

OKI electronic components

KGF1265

Medium-Power Amplifier

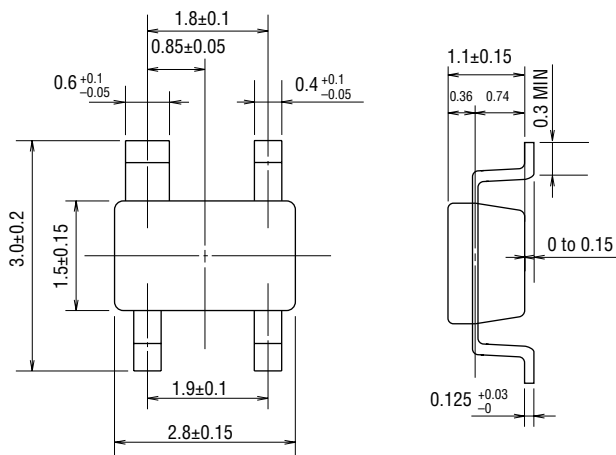
GENERAL DESCRIPTION

The KGF1265 is a medium-power amplifier, with frequencies ranging from the UHF-band, that features high output power, low distortion, and low current operation. The KGF1265 specifications are guaranteed to a fixed matching circuit for 3 V and 900 MHz band; external impedance-matching circuits are also required. Because of the high output power and low distortion at the low operating current, the KGF1265 is ideal as a transmitter-driver amplifier for portable phones such as PDC and CDMA.

FEATURES

- High output power: 11 dBm (min.)
- Low voltage and low current operation: 3 V, 18 mA (max.)
- Low distortion (ACP): -55 dBc (max) @ $P_O = 8\text{dBm}$, $\pi/4\text{DQPSK}$, $\pm 50\text{ kHz}$
- Self-bias circuit configuration with built-in source capacitor
- package: 4PSOP

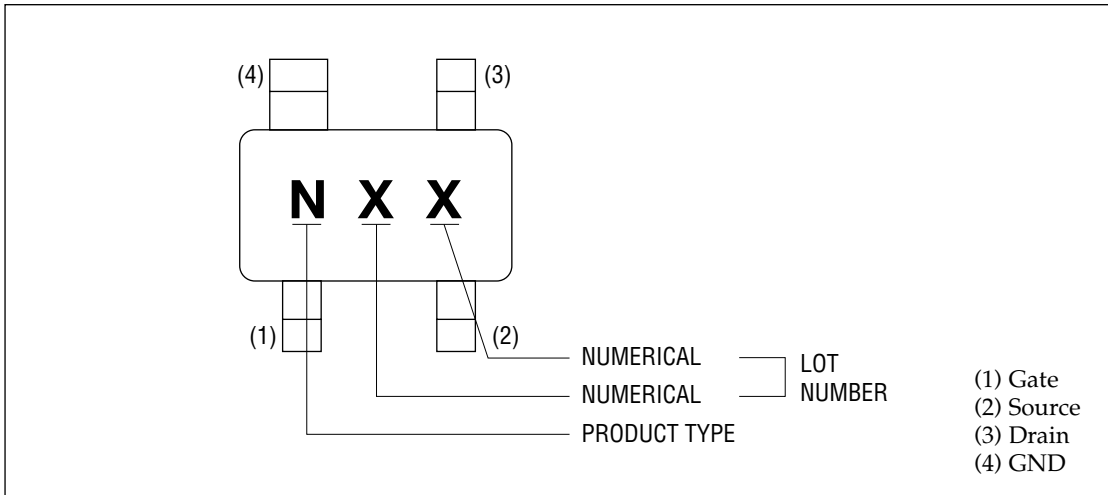
PACKAGE DIMENSIONS



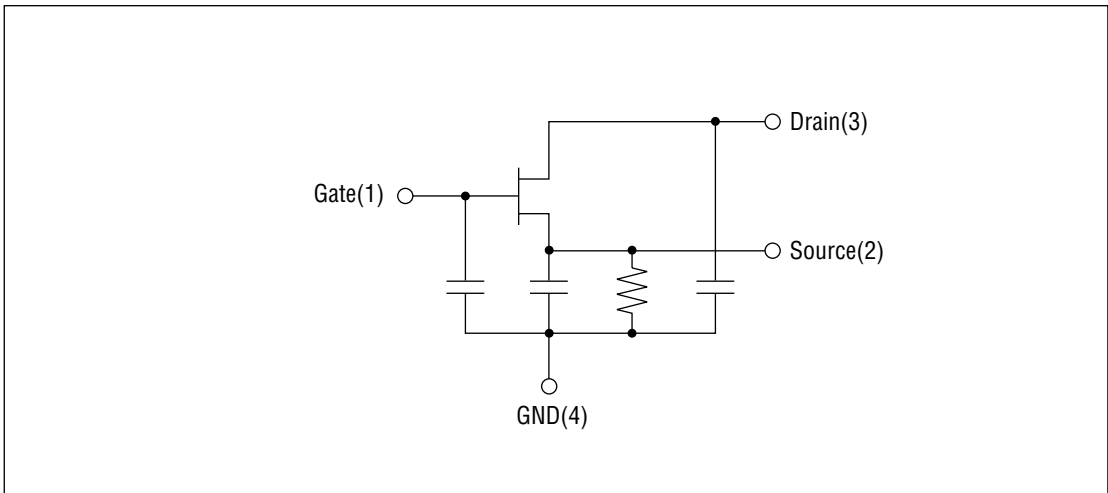
(Unit: mm)

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

MARKING



CIRCUIT



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 | -3.0 | 0.4 |
| Drain current | I_{DS} | $T_a = 25^\circ\text{C}$ | mA | — | 28 |
| Total power dissipation | P_{tot} | $T_a = 25^\circ\text{C}$ | mW | — | 200 |
| Channel temperature | T_{ch} | — | $^\circ\text{C}$ | — | 150 |
| Operating temperature | T_{ope} | — | $^\circ\text{C}$ | -35 | 85 |
| Storage temperature | T_{stg} | — | $^\circ\text{C}$ | -45 | 125 |

ELECTRICAL CHARACTERISTICS

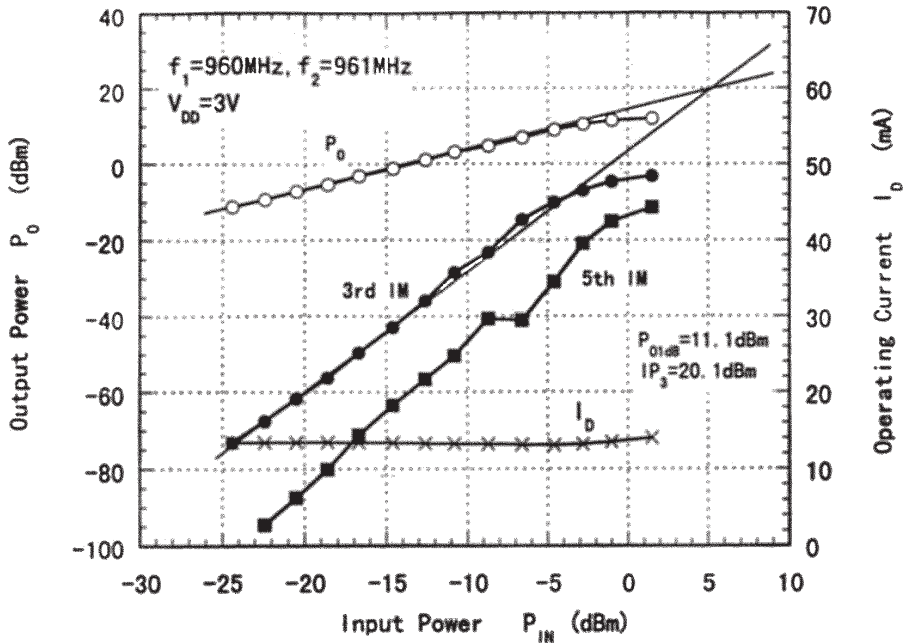
(Ta = 25°C)

| Item | Symbol | Condition | Unit | Min. | Typ. | Max. |
|--------------------------|-----------|---|------|------|------|------|
| Frequency | f | | MHz | 889 | — | 960 |
| Operating current | I_D | (*1), $P_{IN} = 0 \text{ dBm}$ | mA | — | — | 18.0 |
| Linear gain | G_{LIN} | (*1), $P_{IN} = -20 \text{ dBm}$ | dB | 13.0 | 15.0 | — |
| Output power | P_O | (*1), $P_{IN} = 0 \text{ dBm}$ | dBm | 11.0 | 12.5 | — |
| Adjacent Channel Power 1 | ACP1 | (*1), $P_O = 8 \text{ dBm}$, $\pm 50 \text{ kHz offset}$ | dBc | — | -60 | -55 |
| Adjacent Channel Power 2 | ACP2 | (*1), $P_O = 8 \text{ dBm}$, $\pm 100 \text{ kHz offset}$ | dBc | — | -70 | -65 |
| Noise figure | F | (*1) | dB | — | — | 3.0 |

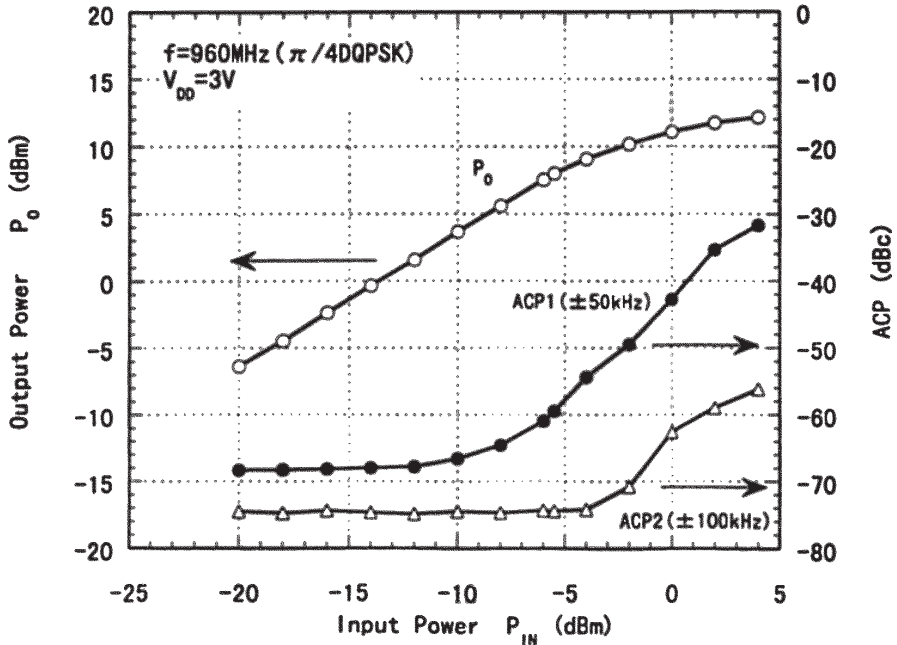
*1 Self-bias condition: $V_{DD} = 3 \text{ V}$, $V_G = 0 \text{ V}$

RF CHARACTERISTICS

KGF1265
 P_o , IM_3 and I_D vs. P_{IN}

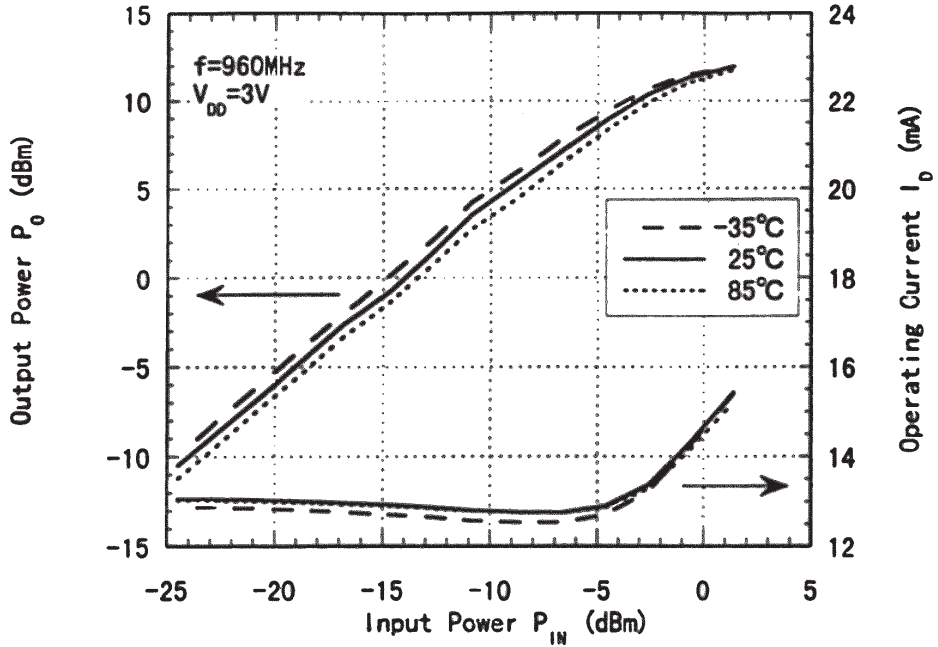


KGF1265
 P_o , ACP1 and ACP2 vs. P_{IN}



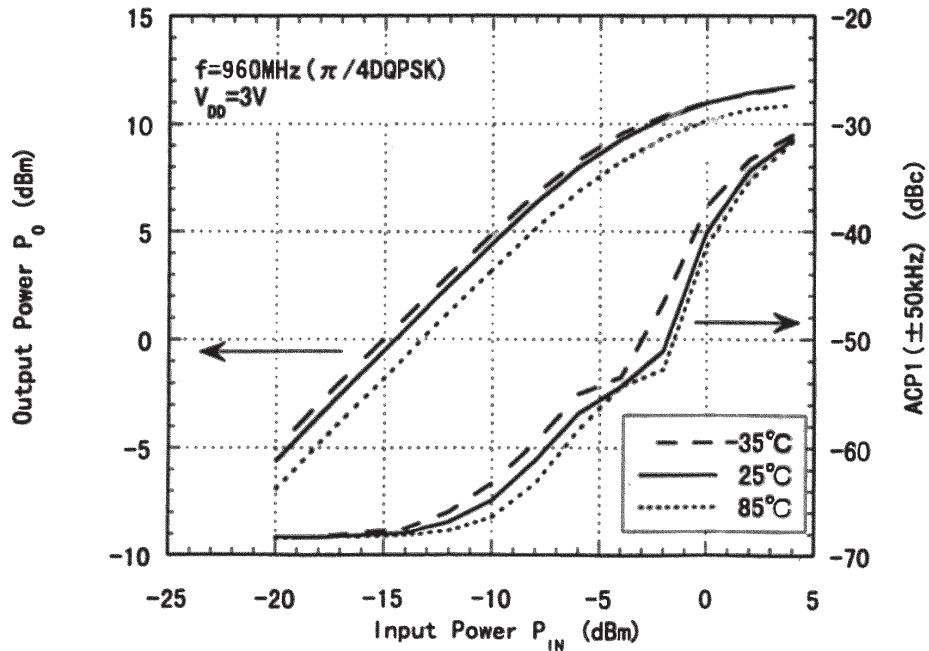
KGF1265 Thermal Stability

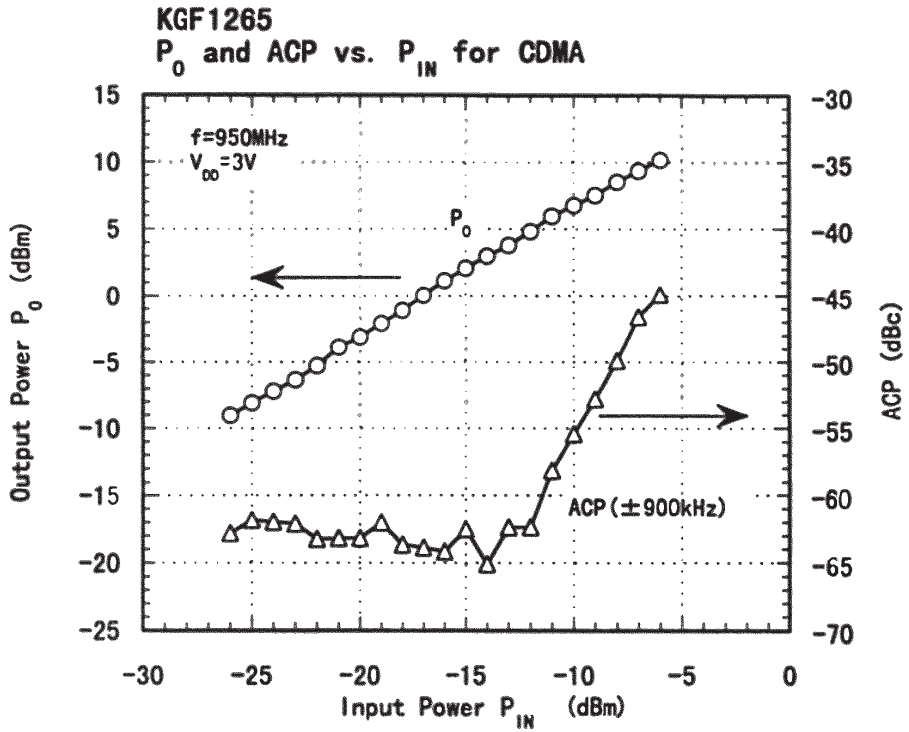
P_o, I_D vs. P_{IN}



KGF1265 Thermal Stability

$P_o, \text{ACP1}$ vs. P_{IN}



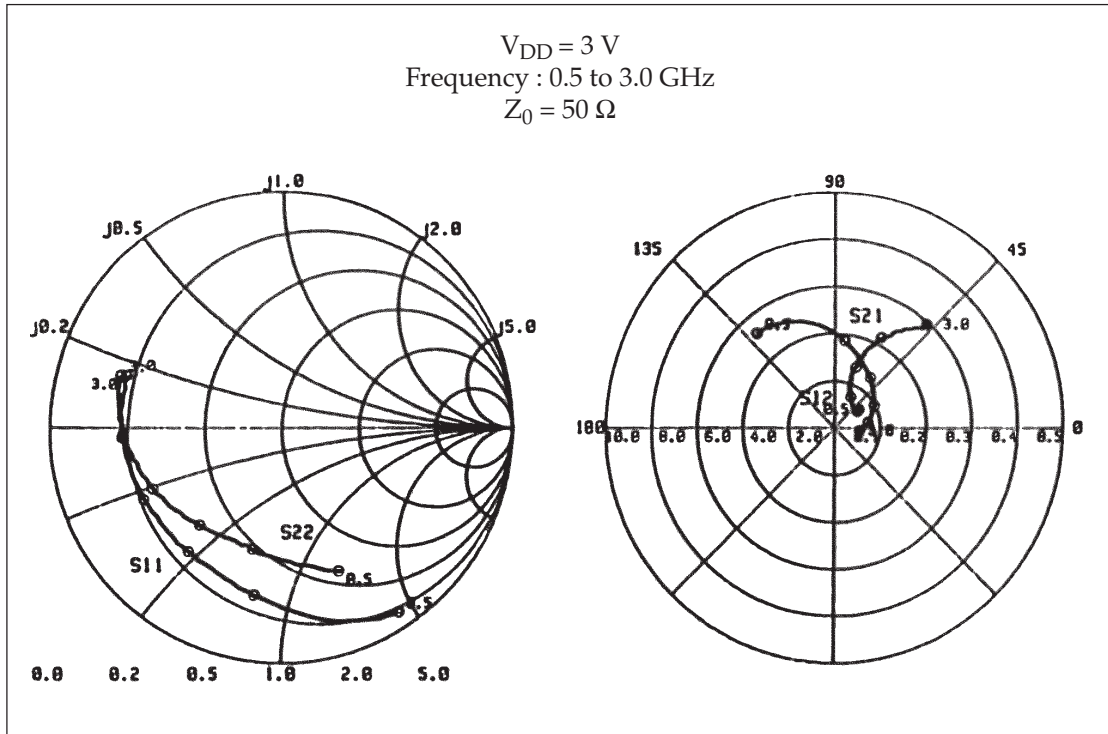


Typical S Parameters

 $V_{DD} = 3V$

| 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 | 0.915 | -54.66 | 4.476 | 128.63 | 0.062 | 33.24 | 0.598 | -76.25 |
| 600.0 | 0.862 | -65.63 | 4.351 | 117.04 | 0.059 | 30.50 | 0.531 | -85.34 |
| 700.0 | 0.813 | -75.40 | 4.134 | 107.13 | 0.057 | 29.69 | 0.492 | -92.80 |
| 800.0 | 0.770 | -85.38 | 3.986 | 97.98 | 0.056 | 30.85 | 0.469 | -99.26 |
| 900.0 | 0.735 | -93.08 | 3.699 | 89.86 | 0.054 | 33.11 | 0.455 | -106.30 |
| 1000.0 | 0.708 | -102.19 | 3.565 | 82.40 | 0.054 | 36.50 | 0.453 | -111.84 |
| 1100.0 | 0.686 | -110.12 | 3.386 | 74.99 | 0.053 | 42.10 | 0.451 | -117.81 |
| 1200.0 | 0.668 | -117.86 | 3.244 | 68.15 | 0.055 | 47.65 | 0.459 | -123.09 |
| 1300.0 | 0.662 | -123.89 | 3.032 | 62.32 | 0.058 | 54.31 | 0.466 | -128.56 |
| 1400.0 | 0.655 | -130.53 | 2.870 | 55.64 | 0.063 | 59.01 | 0.479 | -133.39 |
| 1500.0 | 0.654 | -136.56 | 2.732 | 49.96 | 0.070 | 63.77 | 0.492 | -138.40 |
| 1600.0 | 0.655 | -141.96 | 2.563 | 44.30 | 0.079 | 66.59 | 0.509 | -142.96 |
| 1700.0 | 0.657 | -147.69 | 2.454 | 38.52 | 0.089 | 68.50 | 0.525 | -147.66 |
| 1800.0 | 0.665 | -152.50 | 2.297 | 33.19 | 0.099 | 69.01 | 0.545 | -152.30 |
| 1900.0 | 0.673 | -157.31 | 2.157 | 28.11 | 0.112 | 68.50 | 0.563 | -156.46 |
| 2000.0 | 0.679 | -162.17 | 2.062 | 22.74 | 0.125 | 67.98 | 0.582 | -161.01 |
| 2100.0 | 0.686 | -166.90 | 1.939 | 17.68 | 0.139 | 66.28 | 0.599 | -165.29 |
| 2200.0 | 0.691 | -171.49 | 1.831 | 12.95 | 0.151 | 64.42 | 0.617 | -169.54 |
| 2300.0 | 0.698 | -175.91 | 1.728 | 8.07 | 0.166 | 61.90 | 0.634 | -173.69 |
| 2400.0 | 0.703 | -179.67 | 1.644 | 3.82 | 0.177 | 59.48 | 0.649 | -178.01 |
| 2500.0 | 0.706 | -175.24 | 1.528 | -1.22 | 0.195 | 56.31 | 0.661 | -177.84 |
| 2600.0 | 0.706 | -170.85 | 1.466 | -5.08 | 0.204 | 53.81 | 0.675 | -173.58 |
| 2700.0 | 0.710 | -166.54 | 1.354 | -8.96 | 0.219 | 50.11 | 0.683 | -169.29 |
| 2800.0 | 0.711 | -162.28 | 1.297 | -13.82 | 0.229 | 47.47 | 0.694 | -164.93 |
| 2900.0 | 0.711 | -158.25 | 1.192 | -16.22 | 0.242 | 43.57 | 0.700 | -160.94 |
| 3000.0 | 0.710 | -153.79 | 1.145 | -20.50 | 0.254 | 41.41 | 0.707 | -156.55 |

Typical S Parameters



Test Circuit ($V_{DD} = 3\text{ V}$, $f = 889\text{ MHz}$ to 960 MHz)

