



Technical Specification  
of  
1.625 $\mu$ 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 $\mu$ 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	$\lambda_p$	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	$\Delta Pf$	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	$\mu$ A
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	$\mu$ m
Cladding diameter	122	125	128	$\mu$ m
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)

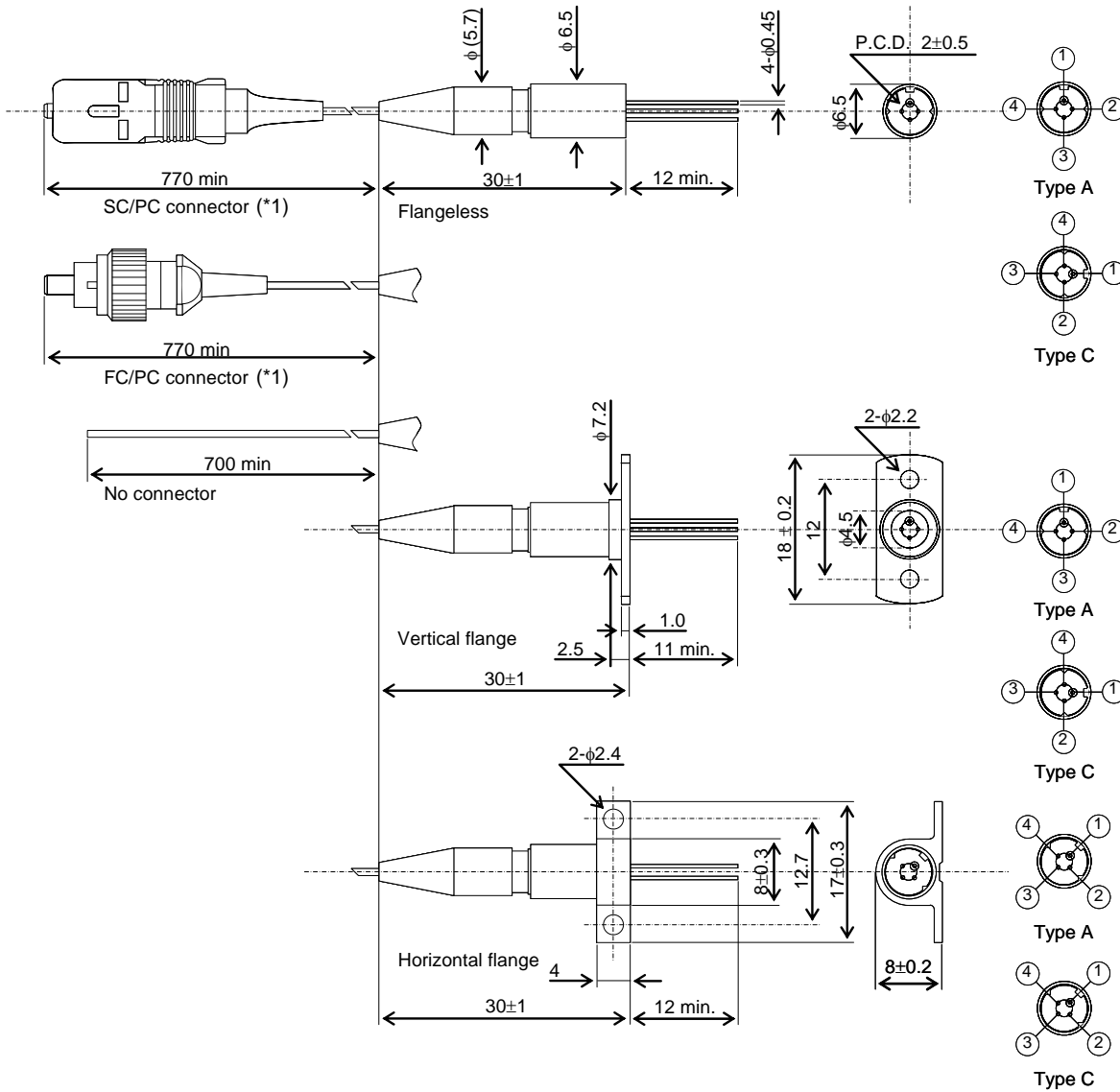
Flange type

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.

## 10. For More Information

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Revision Record

Document No.	Date of issue	Description	Incorporated by	Checked by	Approved by
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