

OKI electronic components

KGF1633

Power FET (Plastic Package Type)

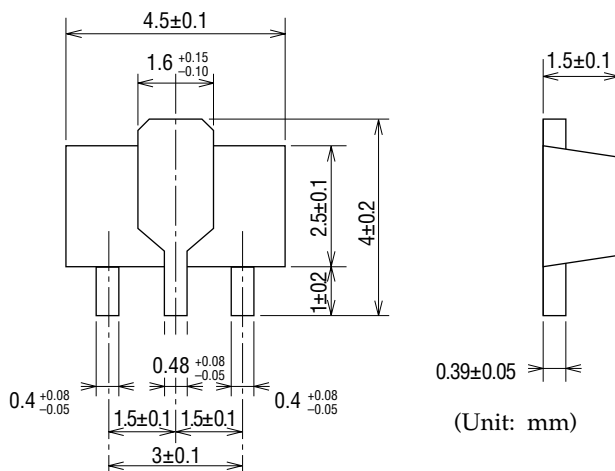
GENERAL DESCRIPTION

The KGF1633, housed in a SOT-89 type plastic-mold package, is a discrete GaAs power FET that features high efficiency and high output power. The KGF1633 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, high output power (more than 27 dBm), and plastic package, the KGF1633 is ideal as a transmitter-drive amplifier for Personal Handy Phones (PHPs), and other 3-V digital cellular phones. This device is also suited to higher frequency applications.

FEATURES

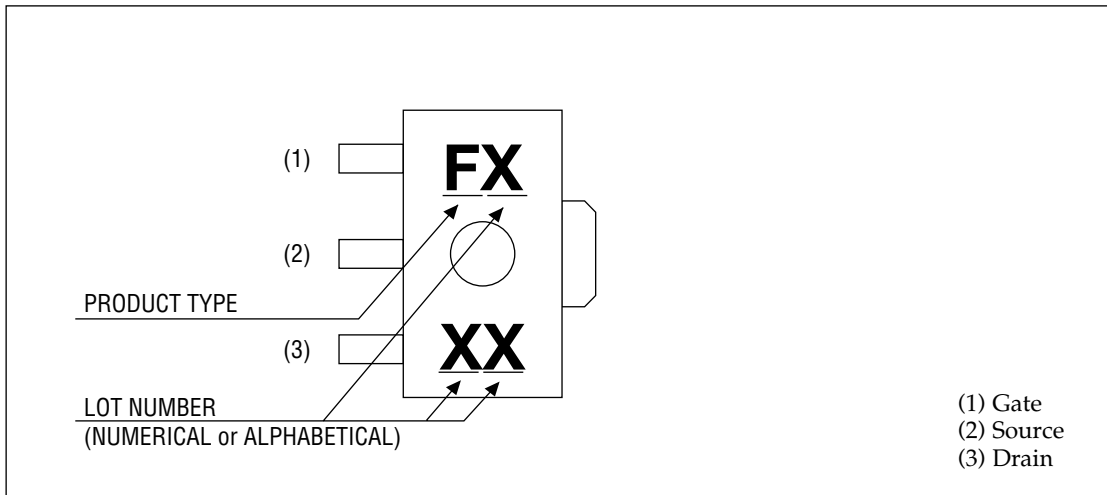
- High output power: 27 dBm (min.)
- High gain: 19 dB (typ.)
- High efficiency: 70% (typ.)
- Specifications guaranteed to a fixed matching circuit for 3.4 V and 850 MHz
- Package: 3PMMP (SOT-89 type)

PACKAGE DIMENSIONS

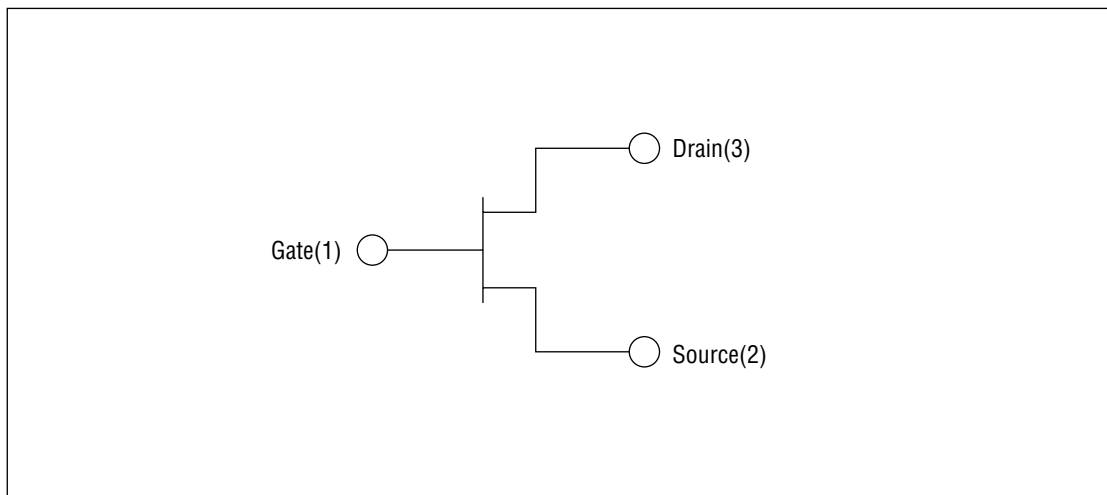


Package material	Epoxy resin
Lead frame material	Cu
Pin treatment	Solder plating
Solder plate thickness	5 μ m or more

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	0.4
Drain current	I_{DS}	$T_a = 25^\circ\text{C}$	A	—	2
Total power dissipation	P_{tot}	$T_a = T_c = 25^\circ\text{C}$	W	—	3
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}	$V_{GS} = -5\text{ V}$	μA	—	—	100
Gate-drain leakage current	I_{GDO}	$V_{GD} = -13\text{ V}$	μA	—	—	1000
Drain-source leakage current	$I_{DS(off)}$	$V_{DS} = 8\text{ V}, V_{GS} = -5\text{ V}$	μA	—	—	1000
Drain current	I_{DSS}	$V_{DS} = 1.5\text{ V}, V_{GS} = 0\text{ V}$	A	1.0	—	—
Gate bias Q point	V_{GSQ}	$V_{DS} = 3.4\text{ V}, I_{DSQ} = 120\text{ mA}$	V	-3.0	—	-2.0
Output power	P_O	(*1), $P_{IN} = 12\text{ dBm}$	dBm	27	28	—
Drain efficiency	η_D	(*1), $P_{IN} = 12\text{ dBm}$	%	60	70	—
Linear gain	G_{LIN}	(*1), $P_{IN} = 0\text{ dBm}$	dB	—	19	—
Thermal resistance	R_{th}	Channel to case	$^\circ\text{C/W}$	—	30	—

*1 Condition: $f = 850\text{ MHz}$, $V_{DS} = 3.4\text{ V}$, $I_{DSQ} = 120\text{ mA}$

RF CHARACTERISTICS

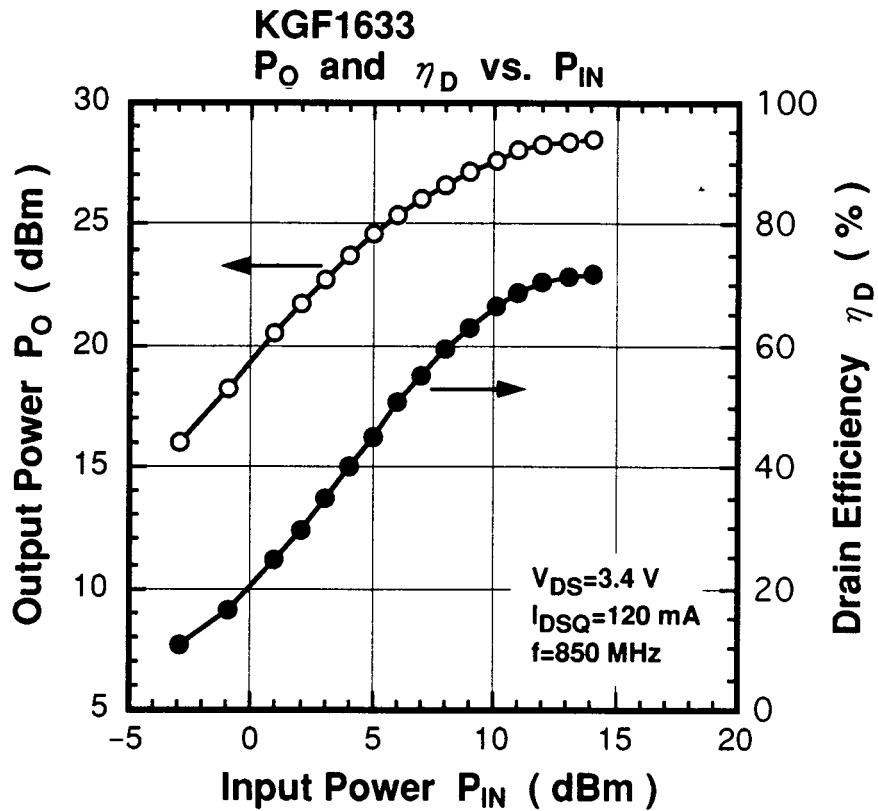
Matching conditions

Gamma S (Source impedance) : $6.27 + j17.03 (\Omega)$

Gamma L (Load impedance) : $9.61 + j0.86 (\Omega)$

Bias conditions

$V_{DS}=3.4\text{ V}$, $I_{DSQ}=120\text{ mA}$, $f=850\text{ MHz}$



Typical S Parameters

 $V_{DS} = 3.4 \text{ V}$, $I_{DS} = 120 \text{ mA}$

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	0.910	-128.52	5.214	104.19	0.039	28.82	0.589	-171.48
600.0	0.903	-137.97	4.722	98.08	0.040	25.86	0.599	-173.56
700.0	0.899	-145.02	4.192	93.14	0.041	23.59	0.605	-175.28
800.0	0.897	-150.80	3.758	88.82	0.042	21.96	0.610	-176.72
900.0	0.896	-155.53	3.400	85.24	0.043	20.77	0.612	-177.81
1000.0	0.894	-159.45	3.091	81.41	0.044	19.43	0.615	-179.23
1100.0	0.891	-163.14	2.855	78.18	0.045	18.98	0.614	179.63
1200.0	0.891	-166.20	2.631	74.98	0.046	17.97	0.616	178.66
1300.0	0.887	-169.10	2.457	72.04	0.046	17.89	0.616	177.81
1400.0	0.885	-171.77	2.285	69.04	0.047	16.76	0.614	176.53
1500.0	0.883	-174.20	2.158	66.15	0.048	16.62	0.613	175.52
1600.0	0.881	-176.57	2.037	63.65	0.049	15.87	0.614	174.55
1700.0	0.880	-178.89	1.931	61.13	0.050	15.72	0.610	173.56
1800.0	0.874	178.94	1.833	58.42	0.051	15.02	0.611	172.62
1900.0	0.874	177.01	1.748	55.71	0.052	14.49	0.607	171.21
2000.0	0.869	174.79	1.665	53.24	0.053	14.17	0.608	170.64
2100.0	0.867	172.99	1.598	50.48	0.053	13.96	0.604	169.17
2200.0	0.864	170.86	1.529	48.17	0.054	13.09	0.605	168.42
2300.0	0.858	168.99	1.476	45.48	0.055	12.90	0.602	167.09
2400.0	0.858	167.15	1.414	43.00	0.056	12.27	0.601	166.12
2500.0	0.851	165.18	1.362	40.70	0.058	11.75	0.598	164.88
2600.0	0.850	163.43	1.322	38.06	0.058	11.30	0.598	163.80
2700.0	0.845	161.55	1.266	35.54	0.060	10.57	0.595	162.38
2800.0	0.842	159.80	1.240	33.24	0.061	9.79	0.594	161.52
2900.0	0.839	158.11	1.188	30.63	0.062	8.87	0.593	160.06
3000.0	0.835	156.37	1.159	28.34	0.062	7.79	0.591	159.16

Typical S Parameters

