



L13141-0085K, L13142-0085K/-0085L

High reliability LED

The L13141-0085K, L13142-0085K and L13142-0085L are current confinement type, high reliability infrared LEDs.

Features

- Reliability improved from the previous product
- Small light spot
L13141-0085K: $\phi 110 \mu\text{m}$
L13142-0085K: $\phi 400 \mu\text{m}$
- Light output power
L13141-0085K: 2.8 mW ($I_F=50 \text{ mA typ.}$)
L13142-0085K/-0085L: 3.0 mW ($I_F=50 \text{ mA typ.}$)
- L13142-0085K/-0085L: with microball lens

Applications

- Automatic control systems
- Optical switches
- Encoders

Absolute maximum ratings ($T_a=25 \text{ }^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Condition	Value	Unit
Reverse voltage	V_R		3	V
Forward current	I_F		80	mA
Derating rate of forward current	-	$T_a > 25 \text{ }^\circ\text{C}$	0.93	mA/ $^\circ\text{C}$
Pulse forward current	I_{FP}	Pulse width=10 μs Duty ratio=1%	0.45	A
Derating rate of pulse forward current	-	$T_a > 25 \text{ }^\circ\text{C}$	5.3	mA/ $^\circ\text{C}$
Power dissipation	P_d		170	mW
Operating temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +100	$^\circ\text{C}$

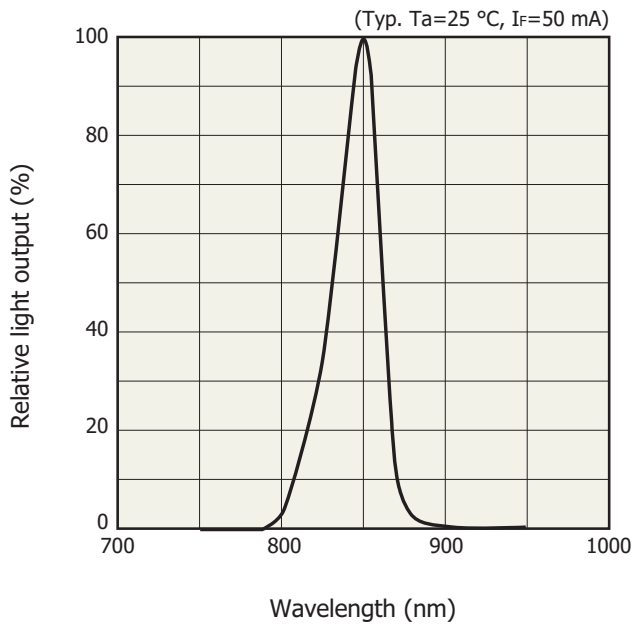
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics ($T_a=25 \text{ }^\circ\text{C}$)

Parameter	Symbol	Condition	L13141-0085K			L13142-0085K			L13142-0085L			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak emission wavelength	λ_p	$I_F=50 \text{ mA}$	830	850	870	830	850	870	830	850	870	nm
Spectral half width	$\Delta\lambda$	$I_F=50 \text{ mA}$	-	30	50	-	35	50	-	35	50	nm
Forward voltage	V_F	$I_F=50 \text{ mA}$	-	1.7	2.0	-	1.7	2.0	-	1.7	2.0	V
Pulse forward voltage	V_{FP}	$I_F=0.45 \text{ A}$	-	3.5	4.5	-	3.5	4.5	-	3.5	4.5	V
Reverse current	I_R	$V_R=3 \text{ V}$	-	-	10	-	-	10	-	-	10	μA
Radiant flux	ϕ_e	$I_F=50 \text{ mA}$	2.1	2.8	-	2.1	3.0	-	2.1	3.0	-	mW
Cutoff frequency*1	f_c	$I_F=50 \text{ mA} \pm 10 \text{ mAp-p}$	15	25	-	15	25	-	15	25	-	MHz

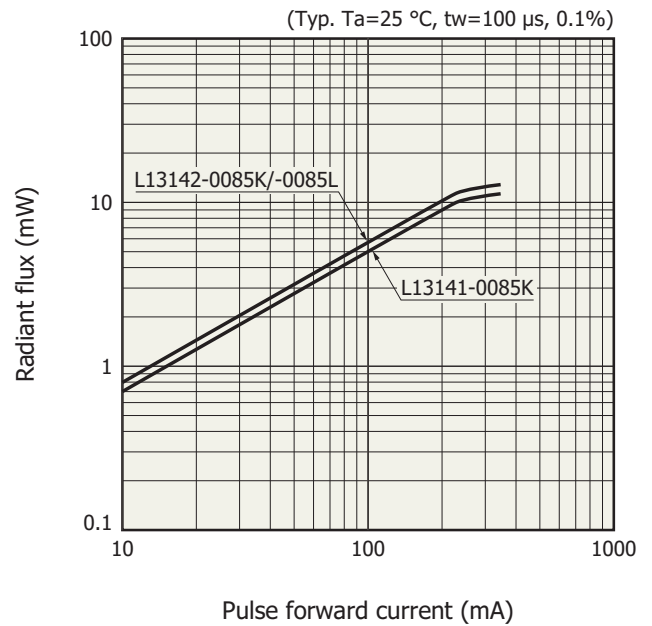
*1: Frequency at which the optical output drops by 3 dB relative to the output at 100 kHz

Emission spectrum



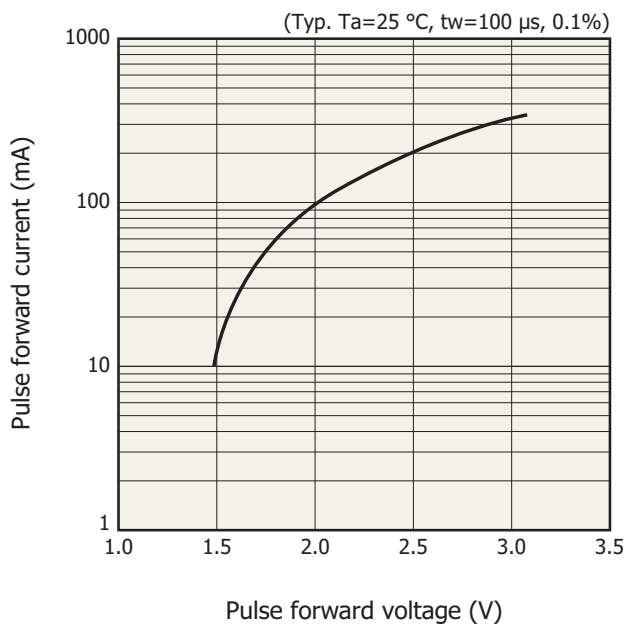
KLEDB0419EA

Radiant flux vs. pulse forward current



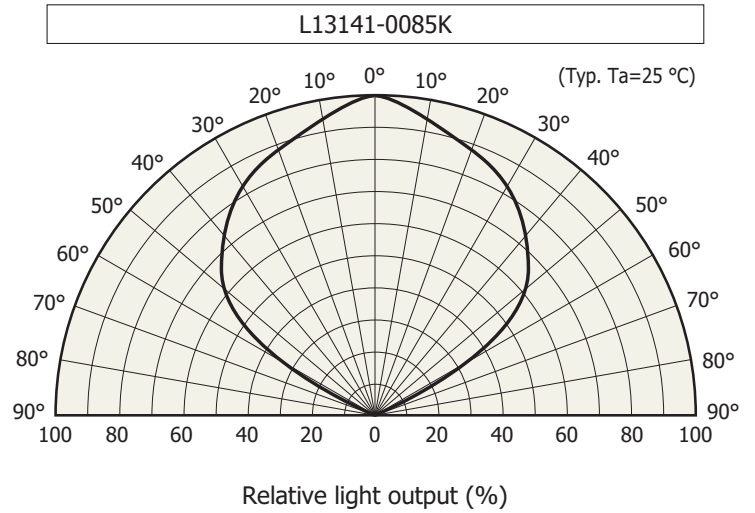
KLEDB0420EB

Pulse forward current vs. pulse forward voltage



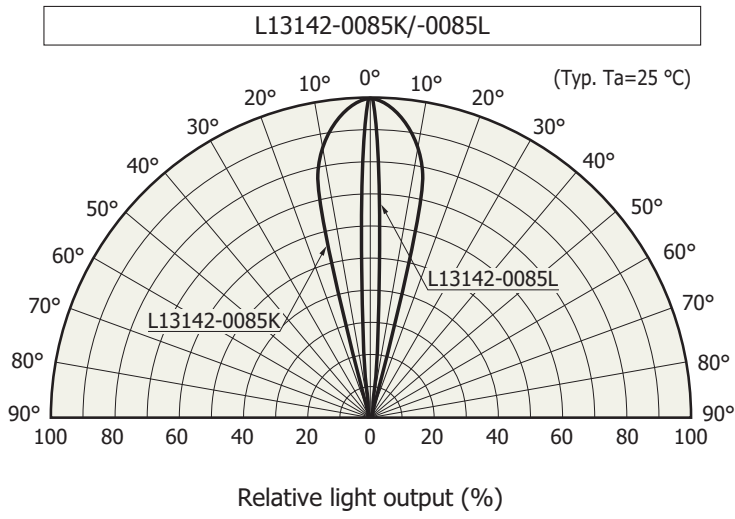
KLEDB0421EA

Directivity



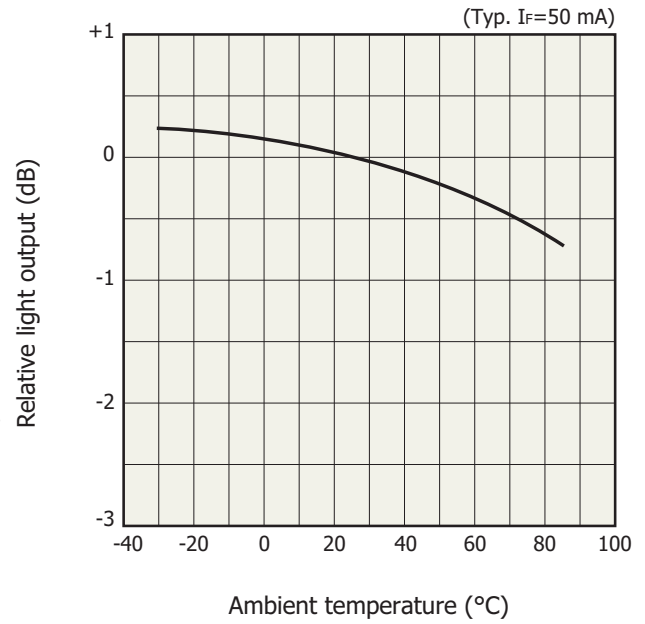
KLEDB0422EA

Directivity



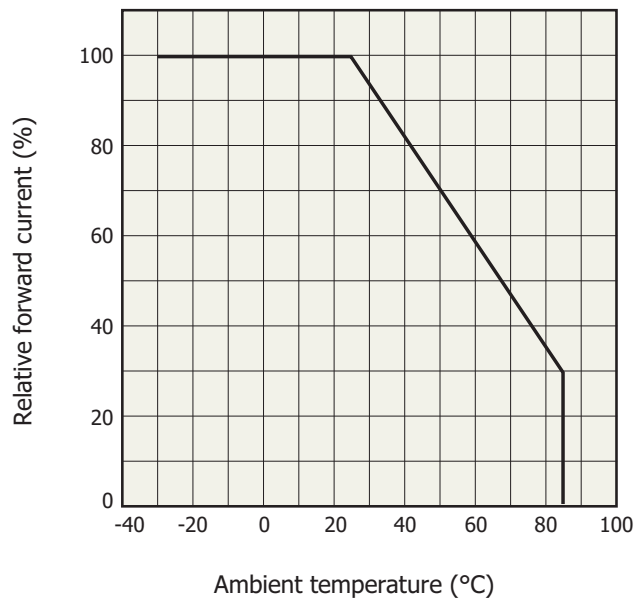
KLED80423EB

Light output vs. ambient temperature



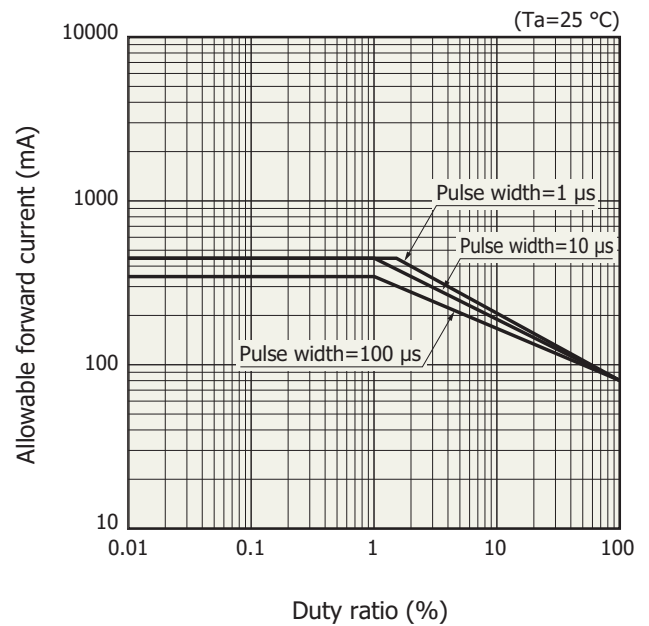
KLED80424EA

Allowable forward current vs. ambient temperature



KLED80425EA

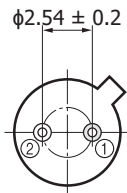
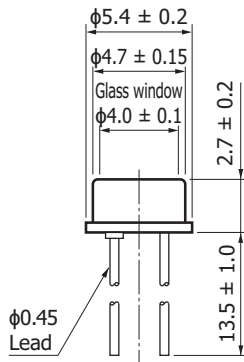
Allowable forward current vs. duty ratio



KLED80310EA

Dimensional outlines (unit: mm)

L13141-0085K

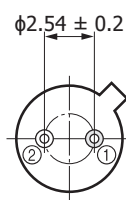
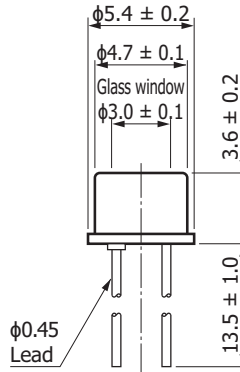


Common to case



KLEDA0102EA

L13142-0085K

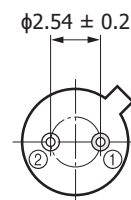
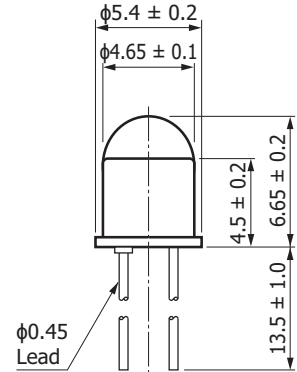


Common to case



KLEDA0103EA

L13142-0085L



Common to case



KLEDA0059EA

Related information

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

Precautions

- Disclaimer
- Metal, ceramic, plastic package products

Information described in this material is current as of July 2018.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

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