

## DFB 10mW Butterfly Laser Diodes(Gas detection)

### Features

- High output power( $\geq 10\text{mW}$ )
- High-performance
- Industry-standard, 14-pin butterfly package
- Built-in TEC and optical isolator
- $\lambda_c$  of  $\text{XXXX}\pm 0.5\text{nm}$

### Applications

- Fiberoptic sensors
- Laser sources
- Gas Detection

This laser diodes cover customer selection of large wavelengths range from 1260nm to 1650nm which are fabricated in a hermetically sealed 14-pin butterfly package. The laser diodes contains thermoelectric cooler (TEC), thermistor, monitor photodiode optical isolator to secure high quality laser performance.

### Specifications

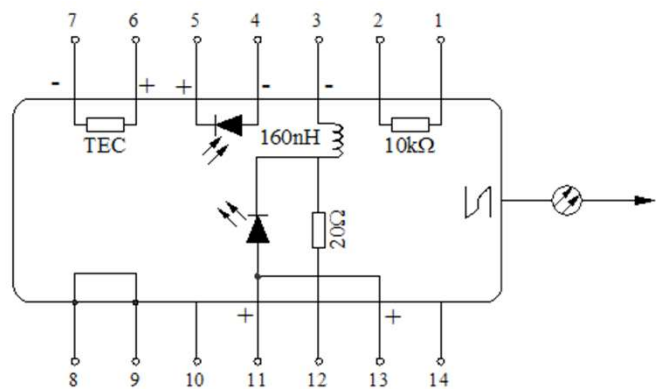
Parameters	Unit	Values	Symbol	Test Conditions
Center Wavelength	nm	See Center Wavelength Table	$\lambda_c$	$T_L=15\sim 35^\circ\text{C}$ , CW
Peak Optical Output Power	mW	$\geq 10$	$P_o$	$P=P_o(\text{CW})$
Spectral Linewidth	MHz	$\leq 5$	LW	FWHM
Sidemode Suppression Ratio	dB	$\geq 35$	SMSR	CW
Optical Isolation	dB	$\geq 30$		
Relative Intensity Noise	dB/Hz	-145	RIN	20-1000MHz
Wavelength Drift (EOL)	nm	$\pm 0.1$	$\Delta\lambda$	Tested over 25Y lifetime
Wavelength Temperature Coefficient	nm/ $^\circ\text{C}$	0.09(Typ.)	$\Delta\lambda/\Delta T$	TEC temperature $15\sim 35^\circ\text{C}$
Wavelength Current Coefficient	nm/mA	0.01(Typ.)	$\Delta\lambda/\Delta I$	
Threshold Current	mA	$\leq 35$	$I_{TH}$	
Slope Efficiency	mW/mA	0.05~0.2	$\eta$	CW
Operating Current	mA	$\leq 150$	$I_{op}$	$P_o=10\text{mW}(\text{CW})$
TEC Set Temperature	$^\circ\text{C}$	15~35	$T_s$	
Laser Forward Voltage	V	$\leq 2$	$V_F$	$P_o=10\text{mW}(\text{CW})$
Monitor PD Current	$\mu\text{A}$	10~2500	$I_{MPD}$	$P_o=10\text{mW}(\text{CW})$
Monitor Dark Current	$\mu\text{A}$	$\leq 0.1$	$I_D$	$I_F=0\text{mA}$ , $V_{RPD}=5\text{V}$
Thermistor Current	$\mu\text{A}$	10~100	$I_{TC}$	
Thermistor Resistance	K $\Omega$	9.5~10.5	$R_{TH}$	$T_L=25^\circ\text{C}$
TEC Current	A	-1.5~+1.5	$I_{TEC}$	$T_L=25^\circ\text{C}$ , $T_C=65^\circ\text{C}$
TEC Voltage	V	-3.5~+3.5	$V_{TEC}$	$T_L=25^\circ\text{C}$ , $T_C=65^\circ\text{C}$
TEC Capacity	$^\circ\text{C}$	$\leq 50$	$\Delta T$	$T_C=65^\circ\text{C}$
Thermistor Temperature	$^\circ\text{C}$	$\leq 100$		
Laser Forward Current	mA	$\leq 200$	$I_F$	CW
Laser Reverse Voltage	V	$\leq 2$	$V_R$	
PD Forward Current	mA	$\leq 5$	$I_{FPD}$	
PD Reverse Voltage	V	$\leq 10$	$V_{RPD}$	
Operating Temperature	$^\circ\text{C}$	-20 ~ +65	$T_{op}$	
Storage Temperature	$^\circ\text{C}$	-40 ~ +85	$T_s$	

**Center Wavelength Table**

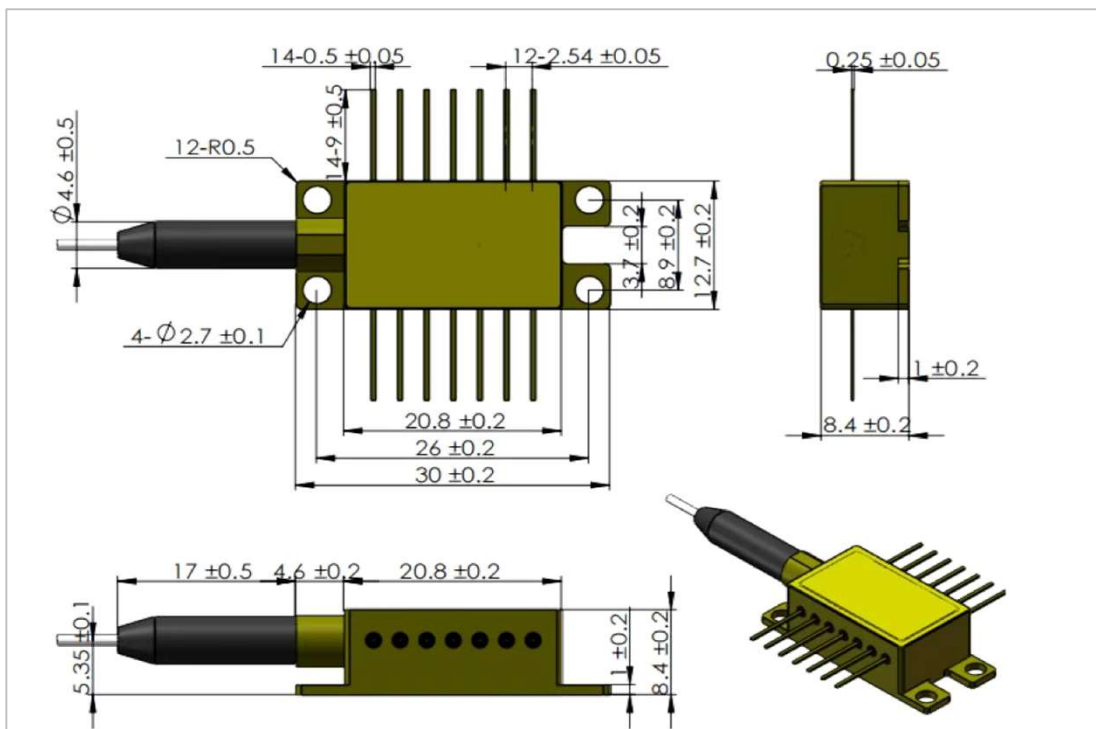
Detection of Gas	Center Wavelength(nm)		
	Min.	Typical	Max.
H <sub>2</sub> O	1391.5	<b>1392</b>	1392.5
N <sub>2</sub> O	1520.5	<b>1521</b>	1521.5
C <sub>2</sub> H <sub>2</sub>	1532.18	<b>1532.68</b>	1533.18
CO	1566.5	<b>1567</b>	1567.5
CO <sub>2</sub>	1579.5	<b>1580</b>	1580.5
C <sub>2</sub> H <sub>4</sub>	1626.5	<b>1627</b>	1627.5
CH <sub>4</sub>	1650.5	<b>1651</b>	1651.5
CH <sub>4</sub>	1653.2	<b>1653.7</b>	1654.2

**Pin Assignments**

1	Thermistor
2	Thermistor
3	Laser dc Bias (Cathode) (-)
4	Monitor PD Anode (-)
5	Monitor PD Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Case Ground
9	Case Ground
10	NC
11	Laser Anode (+)
12	Laser RF Cathode (-)
13	Laser Anode (+)
14	NC



**Package Dimensions (mm)**



**Ordering Information****DBLD- ①①①①-②-③③③-④-⑤-⑥⑥**

①	Wavelength	XXXX=Center Wavelength; 1392; 1521;
②	Optical Power	1=1mW; 10=10mW; 50=50mW; 80=80mW; XX=Customization;
③	Pigtail Type	250=250μm Bare Fiber; 900=900μm Loose Tube;
④	Fiber Type	1=SMF-28e; 5=PM1550;
⑤	Fiber Length	1=1m;
⑥	Connector	NE=None; FA=FC/APC; FC=FC/UPC; SA=SC/APC; SC=SC/UPC; LC=LC/UPC; XX=Others;