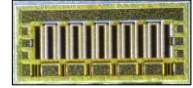


### Product Features

- Up to 7 GHz Operation
- 14.0 dB Typical Small Signal Gain at 3.5 GHz
- 30 W Typical Psat at 5.8GHz
- 48V Operation
- High Breakdown Voltage
- High Efficiency
- Reliability Monitoring Supporting

### Applications

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



WP48007025

### Absolute Maximum Rating (not simultaneous) at 25°C

Parameter	Symbol	Typical Value	Units	Conditions
Threshold voltage @ Id=1mA/mm, Vd=10V	V <sub>to</sub>	-3.4	V	25°C
Breakdown voltage @ Id=1mA/mm	V <sub>DG</sub>	160	V	25°C
Drain-source current, Id @ Vd=10V, Vg=0	I <sub>dss</sub>	800	mA/mm	25°C
Operating Junction Temperature	T <sub>J</sub>	225	°C	
Storage Temperature	T <sub>STG</sub>	-65, +150	°C	
Thermal Resistance, Junction to Case (packaged)	R <sub>θJC</sub>		°C/W	
Thermal Resistance, Junction to Case (die only)	R <sub>θJC</sub>		°C/W	
Mounting Temperature (30 seconds)	T <sub>S</sub>	320	°C	30 seconds

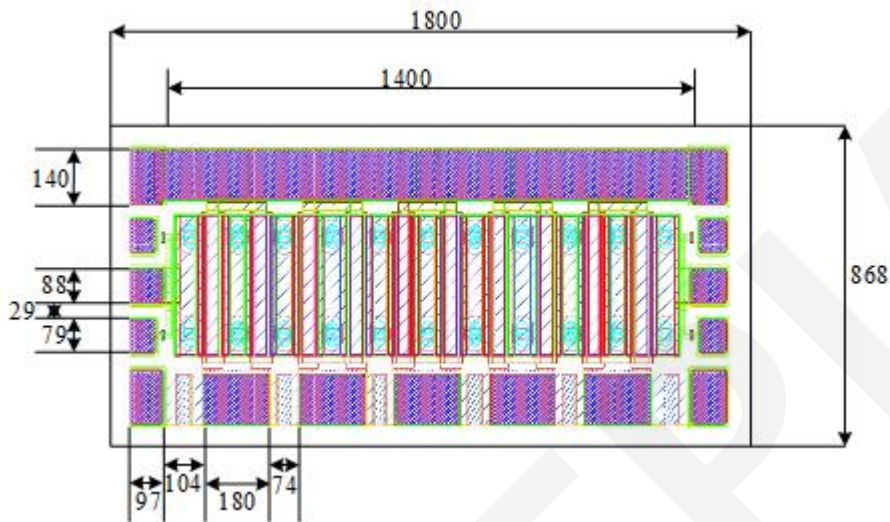
### DC Characteristics (Frequency= 3.5GHz unless otherwise stated; TA=25°C)

Parameter	Symbol	Typical Value	Units	Conditions
Ohmic contact resistance	RC	0.3	Ohm-mm	25°C
Maximum Drain-source current, Id @ Vd=10V, Vg=1V (1X125µm device)	I <sub>dmax</sub>	1000	mA/mm	25°C
Max. trans-conductance, @ Vd=10V, Vg=-4V ~ -1V (1X125µm device)	GM_PEAK	290	mS/mm	25°C

### RF Characteristics (Frequency= 3.5GHz unless otherwise stated; TA=25°C)

Parameter	Symbol	Typical Value	Units	Conditions
Small Signal Gain	G <sub>SS</sub>	>12	dB	V <sub>DD</sub> =48V, I <sub>DQ</sub> =250mA
Saturated Power Output	P <sub>SAT</sub>	30	W	V <sub>DD</sub> =48V, I <sub>DQ</sub> =250mA
Drain Efficiency	η	>60	%	V <sub>DD</sub> =48V, I <sub>DQ</sub> =250mA
Intermodulation Distortion	IM3	<-30	dBc	V <sub>DD</sub> =48V, I <sub>DQ</sub> =250mA
Output Mismatch Stress	v <sub>SWR</sub>	10:1	ψ	

### Die Dimensions (Units in microns)

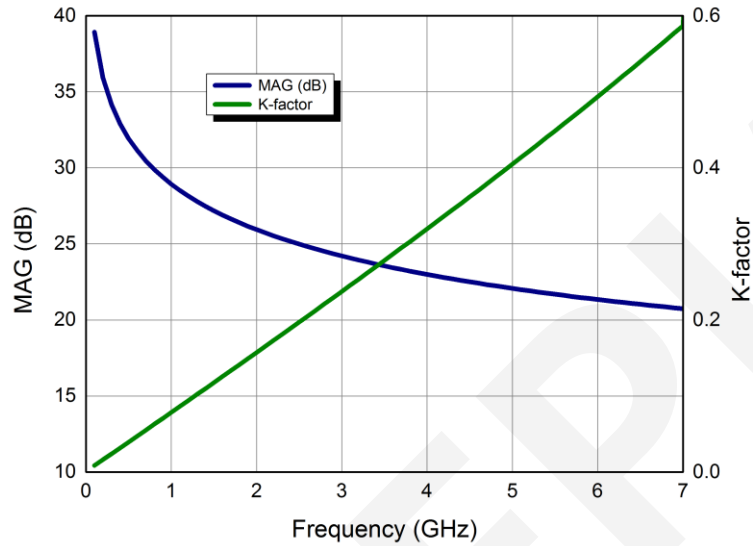


Overall die size 1800 x 868 (+0/-50) microns, die thickness 100 (+/- 10) microns.  
All Gate and Drain pads must be wire bonded for electrical connection.

### Assembly Notes:

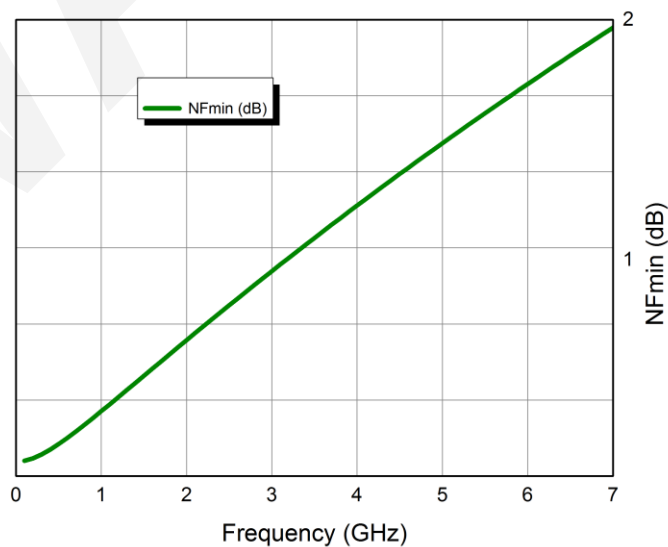
- Recommended solder is AuSn (80/20) solder. Refer to Wavepia's guide for the Eutectic Die Bond Procedure.
- Vacuum collet is the preferred method of pick-up.
- The backside of the die is the Source (ground) contact.
- Die back side gold plating is 5 microns thick minimum.
- Thermosonic ball or wedge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

**Simulated Maximum Available Gain (MAG) and K Factor of the WP48007025**  
 VDD=48V, IDQ=250mA



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

**Simulated Minimum Noise Figure of the WP48007025**  
 VDD=48V, IDQ=250mA



### Small Signal Performance

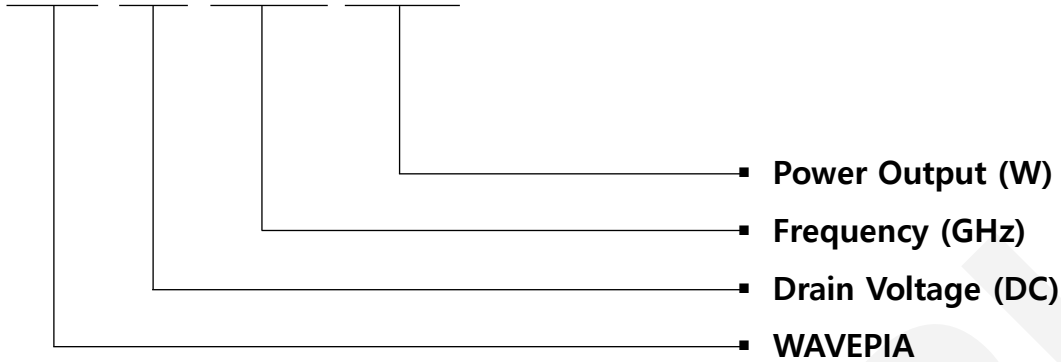
VDS=48V, IDQ=250mA, magnitude / angle

Frequency	Mag S11	Ang S11	Mag S21	Ang S21	Mag S12	Ang S12	Mag S22	Ang S22
100MHz	0.98148	-56.5206	59.38883	149.564	0.007598	59.67954	0.267952	-79.7911
200MHz	0.957075	-94.0773	45.30755	129.3897	0.011593	39.62072	0.346605	-114.096
300MHz	0.94289	-116.259	34.76345	117.2113	0.013342	27.55777	0.385671	-130.492
400MHz	0.935467	-129.925	27.67179	109.3274	0.014159	19.78939	0.406168	-139.42
500MHz	0.931433	-138.942	22.79461	103.7483	0.014578	14.3258	0.418828	-144.7
600MHz	0.929141	-145.258	19.29524	99.49655	0.014806	10.1896	0.428037	-147.985
700MHz	0.92781	-149.899	16.6823	96.06607	0.014932	6.874653	0.435687	-150.085
800MHz	0.927055	-153.439	14.66439	93.1756	0.014998	4.099732	0.442663	-151.439
900MHz	0.926667	-156.221	13.062	90.65852	0.015026	1.698217	0.449406	-152.304
1000MHz	0.926529	-158.46	11.75991	88.41064	0.015028	-0.43408	0.456144	-152.84
1100MHz	0.926571	-160.299	10.6813	86.36382	0.015011	-2.3653	0.462994	-153.152
1200MHz	0.926747	-161.835	9.773218	84.47179	0.014979	-4.14171	0.470015	-153.31
1300MHz	0.927027	-163.135	8.998088	82.70215	0.014936	-5.7957	0.477231	-153.363
1400MHz	0.92739	-164.25	8.328547	81.03159	0.014883	-7.35059	0.484644	-153.345
1500MHz	0.927823	-165.216	7.744235	79.44295	0.014822	-8.82354	0.492246	-153.283
1600MHz	0.928314	-166.062	7.229698	77.92336	0.014754	-10.2274	0.500021	-153.194
1700MHz	0.928853	-166.807	6.773008	76.46298	0.01468	-11.572	0.507948	-153.093
1800MHz	0.929434	-167.469	6.364813	75.05419	0.014601	-12.865	0.516006	-152.988
1900MHz	0.930052	-168.062	5.997685	73.691	0.014516	-14.1124	0.52417	-152.887
2000MHz	0.930701	-168.596	5.665645	72.36863	0.014427	-15.3189	0.532418	-152.794
2100MHz	0.931377	-169.079	5.363833	71.08325	0.014335	-16.4884	0.540726	-152.715
2200MHz	0.932077	-169.519	5.088256	69.83173	0.014238	-17.624	0.549073	-152.651
2300MHz	0.932797	-169.922	4.8356	68.61148	0.014138	-18.7282	0.557437	-152.603
2400MHz	0.933534	-170.292	4.603099	67.42038	0.014036	-19.8033	0.5658	-152.572
2500MHz	0.934285	-170.634	4.388419	66.25661	0.01393	-20.851	0.574143	-152.56
2600MHz	0.935048	-170.951	4.189581	65.11866	0.013822	-21.8728	0.58245	-152.565
2700MHz	0.935821	-171.246	4.004893	64.00523	0.013712	-22.8701	0.590705	-152.588
2800MHz	0.936601	-171.521	3.832902	62.91517	0.0136	-23.8439	0.598896	-152.628
2900MHz	0.937387	-171.779	3.67235	61.84751	0.013487	-24.7953	0.607009	-152.684
3000MHz	0.938177	-172.022	3.522147	60.80136	0.013371	-25.7251	0.615035	-152.755
3100MHz	0.938969	-172.251	3.381336	59.77596	0.013255	-26.6341	0.622963	-152.841
3200MHz	0.939761	-172.468	3.249081	58.77061	0.013137	-27.523	0.630784	-152.941
3300MHz	0.940552	-172.673	3.124644	57.78466	0.013018	-28.3924	0.638492	-153.053
3400MHz	0.941342	-172.869	3.007371	56.81755	0.012899	-29.2429	0.646081	-153.178
3500MHz	0.942127	-173.055	2.896681	55.86872	0.012779	-30.0751	0.653543	-153.313
3600MHz	0.942909	-173.233	2.792056	54.93769	0.012658	-30.8894	0.660877	-153.459
3700MHz	0.943685	-173.404	2.693031	54.02397	0.012537	-31.6863	0.668076	-153.614
3800MHz	0.944454	-173.567	2.599189	53.12714	0.012415	-32.4663	0.67514	-153.777
3900MHz	0.945217	-173.725	2.510156	52.24676	0.012294	-33.2297	0.682064	-153.948



### Part Number System

**W P 4 8 0 0 7 0 2 5**



Parameter	Value	Units
Drain Voltage	48	V
Lower Frequency	DC	GHz
Upper Frequency	7	GHz
Output Power	30	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