

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.

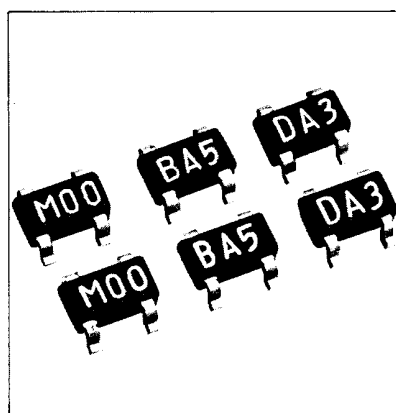
FEATURES

(Analog devices)

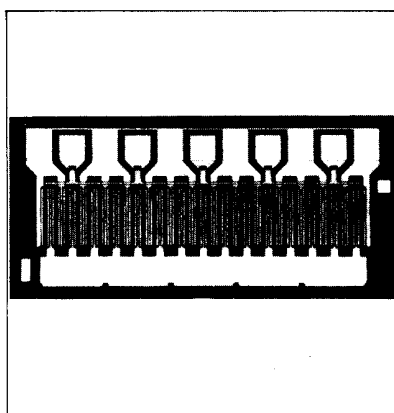
- Low Drain current Operation
- Self-bias Configuration
- Including Soura capacitor
- Mini-mold Package for Surface Mount
- High Isolation
- Low Noise Figure

(Digital device: the KGL2115, Prescaler)

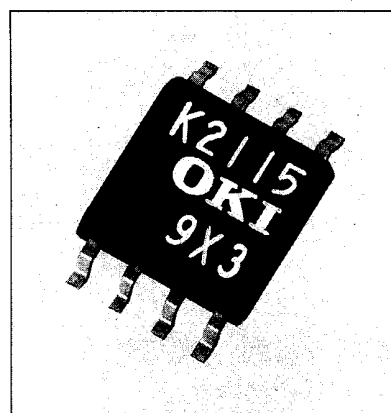
- Low Power Consumption
- Wide Operation Temperature
- 8 pin Flat Package



KGF1145/55/65/75
KGF1255



KGA1301



KGL2115

FUNCTION TABLE

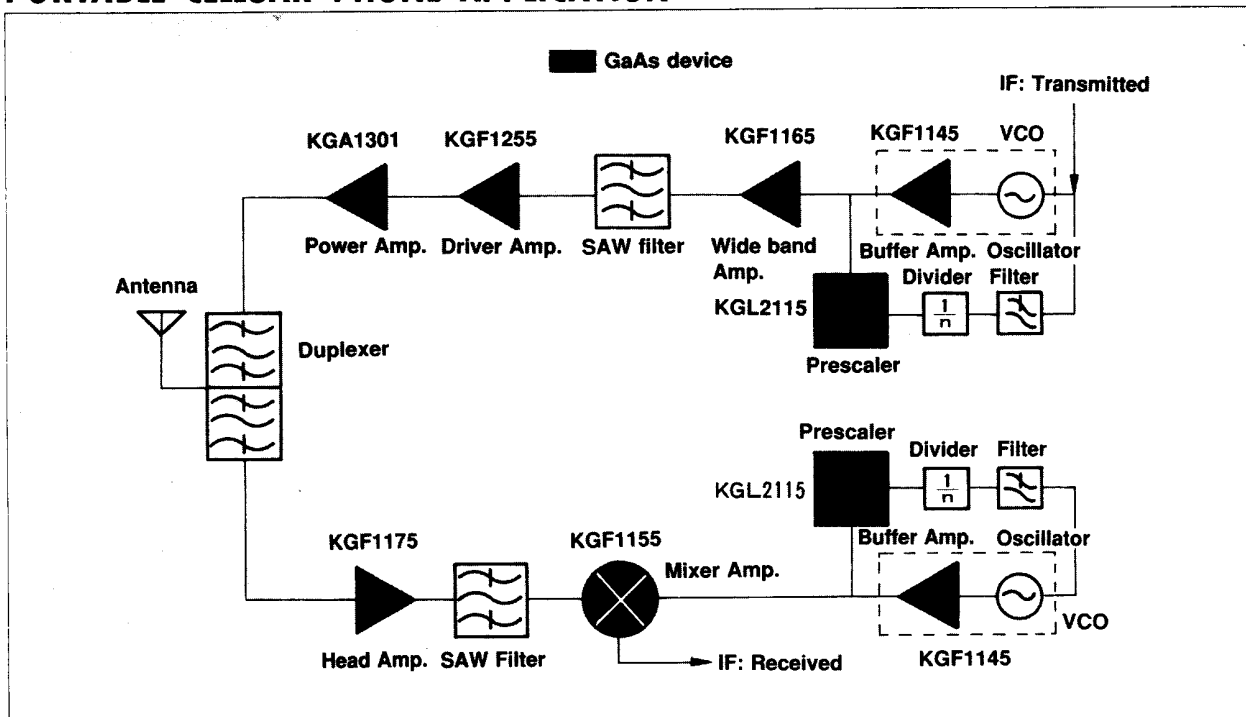
(*) Under development

	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 μm	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 μm	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 μm	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 μm	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 μm	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 μm	Chip (Package-type)*
	KGL2115	2-modulus Prescaler	$I_{DD} < 6\text{mA}$ DR 1/128 1/129 $f = 1\text{GHz}$	1 μm 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 ~ V_{DD}
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)

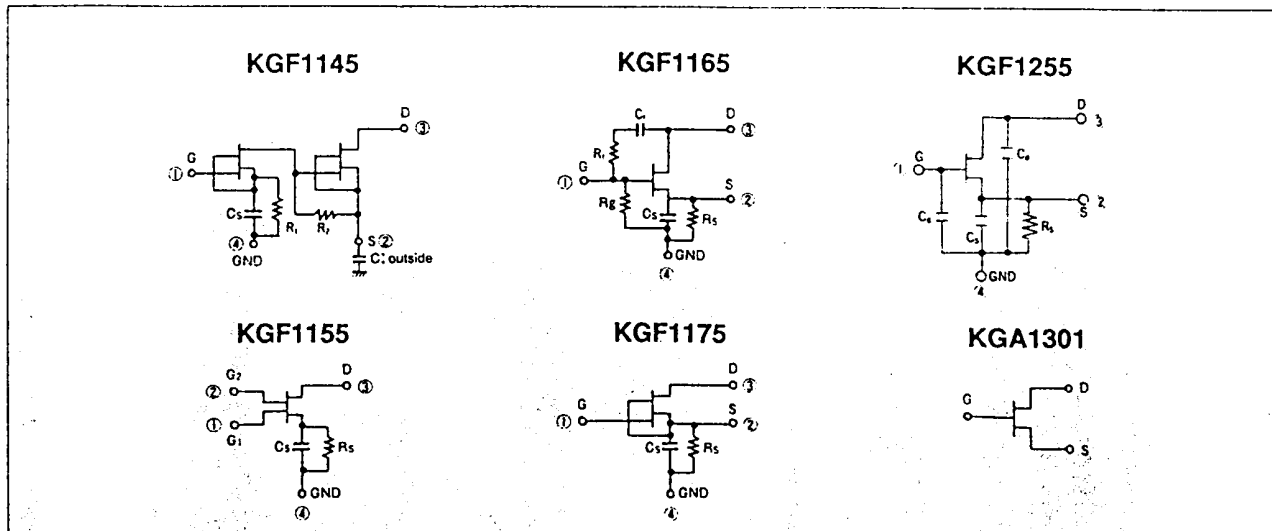
Parameter	Symbol	Unit	KGF1145	KGF1155	KGF1165	KGF1175	KGF1255	KGA1301
Gate Source Leak Current	I_{GSS}	μA	~12	~12	~40	~12	~72	~300
Gate Drain Leak Current	I_{DGO}	μA	~60	~60	~200	~60	~360	~1000
Drain Source Leak Current	I_{DSSOFF}	μA	~120	~120	~400	~120	~720	~1000
Drain Current	I_{DSS}	mA	15~	15~	40~	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	gm	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

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

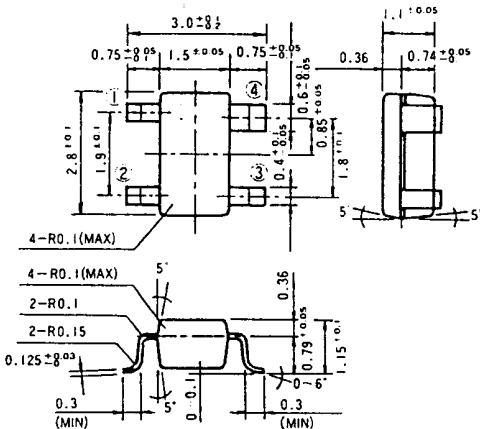
ANALOG DEVICE CIRCUIT AND PINASSIGNMENT



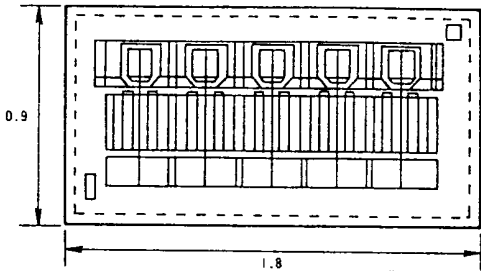
PIN ASSIGNMENT AND PACKAGE DRAWING (Analog Device)

Type	1	2	3		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

KGF1145/55/65/75, KGF1255

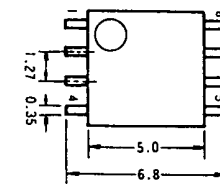


KGA1301 Chip



t=300 μ m

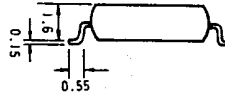
KGL2115 Prescaler



Top View (UNIT:mm)

- 1 IN
2 V_{DD}
3 NC
4 OUT
5 GND
6 MC*
7 NC
8 Reference

* MC; Mode Control



All specifications and details published are subject to change without notice

Ok! Regional Sales Offices

Northwest Area

360 Kiely Blvd.
Suite 115
San Jose, CA 95129
Tel: 408-244-9666
Fax: 408-244-8423

Southwest Area

2302 Martin St.
Suite 250
Irvine, CA 92715
Tel: 714-752-1843
Fax: 714-752-2423

5530 Corbin Avenue
Suite 355
Tarzana, CA 91356
Tel: 818-774-9091
Fax: 818-774-0189

Central Area

Three Crossroads
of Commerce
Suite 590
Rolling Meadows, IL 60008
Tel: 708-870-1400
Fax: 708-870-1659

2007 N. Collins Blvd.
Suite 303
Richardson, TX 75080
Tel: 214-690-6868
Fax: 214-690-8233

Automotive Electronics

17177 N. Laurel Park Dr.
Livonia, MI 48152
Tel: 313-464-7200
Fax: 313-464-1724

Southeast Area

7301 W. Palmetto Park Rd.
Suite 205C
Boca Raton, FL 33433
Tel: 407-394-6099
Fax: 407-395-2716

5672 Peachtree Pkwy.
Suite F
Norcross, GA 30092
Tel: 404-448-7111
Fax: 404-447-1630

Eastern Area

91 Montvale Ave.
Stoneham, MA 02180
Tel: 617-279-0293
Fax: 617-438-3608

440 Lakeside Dr.
Horsham, PA 19044
Tel: 215-674-9511
Fax: 215-674-1861

205 South Avenue
Suite 100
Poughkeepsie, NY 12601
Tel: 914-473-8044
Fax: 914-473-7069



OKI
Semiconductor

785 North Mary Avenue
Sunnyvale, California 94086-2909
Tel: 408-720-1900
Fax: 408-720-1918

OKI Semiconductor reserves the right to make changes in specifications at any time and without notice. The information furnished by OKI Semiconductor in this publication is believed to be accurate and reliable. However, no responsibility is assumed by OKI Semiconductor for its use; nor for any infringements of patents or other rights of third parties resulting from its use. No license is granted under any patents or patent rights of OKI.