

Doc. No.: LAA2B1679

Version : Pro Forma

**HAMAMATSU PHOTONICS K.K.**  
**PRO FORMA SPECIFICATION SHEET**  
**(TRIAL PRODUCT)**

**CW LASER DIODE**

**TYPE No. LE0912CWLD**

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**HAMAMATSU**

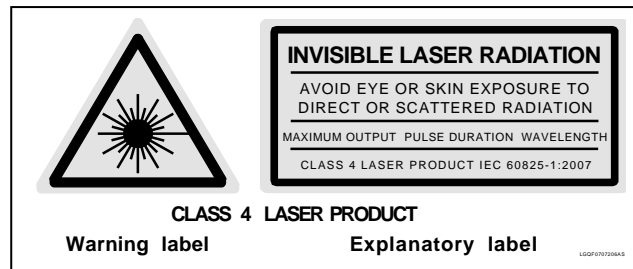
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## **WARNING (CLASS 4 LASER)**

### **Invisible Laser Radiation – Avoid Eye or Skin Exposure to Direct or Scattered Radiation**

- The Laser emits invisible laser radiation. The instrument which uses the LASER, operated under ordinary conditions, is classified as Class 4 according to the laser product classification code IEC 60825-1.

See IEC 60825-1,-14 for more details concerning the above countermeasures.



## **WARNING**

- This delivery specification is not for the purpose of guarantee the perfection of the product. When the product is used in an instrument which may damage body of lives or properties, it is dangerous to operate the instrument unless proper safety measures are taken for the probable defects of the product.

## **CAUTION**

- This product is bare chip. Dust, expiration, fingerprints, sputum, condensation, and fracture may lead LD performance degradation. This product is incorporated into the instrument, keep the LD in an airtight container; do not expose it to the air and keep it away from contact with dust.

## PRO FORMA SPECIFICATION

### 1. Scope of Application

These PRO FORMA specifications apply to TRIAL PRODUCTS of the laser bare chip LE0912CWLD. These specifications were decided by the evaluation results of the laser bare chip assembled on a submount and a copper heatsink(F-mount). Therefore, there is a possibility that some of the specifications may change after evaluating the trial products. And also there is a possibility that some of the specifications may change depending on a method of assembly. These devices are trial products and under development.

We have not yet made any tests for reliability assurance. Therefore, any claims based on defects nor product liability should not be discussed about these trial products. For request of repeat production, there will be a possibility of changing specifications and its type number

### 2. Ratings and Characteristics(Tentative)

#### 2-1. Absolute Maximum Ratings

Absolute maximum ratings are limiting values that must not be exceeded even momentarily.

$T_{op(C)} = +25\text{ }^{\circ}\text{C}$ , unless otherwise specified.

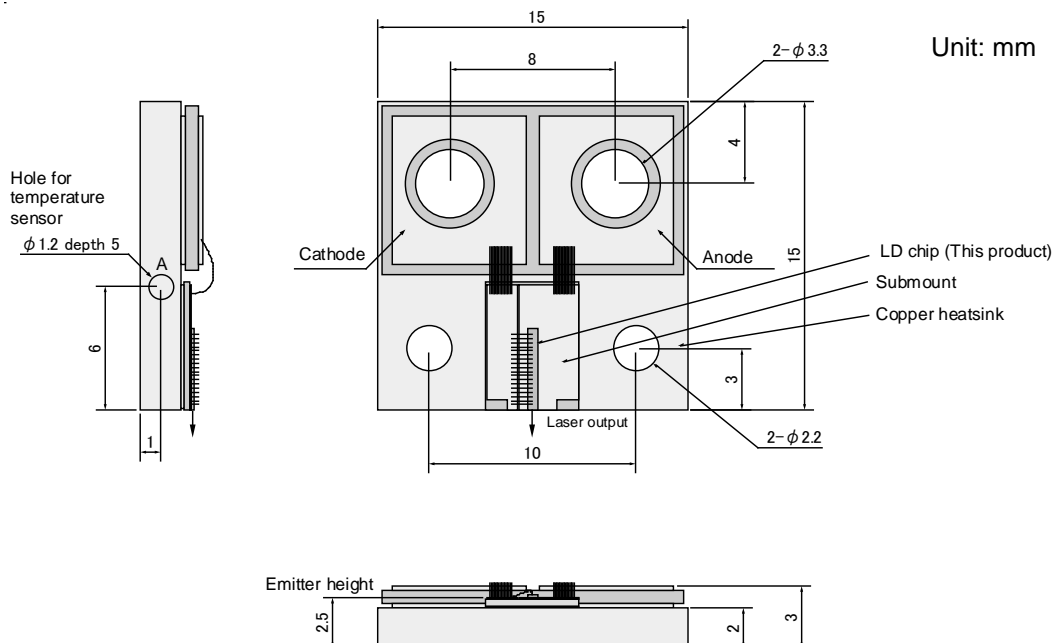
Characteristic	Symbol	Rating	Unit
Forward current	$I_f$	23	A
Reverse voltage	$V_r$	2	V
Operating temperature <sup>NOTE1)</sup>	$T_{op(C)}$	+15 to +50	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-40 to +80	$^{\circ}\text{C}$
Electrostatic discharge <sup>NOTE2)</sup>	—	TBD	V

NOTE1) The temperature of F-mount when the laser bare chip is mounted onto our F-mount.

In other words, the temperature having been measured with a temperature sensor which is inserted into Hole A in the reference illustration.

NOTE2) Human body model

<Reference illustration>

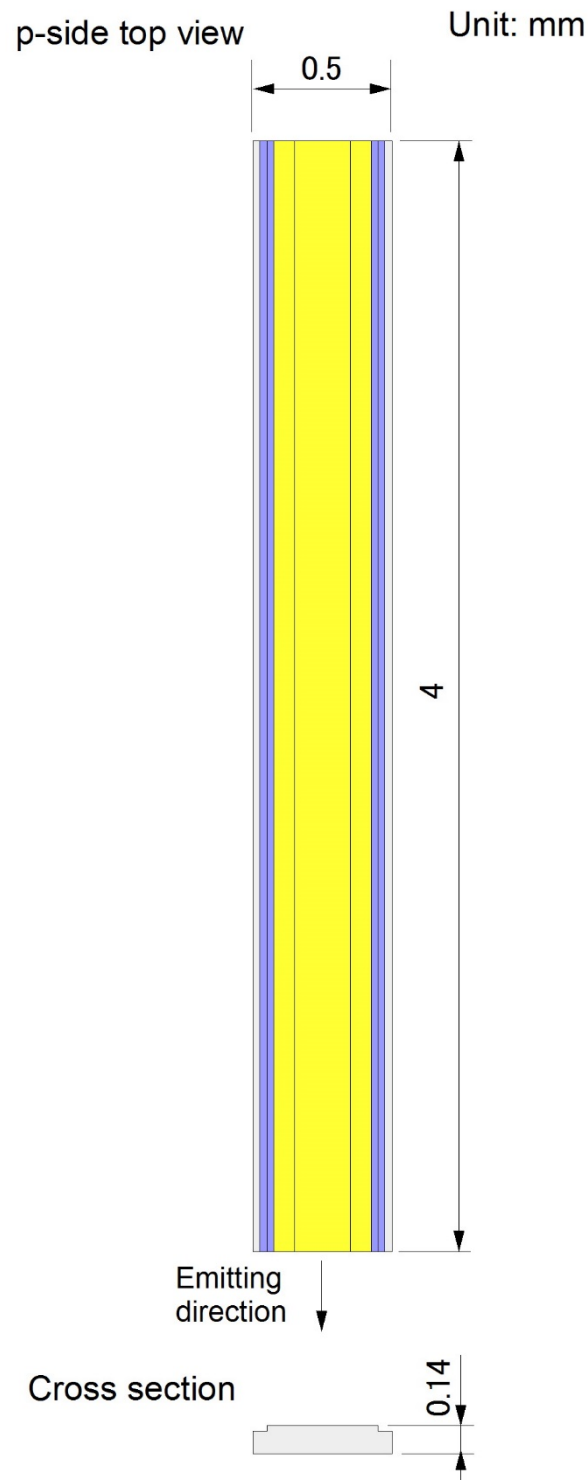


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**2-2. Electrical and Optical Characteristics ( $T_{op(c)} = 25\text{ }^{\circ}\text{C}$ )**

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Lasing threshold current	$I_{th}$	—	—	1.0	1.3	A
Operating current	$I_{op}$	$\Phi_e = 20\text{ W}$	—	20	22.5	A
Operating voltage	$V_{op}$	$\Phi_e = 20\text{ W}$	—	1.7	1.9	V
Central emission wavelength	$\lambda_c$	$\Phi_e = 20\text{ W}$	905	915	925	nm
Spectral radiation half bandwidth	$\Delta\lambda$	$\Phi_e = 20\text{ W}$	—	3.5	4.5	nm
Beam spread angle	Horizontal	$\Phi_e = 12\text{ W}$ FWHM	—	10	15	° (degree)
	Vertical		—	25	30	
Emitting width	$W$	Design Value	—	190	—	$\mu\text{m}$

### 3. Dimensional Outline



※ Since the laser bare chip has no marker indicating the light emitting direction, it is displayed on the packing case. At mass production, markers are displayed on laser bare chip.

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#### 4. Delivery method

This product is delivered in a laser bare chip. This product is put into GelPak.

#### 5. Warranty

This product is laser bare chip. So, we guarantee the quality till just delivering the product to a customer. Do not use these trial products for the customer's product to be shipped to any third parties.

#### 6. Others Handling Precautions

Any dispute or disagreement concerning these specifications shall be settled through consultations between the related companies.

#### 7. Handling Precautions

##### ● Handling the laser bare chip

When handling the laser bare chip, dust, expiration, fingerprints, sputum, condensation, and fracture may lead laser bare chip performance degradation. The following countermeasures should be taken:

- Keep the laser bare chip in an airtight container; do not expose it to the air and keep it away from contact with dust. The air in the container should be kept dry (humidity: less than 40 %).
- Handle the laser bare chip in a clean room and keep it away from expiration, fingerprints, sputum, and solvents until the installation in the airtight container is completed.
- Do not touch or drop the laser bare chip. Do not clean the laser bare chip in any method.

##### ● Protection against Electrostatic Discharges

The laser bare chip is an Electrostatic-Discharge Sensitive (ESDS) device that may be damaged or deteriorated by electrostatic discharges. When handling the laser bare chip, ensure the following measures are taken:

- The conductive sheet which is electrically grounded through 1 MΩ resistor should be laid on all work tables and floors of the work area.
- Operators should wear wrist straps and conductive fingerstalls grounded through 1 MΩ resistor.
- Remove the laser bare chip from gelpak under the ionizer.