

Sumitomo Electric Industries, Ltd.
Part No. : SLT5411/SLT5413-xx-S Series
Document No. : HUW9924078-01C
Date of issue : January 31, 2002



Technical Specification

of

CW DFB Laser Diode Module
for Supervisory Channels of WDM Systems

SLT5411/SLT5413-xx-S series

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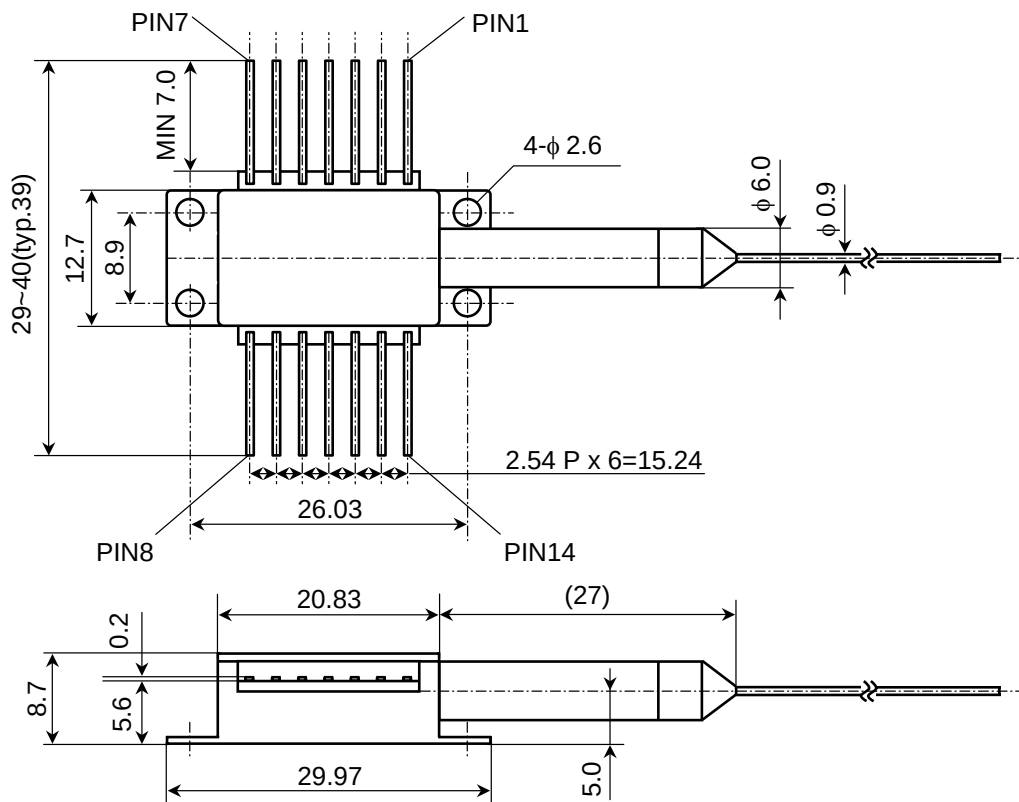
1. General

SLT5411/SLT5413-xx-S series are 1.5~1.6 μ m InGaAsP/InP MQW DFB laser diode modules designed for a supervisory channel light source of WDM (Wavelength Division Multiplexing) application.

A laser diode chip is mounted on a 14 pin butterfly package integrated with an optical isolator, an InGaAs monitor PD, a thermo-electric cooler and a single mode polarization maintaining (PM) fiber pigtail.

2. Package dimension and pin assignment

(unit : mm, tolerance : ± 0.15 unless otherwise noted)



Pin No.	Function	Pin No.	Function
1	Thermistor	14	NC
2	Thermistor	13	LD Anode (*1)
3	LD Cathode (DC)	12	LD Cathode (RF)
4	Monitor PD Anode	11	LD Anode (*1)
5	Monitor PD Cathode	10	NC
6	TEC Anode	9	Case Ground
7	TEC Cathode	8	Case Ground

Note *1 SLT5411 : Anode pins are connected to case ground

SLT5413 : Anode pins are floated against case ground

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3. Absolute maximum ratings

Parameter	Symbol	Min.	Max.	Unit
Storage temperature	Tstg	-40	85	°C
Operating case temperature	Tc	-20	70	°C
LD forward current	IfL	–	200	mA
LD reverse voltage	VrL	–	2	V
PD reverse current	IrP	–	2	mA
PD reverse voltage	VrP	–	15	V
Thermistor current	Itherm	–	0.5	mA
Thermistor voltage	Vtherm	–	5	V
TEC current	Ic	–	1.4	A
Electro static Discharge (ESD) (*2)	VESD	–	500	V
Package mounting screw torque(*3)	Npt	–	0.2	Nm
Lead soldering temperature	Stemp	–	260	°C
Lead soldering time	Stime	–	10	sec

Note *2 A human-body model (HBM, C=100pF, R=1.5kΩ) is employed.

Note *3 Without buffer materials under the package

4. Electrical and optical characteristics

(Unless otherwise noted, T_{LD}=25°C, BOL)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current	Ith	CW	–	10	25	mA
Operating current	Iop	CW (*4) A Pf=10mW	–	–	100	mA
		B Pf=20mW	–	–	120	
Forward voltage	Vf	CW, If=Iop	–	–	2	V
Monitor current	Im	CW, If=Iop	50	–	1000	μA
Side mode suppression ratio	SMSR	CW, If=Iop	35	–	–	dB
Relative intensity noise	RIN	CW, If=Iop, DC~2.5GHz	–	–	-140	dB/Hz
Polarization extinction ratio	PER	CW, If=Iop, launched into slow axis	20	–	–	dB
Monitor dark current	Id	VrP=5V	–	1	10	nA
Monitor capacitance	C	VrP=5V, f=1MHz	–	–	12	pF
Peak wavelength	λp	CW, If=Iop	(*4)			nm
Peak wavelength drift	Dλp	CW, Pf=Pop, 25 years	–	–	0.2	nm
Line width	Δλ	CW, If=Iop	–	–	10	MHz

Note *4 See ordering information (Section 7)

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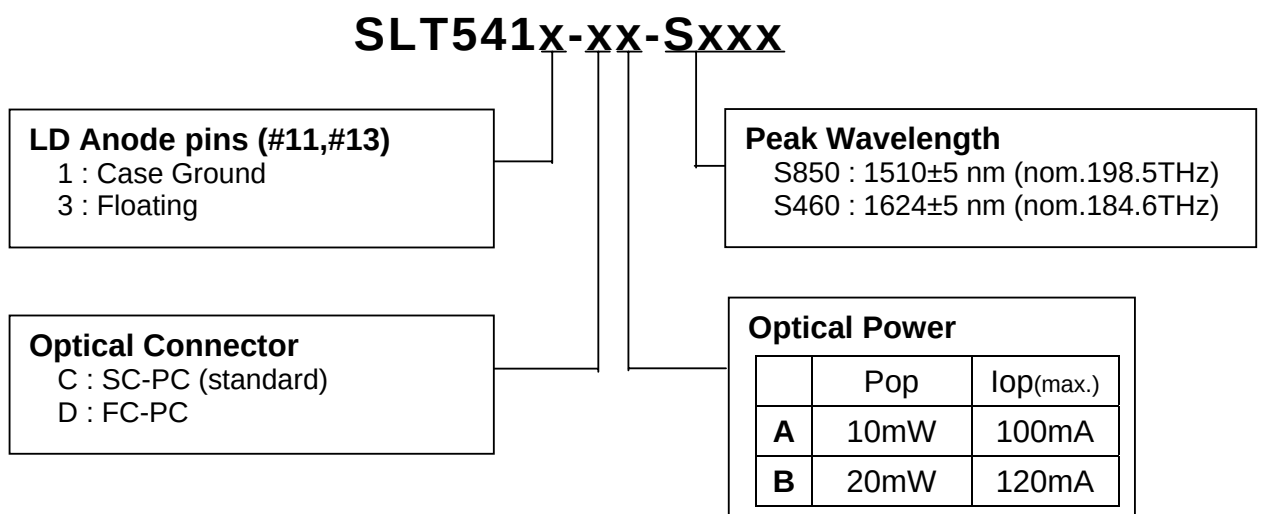
5. Thermal characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Thermistor resistance	Rth	T _{LD} =25°C	9.5	10	10.5	kΩ
Thermistor B const.	B	25°C / 75°C	3800	3900	4000	K
TEC current	Ic	T _{LD} =25°C, Tc =70°C Pf=Pop	–	–	1	A
TEC voltage	Vc	T _{LD} =25°C, Tc =70°C Pf=Pop	–	–	2	V

6. Fiber specification

Parameter	Min.	Typ.	Max.	Unit
Fiber type	Single mode PM fiber			–
Mode field diameter	8.5	9.5	10.5	μm
Cladding diameter	122	125	128	μm
Outer jacket diameter	–	0.9	–	mm
Pigtail length	1.5	2.0	2.5	m
Bending radius	40	–	–	mm
Optical connector	See ordering information (Section 7)			–

7. Ordering information



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8. Precaution

Class 3B in the radiation safety standard applies to all versions of this product. Mishandling may result in hazardous laser radiation exposure.

Refer to the document IRO-D01002 in terms of the usage of this product and safety precautions.

REVISION RECORD

Document No.	Date	Description	Incorporated by	Checked by	Approved by
HUW9924078-01A	Aug./30/1999	Initial issue	T.Nakabayashi	N.Kushida	T.Fujitani
HUW9924078-01B	July/12/2001	Lead pin length and hole diameter are revised. Peak wavelength drift is added.	N.Kushida	T.Kounosu	K.Tanida
HUW9924078-01C	Jan/31/2002	IfL, Iop and Precaution are revised. Itherm, Vtherm, VESD and Pigtail length are added.	N.Kushida	T.Kounosu	K.Tanida