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SPECIFICATIONS

Pulsed Ultra Narrow Linewidth 1383nm Laser In BTF Package

DL-CLS409B-S1383

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

A. PRODUCT DESCRIPTION

DenseLight **DL-CLS409B-S1383** is a pulsed and cooled ultra narrow linewidth laser in BTF package with SMF pigtail emitting at 1383nm 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 >40mW
- Lasing wavelength of 1383 nm
- Minimum SMSR of 45 dB
- 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 μ s, duty = 1% | | 425 | mA |
| Forward voltage | V_F | I_{op} | | 3.5 | V |
| Case temperature | T_c | I_{op} | 0 | 60 | $^{\circ}$ C |
| Laser temperature ¹ | 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 |

¹ T_{Laser} is monitored by internal thermistor with external pin out.

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 | Pulsed width=10 μ s, duty=1%, 40 mW | 40 | – | – | mW |
| Operating current | I_{op} | Pulsed width=10 μ s, duty=1%, 40 mW | – | – | 375 | mA |
| Operation voltage | V_{op} | Pulsed width=10 μ s, duty=1%, 40 mW | – | – | 3.3 | V |
| Peak wavelength | λ_p | CW, 5mW, 50 mA (typ) | 1382 | 1383 | 1384 | nm |
| Side mode suppression ratio | SMSR | CW, 5mW, 50 mA (typ) | 45 | – | – | dB |
| Linewidth ² | $\Delta\lambda$ | CW, 5mW | – | 200 | – | kHz |
| Pulse shape | V_{peak}/V_{min} | Pulsed width=10 μ s, duty=1%, 40 mW | – | – | 1.5 | – |
| | V_{max}/V_{min} | | – | – | 1.33 | – |
| Thermistor resistance | R_{therm} | $T_{therm} = 25^{\circ}$ C | 9.5 | 10 | 10.5 | k Ω |

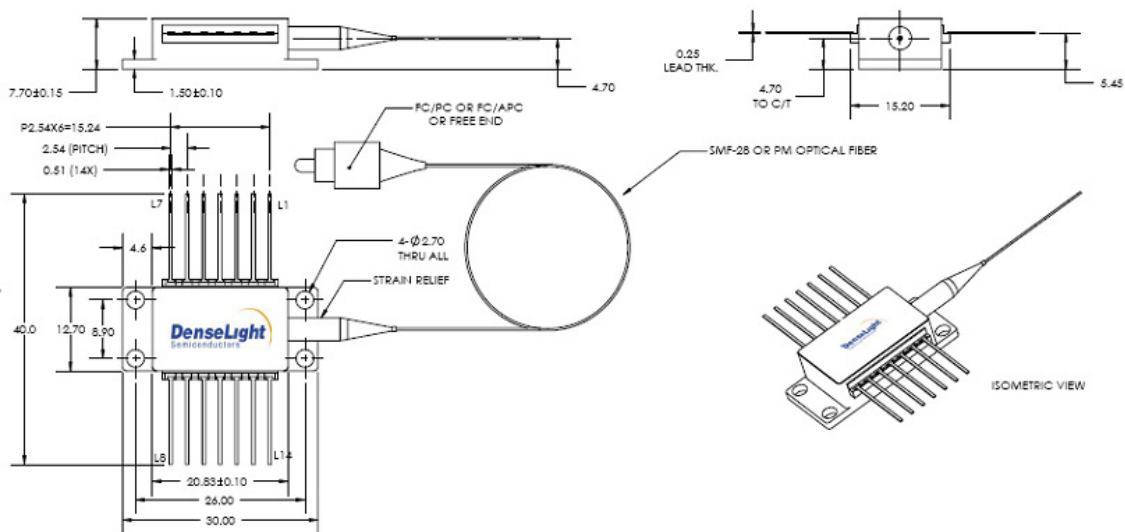
² Typical linewidth is narrowed to < 10kHz when module is integrated inside DenseLight's BF-series box with high precision laser driver & temperature controller.

G. PACKAGE

| Part | Description |
|----------------------|-------------|
| Package type | 14-pin BTF |
| Fiber: | SMF-28 |
| MFD | 9 μ m |
| Cladding diameter | 125 μ m |
| Coating diameter | 245 μ m |
| 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 (-) |

