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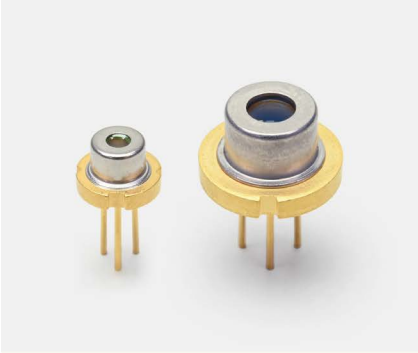
Pulsed laser diode (PLD)



L11348-307-05 L11649-120-04

High-power pulsed laser diode, Peak emission wavelength: 870 nm

L11348-307-05 and L11649-120-04 are pulse-driven multimode laser diodes that achieve high peak output. These are suitable for applications such as laser rangefinders, security, management, and monitoring.

Features

- **Emitter**
  3-stack (L11348-307-05)
  Single emitter (L11649-120-04)
- **Peak emission wavelength: 870 nm typ.**
- **Emission area (design value):**
  70 µm × 10 µm (L11348-307-05)
  230 µm × 1 µm (L11649-120-04)

Applications

- **Rangefinders**
- **Security (intrusion detection, obstacle detection)**
- **Position and shape measurement**

Absolute maximum ratings (Tcase=25 °C, unless otherwise noted)

Parameter	Symbol	L11348-307-05	L11649-120-04	Unit
Pulse forward current	I_{FP}	10	25	A
Reverse voltage	V_R	2		V
Pulse width	tw	100		ns
Duty ratio	DR	0.1		%
Operating temperature (case)*1	Tcase	-40 to +85		°C
Storage temperature*1	Tstg	-40 to +100		°C

*1: No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

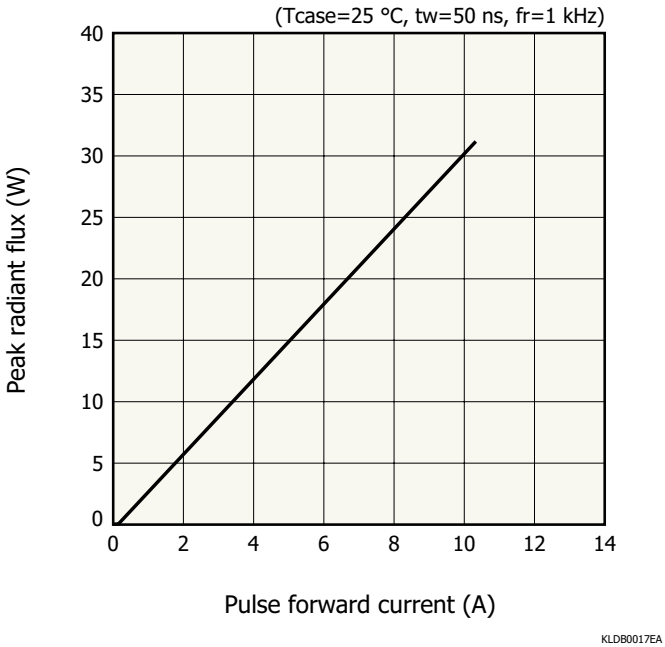
Electrical and optical characteristics (Tcase=25 °C, tw=50 ns, Repetition frequency fr=1 kHz, unless otherwise noted)

Parameter		Symbol	Condition	L11348-307-05*2			L11649-120-04*3			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak radiant flux		ϕep		18	21	-	19	22	-	W
Peak emission wavelength		λp		860	870	880	860	870	880	nm
Operating voltage		Vop		-	13	16	-	7	9	V
Spectral half width		Δλ		-	6	10	-	4	8	nm
Rise time		tr		-	-	2	-	-	2	ns
Wavelength temperature coefficient		-		-	0.25	-	-	0.25	-	nm/°C
Beam spread angle	Horizontal	θ//	FWHM	8	11	14	7	10	13	°
	Vertical	θ⊥		19	24	29	25	30	35	
Threshold current		Ith		-	0.5	-	-	0.8	-	A
Optical axis tilt	Horizontal	Δθ//	FWHM	-2	-	+2	-3	-	+3	°
	Vertical	Δθ⊥								
Emission area (design value)		-	Design value	-	70 × 10	-	-	230 × 1	-	µm
Position accuracy of emission point*4		-	ΔX, ΔY, ΔZ	-0.2	-	+0.2	-0.2	-	+0.2	mm

*2: I_{FP}=7 A
*3: I_{FP}=20 A
*4: Position of emitter center with respect to package base center

Peak radiant flux vs. pulse forward current (typical example)

L11348-307-05



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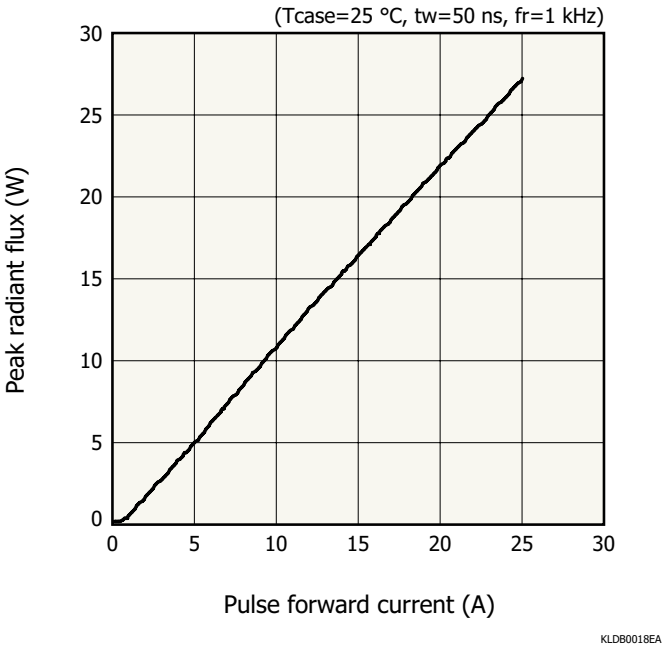

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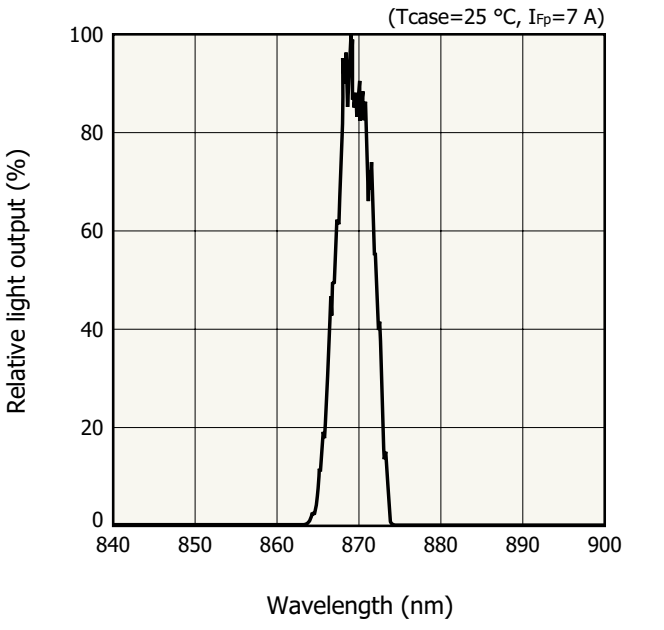
Emission spectrum (typical example)

L11348-307-05



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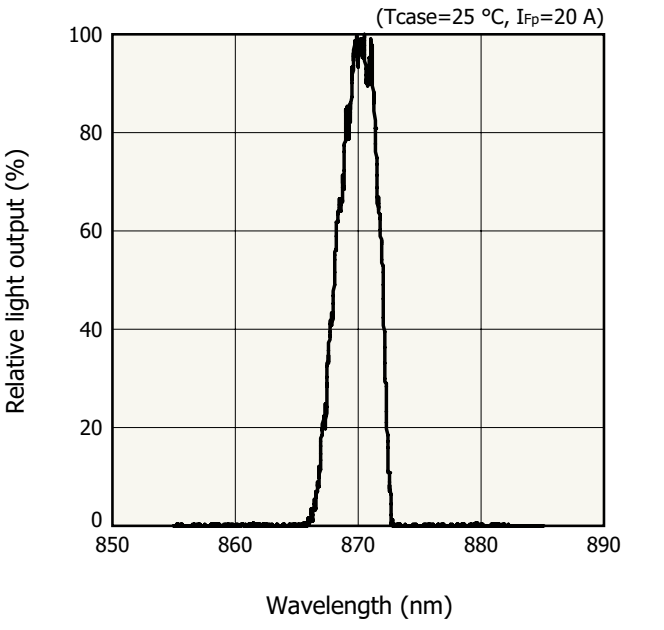

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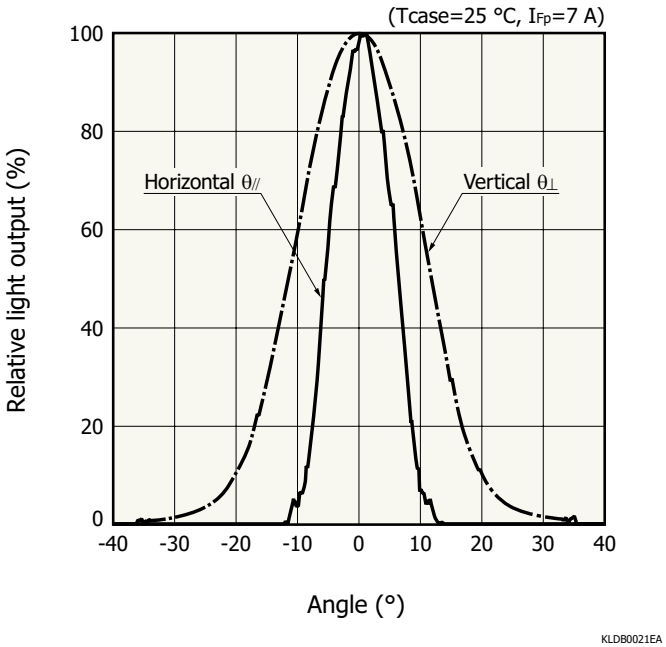
Directivity (typical example)

L11348-307-05



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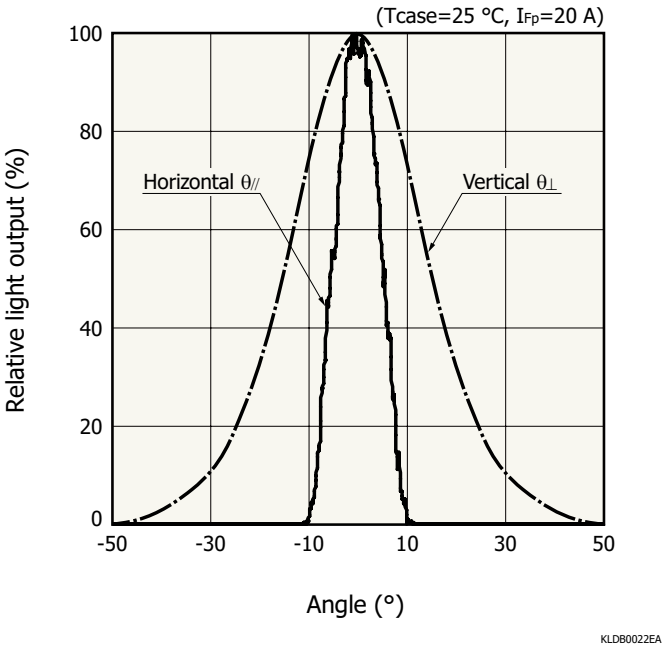
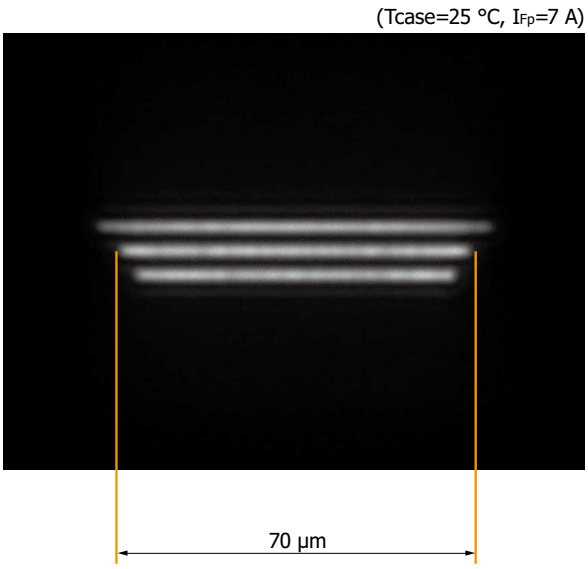


NFP emission pattern (typical example)

L11348-307-05



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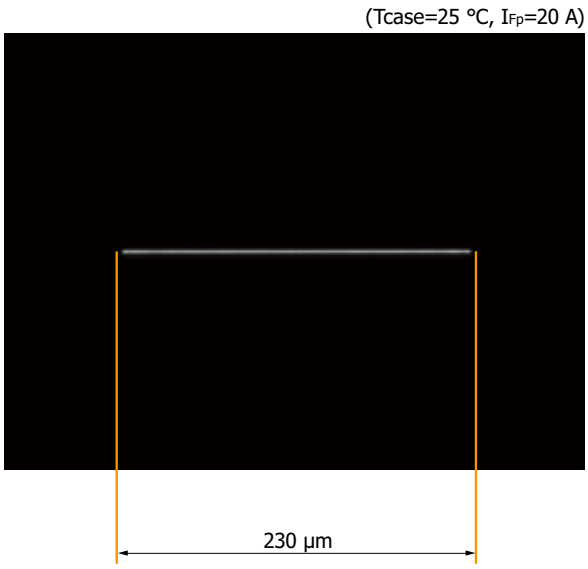
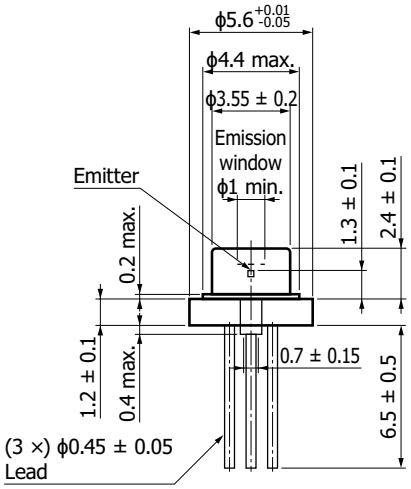
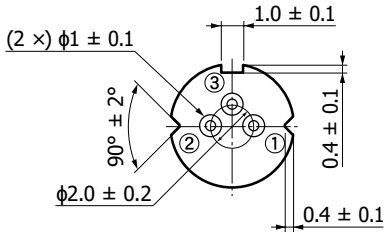
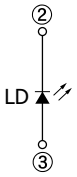


Dimensional outline (unit: mm)

L11348-307-05

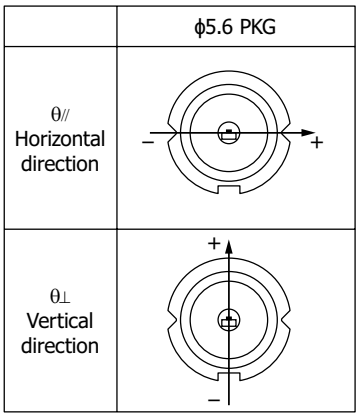






① NC
② LD cathode
③ LD anode (case)

FFP horizontal and vertical directions relative to the package (front view)



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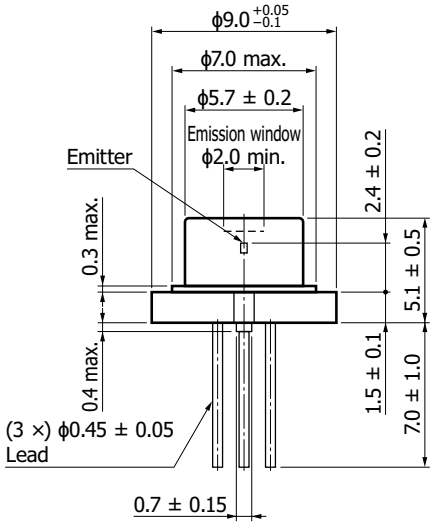
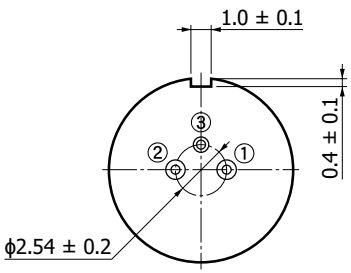
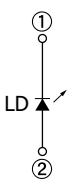
L11649-120-04

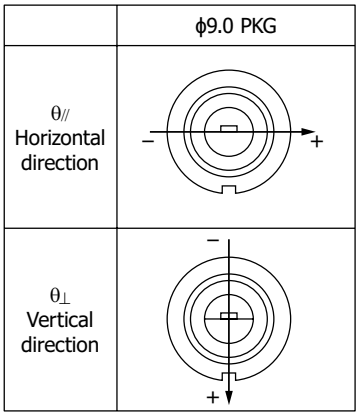






① LD cathode
② LD anode
③ NC (case)

FFP horizontal and vertical directions relative to the package (front view)



KLDA0004EA

Recommended soldering conditions

· Soldering temperature: 260 °C or less, within 5 seconds (1 second or less if the lead terminal length is 2 mm or less)
Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Warning (Class 3B laser)
Invisible laser emission: Avoid exposure to the beam

This product falls under the "Class 3B laser" in the classification of laser products according to IEC 60825-01. The laser light emitted by this product is an invisible laser light that cannot be seen by the naked eye. Observing the laser light directly is dangerous, and you should also avoid direct exposure to the skin. In addition, some conditions may cause skin damage or flammable substances to ignite.
When using equipment incorporating this product, please classify it according to IEC 60825-01.

Note: For more detailed information, please see [IEC 60825-1:2014].

Warning label Explanatory label
KLDC0003EA

Label for wearing protective goggles
KLDC0005EA

Precautions

(1) Electrostatic countermeasures
To prevent damage due to static electricity, take electrostatic countermeasures such as grounding of workers, work benches, and work tools. For details, please refer to the related information "Precautions / Compound opto-semiconductors (photosensors, light emitters)". Also protect this device from surge voltages which might be caused by peripheral equipment.

(2) Reflected light
The product will be destroyed if it is irradiated with laser light, such as by regular reflection. When using this product, use extra caution to avoid irradiation of reflected light.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Disclaimer
· Safety consideration / Opto-semiconductor products
· Precautions / Compound opto-semiconductors (photosensors, light emitters)

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