

Features

- Low Cost GaAs Power FET
- Class A or Class AB Operation
- Greater than 14.5 dB Gain
- 5V to 10V Operation

Description

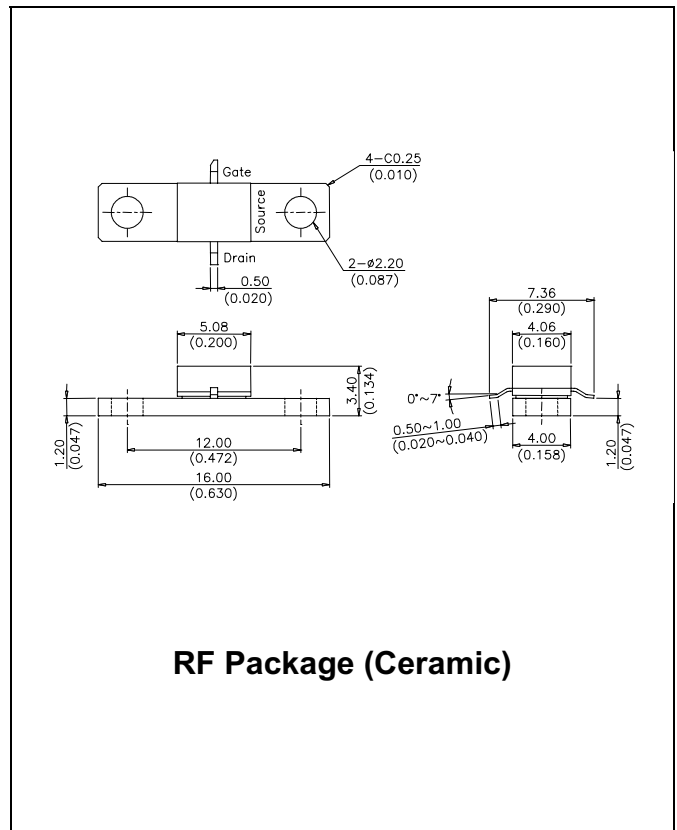
The HWL34YRF is a Power GaAs FET designed for various L-band & S-band applications. It is presently offered in low cost ceramic package.

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	6mA
T_{CH}	Channel Temperature	175°C
T_{STG}	Storage Temperature	-65 to +175°C
P_T^*	Power Dissipation	12W

* mounted on an infinite heat sink.

Outline Dimensions



RF Package (Ceramic)

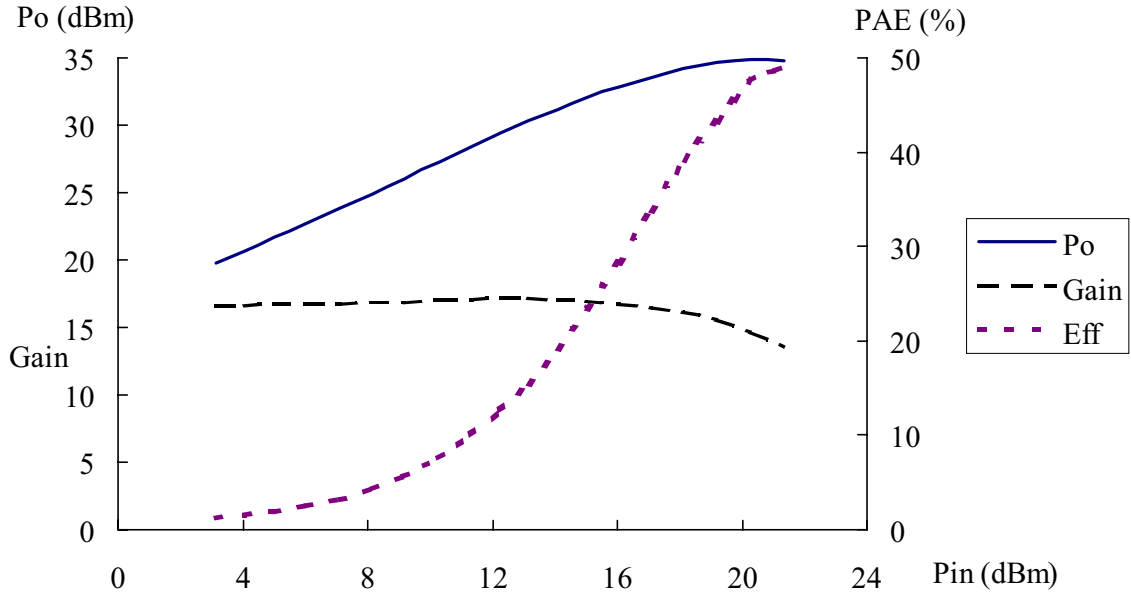
Electrical Specifications ($T_A=25^\circ\text{C}$) $f = 2400$ MHz for all RF Tests

Symbol	Parameters & Conditions	Units	Min.	Typ.	Max.
I_{DSS}	Saturated Current at $V_{DS}=3\text{V}$, $V_{GS}=0\text{V}$	mA	900	1200	1600
V_P	Pinch-off Voltage at $V_{DS}=3\text{V}$, $I_D=60\text{mA}$	V	-3.5	-2.0	-1.5
g_m	Transconductance at $V_{DS}=3\text{V}$, $I_D=60\text{mA}$	mS	-	700	-
R_{th}	Thermal Resistance, Channel to case*	$^\circ\text{C/W}$	-	9	12
P_{1dB}	Power Output at Test Points $V_{DS}=10\text{V}$, $I_D=0.5I_{DSS}$	dBm	33	34	-
G_{1dB}	Gain at 1dB Compression Point $V_{DS}=10\text{V}$, $I_D=0.5I_{DSS}$	dB	13.5	14.5	-
PAE	Power-Added Efficiency ($P_{out} = P_{1dB}$) $V_{DS}=10\text{V}$, $I_D=0.5I_{DSS}$	%	35	45	-

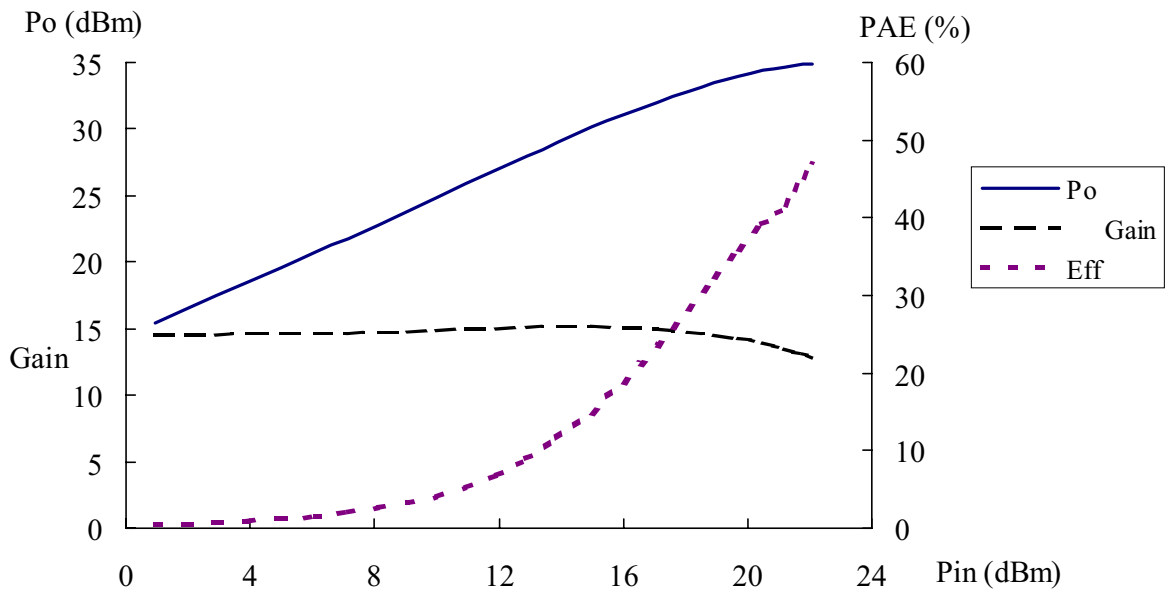
* Device mounted on an infinite heat sink.

Typical Performance at 25°C

Output Power & Efficiency & Gain vs Input Power
@ $f=1.9$ GHz, $V_{ds}=10V$, $I_{ds} = 0.5 I_{dss}$



Output Power & Efficiency & Gain vs Input Power
@ $f=2.4$ GHz, $V_{ds}=10V$, $I_{ds} = 0.5 I_{dss}$



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	0.947	-130.684	11.604	99.353	0.014	30.593	0.254	-131.689
0.6	0.949	-142.198	10.210	91.564	0.013	16.744	0.270	-131.001
0.7	0.927	-152.271	8.674	84.882	0.016	18.392	0.299	-138.530
0.8	0.931	-160.245	7.616	78.087	0.014	11.917	0.321	-141.943
0.9	0.930	-167.066	6.801	73.266	0.016	11.796	0.331	-144.778
1.0	0.934	-173.566	6.168	67.037	0.022	3.037	0.351	-147.447
1.1	0.929	-179.133	5.472	63.127	0.015	8.597	0.369	-151.567
1.2	0.930	175.811	4.965	57.754	0.016	-0.436	0.386	-153.251
1.3	0.927	171.215	4.528	53.779	0.015	2.559	0.399	-155.880
1.4	0.926	167.036	4.141	49.641	0.016	-1.229	0.421	-158.172
1.5	0.924	162.831	3.818	45.231	0.017	-8.179	0.430	-160.732
1.6	0.925	158.511	3.553	41.565	0.016	-9.085	0.441	-162.681
1.7	0.929	155.145	3.306	37.733	0.016	-9.257	0.457	-165.441
1.8	0.928	152.195	3.053	34.226	0.016	-10.604	0.476	-166.853
1.9	0.923	148.836	2.852	30.512	0.017	-17.858	0.483	-169.223
2.0	0.936	145.751	2.675	27.311	0.015	-11.779	0.504	-170.146
2.1	0.924	142.432	2.506	23.576	0.014	-19.614	0.512	-172.408
2.2	0.927	139.764	2.356	20.349	0.015	-17.051	0.529	-174.536
2.3	0.929	136.975	2.211	17.260	0.015	-22.120	0.540	-175.615
2.4	0.930	134.915	2.076	14.278	0.015	-18.382	0.550	-176.656
2.5	0.927	131.630	1.963	10.858	0.014	-25.142	0.563	-178.245
2.6	0.933	129.386	1.874	8.107	0.014	-22.983	0.588	-179.669
2.7	0.932	127.241	1.756	5.346	0.014	-29.044	0.583	179.190
2.8	0.929	125.386	1.665	2.538	0.014	-19.682	0.597	178.052
2.9	0.935	122.879	1.578	-0.146	0.013	-29.826	0.606	176.436
3.0	0.935	120.597	1.497	-3.033	0.012	-49.463	0.613	175.600
3.1	0.934	118.987	1.427	-5.365	0.012	-29.255	0.622	174.679
3.2	0.939	116.922	1.358	-8.017	0.015	-14.167	0.631	173.081
3.3	0.935	114.958	1.304	-10.711	0.012	-32.211	0.639	171.960
3.4	0.931	113.530	1.254	-12.885	0.013	-28.065	0.645	171.700
3.5	0.931	111.453	1.202	-15.654	0.014	-26.944	0.659	170.094
3.6	0.939	109.845	1.157	-17.709	0.011	-42.929	0.662	168.398
3.7	0.934	108.557	1.120	-20.278	0.012	-28.638	0.675	168.044
3.8	0.939	106.654	1.086	-22.849	0.013	-16.919	0.666	164.745
3.9	0.939	105.303	1.039	-24.926	0.012	-35.426	0.683	166.180
4.0	0.938	103.525	1.015	-27.027	0.013	-28.487	0.691	165.577