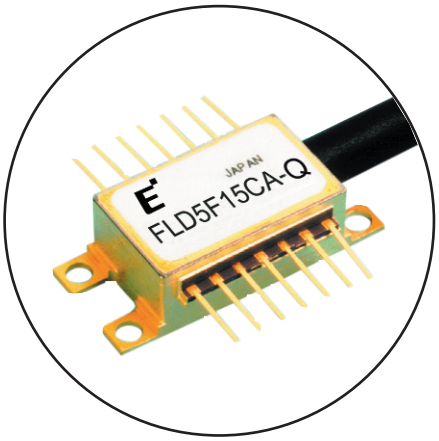
CW LD Module with Wavelength Locker

FLD5F15CA-Q

FEATURES:

- CW light source with integrated wavelength locker
- Output Power: 16dBm (min.)
- Available at L-band ITU-T grid wavelengths between 1570.416 to1608.760nm
- Wavelength stability better than ±25pm drift over 20 years operation and (0 to 70°C) case temperature variation
- Built-in optical isolator, Thermistor, TEC, Wavelength Monitor PIN-PD, Power Monitor PIN-PD
- Polarization maintaining (PANDA) fiber



APPLICATIONS:

Long haul DWDM transmission system
Metropolitan DWDM transmission system
Optical Test Equipment

DESCRIPTION:

The Eudyna LD module with Wavelength Locker (FLD5F15CA-Q) is a high power CW laser (16dBm) with polarization maintaining fiber. It is intended for use with an external modulator. The oscillation wavelength can be locked onto the desired ITU-T grid channel via use of the built-in Wavelength Monitor. This laser is available at any of the 92 ITU-T wavelengths in the L-band (1570.416 to1608.760nm). The device comes in a standard 14-pin butterfly package, and operates between 0 to 70°C.

ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Condition	Ratings		Unit
			Min.	Max.	
Storage Temperature	T_{stg}	-	-40	+85	°C
Operating Case Temperature	T_{op}	-	0	+70	°C
Optical Output Power	P_f	CW	-	50	mW
LD Forward Current	I_F	CW	-	480	mA
LD Reverse Voltage	V_R	-	-	2	V
PD Reverse Voltage	V_{DR}	-	-	20	V
PD Forward Current	I_{PF}	-	-	10	mA
Cooler Voltage	V_c	Cooling	-	+5.00	V
		Heating	-2.50	-	
Cooler Current	I_c	Cooling	-	+1.85	A
		Heating	-0.60	-	
Thermistor Temperature	T_{th}	ATC Operation	0	+70	°C
Lead Soldering Time	-	260°C	-	10	sec

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_L=T_{set}, T_C=25°C, BOL, unless otherwise specified)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Laser Set Temperature (BOL)	T_{set}	-	15	-	35	°C
Laser Set Temperature (EOL)	T_{set}	-	14	-	36	°C
Optical Output Power	P_f	-	40	-	-	mW
Threshold Current	I_{th}	-	3	-	45	mA
Forward Voltage	V_F	CW, I_F=30 mA, pin 3,13	-	-	3.0	V
Slope Efficiency	η	-	-	0.14	-	mW/mA
Operating Forward Current	I_{op}	-	-	-	400	mA
Peak Wavelength	λ_p	ORL>40dB	Note (4)			nm
Wavelength Stability with Case Temperature	-	Im1, Im2=constant, Tc=0 to 70°C, 20 years	-25	-	+25	pm
Wavelength Stability with LD Current Change	-	TL=T_{set}	-	-	+25	pm/mA
Spectral Width (-3dB)	Δλ	ORL>40dB	-	3	10	MHz
Side Mode Suppression	Sr		33	-	-	dB
Power Monitor Current	I_{m1}	Pf=40mW	0.1	-	4.0	mA
Power Monitor Dark Current	I_{dm1}	Vpd=5V	-	-	100	nA
Power Monitor Capacitance	C_{t1}	Vpd=5V, f=1MHz	-	-	10	pF
Wavelength Monitor Current	I_{m2}	Pf=40mW, WL Locked	0.1	-	4.0	mA
Wavelength Monitor Dark Current	I_{dm2}	Vpd=5V	-	-	100	nA
Wavelength Monitor Capacitance	C_{t2}	Vpd=5V, f=1MHz	-	-	10	pF
Wavelength deference between lock point and Im2peak (Note 3)	Δλ locked		6.0	-	33.0	GHz
Im2 peak-bottom Ratio	Im2peak/ Im2bottom		1.0	-	4.5	dB
Tracking Error (Note 1)	TE	Im1, Im2=constant, Tc=0 to +70°C	-0.5	-	+1.0	dB
Optical Isolation	I_S	Tc=0 to +70°C	22	-	-	dB
Polarization Extinction Ratio	PER	-	20	-	-	dB
Relative Intensity Noise	RIN	CW, Pf=40mW, ORL>40dB, average of f=DC to 7.5GHz	-	-	-140	dB/Hz
Cooler Current	Ic	T_L=Tset, Tc=+70°C, Pf=40mW	-	-	1.4	A
Cooler Voltage	Vc		-	-	4.2	V
Cooler Power	Pc		-	-	5.9	W
Thermistor Resistance	Rth	T_L=25°C, Tc=+25°C	9.5	10.0	10.5	kΩ
Thermistor B Constant (Note 2)	B		3,270	3,450	3,630	K

Note 1. TE=10*log[Pf(Tc)/Pf(25)]
Note 2. Relation between resistance and temperature (°K) is: Rth (T) = Rth (25°C)*exp[B(1/T-1/298)]
Note 3. Wavelength at lock point is longer than Im2 peak. (Increasing wavelength shall give a decrease in wavelength monitor current) The value is written in frequency: f=c/λp, c=2.99792458*10^8m/s
Note 4. Reference Table 1 for Wavelength Table

Fig. 1 Forward Current vs Output Power

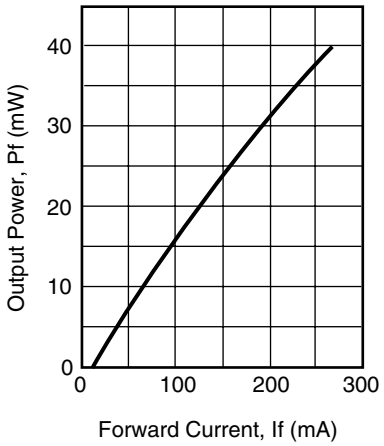


Fig. 2 Temperature Dependance of Wavelength(ACC Operation)

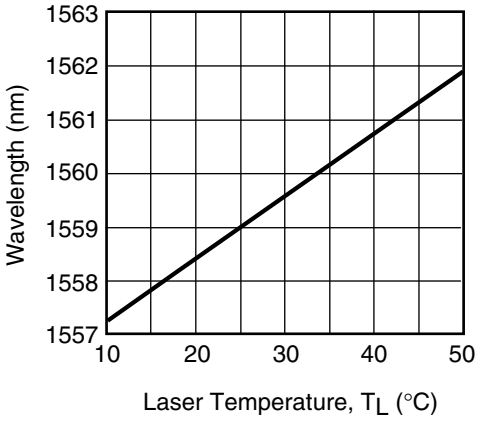


Fig. 3 Cooler Voltage -Current

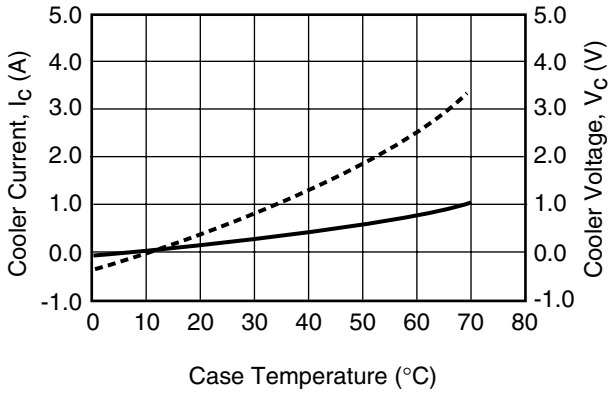


Fig.4 Spectrum

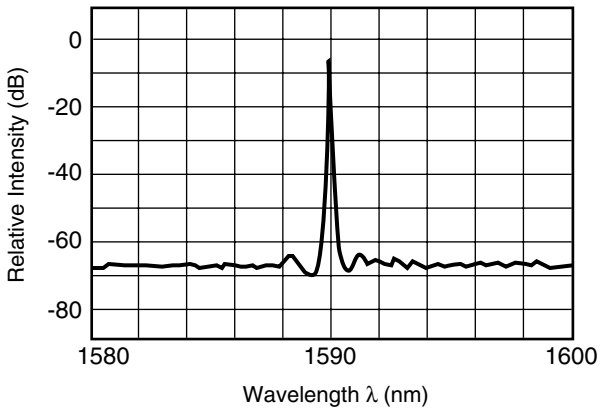


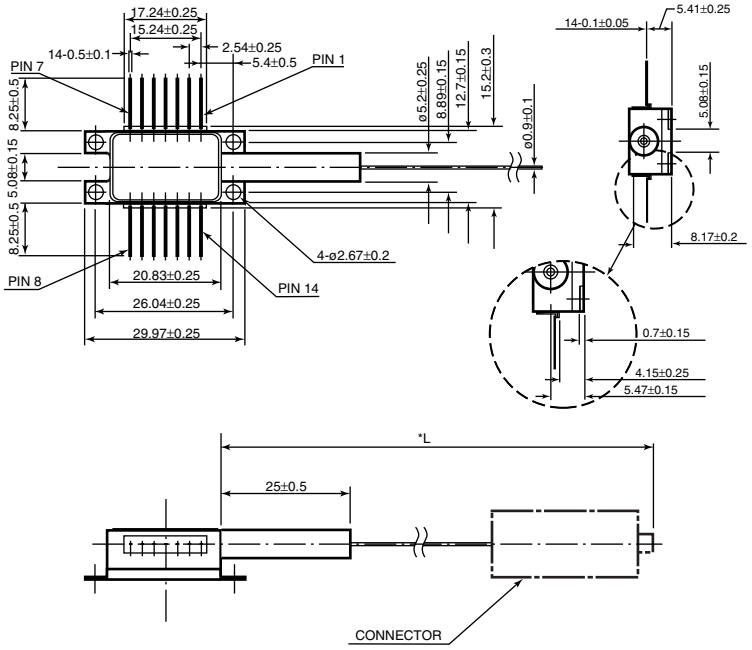
Table 1 Wavelength Table

Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F15CA-Q9090	1570.416	±0.01
FLD5F15CA-Q9085	1570.828	±0.01
FLD5F15CA-Q9080	1571.239	±0.01
FLD5F15CA-Q9075	1571.651	±0.01
FLD5F15CA-Q9070	1572.063	±0.01
FLD5F15CA-Q9065	1572.476	±0.01
FLD5F15CA-Q9060	1572.888	±0.01
FLD5F15CA-Q9055	1573.301	±0.01
FLD5F15CA-Q9050	1573.714	±0.01
FLD5F15CA-Q9045	1574.127	±0.01
FLD5F15CA-Q9040	1574.540	±0.01
FLD5F15CA-Q9035	1574.954	±0.01
FLD5F15CA-Q9030	1575.368	±0.01
FLD5F15CA-Q9025	1575.782	±0.01
FLD5F15CA-Q9020	1576.196	±0.01
FLD5F15CA-Q9015	1576.610	±0.01
FLD5F15CA-Q9010	1577.025	±0.01
FLD5F15CA-Q9005	1577.440	±0.01
FLD5F15CA-Q9000	1577.855	±0.01
FLD5F15CA-Q8995	1578.270	±0.01
FLD5F15CA-Q8990	1578.686	±0.01
FLD5F15CA-Q8985	1579.102	±0.01
FLD5F15CA-Q8980	1579.518	±0.01
FLD5F15CA-Q8975	1579.934	±0.01
FLD5F15CA-Q8970	1580.350	±0.01
FLD5F15CA-Q8965	1580.767	±0.01
FLD5F15CA-Q8960	1581.184	±0.01
FLD5F15CA-Q8955	1581.601	±0.01
FLD5F15CA-Q8950	1582.018	±0.01
FLD5F15CA-Q8945	1582.436	±0.01
FLD5F15CA-Q8940	1582.854	±0.01
FLD5F15CA-Q8935	1583.271	±0.01
FLD5F15CA-Q8930	1583.690	±0.01
FLD5F15CA-Q8925	1584.108	±0.01
FLD5F15CA-Q8920	1584.527	±0.01
FLD5F15CA-Q8915	1584.946	±0.01
FLD5F15CA-Q8910	1585.365	±0.01
FLD5F15CA-Q8905	1585.784	±0.01
FLD5F15CA-Q8900	1586.203	±0.01
FLD5F15CA-Q8895	1586.623	±0.01
FLD5F15CA-Q8890	1587.043	±0.01
FLD5F15CA-Q8885	1587.463	±0.01
FLD5F15CA-Q8880	1587.884	±0.01
FLD5F15CA-Q8875	1588.304	±0.01
FLD5F15CA-Q8870	1588.725	±0.01
FLD5F15CA-Q8865	1589.146	±0.01

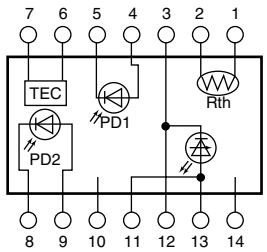
Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F15CA-Q8860	1589.568	±0.01
FLD5F15CA-Q8855	1589.989	±0.01
FLD5F15CA-Q8850	1590.411	±0.01
FLD5F15CA-Q8845	1590.833	±0.01
FLD5F15CA-Q8840	1591.255	±0.01
FLD5F15CA-Q8835	1591.678	±0.01
FLD5F15CA-Q8830	1592.100	±0.01
FLD5F15CA-Q8825	1592.523	±0.01
FLD5F15CA-Q8820	1592.946	±0.01
FLD5F15CA-Q8815	1593.369	±0.01
FLD5F15CA-Q8810	1593.793	±0.01
FLD5F15CA-Q8805	1594.217	±0.01
FLD5F15CA-Q8800	1594.641	±0.01
FLD5F15CA-Q8795	1595.065	±0.01
FLD5F15CA-Q8790	1595.489	±0.01
FLD5F15CA-Q8785	1595.914	±0.01
FLD5F15CA-Q8780	1596.339	±0.01
FLD5F15CA-Q8775	1596.764	±0.01
FLD5F15CA-Q8770	1597.189	±0.01
FLD5F15CA-Q8765	1597.615	±0.01
FLD5F15CA-Q8760	1598.041	±0.01
FLD5F15CA-Q8755	1598.467	±0.01
FLD5F15CA-Q8750	1598.893	±0.01
FLD5F15CA-Q8745	1599.320	±0.01
FLD5F15CA-Q8740	1599.746	±0.01
FLD5F15CA-Q8735	1600.173	±0.01
FLD5F15CA-Q8730	1600.600	±0.01
FLD5F15CA-Q8725	1601.028	±0.01
FLD5F15CA-Q8720	1601.455	±0.01
FLD5F15CA-Q8715	1601.883	±0.01
FLD5F15CA-Q8710	1602.311	±0.01
FLD5F15CA-Q8705	1602.740	±0.01
FLD5F15CA-Q8700	1603.168	±0.01
FLD5F15CA-Q8695	1603.597	±0.01
FLD5F15CA-Q8690	1604.026	±0.01
FLD5F15CA-Q8685	1604.455	±0.01
FLD5F15CA-Q8680	1604.885	±0.01
FLD5F15CA-Q8675	1605.314	±0.01
FLD5F15CA-Q8670	1605.744	±0.01
FLD5F15CA-Q8665	1606.174	±0.01
FLD5F15CA-Q8660	1606.605	±0.01
FLD5F15CA-Q8655	1607.035	±0.01
FLD5F15CA-Q8650	1607.466	±0.01
FLD5F15CA-Q8645	1607.897	±0.01
FLD5F15CA-Q8640	1608.329	±0.01
FLD5F15CA-Q8635	1608.760	±0.01

"CA" PACKAGE

UNIT: mm



TOP VIEW



#	PIN DESIGNATIONS
1	Thermistor
2	Thermistor
3	LD Cathode
4	Power Monitor Anode
5	Power Monitor Cathode
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Wavelength Monitor Cathode
9	Wavelength Monitor Anode
10	NC
11	LD Anode
12	LD Cathode
13	LD Anode
14	NC

* Pigtail length (L) and connector type are specified in the detail (individual) specification.
L = 1500MIN. for standard

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- **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.**