



Sumitomo Electric Industries, Ltd.

Part No.: SLV4460 Series

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Preliminary Specification
of
1.55 μ m MQW-DFB Laser Diode Module
for CATV Return-Path Application
SLV4460 Series



1. General

SLV4460 Series are 1.55 μ m InGaAsP/InP MQW-DFB laser diode modules designed for fiber optic CATV return path applications. These modules are ideally suitable for high capacity transmission including several video channels.

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

2. Package dimension and pin assignment

(See attached appendix.)

3. Absolute maximum ratings (Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Ratings	Unit
Storage temperature	Tstg	-40~+90	°C
Operating case temperature	Top	-20~+85	°C
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 (<10sec.)	Stemp	260	°C

4. Electrical and optical characteristics (Pf=2.0mW, Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current	I _{th}	CW	—	10	15	mA
		CW, Tc=-20~+85°C	—	—	50	
Operating current	I _f	CW	—	28	45	mA
		CW, Tc=-20~+85°C	—	—	80	
Operating voltage	V _f	CW, Tc=-20~+85°C	—	—	2.0	V
Slope efficiency	Se	CW, Average(I _{th} to I _{th} +20mA)	0.05	—	—	mW/mA
Thermal slope efficiency	TSe	CW, Se(Tc)/Se(25°C) Tc=-20~+85°C	0.5	—	1.5	—
Peak wavelength	λ _p	CW	1540	1550	1565	nm
		CW, Tc=-20~+85°C	1530	—	1575	
Side-mode suppression ratio	SSR	CW, Tc=-20~+85°C	30	—	—	dB
Tracking error	ΔPf	I _m hold(@Pf=2.0mW(25°C)) CW, Tc=-20~+85°C	-1.0	—	1.0	dB
Passband flatness	—	peak to peak, f=5~200MHz	—	—	1.0	dB
Second order inter-modulation distortion	IMD2	Tc=-20~+85°C, (*1)	—	—	-40	dBc
Third order inter-modulation distortion	IMD3	Tc=-20~+85°C, (*1)	—	—	-55	dBc
Carrier to noise ratio with carrier ON	CNR _{on}	Tc=-20~+85°C, (*2)	40	—	—	dBc
Carrier to noise ratio with carrier OFF	CNR _{off}	Tc=-20~+85°C, (*2)	40	—	—	dBc
Monitor current	I _m	CW, V _{rP} =5V, Tc=-20~+85°C	50	—	1500	μA
Monitor dark current	I _d	V _{rP} =5V	—	1	10	nA
Monitor capacitance	C	V _{rP} =5V, f=1MHz	—	—	10	pF

Note: *1. OMI=20%, Optical loss=6.6dB (1550nm), 2tone (13MHz, 19MHz)

*2. OMI=20%, Optical loss=6.6dB (1550nm), Carrier signal=19MHz, Res. B.W.=30KHz,
Video B.W.=30Hz, Bandwidth for Calculated CNR=35MHz, Measured point=19MHz

5. Fiber pigtail specification

Parameter	Min.	Typ.	Max.	Unit
Type	Single Mode			—
Mode field diameter	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	40	—	—	mm

6. Order information

Part number	Pin assignment	Connector type	Flange type (hole pitch)
SLV4460-PN	Type A	FC/Angled PC	Flangeless
SLV4460-PP			Vertical (12.0mm)
SLV4460-PS			Horizontal (12.7mm)
SLV4460-QN		SC/Angled PC	Flangeless
SLV4460-QP			Vertical (12.0mm)
SLV4460-QS			Horizontal (12.7mm)
SLV4460-XN		No connector	Flangeless
SLV4460-XP			Vertical (12.0mm)
SLV4460-XS			Horizontal (12.7mm)

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.

Appendix

Part No.: SLV446 □-□□/□□□

(Customize code)

Code	Connector type
P	FC/Angled PC
Q	SC/Angled PC
X	No connector

Connector type

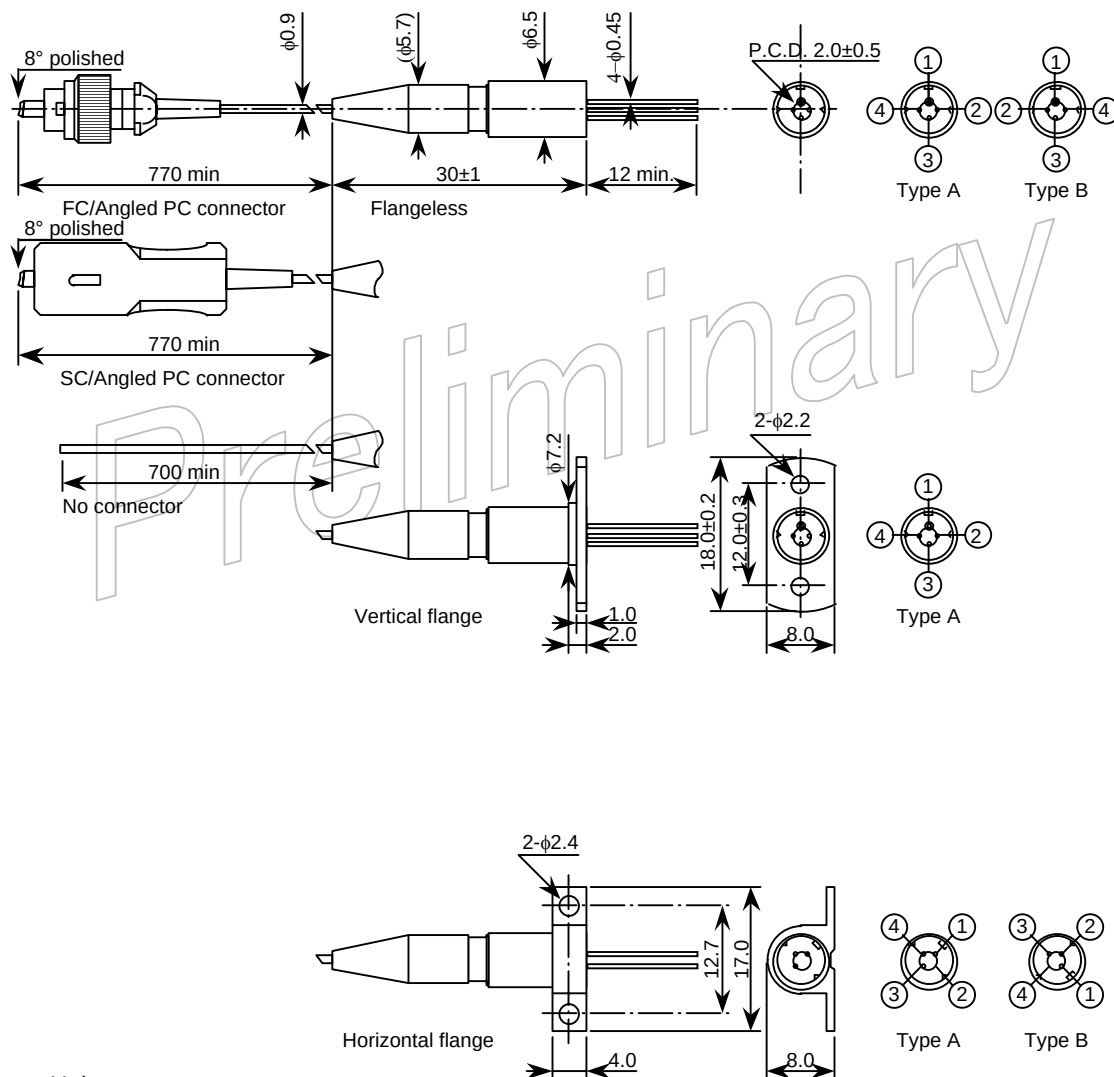
Code	Flange type
N	Flangeless
P	Vertical (12.0mm)
S	Horizontal (12.7mm)
X	(Customize)

Flange type

Code	Pin assignment
0	Type A
1	Type B

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

Pin assignment



Unit: mm

Tolerance: ± 0.1 mm, unless otherwise noted

8. For More Information

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Preliminary