



# QLD106D-6450Cz series

1064 nm 50 mW DFB Laser BFY Module under CW Operation

C00287-02 August 2023



## 1. DESCRIPTION

The QLD106D-6450Cz series is a 1064 nm-wavelength distributed feedback (DFB) laser for use in seeder and sensing applications. The laser is assembled into a 14-pin butterfly package with an optical isolator, a monitor PD and a thermo-electric cooler.

## 2. FEATURES

- Single longitudinal mode operation
- Fiber-pigtailed 14-pin butterfly package with a monitor PD and a TEC
- Optical isolator integration
- Polarization maintaining fiber integration
- CW operation

## 3. APPLICATIONS

- Seeder for fiber lasers
- Sensing

## 4. ABSOLUTE MAXIMUM RATINGS

| PARAMETER                         | SYMBOL    | RATING    | UNIT |
|-----------------------------------|-----------|-----------|------|
| Optical Output Power              | $P_f$     | 70        | mW   |
| LD Forward Current                | $I_f$     | 300       | mA   |
| LD Reverse Voltage                | $V_{RLD}$ | 2         | V    |
| TEC Drive Current                 | $I_{TEC}$ | 2         | A    |
| TEC Drive Voltage                 | $V_{TEC}$ | 4.3       | V    |
| Operation Temperature             | $T_c$     | 0 to 60   | °C   |
| Storage Temperature               | $T_{stg}$ | -40 to 85 | °C   |
| Lead Soldering Temperature (10 s) | $T_{sld}$ | 260       | °C   |

**5. OPTICAL AND ELECTRICAL CHARACTERISTICS**

 (T<sub>LD</sub> = 25°C, unless otherwise specified)

| PARAMETER                              | SYMBOL          | TEST CONDITION                  | MIN    | TYP    | MAX    | UNIT  |
|--|-----------------|---------------------------------|--------|--------|--------|-------|
| Peak Wavelength                        | $\lambda_p$     | CW, P <sub>f</sub> =50 mW       | 1059.3 | 1064.3 | 1069.3 | nm    |
| Temperature Coefficient of $\lambda_p$ | $d\lambda_p/dT$ | CW                              | -      | 0.08   | -      | nm/K  |
| Current Coefficient of $\lambda_p$     | $d\lambda_p/dI$ | CW                              | -      | 0.003  | -      | nm/mA |
| Fiber Output Power                     | P <sub>f</sub>  | CW                              | 50     | -      | -      | mW    |
| Threshold Current                      | I <sub>th</sub> | CW                              | -      | 25     | -      | mA    |
| Operation Current                      | I <sub>op</sub> | CW, P <sub>f</sub> =50 mW       | -      | 180    | 250    | mA    |
| Operation Voltage                      | V <sub>op</sub> | CW, P <sub>f</sub> =50 mW       | -      | 1.6    | 2      | V     |
| Sidemode Suppression Ratio             | SMSR            | CW, P <sub>f</sub> =50 mW       | 30     | 50     | -      | dB    |
| Polarization Extinction Ratio          | PER             | CW                              | 15     | 20     | -      | dB    |
| Monitor PD Current                     | I <sub>m</sub>  | CW, P <sub>f</sub> =50 mW       | 10     | 100    | 1000   | μA    |
| Thermistor Resistance                  | R <sub>th</sub> | T <sub>LD</sub> = 25°C, B=3900K | 9.5    | 10     | 10.5   | kΩ    |

(\*1) Tighter wavelength tolerance of +/-1 nm and +/-0.5 nm is available as an option. Refer to product part number according to wavelength tolerance.

**6. PRODUCT PART NUMBER**
**6-1. General naming rule**

QLD106D-6450Cz

| Symbol | Description          | Parameter   |
|--------|----------------------|---|
| z      | Wavelength tolerance | none: 1064.3 +/-5 nm<br>W64: 1064.3 +/-1 nm<br>TW64: 1064.3 +/-0.5 nm |

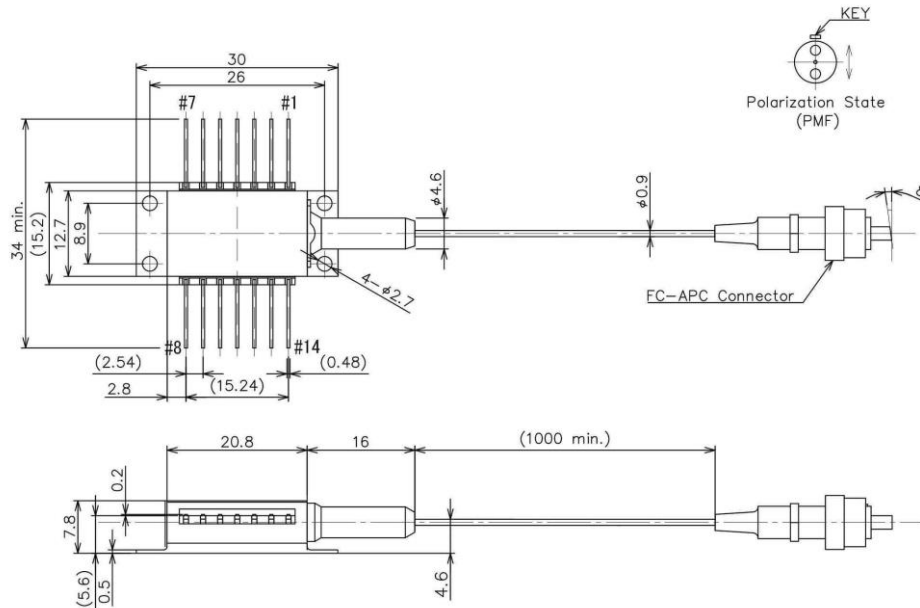
**6-2. Connector type**

| Part Number      | Fiber Type                     | Fiber Diameter | Connector   |
|------------------|--------------------------------|----------------|-------------|
| QLD106D-6450Cz   | Polarization maintaining fiber | 900 μm         | FC/APC      |
| QLD106D-6450Cz11 |                                | 250 μm         | Ferrule/APC |

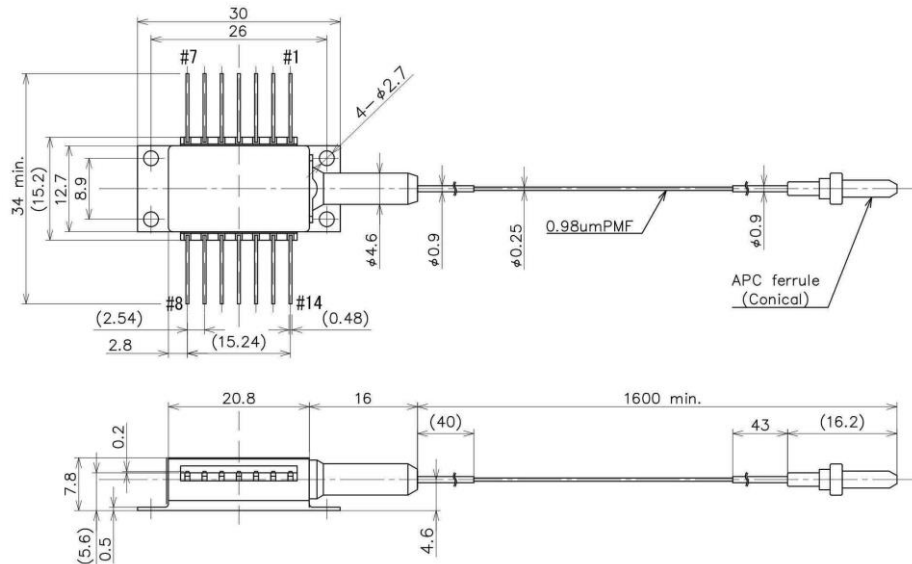
**6-3. Examples of product part number**

| Examples of product name |                                |
|--------------------------|--------------------------------|
| Part Number              | Description                    |
| QLD106D-6450C            | 1064.3 +/-5 nm, 900 μm Fiber   |
| QLD106D-6450C11          | 1064.3 +/-5 nm, 250 μm Fiber   |
| QLD106D-6450CW64         | 1064.3 +/-1 nm, 900 μm Fiber   |
| QLD106D-6450CTW6411      | 1064.3 +/-0.5 nm, 250 μm Fiber |

7. OUTLINE DRAWING



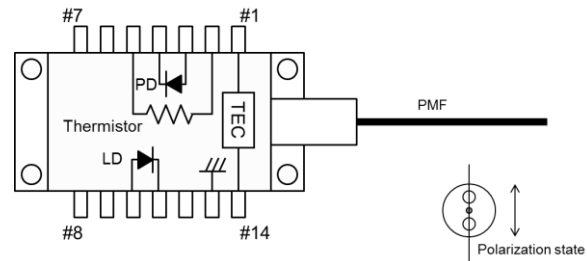
(a) 900 μm fiber diameter and FC/APC connector type (QLD106D-6450Cz)



(b) 250 μm fiber diameter and ferrule/APC type (QLD106D-6450Cz11)

## 8. PIN CONFIGURATION

| No. | Description | No. | Description   |
|-----|-------------|-----|---------------|
| 1   | TEC (+)     | 8   | NC            |
| 2   | Thermistor  | 9   | NC            |
| 3   | PD Anode    | 10  | Laser Anode   |
| 4   | PD Cathode  | 11  | Laser Cathode |
| 5   | Thermistor  | 12  | NC            |
| 6   | NC          | 13  | Case Ground   |
| 7   | NC          | 14  | TEC (-)       |



## 9. NOTICE

- Safety Information

This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10.

Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes.

Please do not eat, burn, break and make chemical process of the products since they contain GaAs material.

- Handling products

Semiconductor lasers are easily damaged by external stress such as excess temperature and ESD.

Please pay attention to handling products, and use within range of maximum ratings.

QD Laser takes no responsibility for any failure or unusual operation resulting from improper handling, or unusual physical or electrical stress.

- RoHS

This product conforms to RoHS compliance related Directive (EU) 2015/863.

|   |   |
|---|---|
|   | <p>LASER DIODE</p>  |
| <p>INVISIBLE LASER RADIATION<br/>AVOID DIRECTION EXPOSURE TO BEAM</p> <p>MAXIMUM OUTPUT 300 mW<br/>WAVELENGTH 1000~1200 nm<br/>CLASS 3B LASER PRODUCT</p>       | <p><b>AVOID EXPOSURE-Invisible</b><br/>Laser Radiation is emitted from this aperture.</p> |
| <p>This product complies with 21 CFR Part 1040.10</p> <p><b>QD Laser, Inc.</b></p> <p>1-1 Minamiataridacho, Kawasaki-ku, Kawasaki, Kanagawa, 210-0855 Japan</p> |   |

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