

FEATURES

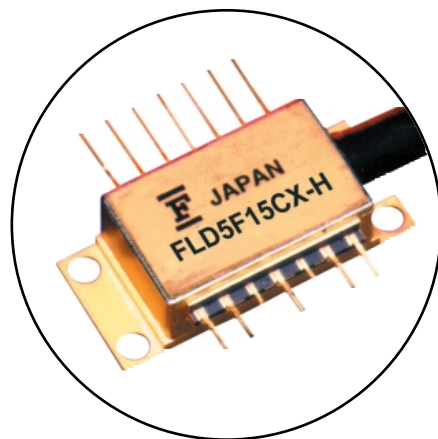
- Continuous Wave (CW) MQW DFB Laser
- 16dBm Output Power
- Available at C band ITU-T Wavelengths between 1528.77-1569.99nm
- Polarization preserving (PANDA) fiber
- Built-in TEC, Thermistor, Monitor PD and Optical Isolation

APPLICATIONS

This laser is intended for use in 2.5 and 10 Gb/s long haul DWDM transmission systems.

DESCRIPTION

The Multiple Quantum Well (MQW) Laser offers high power (16dBm) CW operation, at selected C-Band ITU-T grid wavelengths. It is packaged in a “butterfly” type module with a built in thermistor, TEC, Monitor PD, and optical isolator. This laser is designed for use with external modulation components (such as LiNbO₃ modulators).



ABSOLUTE MAXIMUM RATINGS (T_c=25°C)

Parameter	Symbol	Condition	Ratings	Unit
Storage Temperature	T _{stg}	-	-40 to +85	°C
Operating Case Temperature	T _{op}	-	0 to +70	°C
Optical Output Power	P _f	CW	50	mW
Laser Reverse Voltage	V _R	-	2	V
Laser Forward Current	I _F	CW	480	mA
Photodiode Reverse Voltage	V _{DR}	-	20	V
Photodiode Forward Current	I _{PF}	-	10	mA
Cooler Current	I _c	-	2.0	A
Cooler Voltage	V _c	Note (1)	5.0	V

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

Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Laser Set Temperature	T_{set}	-	15	-	35	$^\circ\text{C}$
Optical Output Power	P_f	CW, $T_c=0$ to $+70^\circ\text{C}$	40	-	-	mW
Threshold Current	I_{th}	CW	3	-	45	mA
Forward Voltage	V_F	CW, $I_F=30$ mA, pin 3,13	-	-	3.0	V
Slope Efficiency	η	CW, $P_f=40$ mW, ORL>40dB	-	0.14	-	mW/mA
Operating Forward Current	I_{op}	CW, $P_f=40$ mW	-	-	400	mA
Peak Wavelength	λ_p	CW, $P_f=40$ mW, ORL>40dB	Note (3)			nm
Wavelength Stability with Case Temperature	-	-	-	-	+/-2	pm/ $^\circ\text{C}$
Spectral Width (-3dB)	$\Delta\lambda$	CW, $P_f=40$ mW, ORL>40dB	-	5	10	MHz
Side Mode Suppression	S_r	CW, $P_f=40$ mW, ORL>40dB	35	-	-	dB
Monitor Current	I_m	$P_f=40$ mW	0.1	-	4.0	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 1)	TE	$I_m=\text{constant}$, $T_c=0$ to $+70^\circ\text{C}$	-0.5	-	+1.0	dB
Optical Isolation	I_S	$T_c=0$ to $+70^\circ\text{C}$	22	-	-	dB
Extinction Ratio	TE/TM	CW, $P_f=40$ mW	20	-	-	dB
Relative Intensity Noise	RIN	CW, $P_f=40$ mW, ORL>40dB, $f=\text{DC}-7.5$ GHz	-	-	-140	dB/Hz
Cooler Current	I_c	$T_L=T_{set}$, $T_c=+70^\circ\text{C}$, $P_f=40$ mW	-	-	1.8	A
Cooler Voltage	V_c	$T_L=T_{set}$, $T_c=+70^\circ\text{C}$, $P_f=40$ mW	-	-	4.8	V
Thermistor Resistance	R_{th}	T_c , $T_L=25^\circ\text{C}$	9.5	10.0	10.5	k Ω
Thermistor B Constant (Note 2)	B	T_c , $T_L=25^\circ\text{C}$	3,270	3,450	3,630	K

Note 1. $TE=10\cdot\log[P_f(T_c)/P_f(25)]$ Note 2. Relation between resistance and temperature ($^\circ\text{K}$) is:

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

Note 3. The selected wavelength is available in accordance with Figure 5.

Fig. 1 Forward Current vs Output Power

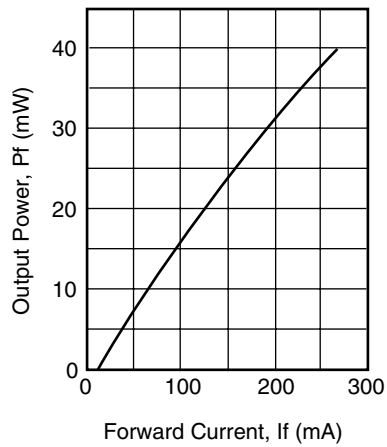


Fig. 2 Temperature Dependence of Wavelength

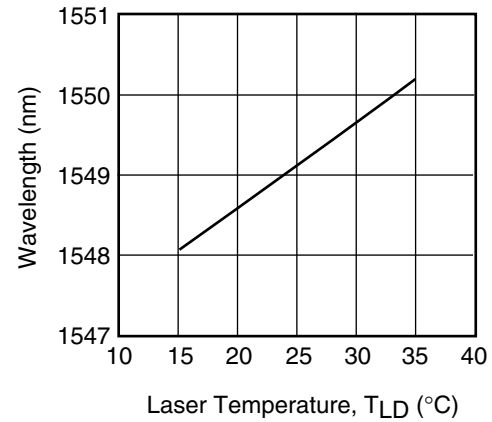


Fig. 3 Cooler Voltage -Current

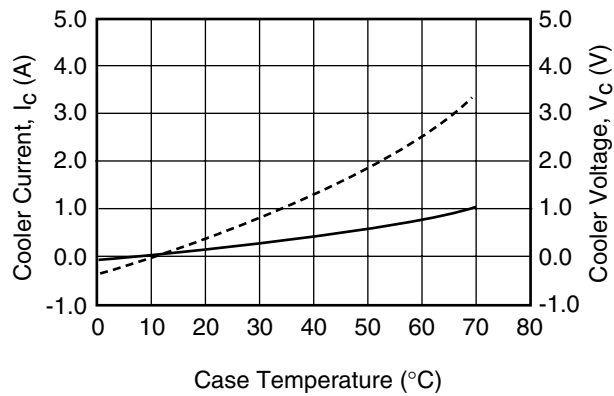


Fig.4 Spectrum

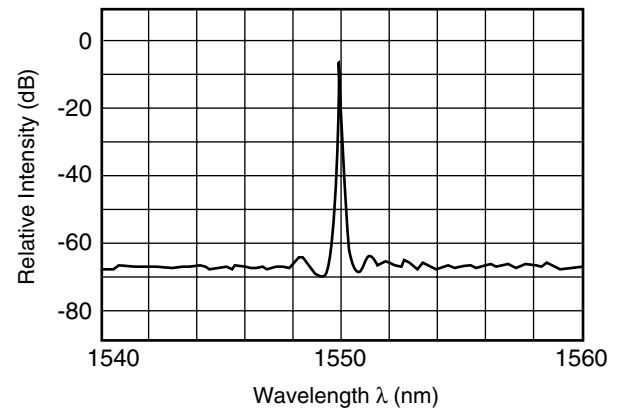


Fig. 5 Wavelength Table

Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F15CX-H9610	1528.77	±0.01
FLD5F15CX-H9600	1529.55	±0.01
FLD5F15CX-H9590	1530.33	±0.01
FLD5F15CX-H9580	1531.12	±0.01
FLD5F15CX-H9570	1531.90	±0.01
FLD5F15CX-H9560	1532.68	±0.01
FLD5F15CX-H9550	1533.47	±0.01
FLD5F15CX-H9540	1534.25	±0.01
FLD5F15CX-H9530	1535.04	±0.01
FLD5F15CX-H9520	1535.82	±0.01
FLD5F15CX-H9510	1536.61	±0.01
FLD5F15CX-H9500	1537.40	±0.01
FLD5F15CX-H9490	1538.19	±0.01
FLD5F15CX-H9480	1538.98	±0.01
FLD5F15CX-H9470	1539.77	±0.01
FLD5F15CX-H9460	1540.56	±0.01
FLD5F15CX-H9450	1541.35	±0.01
FLD5F15CX-H9440	1542.14	±0.01
FLD5F15CX-H9430	1542.94	±0.01
FLD5F15CX-H9420	1543.73	±0.01
FLD5F15CX-H9410	1544.53	±0.01

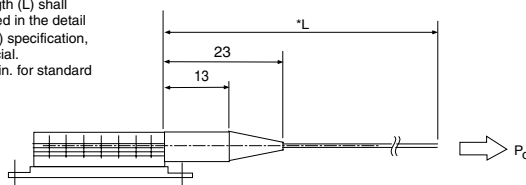
FLD5F15CX-H9400	1545.32	±0.01
FLD5F15CX-H9390	1546.12	±0.01
FLD5F15CX-H9380	1546.92	±0.01
FLD5F15CX-H9370	1547.72	±0.01
FLD5F15CX-H9360	1548.51	±0.01
FLD5F15CX-H9350	1549.32	±0.01
FLD5F15CX-H9340	1550.12	±0.01
FLD5F15CX-H9330	1550.92	±0.01
FLD5F15CX-H9320	1551.72	±0.01
FLD5F15CX-H9310	1552.52	±0.01
FLD5F15CX-H9300	1553.33	±0.01
FLD5F15CX-H9290	1554.13	±0.01
FLD5F15CX-H9280	1554.94	±0.01
FLD5F15CX-H9270	1555.75	±0.01
FLD5F15CX-H9260	1556.55	±0.01
FLD5F15CX-H9250	1557.36	±0.01
FLD5F15CX-H9240	1558.17	±0.01
FLD5F15CX-H9230	1558.98	±0.01
FLD5F15CX-H9220	1559.79	±0.01
FLD5F15CX-H9210	1560.61	±0.01
FLD5F15CX-H9200	1561.42	±0.01
FLD5F15CX-H9190	1562.23	±0.01
FLD5F15CX-H9180	1563.05	±0.01
FLD5F15CX-H9170	1563.86	±0.01
FLD5F15CX-H9160	1564.67	±0.01
FLD5F15CX-H9150	1565.49	±0.01
FLD5F15CX-H9140	1566.31	±0.01
FLD5F15CX-H9130	1567.13	±0.01
FLD5F15CX-H9120	1567.95	±0.01
FLD5F15CX-H9110	1568.77	±0.01
FLD5F15CX-H9100	1569.59	±0.01

NOTE

This device is not available with a fiber polarization axis aligned connector. The attached Fujitsu connector is only for use at incoming inspection. A fusion splice is the recommended method for connecting this laser to an external modulator.

FLD5F15CX-H

UNIT: mm



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

