



Technical Specification
of
1.625 μ m MQW-DFB Laser Diode Module
for Supervisory Channel up to 622Mb/s transmission

SLT4400-xx-S460 Series

RoHS Compliant



1. General

SLT4400-xx-S460 Series are 1.625 μ m InGaAsP/InP MQW-DFB laser diode modules designed for fiber optic communication systems. These modules are ideally suitable for long reach and intermediate reach of up to 622Mb/s transmission applications.

A laser diode is mounted into a coaxial package integrated with an InGaAs monitor PD and a single mode fiber pigtail.

2. Package dimension and pin assignment

(See attached appendix.)

3. Absolute maximum ratings

| Parameter | Symbol | Ratings | Unit |
|------------------------------|--------|---------|------|
| Storage temperature | Tstg | -40~+85 | °C |
| Operating case temperature | Top | -20~+70 | °C |
| Fiber output power | Pf | 2 | 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 (Pf=2mW, Tc=25°C, unless otherwise noted.)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|--|-------|------|-------|-------|
| Threshold current | Ith | CW | — | 10 | 20 | mA |
| | | CW, Tc=-20~+70°C | — | — | 50 | |
| Optical output power | Pf | CW, If=Ith+20mA | 1.0 | 2 | 2.5 | mW |
| | | CW, If=Ith+20mA, Tc=-20~+70°C | 0.5 | — | 4.0 | |
| Operating voltage | Vf | CW, Tc=-20~+70°C | — | — | 1.7 | V |
| Slope efficiency | Se | CW, Average(Ith to Ith+20mA) | 0.050 | — | 0.125 | mW/mA |
| | | CW, Average(Ith to Ith+20mA) Tc=-20~+70°C | 0.025 | — | 0.200 | |
| Peak wavelength | λp | CW | 1620 | 1625 | 1630 | nm |
| | | CW, Tc=-20~+70°C | 1613 | — | 1637 | |
| Side-mode suppression ratio | SSR | CW, Tc=-20~+70°C | 30 | — | — | dB |
| Tracking error | ΔPf | Im hold(@Pf=2mW(25°C)), CW Tc=-20~+70°C | -1.0 | — | 1.0 | dB |
| Rise time | tr | Ib=Ith, 20-80%, Tc=-20~+70°C | — | 0.05 | 0.10 | ns |
| Fall time | tf | Ib=Ith, 80-20%, Tc=-20~+70°C | — | 0.10 | 0.15 | ns |
| Extinction ratio | Er | 10log(2mW/Pf(Ith)), Tc=-20~+70°C | 10 | — | — | dB |
| Monitor current | Im | CW, VrP=5V, Tc=-20~+70°C | 50 | — | 1500 | μA |
| Monitor dark current | Id | VrP=5V | — | 1 | 10 | nA |
| Monitor capacitance | C | VrP=5V, f=1MHz | — | — | 10 | pF |

Note: Since the SLT4400-xx-S460 Series have no optical isolator inside, to integrate externally an optical isolator is recommended for long reach of transmission applications.

5. Fiber pigtail specification

| Parameter | Min. | Typ. | Max. | Unit |
|----------------------------|-------------|------|------|------|
| Type | Single Mode | | | — |
| Mode field diameter@1310nm | 8.5 | 9.5 | 10.5 | μm |
| Cladding diameter | 122 | 125 | 128 | μm |
| Outer jacket diameter | 0.8 | 0.9 | 1.0 | mm |
| Bending radius | 30 | — | — | mm |

6. Ordering Information

| Part number | Pin assignment | Optical isolator | Connector type | Flange type (hole pitch) | Old part number | RoHS compliance of old part number |
|---------------------|----------------|------------------|----------------|--------------------------|-----------------|------------------------------------|
| SLT4400-CN/RH1-S460 | Type A | No isolator | SC/PC | Flangeless | SLT4400-CN-S460 | Not Compliant (*2) |
| SLT4400-CP/RH1-S460 | | | | Vertical (12mm) | SLT4400-CP-S460 | |
| SLT4400-CS/RH1-S460 | | | | Horizontal (12.7mm) | SLT4400-CS-S460 | |
| SLT4400-XN-S460 | | | No connector | Flangeless | SLT4400-XN-S460 | Compliant |
| SLT4400-XP-S460 | | | | Vertical (12mm) | SLT4400-XP-S460 | |
| SLT4400-XS-S460 | | | | Horizontal (12.7mm) | SLT4400-XS-S460 | |

Note:*2. Some products in this category have been already RoHS compliant.

If any query, please contact us with part number and serial number.

7. 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 modules 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) The stress to the fiber pigtail may cause the damage on the performance. The fiber pigtail may snap off by dropping the module.
- (4) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (5) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.

8. RoHS Compliancy

On January 27, 2003, the European Parliament and the Council of the European Union issued the directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

Member States shall ensure that, from July 1, 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Applications listed in the Annex are exempted.

This product is compliant with RoHS 6/6 directive with exemptions "Lead in glass of cathode ray tubes, electronic components and fluorescent tubes" and "Lead as an alloying element in steel containing up to 0.35 % lead by weight, aluminium containing up to 0.4 % lead by weight and as a copper alloy containing up to 4 % lead by weight".

9. Appendix

Part No.: SLT440□-□□ / □□□-S460

(Customize Code)

| Code | Connector Type |
|------|----------------|
| C | SC/PC |
| D | FC/PC |
| X | No Connector |

Connector type

| Code | Flange type |
|------|---------------------|
| N | Flangeless |
| P | Vertical (12.0mm) |
| S | Horizontal (12.7mm) |

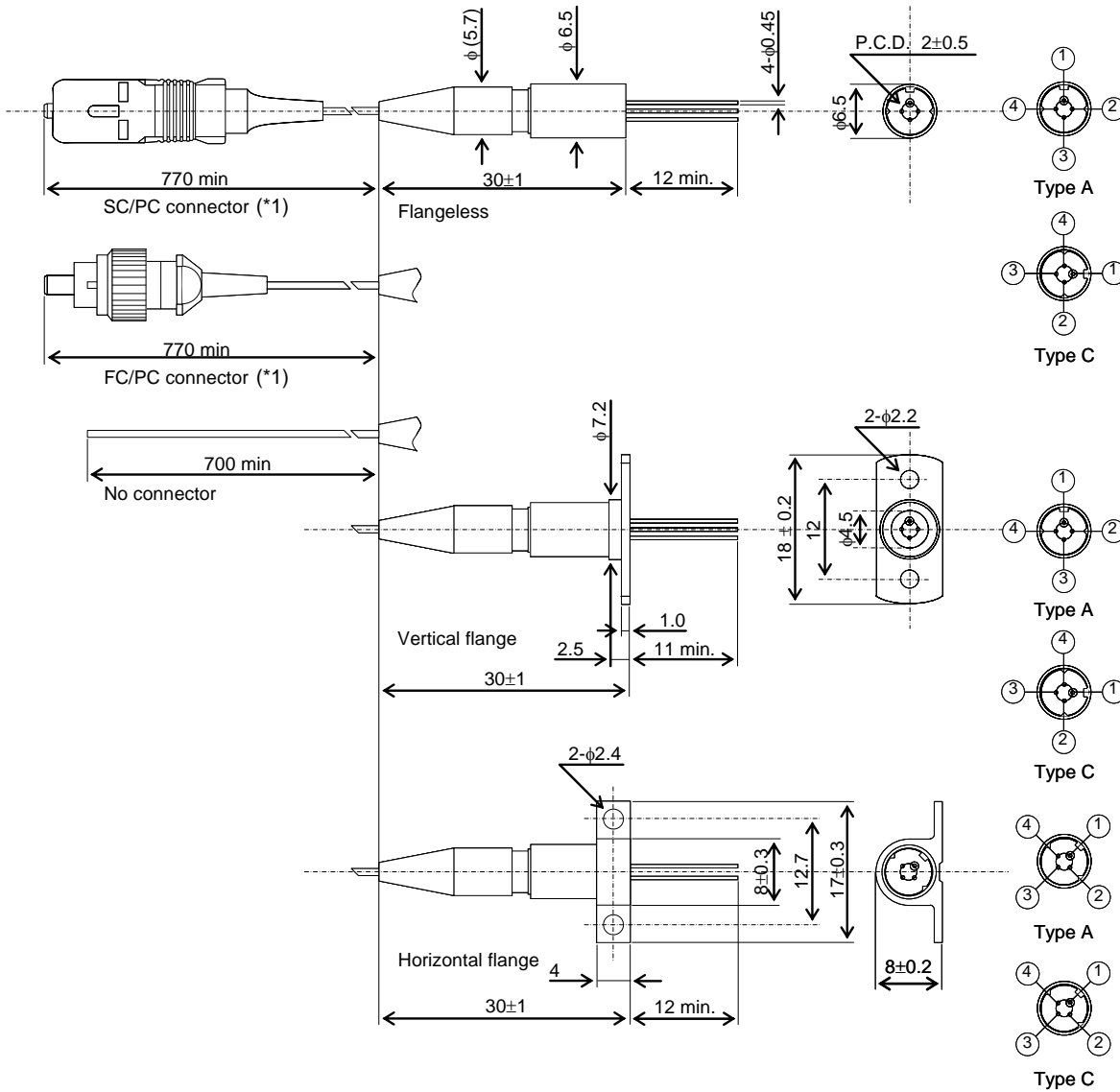
Flange type

| Code | Pin assignment |
|------|----------------|
| 0 | Type A |
| 6 | Type C |

Pin assignment

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

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



Note: *1. IEC and JIS compliant. Detailed design not specified in the IEC and JIS standards is a subject to change without notice.

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10. For More Information

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Revision Record

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|----------------|---------------|---|-----------------|---------------------------------|---------------|
| HUW0024123-01A | Mar./20/01 | Preliminary issue. | R. Shigemoto | T. Nakanishi | M. Yoshimura |
| HUW0024123-01B | Feb./15/02 | Revised Top and the condition of all parameters from Tc=-40~+85°C to Tc=-20~+70°C; Collected the tolerance of the horizontal flange dimension from ±0.2mm to ±0.3mm. | T. Nakanishi | Y. Yamasaki | M. Yoshimura |
| HUW0024123-01C | Apr./10/02 | Collected Se on condition of Tc=-20~+70°C from max.: 0.15mW/mA to max.: 0.200mW/mA. | Y. Yamasaki | T. Nakanishi | M. Yoshimura |
| HUW0024123-01D | Aug./09/06 | Added RoHS Compliacy. | N. Fukushima | T. Kounosu Y. Yamasaki | M. Yoshimura |
| HUW0024123-01E | Feb./01/08 | Removed SLT4460-xx-S460. Revised RoHS compliacy. | T. Takagi | N. Fukushima Y. Yamasaki | H. Michikoshi |