HAMAMATSU
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Infrared LED

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: ϕ110 µm
  L13142-0085K: ϕ400 µm
- **Light output power**
  L13141-0085K: 2.8 mW (I_F=50 mA typ.)
  L13142-0085K/-0085L: 3.0 mW (I_F=50 mA typ.)
- **L13142-0085K/-0085L: with microball lens**

Applications

- **Automatic control systems**
- **Optical switches**
- **Encoders**

Absolute maximum ratings (Ta=25 °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	-	Ta>25 °C	0.93	mA/°C
Pulse forward current	I_{FP}	Pulse width=10 µs Duty ratio=1%	0.45	A
Derating rate of pulse forward current	-	Ta>25 °C	5.3	mA/°C
Power dissipation	Pd		170	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-40 to +100	°C

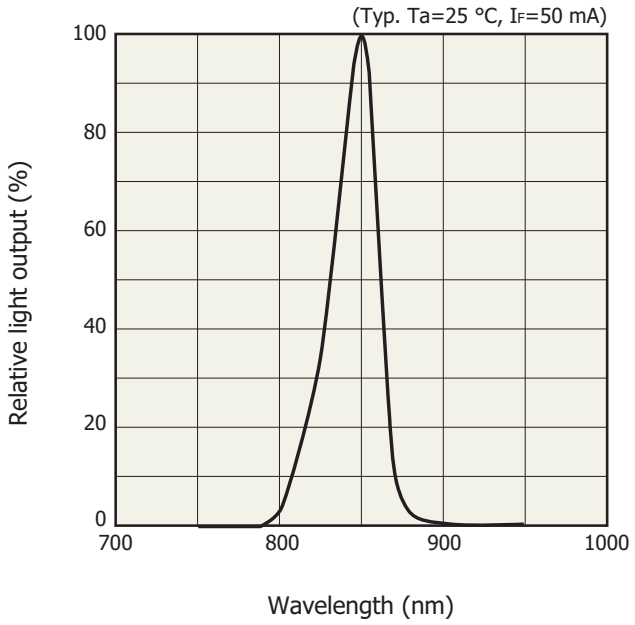
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

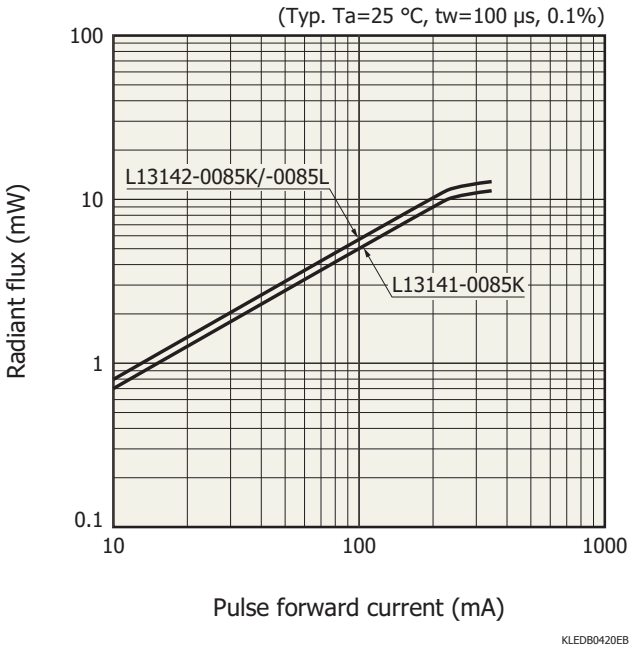
Parameter	Symbol	Condition	L13141-0085K			L13142-0085K			L13142-0085L			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak emission wavelength	λp	I_F=50 mA	830	850	870	830	850	870	830	850	870	nm
Spectral half width	Δλ	I_F=50 mA	-	30	50	-	35	50	-	35	50	nm
Forward voltage	V_F	I_F=50 mA	-	1.7	2.0	-	1.7	2.0	-	1.7	2.0	V
Pulse forward voltage	V_{FP}	I_F=0.45 A	-	3.5	4.5	-	3.5	4.5	-	3.5	4.5	V
Reverse current	I_R	V_R=3 V	-	-	10	-	-	10	-	-	10	µA
Radiant flux	ϕe	I_F=50 mA	2.1	2.8	-	2.1	3.0	-	2.1	3.0	-	mW
Cutoff frequency*1	fc	I_F=50 mA ± 10 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

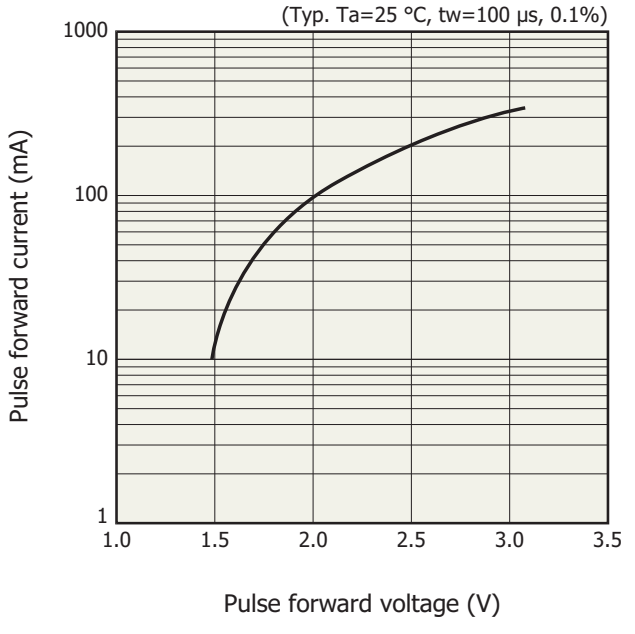
Emission spectrum



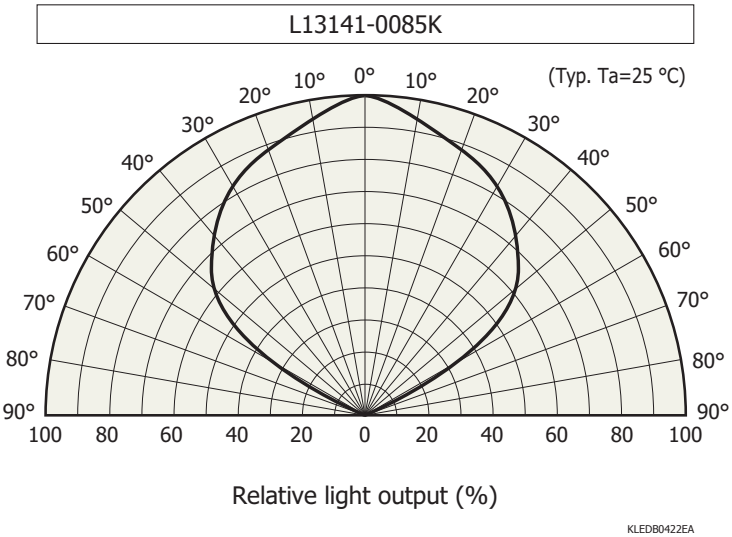
Radiant flux vs. pulse forward current



Pulse forward current vs. pulse forward voltage

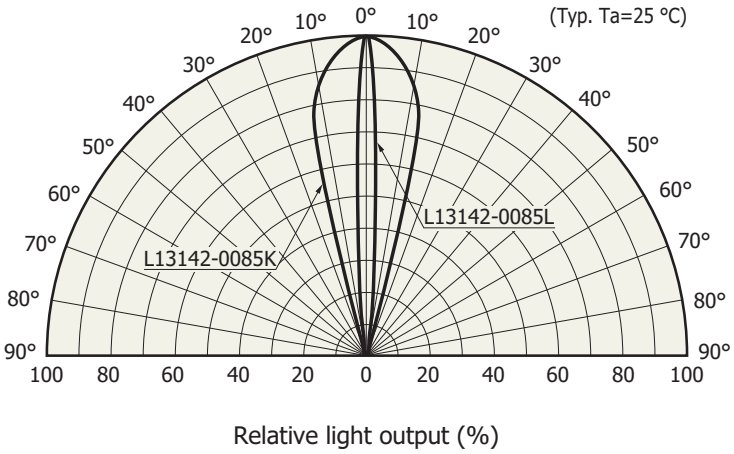


Directivity



Directivity

L13142-0085K/-0085L



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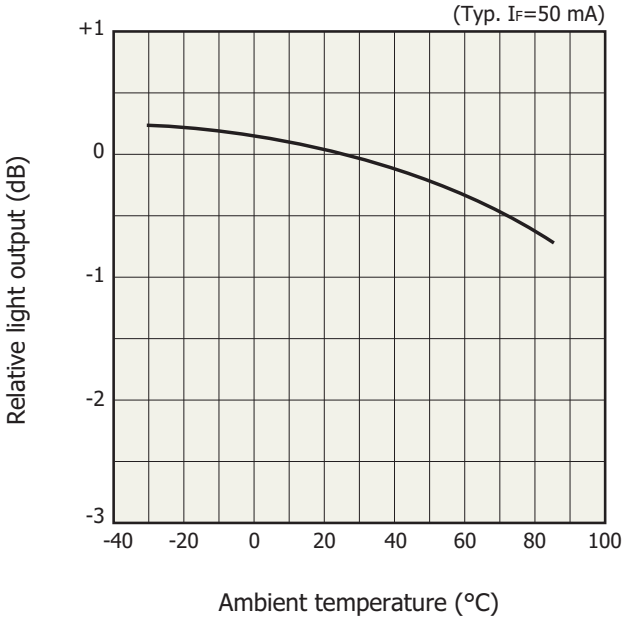
Light output vs. ambient temperature



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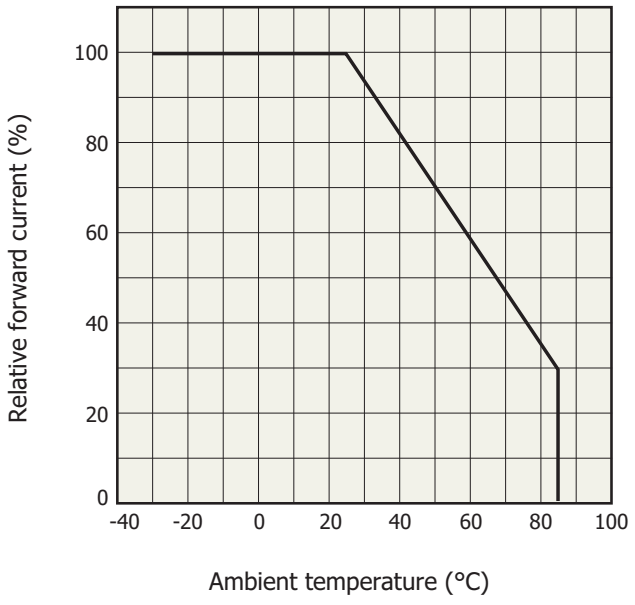
Allowable forward current vs. ambient temperature



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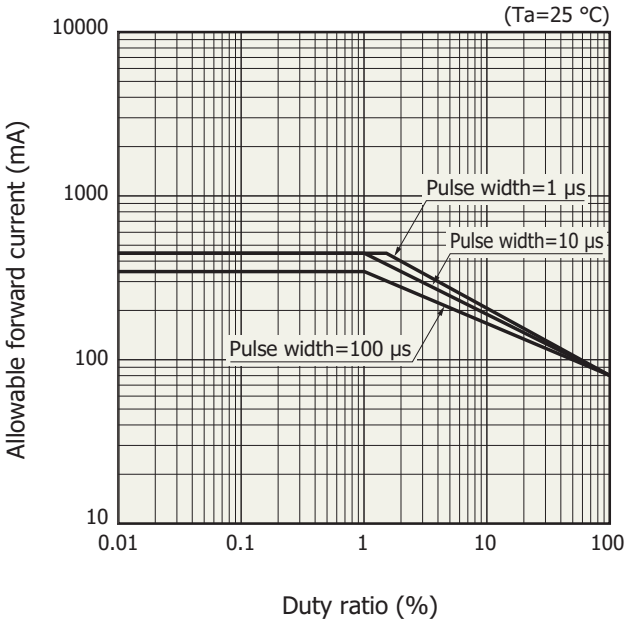
Allowable forward current vs. duty ratio



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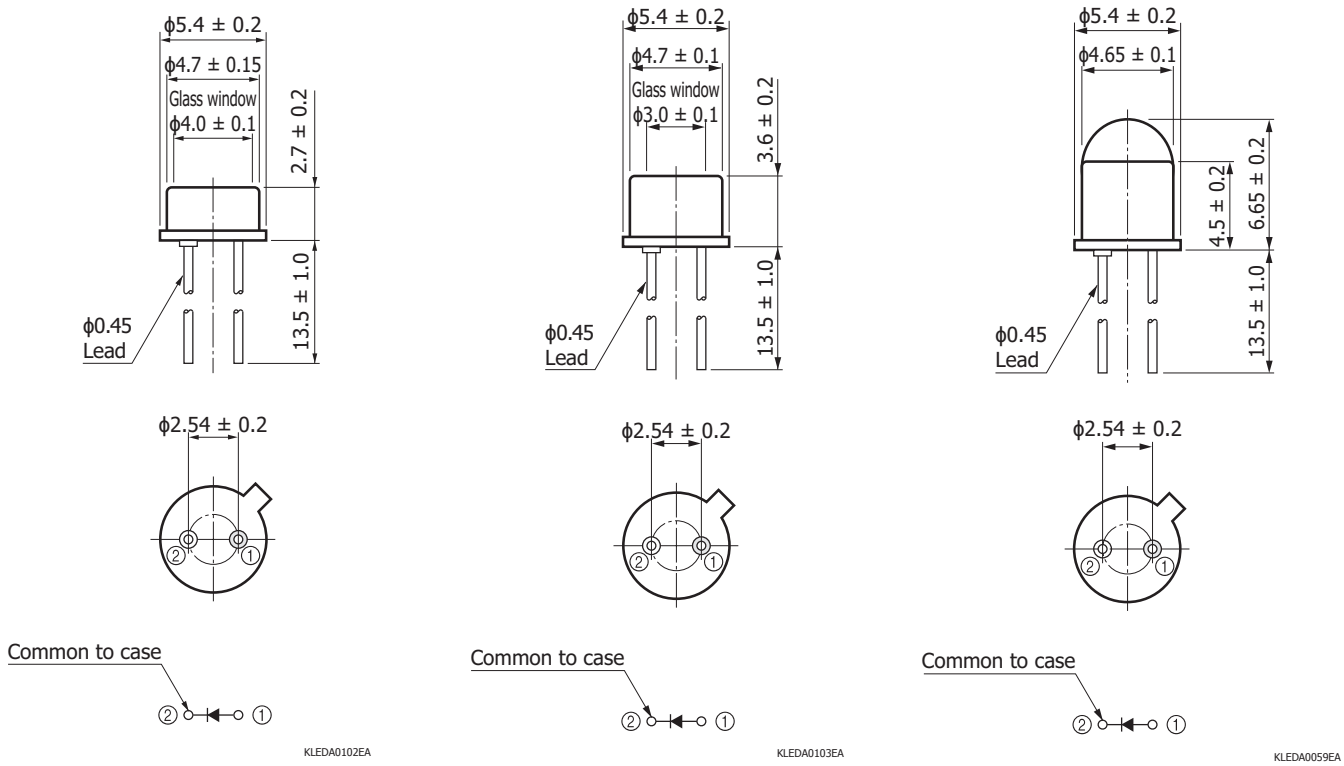
Dimensional outlines (unit: mm)

L13141-0085K	L13142-0085K	L13142-0085L



Related information

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

■ Precautions
· Disclaimer
· Metal, ceramic, plastic package products

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