QD LASER

QLD0593-xxxx Series

Compact Visible Laser Module C00109-06 October 2025

1. DESCRIPTION

The QLD0593 is a visible laser module based on the frequency doubling of NIR distributed feedback (DFB) laser. The laser is assembled into a compact flat package.

2. FEATURES

- 532, 561, and 594nm light source
- 5, 20, 30, 50mW optical output power
- Low power consumption
- Low intensity noise
- Narrow spectral linewidth
- DC~100MHz modulation and short pulse capable
- Small size <0.5cc (5.6 x 3.8 x 22 mm)

3. APPLICATIONS

- Spectroscopy
- Fluorescence microscope
- Time resolved measurement
- Interferometry

4. ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATING	UNIT
DFB forward current		I_{fDFB}	250	mA
DFB forward voltage		V_{fDFB}	2.5	V
DFB reverse voltage		V_{rDFB}	2	V
SOA forward current		I_{fSOA}	320	mA
SOA forward voltage		V_{fSOA}	3	V
SOA reverse voltage		V_{rSOA}	2	V
Output power	QLD0593-xx50	P_o	60	mW
	QLD0593-xx30		40	
	QLD0593-xx20		30	
	QLD0593-xx05		10	
Heater power		P_{ht}	0.3	W
Module Operating Temperature		T_{op}	20 to 30	°C
Storage Temperature		T_{st}	-10 to 50	°C
Module Cure Temperature (<60min)(*1)		T_{mdl}	80	°C

(*1) Specification for discrete module when fixing the module on a heat sink with epoxy

5. OPTICAL AND ELECTRICAL CHARACTERISTICS

(T_C = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
DFB operation current		I_{opDFB}	CW, P_o= P_{op}	-	120	220	mA
DFB operation voltage		V_{opDFB}	CW, P_o= P_{op}	-	1.8	2.4	V
SOA operation current		I_{opSOA}	CW, P_o= P_{op}	-	250	320	mA
SOA operation voltage		V_{opSOA}	CW, P_o= P_{op}	-	2.0	3.0	V
Heater current		I_{heater}	-	0	-	90	mA
Heater resistance		R_{heater}	-	-	30	-	Ω
Power consumption		P_c	CW, P_o= P_{op}	-	0.8	-	W
Peak wavelength	QLD0593-32xx	λ_p (*2)	CW, P_o= P_{op}	530	532	534	nm
	QLD0593-61xx			559	561	563	nm
	QLD0593-94xx			592	594	596	nm
Output power	QLD0593-xx50	P_o	CW(*3)	50	-	-	mW
	QLD0593-xx30			30	-	-	
	QLD0593-xx20			20	-	-	
	QLD0593-xx05			5	-	-	
Output beam quality		M2	CW, P_o= P_{op}	-	1.2	-	-
Beam divergence (FWHM)		$\theta_{\perp}$	CW, P_o= P_{op}	-	10	-	deg.
		$\theta_{//}$	CW, P_o= P_{op}	-	5	-	deg.
Polarization ratio (*4)		-	CW, P_o= P_{op}		30		dB
Thermistor Resistance		R_{th}	T_C = 25°C, B=3375K	9.5	10	10.5	kΩ

(*2) Peak wavelength tolerance of +/- 1nm is available as an option.
(*3) Please refer to section 6 for available optical output power at each wavelength.
(*4) Polarization direction is parrallel to the module surface

6. PRODUCT PART NUMBER

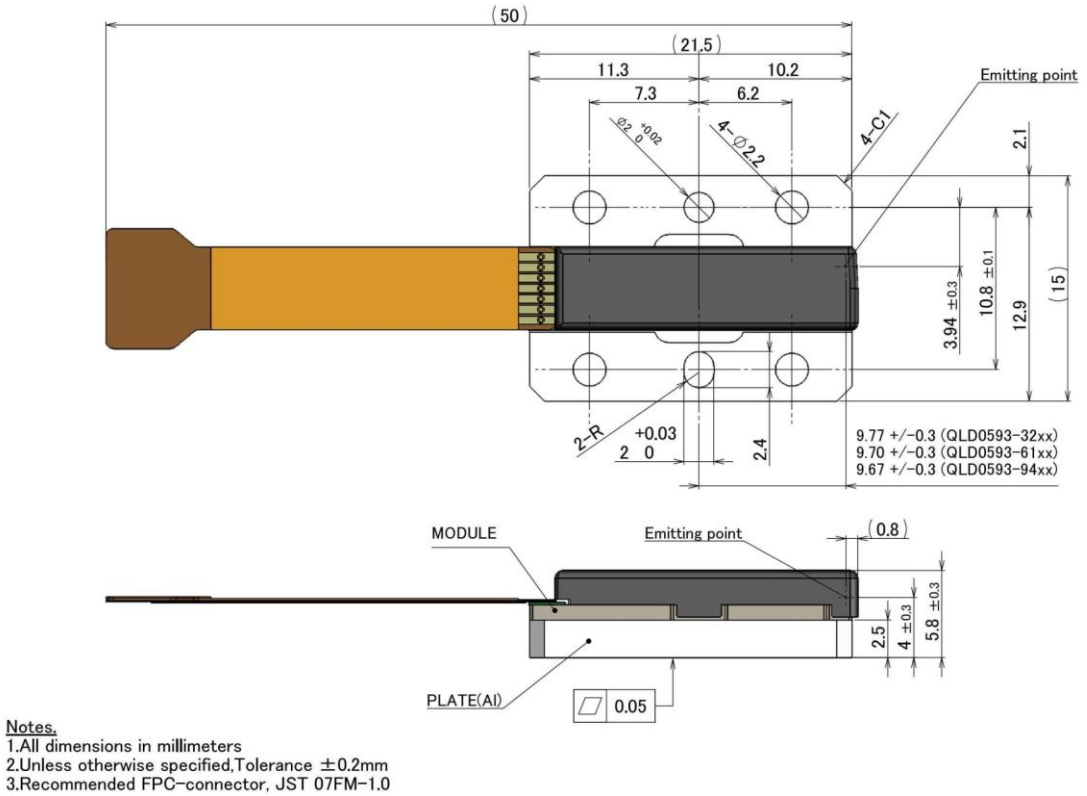
Part Number	Peak Wavelength	Structure option	Output Power under CW operation	Peak Power (*5)
QLD0593-3220	532 nm	Discrete	20 mW	not supported
QLD0593-3230			30 mW	not supported
QLD0593-3230-G50				50mW
QLD0593-3250			50 mW	not supported
QLD0593-3250-G50				50mW
QLD0593-3220-11		with mounting plate	20 mW	not supported
QLD0593-3230-11			30 mW	not supported
QLD0593-3230-11-G50				50mW
QLD0593-3250-11			50 mW	not supported
QLD0593-3250-11-G50				50mW

Part Number	Peak Wavelength	Structure option	Output Power under CW operation	Peak Power (*5)
QLD0593-6120	561 nm	Discrete	20 mW	not supported
QLD0593-6130			30 mW	not supported
QLD0593-6130-G50				50mW
QLD0593-6150			50 mW	not supported
QLD0593-6150-G50				50mW
QLD0593-6120-11		with mounting plate	20 mW	not supported
QLD0593-6130-11			30 mW	not supported
QLD0593-6130-11-G50				50mW
QLD0593-6150-11			50 mW	not supported
QLD0593-6150-11-G50				50mW
QLD0593-9405	594nm	Discrete	5mW	not supported
QLD0593-9405-G20				20mW
QLD0593-9405-11		with mounting plate		not supported
QLD0593-9405-11-G20				20mW

(*5) Peak Power is the minimum peak power value radiated when operated by an appropriate gain switching circuit.

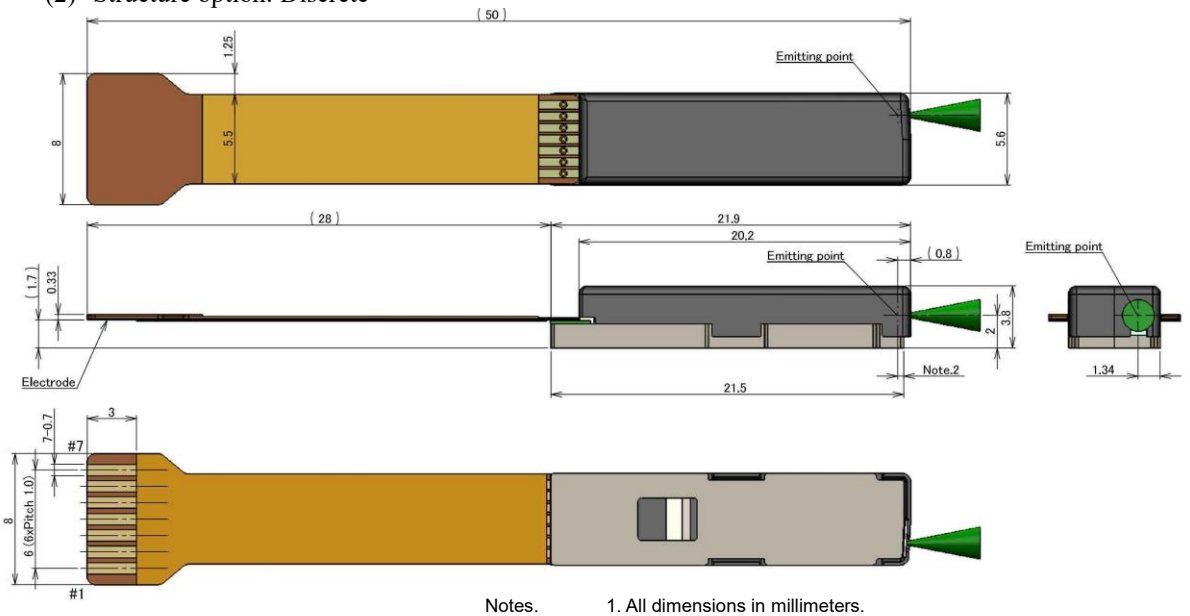
7. OUTLINE DRAWING

(1) Structure option: with mounting plate



Notes.
1.All dimensions in millimeters
2.Unless otherwise specified,Tolerance ±0.2mm
3.Recommended FPC-connector, JST 07FM-1.0

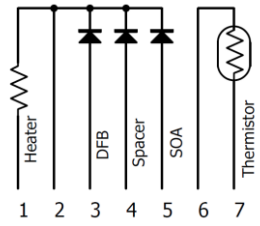
(2) Structure option: Discrete



Notes.
1. All dimensions in millimeters.
2. Emitting point,
-32xx(532nm): 0.43±0.3, -61xx(561nm): 0.50±0.3, -94xx(594nm): 0.53±0.3
3. Unless otherwise specified, Tolerance ±0.2mm
4. Recommended connector for FPC: JST 07FM-1.0

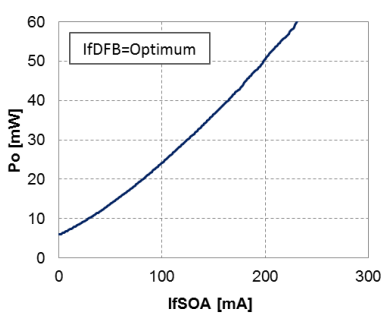
8. PIN CONFIGURATION

No.	Description
1	Heater (+)
2	Common Cathode / Heater (-)
3	DFB Anode
4	Spacer Anode
5	SOA Anode
6	Thermistor (+)
7	Thermistor (-)

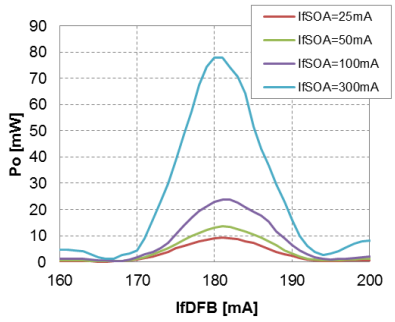


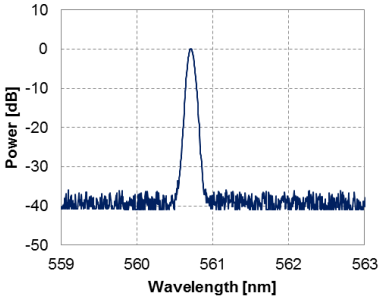
9. TYPICAL OPERATING CHARACTERISTICS

Example data from QLD0593-6150 under CW operation at module temperature of 25°C



(a) Light output characteristics depending on If SOA and If DFB





(b) Spectral characteristics

10. RECOMMENDED METHOD OF FIXATION

(1) QLD0593-xxxx-11 (with mounting plate option)

Apply 4-#2 or M2 screw with each torque of <0.1N.m.

(2) QLD0593-xxxx (Discrete module)

UV curable epoxy or heat curable epoxy are applicable to fix the module onto a heat sink.
Please contact QD Laser for further information.

11. OPTICAL POWER ADJUSTMENT PROCEDURE

With measuring optical power,
(1) Adjust DFB (and Heater) current so that the optical power becomes the maximum.
(2) Adjust SOA current to obtain the required power within the maximum rating.
(3) If needed, repeat the procedure of (1) to (2).

12. NOTICE

- Safety Information

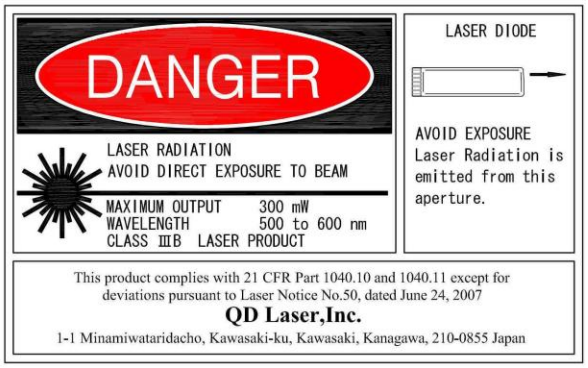
This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10.
Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes.
Please do not eat, burn, break and make chemical process of the products since they contain GaAs 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 2011/95/EC..



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