



DATA SHEET

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

KGL4215
10-Gbps Decision Circuit
0.2 μ m Gate Length GaAs MESFET Technology

February 2000



Oki Semiconductor



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10-Gbps GaAs Decision Circuit

INTRODUCTION

Oki Semiconductor's KGL4215 is a 10-Gbps Decision Circuit with Limiting Amplifier and Flip Flop that is designed for ultra high-speed digital communications systems. The KGL415 uses 0.2- μm gate length GaAs MESFET and Oki's unique MCFF (Memory Cell type Flip Flop) technology to achieve operating speeds of 10-Gbps or more. The KGL4215 is available as a 24-pin ceramic packaged device. Due to the KGL4215's high sensitivity, capacitive coupling is recommended for the IC's interface.

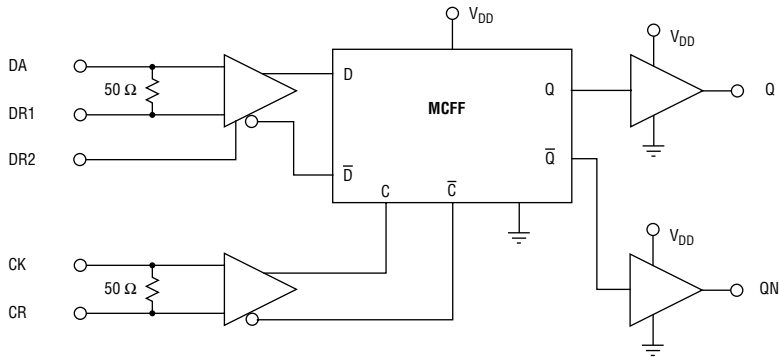
FEATURES

- High-speed operation: 10-Gbps data rate (min)
- Low-power dissipation: 600 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 Terminal
 CK Clock Input Terminal
 DR1, CR Reference Voltage Terminals. Usually D1R and DR are connected to ground through a capacitor (0.1 μ F).
 DR2 Reference Voltage Bias Terminal
 Q, QN Complimentary Data Output Terminals
 VDD Power Supply of Internal Circuit

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Supply Voltage	V_{DD}	-0.3	2.3	V
Data Input Voltage	V_{DI}, V_{CI}	-0.3	1.5	V
Temperature at Package Base under Bias	T_s	-45	100	$^{\circ}$ C
Storage Temperature	T_{st}	-45	125	$^{\circ}$ C

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

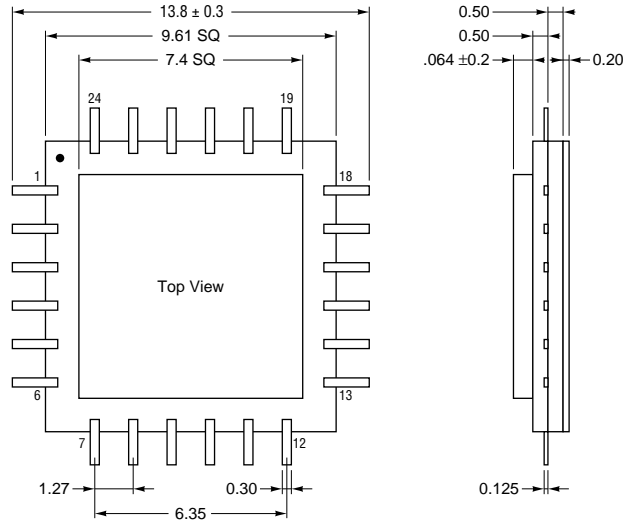
Electrical Characteristics

$V_{DD} = 2 \text{ V} \pm 0.1 \text{ V}$, $T_s = 0^{\circ}\text{C}$ to 70°C

Parameter	Symbol	Min.	Typ.	Max.	Units
Maximum Operating Data Bit Rate	DAR	10			Gbps
Power Dissipation	PW		0.6	0.75	W
Clock Input Voltage Swing	CIS	0.4		0.9	V _{pp}
Data Input Voltage Swing	DIS	0.1		0.9	V _{pp}
Output Voltage Swing	DOS	0.8	1.0	1.2	V _{pp}
Output (Q, QN) Rise Time and Fall Time	TRF		30	40	ps
Phase Margin @ 10 Gbps (2^{23} -1 PRBS)	TPM	250			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	DR2	17	CK	23	VDD
6	GND	12	DR1	18	GND	24	GND

Notes:

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