

QC2x1x6x Series

Picosecond pulsed seeder laser board

C00124-06 August 2023



1. DESCRIPTION

QC2x1x6x series is a picosecond pulsed seed laser board integrated with 14-pin butterfly DFB laser module of QLD1x6x and QLA1x6x series. 50 ps optical pulse with stable single longitudinal mode can be obtained. Flexible and easy operation can be achieved with both external and internal trigger from single shot to 250 MHz high repetition rate. All operation parameters including pulse peak current and laser diode temperature can be controlled by PC software via USB interface. Only single +5V power supply is required for the board operation.

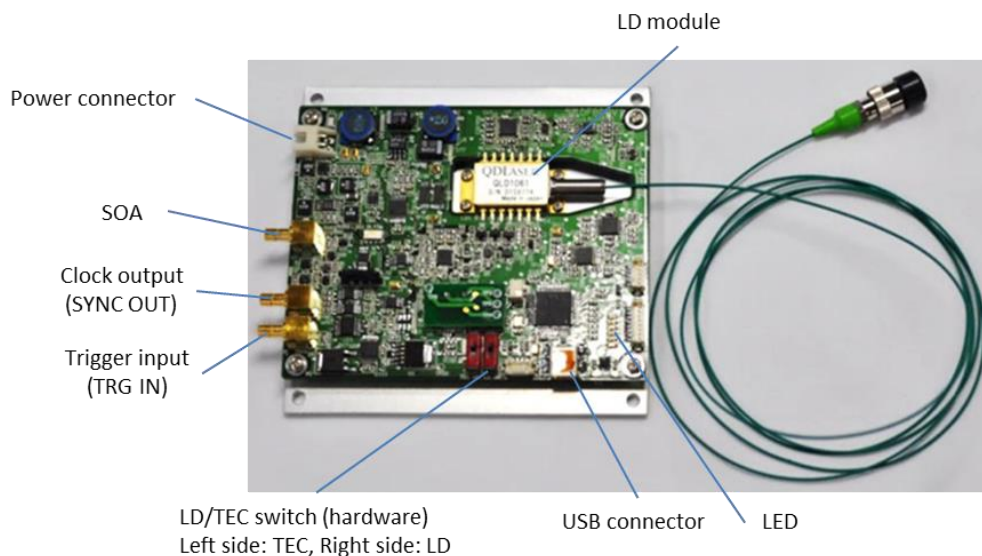
2. FEATURES

- 1018-1188 nm DFB-LD/DFB-SOA LD integrated
- 50 ps gain-switched pulse generation with 100mW peak power
- Internal / External clock operation
- Single shot to 250 MHz repetition rate
- Flexible parameter control via USB
- Plug and play

3. APPLICATIONS

- Pulsed seeder for fiber lasers
- Time resolved measurement

4. APPEARANCE



5. ACCESSORIES

- Power cable (Option: AC/DC adapter)
- USB cable
- SMA-SMB conversion cable
- Document CD-ROM(manual, applicaton software)

6. ABSOLUTE MAXIMUM RATINGS

 (T_c = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Input Voltage	V _{in}	5.5	V
Operation Temperature (*1)	T _c	0 to 40	°C
Storage Temperature (*1)	T _{stg}	-10 to 50	°C

(*1) No condensation

7. OPTICAL AND ELECTRICAL CHARACTERISTICS

 (T_c = 25°C, unless otherwise specified)

7-1(1). Optical specifications for ps version: QC2Y1a6b-xyyGzWtt

PARAMETER	MIN	TYP	MAX	UNIT	REMARK
Optical pulse width	-	50	-	ps	-
Repetition rate	0.012	-	250	MHz	With internal clock mode
Peak output power	-	100	-	mW	-
Pulse peak current	-	100	-	mA	-
Bias current	0	5	-	mA	-
Jitter _{RMS}	-	1	-	ps	-
Peak wavelength (*2)	λ _p -5 (*3)	λ _p (*2)	λ _p +5 (*3)	nm	Depends on integrated LD
Pulsed side-mode supression ratio	-	30	-	dB	-
Pulsed spectral linewidth	-	0.1	-	nm	Under 50 ps pulse width

(*2) Peak wavelength is dependent on integrated LD module, and available wavelength is from 1018 to 1188 nm.

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

7-1(2). Optical specifications for ns version: QC2Y1a6b-xyyPzWtt

PARAMETER	MIN	TYP	MAX	UNIT	REMARK
Optical pulse width	3	-	9	ns	Limited by electronics on board
Repetition rate	0.012	-	250	MHz	With internal clock mode
Peak output power	-	50	-	mW	-
Pulsed peak current	-	150	200	mA	-
Bias current	0	-	-	mA	-
Peak wavelength	$\lambda_p - 5$ (*5)	λ_p (*4)	$\lambda_p + 5$ (*5)	nm	Depends on integrated LD
Pulsed side-mode suppression ratio	-	30	-	dB	-
Pulsed spectral linewidth	-	0.1	-	nm	Under ns pulse operation

(*4) Peak wavelength is dependent on integrated LD module, and available wavelength is from 1018 to 1188 nm.

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

7-1(3). Optical specifications for CW version: QC2Y1a6b-xyyCzWtt

PARAMETER	MIN	TYP	MAX	UNIT	REMARK
CW output power	30 (*6)	-	-	mW	-
Bias current	-	150	200	mA	-
Peak wavelength	$\lambda_p - 5$ (*8)	λ_p (*7)	$\lambda_p + 5$ (*8)	nm	Depends on integrated LD
Spectral linewidth	-	2	-	MHz	Under CW operation

(*6) 100mW is available for DFB-SOA version of QC2A1a6b-xxA0CzWtt.

(*7) Peak wavelength is dependent on integrated LD module, and available wavelength is from 1018 to 1188 nm.

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

7-2. Electrical specifications

PARAMETER	MIN	TYP	MAX	UNIT	REMARK
Electrical pulse width tuning range	300	-	9000	ps	-
Repetition rate tuning range (*9)	0.012	-	250	MHz	With internal clock mode
Pulsed peak current (I_p) tuning range	0	-	200	mA	Not exceed 200 mA for $I_p + I_b$
Bias current (I_b) tuning range	0	-	200	mA	Not exceed 200 mA for $I_p + I_b$
SOA bias current tuning range	0	-	300	mA	For SOA integrated version
LD chip temperature tuning range	10	25	40 (*10)	°C	-
TEC current	-	-	1.3	A	-
Input power (Voltage)	-	+ 5	-	V	-
Input power (Current)	-	1	3	A	-

(*9) Single shot to 250 MHz tuning is possible with external clock mode

(*10) 60°C is available as an option.

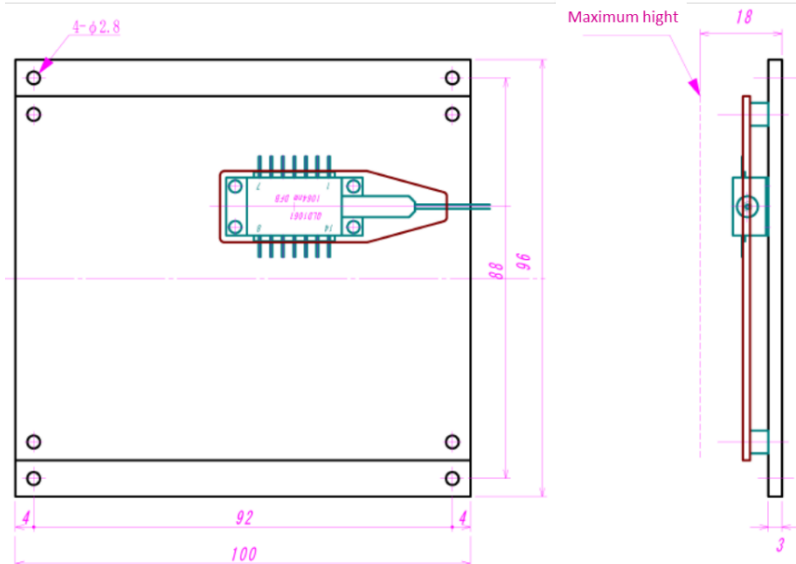
7-3. Clock interface

PARAMETER	MIN	TYP	MAX	UNIT	REMARK
External clock frequency	-	-	250	MHz	Single shot available
External clock voltage range	0~+1	-	-5~+5	V	-
External clock rise time	-	-	10	ns	-
External clock duty ratio	-	50	-	%	-
Clock monitor output voltage	-	0~1	-	V	50 Ω (0~2 V@Open)
Propagation delay	-	15	-	ns	Including optical fiber of 1 m

7-4. Dimensions

PARAMETER	Value	UNIT
Printed circuit board size	100 x 80	mm
Total unit size	100 x 96 x 18 (Maximum parts height)	mm
Weight	0.15	kg

8. EXTERNAL DIMENSION



9. PRODUCT PART NUMBER
9-1. Laser type
QC2Y1a6b-xyyXzWtt

Symbol	Item	Condition	Parameter	Product part number
Y	Laser type	DFB laser	D	<i>QC2D1a6b-xyyXzWtt</i>
		SOA integrated DFB laser (DFB-SOA)	A	<i>QC2A1a6b-xyyXzWtt</i>

9-2. Package type of BFY module
QC2Y1a6b-xyyXzWtt

Symbol	Item	Condition	Parameter	Product part number
b	Isolator/ ns pulse operation	with isolator, >3ns	I	<i>QC2Y1a6I-xyyXzWtt</i>
		without isolator, with polarizer >3ns	L	<i>QC2Y1a6L-xyyXzWtt</i>
		with isolator, 1-20ns	P	<i>QC2Y1a6P-xyyXzWtt</i>

9-3. Operation mode
QC2Y1a6b-xyyXzWtt

Symbol	Item	Condition	Parameter	Product part number
X	Operation mode	50 ps gain switched operation	G	<i>QC2Y1a6b-xyyGzWtt</i>
		ns pulse operation	P	<i>QC2Y1a6b-xyyPzWtt</i>
		CW operation	C	<i>QC2Y1a6b-xyyCzWtt</i>

9-4. Definition of wavelength and output power
QC2Y1a6b-xyyXzWtt

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	Peak output power under pulsed operation Output power under CW operation	yy=30: 30 mW yy=A0: 100 mW
tt	Wavelength	Detailed specification of wavelength	xx=63: 1063 nm xx=32: 1032 nm (examples)
zW	Wavelength tolerance	Wavelength tolerance	none: +/-5 nm W: +/-1 nm TW: +/-0.5 nm

9-5. Connector type

Part Number	Fiber Type	Fiber Diameter	Connector
QC2Y1a6b-xyyXzWtt	Polarization maintaining fiber	900 um	FC/APC
QC2Y1a6b-xyyXzWtt11		250 um	Ferrule/APC

9-6. Examples of product part number

Part Number	Description
QC2D1061-6430GW60	DFB-LD, 1060 nm +/-1 nm, 50 ps gain switch, 900 um fiber, with isolator
QC2D1061-3030PTW3211	DFB-LD, 1032 nm +/-0.5 nm, ns pulse operation, 250 um fiber, with isolator
QC2D1161-2230PW2211	DFB-LD, 1122 nm +/-1 nm, ns pulse operation, 250 um fiber, with isolator
QC2D106L-8330C	DFB-LD, 1083 nm +/-5 nm, 30 mW CW, 900 um fiber, w/o isolator
QC2A1061-64A0CW64	DFB-SOA LD, 1064 nm +/-1 nm, 100 mW CW, 900 um fiber, with isolator
QC2D106P-3030GTW30	DFB-LD, 1030 nm +/-0.5 nm, 50 ps gain switch, 900 um fiber, with isolator

10. 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

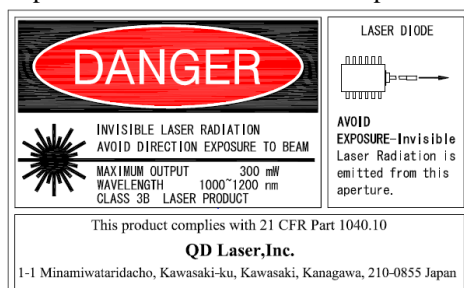
Semiconductor lasers are easily damaged by external stress such as excess temperature and ESD.

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 : info@qdlaser.com <https://www.qdlaser.com>

Copyright 2014-2023 All Rights Reserved by QD Laser, Inc.

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

All company or product names mentioned herein are trademarks or registered trademarks of their respective owners. Information provided in this data sheet is accurate at time of publication and is subject to change without advance notice.