

Oki Semiconductor

Pulsed Laser Diode Modules

OL3204N, OL395N, OL399N, OL594N, OL595N, OL595N, OL5204N, and OL6204N

DESCRIPTION

Oki's pulsed laser diode modules consists of several families, ranging from 1300 nm to 1625 nm in wavelength.

The OL3204N/P20 family are 1310-nm pulsed laser diodes with an attached single-mode fiber in a 14-pin DIL. The OL395N/P20 family are 1310-nm pulsed laser diodes which are PCB mountable, with a flange coaxial package and a single-mode fiber.

The OL399N/P20 family are 1300-nm pulsed laser diodes which are PCB mountable, with a flange coaxial package and a multi-mode fiber.

The OL594N/P20 and OL595N/P20 families are a 1550-nm pulsed laser diodes in a coaxial package with a single-mode fiber. The OL5204/P20 family are 1550-nm pulsed laser diodes with a single-mode fiber pigtail attached in a 14-pin DIP.

The OL6204N/AP10 family are 1625-nm pulsed strained multi-quantum-well (MQW) laser diodes in a 14-pin DIL package with single-mode fiber.

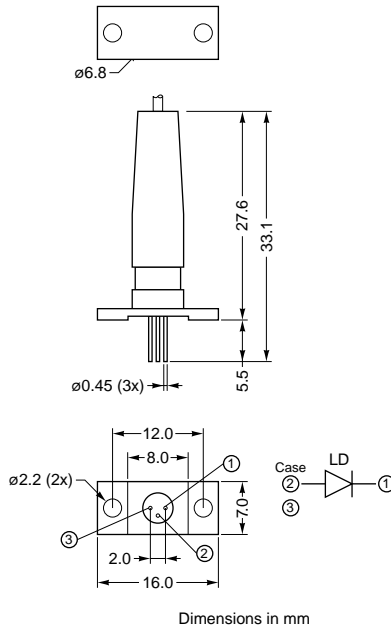
FEATURES

- S-MQW construction
- High efficiency laser diode family
- Coaxial or DIP with TEC cooler
- Single-mode or multi-mode fiber
- Applications:
 - OTDR
 - Fault-locator portable instruments

Family Characteristics

Part Number	λ (nm)	Package Characteristics	PF (mW)	Iop Max. (mA)	Operating Temperature(°C)	Package Type
OL3204N-40/P20	1310	14-pin DIL with Single-Mode Fiber	40	500	-20 ~ +65	204
OL3204N-60/P20			60	550		
OL3204N-80/P20			80	500		
OL3204N-100/P20			100	750		
OL3204N-120/P20			120	800		
OL395N-20/P20			PCB Mountable Flange Coaxial Package with Single-mode Fiber	20		
OL395N-40/P20	40	700				
OL395N-60/P20	60	800				
OL395N-80/P20	80	800				
OL399N-40/P20	1300	PCB Mountable Coaxial Package with Multi-mode Fiber	40	350	-20 ~ +60	99
OL399N-60/P20			60	380		
OL399N-80/P20			80	550		
OL399N-150/P20			150	750		
OL594N-20/P20	1550	Coaxial Package with Single-Mode Fiber	20	500	-20 ~ +60	94
OL594N-40/P20			40	750		
OL594N-60/P20			60	800		
OL595N-20/P20			20	500	-20 ~ +60	95
OL595N-40/P20			40	750		
OL595N-60/P20			60	800		
OL5204-40/P20	1625	14-pin DIL with Single-Mode Fiber	40	600	-20 ~ +65	204
OL5204-60/P20			60	600		
OL5204-80/P20			80	600		
OL5204-100/P20			100	800		
OL5204-120/P20			120	1000		
OL6204A-50/P20			14-pin DIP, 9mm height ThermoElectric Cooler with Attached Single-Mode Fiber Pigtail	55		
OL6204A-80/P20	96	800				
OL6204A-100/P20	110	1000				

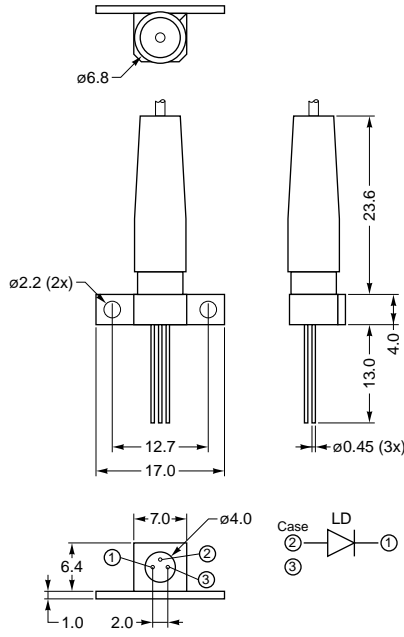
PACKAGE AND PIN CONFIGURATION - PACKAGE TYPE 94



Fiber Pigtail Specification – Package Type 94

Parameter	Specifications	Unit
Type	Single Mode	-
Mode Field Diameter	10 ± 1	μm
Cladding Diameter	125 ± 2	μm
Jacket Diameter	900	μm
Length	1 (Min.)	m
Connector	FC	-

PACKAGE AND PIN CONFIGURATION - PACKAGE TYPE 95

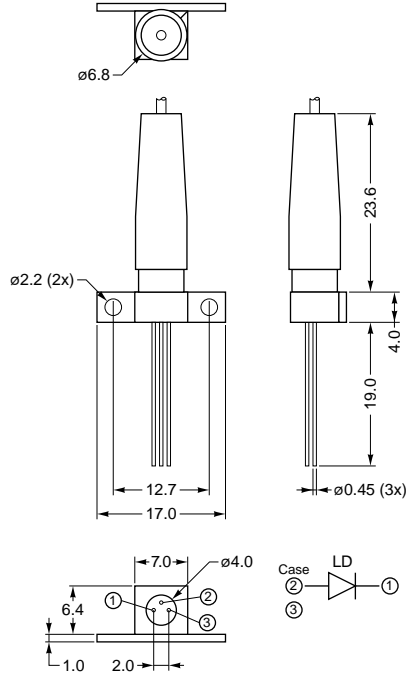


Dimensions in mm

Fiber Pigtail Specification – Package Type 95

Parameter	Specifications	Unit
Type	Single Mode	-
Mode Field Diameter	10 ± 1	μm
Cladding Diameter	125 ± 2	μm
Jacket Diameter	900	μm
Length	1 (Min.)	m
Connector	FC	-

PACKAGE AND PIN CONFIGURATION – PACKAGE TYPE 99

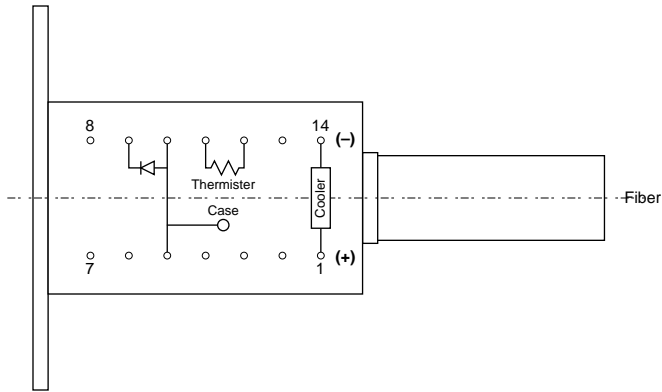
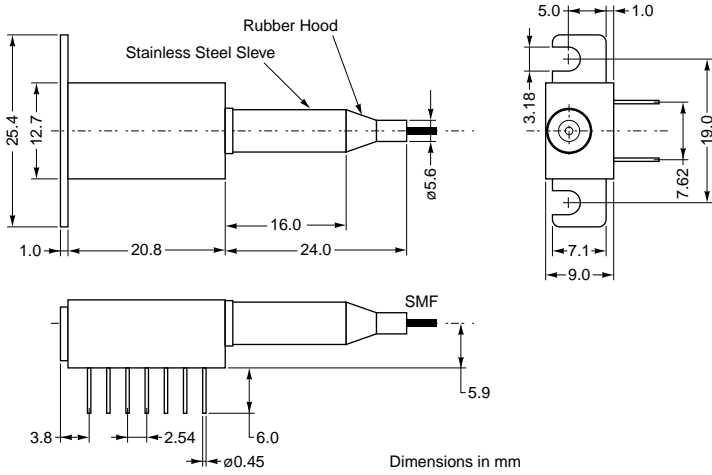


Dimensions in mm

Fiber Pigtail Specification – Package Type 99

Parameter	Specifications	Unit
Type	Multi Mode	–
Mode Field Diameter	50 \pm 1	μ m
Cladding Diameter	125 \pm 2	μ m
Jacket Diameter	900	μ m
Length	1 (Min.)	m
Connector	FC-PC	–

PACKAGE AND PIN CONFIGURATION - PACKAGE TYPE 204



Fiber Pigtail Specification – Package Type 204

Parameter	Specifications	Unit
Type	Single Mode	-
Mode Field Diameter	10 ±1	μm
Cladding Diameter	125 ±2	μm
Jacket Diameter	900	μm
Length	1 (Min.)	m
Connector	FC ^[1]	-

1. FC/PC for OL6204 only.

ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Ta = 25 °C, unless otherwise noted)

Parameter	Notes	Symbol	Ratings	Unit
Fiber Output Power	For OL395N-20, OL594N-20, and OL595N-20.	P _F	30	mW
	For OL395N-40, OL594N-40, OL595N-40, and OL3204N-xx.		48	
	For OL6204N-50.		55	
	For OL594N-60 and OL595N-60.		65	
	For OL395N-60 and OL399N-60.		70	
	For OL395N-80 and OL399N-80.		90	
	For OL6204N-80.		96	
	For OL6204N-100.		110	
	For OL399N-150.		160	
Laser Diode Reverse Voltage	—	V _r (LD)	2	V
Laser Diode Forward Current ^[1]	For OL6204N-50, -80, OL395N-40, -60, -80, OL399N-150, OL595N-xx, and OL594N-xx.	I _f (LD)	800	mA
	For OL399N-40, -60.		400	
	For OL399N-80.		600	
	For all other configurations.		700	
Cooler Current	1	I _C	1.0	A
Operating Temperature	4,5	T _{OPR}	-20 ~ +65 ^[2]	°C
Storage Temperature	2	T _{STC}	-40 ~ +70	°C
Soldering (max. 10 sec)	3	T _{SLD}	260 ^[3]	°C

1. Pulse width ≤ 10μs, duty ≤ 1%.
2. Operating temperature is -20 to +60 °C for OL395N-xx, OL399N-xx, and OL594N-20, and OL595N-40.
3. Soldering temperature applies only to OL395N-xx, OL399N-xx, OL594N-xx, and OL595N-xx.

Optical and Electrical Characteristics – OL3204N
 (T_{LD} = 25 °C, Pulse Width = 10μs, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I _{TH}	P _F = 40 mW	–	25	50	mA
		P _F = 60 mW	–	40	70	mA
		P _F = 80 mW	–	–	–	mA
		P _F = 100 mW	–	–	–	mA
		P _F = 120 mW	–	–	–	mA
Operating Current	I _{OP}	P _F = 40 mW	–	–	500	mA
		P _F = 60 mW	–	400	550	mA
		P _F = 80 mW	–	–	–	mA
		P _F = 100 mW	–	–	–	mA
		P _F = 120 mW	–	–	–	mA
Operating Voltage	V _{OP}	P _F = 40, 60, 80, 100, 120 mW	–	1.7	3	V
Center Wavelength	λ _C	P _F = 40, 60, 80, 100, 120 mW	1290	1310	1330	nm
Spectral Width	σ	P _F = 40, 60, 80, 100, 120 mW RSMx1	–	–	10	nm
Rise Time	τ _r	I _{BIAS} = I _{TH} P _F = 1 mW, 10 ~ 90%	–	–	1	ns
Fall Time	τ _f		–	–	1	ns
Cooler Capacity	ΔT		40			°C
Cooler Current	I _C	Δ _T = 40 °C, P _F = 40 mW	–	–	1.0	A
		Δ _T = 40 °C, P _F = 60 mW	–	–	1.2	A
		Δ _T = 40 °C, P _F = 80 mW	–	–	1.2	A
		Δ _T = 40 °C, P _F = 100 mW	–	–	1.2	A
		Δ _T = 40 °C, P _F = 120 mW	–	–	1.2	A
Cooler Voltage	V _C	Δ _T = 40 °C, P _F = 40 mW	–	–	2.0	V
		Δ _T = 40 °C, P _F = 60 mW	–	–	3.0	V
		Δ _T = 40 °C, P _F = 80 mW	–	–	3.0	V
		Δ _T = 40 °C, P _F = 100 mW	–	–	3.0	V
		Δ _T = 40 °C, P _F = 120 mW	–	–	3.0	V
Thermistor Resistance	R _{TH}	–	–	10	–	kΩ

Optical and Electrical Characteristics – OL395N
($T_{LD} = 25\text{ }^{\circ}\text{C}$, Pulse Width = $10\mu\text{s}$, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I_{TH}	$P_F = 20\text{ mW}$		40	70	mA
		$P_F = 40\text{ mW}$		40	70	mA
		$P_F = 60\text{ mW}$		40	70	mA
		$P_F = 80\text{ mW}$		25	50	mA
Operating Current	I_{OP}	$P_F = 20\text{ mW}$	–	300	600	mA
		$P_F = 40\text{ mW}$	–	400	700	mA
		$P_F = 60\text{ mW}$	–	600	800	mA
		$P_F = 80\text{ mW}$	–	650	800	mA
Operating Voltage	V_{OP}	$P_F = 20\text{ mW}$	–	1.7	3	V
		$P_F = 40\text{ mW}$	–	1.7	3	V
		$P_F = 60\text{ mW}$	–	2	3	V
		$P_F = 80\text{ mW}$	–	2	3	V
Center Wavelength	λ_c	$P_F = 20, 40, 60, 80\text{ mW}$	1290	1310	1330	nm
Spectral Width	σ	$P_F = 20, 40, 60, 80\text{ mW}$ RSMx1	–	–	10	nm
Rise Time	τ_r	$I_{BIAS} = I_{TH}$ $P_F = 1\text{mW}, 10\text{-}90\%$	–	–	3*	ns
Fall Time	τ_f		–	–	3*	ns

* Rise and fall time for OL395N-80 is 1 ns Maximum

Optical and Electrical Characteristics – OL399N
($T_{LD} = 25\text{ }^{\circ}\text{C}$, Pulse Width = $10\mu\text{s}$, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I_{TH}	–	–	–	70	mA
Operating Current	I_{OP}	$P_F = 40\text{ mW}$	–	–	350	mA
		$P_F = 60\text{ mW}$	–	–	380	mA
		$P_F = 80\text{ mW}$	–	–	550	mA
		$P_F = 150\text{ mW}$	–	–	750	mA
Operating Voltage	V_{OP}	$P_F = 40\text{ mW}$	–	–	2.5	V
		$P_F = 60\text{ mW}$	–	–	2.5	V
		$P_F = 80\text{ mW}$	–	–	2.5	V
		$P_F = 150\text{ mW}$	–	–	3	V
Center Wavelength	λ_c	$P_F = 40, 60, 80, 150\text{ mW}$	1280	1300	1320	nm
Spectral Width	σ	$P_F = 40, 60, 80, 150\text{ mW}$ RSMx1	–	–	10	nm
Rise Time	τ_r	$I_{BIAS} = I_{TH}$ $P_F = 1\text{mW}, 10\text{-}90\%$	–	–	3	ns
Fall Time	τ_f		–	–	3	ns

Optical and Electrical Characteristics – OL594N and OL595N
 ($T_{LD} = 25\text{ }^{\circ}\text{C}$, Pulse Width = $10\mu\text{s}$, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I_{TH}	$P_F = 20\text{ mW}$	–	–	75	mA
		$P_F = 40\text{ mW}$	–	55	75	
		$P_F = 60\text{ mW}$	–	40	70	
Operating Current	I_{OP}	$P_F = 20\text{ mW}$	–		500	mA
		$P_F = 40\text{ mW}$	–	450	750	mA
		$P_F = 60\text{ mW}$	–	600	800	mA
Operating Voltage	V_{OP}	$P_F = 20\text{ mW}$	–	1.7	3	V
		$P_F = 40\text{ mW}$	–	1.7	3	V
		$P_F = 60\text{ mW}$	–	2	3	V
Center Wavelength	λ_c	$P_F = 20, 40, 60\text{ mW}$	1530	1550	1570	nm
Spectral Width	σ	$P_F = 20, 40, 60\text{ mW}$ RSMx1	–	–	10	nm
Rise Time	τ_r	$I_{BIAS} = I_{TH}$ $P_F = 1\text{ mW}, 10\text{-}90\%$	–	–	3*	ns
Fall Time	τ_f		–	–	3*	ns

* Rise and fall time for OL595N-60 is 1 ns maximum.

Optical and Electrical Characteristics – OL5204N
($T_{LD} = 25\text{ }^{\circ}\text{C}$, Pulse Width = $10\mu\text{s}$, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I_{TH}	$P_F = 40\text{ mW}$	–	55	75	mA
		$P_F = 60\text{ mW}$	–	55	75	mA
		$P_F = 80\text{ mW}$	–	55	75	mA
		$P_F = 100\text{ mW}$	–	20	50	mA
		$P_F = 120\text{ mW}$	–	30	50	mA
Operating Current	I_{OP}	$P_F = 40\text{ mW}$	–	350	600	mA
		$P_F = 60\text{ mW}$	–	350	600	mA
		$P_F = 80\text{ mW}$	–	350	600	mA
		$P_F = 100\text{ mW}$	–	700	800	mA
		$P_F = 120\text{ mW}$	–	800	1000	mA
Operating Voltage	V_{OP}	$P_F = 40,60,80\text{ mW}$	–	1.7	3	V
		$P_F = 100\text{ mW}$	–	–	3	
		$P_F = 120\text{ mW}$	–	–	3	
Center Wavelength	λ_c	$P_F = 40, 60, 80, 100, 120\text{ mW}$	1530	1550	1570	nm
Spectral Width	σ	$P_F = 40, 60, 80, 100, 120\text{ mW}$ RSMx1	–	–	10	nm
Rise Time	τ_r	$I_{BIAS} = I_{TH}$ $P_F = 1\text{ mW}, 10\text{-}90\%$	–	–	1	ns
Fall Time	τ_f		–	–	1	ns
Cooler Capacity	ΔT	$P_F = 40, 60, 80, 100, 120\text{ mW}$	40	–	–	$^{\circ}\text{C}$
Cooler Current	I_c	$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 40\text{ mW}$	–	–	1.2	A
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 60\text{ mW}$	–	–	1.2	A
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 80\text{ mW}$	–	–	1.2	A
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 100\text{ mW}$	–	–	1	A
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 120\text{ mW}$	–	–	1	A
Cooler Voltage	V_c	$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 40\text{ mW}$	–	–	3	V
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 60\text{ mW}$	–	–	3	V
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 80\text{ mW}$	–	–	3	V
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 100\text{ mW}$	–	–	2	V
		$\Delta_T = 40\text{ }^{\circ}\text{C}, P_F = 120\text{ mW}$	–	–	2	V
Thermistor Resistance	R_{TH}	–	–	10	–	$k\Omega$

Optical and Electrical Characteristics - OL6204N
 (T_{LD} = 25 °C, Pulse Width = 10μs, Duty Cycle = 1%)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Threshold Current	I _{TH}	P _F = 50 mW	-	70	100	mA
		P _F = 80 mW	-	25	50	mA
		P _F = 100 mW	-	20	50	mA
Operating Current	I _{OP}	P _F = 50 mW	-	550	800	mA
		P _F = 80 mW	-	-	800	mA
		P _F = 100 mW	-	700	1000	mA
Operating Voltage	V _{OP}	P _F = 50 mW	-	2	3	V
		P _F = 80 mW	-	2	4	V
		P _F = 100 mW	-	-	3	V
Center Wavelength	λ _c	P _F = 50, 80, 100 mW	1615	1625	1635	nm
Spectral Width	σ	P _F = 50, 80, 100 mW RSMx1	-	-	10	nm
Rise Time	τ	I _{BIAS} = I _{TH} P _F = 1mW, 10-90%	-	-	1	ns
Fall Time	τ _f		-	-	1	ns
Cooler Capacity	ΔT	P _F = 50 mW	40	-	-	°C
Cooler Current	I _c	ΔT = 40 °C, P _F = 50 mW	-	-	1.2	A
		ΔT = 40 °C, P _F = 80 mW	-	-	1.0	A
		ΔT = 40 °C, P _F = 100 mW	-	-	1.0	A
Cooler Voltage	V _c	ΔT = 40 °C, P _F = 50 mW	-	-	3.0	V
		ΔT = 40 °C, P _F = 80 mW	-	-	2.0	V
		ΔT = 40 °C, P _F = 100 mW	-	-	2.0	V
Thermistor Resistance	R _{TH}	-	-	10	-	kΩ

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.

Copyright 1995 OKI SEMICONDUCTOR

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

Southwest Area

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

Central Area

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

Southeast Area

1590 Adamson Parkway
Suite 220
Morrow, GA 30260
Tel: 404/960-9660
Fax: 404/960-9682

Eastern Area

Shattuck Office Center
138 River Road
Andover, MA 01810
Tel: 508/688-8687
Fax: 508/688-8896

Automotive Electronics

17177 N. Laurel Park Drive
Suite 433
Livonia, MI 48152
Tel: 313/464-7200
Fax: 313/464-1724

FOR OKI LITERATURE:

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

Oki Stock No: 010032-001



Oki Semiconductor

Corporate Headquarters

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