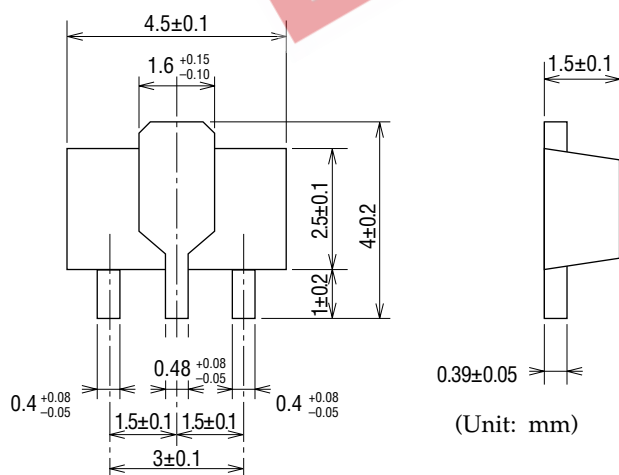


**OKI** electronic components**KGF1313****Power FET (Plastic Package Type)****GENERAL DESCRIPTION**

The KGF1313, housed in a SOT-89 type plastic-mold package, is a discrete power FET with frequencies ranging from the UHF-band to the L-band. This device features high efficiency and high output power. The KGF1313 specifications are guaranteed to a fixed matching circuit for 3.4 V and 1.9 GHz; external impedance-matching circuits are also required. Because of its high efficiency, high output power (more than 27 dBm), and plastic package, the KGF1313 is ideal as a transmitter-final-stage amplifier for personal handy phones, such as digital keying cordless phones.

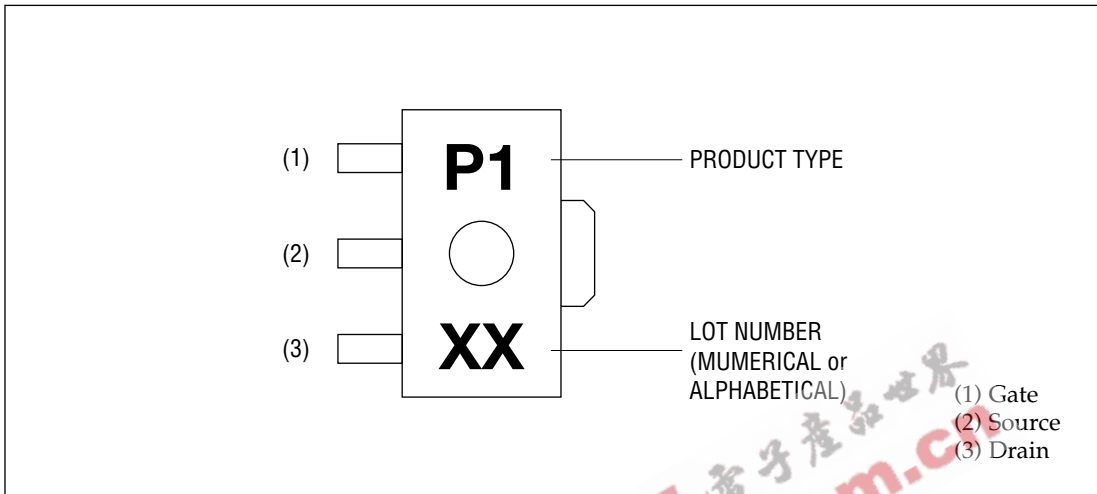
**FEATURES**

- Specifications guaranteed to a fixed matching circuits for 3.4 V, 1.9 GHz
- High output power: 27 dBm (min.) at 1.9 GHz
- High efficiency: 50% (typ.) at 1.9 GHz
- Low thermal resistance: 23°C/W (typ.)
- Package: 3PMMP (SOT-89 type)

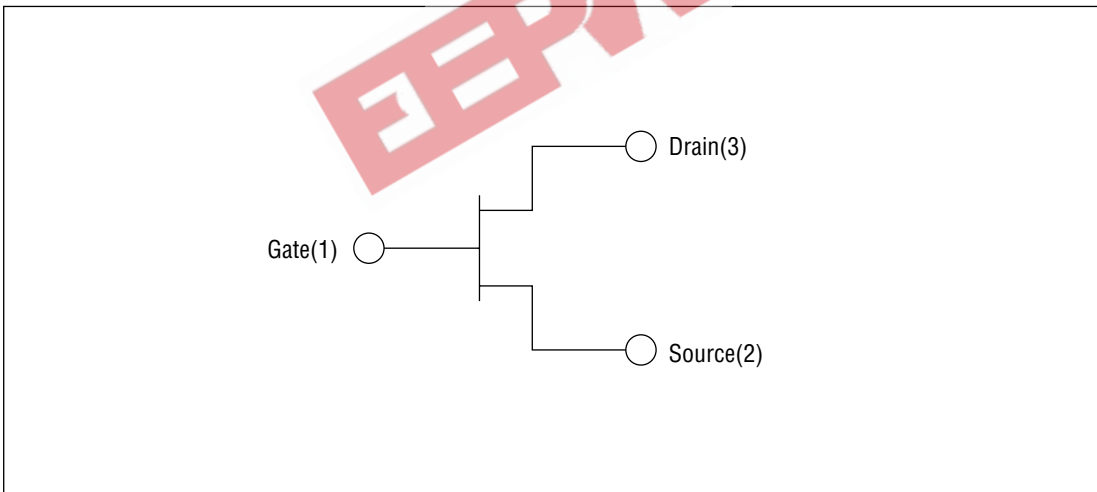
**PACKAGE DIMENSIONS**

Package material	Epoxy resin
Lead frame material	Cu
Pin treatment	Solder plating
Solder plate thickness	5 $\mu$ m or more

MARKING



CIRCUIT



**ABSOLUTE MAXIMUM RATINGS**

Item	Symbol	Condition	Unit	Min.	Max.
Drain-source voltage	$V_{DS}$	$T_a = 25^\circ\text{C}$	V	—	7.0
Gate-source voltage	$V_{GS}$	$T_a = 25^\circ\text{C}$	V	-5.0	0.4
Drain current	$I_{DS}$	$T_a = 25^\circ\text{C}$	A	—	2.0
Total power dissipation	$P_{tot}$	$T_a = T_c = 25^\circ\text{C}$	W	—	4.5
Channel temperature	$T_{ch}$	—	$^\circ\text{C}$	—	150
Storage temperature	$T_{stg}$	—	$^\circ\text{C}$	-45	125

**ELECTRICAL CHARACTERISTICS**

(Ta = 25°C)

Item	Symbol	Condition	Unit	Min.	Typ.	Max.
Gate-source leakage current	$I_{GSS}$	$V_{GS} = -5\text{ V}$	$\mu\text{A}$	—	—	100
Gate-drain leakage current	$I_{GDO}$	$V_{GD} = -12\text{ V}$	$\mu\text{A}$	—	—	500
Drain-source leakage current	$I_{DS(off)}$	$V_{DS} = 7\text{ V}, V_{GS} = -5\text{ V}$	$\mu\text{A}$	—	—	1500
Drain current	$I_{DSS}$	$V_{DS} = 1.5\text{ V}, V_{GS} = 0\text{ V}$	A	1.3	—	—
Gate-source cut-off voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}, I_{DS} = 4.0\text{ mA}$	V	-3.0	—	-2.0
Output power	$P_O$	(*1), $P_{IN} = 20\text{ dBm}$	dBm	27.0	27.5	—
Drain efficiency	$\eta_D$	(*1), $P_{IN} = 20\text{ dBm}$	%	45	50	—
Linear gain	$G_{LIN}$	(*1), $P_{IN} = 0\text{ dBm}$	dB	—	9.5	—
Thermal resistance	$R_{th}$	Channel to case	$^\circ\text{C/W}$	—	15	—

\*1 Condition:  $f = 1.9\text{ GHz}$ ,  $V_{DS} = 3.4\text{ V}$ ,  $I_{DSQ} = 200\text{ mA}$

RF CHARACTERISTICS

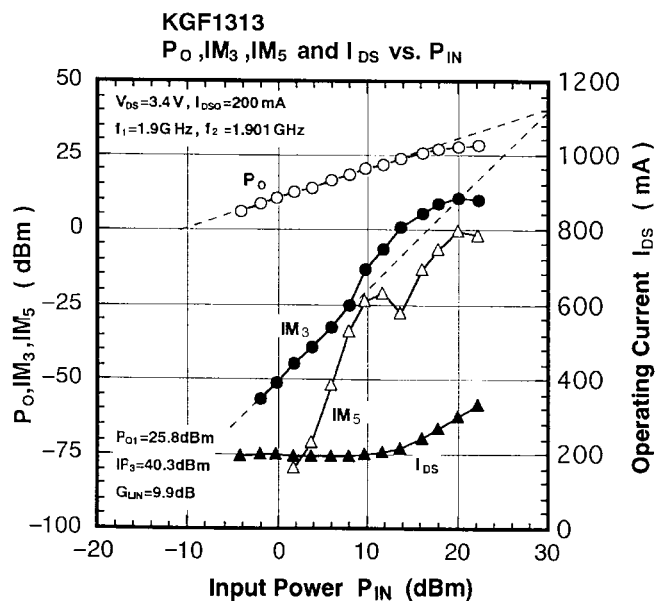
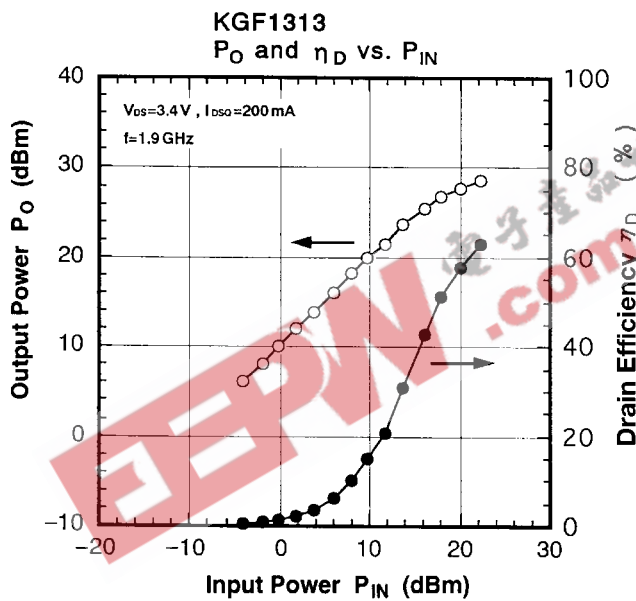
Matching conditions

Gamma S (Source impedance) :  $4.88 - j0.28 (\Omega)$

Gamma L (Load impedance) :  $12.66 - j5.96 (\Omega)$

Bias conditions

$V_{DS}=3.4 V, I_{DSQ}=200 mA, f=1.9 GHz$

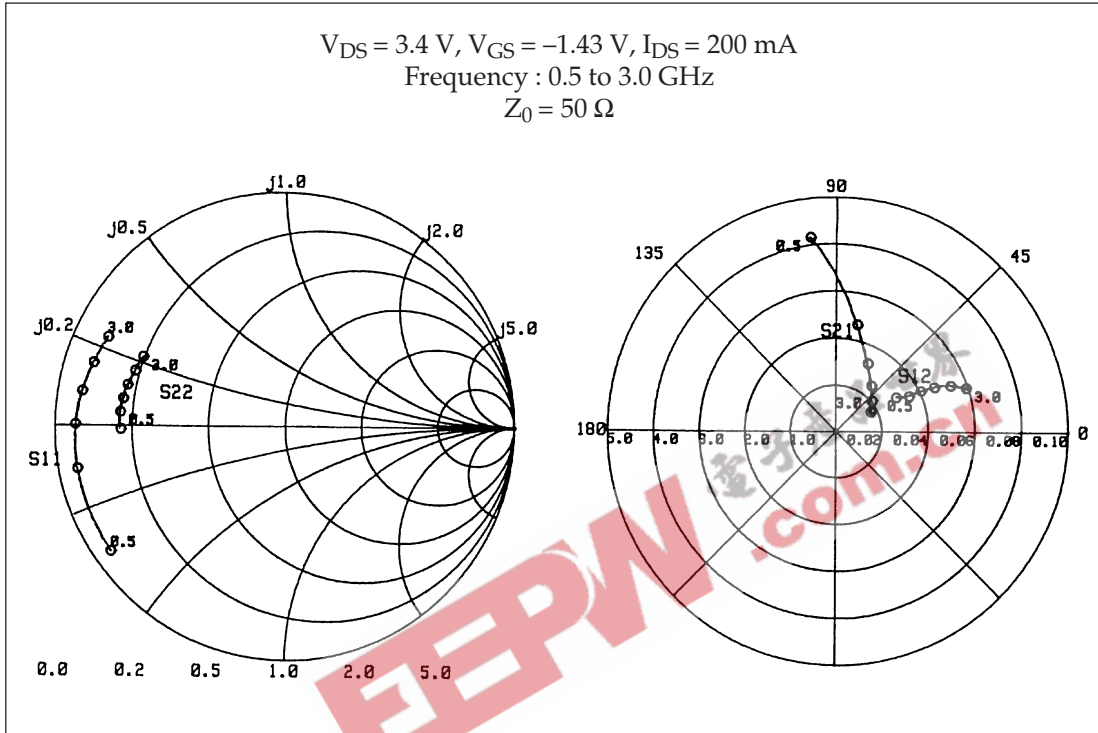


Typical S Parameters

$V_{DS} = 3.4\text{ V}$ ,  $V_{GS} = -1.43\text{ V}$ ,  $I_{DS} = 200\text{ mA}$

Freq(MHz)	MAG(S <sub>11</sub> )	ANG(S <sub>11</sub> )	MAG(S <sub>21</sub> )	ANG(S <sub>21</sub> )	MAG(S <sub>12</sub> )	ANG(S <sub>12</sub> )	MAG(S <sub>22</sub> )	ANG(S <sub>22</sub> )
500.0	0.929	-144.45	4.159	98.07	0.030	29.22	0.715	-178.78
600.0	0.926	-151.64	3.643	93.23	0.031	27.84	0.717	179.91
700.0	0.925	-157.14	3.189	88.93	0.032	26.84	0.720	178.56
800.0	0.923	-161.46	2.833	85.11	0.033	26.40	0.721	177.48
900.0	0.923	-165.18	2.543	81.97	0.034	26.26	0.721	176.49
1000.0	0.921	-168.30	2.314	78.72	0.035	25.70	0.719	175.41
1100.0	0.919	-171.07	2.121	75.71	0.036	25.89	0.719	174.68
1200.0	0.917	-173.67	1.959	72.79	0.037	25.53	0.718	173.46
1300.0	0.915	-175.87	1.823	70.07	0.038	25.89	0.716	172.74
1400.0	0.913	-178.12	1.702	67.46	0.040	25.44	0.717	171.75
1500.0	0.911	-179.76	1.602	64.62	0.041	25.55	0.713	170.66
1600.0	0.907	-177.80	1.511	62.17	0.042	25.16	0.714	169.82
1700.0	0.903	-175.91	1.428	59.34	0.043	24.95	0.708	168.55
1800.0	0.901	-174.04	1.361	56.91	0.044	24.92	0.710	167.77
1900.0	0.896	-172.38	1.292	54.42	0.046	24.41	0.704	166.73
2000.0	0.894	-170.48	1.236	51.87	0.047	24.23	0.706	165.70
2100.0	0.890	-168.74	1.180	49.30	0.048	23.93	0.700	164.81
2200.0	0.885	-167.12	1.130	47.08	0.049	23.58	0.702	163.51
2300.0	0.882	-165.38	1.086	44.40	0.051	23.06	0.697	162.59
2400.0	0.876	-163.78	1.043	42.64	0.052	22.40	0.697	161.49
2500.0	0.875	-162.12	1.011	39.67	0.053	21.91	0.692	160.22
2600.0	0.870	-160.47	0.972	37.75	0.054	21.43	0.691	159.44
2700.0	0.866	-158.91	0.942	35.06	0.056	20.25	0.689	158.03
2800.0	0.863	-157.28	0.911	33.01	0.057	19.79	0.687	157.02
2900.0	0.858	-155.62	0.875	30.62	0.059	18.82	0.688	155.85
3000.0	0.858	-153.95	0.856	28.46	0.059	18.59	0.683	154.65

Typical S Parameters



Test Circuit and Bias Configuration for KGF1313 at 1.9 GHz

