power	20	W
Transistor Type	Bare-die	-

Packaging Information

- Bare die are shipped in Wafer-level with Expander Ring or Gel-Pak® containers.
- Possible UV Curing for Wafer-level with dicing saw



Revision History

Part Number	Release Date	Version	Description
WP28015020	2021.04	2.0	데이터시트 전체 포맷 수정



WAVE PIA

- ✓ 워터마크를 모든 페이지에 삽입 후 PDF 파일로 내보낼 것
- ✓ PDF 내보내기 전 본 페이지 삭제

WAVEPIA