

## UHF-band Device Series

# KGF1145/1155/1165/1175/1255/KGA1301/KGL2115

### DESCRIPTION

The UHF band device series consists of analog devices and a digital device.

The analog devices include a Dual-Gate Buffer Amplifier, Dual-Gate Mixer Amplifier, Feedback Wide-band Amplifier, Dual-Gate Head Amplifier, Single-Gate Driver Amplifier and a Single-Gate Power Amplifier.

The digital device is a 2-modulus Prescaler.

Thanks to the low power consumption and low noise of GaAs devices, this series is perfect for application in portable Cellular phones.

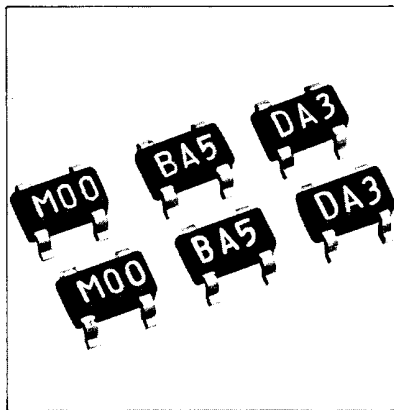
### FEATURES

(Analog devices)

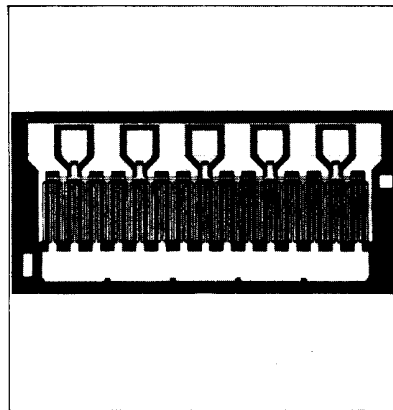
- Low Drain current Operation
- Self-bias Configuration
- Including Soura capacitor
- Mini-mold Package for Surface Mount
- High Isolation
- Low Noise Figure

(Digital device: the KGL2115, Prescaler)

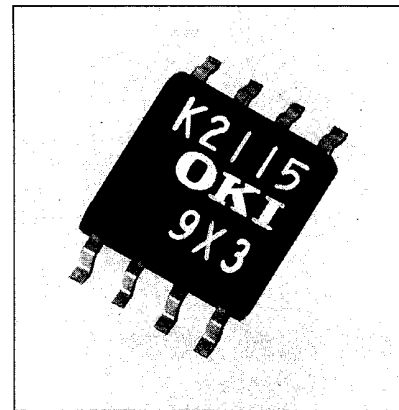
- Low Power Consumption
- Wide Operation Temperature
- 8 pin Flat Package



KGF1145/55/65/75  
KGF1255



KGA1301



KGL2115

### FUNCTION TABLE

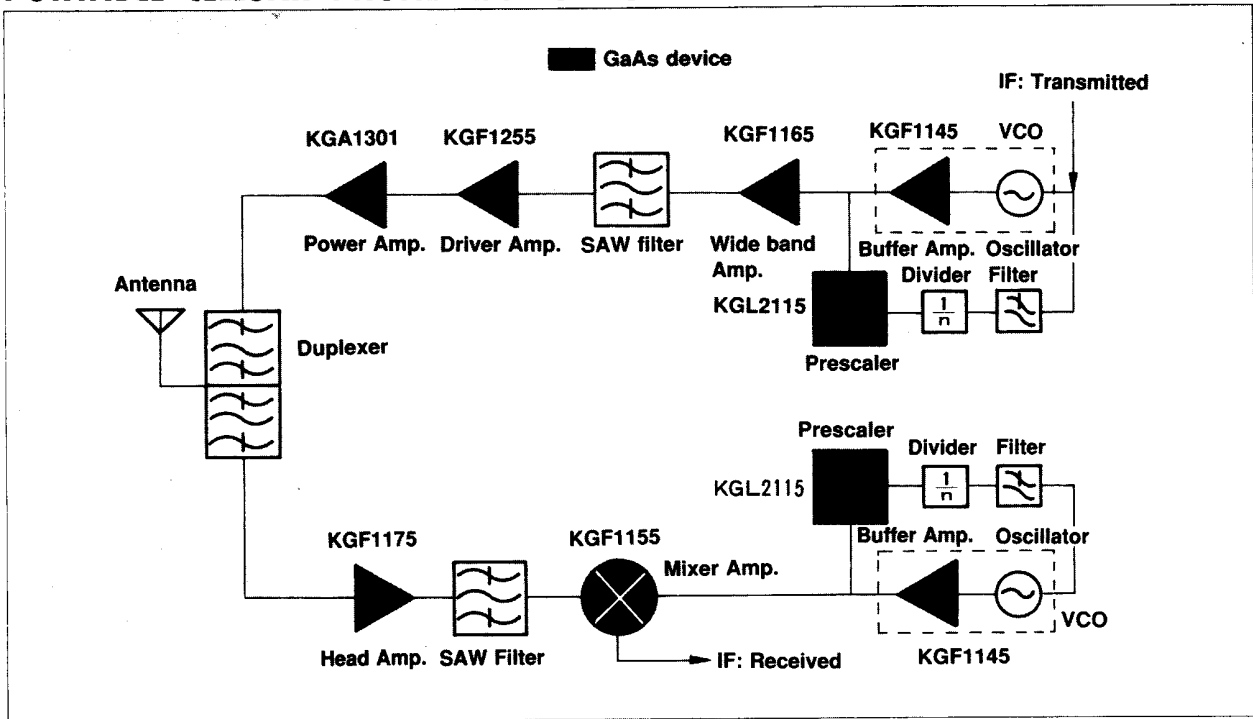
(\*) Under development

	Type	Functions	Specifications	Gate length/width	Package
Analog	KGF1145	Dual-Gate Buffer Amplifier	$F < 3\text{dB}$ $P_o > 2\text{dBm}$ $I_{DS} < 4\text{mA}$ $f = 850\text{MHz}$	0.5/300 $\mu\text{m}$	Mini-mold 4P
	KGF1155	Dual-Gate Mixer Amplifier	$F < 3\text{dB}$ $G_c > 12\text{dB}$ $I_{DS} < 2.5\text{mA}$ $f = 850\text{MHz}$	0.5/300 $\mu\text{m}$	Mini-mold 4P
	KGF1165	Feedback Wide-band Amplifier	$F < 4\text{dB}$ $P_o > 7\text{dBm}$ $I_{DS} < 25\text{mA}$ $f = 800\sim 900\text{MHz}$	0.5/1000 $\mu\text{m}$	Mini-mold 4P
	KGF1175	Dual-Gate Head Amplifier	$F < 2\text{dB}$ $P_o > 3\text{dBm}$ $I_{DS} < 2.5\text{mA}$ $f = 850\text{MHz}$	0.5/300 $\mu\text{m}$	Mini-mold 4P
	KGF1255	Single-Gate Driver Amplifier	$F < 2.5\text{dB}$ $P_o > 17\text{dBm}$ $I_{DS} < 80\text{mA}$ $f = 850\text{MHz}$	0.5/1800 $\mu\text{m}$	Mini-mold 4P
Digital	KGA1301	Single-Gate Power Amplifier.	$P_o > 31.5\text{dBm}$ $I_{DS} = 400\text{mA}$ $f = 850\text{MHz}$	1.0/7500 $\mu\text{m}$	Chip (Package-type)*
	KGL2115	2-modulus Prescaler	$I_{DD} < 6\text{mA}$ DR 1/128 1/129 $f = 1\text{GHz}$	1 $\mu\text{m}$ 60GATE (SCFL)	SOP 8P

NOTE: Device: MESFET, +5V power supply

F: Noise Figure  $P_o$ : Output Power  $I_{DS}$ : Drain Current  $f$ : Operating Frequency DR: Dividing Ratio SCFL: Source Coupled FET Logic

# PORTABLE CELLULAR PHONE APPLICATION



## MAXIMUM RATINGS (Analog Devices)

Parameter	Symbol	Unit	KGF1145	KGF1155	KGF1165	KGF1175	KGF1255	KGA1301
Drain Source Voltage	$V_{DS}$	V	6	7	7	7	7	7
Gate Source Voltage	$V_{GS}$	V	-3	-3	-3	-3	-3	-5
Total Power Dissipation	$P_T$	mW	100	100	200	100	300	3W (*)
Channel Temperature	$T_{CH}$	°C	150	150	150	150	150	150
Storage Temperature	$T_{stg}$	°C	-45 ~ 125	-45 ~ 125	-45 ~ 125	-45 ~ 125	-45 ~ 125	-45 ~ 125
Drain Current	$I_D$	mA	60	60	180	60	360	2000

(\*) On infinite heatsink

### (KGL2115 Prescaler)

Parameter	Symbol	Unit	Rating
Supply Voltage	$V_{DD}$	V	-0.5 ~ 7.0
MC Input Voltage	$V_{MC}$	V	-0.5 ~ VDD
CLK Input Voltage	$V_{IN}$	V	-1.5 ~ 1.5
Operating Temperature	$T_{opt}$	°C	-30 ~ 85
Storage Temperature	$T_{stg}$	°C	-55 ~ 125

**ELECTRICAL CHARACTERISTICS**  
(Analog Devices)

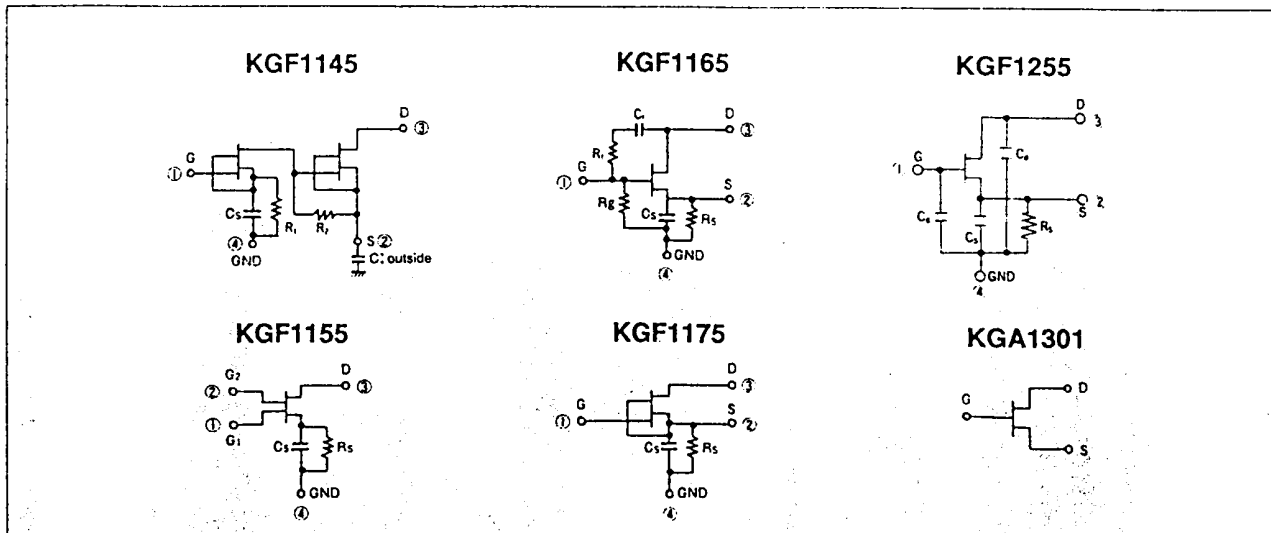
Parameter	Symbol	Unit	KGF1145	KGF1155	KGF1165	KGF1175	KGF1255	KGA1301
Gate Source Leak Current	$I_{GSS}$	$\mu A$	~12	~12	~40	~12	~72	~300
Gate Drain Leak Current	$I_{DGO}$	$\mu A$	~60	~60	~200	~60	~360	~1000
Drain Source Leak Current	$I_{DsoFF}$	$\mu A$	~120	~120	~400	~120	~720	~1000
Drain Current	$I_{DSS}$	mA	15~	15~	40~	15~	130~	1270~
Gate Source Cut off Voltage	$V_{GsoFF}$	V	-2.0 ~ -1.0	-2.0 ~ -1.0	-1.5 ~ -0.5	-2.0 ~ -1.0	-2.0 ~ -1.0	-3.5 ~ -2.5
Operating Current	$I_D$	mA	~4	~2.5	~25	~2.5	~80	~400
Noise Figure	F	dB	~3	~3	~4	~2	~2.5	—
Output Power	$P_O$	dBm	2~	3~	7~	3~	17~	31.5~
Isolation	$I_{SO}$	dB	40~	—	—	—	—	—
Transconductance	$g_m$	mS	8~	8~	55~	8~	125~	~400
Linear Gain	$G_{LIN}$	dB	—	12~	7~	12~	—	—
Input Return Loss	$R_{LIN}$	dB	—	—	~10	—	—	—

(KGL2115 Prescaler)

Parameter	Symbol	Unit	Specification
Power Supply Current	$I_{DD}$	mA	~6.0
Output Voltage	$V_O$	Vp-p	0.5~4.5
Toggle Frequency	$f_{IN}$	GHz	0.7~1.0
CLK Input Voltage	$V_{IN}$	Vp-p	0.4~1.0
MC Input Voltage High	$V_{IH}$	V	2~ $V_{DD}$
MC Input Voltage Low	$V_{IL}$	V	0~0.8
MC Input Current High	$I_{IH}$	mA	~0.15

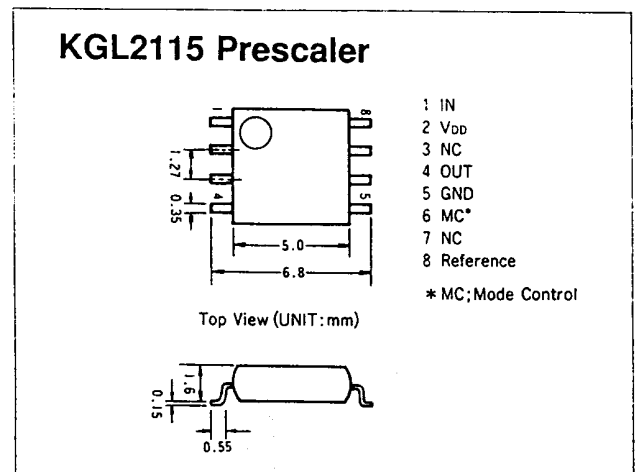
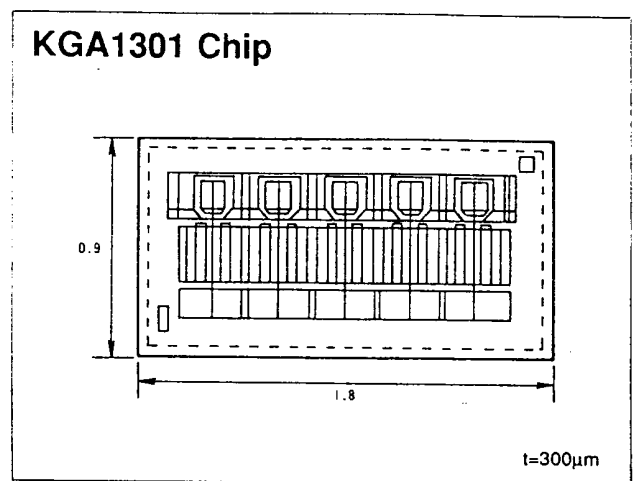
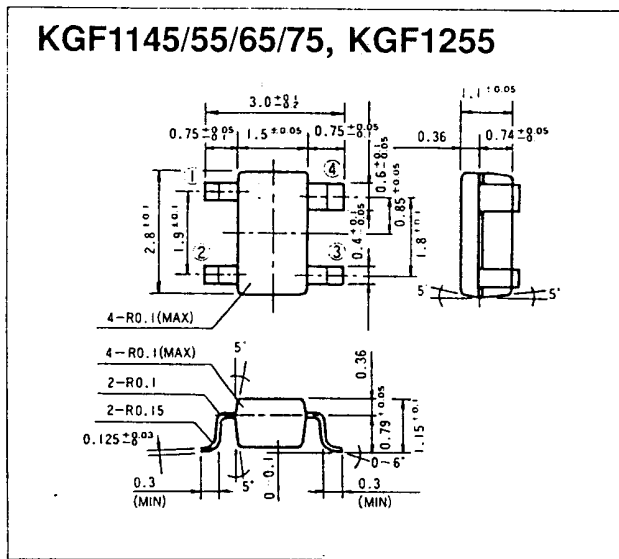
( $T_a = -30 \sim 85^\circ C$ )

**ANALOG DEVICE**  
**CIRCUIT AND PIN ASSIGNMENT**



**PIN ASSIGNMENT AND PACKAGE DRAWING**  
(Analog Device)

Type	1	2	3	4	Remarks
KGF1145	Gate	Source	Drain	GND	Self bias only
KGF1155	1 Gate	2 Gate	Drain	GND	Self bias only
KGF1165	Gate	Source	Drain	GND	④ Self bias ② Non Self bias
KGF1175	Gate	Source	Drain	GND	④ Self bias ② Non Self bias
KGF1255	Gate	Source	Drain	GND	④ Self bias ② Non Self bias



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