OKI electronic components

KGF2702

Wide-Band Amplifier for Microwave UHF-Band and PCS Frequencies

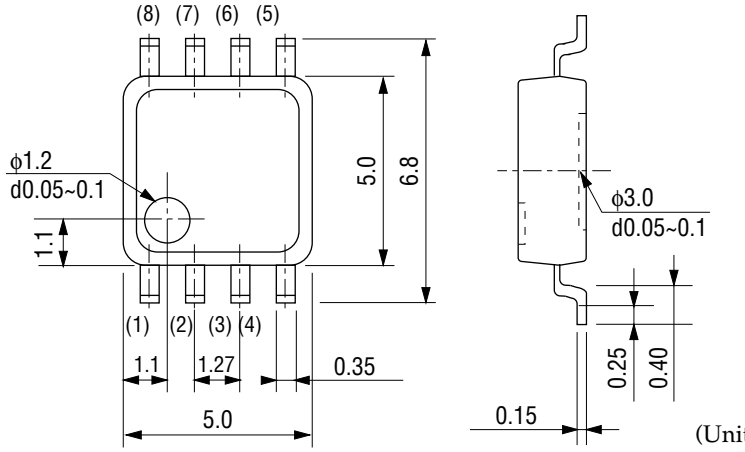
GENERAL DESCRIPTION

The KGF2702, housed in an 8-pin SOP plastic package, is a two-stage amplifier that features flat and high gain over a wide range of frequencies, internal input and output matching, and high output power. The internally matched 50 Ω input and output eliminate external impedance matching circuits. The KGF2702 is ideal as a medium power amplifier in the 0.8~4 GHz frequency range .

FEATURES

- Flat gain property from 0.8 GHz to 4 GHz
- Input and output 50 Ω matched inpedance
- Single power supply: 5 V (typ)
- High linear gain: 15.5 dB (min)
- High output power: 14 dBm (min)
- Low noise: 5 dB (typ)
- Surface-mount 8-pin SOP plastic package

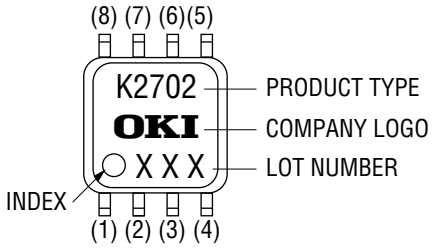
PACKAGE OUTLINE



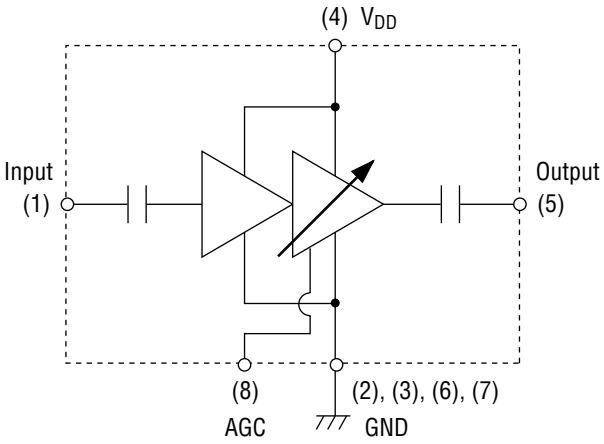
Pin No.	Name
1	Input
2	GND
3	GND
4	V_{DD}
5	Output
6	GND
7	GND
8	AGC

(Unit: mm)

MARKING



CIRCUIT



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	Unit	Min.	Max.
Supply voltage	V_{DD}	Ta = 25°C	V	—	8
Input power	P_{IN}	Ta = 25°C	dBm	—	6
Total power dissipation	P_{tot}	Ta = 25°C	mW	—	TBD
Channel temperature	T_{ch}	—	°C	—	150
Storage temperature	T_{stg}	—	°C	–45	125

ELECTRICAL CHARACTERISTICS

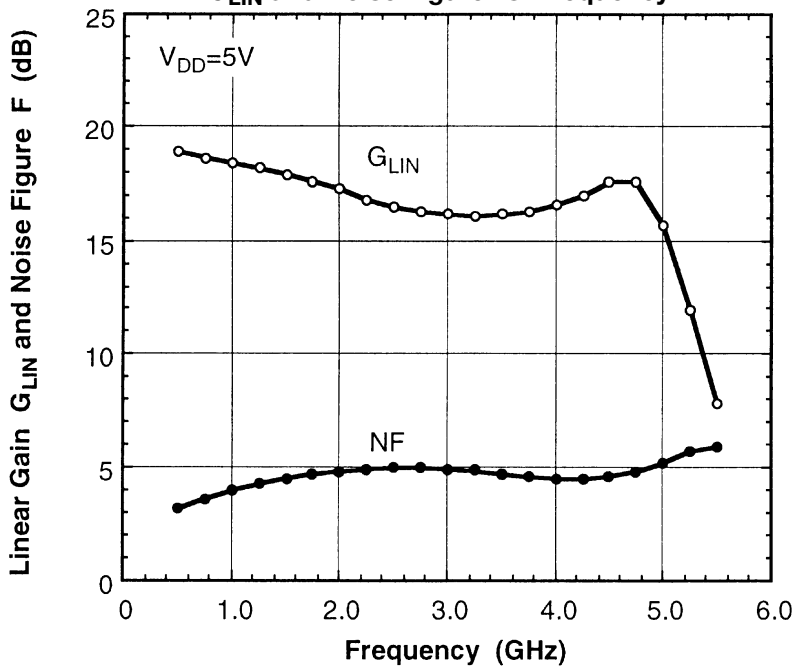
(Ta = 25°C)

Item	Symbol	Condition	Unit	Min.	Typ.	Max.
Operating current	I_{DD}	(*1), P_{IN} = –20 dBm	mA	—	70	90
Isolation	$\|S_{12}\|$	f = 2.5 GHz	dB	—	–30	–25
Linear gain	G_{LIN}	(*1), P_{IN} = –20 dBm	dB	15.5	17.0	—
Gain flatness	ΔG	f = 0.8 GHz	dB	—	2.5	3.0
Input return loss	$\|S_{11}\|$	f = 2.5 GHz	dB	—	–10	—
Output return loss	$\|S_{22}\|$	f = 4.0 GHz	dB	—	–9	—
Output power	P_{O1}		dBm	14	15	—
Noise figure	F	(*1), f = 2.5 GHz	dB	—	5.0	—
Third-order intercept point	IP_3		dBm	—	25	—
Thermal resistance	R_{th}	Channel to case	°C/W	—	TBD	—

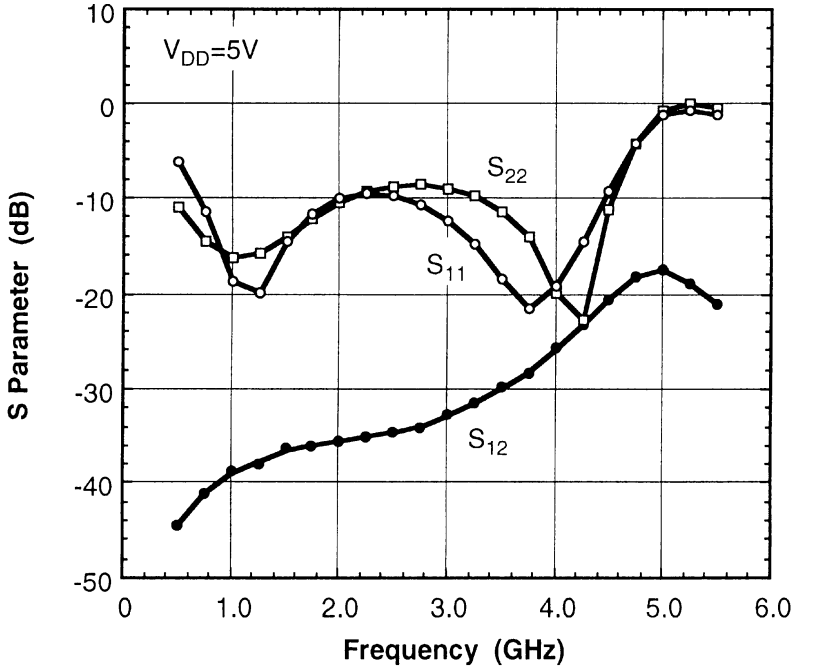
*1 Self-bias condition: V_{DD} = 5.0 V, V_{AGC} = 0 V

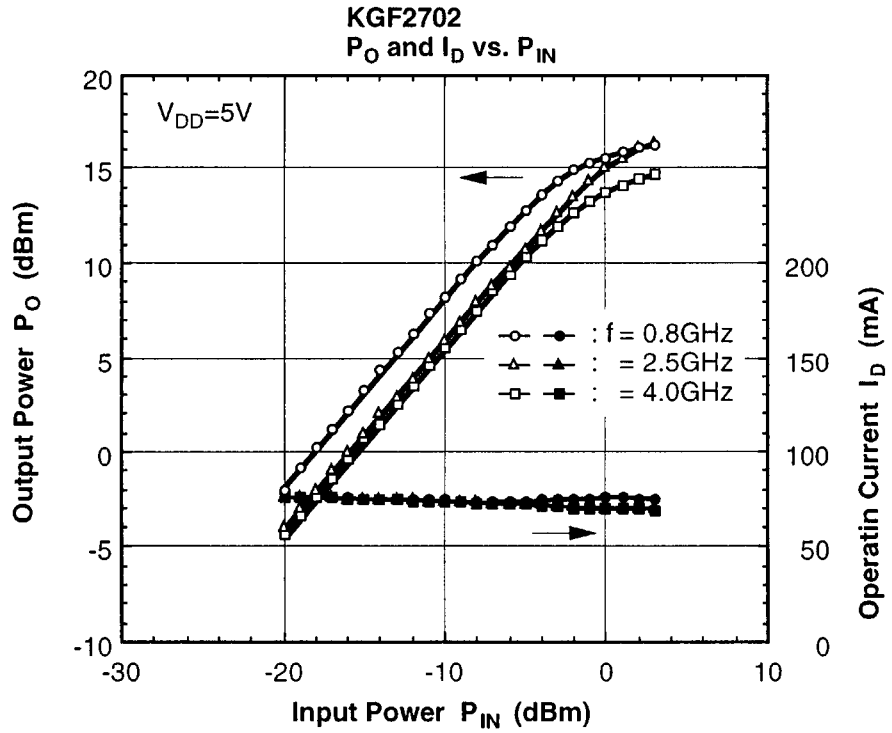
RF CHARACTERISTICS

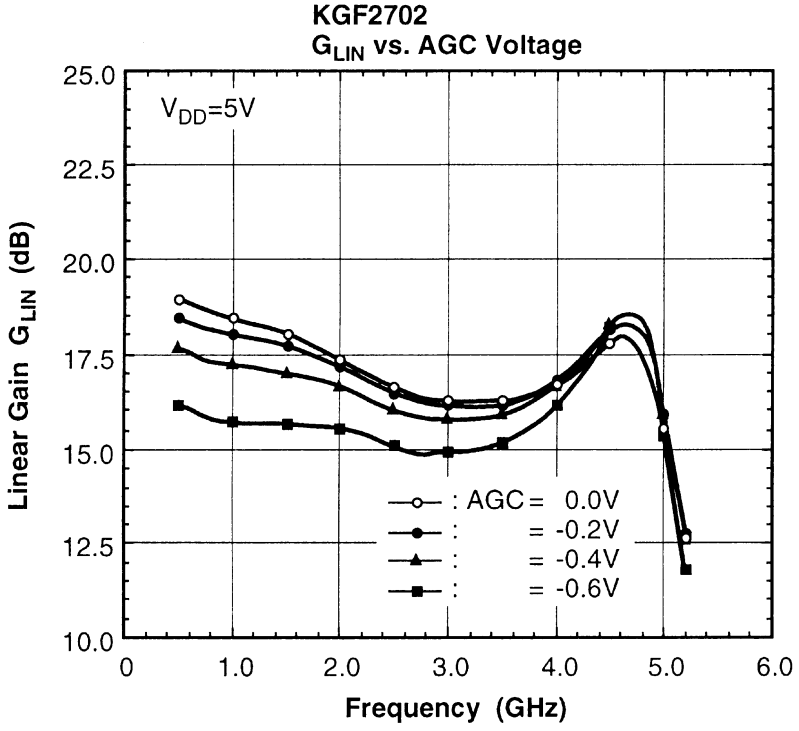
KGF2702
G_{LIN} and Noise Figure vs. Frequency



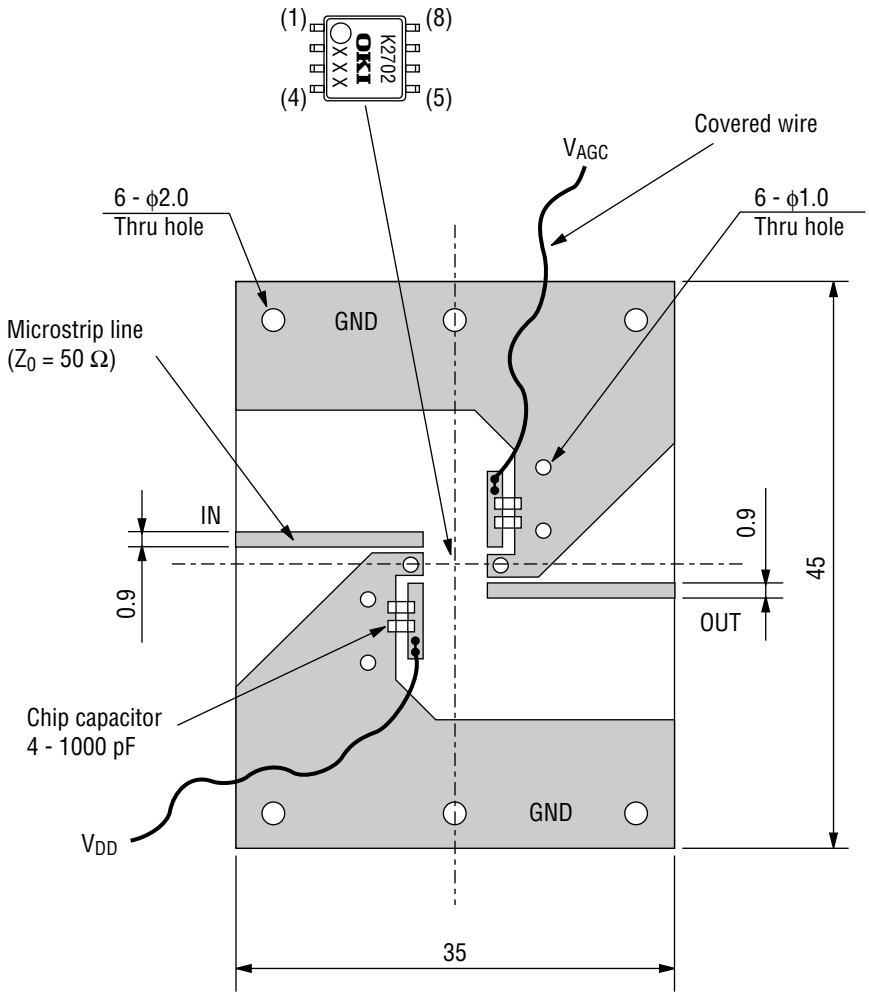
KGF2702
Input, Output Return Loss and Isolation vs. Frequency




KGF2702
P_O and I_D vs. P_{IN}
V_{DD}=5V
: f = 0.8GHz
: = 2.5GHz
: = 4.0GHz
Output Power P_O (dBm)
Operatin Current I_D (mA)
Input Power P_{IN} (dBm)
20
15
10
5
0
-5
-10
200
150
100
50
0
-30
-20
-10
0
10


KGF2702
G_{LIN} vs. AGC Voltage
V_{DD}=5V
: AGC = 0.0V
: = -0.2V
: = -0.4V
: = -0.6V
Linear Gain G_{LIN} (dB)
Frequency (GHz)
25.0
22.5
20.0
17.5
15.0
12.5
10.0
0
1.0
2.0
3.0
4.0
5.0
6.0

Test Circuit Board for KGF2702

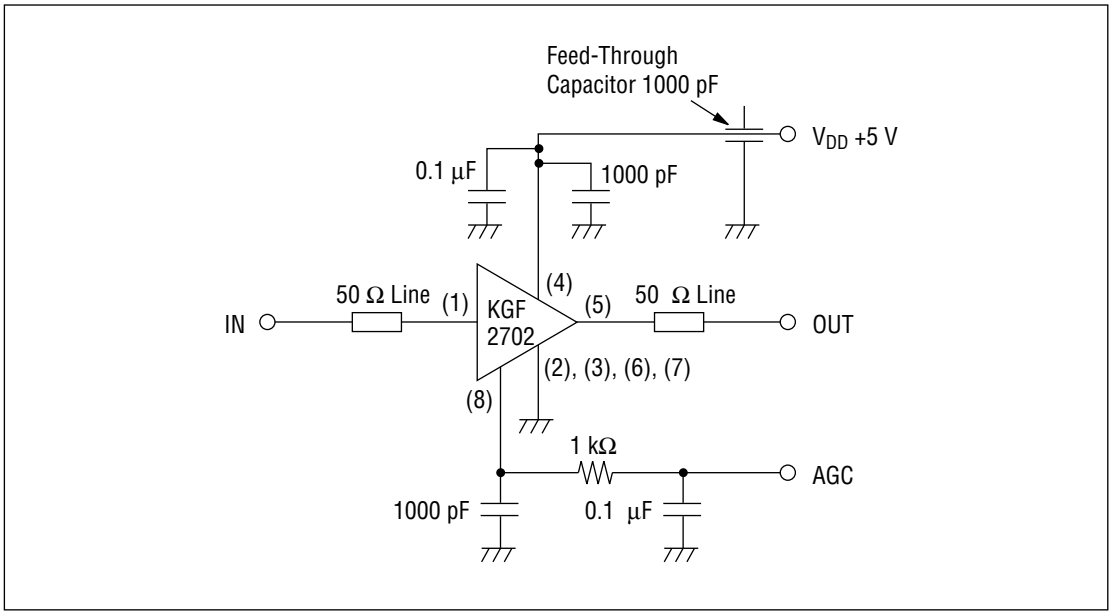


(Unit: mm)

Substrate:Teflon-fiberglass
(0.33 mm^t, 35 μm^t Cu plated both side, ε_r = 2.5)

Application Note

Example 1: Single-stage Amplifier with AGC



Example 2: Two-stage Amplifier