

## Cooled TO60 CWDM Laser Diodes Datasheet

### 1. Product Information

**Part Number:** CTLD-XXXX100122-01

**Product Description:** The Cooled TO60 CWDM series laser diodes are 1.27 $\mu$ m~1.61 $\mu$ m Multiple Quantum Well (MQW) structured distributed-feedback (DFB) laser devices. The laser diodes are built in a 8-PIN TO60 package with TEC/thermistor closed loop temperature control and monitor PIN-PD for fiberoptic communication and fiber sensor systems. The products are Telcordia GR-468 qualified, and in compliance with RoHS requirement.

**Applications:**

- Telecommunication transceivers
- Datacom transceivers
- Fiberoptic sensors and Lidar

**Features:**

- $\lambda_c$  of XXXX $\pm$ 2nm
- Coaxial TO60 package
- High output power( $\geq$ 10mW)

**Reliability:** Telcordia GR-468. RoHS

### 2. Revision History

Rev.	Notes	Prepared by	Audited by	Approved by	Date
V0	Initial release	Larry Song	Xing Gao	YuanShi	2025-08-26

### 3. Performance Specifications--Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage Temperature	T <sub>s</sub>	-	-40	-	+85	°C
Operating Case Temperature	T <sub>op</sub>	-	-20	-	+70	°C
Laser Forward Current	I <sub>F</sub>	CW	-	-	180	mA
Laser Reverse Voltage	V <sub>LR</sub>	-	-	-	2	V
PD Forward Current	I <sub>FPD</sub>	-	-	-	5	mA
PD Reverse Voltage	V <sub>RPD</sub>	-	-	-	10	V
TEC Current	I <sub>TEC</sub>	-	-1.0	-	+1.0	A
TEC Voltage	V <sub>TEC</sub>	-	-3.0	-	+3.0	V

**Optical Characteristics (at 25°C laser temperature)**

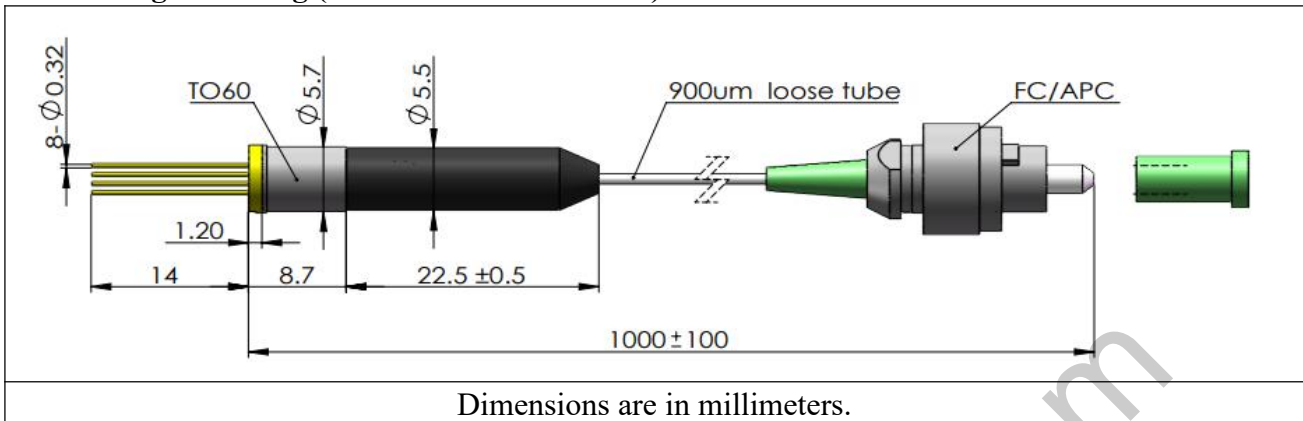
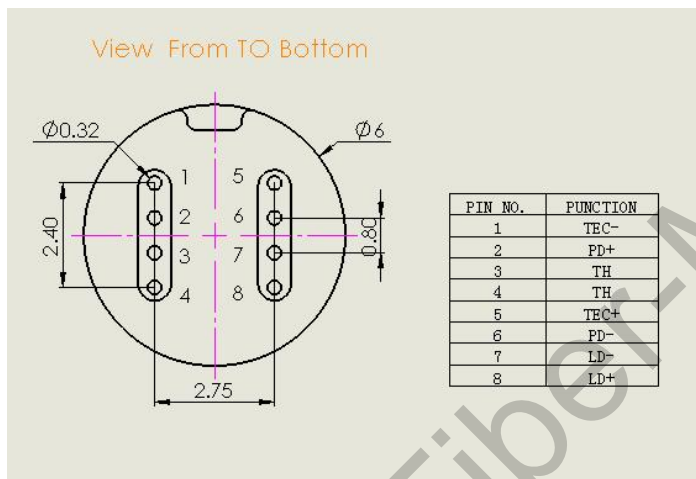
Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	$\lambda_c$	$T_L=15 \sim 35^\circ\text{C}$ , CW	Shown in Section 6			nm
Peak Optical Output Power	$P_O$	-	10	-	-	mW
Spectral Linewidth	LW	Full width, half maximum (FWHM)	-	3	5	MHz
Side-mode Suppression Ratio	SMSR	CW	40	50	-	dB
Optical Isolation	-	-	30	-	-	dB
Relative Intensity Noise	RIN	20-1000MHz	-	-	-145	dB/Hz
Wavelength Drift (EOL)	$\Delta\lambda$	Tested over 25-year lifetime	-	-	$\pm 0.1$	nm
Wavelength Temperature Coefficient	$\Delta\lambda/\Delta T$	TEC temperature at 15°C to 35°C	-	0.09	-	nm/°C
Wavelength Current Coefficient	$\Delta\lambda/\Delta I$	-	-	0.01	-	nm/mA

**Electrical Characteristics (at 25°C laser temperature)**

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	$I_{th}$	-	-	10	35	mA
Slope Efficiency	$\eta$	$P_O=10\text{mW(CW)}$	0.05	0.13	0.2	mW/mA
Operating Current	$I_{op}$	$P_O=10\text{mW(CW)}$	-	100	150	mA
TEC Set Temperature	$T_s$	-	15	-	35	°C
Laser Forward Voltage	$V_F$	$P_O=10\text{mW(CW)}$	-	1.2	3.0	V
Monitor PD Current	$I_{MPD}$	$P_O=10\text{mW(CW)}$	10	-	2500	$\mu\text{A}$
Monitor Dark Current	$I_D$	$I_F=0\text{mA}$ , $V_{RPD}=5\text{V}$	-	-	10	nA
Thermistor Current	$I_{TC}$	-	10	-	100	$\mu\text{A}$
Thermistor Resistance	$R_{TH}$	$T_L=25^\circ\text{C}$	9.5	10	10.5	K $\Omega$
Thermistor Constant	B	-	3800	-	4100	K
TEC Current	$I_{TEC}$	$T_L=25^\circ\text{C}$ , $T_C=70^\circ\text{C}$	-1.0	-	+1.0	A
TEC Voltage	$V_{TEC}$	$T_L=25^\circ\text{C}$ , $T_C=70^\circ\text{C}$	-3.0	-	+3.0	V
TEC Capacity	$V_{TEC}$	$T_C=70^\circ\text{C}$	-	-	50	°C

**Fiber Pigtail Specifications**

Parameters	Description	Parameters	Description
Fiber Type	SMF-28e	Pigtail Length	1.0+/-0.1m
Pigtail Type	900 $\mu\text{m}$ loose tube	Connector Type	FC/APC

**4. Package Drawing (Mechanical Dimensions):**

**5. Pin Assignment:**

**6. Part Number and Laser Center Wavelength List, as below:**

No.	Part Number	Center Wavelength			Unit
		Min.	Typical	Max.	
1	CTLD-1270100122-01	1268	1270	1272	nm
2	CTLD-1290100122-01	1288	1290	1292	nm
3	CTLD-1310100122-01	1308	1310	1312	nm
4	CTLD-1330100122-01	1328	1330	1332	nm
5	CTLD-1350100122-01	1348	1350	1352	nm
6	CTLD-1370100122-01	1368	1370	1372	nm
7	CTLD-1390100122-01	1388	1390	1392	nm
8	CTLD-1410100122-01	1408	1410	1412	nm
9	CTLD-1430100122-01	1428	1430	1432	nm
10	CTLD-1450100122-01	1448	1450	1452	nm
11	CTLD-1470100122-01	1468	1470	1472	nm
12	CTLD-1490100122-01	1488	1490	1492	nm
13	CTLD-1510100122-01	1508	1510	1512	nm
14	CTLD-1530100122-01	1528	1530	1532	nm

15	CTLD-1550100122-01	1548	1550	1552	nm
16	CTLD-1570100122-01	1568	1570	1572	nm
17	CTLD-1590100122-01	1588	1590	1592	nm
18	CTLD-1610100122-01	1608	1610	1612	nm

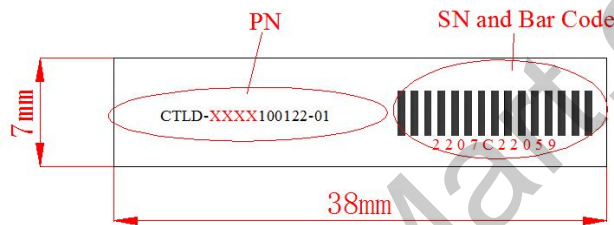
### 7. Test Report:

The test report should be provided when the products are delivered. Following characteristic test data should be included: Optical Output Power, Center Wavelength, Spectrum Chart, Slope Efficiency, P-I/U-I Curve, Pin Assignments.

### 8. Packaging:

Vacuum anti-static plastic package. Following items should be indicated on the outer packaging surface: Product Name; Product Number; Serial Number.

Labelling on each laser device needs to imply: Part Number, Serial Number.



The labeling of the individual packaging units

### 9. Ordering Information:

CTLD-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Wavelength	Power	Fiber type	Pigtail Type	Pigtail length	Connector
	1270: 1270nm	05:5mW	0: SMF-28e	0: 250um bare fiber	1: 50cm	0: None
	.....	10:10mW	1:PMF-1310	1:900um loose tube	2: 100cm	1: FC/UPC
	1610: 1610nm	20:20mW	2:PMF-1550	2:900um tight tube	3: 150cm	2: FC/APC
CTLD-	8480:1622.25nm	40:40mW	3:RC SMF	3:45mm 900um loose tube+955mm 165um bare fiber	4: 200cm	3: SC/UPC
	.....	60:60mW	C: Customized	4:45mm 900um loose tube+955mm 250um bare fiber	C: Customized	4: SC/APC
	9340: 1550.12nm	80:80mW		C: Customized		5: LC/UPC
	.....	1H:100mW				6: LC/APC
	9630: 1527.22nm	CC: Customized				C: Customized
<b>Example of Ordering Form: CTLD-9295050422</b>						
CTLD-	9295	05	0	4	2	2
	1553.7nm	5mW	SMF-28e	45mm 900um loose tube+955mm 250um bare fiber	100cm	FC/APC

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