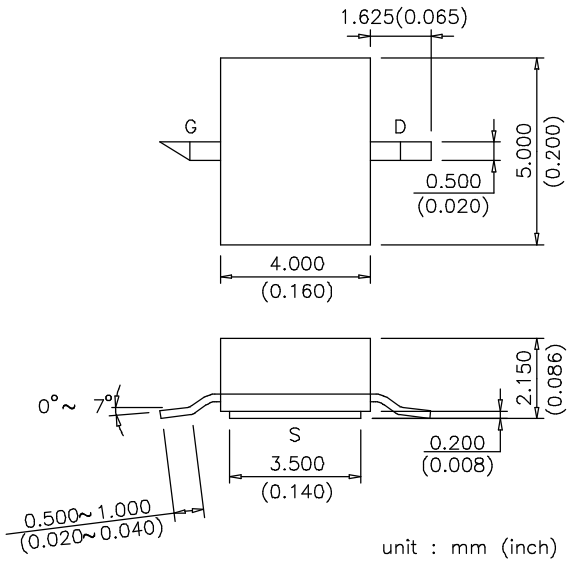
Features

- **Low Cost GaAs Power FET**
- **Class A or Class AB Operation**
- **Greater than 17 dB Gain**
- **5V to 10V Operation**

Outline Dimensions



RA Package (Ceramic)

Description

The HWL27YRA is a Medium Power GaAs FET designed for various L-band & S-band applications. It is presently offered in low cost ceramic package.

Absolute Maximum Ratings

V_{DS}	Drain to Source Voltage	+15V
V_{GS}	Gate to Source Voltage	-5V
I_D	Drain Current	I_{DSS}
I_G	Gate Current	2mA
T_{CH}	Channel Temperature	175°C
T_{STG}	Storage Temperature	-65 to +175°C
P_T^*	Power Dissipation	3.5W

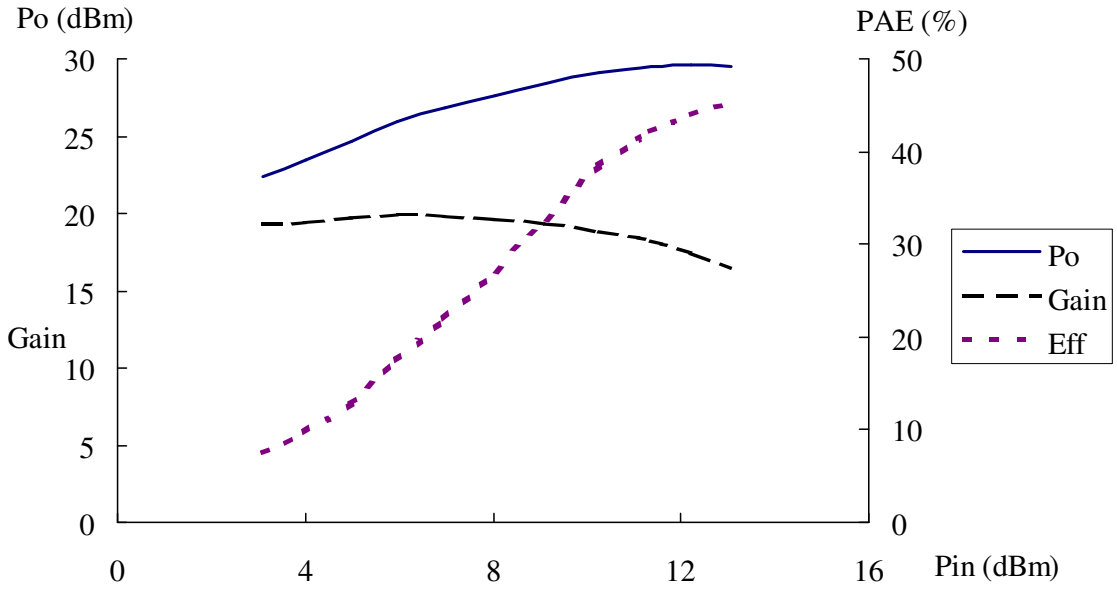
* mounted on an infinite heat sink

Electrical Specifications (TA=25°C) f = 2400 MHz for all RF Tests

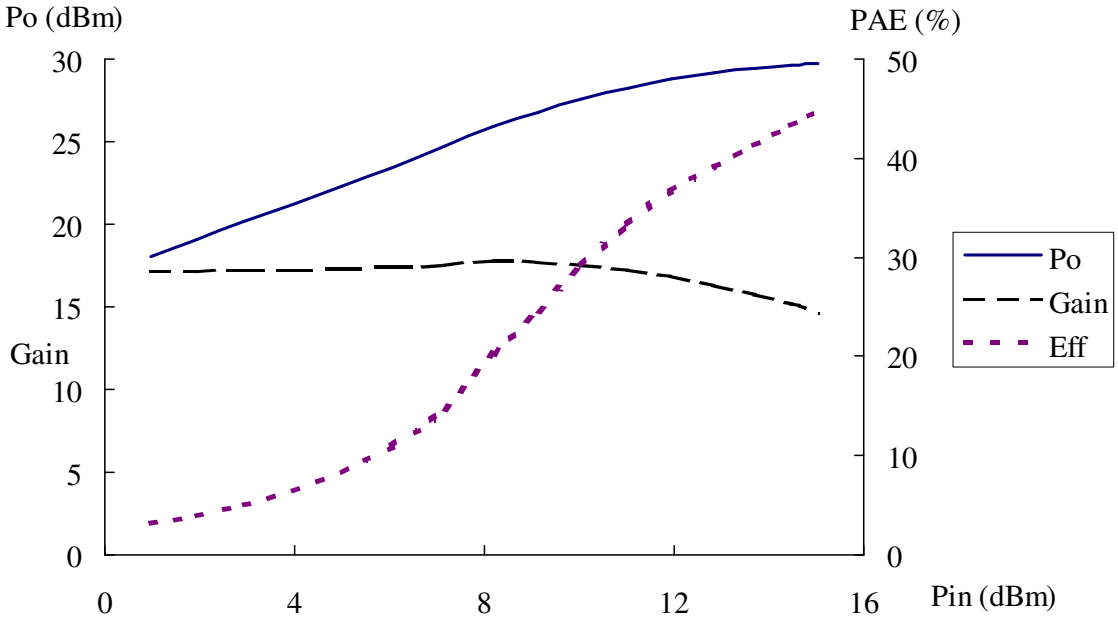
Symbol	Parameters & Conditions	Units	Min.	Typ.	Max.
I_{DSS}	Saturated Current at V_{DS}=3V, V_{GS}=0V	mA	300	400	600
V_P	Pinch-off Voltage at V_{DS}=3V, I_D=20mA	V	-3.5	-2.0	-1.5
gm	Transconductance at V_{DS}=3V, I_D=200mA	mS	-	250	-
R_{th}	Thermal Resistance	°C/W	-	30	40
P_{1dB}	Power Output at Test Points V_{DS}=10V, I_D=0.5I_{DSS}	dBm	27.5	29	-
G_{1dB}	Gain at 1dB Compression Point V_{DS}=10V, I_D=0.5I_{DSS}	dB	16	17	-
PAE	Power-Added Efficiency (P_{OUT} = P_{1dB}) V_{DS}=10V, I_D=0.5I_{DSS}	%	35	42	-

Typical Performance at 25°C

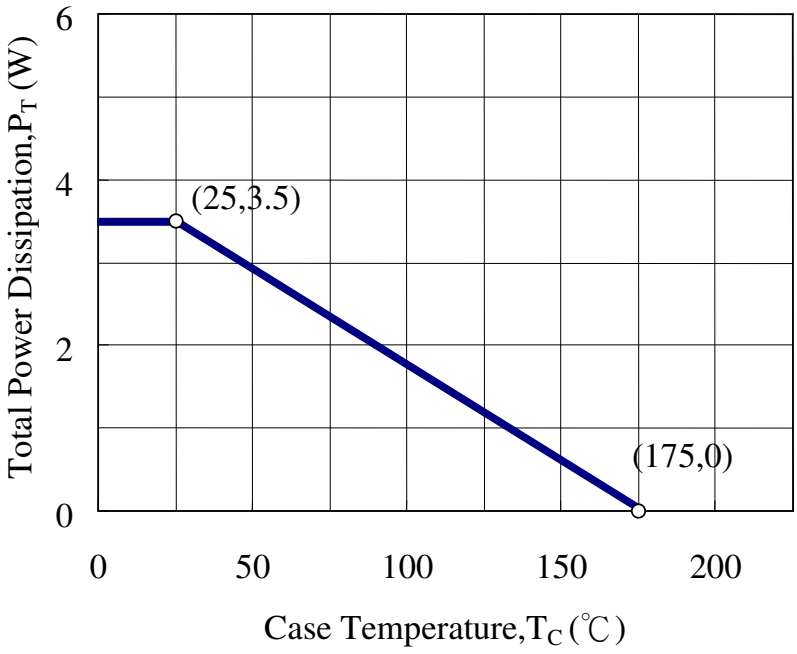
Output Power & Efficiency & Gain vs Input Power
@ f=1.9 GHz, Vds=10V, Ids = 0.5 Idss



Output Power & Efficiency & Gain vs Input Power
@ f=2.4 GHz, Vds=10V, Ids = 0.5 Idss



Power Derating Curve



Small Signal Common Source Scattering Parameters

S-MAGN AND ANGLES

V_{DS}=10V, I_{DS}=0.5I_{DSS}

(GHz)	IS11I	∠ANG	IS21I	∠ANG	IS12I	∠ANG	IS22I	∠ANG
0.5	0.982	-61.461	9.844	136.813	0.013	52.623	0.447	-32.966
0.6	0.971	-69.936	9.365	129.921	0.014	47.681	0.444	-38.731
0.7	0.964	-81.633	8.899	121.728	0.015	44.018	0.428	-45.320
0.8	0.937	-90.910	8.363	115.284	0.017	36.674	0.420	-49.001
0.9	0.933	-98.950	7.961	108.905	0.018	30.805	0.428	-55.306
1.0	0.924	-106.780	7.490	102.487	0.019	28.107	0.428	-61.485
1.1	0.918	-113.821	7.061	97.625	0.020	22.025	0.41	-64.461
1.2	0.913	-120.643	6.612	91.913	0.020	17.253	0.414	-70.907
1.3	0.909	-126.386	6.291	86.997	0.020	13.667	0.419	-74.910
1.4	0.904	-131.833	5.935	82.084	0.021	13.004	0.423	-80.144
1.5	0.901	-136.947	5.614	77.424	0.021	9.034	0.427	-84.795
1.6	0.898	-141.533	5.305	72.989	0.021	5.959	0.431	-89.459
1.7	0.896	-145.822	5.059	68.707	0.021	3.927	0.439	-93.888
1.8	0.892	-149.743	4.789	64.775	0.021	-0.675	0.444	-98.561
1.9	0.891	-153.407	4.549	60.313	0.021	-3.457	0.460	-102.778
2.0	0.891	-156.920	4.345	56.755	0.021	-3.585	0.464	-106.597
2.1	0.887	-159.832	4.134	52.907	0.020	-6.903	0.478	-110.863
2.2	0.886	-162.929	3.948	49.197	0.020	-11.613	0.483	-115.106
2.3	0.886	-165.820	3.775	45.842	0.021	-11.788	0.499	-118.232
2.4	0.884	-168.354	3.616	42.255	0.020	-13.795	0.509	-122.794
2.5	0.885	-170.866	3.465	39.068	0.020	-14.222	0.520	-125.298
2.6	0.882	-173.301	3.316	35.427	0.019	-16.583	0.531	-130.150
2.7	0.884	-175.371	3.191	32.807	0.019	-19.663	0.541	-132.364
2.8	0.881	-177.307	3.060	29.347	0.019	-21.313	0.558	-136.654
2.9	0.880	-179.342	2.947	26.673	0.018	-21.557	0.564	-138.636
3.0	0.878	178.271	2.840	23.149	0.019	-23.821	0.583	-142.943
3.1	0.881	176.581	2.750	20.485	0.019	-22.535	0.589	-145.194
3.2	0.876	174.575	2.634	17.300	0.019	-23.390	0.605	-148.236
3.3	0.87	172.901	2.568	14.637	0.018	-24.783	0.613	-151.402
3.4	0.873	171.118	2.466	12.009	0.018	-25.211	0.630	-153.160
3.5	0.870	169.291	2.395	8.989	0.019	-28.791	0.637	-156.297
3.6	0.872	167.418	2.325	6.724	0.019	-27.836	0.652	-157.090
3.7	0.869	165.617	2.254	4.003	0.018	-31.087	0.662	-160.219
3.8	0.863	163.932	2.193	1.711	0.018	-31.379	0.670	-160.919
3.9	0.862	162.100	2.128	-1.228	0.017	-31.508	0.680	-163.691
4.0	0.861	160.391	2.089	-3.083	0.018	-32.003	0.685	-164.095