



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}	No dew condensation*1	-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}	No dew condensation*1	-40 to +100	$^\circ\text{C}$

*1: 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.

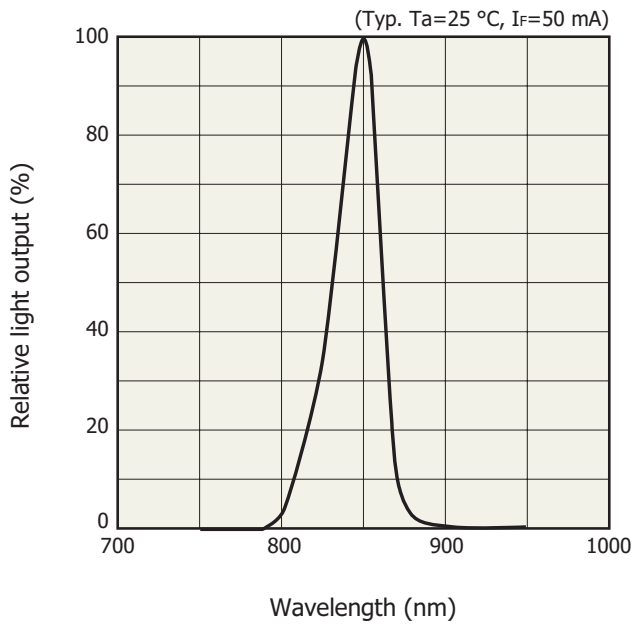
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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

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*2	f_c	$I_F=50 \text{ mA} \pm 10 \text{ mAp-p}$	15	25	-	15	25	-	15	25	-	MHz

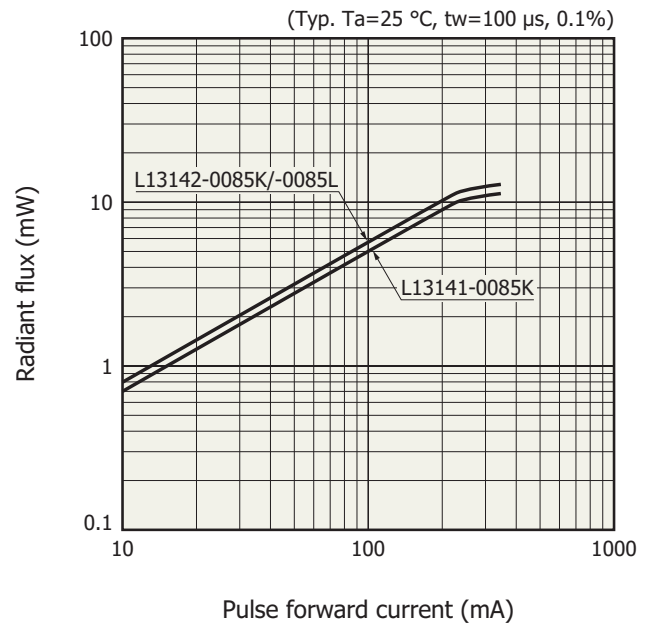
*2: Frequency at which the optical output drops by 3 dB relative to the output at 100 kHz

Emission spectrum



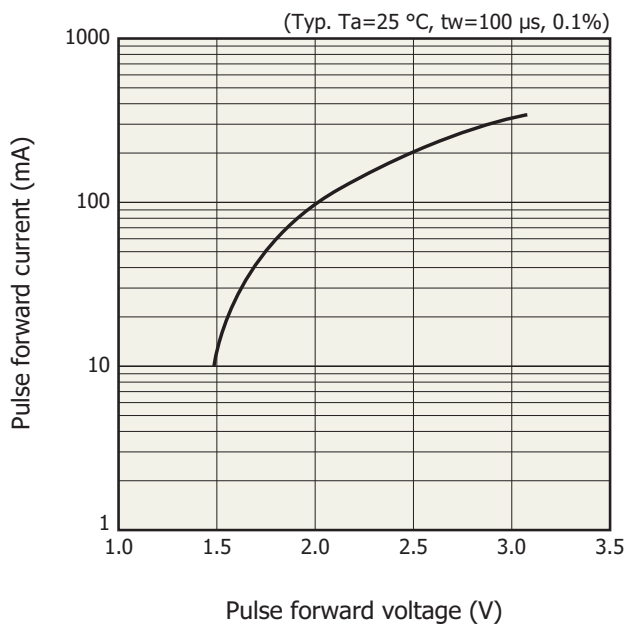
KLEDB0419EA

Radiant flux vs. pulse forward current



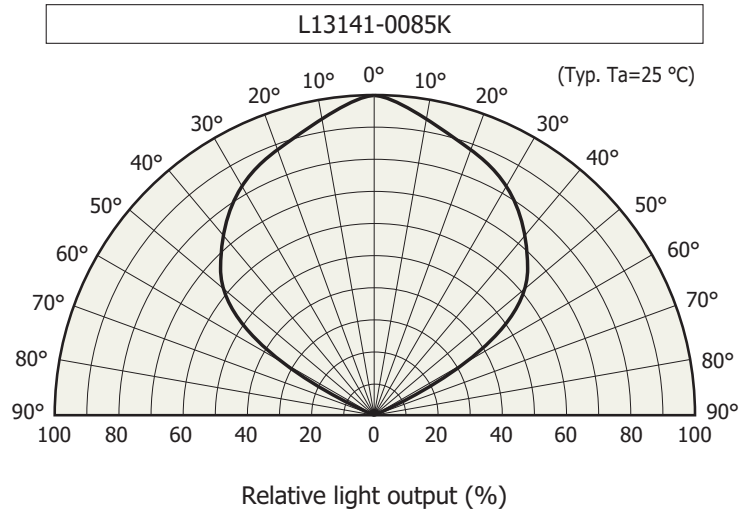
KLEDB0420EB

Pulse forward current vs. pulse forward voltage



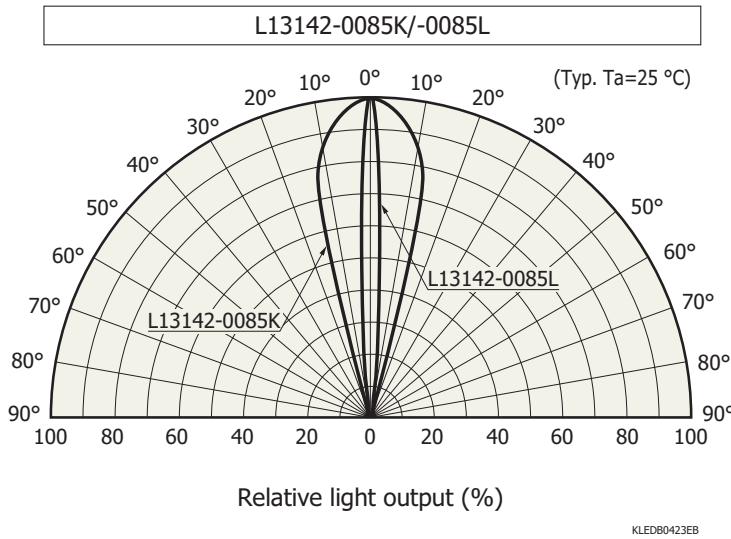
KLEDB0421EA

Directivity

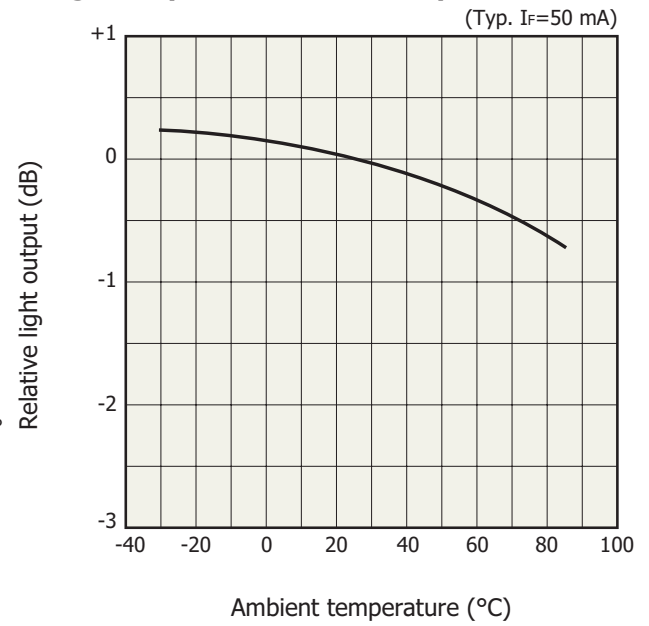


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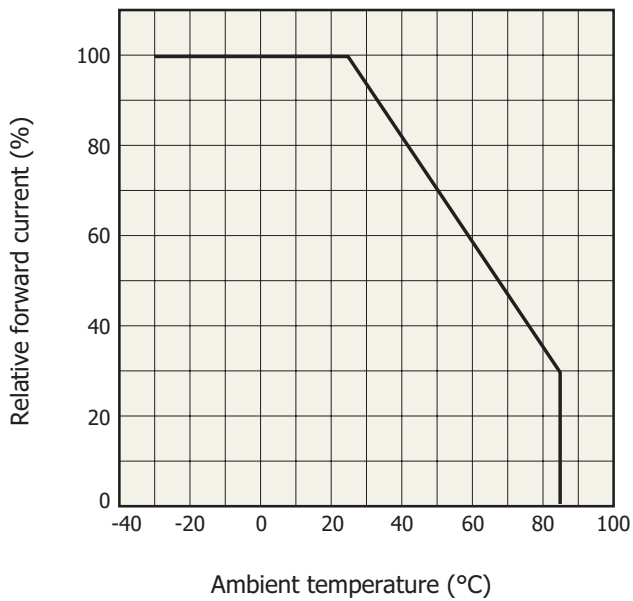
Directivity



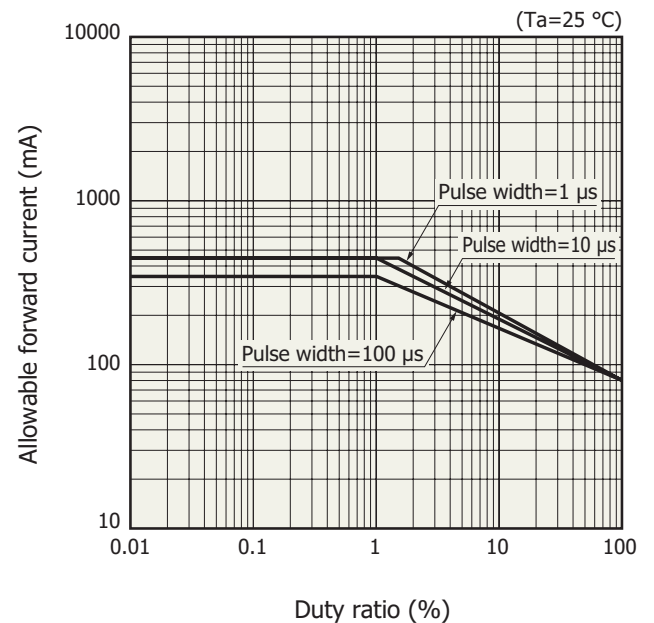
Light output vs. ambient temperature



Allowable forward current vs. ambient temperature

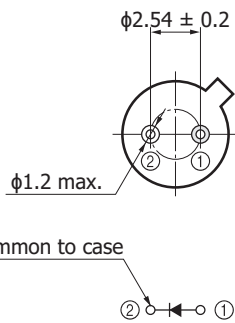
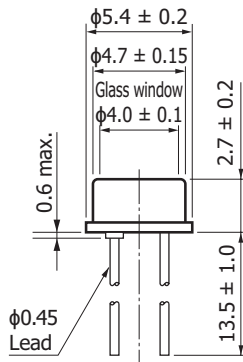


Allowable forward current vs. duty ratio



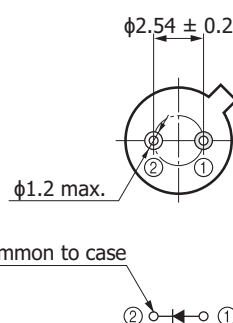
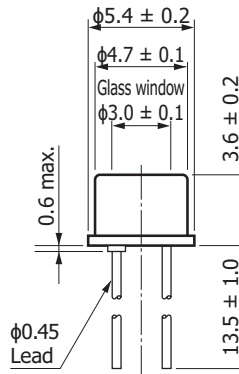
Dimensional outlines (unit: mm)

L13141-0085K



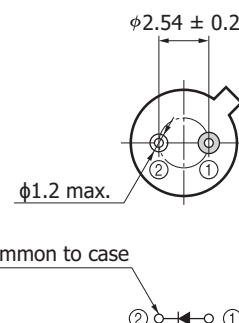
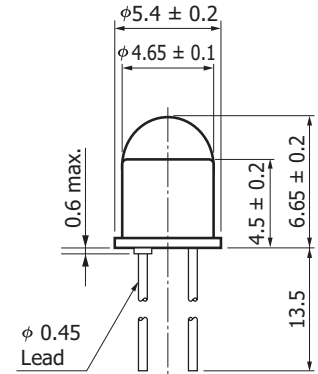
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L13142-0085K



KLEDA0103EB

L13142-0085L



KLEDA0092EB

Related information

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

- Precautions
 - Disclaimer
 - Safety consideration
 - Compound opto-semiconductors (photosensors, light emitters)
- Technical information
 - LED / Technical note

Information described in this material is current as of April 2022.

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