

OKI electronic components

KGF1165

Medium-Power Amplifier

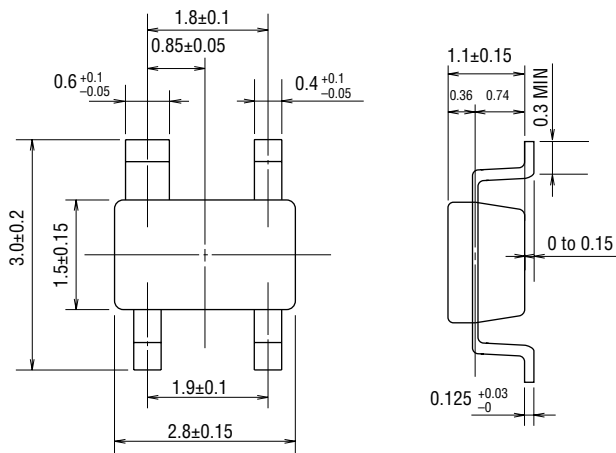
GENERAL DESCRIPTION

The KGF1165 is a one-stage resistive feedback type medium-power amplifier for the UHF-band that features high output power and low current operation. The internally matched $50\ \Omega$ input and output eliminate external impedance-matching circuits. All specifications for this device are guaranteed at 5 V and 800 to 1000 MHz. Because there is no need for external impedance-matching circuits, the KGF1165 is best suited to transmitter-intermediate-stage amplifiers for personal handy phones.

FEATURES

- Input and output $50\ \Omega$ matched
- High output power: 7 dBm (min.)
- Low current operation: 25 mA (max.)
- Self-bias circuit configuration with built-in source capacitor
- Package: 4PSOP

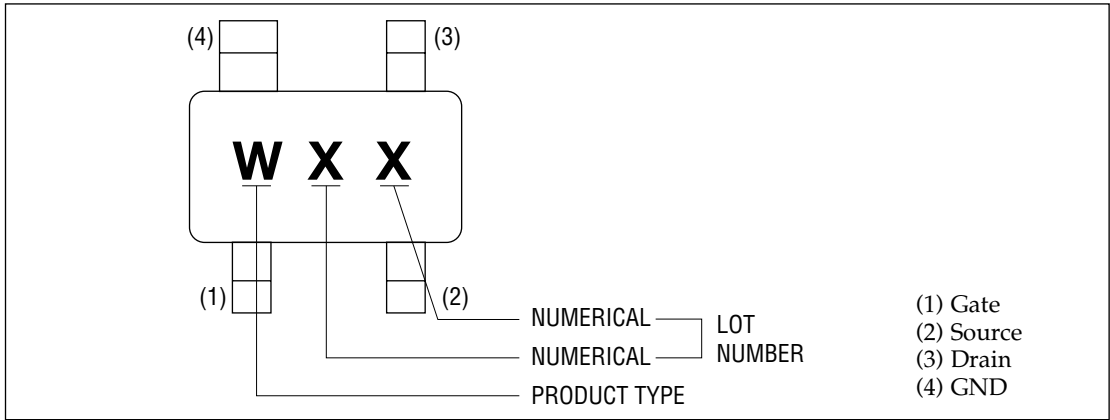
PACKAGE DIMENSIONS



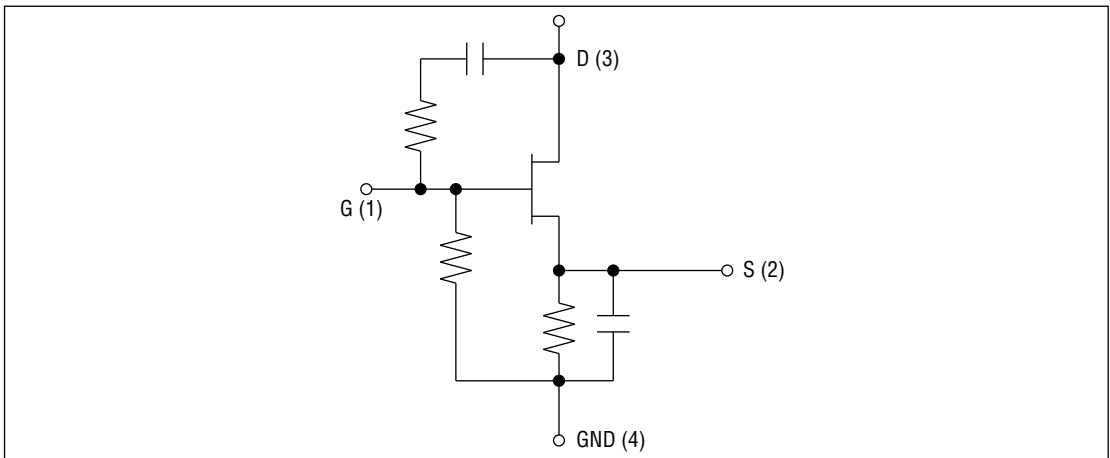
(Unit: mm)

Package material	Epoxy resin
Lead frame material	42 alloy
Pin treatment	Solder plating
Solder plate thickness	5 μm or more

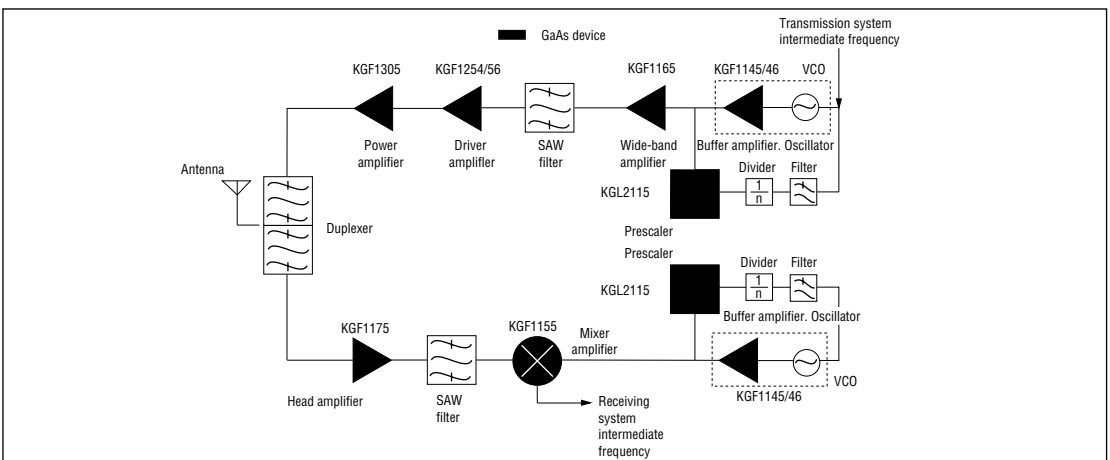
MARKING



CIRCUIT



APPLICATION EXAMPLE FOR PORTABLE PHONES



ABSOLUTE MAXIMUM RATINGS

(Ta = 25°C)

Item	Symbol	Unit	Min.	Max.
Drain-source voltage	V _{DS}	V	—	7
Gate-source voltage	V _{GS}	V	-3	0.4
Drain current	I _{DS}	mA	—	180
Total power dissipation	P _{tot}	mW	—	200
Channel temperature	T _{ch}	°C	—	150
Storage temperature	T _{stg}	°C	-45	125

ELECTRICAL CHARACTERISTICS

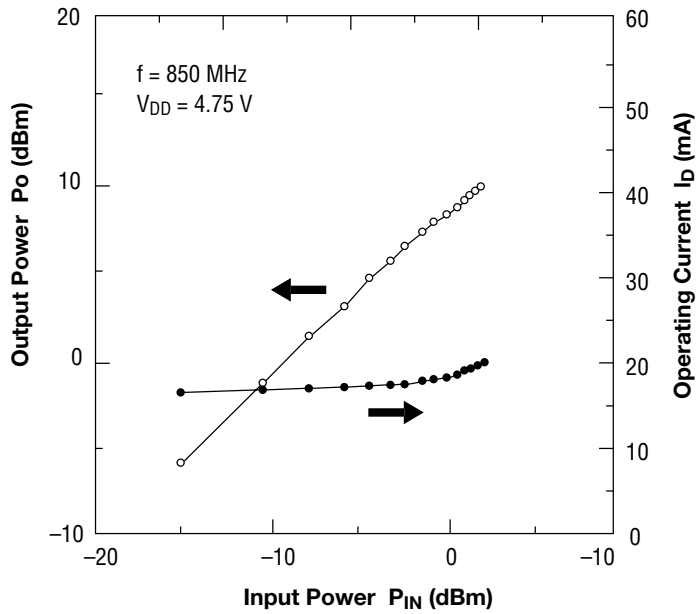
(Ta = 25°C)

Item	Symbol	Condition	Unit	Min.	Max.
Gate-source leakage current	I _{GSS}	V _{GS} = -3 V	μA	—	40
Gate-drain leakage current	I _{GDO}	V _{GDO} = -7 V	μA	—	200
Drain-source leakage current	I _{DS(off)}	V _{DS} = 3 V, V _{GS} = -2 V	μA	—	400
Drain current	I _{DSS}	V _{DS} = 3 V, V _{GS} = 0 V	mA	40	—
Operating current	I _D	(*1), P _{IN} = 3 dBm	mA	—	25
Gate-source cut-off voltage	V _{GS(off)}	V _{DS} = 3 V, I _{DS} = 400 μA	V	-1.5	-0.5
Transconductance	g _m	V _{DS} = 3 V, I _{DS} = 15 mA	mS	55	—
Noise figure	F	(*1)	dB	—	4
Linear gain	G _{LIN}	(*1), P _{IN} = -10 dBm	dB	7	—
Output power	P _O	(*1), P _{IN} = 3 dBm	dBm	7	—
Input return loss	R _{LIN}	(*1), P _{IN} = -20 dBm	dB	—	-8

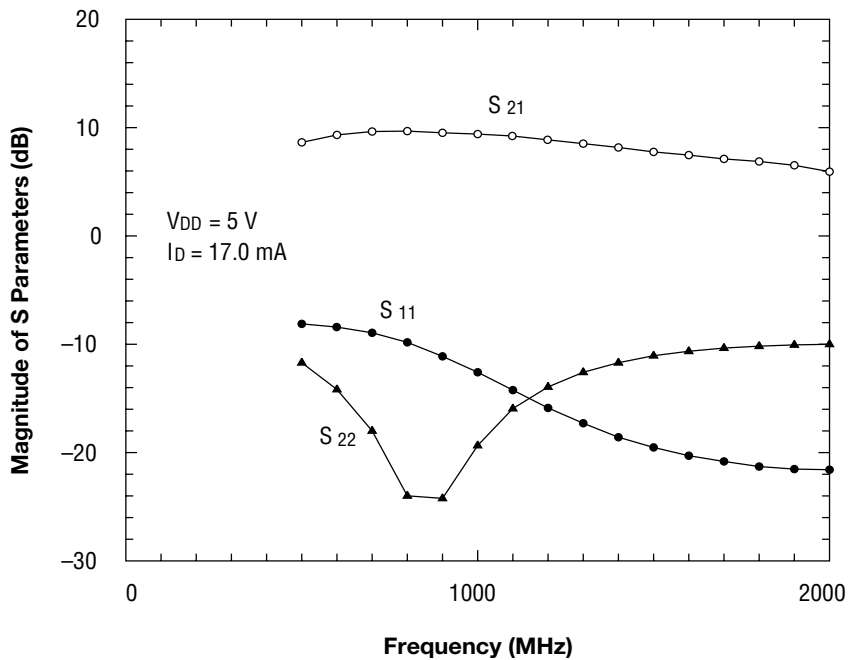
*1 Self-bias condition: V_{DD} = 5.0 ± 0.25 V, V_G = 0 V, f = 800 to 1000 MHz

RF CHARACTERISTICS

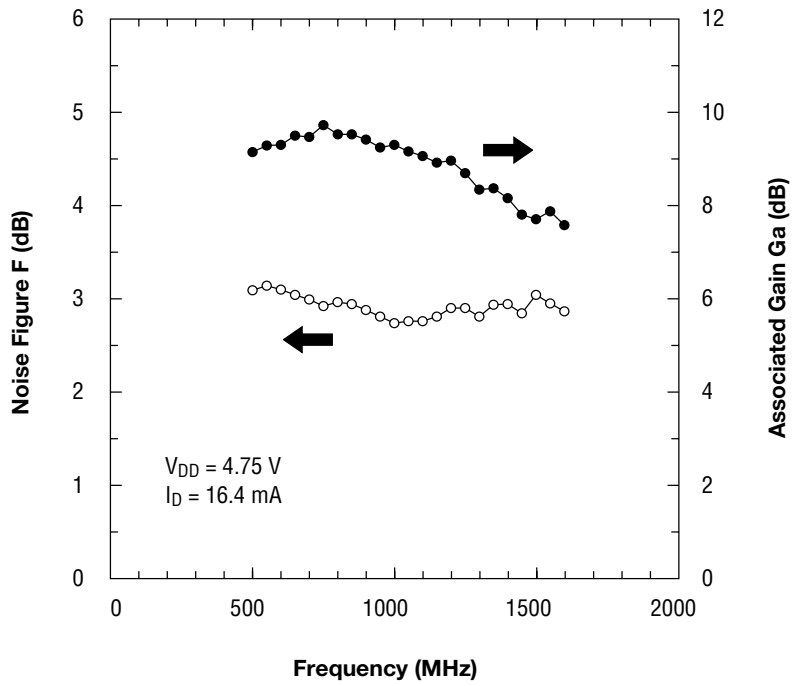
Po vs Pin



Gain and Return Loss



Noise Properties



Typical S Parameters

 $V_{DD} = 5\text{ V}$, $I_D = 16.5\text{ mA}$

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	0.464	-49.68	2.769	177.71	0.171	-10.68	0.300	-63.30
600.0	0.420	-55.84	2.937	168.40	0.161	-12.60	0.222	-69.18
700.0	0.380	-61.50	3.003	159.30	0.151	-12.96	0.154	-71.17
800.0	0.342	-66.46	3.030	151.09	0.143	-12.89	0.095	-64.41
900.0	0.309	-70.67	3.000	143.39	0.135	-11.77	0.064	-35.77
1000.0	0.278	-74.31	2.952	136.12	0.130	-11.00	0.065	1.80
1100.0	0.253	-77.45	2.894	129.57	0.125	-9.35	0.095	19.44
1200.0	0.228	-80.33	2.808	123.58	0.122	-7.61	0.123	26.35
1300.0	0.209	-83.08	2.732	117.90	0.118	-6.18	0.153	26.56
1400.0	0.191	-85.44	2.653	112.33	0.116	-3.49	0.177	24.88
1500.0	0.174	-87.16	2.564	107.34	0.113	-1.18	0.202	23.28
1600.0	0.159	-89.15	2.483	102.84	0.111	1.07	0.219	20.69
1700.0	0.147	-91.27	2.405	98.02	0.112	3.65	0.238	17.73
1800.0	0.133	-92.93	2.334	93.99	0.111	5.85	0.252	15.08
1900.0	0.124	-94.17	2.252	89.67	0.110	7.92	0.266	12.92
2000.0	0.113	-95.51	2.198	85.85	0.111	11.13	0.276	9.93
2100.0	0.103	-97.04	2.128	82.15	0.112	12.88	0.287	6.87
2200.0	0.096	-99.77	2.074	78.77	0.113	15.72	0.292	4.62
2300.0	0.090	-100.62	2.019	75.32	0.117	18.01	0.301	2.40
2400.0	0.082	-102.87	1.971	72.05	0.119	20.59	0.307	-0.30
2500.0	0.078	-102.03	1.917	68.80	0.122	22.87	0.314	-2.57
2600.0	0.072	-104.03	1.877	65.35	0.128	25.14	0.320	-5.23
2700.0	0.065	-104.75	1.833	62.41	0.131	28.00	0.322	-6.89
2800.0	0.059	-108.33	1.797	59.18	0.137	29.32	0.330	-9.99
2900.0	0.060	-108.58	1.770	56.54	0.143	30.93	0.331	-12.00
3000.0	0.052	-111.63	1.731	53.77	0.149	32.47	0.333	-14.99

Typical S Parameters

