



Technical Specification  
of  
1.55 $\mu$ m MQW-DFB Laser Diode  
with Flat Window Cap

SLT1400 Series



### 1. General

SLT1400 Series are 1.55 $\mu$ m InGaAsP/InP MQW-DFB laser diodes fabricated by OMVPE entirely. These diodes have low threshold current and high performance at high temperature.

A laser diode is mounted into a coaxial package integrated with an InGaAs monitor PD and a flat window cap.

### 2. Package dimension and pin assignment

(See attached appendix.)

### 3. Absolute maximum ratings

| Parameter                    | Symbol | Ratings  | Unit |
|------------------------------|--------|----------|------|
| Storage temperature          | Tstg   | -40~+100 | °C   |
| Operating case temperature   | Top    | -40~+85  | °C   |
| Peak optical output power    | Po     | 20       | mW   |
| Forward current (LD)         | IfL    | 150      | mA   |
| Reverse voltage (LD)         | VrL    | 2        | V    |
| Reverse voltage (PD)         | VrP    | 15       | V    |
| Reverse current (PD)         | IrP    | 2        | mA   |
| Soldering temperature (<10s) | Stemp  | 260      | °C   |

4. Electrical and optical characteristics (Po=5mW, Tc=+25°C, unless otherwise noted.)

| Parameter                   | Symbol           | Condition                     | Min. | Typ. | Max. | Unit    |
|-----------------------------|------------------|-------------------------------|------|------|------|---------|
| Threshold current           | Ith              | CW                            | —    | 10   | 15   | mA      |
|                             |                  | CW, Tc=-40~+85°C              | —    | —    | 50   |         |
| Optical output power        | Po               | CW, If=Ith+20mA               | 3.0  | 5.0  | —    | mW      |
|                             |                  | CW, If=Ith+20mA, Tc=-40~+85°C | 2.0  | —    | —    |         |
| Operating voltage           | Vf               | CW, Tc=-40~+85°C              | —    | —    | 1.6  | V       |
| Slope efficiency            | Se               | CW                            | 0.15 | 0.25 | —    | mW/mA   |
|                             |                  | CW, Tc=-40~+85°C              | 0.1  | —    | —    |         |
| Peak wavelength             | $\lambda_p$      | CW                            | 1540 | 1550 | 1560 | nm      |
|                             |                  | CW, Tc=-40~+85°C              | 1530 | —    | 1570 |         |
| Side-mode suppression ratio | SSR              | CW, Tc=-40~+85°C              | 30   | —    | —    | dB      |
| Spectral width              | $\Delta\lambda$  | CW, 20dB down, Tc=-40~+85°C   | —    | —    | 1    | nm      |
| Radiant beam angle          | $\theta_{  }$    | CW, FWHM                      | 15   | —    | 35   | deg.    |
|                             | $\theta_{\perp}$ |                               | 25   | —    | 40   |         |
| Rise time                   | tr               | Ib=Ith, 20-80%, Tc=-40~+85°C  | —    | —    | 0.10 | ns      |
| Fall time                   | tf               | Ib=Ith, 80-20%, Tc=-40~+85°C  | —    | —    | 0.15 | ns      |
| Monitor current             | Im               | CW, VrP=5V, Tc=-40~+85°C      | 80   | —    | —    | $\mu$ A |
| Monitor dark current        | Id               | VrP=5V                        | —    | —    | 10   | nA      |
|                             |                  | VrP=5V, Tc=-40~+85°C          | —    | —    | 100  |         |
| Monitor capacitance         | C                | VrP=5V, f=1MHz                | —    | —    | 10   | pF      |

## 5. Ordering information

| Part number | Pin assignment | Number of pin | Pin length |
|-------------|----------------|---------------|------------|
| SLT1400     | Type A         | 4             | 13.5±0.5mm |
| SLT1406     | Type C         | 4             | 13.5±0.5mm |

## 6. Precaution

- (1) Radiation emitted by laser devices can be dangerous to the eyes. Avoid eye or skin exposure to direct or scattered radiation.
- (2) The laser diodes should be handled in the same manner as ordinary semiconductor devices to prevent the electro-static damages. For safe keeping and carrying, the modules should be packaged with ESD proof material. To assemble the modules on PCB, the workbench, the soldering iron and the human body should be grounded.
- (3) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (4) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.

Appendix

Part No.: SLT1400□/□□□

(Customize code)

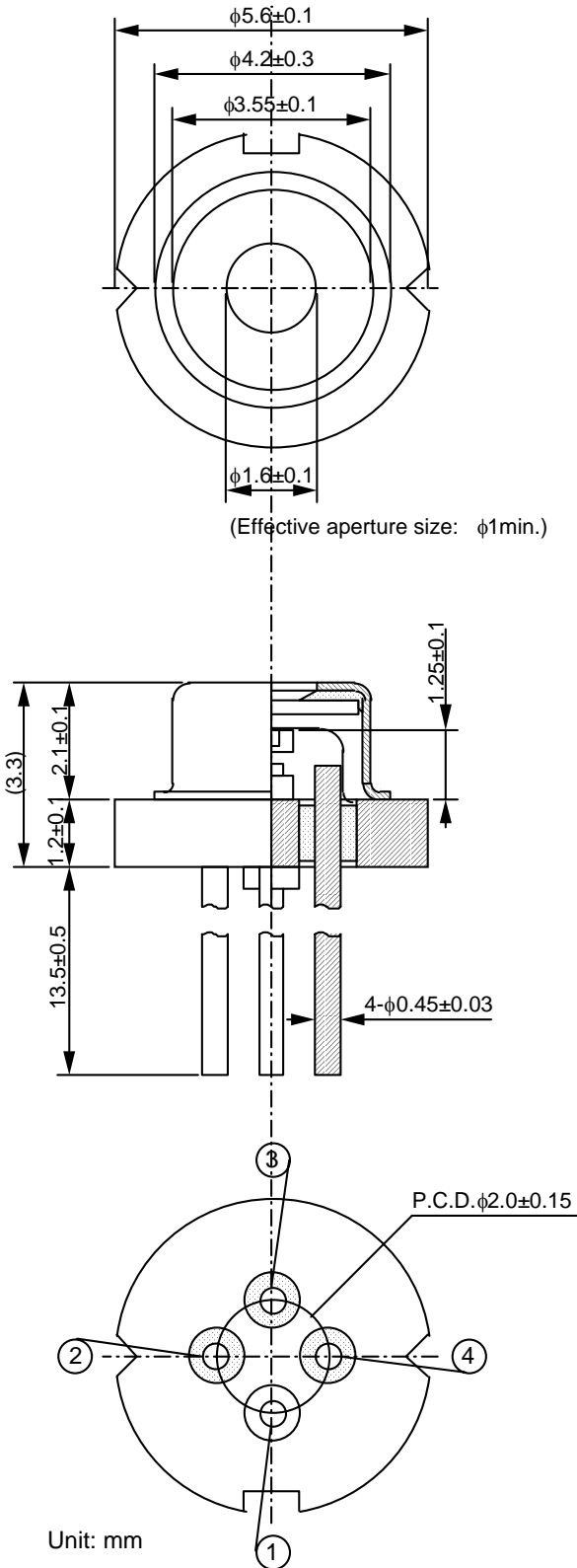
| Code | Pin assignment | Pin length (L1) |
|------|----------------|-----------------|
| 0    | Type A         | 13.5±0.5        |
| 6    | Type C         | 13.5±0.5        |

| Pin No. | Pin function for typeA |
|---------|------------------------|
| 1       | LD anode (CASE)        |
| 2       | LD cathode             |
| 3       | PD cathode             |
| 4       | PD anode               |

| Pin No. | Pin function for typeC |
|---------|------------------------|
| 1       | (CASE) LD cathode      |
| 2       | LD cathode             |
| 3       | PD anode               |
| 4       | LD anode/PD cathode    |

| Pin No. | Pin function for typeB |
|---------|------------------------|
| 1       | LD anode (CASE)        |
| 2       | PD anode               |
| 3       | PD cathode             |
| 4       | LD cathode             |

Pin Assignment



Sumitomo Electric Industries, Ltd.  
Part No.: SLT1400 Series  
Document No.: HUW0124065-01C  
Date of issue: August 1, 2002

## 7. For More Information

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Revision Record

| Document No.   | Date of issue | Description   | Incorporated by | Checked by  | Approved by  |
|----------------|---------------|---|-----------------|-------------|--------------|
| HUW0124065-01A | Feb./12/02    | Preliminary issue.  | T. Nakanishi    | Y. Yamasaki | M. Yoshimura |
| HUW0124065-01B | May/21/02     | Initial issue;<br>Added Se on condition of<br>Tc=+25°C and Tc=-40~+85°C;<br>Removed Type B pin assignment.  | T. Nakanishi    | Y. Yamasaki | M. Yoshimura |
| HUW0124065-01C | Aug./01/02    | Added the spec of $\Delta\lambda$ ;<br>Revised tr from max.: 0.25ns to<br>max.: 0.10ns;<br>Revised tf from max.: 0.30ns to<br>max.: 0.15ns;<br>Corrected the tolerance of PKG<br>diameter from +0/-0.025mm to<br>$\pm 0.1$ mm;<br>Corrected the tolerance of cap<br>diameter from $\pm 0.05$ mm to<br>$\pm 0.1$ mm;<br>Corrected the tolerance of cap<br>height from +0.1/-0.05mm to<br>$\pm 0.1$ mm. | Y. Yamasaki     | N. Kushida  | M. Yoshimura |