

Optical Components

OL5450L-2, OL5451L-2, OL5453L-2

Series

2mW Coaxial DFB Laser Diode Modules

1. DESCRIPTION

The OL5450L-2, OL5451L-2, OL5453L-2 series consist of an MQW-DFB laser diode, a monitor PD, a single-stage optical isolator, a single-mode fiber and a coaxial package.

These modules are coaxial DFB Laser Diode Modules for 2.5Gbit/s transmission with high power at high temperature.

2. FEATURES

- Fiber output power: $P_f=2.0\text{mW}$
- Wide operating temperature range: $T_c=0$ to $+85^\circ\text{C}$
- Side mode suppression: 32dB
- Multi-quantum-well (MQW) DFB structure
- Internal monitor PD for power control
- Built-in single-stage optical isolator
- Coaxial Package
- No TEC required

3. APPLICATION

- OC-48, STM-16

4.OPTICAL AND ELECTRICAL CHARACTERISTICS

(Tc = 0 to +85°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Fiber Output Power	Pf	CW	2.0			mW
Fiber Output Power (Average)	PAVG	Modulated	1.0			mW
Threshold Current	Ith	Tc=+25°C ,CW,BOL		7	15	mA
		Tc=+85°C,CW,BOL		25	40	
		Tc=+85°C,CW,EOL			1.5*Ith-BOL	
Operation Current	Iop	Pf=2.0mW,CW		70	110	mA
Slope efficiency	η	Pf=2.0mW, CW,Tc=+25°C	0.05	0.073		W/A
Modulation Current	Imod	Pf=2.0mW,CW,Tc=+25°C		30	40	mA
Peak Wavelength	λp	Pf=2.0mW,CW	1500		1580	nm
Spectral Width	Δλ	Pf=2.0mW,CW,-20dB		0.2	0.5	nm
Side-mode suppression ratio	SMSR	Pf=2.0mW,CW	32	40		dB
Rise/Fall times	Tr/Tf	PAVG=1.0mW,20-80% ExR*=9dB		0.09	0.15	ns
Relative Intensity Noise	RIN	Pf=2.0mW,CW		-140	-130	dB/Hz
Monitor Current	Im	Pf=2.0mW,CW, Tc=+25°C	50	400	2200	μA
Tracking Error**	TRE	Pf=2.0mW,CW	-1	---	+1	dB

*ExR=Extinction ratio

**TRE=10*log{(Pf@0~+85°C)/(Pf@25°C)} at Im hold(@25°C)

5.ABSOLUTE MAXIMUM RATING

(Tc = +25°C, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Fiber Output Power	Pf	4	mW
LD Reverse Voltage	Vrl	2	V
Monitor PD Forward Current	Ifd	10	mA
Monitor PD Reverse Current	Ird	3	mA
Monitor PD Reverse Voltage	Vrd	30	V
Operating Case Temperature (Tc)	Tc	0 to +85	°C
Storage Temperature	Tstg	-40 to +85	°C
Lead Soldering Temperature (10s)	-	260	°C

6.CONNECTOR AND FIBER SPECIFICATIONS

Parameter	Specifications	Unit
Type	SM	---
Mode Field Diameter	9+/-1	μm
Cladding Diameter	125+/-2	μm
Jacket Diameter	900	μm
Length	1(Min)	m
Connector Type	FC/SC/LC/MU/MU-J	---

7.ORDERING INFORMATION

OL545 0 L – 2 – AF SC

Pin Assignment

0: C type

1: A type

3: B type

(See P.4)

Flange type

AF: Angled Flange

SF: Straight Flange

NF: No Flange

Connector type

SC: SC Connector

FC: FC Connector

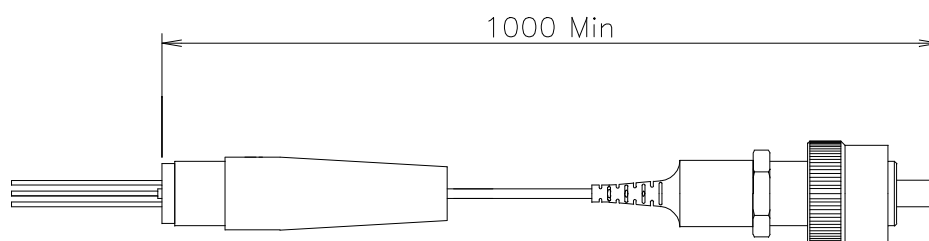
LC: LC Connector

MU: MU Connector

MUJ: MU-J Connector

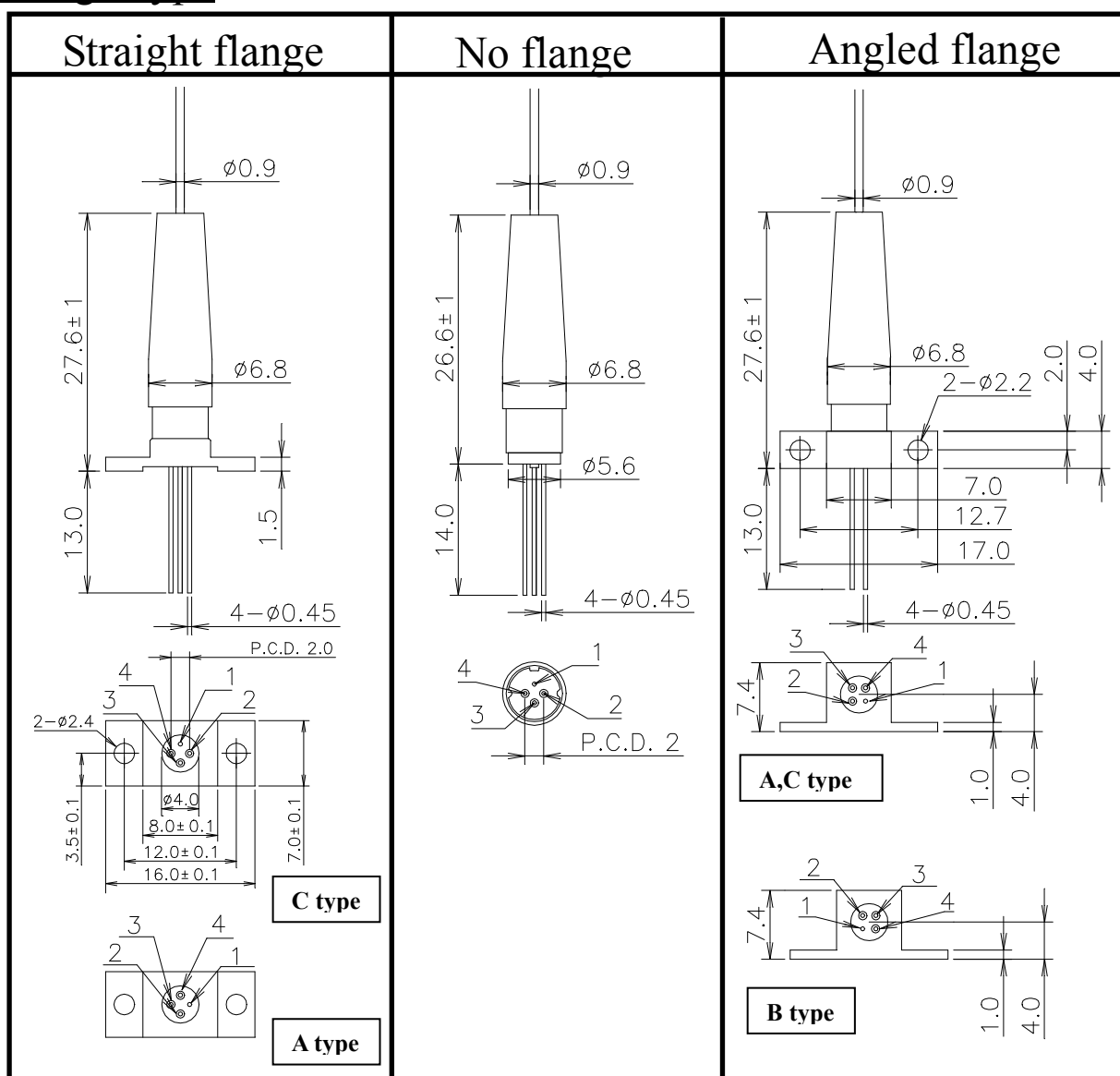
8.OUTLINE DRAWING

Length (mm)



Drawing No: JOG-01146 Rev.5

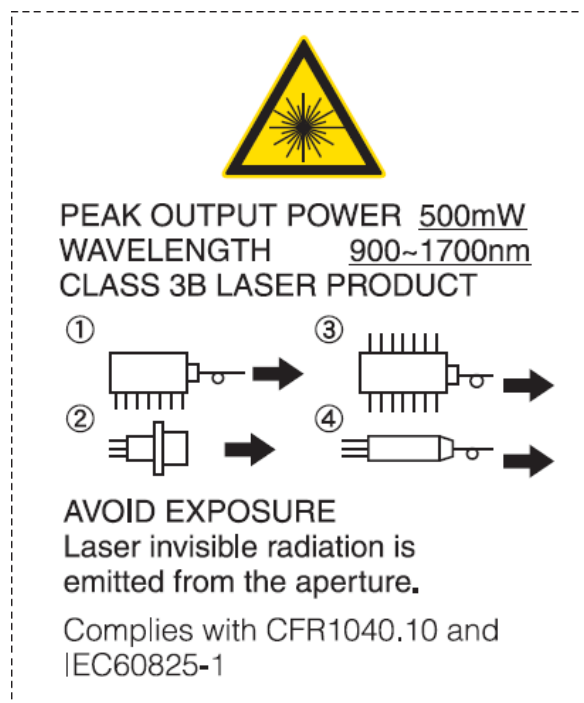
ALL DIMENSIONS IN MILLIMETERS

Flange TypePin Assignment

OL5450L (C type)	OL5451L (A type)	OL5453L (B type)																																				
<table><tr><th colspan="2">PIN configuration</th></tr><tr><th colspan="2">Assignment</th></tr><tr><td>1</td><td>CASE</td></tr><tr><td>2</td><td>LD cathode</td></tr><tr><td>3</td><td>PD anode</td></tr><tr><td>4</td><td>LD anode PD cathode</td></tr></table>	PIN configuration		Assignment		1	CASE	2	LD cathode	3	PD anode	4	LD anode PD cathode	<table><tr><th colspan="2">PIN configuration</th></tr><tr><th colspan="2">Assignment</th></tr><tr><td>1</td><td>LD anode (CASE)</td></tr><tr><td>2</td><td>LD cathode</td></tr><tr><td>3</td><td>PD cathode</td></tr><tr><td>4</td><td>PD anode</td></tr></table>	PIN configuration		Assignment		1	LD anode (CASE)	2	LD cathode	3	PD cathode	4	PD anode	<table><tr><th colspan="2">PIN configuration</th></tr><tr><th colspan="2">Assignment</th></tr><tr><td>1</td><td>LD anode (CASE)</td></tr><tr><td>2</td><td>PD anode</td></tr><tr><td>3</td><td>PD cathode</td></tr><tr><td>4</td><td>LD cathode</td></tr></table>	PIN configuration		Assignment		1	LD anode (CASE)	2	PD anode	3	PD cathode	4	LD cathode
PIN configuration																																						
Assignment																																						
1	CASE																																					
2	LD cathode																																					
3	PD anode																																					
4	LD anode PD cathode																																					
PIN configuration																																						
Assignment																																						
1	LD anode (CASE)																																					
2	LD cathode																																					
3	PD cathode																																					
4	PD anode																																					
PIN configuration																																						
Assignment																																						
1	LD anode (CASE)																																					
2	PD anode																																					
3	PD cathode																																					
4	LD cathode																																					

Drawing No: JOG-01146 Rev.5

9. SAFETY INFORMATION ON THIS PRODUCT



Warning Laser Beam	A laser beam is emitted from this laser diode during operation. The invisible or visible laser beam, directly or indirectly, may cause injury to the eye or loss of eyesight. Do not look directly into the laser beam. Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Product	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled, ingested or swallowed. Do not destroy or burn the product. Do not crush or chemically dissolve the product. Do not put the product in the mouth. Observe related laws and company regulations when discarding this product. The product should be excluded from general industrial waste or household garbage.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

All specifications described herein are subject to change without notice.

Notice

No copying or reproduction of this document, in part or in whole, is permitted without the consent of LAPIS Semiconductor Co., Ltd.

The content specified herein is subject to change for improvement without notice.

The content specified herein is for the purpose of introducing LAPIS Semiconductor's products (hereinafter "Products"). If you wish to use any such Product, please be sure to refer to the specifications, which can be obtained from LAPIS Semiconductor upon request.

Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

Great care was taken in ensuring the accuracy of the information specified in this document. However, should you incur any damage arising from any inaccuracy or misprint of such information, LAPIS Semiconductor shall bear no responsibility for such damage.

The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. LAPIS Semiconductor does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by LAPIS Semiconductor and other parties. LAPIS Semiconductor shall bear no responsibility whatsoever for any dispute arising from the use of such technical information.

The Products specified in this document are intended to be used with general-use electronic equipment or devices (such as audio visual equipment, office-automation equipment, communication devices, electronic appliances and amusement devices).

The Products specified in this document are not designed to be radiation tolerant.

While LAPIS Semiconductor always makes efforts to enhance the quality and reliability of its Products, a Product may fail or malfunction for a variety of reasons.

Please be sure to implement in your equipment using the Products safety measures to guard against the possibility of physical injury, fire or any other damage caused in the event of the failure of any Product, such as derating, redundancy, fire control and fail-safe designs. LAPIS Semiconductor shall bear no responsibility whatsoever for your use of any Product outside of the prescribed scope or not in accordance with the instruction manual.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). LAPIS Semiconductor shall bear no responsibility in any way for use of any of the Products for the above special purposes. If a Product is intended to be used for any such special purpose, please contact a ROHM sales representative before purchasing.

If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.

Copyright 2008 - 2011 LAPIS Semiconductor Co., Ltd.

Drawing No: JOG-01146 Rev.5