

## Tunable Laser Diode 1650nm 5mW



TLD-1650-14BF Fiber Bragg Grating laser is a stable narrow band light source with a wavelength tuning possibility in 1-2 nm range. The laser is packaged in 14-pin standard butterfly package with monitor photodiode and thermo-electric cooler (TEC).

### Key Features

- Optical output: 5mW
- Narrow linewidth ( $\Delta\nu < 0.1\text{MHz}$ )
- Tuning range:  $> 1\text{nm}$
- Wavelength: 1650nm
- SM or PM fiber
- FC-APC connector
- Internal monitor PD and TEC
- 14-pin butterfly package

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

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
Output Power	$P_f$			5		mW
Forward Voltage	$V_F$	$P_f=5\text{mW}$			2.5	V
Threshold Current	$I_{th}$		50		80	mA
Forward Current	$I_F$	$P_f=5\text{mW}$		200	300	mA
Center Wavelength	$\lambda_c$	$P_f=5\text{mW}$	1630		1660	nm
Spectral Width	$\Delta\lambda$	$P_f=5\text{mW}$		100		kHz
Side Mode Suppression Ratio	SMSR	$P_f=5\text{mW}$	40	45		dB
Relative Intensity Noise	RIN	$P_f=5\text{mW}$		-145		dB/Hz
Monitor Current	$I_m$	$P_f=5\text{mW}, V_{RD}=5\text{V}$	40		200	$\mu\text{A}$
PD Dark Current	$I_d$	$V_{RD}=5\text{V}$			0.1	$\mu\text{A}$
Cooler Voltage	$V_C$	$I_F=EOL, TC=70^\circ\text{C}$			2.7	V
Cooler Current	$I_C$	$I_F=EOL, TC=70^\circ\text{C}$			1.4	A
Thermal Resistance	$R_o$	$T_{LD}=25^\circ\text{C}, B=3900\pm 100\text{K}$	9.5	10.0	10.5	k $\Omega$
Extinction Ratio	$X_P$	$P_f=5\text{mW}$	17			dB
Mode Hop Free Range	$\Delta I$			30		mA
Tuning Range	$\Delta f$		1	1.5		nm
PZT Tuning Voltage	$V_T$		0		150	V
Current Tuning	$\Delta\lambda/\Delta I$			0.001		nm/mA
Temperature Tuning	$\Delta\lambda/\Delta T$			0.08		nm/ $^\circ\text{C}$

## Absolute Maximum Ratings

Item	Symbol	Rating	Unit
LD Forward Current	$I_f$	400	mA
LD Reverse Voltage	$V_r$	1.8	V
PD Reverse Voltage	$V_{RD}$	10	V
Operation Case Temperature	$T_c$	-40 to +70	°C
Storage Temperature	$T_{stg}$	-40 to +85	°C
Cooler Current	$I_c$	1.4	A

## PACKAGING

No.	FUNCTION	No.	FUNCTION
1	Cooler anode +	8	PZT tuning -
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	PZT tuning +	14	Cooler anode -



