

OKI electronic components

KGF1637

Power FET (Plastic Package Type)

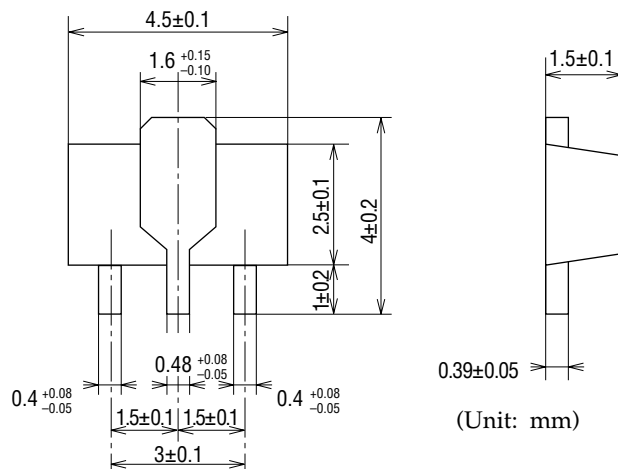
GENERAL DESCRIPTION

The KGF1637, housed in a SOT-89 type plastic-mold package, is a discrete GaAs power FET that features high efficiency and high output power. The KGF1637 specifications are guaranteed to a fixed matching circuit for 3.4 V and 850 MHz; external impedance-matching circuits are also required. Because of its high efficiency more than 70 %, high output power (more than 31.5 dBm), and plastic package, the KGF1637 is ideal as a transmitter-final-stage amplifier for personal handy phones, such as 3-V analog cellular phones.

FEATURES

- High output power: 31.5 dBm (min.)
- High efficiency: 70% (typ.)
- Specifications guaranteed to a fixed matching circuit for 3.4 V and 850 MHz
- Low thermal resistance: 20°C/W (typ.)
- Package: 3PMMP (SOT-89 type)

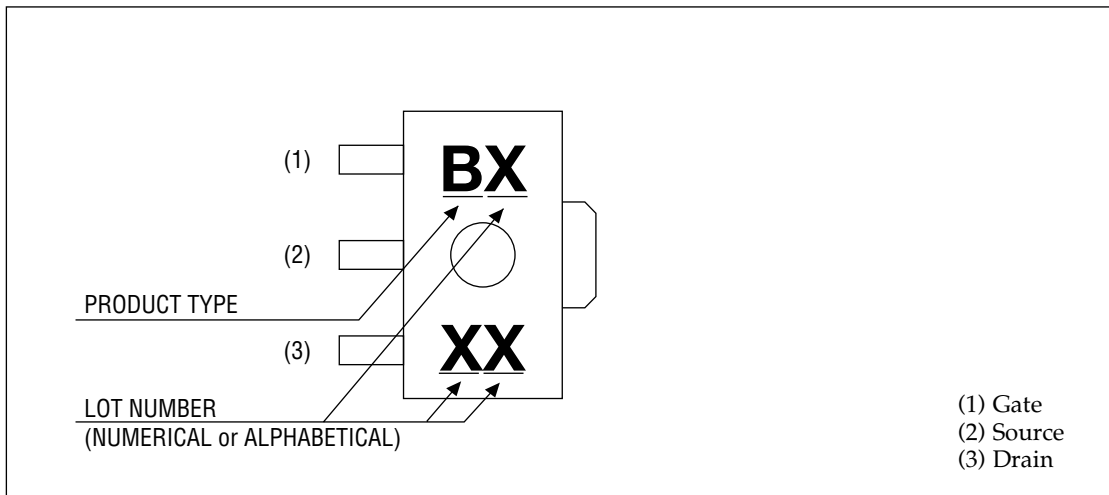
PACKAGE DIMENSIONS



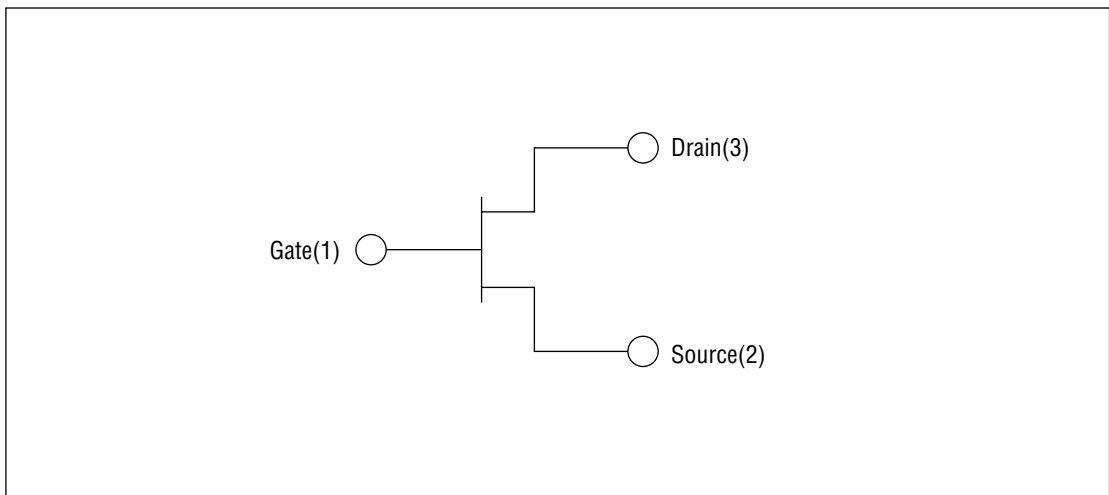
(Unit: mm)

Package material	Epoxy resin
Lead frame material	Cu
Pin treatment	Solder plating
Solder plate thickness	5 μ 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	—	8
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	—	4.5
Total power dissipation	P_{tot}	$T_a = T_c = 25^\circ\text{C}$	W	—	1.5
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}	$V_{GS} = -5\text{ V}$	mA	—	—	0.1
Gate-drain leakage current	I_{GDO}	$V_{GD} = -13\text{ V}$	mA	—	—	3
Drain-source leakage current	$I_{DS(off)}$	$V_{DS} = 8\text{ V}, V_{GS} = -5\text{ V}$	mA	—	—	3
Drain current	I_{DSS}	$V_{DS} = 1.5\text{ V}, V_{GS} = 0\text{ V}$	A	3.5	—	—
Gate-source cut-off voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}, I_{DS} = 8.4\text{ mA}$	V	-3.0	—	-2.0
Output power	P_O	(*1), $P_{IN} = 22\text{ dBm}$	dBm	31.5	32.0	—
Drain efficiency	η_D	(*1), $P_{IN} = 22\text{ dBm}$	%	60	70	—
Thermal resistance	R_{th}	Channel to case	$^\circ\text{C/W}$	—	20	—

*1 Condition: $f = 850\text{ MHz}$, $V_{DS} = 3.4\text{ V}$, $I_{DSQ} = 300\text{ mA}$

RF CHARACTERISTICS

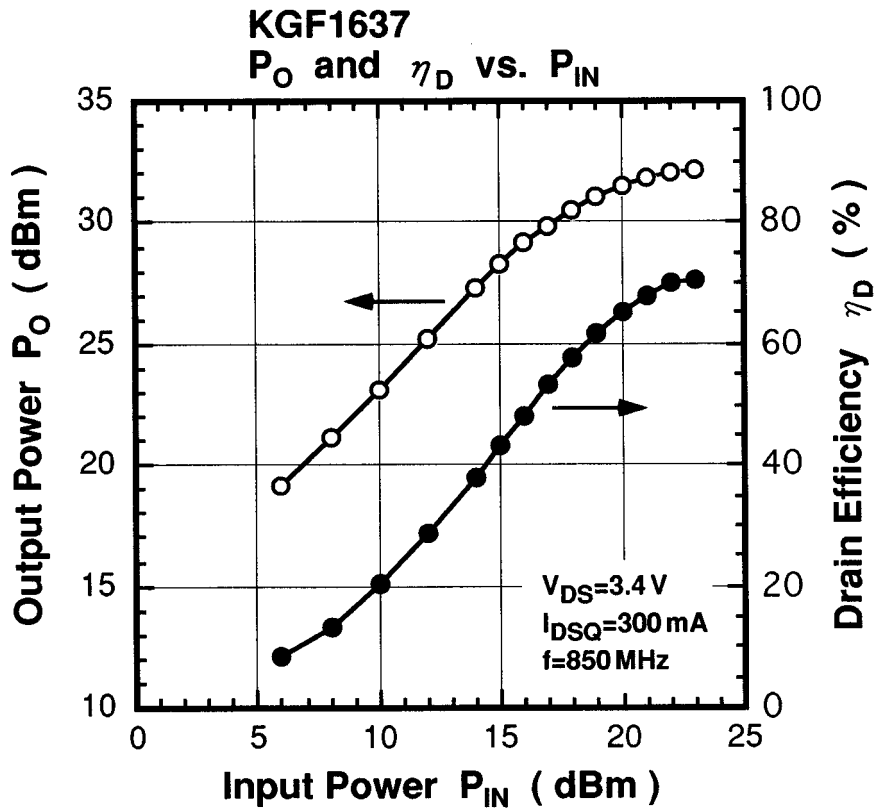
Matching conditions

Gamma S (Source impedance) : $1.83 + j4.98 (\Omega)$

Gamma L (Load impedance) : $5.80 - j2.37 (\Omega)$

Bias conditions

$V_{DS}=3.4V, I_{DSQ}=300mA, f=850MHz$



Typical S Parameters

 $V_{DS} = 3.4 \text{ V}$, $I_{DS} = 300 \text{ mA}$

Freq(MHz)	MAG(S ₁₁)	ANG(S ₁₁)	MAG(S ₂₁)	ANG(S ₂₁)	MAG(S ₁₂)	ANG(S ₁₂)	MAG(S ₂₂)	ANG(S ₂₂)
500.0	0.927	-166.10	2.301	87.47	0.027	37.26	0.842	177.69
600.0	0.925	-170.04	1.928	84.05	0.030	37.18	0.840	176.52
700.0	0.924	-172.97	1.663	80.79	0.031	38.80	0.836	175.74
800.0	0.923	-175.48	1.462	77.93	0.033	39.50	0.837	174.64
900.0	0.922	-177.47	1.311	75.49	0.035	40.32	0.835	174.06
1000.0	0.920	-179.55	1.188	72.56	0.038	40.40	0.836	172.78
1100.0	0.918	178.71	1.090	70.04	0.040	41.00	0.833	172.23
1200.0	0.917	177.01	1.004	67.32	0.042	40.77	0.831	170.87
1300.0	0.916	175.34	0.940	64.95	0.045	41.24	0.826	169.93
1400.0	0.911	173.72	0.875	62.44	0.047	40.51	0.830	168.84
1500.0	0.909	172.30	0.828	59.96	0.049	40.44	0.821	167.74
1600.0	0.906	170.62	0.781	57.65	0.052	39.98	0.823	166.84
1700.0	0.905	168.98	0.746	55.19	0.054	39.76	0.810	165.69
1800.0	0.902	167.74	0.710	52.72	0.057	39.16	0.819	164.39
1900.0	0.897	166.36	0.675	50.65	0.059	38.26	0.807	163.25
2000.0	0.893	164.42	0.654	48.07	0.062	37.92	0.810	162.08
2100.0	0.893	163.31	0.624	45.76	0.064	37.08	0.804	160.67
2200.0	0.887	161.43	0.608	43.41	0.066	36.32	0.799	159.57
2300.0	0.882	160.10	0.585	40.88	0.070	35.72	0.797	158.04
2400.0	0.881	158.44	0.566	39.03	0.072	34.45	0.791	156.76
2500.0	0.873	156.79	0.551	35.95	0.075	34.01	0.789	155.27
2600.0	0.872	155.41	0.531	34.02	0.077	32.77	0.784	154.10
2700.0	0.866	153.77	0.515	31.78	0.080	31.44	0.782	152.20
2800.0	0.861	152.29	0.505	29.50	0.082	30.86	0.778	151.37
2900.0	0.854	150.71	0.486	27.52	0.085	28.58	0.776	149.35
3000.0	0.850	149.22	0.478	24.78	0.087	27.83	0.768	148.47

Typical S Parameters

