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## **SPECIFICATIONS**

### **Pulsed Ultra Narrow Linewidth 1648nm Laser In BTF Package**

#### **DL-CLS259B-S1648**

DenseLight Semiconductors reserves the right to make product design or specifications changes without notice.

## **A. PRODUCT DESCRIPTION**

DenseLight DL-CLS259B-S1648 is a pulsed and cooled ultra narrow linewidth laser in BTF package with SMF pigtail emitting at 1648nm wavelength. This laser is based on an external cavity laser with built-in fiber Bragg grating, offering very stable performance of lasing wavelength, narrow spectral linewidth and excellent SMSR.

## **B. FEATURES**

- Strained InGaAsP/InP MQW gain chip coupled with built-in fiber Bragg grating
- Pulsed single mode optical output of >25mW
- Lasing wavelength of 1648nm
- Minimum SMSR of 35dB
- Internal thermoelectric cooler and thermistor
- RoHS Compliance

## **C. PACKAGING**

- 14-pin BTF package with SMF-28 pigtail

## **D. APPLICATIONS**

- OTDR
- Optical measuring instrumentation
- Optical gas and chemical sensor

## E. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Reverse voltage	$V_R$			2	V
Forward current	$I_F$	pulse width = 10 $\mu$ s, duty = 1%		425	mA
Forward voltage	$V_F$	$I_{op}$		3.3	V
Case temperature	$T_c$	$I_{op}$	0	60	$^{\circ}$ C
Laser temperature <sup>1</sup>	$T_{Laser}$	$I_{op}$	0	70	$^{\circ}$ C
Thermoelectric cooler voltage	$V_{TEC}$			3.0	V
Thermoelectric cooler current	$I_{TEC}$			1.8	A
Storage temperature	$T_{stg}$	Unbiased	-40	85	$^{\circ}$ C
Storage humidity			5	85	%RH
Electro static discharge (ESD)	$V_{ESD}$	Human body model		500	V
Lead soldering temperature	$S_{temp}$			260	$^{\circ}$ C
Lead soldering time	$S_{time}$			10	sec

## F. ELECTRICAL AND OPTICAL CHARACTERISTICS ( $T_{Laser} = 25^{\circ}$ C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Threshold current	$I_{th}$	CW	–	25	35	mA
Optical output power	$P_O$	pulse width = 10 $\mu$ s, duty = 1%, 25mW	25	–	–	mW
Operating current	$I_{op}$	pulse width = 10 $\mu$ s, duty = 1%, 25mW	–	–	375	mA
Operation voltage	$V_{op}$	pulse width = 10 $\mu$ s, duty = 1%, 25mW	–	–	2.8	V
Peak wavelength	$\lambda_p$	CW, 5mW, $I_{op}$ =70mA (typ)	1646	1648	1650	nm
Side mode suppression ratio	SMSR	CW, 5mW, $I_{op}$ =70mA (typ)	35	–	–	dB
Linewidth	$\Delta\lambda$	CW	–	–	50	kHz
Pulse shape	$V_{peak}/V_{min}$	pulse width = 10 $\mu$ s, duty = 1%, 25mW	–	–	1.5	–
	$V_{max}/V_{min}$		–	–	1.33	–
Thermistor resistance	$R_{therm}$	$T_{therm} = 25^{\circ}$ C	9.5	10	10.5	k $\Omega$

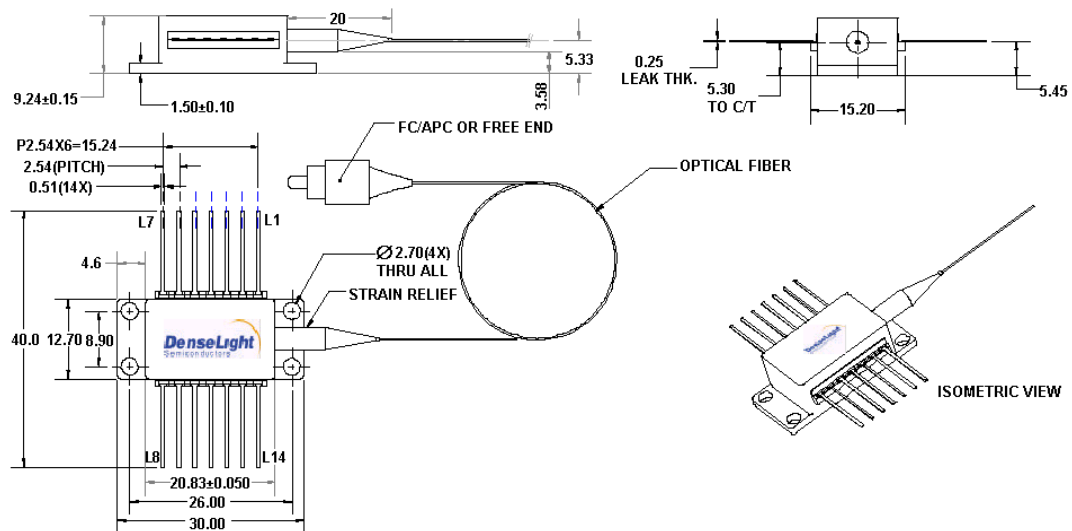
<sup>1</sup>  $T_{Laser}$  is monitored by internal thermistor with external pin out.

## G. PACKAGE

Part	Description
Package type	14-pin BTF
Fiber:	SMF-28
MFD	9μm
Cladding diameter	125μm
Coating diameter	245μm
Fiber pigtail length	>1m
Fiber connector	FC/APC

## H. OUTLINE DRAWINGS

### Typical Package Dimension



Pin Assignment	
1	TEC (+)
2	THERMISTOR
3	
4	
5	THERMISTOR
6	-
7	-
8	-
9	-
10	LD ANODE (+)
11	LD CATHODE (-)
12	-
13	CASE
14	TEC (-)

