QD LASER

QCED106G series

Preliminary

15-ps pulsed seed laser with driver board

C00215-02 February 2018

1. DESCRIPTION

QCED106G series is a 15-ps pulsed seed laser integrated with a compact driver board. Butterfly laser modules are QLD106G series, which employ semiconductor DFB laser diodes emitting at 1064 nm or 1030 nm and can generate ultra-short pulses of 15 ps under gain-switching operation with stable single longitudinal mode. All operating parameters such as bias currents, pulse voltages and laser diode temperatures can be easily controlled by GUI on PC through USB interface.

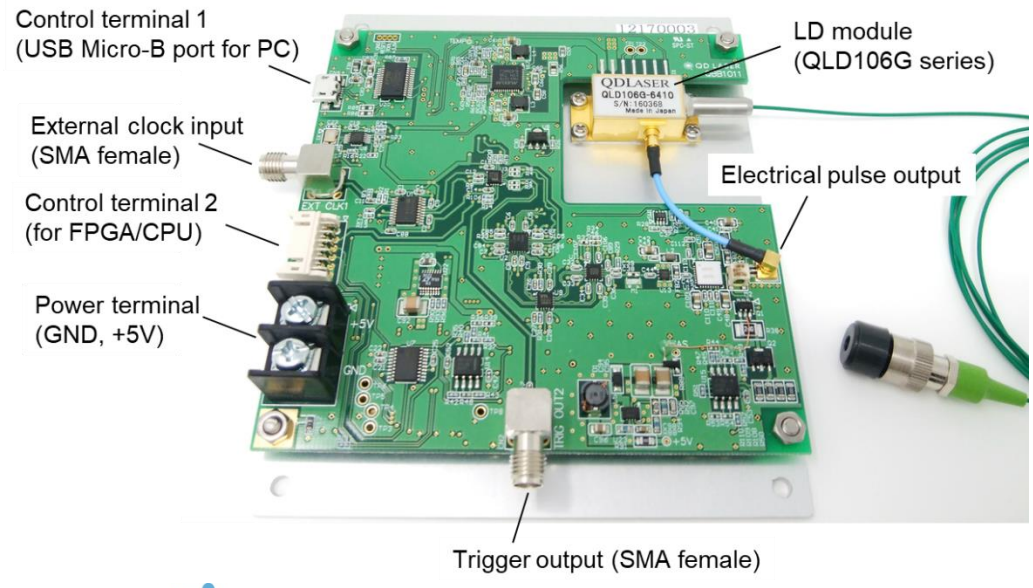
2. FEATURES

- Ultra-short pulse width of 15 ps under gain-switching operation with a peak power of 50 mW
- Stable single mode operation at 1064 nm or 1030 nm
- Wide repetition rate tuning range (12 kHz to 200 MHz for internal clock)
- Easy parameter control by GUI on PC

3. APPLICATIONS

- Pulsed seeder for fiber lasers
- Time resolved measurement

4. APPEARANCE



5. ACCESSORIES

- Power cable
- USB cable
- Document CD-ROM (manual, applicaton software)

6. ABSOLUTE MAXIMUM RATINGS

(T_c = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT	REMARK
Optical output power	P_f	20	mW	CW
LD forward current	I^f	90	mA	CW
Power supply voltage	V_{in}	5.25	V	
Power supply current	I_{in}	4.0	A	
External clock input voltage	V_{ext}	1.0	V_{pp}	AC coupling, Z_{in}=50Ω
Operating Temperature	T_c	10 to 40	°C	No condensation
Storage Temperature	T_{stg}	-10 to 50	°C	No condensation

7. OPTICAL AND ELECTRICAL CHARACTERISTICS

(T_c = 25°C, unless otherwise specified)

Optical specifications

All the parameters are measured under gain switching operation.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Peak wavelength	λ_p	-3	(*1)	+3	nm	*2
Spectral Linewidth	$\Delta\lambda$	-	1	-	nm	-
Optical pulse width	t_{pw}	-	15	-	ps	-
Peak output power	P_{peak}	-	50	-	mW	-
Side-mode supression ratio	SMSR	-	30	-	dB	-
Polarization Extinction Ratio	PER	15	20	-	dB	CW

*1) Wavelength depends on the integrated LD module.
QLD106G-6410: 1064 nm, QLD106G-3010: 1030 nm

*2) Peak wavelength tolerance of +/- 1 nm is available as an option.

Electrical specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Power supply voltage	V_{in}	4.75	5.00	5.25	V	*3
LD temperature	T_{LD}	15	25	40	°C	
TEC current	I_{TEC}	-2.0	-	2.0	A	
TEC voltage	V_{TEC}	-4.3	-	4.3	V	
Electrical pulse width	t_{ele}	80	100	120	ps	@ V_{peak} of 5 V, unadjustable
Repetition rate	f_{rep}	0.012	-	200	MHz	With internal clock, 1 kHz step
Pulse peak voltage	V_{peak}	3.5	5.0	5.5	V	DC coupling, Z_{out}=50Ω
Bias current	I_b	0	-	10	mA	*4
Trigger output	V_{trig}	0.5		0.8	V	AC coupling, Z_{out}=50Ω

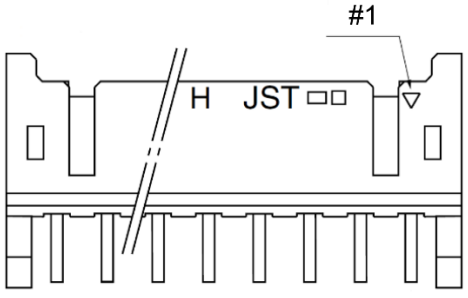
*3) The power supply is only prepared for operation of the driver board.
*4) When the "Stop" button is checked on GUI for the clock source selection and the pulse generation is turned off, I_b tuning range turns to be 0-100 mA. Although the board can generate I_b of up to 100 mA, please note that the absolute maximum rating of the I_b for QLD106G series is 90 mA. This bias current is used to adjust optical pulse shape under gain switch operation.

External clock

	PARAMETER	MIN	TYP	MAX	UNIT	REMARK
Ext CLK 1 (thorough SMA)	Repetition rate	0.1		750	MHz	
	Input voltage	0.5		1.0	V_{pp}	AC coupling
	Impedance		50		Ω	
Ext CLK 2 (thorough the control terminal 2)	Repetition rate	0		300	MHz	Single shot available
	Input voltage		LVTTL		-	
	Impedance		4.7		kΩ	Pull up

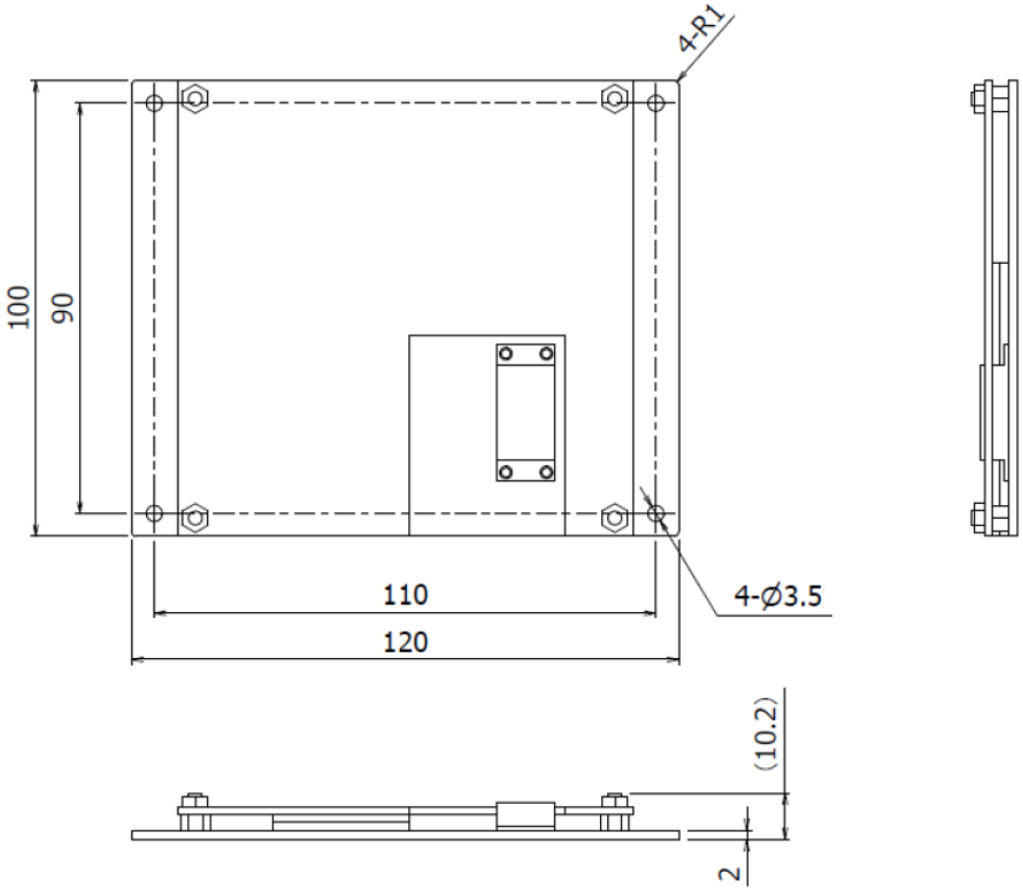
Control terminal 2

Connector: S12B-PHDSS, J.S.T. Mfg. Co. Ltd.
(Mating connector: PHDR-12VS)



#	I/O	Description	REMARK
1	I	External clock input	EXT CLK2, LVTTL, single shot to 300 MHz
2	-	GND	
3	O	Trigger output	LVTTL, Max 24 mA
4	-	GND	
5	O	UART output	TxD, LVTTL
6	-	GND	
7	I	UART output	RxD, LVTTL
8	-	GND	
9	-	+5V power supply	< 4 A
10	-	GND	
11	-	+5V power supply	< 4 A
12	-	GND	

8. OUTLINE DRAWING



unit: mm

9. PRODUCT PART NUMBER

QCED106G-xxxx
Code from the integrated laser module
eg.) QLD106G-6410 → QCED106G-6410

Part Number	Wavelength	Fiber Type	Fiber Diameter	Connector
QCED106G-6410	1064 nm	Polarization maintaining fiber	900um	FC/APC
QCED106G-641011	1064 nm		250um	Ferrule
QCED106G-3010	1030 nm		900um	FC/APC
QCED106G-301011	1030 nm		250um	Ferrule

10. NOTICE

- Safety Information

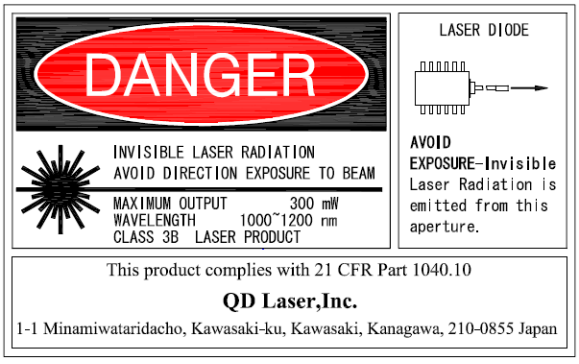
This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10. Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes. Please do not eat, burn, break and make chemical process of the products since they contain GaAs 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 EU Directive 2011/65/EU.



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