



Technical Specification
of
1.47 μm ~1.61 μm MQW-DFB Laser Diode Module
for CATV Return-Path Application

SLV4460-xx/RH2-xnnnx Series

RoHS Compliant



1. General

SLV4460-xx/RH2-xnnnx Series are 1.47 μ m~1.61 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. The lead content of this isolator is less than 1000ppm.

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	10	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	
Operating current	If	CW	—	28	45	mA
		CW, Tc=-20~+70°C	—	—	80	
Operating voltage	Vf	CW, Tc=-20~+70°C	—	—	1.7	V
Slope efficiency	Se	CW, Average(Ith to Ith+20mA)	0.05	—	0.2	mW/mA
Thermal slope efficiency	TSe	CW, Se(Tc)/Se(25°C) Tc=-20~+70°C	0.5	—	1.5	—
Peak wavelength	λ_p	CW	(*4)			nm
Wavelength temperature coeff.	—	CW, Tc=0~+70°C	0.07	0.1	0.12	nm/°C
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
Relative intensity noise	RIN	CW, Tc=-20~+70°C, (*3)	—	-145	—	dB/Hz
Passband flatness	—	peak to peak, f=5~200MHz	—	—	1.0	dB
Second order inter-modulation distortion	IMD2	OMI=20%, Tc=-20~+70°C, (*1)	—	—	-40	dBc
Third order inter-modulation distortion	IMD3	OMI=20%, Tc=-20~+70°C, (*1)	—	—	-50	dBc
Carrier to noise ratio with carrier ON	CNRon	OMI=20%, Tc=-20~+70°C, (*2)	40	—	—	dBc
Carrier to noise ratio with carrier OFF	CNRoff	OMI=20%, Tc=-20~+70°C, (*2)	40	—	—	dBc
Monitor current	Im	CW, VrP=5V, Tc=-20~+70°C	50	—	1500	μ A
Monitor dark current	Id	VrP=5V	—	1	10	nA
Monitor capacitance	C	VrP=5V, f=1MHz	—	—	10	pF

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

*2. Optical loss=6.6dB (1550nm), Carrier signal=19MHz, Res. B.W.=30kHz,

Video B.W.=30Hz, Bandwidth for Calculated CNR=35MHz, Measured point=19MHz

*3. Zero link loss, f=5~200MHz

Note: *4. Detail of peak wavelength specification

Rank A					Rank B				
Channel No.	Min.	Typ.	Max.	Unit	Channel No.	Min.	Typ.	Max.	Unit
-G390A	1468	1470	1472	nm	-G390B	1467	1470	1473	nm
-G120A	1488	1490	1492		-G120B	1487	1490	1493	
-F850A	1508	1510	1512		-F850B	1507	1510	1513	
-F590A	1528	1530	1532		-F590B	1527	1530	1533	
-F340A	1548	1550	1552		-F340B	1547	1550	1553	
-F095A	1568	1570	1572		-F095B	1567	1570	1573	
-E855A	1588	1590	1592		-E855B	1587	1590	1593	
-E620A	1608	1610	1612		-E620B	1607	1610	1613	

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	30	—	—	mm

6. Optical isolator specification

Parameter	Condition	Min.	Typ.	Max.	Unit
Type		Single stage			—
Optical isolation	T _c =0~+70°C	20	—	—	dB

7. Order information

Part number	Pin assignment	Connector type	Flange type (hole pitch)
SLV4460-QN/RH2-xnnnx	Type A	SC/Angled PC	Flangeless
SLV4460-QP/RH2-xnnnx			Vertical (12.0mm)
SLV4460-QS/RH2-xnnnx			Horizontal (12.7mm)
SLV4460-XN/RH2-xnnnx		No connector	Flangeless
SLV4460-XP/RH2-xnnnx			Vertical (12.0mm)
SLV4460-XS/RH2-xnnnx			Horizontal (12.7mm)

Channel (-xnnnx)	λ _p @25°C	Range
-G390A	1470nm	±2nm
-G390B		±3nm
-G120A	1490nm	±2nm
-G120B		±3nm
-F850A	1510nm	±2nm
-F850B		±3nm
-F590A	1530nm	±2nm
-F590B		±3nm
-F340A	1550nm	±2nm
-F340B		±3nm
-F095A	1570nm	±2nm
-F095B		±3nm
-E855A	1590nm	±2nm
-E855B		±3nm
-E620A	1610nm	±2nm
-E620B		±3nm

8. 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.

9. 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”.

Appendix

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RH2 or Customized code

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

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

Code	Pin assignment
0	Type A

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

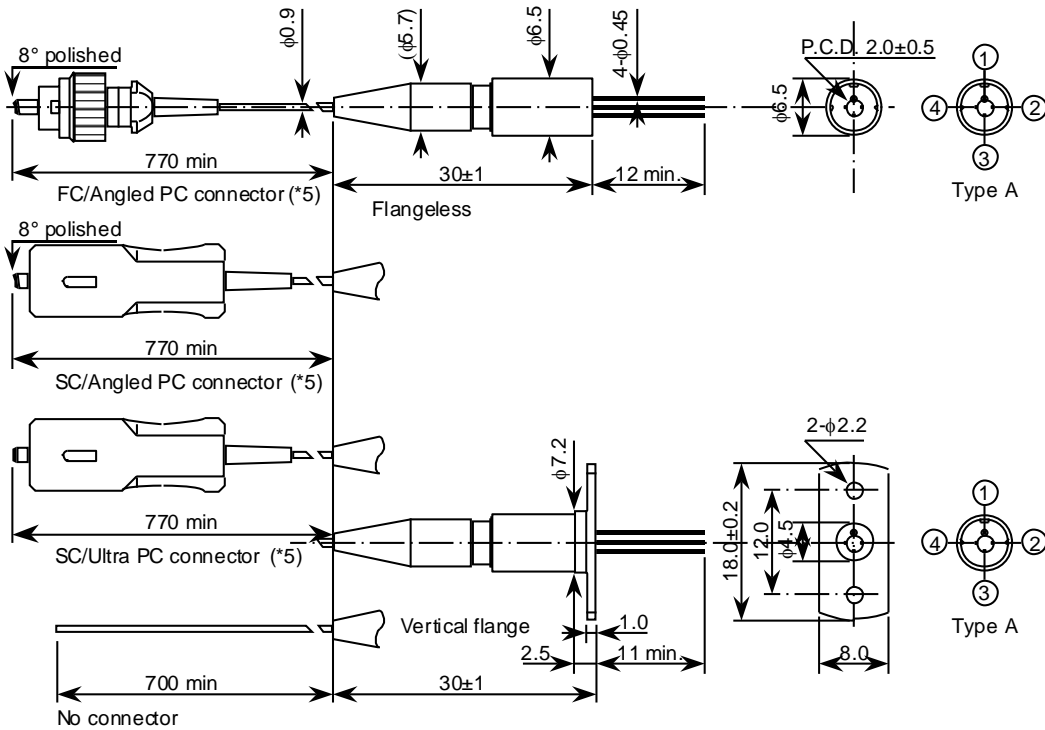
Code	Wavelength range
A	±2nm
B	±3nm

Channel	Wavelength @25deg.
-G390	1470nm
-G120	1490nm
-F850	1510nm
-F590	1530nm
-F340	1550nm
-F095	1570nm
-E855	1590nm
-E620	1610nm

Connector type

Flange type

Pin assignment



Unit: mm

Tolerance: ±0.1mm, unless otherwise noted.

Note:*5. IEC and JIS compliant. Detailed design not specified in the IEC and JIS standards is a subject to change without notice.

Sumitomo Electric Industries, Ltd.
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10. For More Information

U.S.A.

ExceLight Communications Inc.

4021 Stirrup Creek Drive, Suite 200, Durham NC, 27703

U.S.A.

Tel. (919) 361-1600

Fax. (919) 361-1619

E-mail: info@excelight.com

URL: <http://www.excelight.com>

Europe

Sumitomo Electric Europe Ltd.

220 Centennial Park, Centennial Avenue, Elstree, Herts, WD6 3SL

United Kingdom

Tel. (020) 8953-8118

Fax. (020) 8207-5950

URL: <http://www.sumielectric.com>

Japan

Sumitomo Electric Industries, Ltd. (Opto-electronic Products Sales Dept.)

3-12, Moto-Akasaka 1-chome, Minato-ku Tokyo, 107-8468

Japan

Tel. (03) 3423-5031

Fax. (03) 3423-5247

E-mail: product_info@ppd.sei.co.jp

URL: http://www.sei.co.jp/Electro-optic/index_e.html

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