



## QLD1a61-xyyPzWtt series

1  $\mu$ m 100-300 mW DFB Laser BFY Module under ns Pulsed Operation

C00281-03 February 2026



### 1. DESCRIPTION

The QLD1a61-xyyPzWtt series is a high power 1  $\mu$ m-wavelength range distributed feedback (DFB) laser under ns pulsed operation for use in seeder for fiber lasers 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
- High peak output power of 300 mW under pulsed operation
- 3-20 ns pulse width@300 mW and 3-100 ns pulse width@100 mW available
- Fiber-pigtailed 14-pin butterfly package with a monitor PD and a TEC
- Optical isolator integration
- Polarization maintaining fiber integration

### 3. APPLICATIONS

- Seeder for fiber lasers
- Sensing

### 4. ABSOLUTE MAXIMUM RATINGS

| PARAMETER                             | SYMBOL                        | RATING    | UNIT         |
|---------------------------------------|-------------------------------|-----------|--------------|
| Optical Output power (CW)             | $P_f$                         | 50        | mW           |
| LD Forward Current (CW)               | $I_F$                         | 250       | mA           |
| Peak Output power (Pulse 10 ns/1 MHz) | $P_{f\_pulse}$ 300 mW version | 450       | mW           |
|                                       | $P_{f\_pulse}$ 100 mW version | 150       | mW           |
| LD Peak Current (Pulse 10 ns/1 MHz)   | $I_{F\_pulse}$ 300 mW version | 2         | A            |
|                                       | $I_{F\_pulse}$ 100 mW version | 600       | 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   | $^{\circ}$ C |
| Storage Temperature                   | $T_{sig}$                     | -40 to 85 | $^{\circ}$ C |
| Lead Soldering Temperature (10 s)     | $T_{sld}$                     | 260       | $^{\circ}$ C |



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## 5. OPTICAL AND ELECTRICAL CHARACTERISTICS

### 5-1. 300mW version: QLD1a61-xxC0PzWtt

( $T_{LD} = 25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                              | SYMBOL          | TEST CONDITION                                            | MIN                     | TYP              | MAX                     | UNIT          |
|----------------------------------------|-----------------|-----------------------------------------------------------|-------------------------|------------------|-------------------------|---------------|
| Peak Wavelength                        | $\lambda_p$     | CW, $P_f = 30 \text{ mW}$                                 | $\lambda_p - 5$<br>(*2) | $\lambda_p$ (*1) | $\lambda_p + 5$<br>(*2) | nm            |
| Temperature Coefficient of $\lambda_p$ | $d\lambda_p/dT$ | CW / Pulsed                                               | -                       | 0.08             | -                       | nm/K          |
| Threshold Current                      | $I_{th}$        | CW / Pulsed                                               | -                       | 15               | -                       | mA            |
| CW Fiber Output Power                  | $P_f$           | CW                                                        | 30                      | -                | -                       | mW            |
| CW Operation Voltage                   | $V_{op}$        | CW, $P_f = 30 \text{ mW}$                                 | -                       | 1.8              | -                       | V             |
| Pulsed Peak Output Power               | $P_{f\_peak}$   | Pulsed, $I_{f\_peak} = 1.5 \text{ A}$                     | 300                     | 340              | -                       | mW            |
| Pulsed Averaged Output Power           | $P_{f\_ave}$    | Pulsed<br>10 ns/100 kHz/1.5 A                             | 300                     | 340              | -                       | $\mu\text{W}$ |
| Pulse Width                            | $t_{pw}$        | Pulsed, 100 kHz/1.5 A                                     | 3                       | -                | 20                      | ns            |
| Repetition rate                        | RR              | Pulsed, 20 ns/1.5 A                                       | -                       | -                | 1(*3)                   | MHz           |
| Sidemode Suppression Ratio             | SMSR            | CW, $P_f = 30 \text{ mW}$                                 | 30                      | 40               | -                       | dB            |
|                                        |                 | Pulsed 3 ns / 100 kHz /<br>$P_{f\_peak} = 300 \text{ mW}$ | 25                      | 30               | -                       | dB            |
| Polarization Extinction Ratio          | PER             | CW                                                        | 15                      | 20               | -                       | dB            |
| Monitor PD Current                     | $I_m$           | CW, $P_f = 30 \text{ mW}$                                 | -                       | 300              | -                       | $\mu\text{A}$ |
| Thermistor Resistance                  | $R_{th}$        | $T_{LD} = 25^{\circ}\text{C}$ , B=3900K                   | 9.5                     | 10               | 10.5                    | k $\Omega$    |

(\*1) Available peak wavelength is from 1018 to 1122 nm and 1140 to 1188 nm.

(\*2) Tighter wavelength tolerance of  $\pm 1 \text{ nm}$  and  $\pm 0.5 \text{ nm}$  is available as an option. Refer to product part number according to wavelength tolerance

(\*3) Higher repetition rate is available with proper adjustment of a peak current and pulse width. Please ask QDL for more detail.

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### 5-2. 100mW version: QLD1a61-xxA0PzWtt

| (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> = 30 mW                            | $\lambda_p - 5$<br>(*2) | $\lambda_p$ (*1) | $\lambda_p + 5$<br>(*2) | nm   |
| Temperature Coefficient of $\lambda_p$               | d $\lambda_p$ /dT    | CW / Pulsed                                           | -                       | 0.08             | -                       | nm/K |
| Threshold Current                                    | I <sub>th</sub>      | CW / Pulsed                                           | -                       | 15               | -                       | mA   |
| CW Fiber Output Power                                | P <sub>f</sub>       | CW                                                    | 30                      | -                | -                       | mW   |
| CW Operation Voltage                                 | V <sub>op</sub>      | CW, P <sub>f</sub> = 30 mW                            | -                       | 1.8              | -                       | V    |
| Pulsed Peak Output Power                             | P <sub>f, peak</sub> | 5 ns / 100 kHz                                        | -                       | 100              | -                       | mW   |
| Pulsed Averaged Output Power                         | P <sub>f, ave</sub>  | Pulsed<br>10 ns/100 kHz/300 mA                        | -                       | 100              | -                       | μW   |
| Pulse Width                                          | t <sub>pw</sub>      | Pulsed, 100 kHz/300 mA                                | 3                       | -                | 100                     | ns   |
| Repetition rate                                      | RR                   | Pulsed, 100 ns/ 300 mA                                | -                       | -                | 1(*3)                   | MHz  |
| Sidemode Suppression Ratio                           | SMSR                 | CW, P <sub>f</sub> = 30 mW                            | 30                      | 40               | -                       | dB   |
|                                                      |                      | Pulsed 4 ns / 1 MHz /<br>P <sub>f, peak</sub> = 50 mW | 30                      | 40               | -                       | dB   |
| Polarization Extinction Ratio                        | PER                  | CW                                                    | 15                      | 20               | -                       | dB   |
| Monitor PD Current                                   | I <sub>m</sub>       | CW, P <sub>f</sub> = 30 mW                            | -                       | 300              | -                       | μA   |
| Thermistor Resistance                                | R <sub>th</sub>      | T <sub>LD</sub> = 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 +/- 1nm and +/- 0.5nm is available as an option. Refer to product part number according to wavelength tolerance

(\*3) Higher repetition rate is available with proper adjustment of a peak current and pulse width. Please ask QDL for more detail.



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## 6. PRODUCT PART NUMBER

### 6-1 General naming rule

QLD1a61-xyyPzWtt

| Symbol | Item                  | Condition                                                    | Parameter                                                                                                            |
|--------|-----------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| a      | Main wavelength range | 1axx defines wavelength range in nm                          | a=0: 10xx nm range<br>a=1: 11xx nm range                                                                             |
| xx     | Main wavelength range | xx defines the last two digits of the wavelength range in nm | xx=30: 1030 to 1039 nm<br>xx=50: 1050 to 1059 nm<br>xx=80: 1080 to 1089 nm<br>(exception: xx=64 for 1060 to 1069 nm) |
| yy     | Output power          | Peak output power                                            | yy=A0: 100 mW<br>yy=C0: 300 mW                                                                                       |
| tt     | Wavelength            | Detailed specification of wavelength                         | tt=63: 1063 nm<br>tt=32: 1032 nm<br>(examples)                                                                       |
| zW     | Wavelength tolerance  | wavelength tolerance                                         | none: +/-5 nm<br>W: +/-1 nm<br>TW: +/-0.5 nm                                                                         |

### 6-2 Connector type

| Part Number        | Fiber Type                     | Fiber Diameter | Connector   |
|--------------------|--------------------------------|----------------|-------------|
| QLD1a61-xyyPzWtt   | Polarization maintaining fiber | 900 µm         | FC/APC      |
| QLD1a61-xyyPzWtt11 |                                | 250 µm         | Ferrule/APC |

### 6-3 Examples of product part number

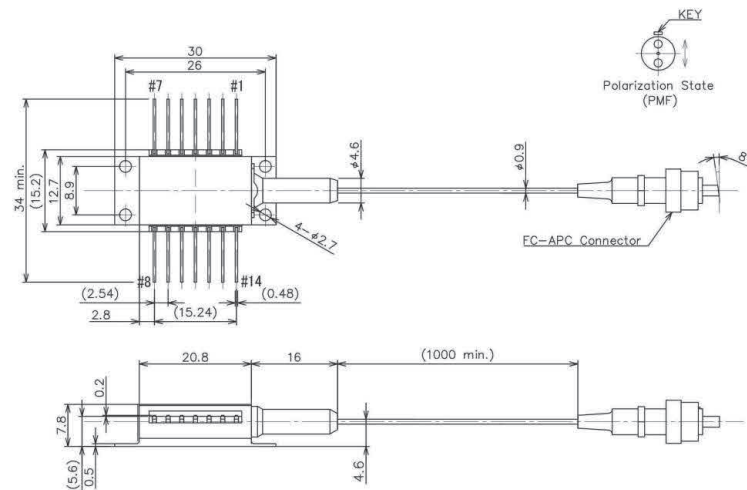
| Part Number         | Peak Wavelength, Fiber type                |
|---------------------|--------------------------------------------|
| QLD1061-64A0PW60    | 1060 nm +/-1 nm, 100 mW,<br>900 µm fiber   |
| QLD1061-30C0PTW3211 | 1032 nm +/-0.5 nm, 300 mW,<br>250 µm fiber |
| QLD1161-20A0PW2211  | 1122 nm +/-1 nm, 100 mW,<br>250 µm fiber   |
| QLD1061-80A0P83     | 1083 nm +/-5 nm, 300 mW,<br>900 µm fiber   |

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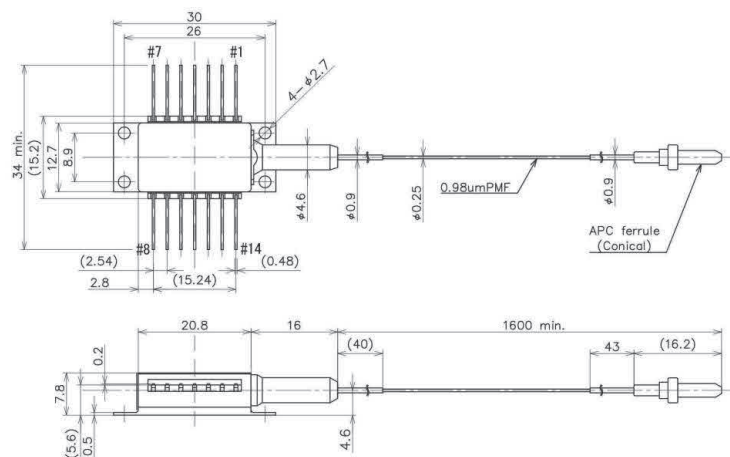
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## 7. OUTLINE DRAWING



(a) 900 μm fiber diameter and FC/APC connector type (QLD1a61-xxyyPzWtt)



(b) 250 μm fiber diameter and ferrule type (QLD1a61-xxyyPzWtt11)

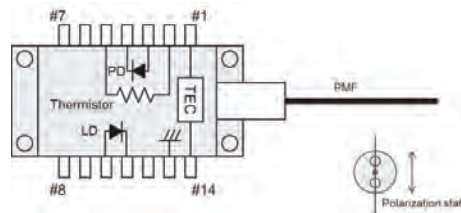
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### 8. PIN CONFIGURATION

| 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 4 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

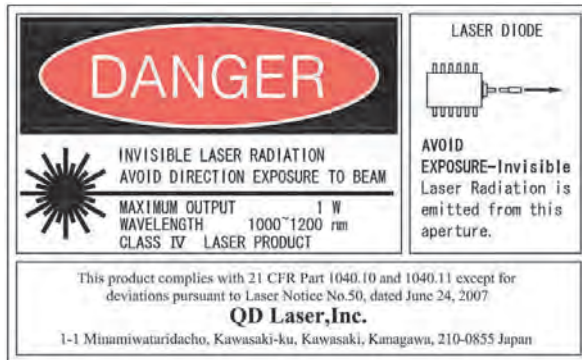
Semiconductor lasers are easily damaged by external stress such as excess temperature and ESD.

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](mailto:sales@qdlaser.com) <https://www.qdlaser.com>

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

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