QD LASER

# QLD1a6L-xx50C series

1 μm wavelength range 50 mW CW DFB Laser Butterfly Package C00243-02 March 2025

## 1. DESCRIPTION

The QLD1a6L-xx50C series is a 1 μm-wavelength range distributed feedback (DFB) laser for use in seeder for fiber lasers and sensing applications. The laser is assembled into a 14-pin butterfly package with 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
- Without an optical isolator and with one polarizer
- Polarization maintaining fiber integration
- CW operation

## 3. APPLICATIONS

- Seeder for fiber lasers
- Sensing

## 4. ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Optical Output power | $P_f$ | 60 | mW |
| LD Forward Current | $I_F$ | 250 | mA |
| LD Reverse Voltage | $V_{RLD}$ | 2 | V |
| TEC Drive Current | $I_{TEC}$ | 2 | A |
| TEC Drive Voltage | $V_{TEC}$ | 4.3 | V |
| LD Chip Temperature | $T_{Chip}$ | 10 to 40 | °C |
| Operation Temperature | $T_c$ | 0 to 60 | °C |
| Storage Temperature | $T_{stg}$ | -40 to 85 | °C |
| Lead Soldering Temperature (5 s) | $T_{sld}$ | 230 | °C |

## 5. OPTICAL AND ELECTRICAL CHARACTERISTICS

($T_{LD}$ = 25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Peak Wavelength | $\lambda_p$ | CW, $P_f$ =50 mW | $\lambda_p$-5 (*2) | $\lambda_p$(*1) | $\lambda_p$+5 (*2) | nm |
| Spectral Linewidth (FWHM) | $\Delta\lambda$ | CW, $P_f$ =50 mW | - | 2(*3) | - | MHz |
| Temperature Coefficient of $\lambda_p$ | $d\lambda_p/dT$ | CW | - | 0.08 | - | nm/K |
| Current Coefficient of $\lambda_p$ | $d\lambda_p/dI$ | CW | - | 0.008 | - | nm/mA |
| Fiber Output Power | $P_f$ | CW | 50 | - | - | mW |
| Threshold Current | $I_{th}$ | CW | - | 15 | - | mA |
| Operation Current | $I_{op}$ | CW, $P_f$ =50 mW | - | 120 | - | mA |
| Operation Voltage | $V_{op}$ | CW, $P_f$ =50 mW | - | 1.8 | - | V |
| Sidemode Suppression Ratio | SMSR | CW, $P_f$ =50 mW | 30 | 40 | - | dB |
| Polarization Extinction Ratio | PER | CW | 15 | 20 | | dB |
| Monitor PD Current | Im | CW, $P_f$ =50 mW | 50 | 350 | 1000 | μA |
| Thermistor Resistance | Rth | $T_{LD}$ = 25°C, B=3900K | 9.5 | 10 | 10.5 | kΩ |

(*1) Available peak wavelength is from 1018 to 1122 nm and 1140 to 1188 nm.
(*2) Tighter wavelength tolerance of +/- 1 nm and +/- 0.5 nm is available as an option. Refer to product part number according to wavelength tolerance.
(*3) QD Laser, Inc. does not guarantee the linewidth of an individual diode.

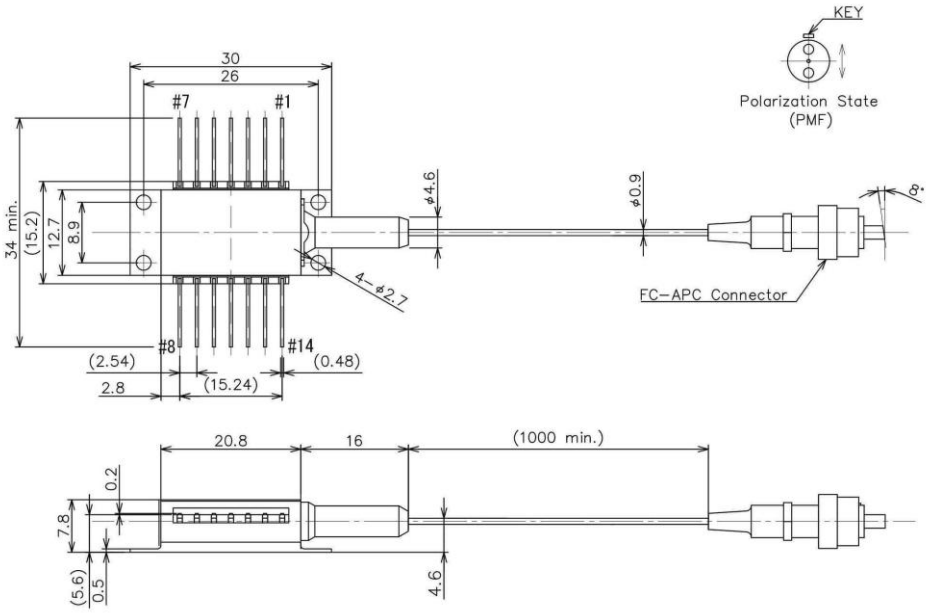
## 6. PRODUCT PART NUMBER

| Part Number | Fiber Type | Fiber Diameter | Connector |
|---|---|---|---|
| QLD1a6L-xx50C | Polarization maintaining fiber | 900 μm | FC/APC |
| QLD1a6L-xx50C-11 | | 250 μm | Ferrule |

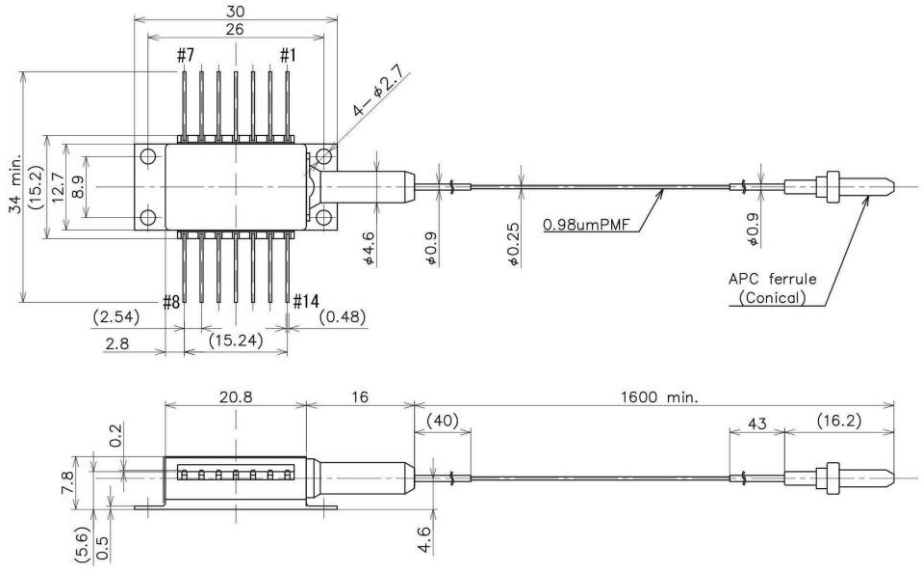
Examples of prodcut name

| Peak Wavelength (nm) | Part Number |
|---|---|
| 1050 | QLD106L-5050C |
| 1064 | QLD106L-6450C |
| 1070 | QLD106L-7050C |

## 7. OUTLINE DRAWING



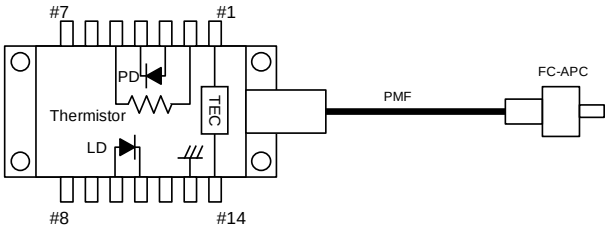

(a) 900 μm fiber diameter and FC/APC connector type (QLD1a6L-xx50C)




(b) 250 μm fiber diameter and ferrule type (QLD1a6L-xx50C-11)

## 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

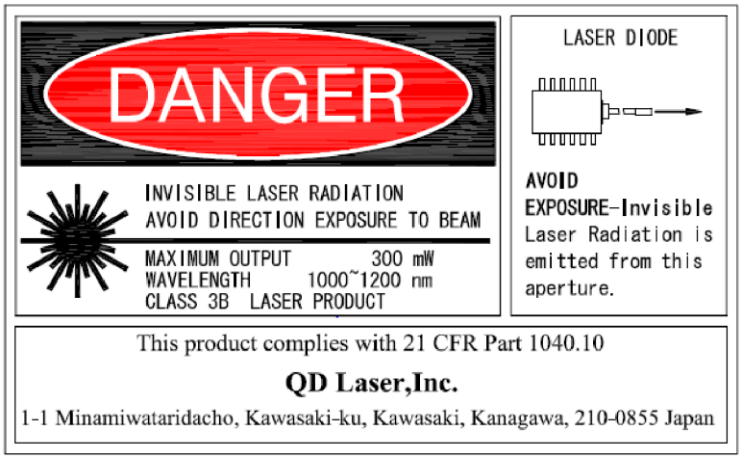
This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10.
Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes.
Please do not eat, burn, break and make chemical process of the products since they contain GaAs 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.




**QD Laser, Inc.**
**Contact : sales@qdlaser.com https://www.qdlaser.com**

**Keihin Bldg. 1F 1-1 Minamiwatarida-cho, Kawasaki-ku, Kawasaki, Kanagawa Zip 210-0855 Japan**