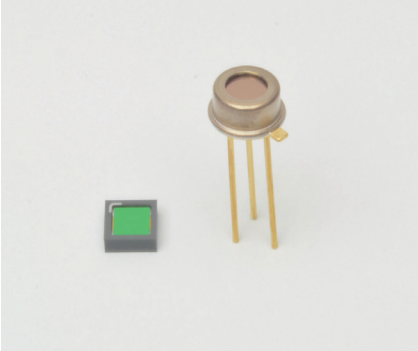
HAMAMATSU
PHOTON IS OUR BUSINESS

Mid infrared LED



L13771 series

Peak emission wavelength: 3.3 µm

The L13771 series is a high-output mid-infrared LED with a 3.3 µm peak emission wavelength. It is a product that has been achieved using Hamamatsu unique crystal growth technology and process technology. It is a suitable light source for CH_4 detectors.

Features

- **High output**
- **High-speed response**
- **High reliability**
- **Surface mount type ceramic package (L13771-0330C)**

Applications

- **Gas measurement (CH_4)**

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

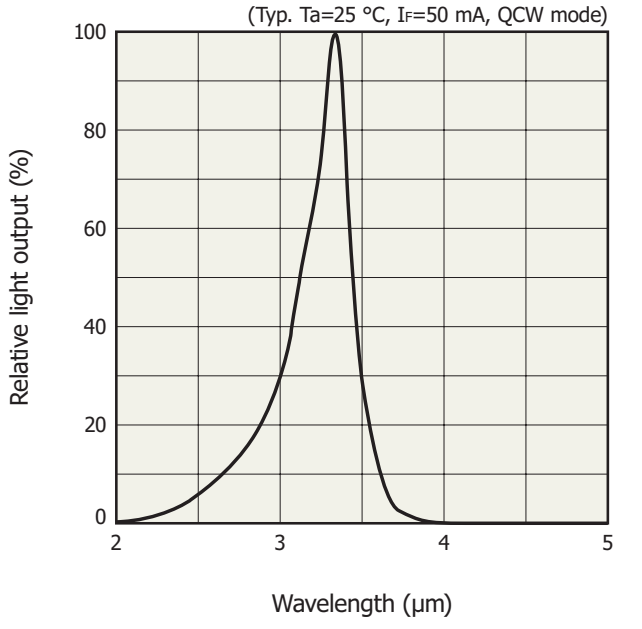
Parameter	Symbol	Condition	L13771-0330C	L13771-0330M	Unit
Reverse voltage	V_R		1		V
Forward current (QCW mode)*1	I_{FQCW}	Pulse width=100 µs Duty ratio=50%	80		mA
Pulse forward current	I_{FP}	Pulse width=10 µs Duty ratio=1%	0.5		A
Power dissipation	P		150		mW
Operating temperature	Topr	No dew condensation*2	-30 to +85		°C
Storage temperature	Tstg	No dew condensation*2	-40 to +100		°C
Reflow soldering condition	-		Peak temperature: 260 °C, 2 times*3	-	-

*1: Quasi continuous wave mode
*2: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
*3: JEDEC level 3
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.

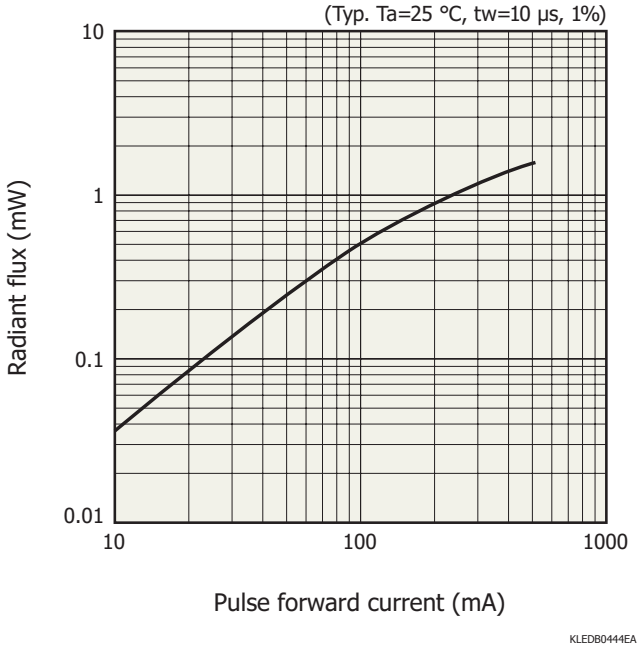
Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak emission wavelength	λp	I_F=50 mA, QCW mode	3.1	3.3	3.4	µm
Spectral half width	Δλ	I_F=50 mA, QCW mode	-	0.3	0.5	µm
Radiant flux	φe	I_F=50 mA, QCW mode	0.15	0.25	-	mW
Forward voltage	V_F	I_F=50 mA, QCW mode	-	2.1	2.5	V
Reverse current	I_R	V_R=100 mV	-	-	500	µA
Rise time	tr	10 to 90%	-	-	1	µs

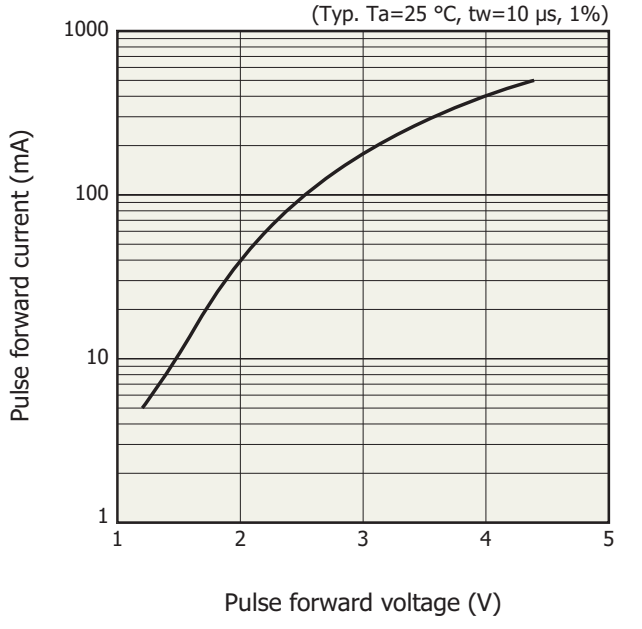
Emission spectrum



Radiant flux vs. pulse forward current

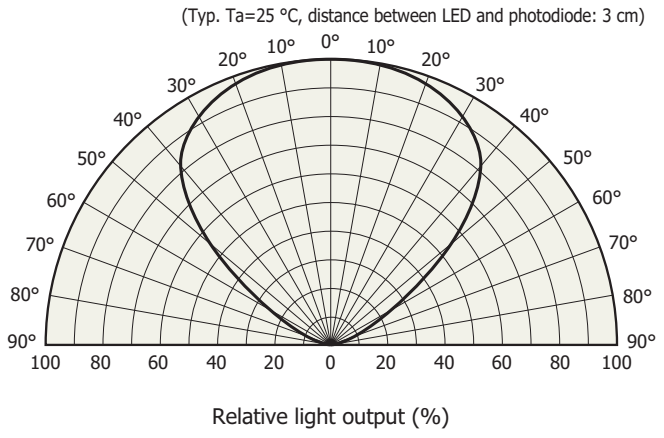


Pulse forward current vs. pulse forward voltage



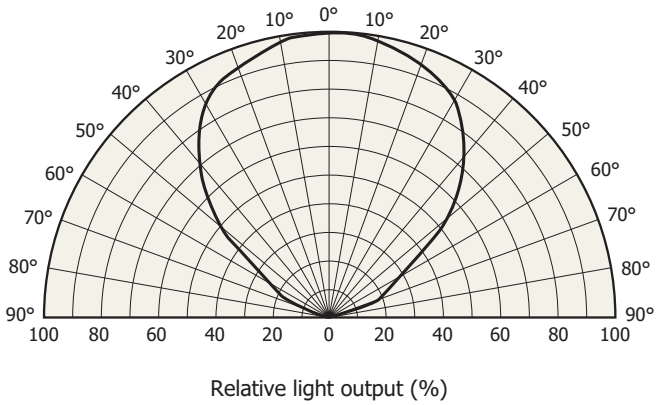
Directivity

L13771-0330C



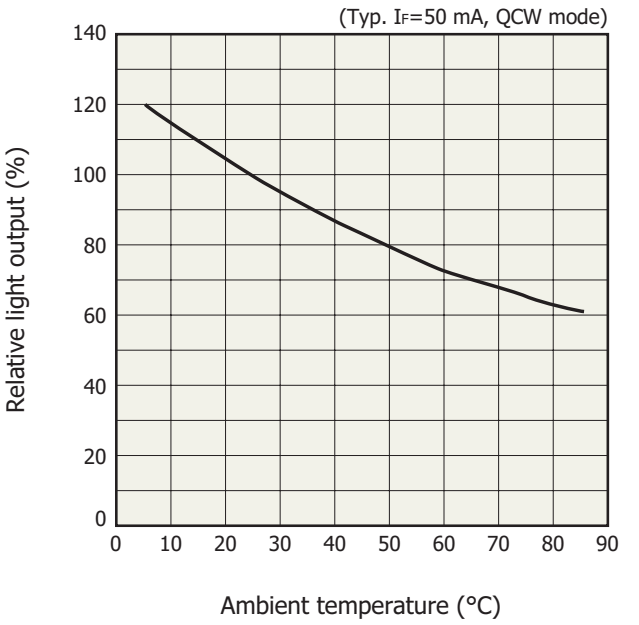
L13771-0330M

(Typ. Ta=25 °C, distance between LED and photodiode: 5 cm)



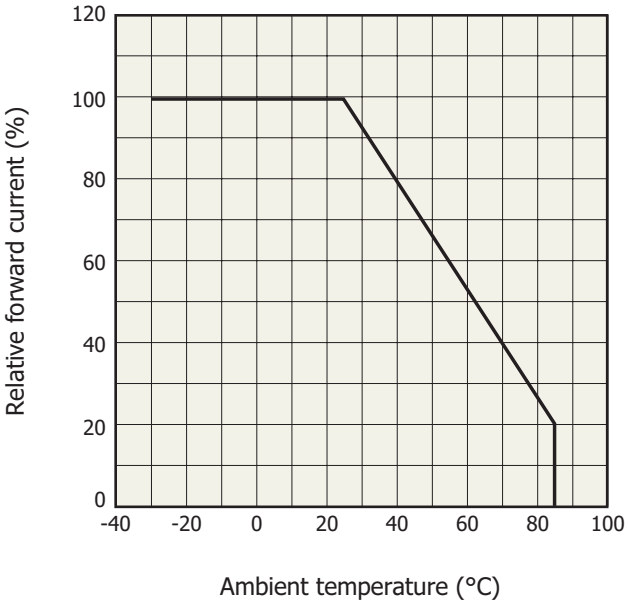
KLEDB0446EA

Light output vs. ambient temperature



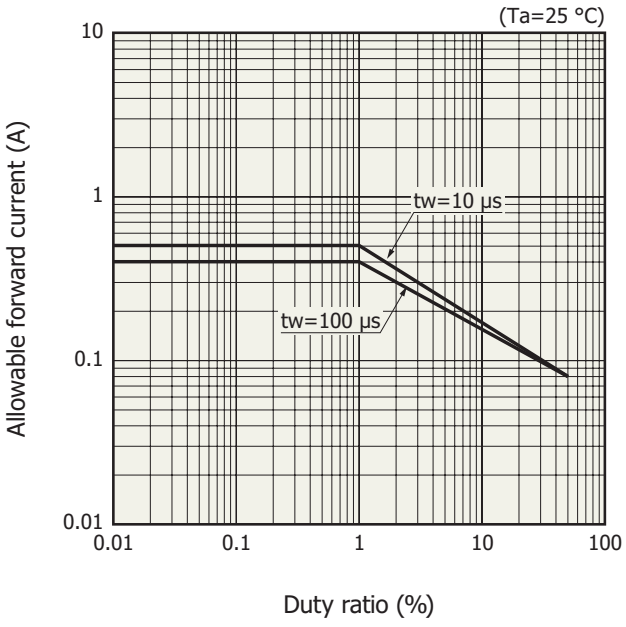
KLEDB0447EA

Allowable forward current vs. ambient temperature



KLEDB0448EA

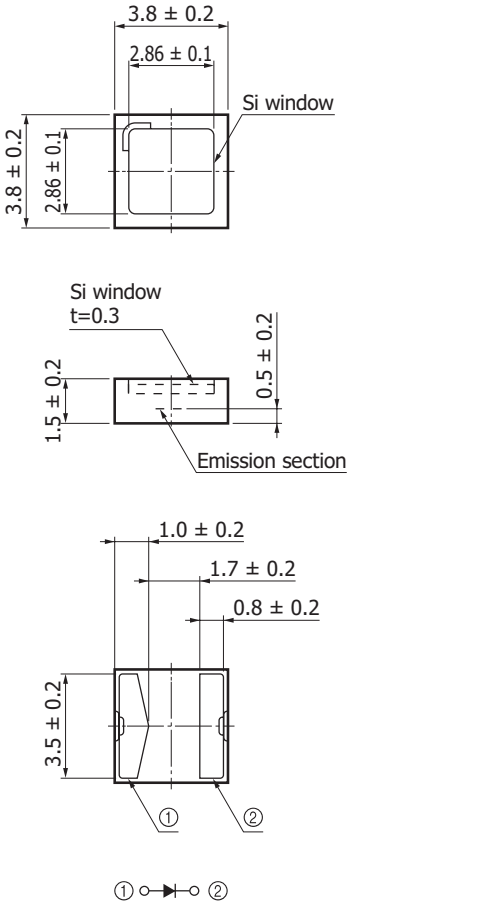
Allowable forward current vs. duty ratio



KLEDB0418EA

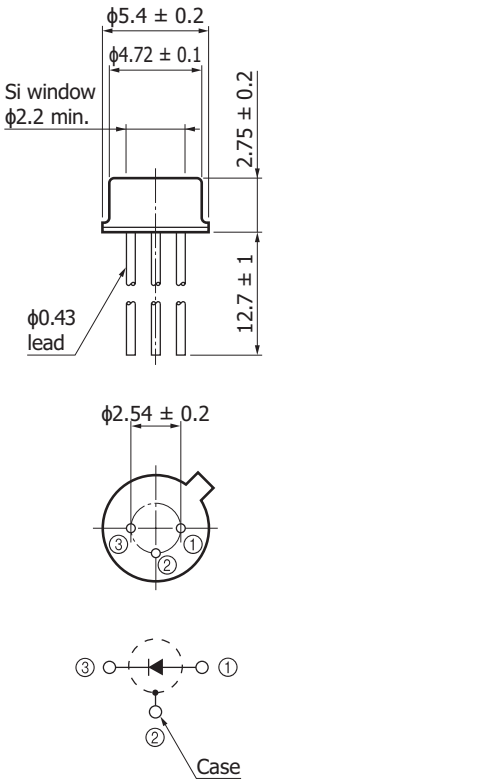
Dimensional outlines (unit: mm)

L13771-0330C



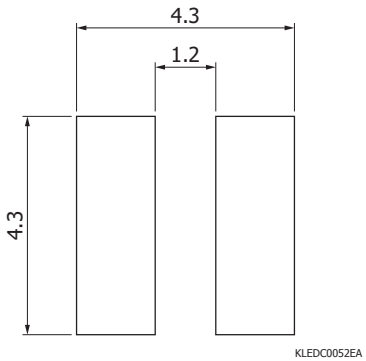
KLEDA0105EA

L13771-0330M



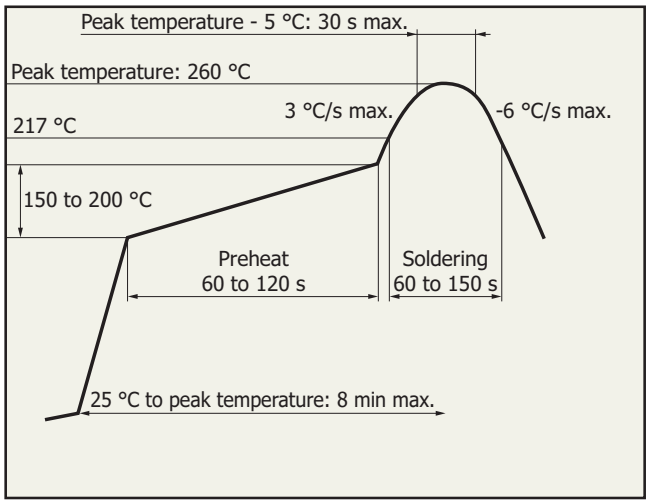
KLEDA0101EB

Recommended land pattern (unit: mm)



KLEDC0052EA

Recommended solder reflow conditions



- After unpacking, store the device in an environment at a temperature range of 5 to 30 °C and a humidity of 60% or less, and perform reflow soldering within 168 hours.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. Before actual reflow soldering, check for any problems by testing out the reflow soldering methods in advance.

KLEDB0465EA

Related information

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

■ Precautions
- Disclaimer
- Metal, ceramic, plastic packages

■ Technical information
- LED

HAMAMATSU www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division
1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218, E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8, E-mail: info@hamamatsu.de
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10, E-mail: infos@hamamatsu.fr
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777, E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866, E-mail: hpc@hamamatsu.com.cn
Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081, E-mail: info@hamamatsu.com.tw