

1,550nm Continuous Wave DFB Laser

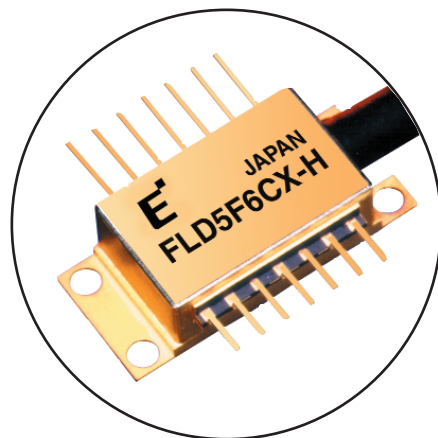
FLD5F6CX-H

FEATURES

- Continuous Wave (CW) Light Source for DWDM System
- Output Power: 10mW
- Available at C-band ITU-T Wavelengths between 1527.99 to 1562.05nm
- Built-in TEC, Thermistor, Monitor PIN PD and Optical Isolator
- Polarization maintaining (PANDA) fiber

APPLICATIONS

2.5 and 10 Gb/s Long Haul DWDM Transmission Systems



DESCRIPTION

The laser is for a high power (10mW) CW operation, at selected C-band ITU-T grid wavelengths. The module includes an optical isolator monitor photodiode, thermistor and a thermo-electric cooler. This laser is designed for use with external modulation components (such as LiNbO₃ modulators). The device comes in “butterfly” type, 14-pin package, and operates between -20 to 70°C.

ABSOLUTE MAXIMUM RATINGS (T_{op}=25°C, unless otherwise specified)

Parameter	Symbol	Condition	Rating		Unit
			Min.	Max.	
Storage Temperature	T _{stg}	-	-40	+85	°C
Operating Case Temperature	T _{op}	-	-20	+70	°C
Optical Output Power	P _f	CW	-	15	mW
LD Forward Current	I _F	CW	-	150	mA
LD Reverse Voltage	V _R	CW	-	2	V
PD Forward Current	-	-	-	10	mA
PD Reverse Voltage	V _{DR}	-	-	20	V
Cooler Voltage	V _C	Cooling	-	+2.5	V
		Heating	-2.5	-	
Cooler Current	I _C	Cooling	-	+1.4	A
		Heating	-0.9	-	
Thermistor Temperature	T _{th}	ATC Operation	-20	+70	°C
Lead Soldering Time	-	260°C	-	10	sec

Note 1: Heatsink thickness shall be 10mm min. (refer to note on thermal precaution).

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_L=T_{set}$, $T_C=25^{\circ}\text{C}$, BOL, unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Laser Set Temperature	T_{set}	-	+20	-	+35	$^{\circ}\text{C}$
Optical Output Power	P_f	CW, $T_c=-20$ to $+70^{\circ}\text{C}$	10	-	-	mW
Threshold Current	I_{th}	CW	3	-	40	mA
Forward Voltage	V_F	CW, $I_F=30$ mA, pin 3,13	-	-	1.5	V
Slope Efficiency	η	CW, $P_f=10$ mW, ORL>40dB	0.09	0.16	-	mW/mA
Operating Current	I_{op}	CW, $P_f=10$ mW	-	-	110	mA
Peak Wavelength	λ_p	CW, $P_f=10$ mW, ORL>40dB	Note (4)			nm
Wavelength Drift	-	after 20 years	-0.2	-	0.2	nm
Wavelength Stability with Case Temperature	-	-	-	-	+/-1	pm/ $^{\circ}\text{C}$
Spectral Width (-3dB)	$\Delta\lambda$	CW, $P_f=10$ mW, ORL>40dB	-	8	50	MHz
Side Mode Suppression	S_r	CW, $P_f=10$ mW, ORL>40dB	30	33	-	dB
Monitor Current	I_m	$P_f=10$ mW	0.04	-	1.0	mA
Monitor Dark Current	I_{dm}	$V_{PD}=5$ V	-	-	100	nA
Monitor Capacitance	C_t	$V_{PD}=5$ V, $f=1$ MHz	-	-	10	pF
Tracking Error (Note 2)	TE	$I_m=\text{constant}$, $P_f(T_c=25^{\circ}\text{C})=10$ mW, $T_c=-20$ to $+70^{\circ}\text{C}$	-	-	+/-0.5	dB
Optical Isolation	S22	$T_c=-20$ to $+70^{\circ}\text{C}$	25	-	-	dB
Polarization Extinction Ratio	PER	CW, $P_f=10$ mW	20	-	-	dB
Relative Intensity Noise	RIN	CW, $P_f=10$ mW, ORL>40dB, $f=0.5$ GHz	-	-	-157	dB/Hz
Cooler Current	I_c	$T_L=T_{set}$, $T_c=+70^{\circ}\text{C}$, $P_f=10$ mW	-	-	1.0	A
Cooler Voltage	V_c	$T_L=T_{set}$, $T_c=+70^{\circ}\text{C}$, $P_f=10$ mW	-	-	2.4	V
Thermistor Resistance	R_{th}	$T_L=25^{\circ}\text{C}$	9.5	10.0	10.5	k Ω
Thermistor B Constant (Note 2)	B	-	3,270	3,450	3,630	K

Note 2. $TE=10*\log[P_f(T_c)/P_f(25)]$ Note 3. Relation between resistance and temperature ($^{\circ}\text{K}$) is:

$$R_{th}(T) = R_{th}(25) * \exp[B(1/T - 1/298)]$$

Note 4. The selected wavelengths available are listed in Table 1

Fig. 1 Forward Current vs Output Power

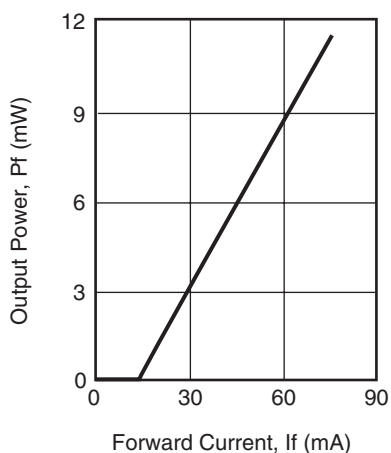


Fig. 2 Temperature Dependence of Wavelength (ACC Operation)

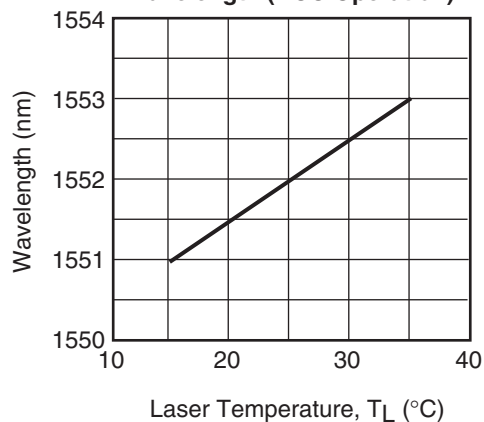


Fig. 3 Cooler Voltage -Current

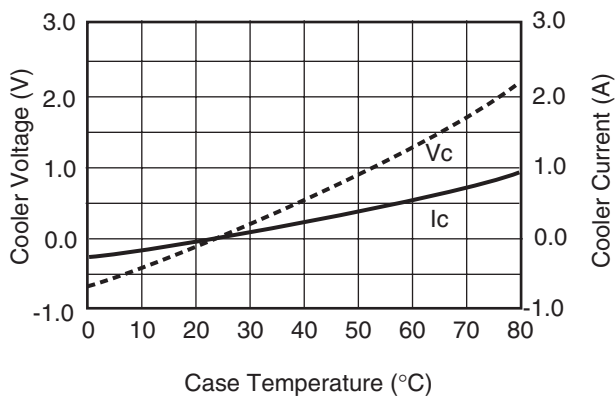


Fig.4 Spectrum

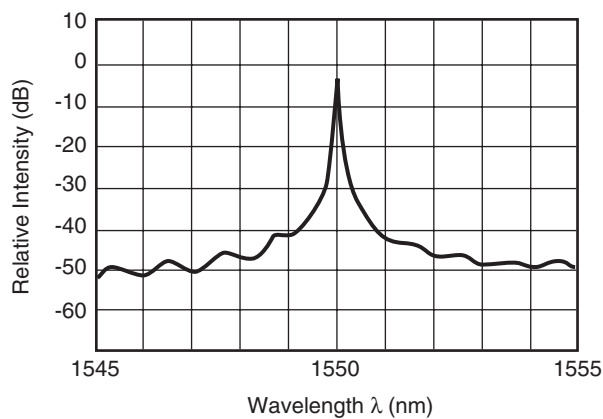


Table 1 Wavelength Table

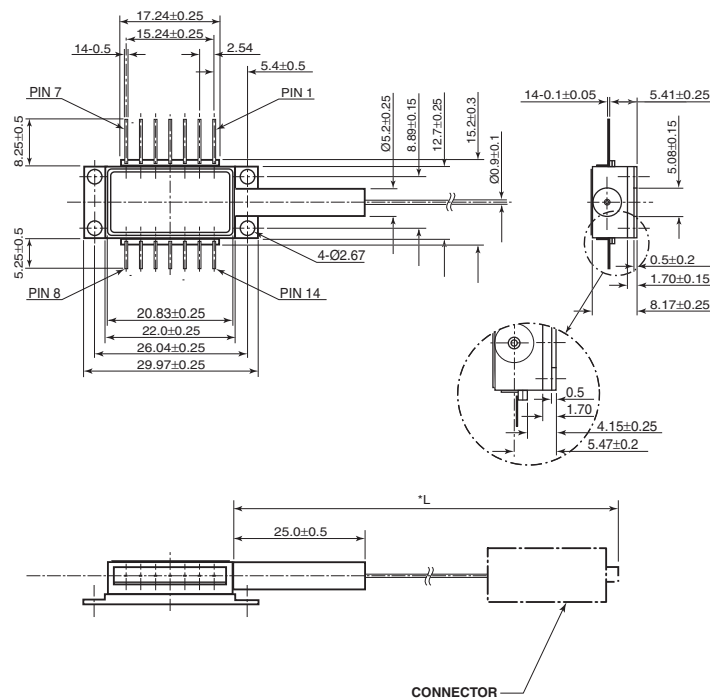
Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F6CX-H62	1527.99	±0.1
-H61	1528.77	±0.1
-H60	1529.55	±0.1
-H59	1530.33	±0.1
-H58	1531.12	±0.1
-H57	1531.90	±0.1
-H56	1532.68	±0.1
-H55	1533.47	±0.1
-H54	1534.25	±0.1
-H53	1535.04	±0.1
-H52	1535.82	±0.1
-H51	1536.61	±0.1
-H50	1537.40	±0.1
-H49	1538.19	±0.1
-H48	1538.98	±0.1
-H47	1539.77	±0.1
-H46	1540.56	±0.1
-H45	1541.35	±0.1
-H44	1542.14	±0.1
-H43	1542.94	±0.1
-H42	1543.73	±0.1
-H41	1544.53	±0.1
-H40	1545.32	±0.1
-H39	1546.12	±0.1
-H38	1546.92	±0.1
-H37	1547.72	±0.1
-H36	1548.51	±0.1
-H35	1549.32	±0.1
-H34	1550.12	±0.1
-H33	1550.92	±0.1
-H32	1551.72	±0.1
-H31	1552.52	±0.1
-H30	1553.33	±0.1
-H29	1554.13	±0.1
-H28	1554.94	±0.1
-H27	1555.75	±0.1
-H26	1556.55	±0.1
-H25	1557.36	±0.1
-H24	1558.17	±0.1
-H23	1558.98	±0.1
-H22	1559.79	±0.1
-H21	1560.61	±0.1
-H20	1561.42	±0.1
-H19	1562.23	±0.1
-H18	1563.05	±0.1

1,550nm Continuous Wave DFB Laser

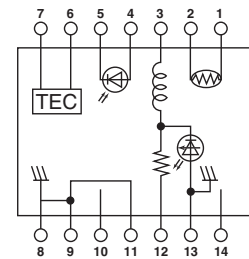
FLD5F6CX-H

"CX" PACKAGE

UNIT: mm



Grounded Type	
PIN #	FUNCTION
1.	Thermistor
2.	Thermistor
3.	Laser DC Bias (-)
4.	Monitor (Anode)
5.	Monitor (Cathode)
6.	Thermoelectric Cooler (+)
7.	Thermoelectric Cooler (-)
8.	Case Ground
9.	Case Ground
10.	N.C.
11.	Case Ground
12.	Laser Modulation (-)
13.	Case Ground
14.	N.C.



For further information please contact:

Eudyna Devices USA Inc.

2355 Zanker Rd.
San Jose, CA 95131-1138, U.S.A.
TEL: (408) 232-9500
FAX: (408) 428-9111
www.us.eudyna.com

Eudyna Devices Europe Ltd.

Network House
Norreys Drive
Maidenhead, Berkshire SL6 4FJ
United Kingdom
TEL: +44 (0) 1628 504800
FAX: +44 (0) 1628 504888

Eudyna Devices Asia Pte Ltd.

Hong Kong Branch
Rm. 1101, Ocean Centre, 5 Canton Rd.
Tsim Sha Tsui, Kowloon, Hong Kong
TEL: +852-2377-0227
FAX: +852-2377-3921

Eudyna Devices Inc.

Sales Division
1, Kanai-cho, Sakae-ku
Yokohama, 244-0845, Japan
TEL: +81-45-853-8156
FAX: +81-45-853-8170

CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Eudyna Devices Inc. reserves the right to change products and specifications without notice. The information does not convey any license under rights of Eudyna Devices Inc. or others.

© 2004 Eudyna Devices USA Inc.
Printed in U.S.A.