

OKI electronic components

KGF1638

Power FET (Plastic Package Type)

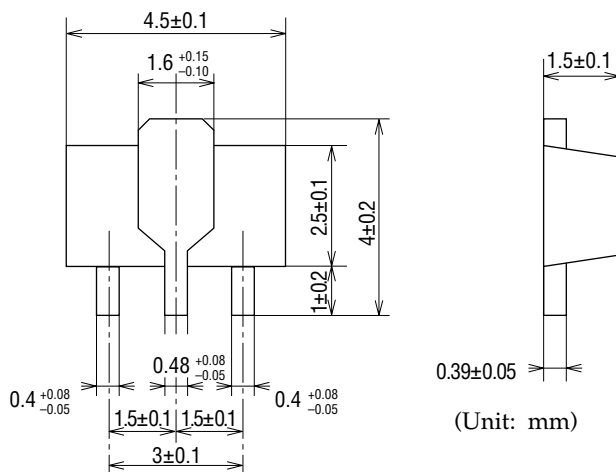
GENERAL DESCRIPTION

The KGF1638, housed in a SOT-89 type plastic-mold package, is a discrete GaAs power FET that features high efficiency and high output power. The KGF1638 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 60 %), high output power (more than 33 dBm), and plastic package, the KGF1638 is ideal as a transmitter-final-stage amplifier for personal handy phones, such as 3-V digital cellular phones.

FEATURES

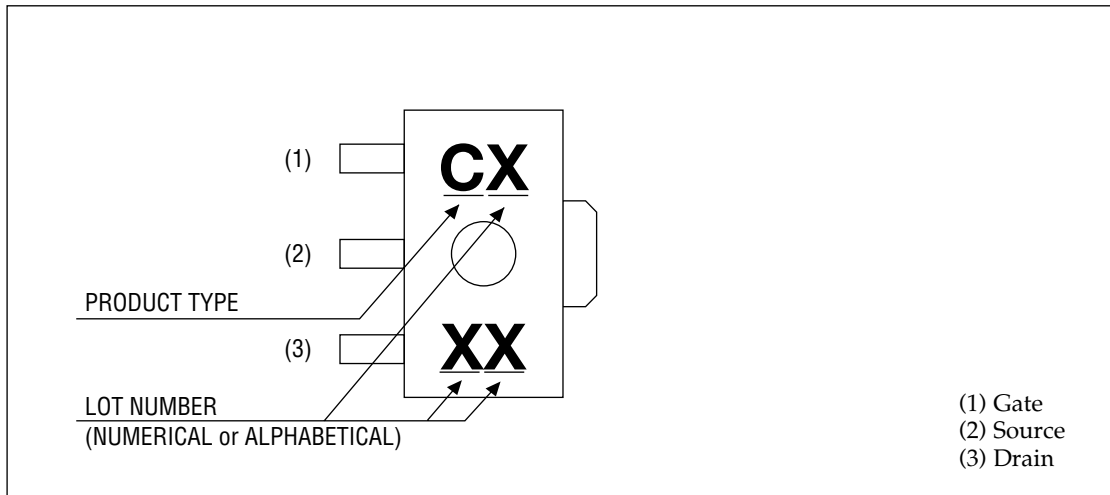
- High output power: 33 dBm (min.)
- High efficiency: 70% (typ.)
- Specifications guaranteed to a fixed matching circuit for 3.4 V and 850 MHz
- Low thermal resistance: 20°C/W (typ.)
- Package: 3PMMP (SOT-89 type)

PACKAGE DIMENSIONS

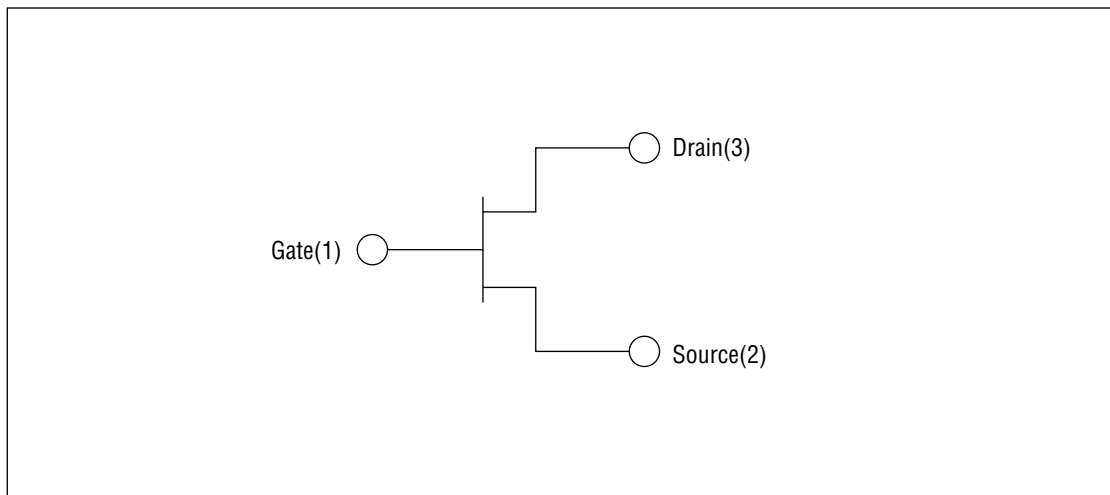


Package material	Epoxy resin
Lead frame material	Cu
Pin treatment	Solder plating
Solder plate thickness	5 μ m or more

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	—	5.5
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	4.5	—	—
Gate-source cut-off voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}, I_{DS} = 11.2\text{ mA}$	V	-3.0	—	-2.0
Output power	P_O	(*1), $P_{IN} = 26\text{ dBm}$	dBm	33.0	33.5	—
Drain efficiency	η_D	(*1), $P_{IN} = 26\text{ dBm}$	%	60	70	—
Thermal resistance	R_{th}	Channel to case	$^\circ\text{C/W}$	—	20	—

*1 Condition: $f = 850\text{ MHz}$, $V_{DS} = 3.4\text{ V}$, $I_{DSQ} = 400\text{ mA}$

RF CHARACTERISTICS

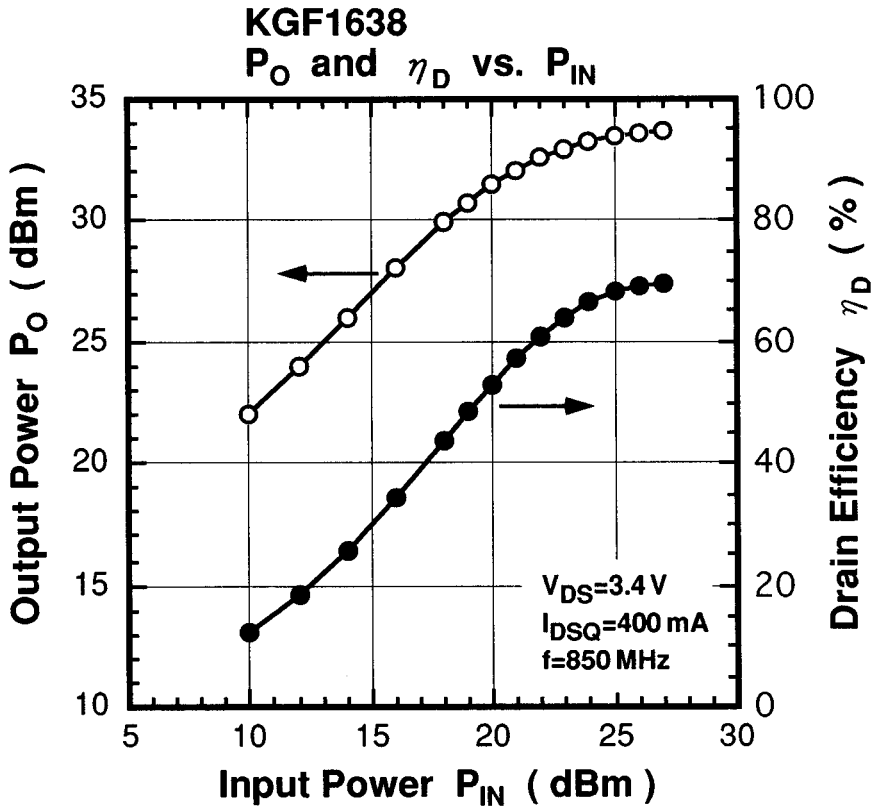
Matching conditions

Gamma S (Source impedance) : $3.05 + j4.76 (\Omega)$

Gamma L (Load impedance) : $4.09 - j1.84 (\Omega)$

Bias conditions

$V_{DS}=3.4V, I_{DSQ}=400mA, f=850MHz$



Typical S Parameters

 $V_{DS} = 3.4\text{ V}$, $I_{DS} = 400\text{ mA}$

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	0.944	-171.12	1.764	85.68	0.023	35.51	0.881	177.03
600.0	0.942	-174.20	1.472	82.53	0.024	36.18	0.878	175.96
700.0	0.942	-176.57	1.270	79.69	0.026	36.78	0.873	175.33
800.0	0.939	-178.60	1.119	77.05	0.028	37.05	0.878	174.03
900.0	0.938	179.79	1.003	74.77	0.030	37.72	0.872	173.64
1000.0	0.937	177.90	0.906	72.10	0.031	37.22	0.874	172.34
1100.0	0.934	176.34	0.830	69.54	0.033	37.66	0.870	171.65
1200.0	0.933	174.89	0.765	67.02	0.035	37.05	0.869	170.40
1300.0	0.932	173.38	0.719	64.67	0.037	37.21	0.866	169.46
1400.0	0.928	172.05	0.666	62.48	0.038	36.36	0.867	168.39
1500.0	0.926	170.68	0.630	59.98	0.040	36.26	0.858	167.23
1600.0	0.922	169.14	0.594	57.81	0.041	35.51	0.861	166.30
1700.0	0.919	167.84	0.569	55.32	0.043	34.80	0.849	165.18
1800.0	0.918	166.57	0.539	53.03	0.045	34.46	0.857	164.06
1900.0	0.913	164.92	0.515	50.92	0.047	33.42	0.843	162.65
2000.0	0.910	163.61	0.497	48.52	0.048	33.06	0.850	161.76
2100.0	0.907	162.01	0.476	46.16	0.050	32.44	0.837	160.05
2200.0	0.904	160.58	0.461	44.05	0.051	31.43	0.838	159.31
2300.0	0.898	159.12	0.445	41.43	0.053	31.14	0.833	157.49
2400.0	0.895	157.50	0.429	39.62	0.055	29.99	0.829	156.50
2500.0	0.890	156.16	0.419	36.89	0.057	29.42	0.828	154.89
2600.0	0.887	154.52	0.403	34.96	0.058	28.52	0.821	153.61
2700.0	0.880	153.15	0.391	32.85	0.060	27.04	0.819	151.96
2800.0	0.877	151.64	0.384	30.49	0.062	26.41	0.811	151.00
2900.0	0.870	150.22	0.369	28.64	0.064	24.09	0.810	149.05
3000.0	0.869	148.81	0.363	25.97	0.064	23.43	0.804	148.29

Typical S Parameters

