HAMAMATSU
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Super luminescent diode (SLD)

L11607-04 L12856-04

High-power super luminescent diode

SLD (Super Luminescent Diode) is an infrared light-emitting device that combines the high brightness of a laser diode with the low coherence of an LED. It was developed as a high-brightness light source that compensates for the disadvantages of laser diodes such as coherence noise, and is suitable for applications that require high S/N, such as optical gyroscopes, medical imaging, and optical application measurement.

Features

- **High brightness**
- **Low coherency**
- **Center wavelength:**
  875 nm typ. (L11607-04)
  830 nm typ. (L12856-04)
- **Built-in photodiode for monitoring (L12856-04)**

Applications

- **Optical gyroscope**
- **Medical imaging**
- **Light source for displacement measurement**

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

Parameter	Symbol	L11607-04	L12856-04	Unit
Radiant flux	ϕe	35	15	mW
Forward current	I_F	140	185	mA
Reverse voltage (SLD)	V_{Rs}	1.5		V
Reverse voltage (PD)*1	V_{Rd}	-	20	V
Operating temperature (case)*2	Tcase	0 to +50	-10 to +70	°C
Storage temperature*2	Tstg	-20 to +80		°C

*1: Photodiode for output monitoring

*2: 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.

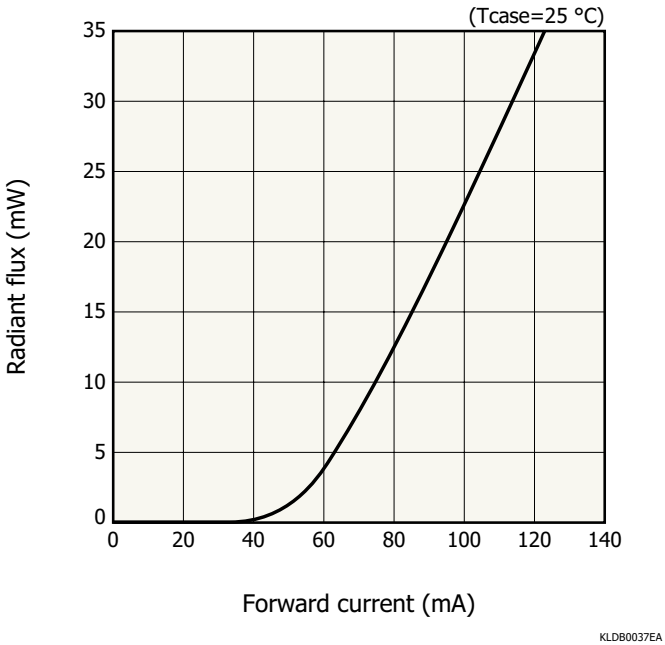
Electrical and optical characteristics (Tcase=25 °C, unless otherwise noted)

Parameter		Symbol	Condition	L11607-04*3			L12856-04*3			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Center wavelength		λc		855	875	895	820	830	840	nm
Spectral half-width		Δλ		7	10	13	5	10	20	nm
Operating voltage		Vop		-	1.7	1.9	-	1.8	2.2	V
Operating current		Iop		-	110	125	-	120	170	mA
Beam spread angle	Horizontal	θ//	FWHM	6	11	16	4	8	12	°
	Vertical	θ⊥		26	36	46	28	36	44	
Coherent length		Lc	Design value	-	70	-	-	70	-	μm
Output monitor current		Im		-	-	-	-	0.12	-	mA
Emission area		-	Design value	-	5 × 1	-	-	5 × 1	-	μm

*3: L11607-04 ϕe=30 mW, L12856-04 ϕe=10 mW

Radiant flux vs. forward current (typical example)

L11607-04



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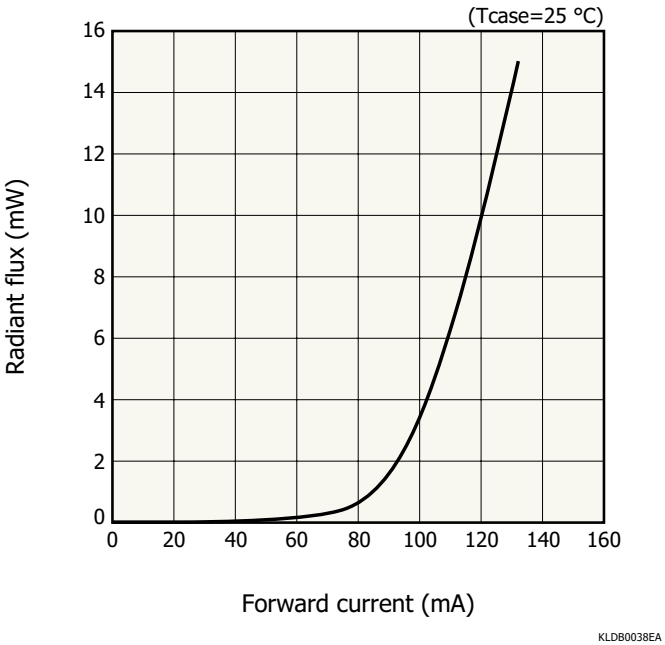
L12856-04



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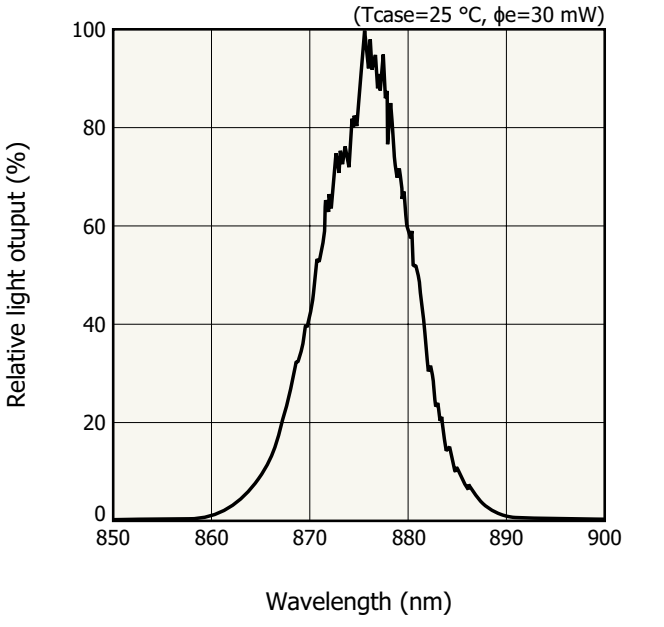
Emission spectrum (typical example)

L11607-04



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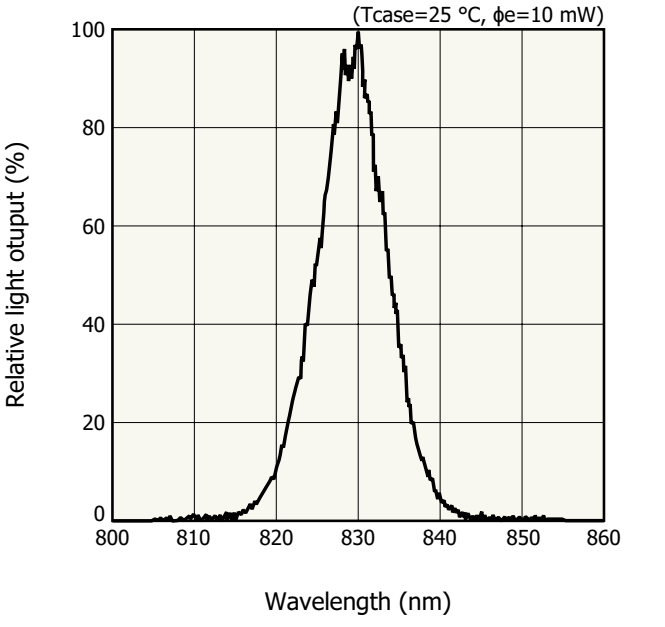
L12856-04



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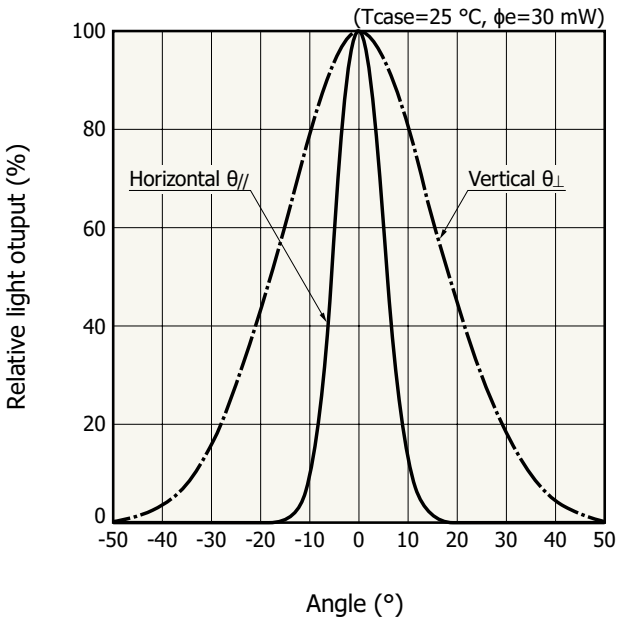
Directivity (typical example)

L11607-04



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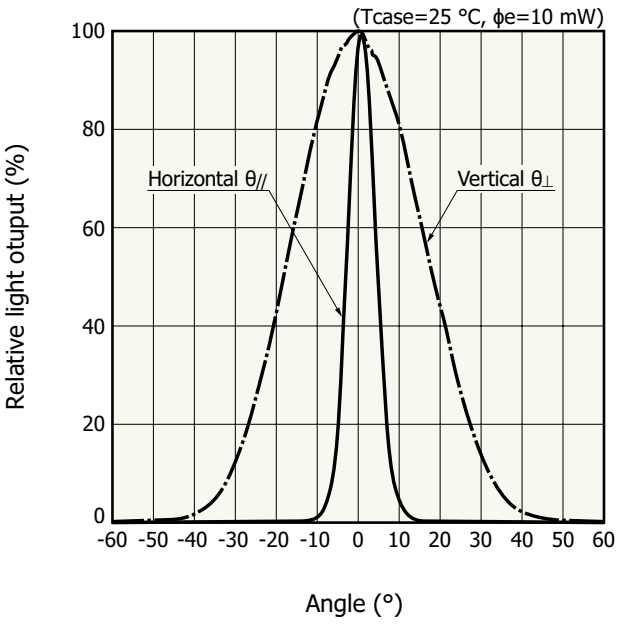
L12856-04



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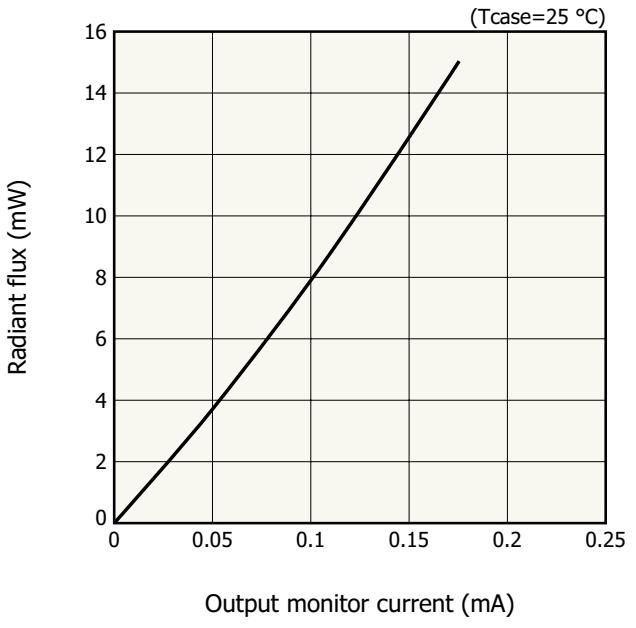
Radiant flux vs. Output monitor current (typical example)

L12856-04



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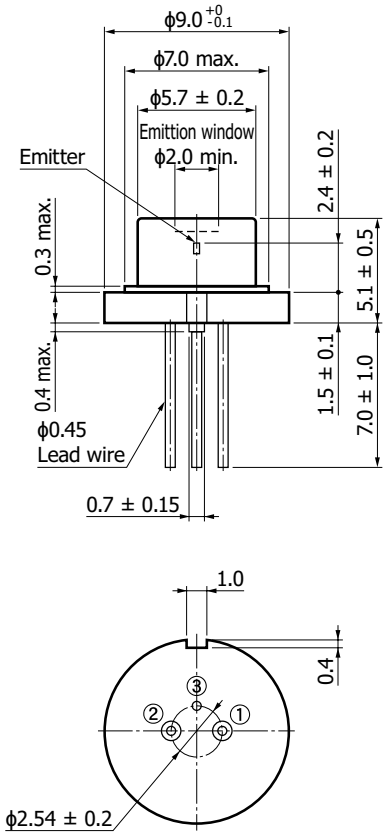
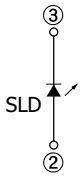
Dimensional outline (unit: mm)

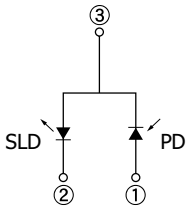


●L11607-04



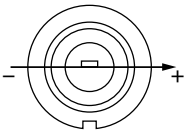
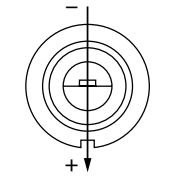
①NC
②SLD anode
③SLD cathode
(case)

●L12856-04



①PD anode
②SLD cathode
③SLD anode
PD cathode
(case)

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

	ϕ9.0 PKG
θ// Horizontal direction	
θ⊥ Vertical direction	

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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.

Class 3B Laser

Warning label　Explanatory label

KLDC0003EA

Label for wearing protective goggles

KLDC0005EA

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

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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