QD LASER

QLD1a61-xxyyCzWtt series

1 μm-range 10-30 mW DFB Laser BFY Module under CW Operation C00280-03 March 2025

1. DESCRIPTION

The QLD1a61-xxyyCzWtt series is a 1μm-wavelength range 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 (CW)	P_f 30 mW version	50	mW
	P_f 10 mW version	30	mW
LD Forward Current (CW)	I_F 30 mW version	250	mA
	I_F 10 mW version	150	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

5-1. 10 mW verison: QLD1a61-xx10CzWtt

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

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Peak Wavelength	λ_p	CW, P_f =10 mW	λ_p-5 (*2)	λ_p(*1)	λ_p+5 (*2)	nm
Spectral Linewidth (FWHM)	$\Delta\lambda$	CW, P_f =10 mW	-	2(*3)	-	MHz
Temperature Coefficient of λ_p	$d\lambda_p/dT$	CW	-	0.08	-	nm/K
Current Coefficient of λ_p	$d\lambda_p/dI$	CW	-	0.008	-	nm/mA
Fiber Output Power	P_f	CW	10	-	-	mW
Threshold Current	I_{th}	CW	-	15	-	mA
Operation Current	I_{op}	CW, P_f =10 mW	-	50	80	mA
Operation Voltage	V_{op}	CW, P_f =10 mW	-	1.4	1.8	V
Sidemode Suppression Ratio	SMSR	CW, P_f =10 mW	-	40	-	dB
Polarization Extinction Ratio	PER	CW	15	20		dB
Monitor PD Current	Im	CW, P_f =10mW	10	100	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.

5-2. 30 mW verison: QLD1a61-xx30CzWtt

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

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Peak Wavelength	λ_p	CW, P_f =30 mW	λ_p-5 (*2)	λ_p(*1)	λ_p+5 (*2)	nm
Spectral Linewidth (FWHM)	$\Delta\lambda$	CW, P_f =30 mW	-	2(*3)	-	MHz
Temperature Coefficient of λ_p	$d\lambda_p/dT$	CW	-	0.08	-	nm/K
Current Coefficient of λ_p	$d\lambda_p/dI$	CW	-	0.008	-	nm/mA
Fiber Output Power	P_f	CW	30	-	-	mW
Threshold Current	I_{th}	CW	-	20	-	mA
Operation Current	I_{op}	CW, P_f =30 mW	-	150	200	mA
Operation Voltage	V_{op}	CW, P_f =30 mW	-	1.7	2.0	V
Sidemode Suppression Ratio	SMSR	CW, P_f =30 mW	-	40	-	dB
Polarization Extinction Ratio	PER	CW, P_f =30 mW	15	20		dB
Monitor PD Current	Im	CW, P_f =30 mW	50	200	1,000	μA
Thermistor Resistance	Rth	T_{LD} = 25°C, B=3900 K	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

6-1 General naming rule

QLD1a61-xxyyCzWtt

Symbol	Item	Condition	Parameter
a	Main wavelength range	1axx defines wavelength range in nm	a=0: 10xx nm range a=1: 11xx nm range
xx	Main wavelength range	xx defines the last two digits of the wavelength range in nm	xx=30: 1030 nm range xx=53: 1053 nm range xx=64: 1064 nm range xx=83: 1083 nm range (examples)
yy	Output power	Minimum output power	yy=10: 10 mW yy=30: 30 mW
tt	Wavelength	Detailed specification of wavelength	xx=63: 1063 nm xx=32: 1032 nm (examples)
zW	Wavelenth tolerance	wavelenth tolerance	none:+/-5 nm W:+/-1 nm TW:+/-0.5 nm

6-2 Connector type

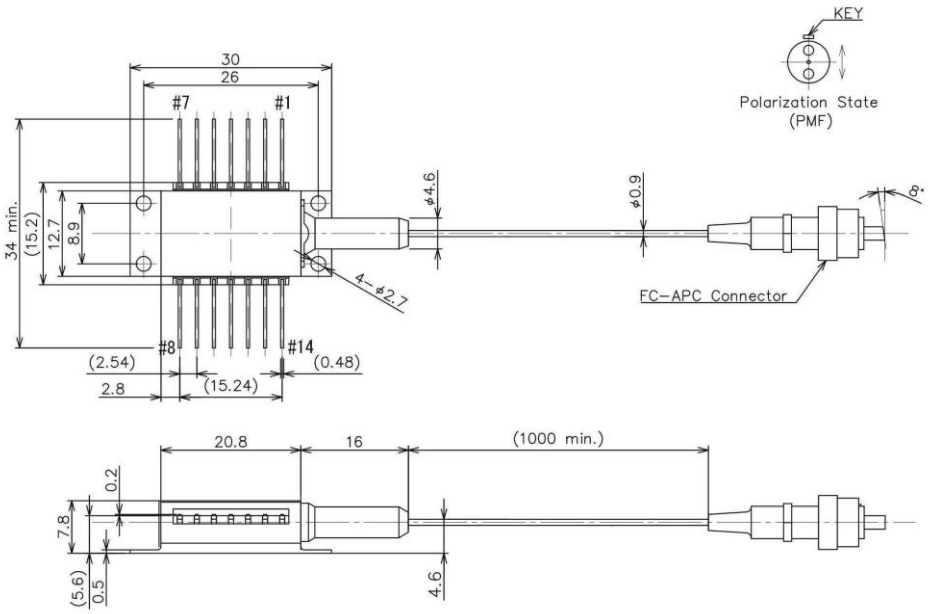
Part Number	Fiber Type	Fiber Diameter	Connector
QLD1a61-xxyyCzWtt	Polarization maintaining fiber	900 μm	FC/APC
QLD1a61-xxyyCzWtt11		250 μm	Ferrule/APC

6-3 Examples of product part number

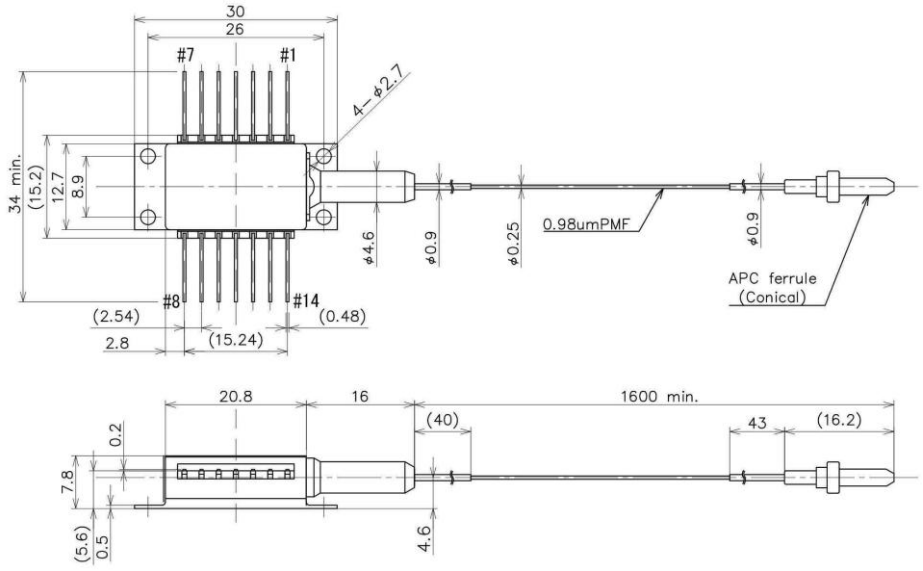
Examples of product name

Part Number	Peak Wavelength (nm)
QLD1061-6410CW60	1060 nm +/-1 nm, 10 mW 900 μm Fiber
QLD1061-3030CTW3211	1032 nm +/-0.5 nm, 30 mW 250 μm Fiber
QLD1161-2230CW2211	1122 nm +/-1 nm, 30 mW 250 μm Fiber
QLD1061-8330C	1083 nm +/-5 nm, 30 mW 900 μm Fiber

7. OUTLINE DRAWING



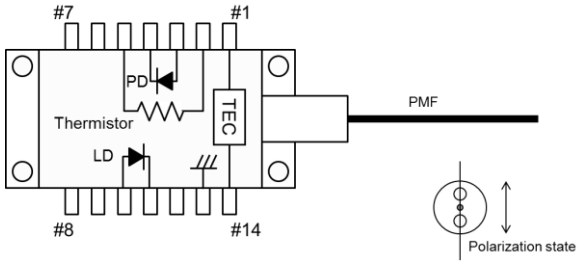
(a) 900 μm fiber diameter and FC/APC connector type (QLD1a61-xxyyCzWtt)



(b) 250 μm fiber diameter and ferrule type (QLD1a61-xxyyCzWtt11)

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

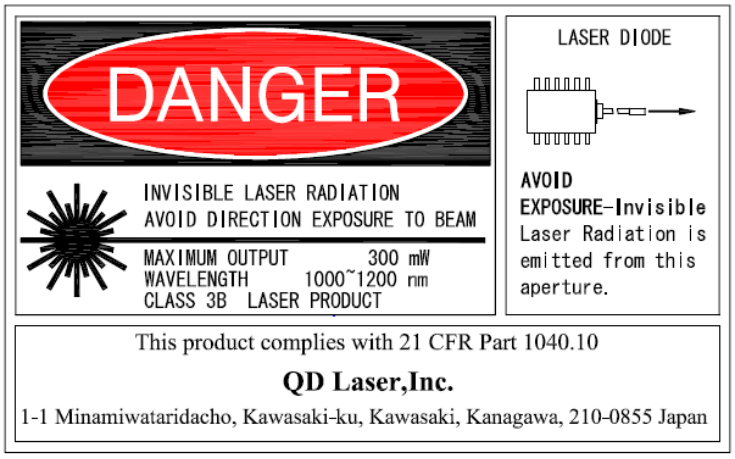
This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10.
Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes.
Please do not eat, burn, break and make chemical process of the products since they contain GaAs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



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