

OKI electronic components

KGF1631

Power FET (Plastic Package Type)

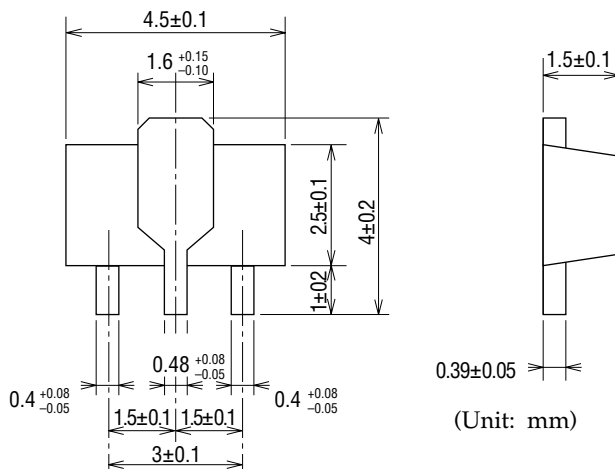
GENERAL DESCRIPTION

The KGF1631, housed in a SOT-89 type plastic-mold package, is a discrete GaAs power FET that features high efficiency and high output power. The KGF1631 specifications are guaranteed to a fixed matching circuit for 3.4 V and 850 MHz; external impedance-matching circuits are also required. The KGF1631 provides an output power of more than 24dBm at 3.4V, with high efficiency (50% typ.) and high gain (21dB typ.). The device is optimized for transmitter driver amplifier applications for Portable Handy Phones (PHPs) and other 3-V cellular phones.

FEATURES

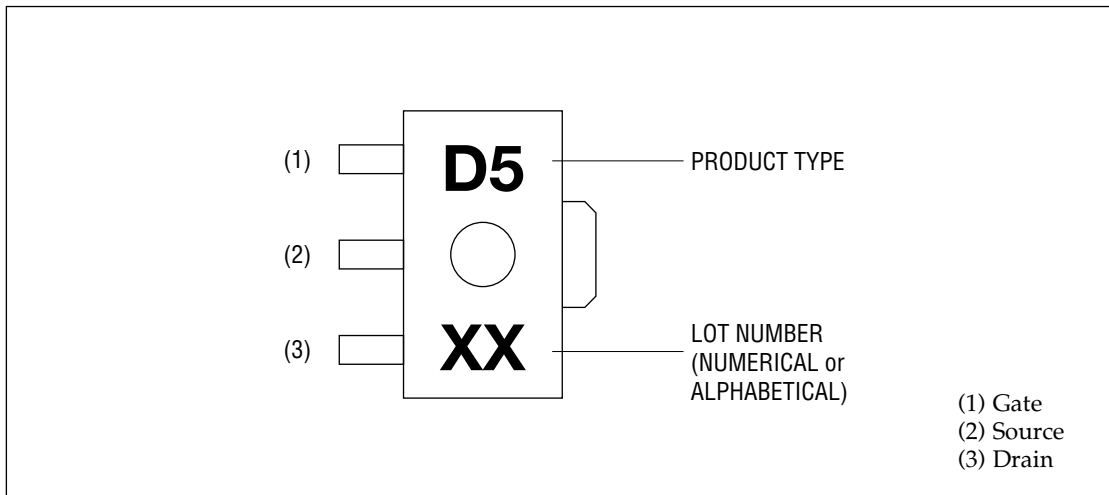
- High output power: 24 dBm (min.)
- High gain: 21dB (typ.)
- High efficiency: 50% (typ.)
- Specifications guaranteed to a fixed matching circuits for 3.4 V, 850 MHz
- Package: 3PMMP (SOT-89 type)

PACKAGE DIMENSIONS

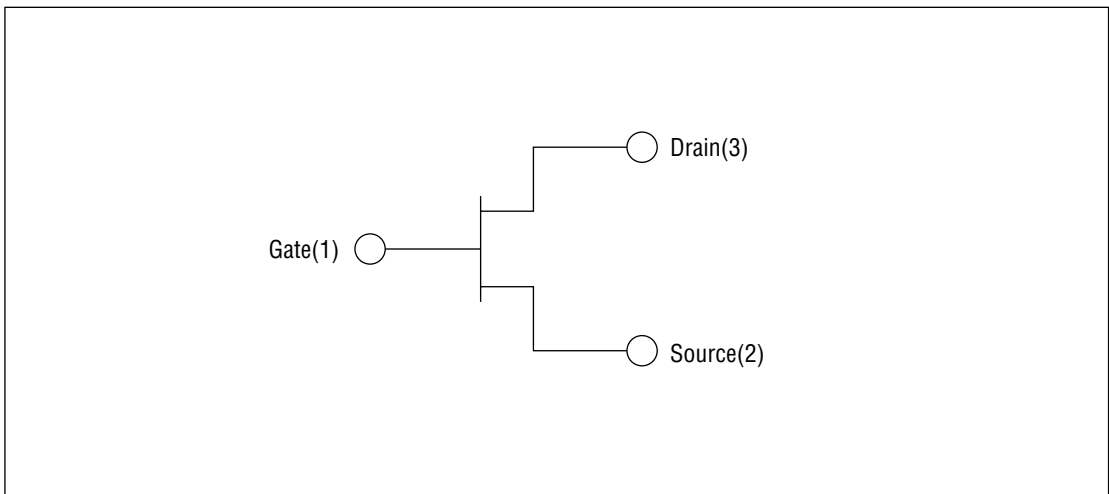


Package material	Epoxy resin
Lead frame material	Cu
Pin treatment	Solder plating
Solder plate thickness	5 μ m or more

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	—	0.8
Total power dissipation	P_{tot}	$T_a = T_c = 25^\circ\text{C}$	W	—	2
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	—	—	50
Gate-drain leakage current	I_{GDO}	$V_{GD} = -13\text{ V}$	μA	—	—	500
Drain-source leakage current	$I_{DS(off)}$	$V_{DS} = 8\text{ V}, V_{GS} = -5\text{ V}$	μA	—	—	500
Drain current	I_{DSS}	$V_{DS} = 1.5\text{ V}, V_{GS} = 0\text{ V}$	mA	500	—	—
Gate bias Q point	V_{GSQ}	$V_{DS} = 3.4\text{ V}, I_{DSQ} = 70\text{ mA}$	V	-3.0	—	-2.0
Output power	P_O	(*1), $P_{IN} = 7\text{ dBm}$	dBm	24	24.5	—
Drain efficiency	η_D	(*1), $P_{IN} = 7\text{ dBm}$	%	45	50	—
Linear gain	G_{LIN}	(*1), $P_{IN} = 0\text{ dBm}$	dB	—	21	—
Thermal resistance	R_{th}	Channel to case	$^\circ\text{C/W}$	—	40	—

*1 Condition: $f = 850\text{ MHz}$, $V_{DS} = 3.4\text{ V}$, $I_{DSQ} = 70\text{ mA}$

RF CHARACTERISTICS

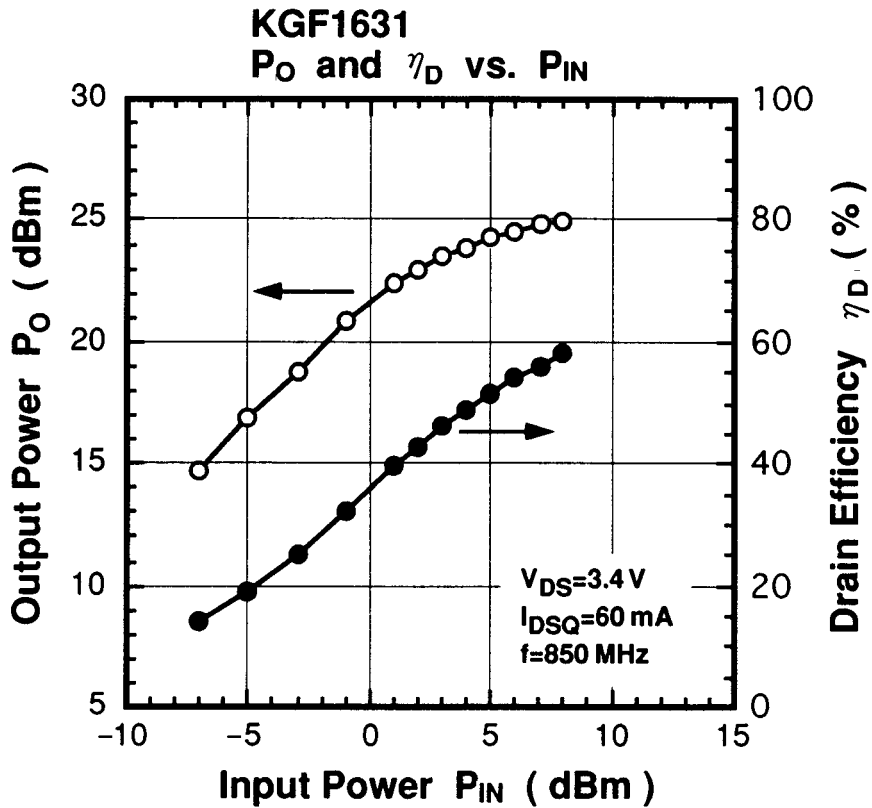
Matching conditions

Gamma S (Source impedance) : $11.87 + j39.22 (\Omega)$

Gamma L (Load impedance) : $11.89 + j7.41 (\Omega)$

Bias conditions

$V_{DS}=3.4V$, $I_{DSQ}=60mA$, $f=850MHz$



Typical S Parameters

 $V_{DS} = 3.4V, I_{DS} = 60mA$

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	0.912	-82.96	5.291	125.03	0.051	45.92	0.293	-139.69
600.0	0.890	-95.50	5.203	117.02	0.055	40.96	0.318	-145.24
700.0	0.877	-105.77	4.901	109.97	0.059	36.59	0.339	-149.01
800.0	0.862	-114.69	4.748	103.99	0.062	33.33	0.350	-152.49
900.0	0.852	-122.49	4.402	98.78	0.064	30.12	0.363	-155.70
1000.0	0.844	-129.11	4.185	93.87	0.067	27.58	0.368	-158.02
1100.0	0.836	-135.35	3.952	89.28	0.069	25.41	0.375	-160.24
1200.0	0.829	-140.56	3.727	85.04	0.071	23.21	0.378	-162.50
1300.0	0.820	-145.56	3.526	81.18	0.072	21.66	0.383	-164.25
1400.0	0.818	-150.19	3.325	77.31	0.074	19.64	0.385	-166.00
1500.0	0.811	-154.29	3.162	73.59	0.075	18.31	0.385	-167.91
1600.0	0.806	-158.37	3.008	70.23	0.077	16.52	0.387	-169.46
1700.0	0.803	-162.27	2.860	66.68	0.078	15.41	0.387	-171.06
1800.0	0.794	-165.60	2.727	63.99	0.079	13.93	0.388	-172.92
1900.0	0.792	-169.02	2.626	60.15	0.081	12.77	0.386	-174.22
2000.0	0.783	-172.51	2.499	57.37	0.082	11.31	0.386	-175.82
2100.0	0.781	-175.43	2.420	54.00	0.083	10.49	0.386	-177.63
2200.0	0.774	-178.78	2.316	50.98	0.084	8.76	0.385	-178.86
2300.0	0.769	178.27	2.242	47.99	0.086	7.84	0.383	179.19
2400.0	0.764	175.35	2.159	44.96	0.087	6.58	0.383	177.94
2500.0	0.757	172.17	2.083	42.18	0.089	5.47	0.381	176.06
2600.0	0.753	169.62	2.024	39.18	0.089	4.46	0.379	174.75
2700.0	0.746	166.72	1.951	36.14	0.091	3.18	0.377	173.09
2800.0	0.741	164.19	1.897	33.39	0.092	1.83	0.377	171.74
2900.0	0.736	161.65	1.827	30.30	0.094	0.39	0.376	169.90
3000.0	0.734	159.07	1.778	28.02	0.093	-0.72	0.377	168.25

Typical S Parameters

