
**OL4450L-2-Wnnn,OL4451L-2-Wnnn
OL4453L-2-Wnnn,OL5450L-2-Wnnn
OL5451L-2-Wnnn,OL5453L-2-Wnnn
OL6450L-2-Wnnn,OL6451L-2-Wnnn
OL6453L-2-Wnnn Series(W147-W161)**

2mWCoaxial DFB Laser Diode Modules

1. DESCRIPTION

The OL4450L-2-Wnnn, OL4451L-2-Wnnn, OL4453L-2-Wnnn, OL5450L-2-Wnnn, OL5451L-2-Wnnn, OL5453L-2-Wnnn, OL6450L-2-Wnnn, OL6451L-2-Wnnn, OL6453L-2-Wnnn 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 CWDM 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

- CWDM

OKI Electronics Components

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) | P _{AVG} | Modulated | 1.0 | | | mW | |
| Threshold Current | I _{th} | Tc=+25°C,CW,BOL | | 7 | 15 | mA | |
| | | Tc=+85°C,CW,BOL | | 25 | 40 | | |
| | | Tc=+85°C,CW,EOL | | | 1.5*I _{th} -BOL | | |
| Operation Current | I _{op} | 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 | I _{mod} | Pf=2.0mW,CW,Tc=+25°C | | 30 | 40 | mA | |
| Peak Wavelength | λ _p | Pf=2.0mW, CW Tc=25°C | OL445xL-2-W147 | 1467 | 1470 | 1473 | nm |
| | | | OL445xL-2-W149 | 1487 | 1490 | 1493 | |
| | | | OL545xL-2-W151 | 1507 | 1510 | 1513 | |
| | | | OL545xL-2-W153 | 1527 | 1530 | 1533 | |
| | | | OL545xL-2-W155 | 1547 | 1550 | 1553 | |
| | | | OL545xL-2-W157 | 1567 | 1570 | 1573 | |
| | | | OL545xL-2-W159 | 1587 | 1590 | 1593 | |
| OL645xL-2-W161 | 1607 | 1610 | 1613 | | | | |
| 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 | P _{AVG} =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 | I _m | Pf=2.0mW,CW,Tc=+25°C | 50 | 400 | 2200 | μA | |
| Tracking Error** | TRE | Pf=2.0mW,CW | -1 | --- | +1 | dB | |
| Dispersion Penalty*** | DP | - | | | 2 | dB | |

*ExR=Extinction ratio

TRE=10*log{(Pf@0~+85°C)/(Pf@25°C)} at I_m hold(@25°C)*For OLx45xL-2-Wnnn-xxxxL (See P.4) after Corning SMF-28™ 80km transmission
Test condition: ExR=9dB, NRZ, PRBS=2²³-1, @10⁻¹⁰

OKI Electronics Components**5.ABSOLUTE MAXIMUM RATING**

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

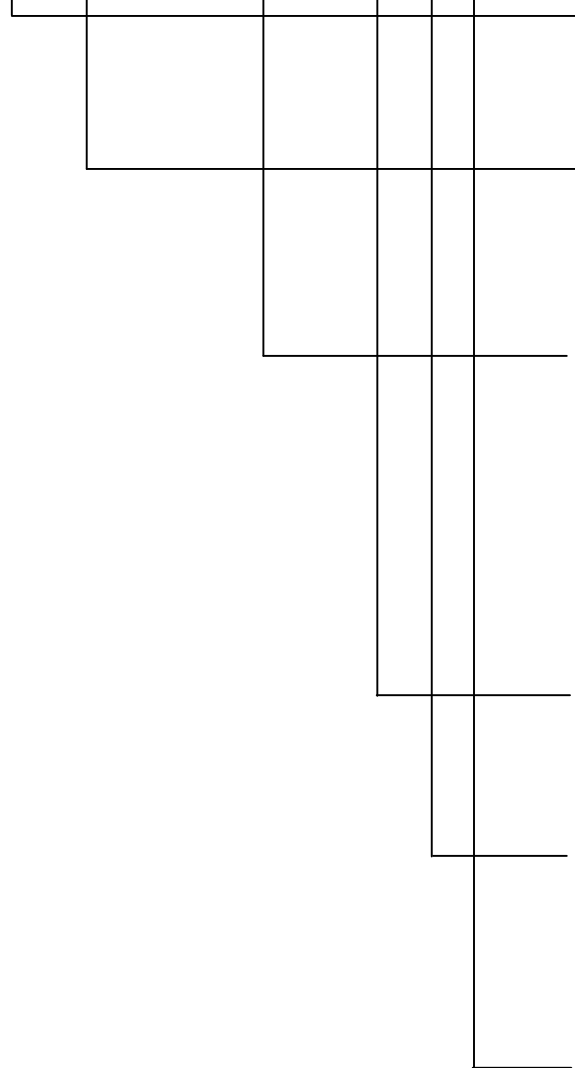
| Parameter | Symbol | Rating | Unit |
|----------------------------------|--------|------------|------|
| Fiber Output Power | Pf | 4 | mW |
| LD Reverse Voltage | Vrl | 2 | V |
| Monitor PD Forward Current | Ifd | 10 | mA |
| Monitor PD Reverse Current | Ird | 3 | mA |
| Monitor PD Reverse Voltage | 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

OL 5 45 0 L - 2 - W155 - AF SC L



Wavelength

- 4: 1.4 μm
- 5: 1.5 μm
- 6: 1.6 μm

Pin Assignment

- 0: C type
- 1: A type
- 3: B type
- (See P.5)

Peak Wavelength

- W147: 1.47 μm
- W149: 1.49 μm
- W151: 1.51 μm
- W153: 1.53 μm
- W155: 1.55 μm
- W157: 1.57 μm
- W159: 1.59 μm
- W161: 1.61 μm

Flange type

- AF: Angled Flange
- SF: Straight Flange
- NF: No Flange

Connector type

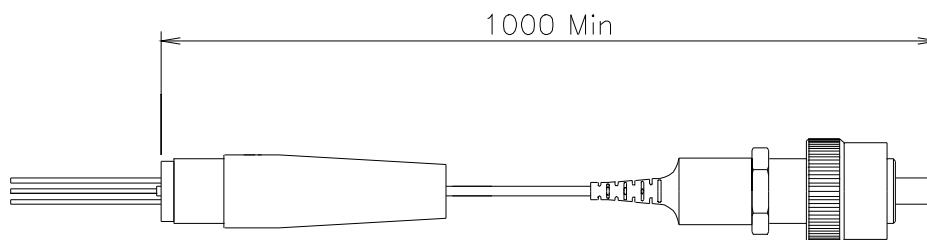
- SC: SC Connector
- FC: FC Connector
- LC: LC Connector
- MU: MU Connector
- MUJ: MU-J Connector

Distance

- Default, no suffix: 40km
- L: 80km

8.OUTLINE DRAWING

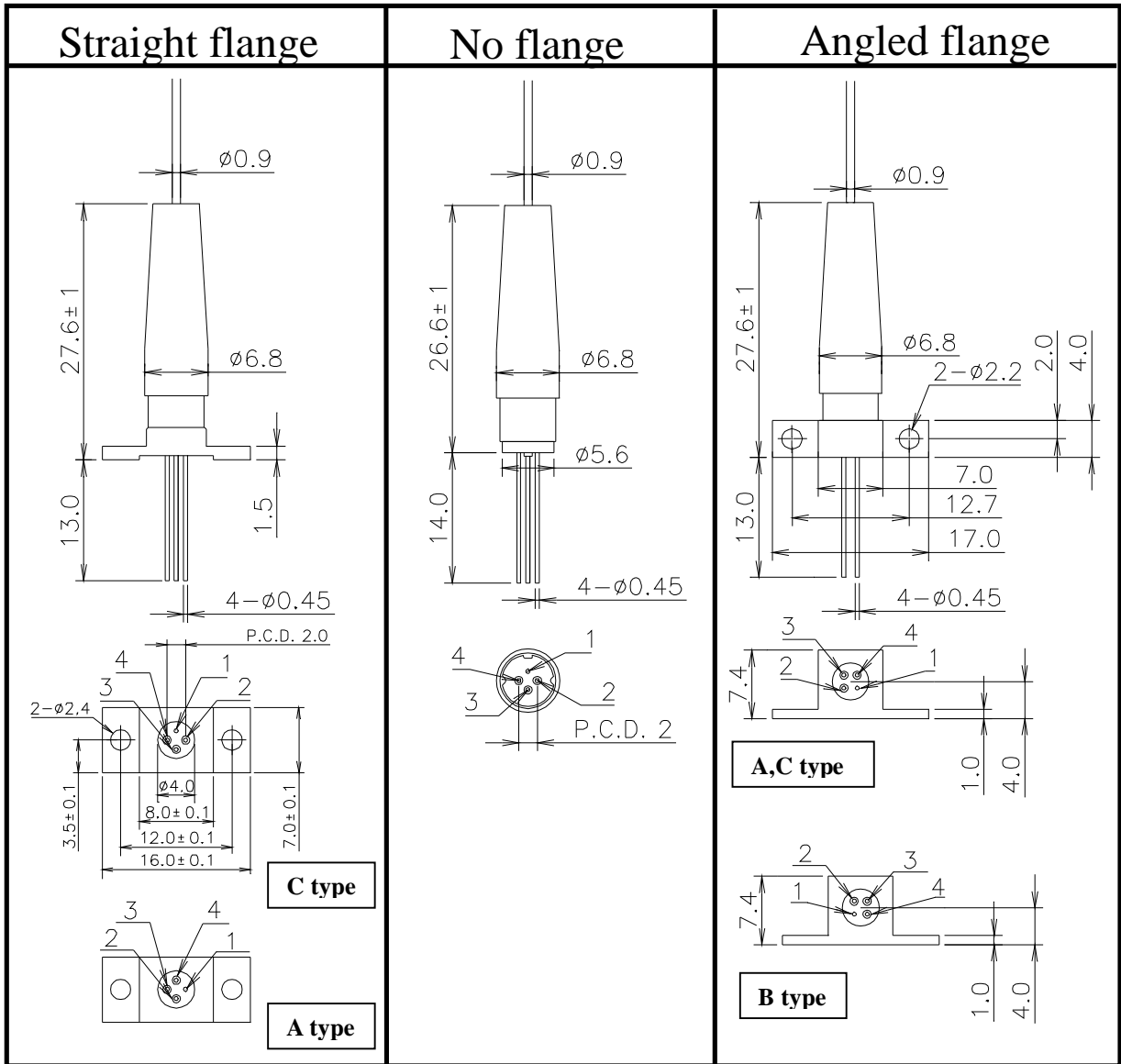
Length (mm)



Drawing No: JOG-01072 Rev.8

All dimensions in millimeters

Flange Type



Pin Assignment

| OL5450L (C type) | OL5451L (A type) | OL5453L (B type) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|------------------|------------|--|---|------|---|------------|---|----------|---|------------------------|---|-------------------|--|------------|--|---|-----------------|---|------------|---|------------|---|----------|---|-------------------|--|------------|--|---|-----------------|---|----------|---|------------|---|------------|
| <table border="1"> <tr><td colspan="2">PIN configuration</td></tr> <tr><td colspan="2">Assignment</td></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 border="1"> <tr><td colspan="2">PIN configuration</td></tr> <tr><td colspan="2">Assignment</td></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 border="1"> <tr><td colspan="2">PIN configuration</td></tr> <tr><td colspan="2">Assignment</td></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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

9. SAFETY INFORMATION ON THIS PRODUCT



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

All specifications described herein are subject to change without notice.

OKI Electronics Components

Notice

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.
2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.
3. 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.
4. 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 beyond the specified maximum ratings or operation outside the specified operating range.
5. 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 the 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.
6. 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 and automotive equipment, safety devices, aerospace equipment, nuclear power control, medical equipment, and life-support systems.
7. Certain products in this document may need government approval before they can be exported to particular countries. The purchaser assumes the responsibility of determining the legality of export of these products and will take appropriate and necessary steps at their own expense for these.
8. No part of the contents contained herein may be reprinted or reproduced without our prior permission.

Sales Support

| | |
|-------------------|---|
| JAPAN/ASIA | Oki Electric Industry Co., Ltd. 550-1, Higashiasakawa-cho, Hachioji-shi, Tokyo 193-8550 Phone: +81-426-62-6646 INTERNET: http://www.oki.com |
| AMERICA | Oki Optical Components 785 North Mary Avenue, Sunnyvale, CA 94086 Phone: +1-408-737-6379 Fax: +1-408-737-6579 INTERNET: http://www.okioptical.com |
| EUROPE | Oki Electric Europe GmbH D-41460 Neuss, Germany Phone: +49-2131-15960 Fax: +49-2131-103539 INTERNET: http://www.oki-europe.de |

Copyright 2005 Oki Electric Industry Co., Ltd

Drawing No: JOG-01072 Rev.8