Sumitomo Electric Industries, Ltd.
Part No.: SLV4710 Series
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Preliminary Specification

of

1.31µm MQW-FP Laser Diode Module

for CATV Return-Path Application

SLV4710 Series

RoHS Compliant

SUMITOMO ELECTRIC

1. General

SLV4710 Series are 1.31µm InGaAsP/InP MQW-FP laser diode modules designed for fiber optic CATV return path applications. These modules are ideally suitable for an analogue modulation transmission.

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

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	-40~+85	°C
Fiber output power	Pf	5	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	—	4	15	mA
		CW, Tc=-40~+85°C	—	—	45	
Operating current	If	CW	—	18	45	mA
		CW, Tc=-40~+85°C	—	—	80	
Operating voltage	Vf	CW, Tc=-40~+85°C	—	—	2.0	V
Slope efficiency	Se	CW, Average(Ith to Ith+20mA)	0.07	—	0.2	mW/mA
Thermal slope efficiency	TSe	CW, Se(Tc)/Se(25°C) Tc=-40~+85°C	0.5	—	1.5	—
Central wavelength	λc	CW	1270	1310	1340	nm
		CW, Tc=-40~+85°C	1240	—	1370	
Spectral width	Δλ	CW, Tc=-40~+85°C	—	2	5	nm
Tracking error	ΔPf	Im hold(@Pf=2mW(25°C)) CW, Tc=-40~+85°C	-1.0	—	1.0	dB
Passband flatness	—	peak to peak, f=5~200MHz	—	—	1.0	dB
Second order inter-modulation distortion	IMD2	OMI=20%, (*1)	—	-40	—	dBc
		OMI=20%, Tc=-40~+85°C, (*1)	—	-30	—	
Third order inter-modulation distortion	IMD3	OMI=20%, (*1)	—	-55	—	dBc
		OMI=20%, Tc=-40~+85°C, (*1)	—	-40	—	
Spurious noise with carrier	SNon	OMI=20%, (*2)	—	-45	—	dBc
		OMI=20%, Tc=-40~+85°C, (*2)	—	-35	—	
Spurious noise without carrier	SNoff	OMI=20%, (*2)	—	-30	—	dBc
		OMI=20%, Tc=-40~+85°C, (*2)	—	-20	—	
Relative intensity noise	RIN	CW, (*3)	—	-125	—	dB/Hz
		CW, Tc=-40~+85°C, (*3)	—	-120	—	
Monitor current	Im	CW, VrP=5V, Tc=-40~+85°C	100	—	2000	μA
Monitor dark current	Id	VrP=5V	—	1	10	nA
Monitor capacitance	C	VrP=5V, f=1MHz	—	—	10	pF

Note: *1. Optical loss=9dB, 2tone (13MHz, 19MHz)

*2. Optical loss=9dB, Modulation signal=19MHz, f=5~200MHz, Res. B.W.=100kHz, Video B.W.=30kHz, Hold time=30s.
Using high gain optical receiver with responsivity of 90-100A/W
Since spurious noise is strongly dependent on an optical receiver, cross check is strongly recommended.

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

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	Connector type	Flange type (hole pitch)
SLV4710-QN/RH1	Type A	SC/APC	Flangeless
SLV4710-QP/RH1			Vertical (12mm)
SLV4710-QS/RH1			Horizontal (12.7mm)
SLV4710-PN/RH1		FC/APC	Flangeless
SLV4710-PS/RH1			Horizontal (12.7mm)
SLV4710-XN		No connector	Flangeless
SLV4710-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 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.

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”.

Appendix

Part No.: SLV471□-□□/□□□

(Customize code)

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

Connector type

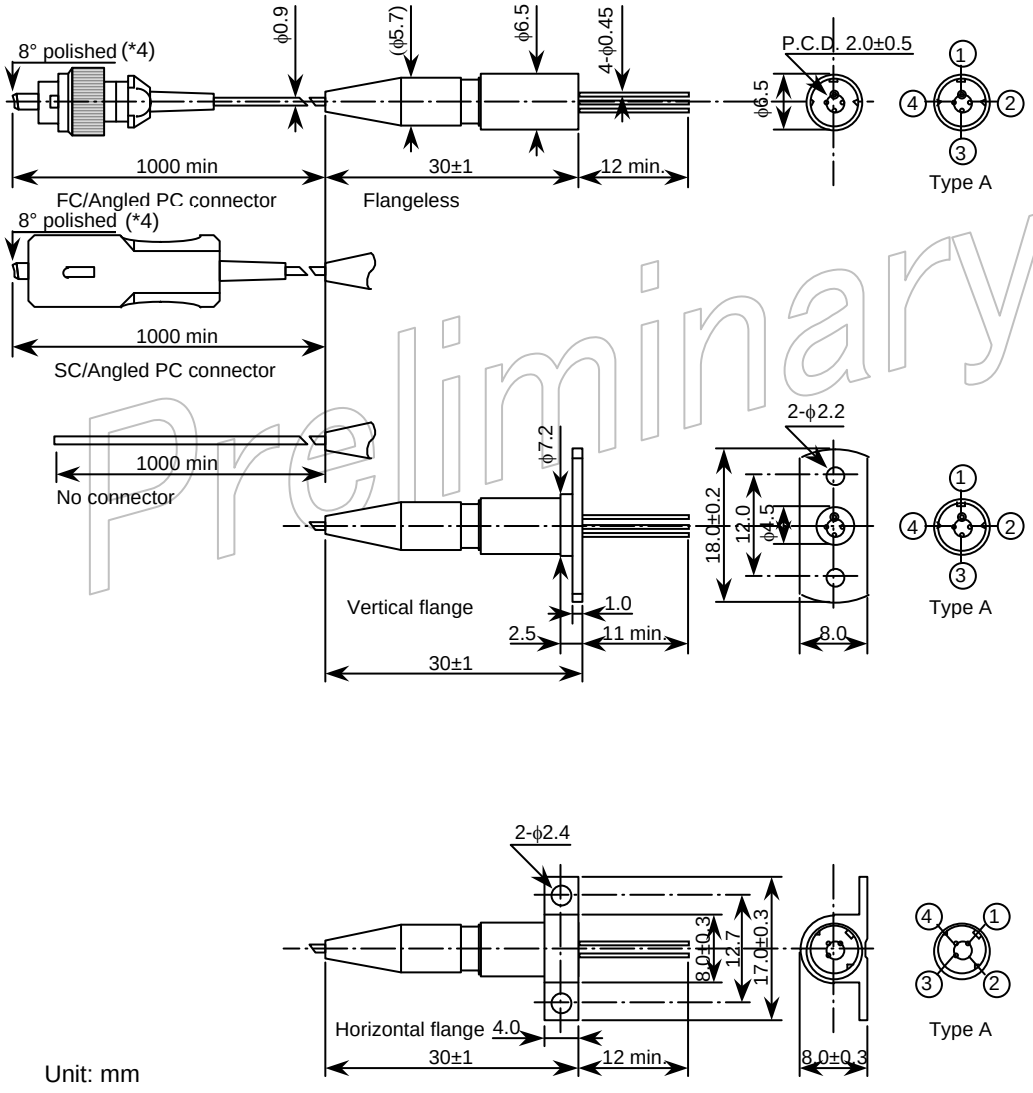
Code	Flange type
N	Flangeless
P	Vertical (12.0mm)
S	Horizontal (12.7mm)
X	(Customize)

Flange type

Code	Pin assignment
0	Type A

Pin assignment

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



Unit: mm

Tolerance: ±0.1mm, unless otherwise noted

Note: *4. IEC compliant. Detailed design not specified in the IEC standard is a subject to change without notice.

9. For More Information

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Revision Record

Document No.	Date of issue	Description	Incorporated by	Checked by	Approved by
HUW0124060-01A	Jan./30/02	Preliminary issue.	T. Nakanishi	K. Ojima	M. Yoshimura
HUW0124060-01B	Mar./16/02	Revised standard operating power from Pf=1mW to Pf=2mW; Revised operating case temp. from Tc=-20~+85°C to Tc=-40~+85°C; Revised Im from max.: 1500μA to max.: 2000μA.	T. Nakanishi	Y. Yamasaki	M. Yoshimura
HUW0124060-01C	July/11/06	Added RoHS compliancy.	H. Kobayashi	Y. Yamasaki	M. Yoshimura
HUW0124060-01D	Dec./28/07	Changed ordering information. Changed the description in RoHS compliancy.	K. Mii	H. Kobayashi T. Takagi	H. Michikoshi