OKI

Oki, Network Solutions for a Global Society

Electronic Components

ODRKGF1323-03
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KGF1323

Driver-FET (Plastic Package Type)

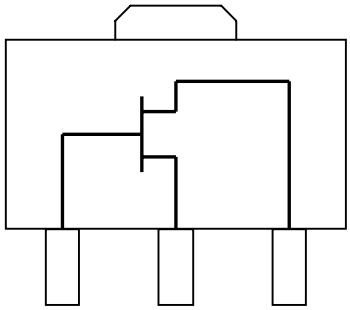
GENERAL DESCRIPTION

The KGF1323, housed in a SOT-89 type plastic-mold package, is a discrete UHF-band driver FET that features high output power and high efficiency. The KGF1323 specifications are guaranteed to a fixed matching circuit for 5.8V and 850MHz; external impedance-matching circuits are also required. Because of its high output power (more than 33dBm), and high efficiency, the KGF1323 is ideal as a transmitter-driver-stage amplifier for base stations and a final-stage amplifier for personal handy phones.

FEATURES

- High output power: > 33dBm
- High efficiency: 70% (typ.)
- Low thermal resistance: 23°C /W (typ.)
- Package: SOT-89 with lead-free plating terminals

FUNCTION DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit	Note
Drain - source Voltage	V_{DS}	Ta=25°C	—	10	V	
Gate - source Voltage	V_{GS}	Ta=25°C	- 6.0	0.4	V	
Drain Current	I_{DS}	Ta=25°C	—	3.0	A	
Total Power Dissipation	P_{TOT}	Ta=Tc=25°C	—	1.5	W	
Channel Temperature	T_{CH}	—	—	150	°C	
Storage Temperature	T_{STG}	—	-45	125	°C	

ELECTRICAL CHARACTERISTICS

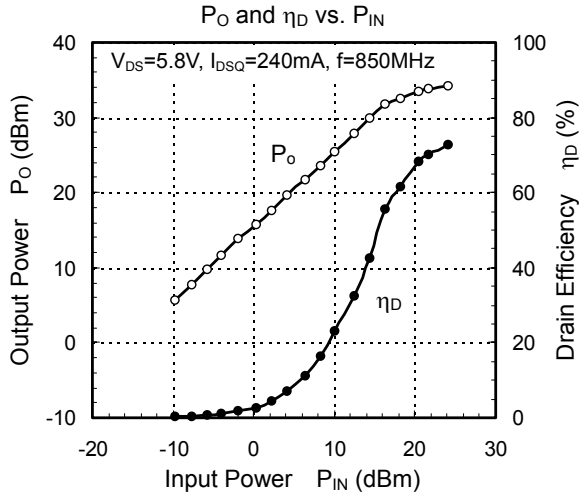
(Ta=25°C)

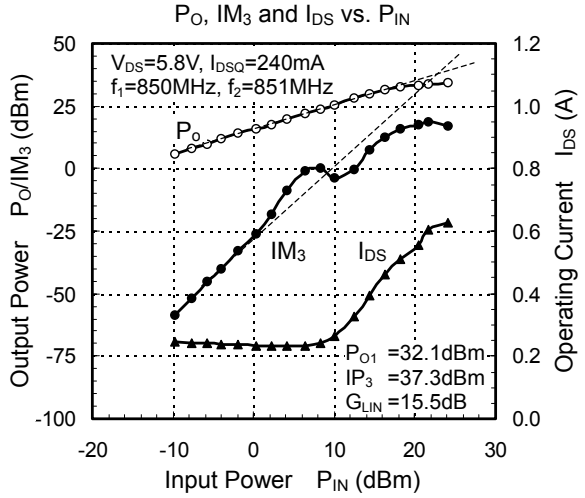
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Gate-source Leakage Current	I_{GSS}	V_{GS}=-6V	—	—	100	μA
Gate-drain Leakage Current	I_{GDO}	V_{GD}=-16V	—	—	500	μA
Drain-source Leakage Current	$I_{DS(off)}$	V_{DS}=10V, V_{GS}=-6V	—	—	1500	μA
Drain Current	I_{DSS}	V_{DS}=1.5V, V_{GS}=0V	2.0	—	—	A
Gate-source Cut-off Voltage	$V_{GS(off)}$	V_{DS}=3V, I_{DS}=4.8mA	- 3.8	—	- 2.8	V
Output Power	P_O	(*1), P_{IN}=22dBm	33	33.5	—	dBm
Drain efficiency	η_D	(*1), P_{IN}=22dBm	60	70	—	%
Linear Gain	G_{LIN}	(*1), P_{IN}=0dBm	—	15.0	—	dB
Thermal resistance	R_{th}	Channel to case	—	23	—	°C/W

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

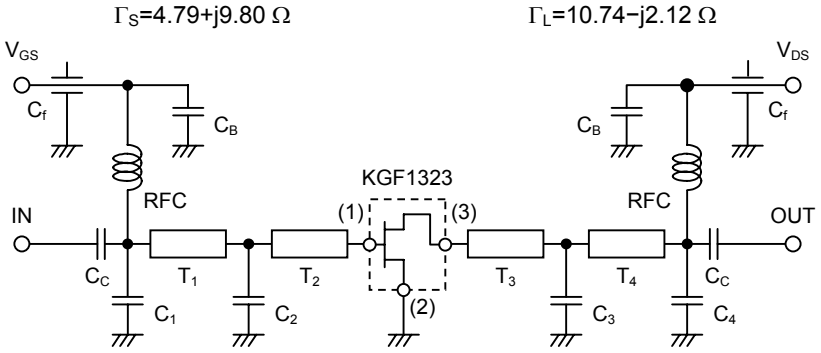
TYPICAL CHARACTERISTICS

f=850MHz





Test circuit



f=850MHz Board: Glass epoxy (t=0.8mm, ε= 4.3)

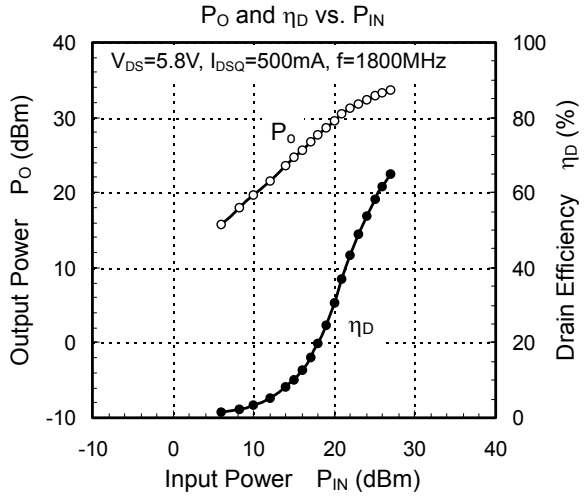
T_1: Z_0=50Ω, E=28.5deg T_2: Z_0=50Ω, E=16.5deg T_3: Z_0=50Ω, E=15.0deg T_4: Z_0=50Ω, E=30.0deg

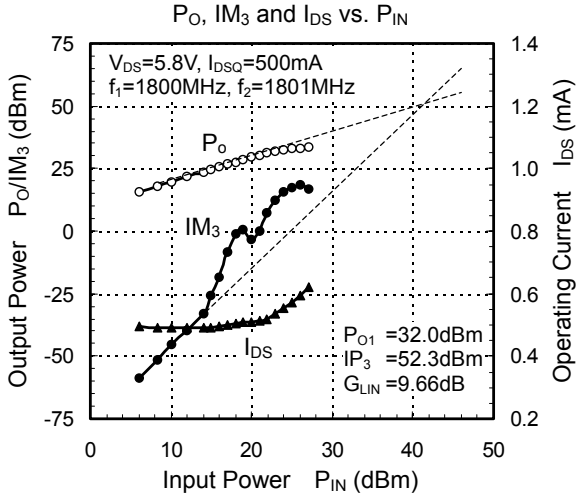
C_1 =2.0pF C_2 =10.0pF C_3 =5.0pF C_4 =1.0pF

C_C =1000pF C_B =1,000pF C_F=1,000pF RFC =200nH

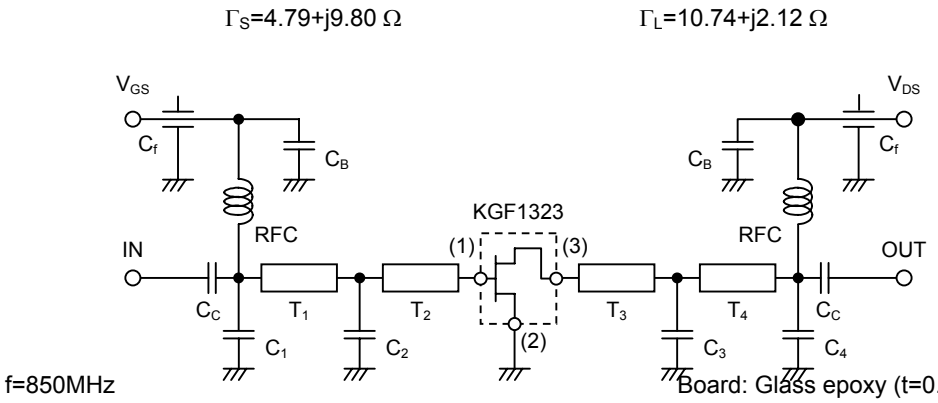
TYPICAL CHARACTERISTICS

f=1800MHz





Test circuit



f=850MHz Board: Glass epoxy (t=0.8mm, ε= 4.3)

T_1: Z_0=50Ω, E=28.5deg T_2: Z_0=50Ω, E=16.5deg T_3: Z_0=50Ω, E=15.0deg T_4: Z_0=50Ω, E=30.0deg

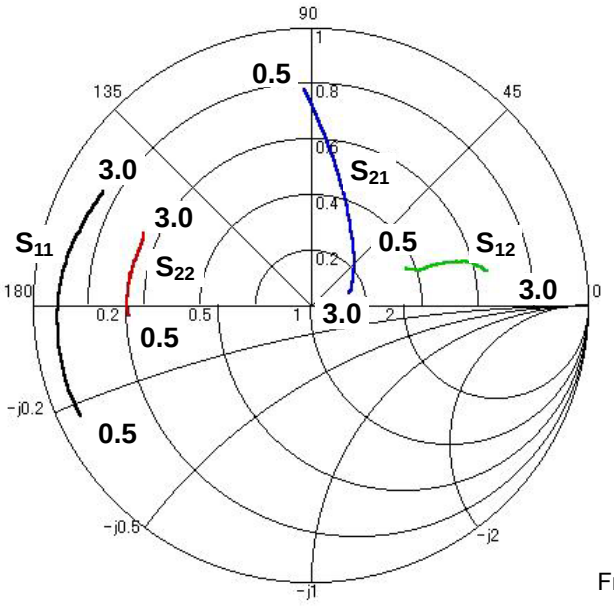
C_1 =2.0pF C_2 =10.0pF C_3 =5.0pF C_4 =1.0pF

C_C =1000pF C_B =1,000pF C_F=1,000pF RFC =200nH

TYPICAL S PARAMETERS

V_{DS}=5.8V, V_{GS}=-2.80V, I_{DS}=240mA

Freq(MHz)	MAG(S11)	ANG(S11)	MAG(S21)	ANG(S21)	MAG(S12)	ANG(S12)	MAG(S22)	ANG(S22)
500	0.921	-154.27	3.891	91.63	0.037	20.87	0.655	-176.53
600	0.921	-160.15	3.291	87.28	0.038	19.65	0.657	-178.18
700	0.920	-164.62	2.854	82.96	0.039	18.86	0.659	-179.48
800	0.917	-168.17	2.519	79.31	0.040	18.39	0.661	179.28
900	0.917	-171.22	2.250	76.01	0.040	18.30	0.660	178.41
1000	0.914	-173.90	2.041	72.42	0.041	17.74	0.661	177.38
1100	0.913	-176.22	1.871	69.42	0.042	17.99	0.660	176.61
1200	0.911	-178.42	1.721	66.28	0.043	17.72	0.660	175.52
1300	0.909	179.67	1.599	63.39	0.044	18.08	0.660	174.76
1400	0.907	177.63	1.491	60.39	0.045	17.76	0.661	173.75
1500	0.903	175.71	1.404	57.29	0.046	17.98	0.658	172.81
1600	0.901	173.93	1.324	54.72	0.047	17.75	0.660	171.94
1700	0.899	172.15	1.248	51.47	0.048	17.57	0.654	170.90
1800	0.893	170.52	1.188	48.90	0.048	17.85	0.660	170.04
1900	0.892	169.01	1.127	45.99	0.050	17.23	0.653	169.08
2000	0.888	167.01	1.077	43.37	0.051	17.60	0.658	168.02
2100	0.885	165.66	1.027	40.36	0.052	17.24	0.651	167.14
2200	0.881	163.90	0.983	37.89	0.053	16.83	0.655	165.92
2300	0.875	162.38	0.944	35.01	0.055	16.62	0.650	164.99
2400	0.873	160.75	0.906	32.96	0.055	16.02	0.652	163.98
2500	0.869	159.09	0.876	29.90	0.057	16.20	0.649	162.58
2600	0.866	157.56	0.844	27.58	0.058	15.62	0.649	161.68
2700	0.863	155.95	0.816	24.58	0.060	14.77	0.649	160.24
2800	0.856	154.35	0.789	22.20	0.061	14.20	0.646	159.52
2900	0.854	152.84	0.756	19.48	0.063	12.48	0.649	158.10
3000	0.852	151.31	0.736	17.09	0.063	11.90	0.646	157.17

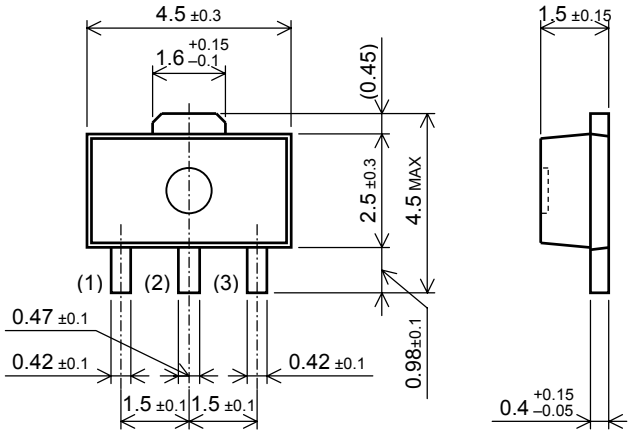


V_{DS}=5.8V, I_{DS}=240mA
Frequency: 0.5 to 3.0GHz
Z_0=50Ω

PACKAGE

SOT-89 (lead-free terminal plating of Sn-Bi material)

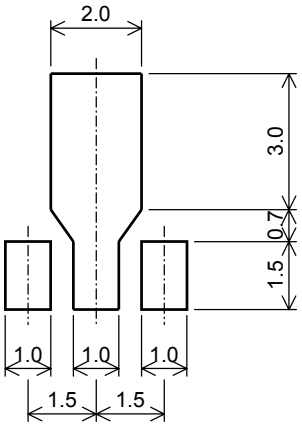
unit: mm



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

Footprint

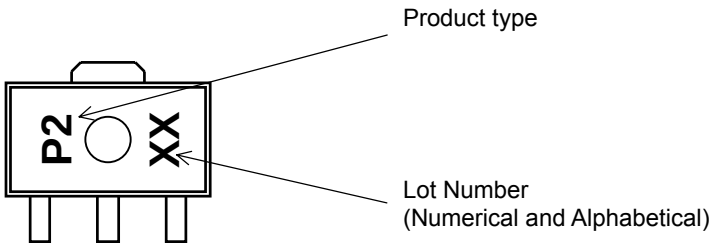
unit: mm



notes:

1) This footprint is an example. The size of footprint depends on accuracy of your mounter.
2) The mounting design should fully be considered in RF grounding and heat dissipation for the better RF performance of the product.
3) Vias are effective in a RF grounding and heat dissipation.

MARKING



SAFETY AND HANDRING INFORMATION ON GAAS DEVICES

Arsenic Compound (GaAs Devices)
The product contains arsenic (As) as a compound.
This material is stable for normal use, however, its dust or vapor may be potentially hazardous to the human body.
Avoid ingestion, fracture, burning or chemical treatment to the product.

- Do not put the product in your mouth.
- Do not burn or destroy the product.
- Do not perform chemical treatment for the product.

Keep laws and ordinances related to the disposal of the products.

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1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.

2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.

3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.

4. Oki assumes no responsibility or liability whatsoever for any failure or unusual or unexpected operation resulting from misuse, neglect, improper installation, repair, alteration or accident, improper handling, or unusual physical or electrical stress including, but not limited to, exposure to parameters beyond the specified maximum ratings or operation outside the specified operating range.

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