DATA SHEET

O K I G a A s P R O D U C T S

KGL4205
10-Gbps D-Flip Flop IC
0.2µm Gate Length GaAs MESFET Technology

February 2000

Oki Semiconductor

Oki Semiconductor

KGL4205

10-Gbps GaAs D-Flip Flop IC

INTRODUCTION

Oki Semiconductor's KGL4205 is a 10-Gbps D-Flip Flop IC designed for ultra high-speed digital communications systems. The KGL4205 uses 0.2-µm gate length GaAs MESFETs and Oki's unique MCFF (Memory Cell type Flip Flop) technology to achieve operations of 10-GHz or more. The KGL4205 is available as a 24-pin ceramic packaged device. Due to the KGL4205's high sensitivity, capacitive coupling is recommended for IC's DA and CK connections.

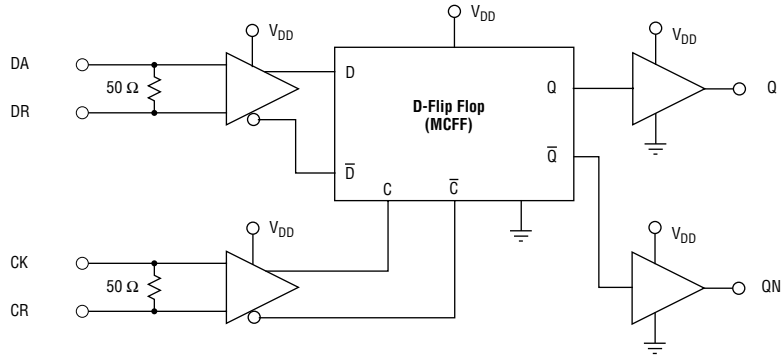
FEATURES

- High-speed operation: 10-Gbps data rate (typ)
- Low-power dissipation: 340 mW (typ.) using 2-V power-supply
- 0.2-µm gate length GaAs MESFET process
- MCFF (Memory Cell type Flip Flop) technology
- 24-pin ceramic package

APPLICATION

- High-speed optical communication systems: 10 Gbps
- High-speed test equipment

BLOCK DIAGRAM



DA	Data Input Terminals
CK	Clock Input Terminals
DR, CR	Output Reference Voltage Terminals
Q, QN	Complimentary Data Outputs
VDD	Power Supply of Internal Circuit

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Supply Voltage	V_{DD} , V_B	-0.3	2.3	V
Data, Clock Input Voltage	V_{DI} , V_{CI}	-0.3	1.5	V
Temperature at Package Base Under Bias	Ts	-45	100	°C
Storage Temperature	Tst	-45	125	°C

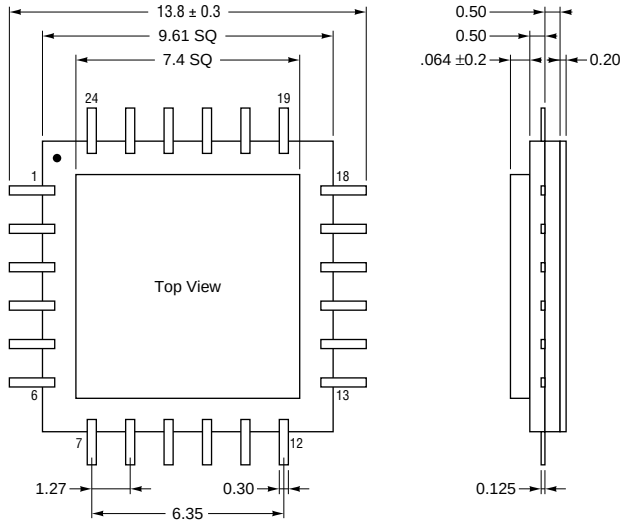
Exceeding these maximum ratings could cause immediate damage or lead to permanent deterioration of the device.

Electrical Characteristics
V_{DD} = 2 V ± 0.1 V, Ts = 0°C to 70°C

Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Data Bit Rate Range	DAR		10		Gbps
Power Dissipation	PW		0.34	0.38	W
High-Level Data, Clock Input Voltage	VIH	0.6	0.9	1.25	V
Low-Level Data, Clock Input Voltage	VIL	-0.1	0.1	0.3	V
High-Level Output Voltage (Q, QN)	VOH	0.65	0.9	1.2	V
Low-Level Output Voltage (Q, QN)	VOL	0	0.1	0.2	V
Output (Q, QN) Rise time and Fall time	TRF		30	40	ps
Phase Margin @ 10 Gbps (2^{23} -1 PRBS)	TOM		240		degree

PACKAGE DIMENSIONS

(Units: mm)



Dimension in mm.

Pin Configuration

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	GND	7	GND	13	GND	19	CR
2	Q	8	GND	14	DA	20	VDD
3	GND	9	GND	15	GND	21	VDD
4	GND	10	GND	16	GND	22	GND
5	QN	11	DR	17	CK	23	VDD
6	GND	12	DR	18	GND	24	GND

Notes:

The information contained herein can change without notice owing to product and/or technical improvements.

Please make sure before using the product that the information you are referring to is up-to-date.

The outline of action and examples of application circuits described herein have been chosen as an explanation of the standard action and performance of the product. When you actually plan to use the product, please ensure that the outside conditions are reflected in the actual circuit and assembly designs.

Oki assumes no responsibility or liability whatsoever for any failure or unusual or unexpected operation resulting from misuse, neglect, improper installation, repair, alteration or accident, improper handling, or unusual physical or electrical stress including, but not limited to, exposure to parameters outside the specified maximum ratings or operation outside the specified operating range.

Neither indemnity against nor license of a third party's industrial and intellectual property right,etc.is granted by us in connection with the use of product and/or the information and drawings contained herein. No responsibility is assumed by us for any infringement of a third party's right which may result from the use thereof.

When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges, including but not limited to operating voltage, power dissipation, and operating temperature.

The products listed in this document are intended for use in general electronics equipment for commercial applications (e.g.,office automation, communication equipment, measurement equipment, consumer electronics, etc.).These products are not authorized for use in any system or application that requires special or enhanced quality and reliability characteristics nor in any system or application where the failure of such system or application may result in the loss or damage of property or death or injury to humans. Such applications include, but are not limited to: traffic control, automotive, safety, aerospace, nuclear power control, and medical, including life support and maintenance.

Certain parts in this document may need governmental approval before they can be exported to certain countries. The purchaser assumes the responsibility of determining the legality of export of these parts and will take appropriate and necessary steps, at their own expense, for export to another country.

Oki Semiconductor reserves the right to make changes in specifications at anytime and without notice. This 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.

Oki Regional Sales Offices

Northwest Area

785 N. Mary Avenue
Sunnyvale, CA 94086
Tel: 408/720-8940
Fax: 408/720-8965

North Central Area

300 Park Blvd.
Suite 365
Itasca, IL 60143
Tel: 630/250-1313
Fax: 630/250-1414

Northeast Area

138 River Road
Shattuck Office Center
Andover, MA 01810
Tel: 978/688-8687
Fax: 978/688-8896

Southwest Area

2302 Martin Street
Suite 250
Irvine, CA 92715
Tel: 949/752-1843
Fax: 949/752-2423

Southeast Area

1590 Adamson Parkway
Suite 220
Morrow, GA 30260
Tel: 770/960-9660
Fax: 770/960-9682

Oki Web Site:

http://www.okisemi.com

For Oki Literature:

Call toll free 1-800-OKI-6388
(6 a.m. to 5 p.m. Pacific Time)

Oki Stock No: 320184-000

Oki Semiconductor

Corporate Headquarters

785 N. Mary Avenue
Sunnyvale, CA 94086-2909
Tel: 408/720-1900
Fax: 408/720-1918