

## Laser Diode 15XX.XXnm<sup>1</sup>



BLD-15XX.XX<sup>1</sup>-14BF Fiber Bragg Grating laser is designed for DWDM applications with external (type 1) or 2.5 Gbit/s direct modulation (type 2). The laser is packaged in 14-pin standard butterfly package with monitor photodiode and thermo-electric cooler (TEC).

### Key Features

- Optical output: 2-10mW
- Narrow linewidth ( $\Delta\nu < 1\text{MHz}$ )
- Wavelength: 1520-1580nm
- SM or PM Fiber ( $\varnothing 0.9\text{mm}$ )
- 50GHz spacing available
- 14-pin butterfly package
- Internal monitor PD and TEC
- Up to 2.5Gbit/s

### Optical and electrical characteristics: (T = 25 °C)

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
Output Power	$P_f$			2	10	mW
Forward Voltage	$V_F$	$P_f=10\text{mW}$			2.5	V
Threshold Current	$I_{th}$	$P_f=2\text{mW}$		20	40	mA
		$P_f=10\text{mW}$		40	60	mA
Forward Current	$I_F$	$P_f=2\text{mW}$		50	70	mA
		$P_f=10\text{mW}$		200	250	mA
Center Wavelength <sup>1</sup>	$\lambda_c$	$P_f=10\text{mW}$	1520±0.1		1580±0.1	nm
Spectral Width	$\Delta\lambda$	$P_f=10\text{mW}$			1000	kHz
Side Mode Suppression Ratio	SMSR	$P_f=10\text{mW}$	40	45		dB
Relative Intensity Noise	RIN	$P_f=10\text{mW}$		-145		dB/Hz
Extinction Ratio	$X_P$	$P_f=10\text{mW}$	17			dB
Mode Hop Free Range	$\Delta I$			30		mA
Single-Frequency Continuous Tuning Range	$\Delta f$		3			GHz
Current Tuning	$\Delta\lambda/\Delta I$			0.002		nm/mA
Temperature Tuning	$\Delta\lambda/\Delta T$			0.08		nm/°C

<sup>1</sup> - Selected wavelength according to ITU-T Grid (See Table.1)

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
Monitor Current	$I_m$	$P_f=10mW, V_{RD}=5V$	40		200	$\mu A$
PD Dark Current	$I_d$	$V_{RD}=5V$			0.1	$\mu A$
Cooler Voltage	$V_C$	$I_F=EOL, TC=70^\circ C$			2.7	V
Cooler Current	$I_C$	$I_F=EOL, TC=70^\circ C$			1.4	A
Thermal Resistance	$R_o$	$T_{LD}=25^\circ C, B=3900\pm 100K$	9.5	10.0	10.5	k $\Omega$

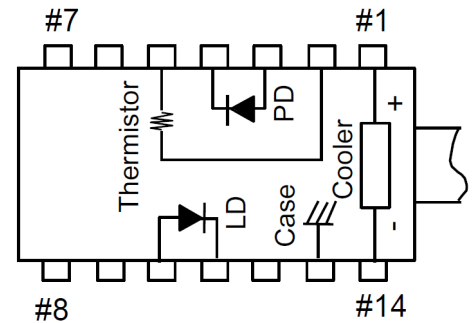
## Absolute Maximum Ratings

Item	Symbol	Rating	Unit
LD Forward Current	$I_f$	300	mA
LD Reverse Voltage	$V_r$	1.8	V
PD Reverse Voltage	$V_{RD}$	10	V
Operation Case Temperature	$T_C$	-40 to +70	$^\circ C$
Storage Temperature	$T_{stg}$	-40 to +85	$^\circ C$
Cooler Current	$I_C$	1.4	A

## PACKAGING

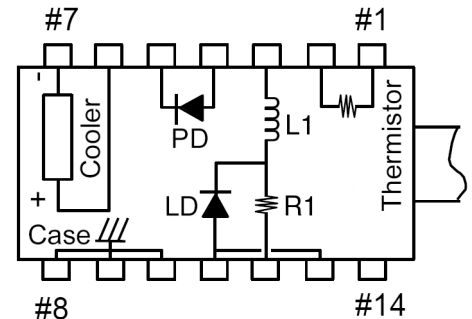
### Type 1:

No.	FUNCTION	No.	FUNCTION
1	Cooler anode +	8	NC
2	Thermistor	9	NC
3	PD anode -	10	LD anode +
4	PD cathode +	11	LD cathode -
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler cathode -

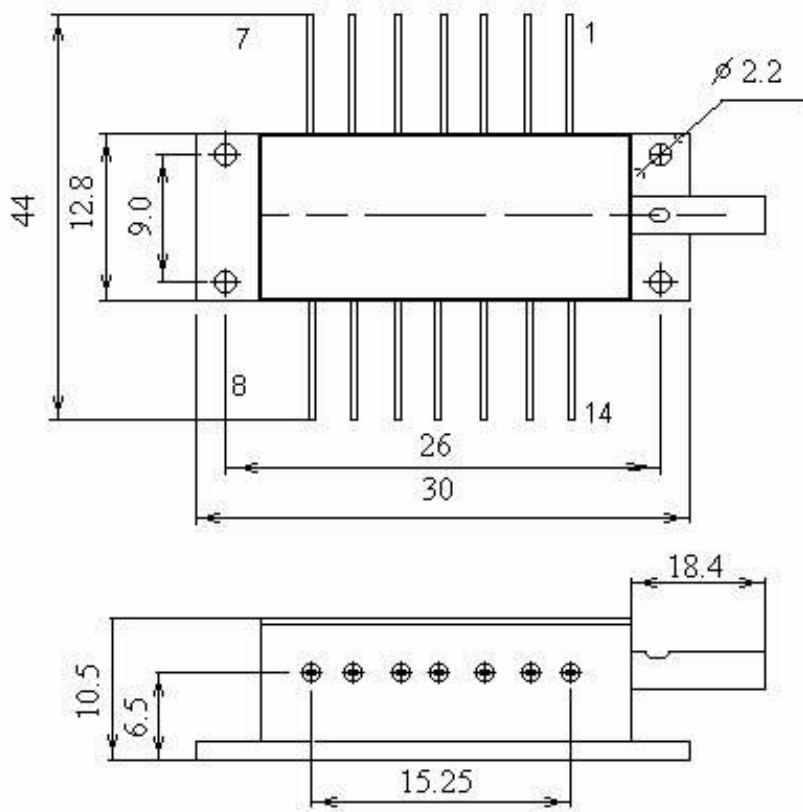


### Type 2:

No.	FUNCTION	No.	FUNCTION
1	Thermistor	8	Case
2	Thermistor	9	Case
3	LD DC bias cathode -	10	Case
4	PD anode -	11	LD anode +
5	PD cathode +	12	LD RF input cathode -
6	Cooler anode +	13	LD anode +
7	Cooler cathode -	14	NC



$R1 = 20\Omega; L1 = 180nH$



*Table 1. ITU-T Grid.*

Type	Channel number	Wavelength (nm)	Frequency (GHz)	Type	Channel number	Wavelength (nm)	Frequency (GHz)
BLD-1577.03	1	1577.03	190100	BLD-1547.72	37	1547.72	193700
BLD-1576.61	1.5	1576.61	190150	BLD-1547.32	37.5	1547.32	193750
BLD-1576.20	2	1576.20	190200	BLD-1546.92	38	1546.92	193800
BLD-1575.78	2.5	1575.78	190250	BLD-1546.52	38.5	1546.52	193850
BLD-1575.37	3	1575.37	190300	BLD-1546.12	39	1546.12	193900
BLD-1574.95	3.5	1574.95	190350	BLD-1545.72	39.5	1545.72	193950
BLD-1574.54	4	1574.54	190400	BLD-1545.32	40	1545.32	194000
BLD-1574.13	4.5	1574.13	190450	BLD-1544.92	40.5	1544.92	194050
BLD-1573.71	5	1573.71	190500	BLD-1544.53	41	1544.53	194100
BLD-1573.30	5.5	1573.30	190550	BLD-1544.13	41.5	1544.13	194150
BLD-1572.89	6	1572.89	190600	BLD-1543.73	42	1543.73	194200
BLD-1572.48	6.5	1572.48	190650	BLD-1543.33	42.5	1543.33	194250
BLD-1572.06	7	1572.06	190700	BLD-1542.94	43	1542.94	194300
BLD-1571.65	7.5	1571.65	190750	BLD-1542.54	43.5	1542.54	194350
BLD-1571.24	8	1571.24	190800	BLD-1542.14	44	1542.14	194400
BLD-1570.83	8.5	1570.83	190850	BLD-1541.75	44.5	1541.75	194450
BLD-1570.42	9	1570.42	190900	BLD-1541.35	45	1541.35	194500
BLD-1570.01	9.5	1570.01	190950	BLD-1540.95	45.5	1540.95	194550
BLD-1569.59	10	1569.59	191000	BLD-1540.56	46	1540.56	194600
BLD-1569.18	10.5	1569.18	191050	BLD-1540.16	46.5	1540.16	194650
BLD-1568.77	11	1568.77	191100	BLD-1539.77	47	1539.77	194700
BLD-1568.36	11.5	1568.36	191150	BLD-1539.37	47.5	1539.37	194750
BLD-1567.95	12	1567.95	191200	BLD-1538.98	48	1538.98	194800
BLD-1567.54	12.5	1567.54	191250	BLD-1538.58	48.5	1538.58	194850
BLD-1567.13	13	1567.13	191300	BLD-1538.19	49	1538.19	194900
BLD-1566.72	13.5	1566.72	191350	BLD-1537.79	49.5	1537.79	194950
BLD-1566.31	14	1566.31	191400	BLD-1537.40	50	1537.40	195000
BLD-1565.90	14.5	1565.90	191450	BLD-1537.00	50.5	1537.00	195050
BLD-1565.50	15	1565.50	191500	BLD-1536.61	51	1536.61	195100
BLD-1565.09	15.5	1565.09	191550	BLD-1536.22	51.5	1536.22	195150
BLD-1564.68	16	1564.68	191600	BLD-1535.82	52	1535.82	195200
BLD-1564.27	16.5	1564.27	191650	BLD-1535.43	52.5	1535.43	195250
BLD-1563.86	17	1563.86	191700	BLD-1535.04	53	1535.04	195300
BLD-1563.45	17.5	1563.45	191750	BLD-1534.64	53.5	1534.64	195350
BLD-1563.05	18	1563.05	191800	BLD-1534.25	54	1534.25	195400
BLD-1562.64	18.5	1562.64	191850	BLD-1533.86	54.5	1533.86	195450
BLD-1562.23	19	1562.23	191900	BLD-1533.47	55	1533.47	195500

BLD-1561.83	19.5	1561.83	191950	BLD-1533.07	55.5	1533.07	195550
BLD-1561.42	20	1561.42	192000	BLD-1532.68	56	1532.68	195600
BLD-1561.01	20.5	1561.01	192050	BLD-1532.29	56.5	1532.29	195650
BLD-1560.61	21	1560.61	192100	BLD-1531.90	57	1531.90	195700
BLD-1560.20	21.5	1560.20	192150	BLD-1531.51	57.5	1531.51	195750
BLD-1559.79	22	1559.79	192200	BLD-1531.12	58	1531.12	195800
BLD-1559.39	22.5	1559.39	192250	BLD-1530.72	58.5	1530.72	195850
BLD-1558.98	23	1558.98	192300	BLD-1530.33	59	1530.33	195900
BLD-1558.58	23.5	1558.58	192350	BLD-1529.94	59.5	1529.94	195950
BLD-1558.17	24	1558.17	192400	BLD-1529.55	60	1529.55	196000
BLD-1557.77	24.5	1557.77	192450	BLD-1529.16	60.5	1529.16	196050
BLD-1557.36	25	1557.36	192500	BLD-1528.77	61	1528.77	196100
BLD-1556.96	25.5	1556.96	192550	BLD-1528.38	61.5	1528.38	196150
BLD-1556.56	26	1556.56	192600	BLD-1527.99	62	1527.99	196200
BLD-1556.15	26.5	1556.15	192650	BLD-1527.60	62.5	1527.60	196250
BLD-1555.75	27	1555.75	192700	BLD-1527.22	63	1527.22	196300
BLD-1555.34	27.5	1555.34	192750	BLD-1526.83	63.5	1526.83	196350
BLD-1554.94	28	1554.94	192800	BLD-1526.44	64	1526.44	196400
BLD-1554.54	28.5	1554.54	192850	BLD-1526.05	64.5	1526.05	196450
BLD-1554.13	29	1554.13	192900	BLD-1525.66	65	1525.66	196500
BLD-1553.73	29.5	1553.73	192950	BLD-1525.27	65.5	1525.27	196550
BLD-1553.33	30	1553.33	193000	BLD-1524.89	66	1524.89	196600
BLD-1552.93	30.5	1552.93	193050	BLD-1524.50	66.5	1524.50	196650
BLD-1552.52	31	1552.52	193100	BLD-1524.11	67	1524.11	196700
BLD-1552.12	31.5	1552.12	193150	BLD-1523.72	67.5	1523.72	196750
BLD-1551.72	32	1551.72	193200	BLD-1523.34	68	1523.34	196800
BLD-1551.32	32.5	1551.32	193250	BLD-1522.95	68.5	1522.95	196850
BLD-1550.92	33	1550.92	193300	BLD-1522.56	69	1522.56	196900
BLD-1550.52	33.5	1550.52	193350	BLD-1522.18	69.5	1522.18	196950
BLD-1550.12	34	1550.12	193400	BLD-1521.79	70	1521.79	197000
BLD-1549.72	34.5	1549.72	193450	BLD-1521.40	70.5	1521.40	197050
BLD-1549.32	35	1549.32	193500	BLD-1521.02	71	1521.02	197100
BLD-1548.91	35.5	1548.91	193550	BLD-1520.63	71.5	1520.63	197150
BLD-1548.52	36	1548.52	193600	BLD-1520.25	72	1520.25	197200
BLD-1548.11	36.5	1548.11	193650	BLD-1519.86	72.5	1519.86	197250