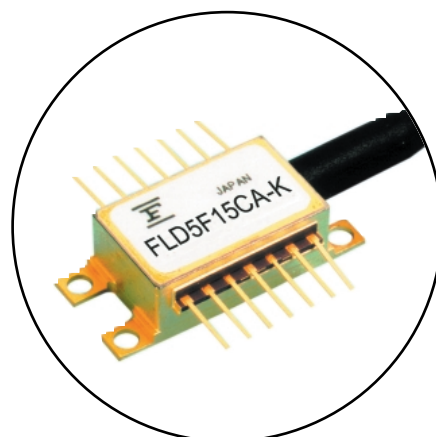


FEATURES:

- CW light source with integrated wavelength locker
- 13dBm (min.) output power
- Tunable over 4 ITU-T grid channels (2.4nm)
- Available at C Band ITU-T grid wavelengths between 1528.77-1569.99nm
- Wavelength stability better than +/-25pm drift over 20 years operation and (0 - 70°C) case temperature variation
- Built-in optical isolator, Thermistor, TEC, Wavelength Monitor Pin, Power Monitor Pin
- Polarization preserving (PANDA) fiber



APPLICATIONS:

Long haul DWDM
Metropolitan DWDM applications at 10 Gbs
Optical Test Equipment

DESCRIPTION:

The Fujitsu Tunable LD module with Wavelength Locker (FLD5F15CA-K) is a high power CW laser (13dBm) with polarization maintaining fiber. It is intended for use with an external modulator. The laser can be wavelength tuned across a 2.4nm range (4 ITU-T 100Ghz spaced channels) via adjustment of the chip temperature with the included TEC. The tuned wavelength can be locked onto the desired ITU-T grid channel via use of the included fabry-perot etalon. This laser is available at any of the 52 ITU-T wavelengths in the C band (1528.77-1569.59nm). The device comes in a standard 14-pin butterfly package, operates between 0-70°C, and requires 120mA of drive current (typical).

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	30	mW
Laser Reverse Voltage	V _R	-	2	V
Laser Forward Current	I _F	CW	250	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)	4.8	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}	-	11	-	51	$^\circ\text{C}$
Optical Output Power	P_f	CW, $T_c=0$ to $+70^\circ\text{C}$	20	-	-	mW
Threshold Current	I_{th}	CW	3	-	45	mA
Forward Voltage	V_F	CW, $I_F=30$ mA, pin 3,13	-	-	2.2	V
Slope Efficiency	η	CW, $P_f=20$ mW, ORL>40dB	-	0.2	-	mW/mA
Operating Forward Current	I_{op}	-	-	120	200	mA
Peak Wavelength	λ_p	CH. 1-CH.4, ORL>40dB	Note (3)			nm
Wavelength Stability with Case Temperature	-	$I_{m1}=\text{constant}$, $I_{m2}=\text{constant}$, $T_c=0-70^\circ\text{C}$, 20 years	-25	-	25	pm
Spectral Width (-3dB)	$\Delta\lambda$	CW, $P_f=20$ mW, ORL>40dB	-	3	10	MHz
Side Mode Suppression	S_r	CW, $P_f=20$ mW, ORL>40dB	33	-	-	dB
Monitor Current	I_{m1}	$P_f=20$ mW	0.1	-	1.8	mA
Wavelength Monitor Current	I_{m2}	$P_f=20$ mW, WL Locked	0.1	-	1.8	mA
Tracking Error (Note 1)	TE	$I_m=\text{constant}$, $P_f(T_c=25^\circ\text{C})=20$ mW, $T_c=0$ 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, $P_f=20$ mW	20	-	-	dB
Relative Intensity Noise	RIN	CW, $P_f=20$ mW, ORL>40dB, $f=\text{DC}-7.5\text{GHz}$	-	-	-140	dB/Hz
Cooler Current	I_c	$T_L=T_{set}$, $T_c=+70^\circ\text{C}$, $P_f=20$ mW	-	-	1.8	A
Cooler Voltage	V_c	$T_L=T_{set}$, $T_c=+70^\circ\text{C}$, $P_f=20$ mW	-	-	4.6	V
Thermistor Resistance	R_{th}	T_c , $T_L=+25^\circ\text{C}$	9.5	10.0	10.5	$k\Omega$
Thermistor B Constant (Note 2)	B	T_c , $T_L=+25^\circ\text{C}$	3,270	3,450	3,630	K

Note 1. $TE=10\log[P_f(T_c)/P_f(25)]$ 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. Reference Figure 5 Wavelength Table

Fig. 1 Forward Current vs Output Power

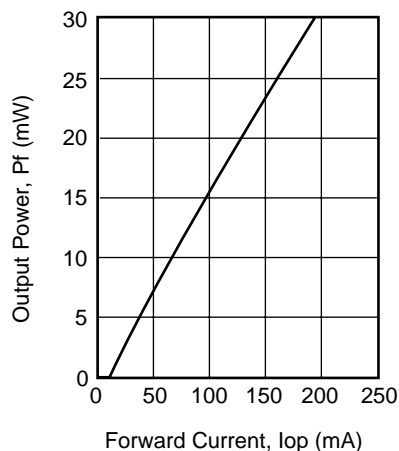


Fig. 2 Temperature Dependence of Wavelength(ACC Operation)

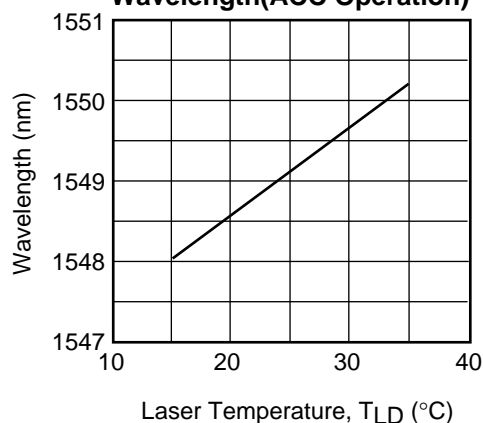


Fig. 3 Cooler Voltage -Current

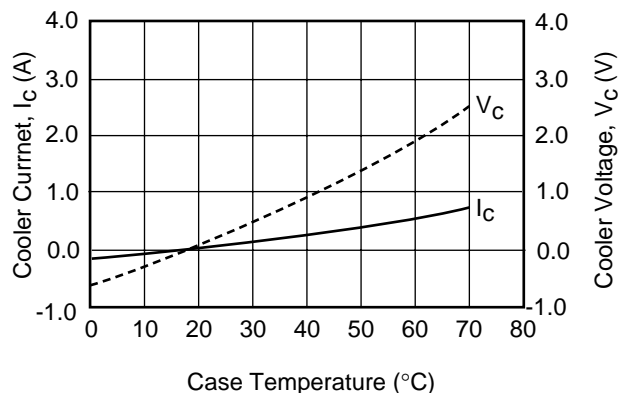


Fig.4 Spectrum

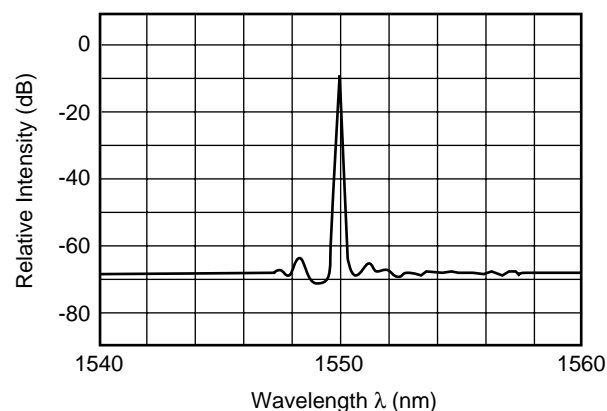
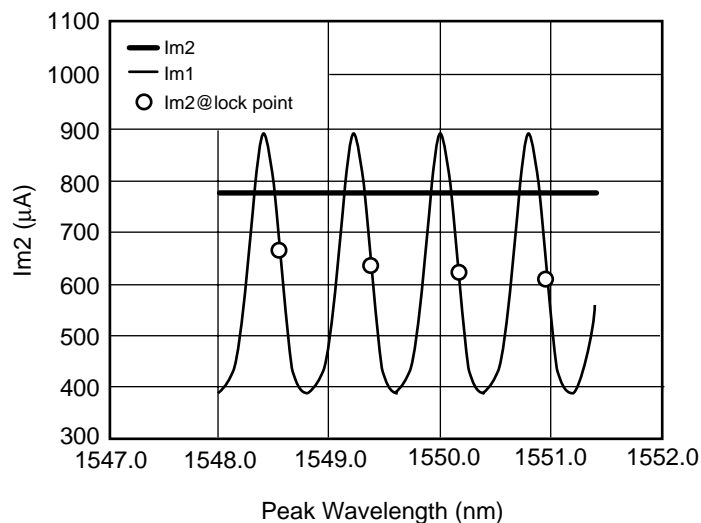


Fig. 5 Filter Curve



FLD5F15CA-K ————— Tunable LD Module with Wavelength Locker

Fig. 6 Wavelength Table

Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F15CA-K9610	1528.773	±0.01
	1529.553	±0.01
	1530.334	±0.01
	1531.116	±0.01
FLD5F15CA-K9605	1529.163	±0.01
	1529.944	±0.01
	1530.725	±0.01
	1531.507	±0.01
FLD5F15CA-K9570	1531.898	±0.01
	1532.681	±0.01
	1533.465	±0.01
	1534.250	±0.01
FLD5F15CA-K9565	1532.290	±0.01
	1533.073	±0.01
	1533.858	±0.01
	1534.643	±0.01
FLD5F15CA-K9530	1535.036	±0.01
	1535.822	±0.01
	1536.609	±0.01
	1537.397	±0.01
FLD5F15CA-K9525	1535.429	±0.01
	1536.216	±0.01
	1537.003	±0.01
	1537.792	±0.01
FLD5F15CA-K9490	1538.186	±0.01
	1538.976	±0.01
	1539.766	±0.01
	1540.557	±0.01
FLD5F15CA-K9485	1538.581	±0.01
	1539.371	±0.01
	1540.162	±0.01
	1540.953	±0.01
FLD5F15CA-K9450	1541.349	±0.01
	1542.142	±0.01
	1542.936	±0.01
	1543.730	±0.01
FLD5F15CA-K9445	1541.746	±0.01
	1542.539	±0.01
	1543.333	±0.01
	1544.128	±0.01
FLD5F15CA-K9410	1544.526	±0.01
	1545.322	±0.01
	1546.119	±0.01
	1546.917	±0.01
FLD5F15CA-K9405	1544.924	±0.01
	1545.720	±0.01
	1546.518	±0.01
	1547.316	±0.01
FLD5F15CA-K9370	1547.715	±0.01
	1548.515	±0.01
	1549.315	±0.01
	1550.116	±0.01
FLD5F15CA-K9365	1548.115	±0.01
	1548.915	±0.01
	1549.715	±0.01
	1550.517	±0.01

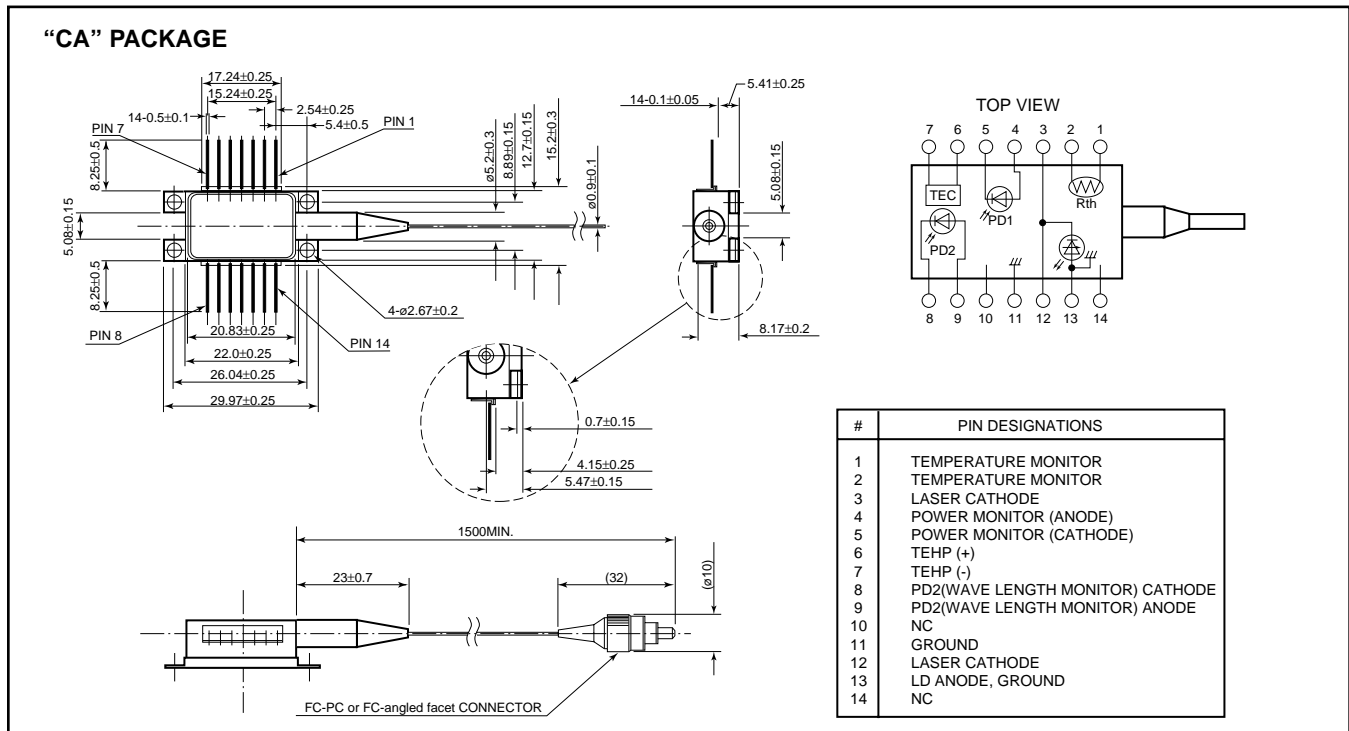
Part Number	Wavelength (nm) (TL=Tset) (in vacuum)	Tolerance (nm)
FLD5F15CA-K9330	1550.918	±0.01
	1551.721	±0.01
	1552.524	±0.01
	1553.329	±0.01
FLD5F15CA-K9325	1551.319	±0.01
	1552.122	±0.01
	1552.926	±0.01
	1553.731	±0.01
FLD5F15CA-K9290	1554.134	±0.01
	1554.940	±0.01
	1555.747	±0.01
	1556.555	±0.01
FLD5F15CA-K9285	1554.537	±0.01
	1555.343	±0.01
	1556.151	±0.01
	1556.959	±0.01
FLD5F15CA-K9250	1557.363	±0.01
	1558.173	±0.01
	1558.983	±0.01
	1559.794	±0.01
FLD5F15CA-K9245	1557.768	±0.01
	1558.578	±0.01
	1559.389	±0.01
	1560.200	±0.01
FLD5F15CA-K9210	1560.606	±0.01
	1561.419	±0.01
	1562.233	±0.01
	1563.047	±0.01
FLD5F15CA-K9205	1561.013	±0.01
	1561.826	±0.01
	1562.640	±0.01
	1563.455	±0.01
FLD5F15CA-K9170	1563.863	±0.01
	1564.679	±0.01
	1565.496	±0.01
	1566.314	±0.01
FLD5F15CA-K9165	1564.271	±0.01
	1565.087	±0.01
	1565.905	±0.01
	1566.723	±0.01
FLD5F15CA-K9130	1567.133	±0.01
	1567.952	±0.01
	1568.773	±0.01
	1569.594	±0.01
FLD5F15CA-K9125	1567.542	±0.01
	1568.362	±0.01
	1569.183	±0.01
	1570.005	±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.

Tunable LD Module with Wavelength Locker

FLD5F15CA-K



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- 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.

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