OKI electronic components

KGF1322

Power FET (Ceramic Package Type)

GENERAL DESCRIPTION

The KGF1322, housed in a ceramic package with integrated heat sink, is a discrete UHF-band power FET that features high efficiency, high output power, and low current operation. The KGF1322 specifications are guaranteed to a fixed matching circuit for 5.8 V and 850 MHz; external impedance-matching circuits are also required. Because of its high efficiency, high output power (more than 33 dBm), and low thermal resistance, the KGF1322 is ideal as a transmitter-final-stage amplifier for personal handy phones, such as digital cellular phones.
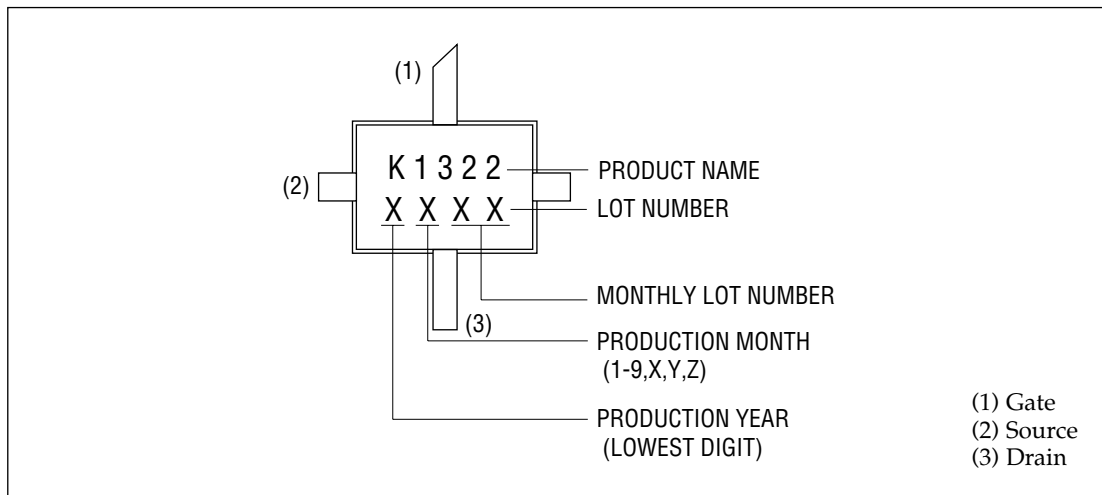
FEATURES

- High output power: 33 dBm (min.)
- High efficiency: 60% (min.)
- Low thermal resistance: 12°C/W (typ.)
- Package: 3PHTP

PACKAGE DIMENSIONS
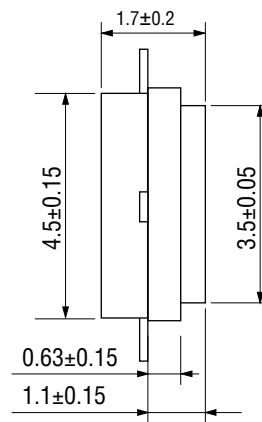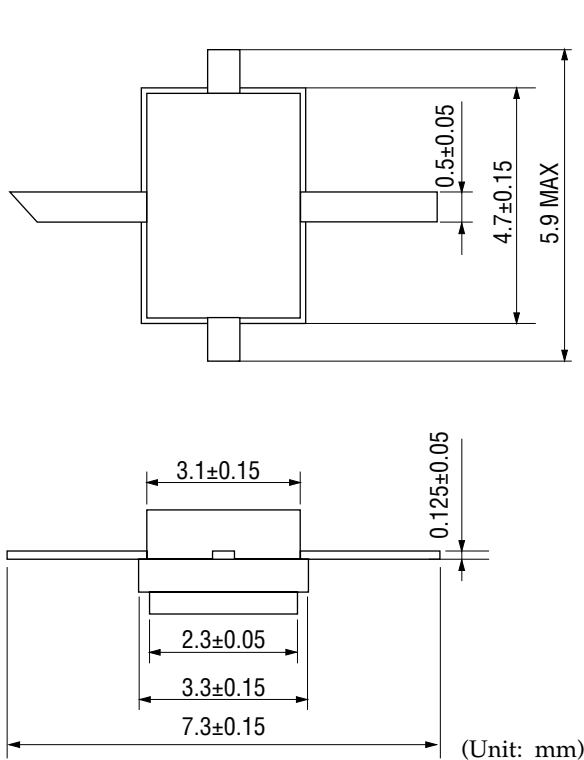
(Unit: mm)

Package material	Al_2O_3
Lead frame material	Fe-Ni-Co alloy
Pin treatment	Ni/Au plating
plate thickness	Au:1.0 μm or more

MARKING

K 1 3 2 2 ——— PRODUCT NAME

X X X X ——— LOT NUMBER

——— MONTHLY LOT NUMBER

(3)

——— PRODUCTION MONTH
(1-9,X,Y,Z)

——— PRODUCTION YEAR
(LOWEST DIGIT)

(1) Gate
(2) Source
(3) Drain

CIRCUIT

Drain(3)

Gate(1)
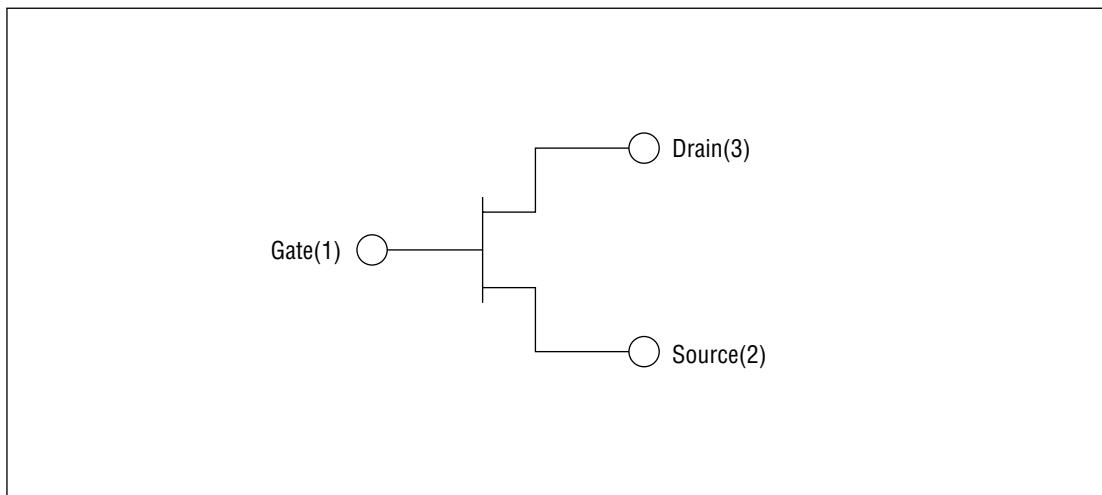
Source(2)

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Unit	Min.	Max.
Drain-source voltage	V_{DS}	Ta = 25°C	V	—	10
Gate-source voltage	V_{GS}	Ta = 25°C	V	−6.0	0.4
Drain current	I_{DS}	Ta = 25°C	A	—	3
Total power dissipation	P_{tot}	Ta = Tc = 25°C	W	—	5
Channel temperature	T_{ch}	—	°C	—	150
Storage temperature	T_{stg}	—	°C	−45	125

ELECTRICAL CHARACTERISTICS

(Ta = 25°C)

Item	Symbol	Condition	Unit	Min.	Typ.	Max.
Gate-source leakage current	I_{GSS}	V_{GS} = −6 V	mA	—	—	0.1
Gate-drain leakage current	I_{GDO}	V_{GD} = −16 V	mA	—	—	0.5
Drain-source leakage current	$I_{DS(off)}$	V_{DS} = 10 V, V_{GS} = −6 V	mA	—	—	1.5
Drain current	I_{DSS}	V_{DS} = 1.5 V, V_{GS} = 0 V	A	2.0	—	—
Gate-source cut-off voltage	$V_{GS(off)}$	V_{DS} = 3 V, I_{DS} = 4 mA	V	−3.6	—	−2.6
Output power	P_O	(*1), P_{IN} = 22 dBm	dBm	33.0	—	—
Drain efficiency	η_D	(*1), P_{IN} = 22 dBm	%	60	—	—
Thermal resistance	R_{th}	Channel to case	°C/W	—	12	—

*1 Condition: f = 850 MHz, V_{DS} = 5.8 V, I_{DSQ} = 240 mA

RF CHARACTERISTICS

KGF1322
P_O and η_D vs. P_{IN}

Chart: Output Power P_O (dBm) and Drain Efficiency η_D (%) vs. Input Power P_{IN} (dBm). Conditions: $V_{DS}=5.8V$, $I_{DSQ}=240mA$, $f=850MHz$.
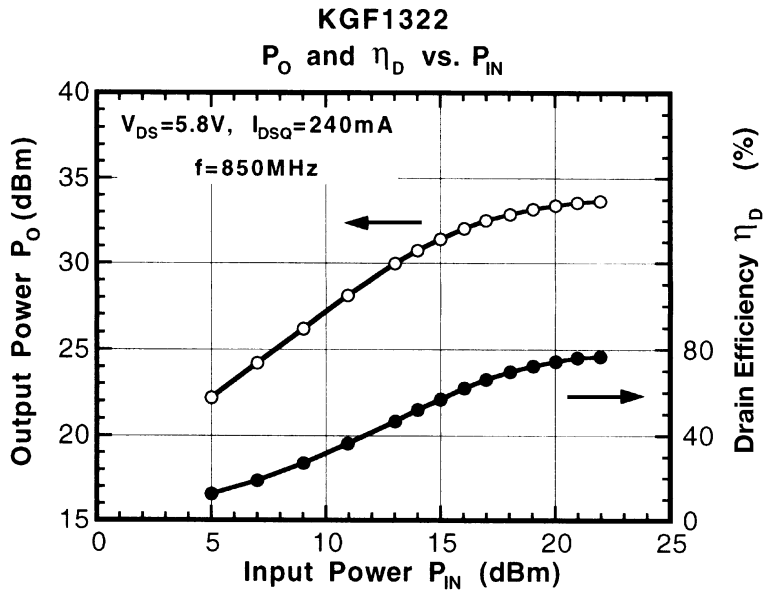
Typical S Parameters

V_{DS} = 5.8 V, I_{DS} = 240 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	0.941	−151.20	3.945	95.29	0.032	24.38	0.697	−176.88
600.0	0.939	−157.04	3.325	90.96	0.033	23.33	0.699	−178.02
700.0	0.939	−161.53	2.878	86.91	0.034	22.90	0.702	−178.91
800.0	0.937	−165.06	2.542	83.63	0.035	22.86	0.702	−179.73
900.0	0.937	−167.96	2.273	80.53	0.035	23.33	0.704	179.81
1000.0	0.935	−170.53	2.052	77.50	0.036	23.14	0.702	178.93
1100.0	0.933	−172.69	1.869	75.04	0.037	23.63	0.703	178.55
1200.0	0.932	−174.68	1.731	72.26	0.038	23.81	0.703	177.88
1300.0	0.930	−176.46	1.602	70.02	0.038	24.52	0.703	177.60
1400.0	0.930	−178.20	1.501	67.31	0.039	24.26	0.702	176.77
1500.0	0.926	−179.81	1.406	64.99	0.040	24.96	0.702	176.48
1600.0	0.925	178.70	1.322	62.62	0.041	25.06	0.700	175.79
1700.0	0.920	177.39	1.256	60.34	0.042	25.40	0.701	175.46
1800.0	0.921	175.86	1.181	58.29	0.043	25.57	0.698	174.77
1900.0	0.915	174.46	1.132	55.93	0.044	25.34	0.698	174.66
2000.0	0.916	173.22	1.077	53.69	0.045	25.63	0.698	173.77
2100.0	0.913	171.70	1.036	51.72	0.046	25.70	0.696	173.63
2200.0	0.909	170.64	0.992	49.37	0.047	25.35	0.696	172.90
2300.0	0.907	169.24	0.953	47.61	0.048	25.72	0.693	172.71
2400.0	0.904	167.93	0.918	45.18	0.049	25.16	0.693	172.00
2500.0	0.903	166.79	0.887	43.47	0.051	25.17	0.686	171.74
2600.0	0.900	165.54	0.853	41.07	0.051	24.40	0.689	171.27
2700.0	0.897	164.25	0.830	39.39	0.053	23.73	0.685	171.07
2800.0	0.895	163.01	0.799	37.42	0.053	23.10	0.688	170.79
2900.0	0.891	161.64	0.781	35.16	0.054	21.96	0.686	170.71
3000.0	0.887	160.49	0.755	33.63	0.053	22.01	0.693	170.54

Typical S Parameters

$$V_{DS} = 5.8 \text{ V}, I_{DS} = 240 \text{ mA}$$
$$\text{Frequency} : 0.5 \text{ to } 3.0 \text{ GHz}$$
$$Z_0 = 50 \text{ }\Omega$$