HAMAMATSU

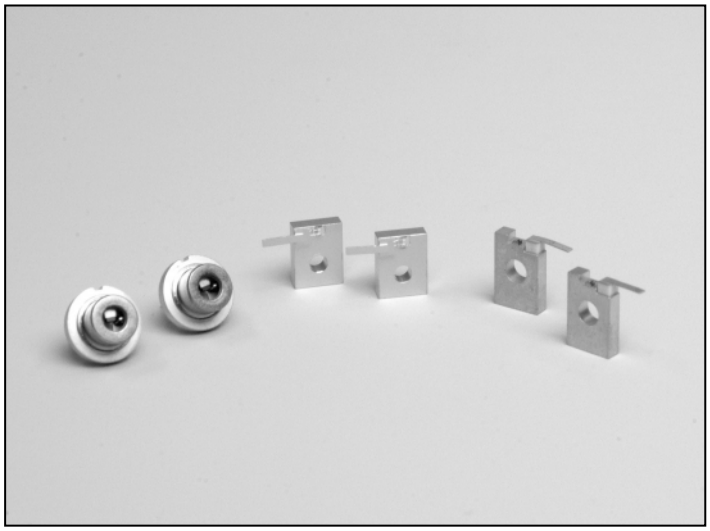
PRELIMINARY DATA

CW LASER DIODES
L10452 , L10451 , L8763 , L8828 SERIES

High radiant flux from a single chip

■ FEATURES

- High radiant flux and its density(CW)
  - L10452 series : 0.5 W / 50 µm
  - L10451 series : 1 W / 100 µm
  - L8763 series : 1 W / 50 µm
  - L8828 series : 2 W / 100 µm
- High stability
- Long life
- Compact



■ APPLICATIONS

- Pumping source for solid state lasers
- Printing
- Medical instrument
- Measuring instrument
- Material Processing
- Marking

HAMAMATSU CW laser diodes, L10452, L10451, L8763, L8828 series feature high radiant flux of 0.5 to 2.0 W under CW operation. As this is single chip and single element type, emitting area is small (50 µm to 100 µm X 1 µm). Therefore, it is easy to focus on to a small spot with optics. It can be used for various applications such as pumping of solid lasers, printers, medical instruments etc.

CW LASER DIODES L10452 , L10451 , L8763 , L8828 SERIES

■ ABSOLUTE MAXIMUM RATINGS (Top(c) = 25 °C)

Parameter	Symbol	Value				Unit
		L10452	L10451	L8763	L8828	
Radiant Flux	Φ_e	0.6	1.2	1.2	2.2	W
Reverse Voltage	V_r	2				V
Operating Temperature	$T_{op(c)}$	0 to +30				°C
Storage Temperature	T_{stg}	-30 to +80				°C

■ CHARACTERISTICS (Top(c) = 25 °C)

Parameter		Symbol	Conditions	Value				Unit
				L10452	L10451	L8763	L8828	
Operating Current		I_{op}	L10452 Φ_e = 0.5 W	0.65	1.2	1.2	2.4	A
Peak Emission Wavelength		λ_p	L10451 Φ_e = 1 W	808 ± 3 , 808 ± 10 *1				nm
Spectral Radiation Half Bandwidth		$\Delta\lambda$	L8763 Φ_e = 1 W	2				nm
Operating Voltage		V_{op}	L8828 Φ_e = 2 W	2				V
Emitting Area Size		-	Value at designing	50 x 1	100 x 1	50 x 1	100 x 1	µm
Beam Spread Angle	Horizontal	$\theta_{//}$	FWHM	8				degree
	Vertical	$\theta_{\perp}$		32				degree
Lasing Threshold Current		I_{th}	-	0.15	0.35	0.35	0.6	A

*1 Tolerance of peak emission wavelength can be selected from +/- 3nm and +/- 10nm for every type of laser diodes listed above. For its details, see the table of SUFFIX in the next page.
Other laser diodes of different peak emission wavelength are available, such as 830nm, 940nm and 980nm. Contact your local representative for more information.

Figure 1: Radiant Flux vs. Forward Current (Typ.)

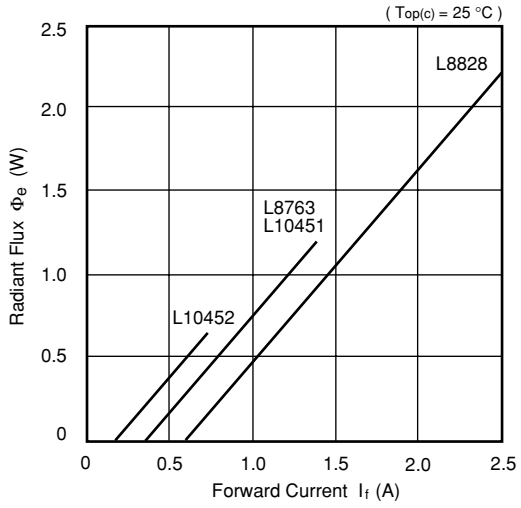


Figure 2: Emission Spectrum (Typ.)

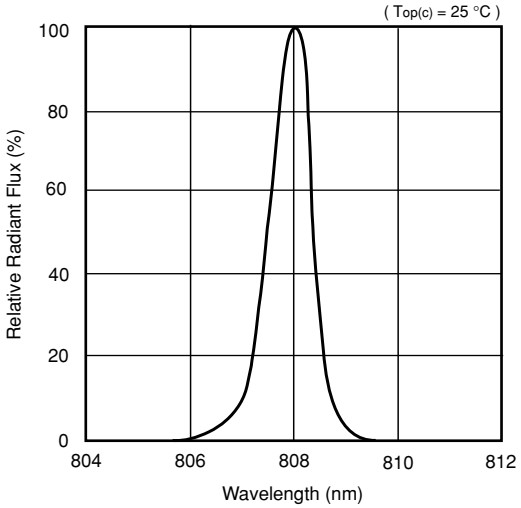
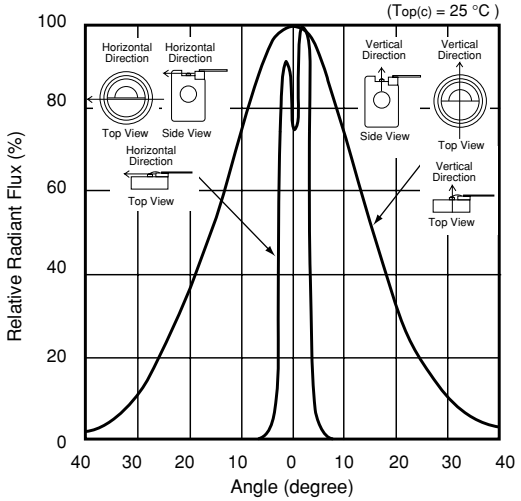


Figure 3: Directivity (Example from Measurement)

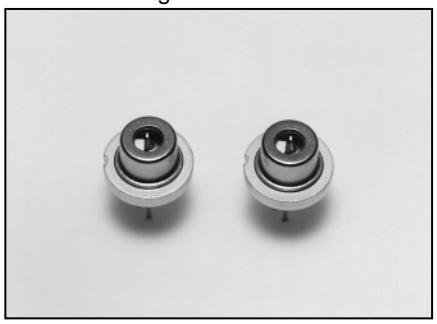


■ SUFFIX / DIMENSIONAL OUTLINE (Unit : mm)

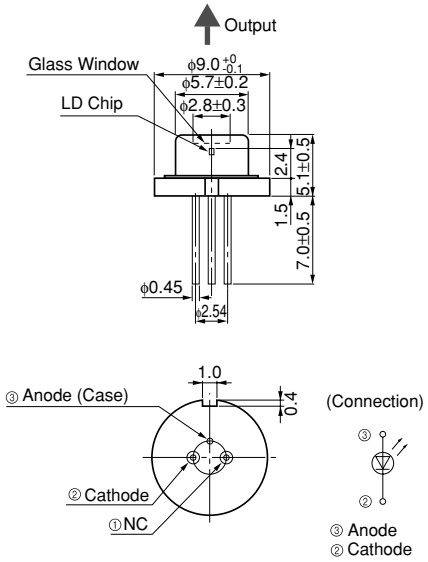
Parameter	Suffix					
	L####-04	L####-42	L####-06	L####-62	L####-07	L####-72
Peak Emission Wavelength (nm)	808 ± 3	808 ± 10	808 ± 3	808 ± 10	808 ± 3	808 ± 10
Package	ϕ 9.0 CD		Side-out OHS		Head-out OHS	
Dimensional Outline	①		②		③	

* ϕ9.0CD package is not available with 2W type L8288 series.
Pigtailed type is available as custom option. Contact your local representative for details.

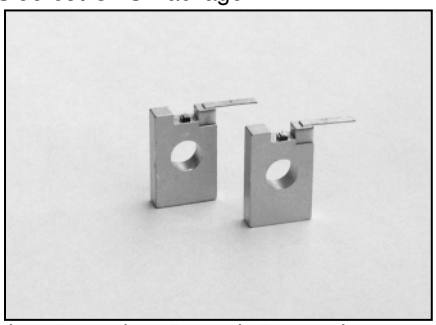
① ϕ 9.0 CD Package



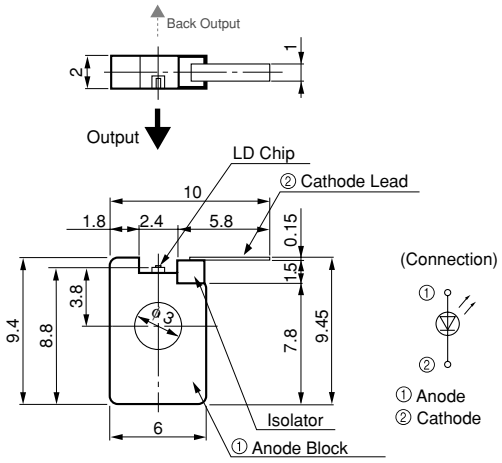
L10452-04 , L10451-04 , L8763-04
L10452-42 , L10451-42 , L8763-42



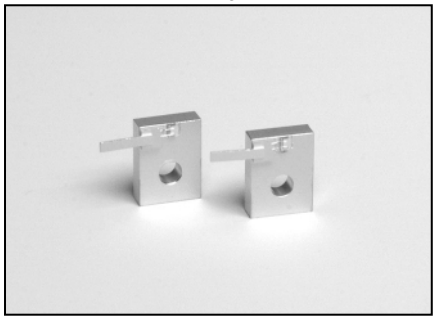
② Side-out OHS Package



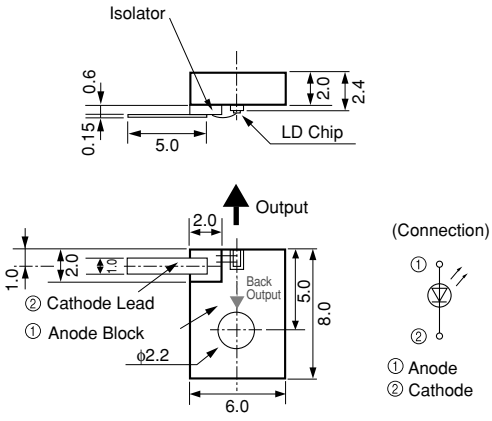
L10452-06 , L10451-06 , L8763-06 , L8828-06
L10452-62 , L10451-62 , L8763-62 , L8828-62



③ Head-out OHS Package



L10452-07 , L10451-07 , L8763-07 , L8828-07
L10452-72 , L10451-72 , L8763-72 , L8828-72



Handling precautions & instructions

1. Absolute maximum ratings

When LDs are driven exceeding its absolute maximum ratings, it will be broken instantly or it leads to degradation of performance & reliability. Please be careful not to exceed absolute maximum ratings even only a moment. The absolute maximum ratings in this datasheet are specified based on case temperature at 25 °C. When the operating temperature is higher, the radiant output power & dissipation will be reduced and it affects other characteristics. When designing the operating circuitry for LDs, please surely take absolute maximum ratings into account.

2. Protection of electrostatic discharge sensitive (ESDS) devices

The LDs may be damaged or its performance may deteriorate due to such factors as electric field, electrostatic discharges (ESD), surge voltage, leakage voltage etc. As a countermeasure against ESD, the device, operator, work place and jigs must all be set at the same electric potential. When handling LDs, please wear conductive finger-cap. And please take following countermeasures ;

(1) Install protection circuit for excess voltage, reverse voltage, surge voltage into power supply, measuring instrument etc.

(2) When using soldering iron, protect LDs from leakage current & electrostatic discharge from soldering iron bit.

(3) Conductive sheet, electrically grounded through 1Mohm resistor should be laid on both the work table and the floor of the working area. In order to protect the device from ESD which accumulate on the operator or the operator's clothes, ground electrically through 1Mohm resistor and wear a wrist strap etc.

(4) Goods like parts, container to contact / approach to LDs should be materials which is taken a countermeasures for ESD.

3. Protection for stain, stress, external damage, etc.

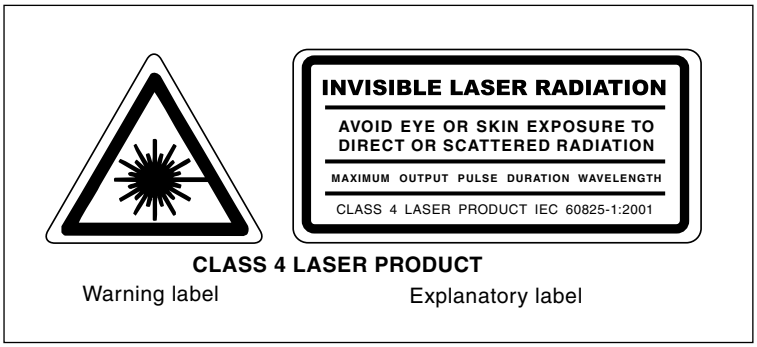
The LDs whose suffix -06 & -07 are bare type product, vital & fragile part is naked. Dusts, expiration, finger print, sputum, condensation bending, chip off of LD chip, re-forming of wire may leads to degradation of performance of the LDs. Please unpack, keep, handle, operate, drive in air-conditioned clean room so that the LDs are keep away from dust & condensation. When handling, please take enough care not to drop, not to stain any part of LDs. When dropped or stained, do not use it.

4. Heat dissipation

Reliability of LDs is deeply correlated with junction temperature. Under higher operating temperature, the reliability deteriorates sooner. Heat dissipating device (material: Aluminum, Copper) should be attached to the base of LDs, and cooling devices (air, water, peltier etc.) should be operate with the LDs in order to dissipate the heat from the LDs, so that the operating temperature is kept within the absolute maximum ratings.

5. Safety for operators and users

These LDs emit invisible laser radiation. It's classified into Class 4 according to the laser product standards of the IEC 60825-1 (Safety of laser products Part 1: Equipment classification, requirements and user's guide) and/or ANSI Z136.1 (American National Standard for Safe Use of Lasers) etc. Direct or reflected laser beam from these LDs may damage eyes or skin by being absorbed by cells. In the worst case, it leads to burn or loss of eyesight. The operator must not stare the emitting area of LDs, must avoid direct exposure to the laser beam. Wear eye-protectors (glasses or goggles) against laser radiation while operating a device. Please provide adequate information to the end-user of its classification, performances and warnings of the products using these LDs, defying the regulations of IEC 60825-1 etc.



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Cat. No. LLD1010E05
DEC. 2006
Printed in Japan