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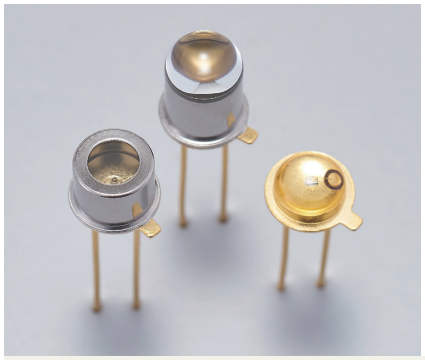
Infrared LED



L10596 series

Small emission spot LED using current confined chip

The L10596 is infrared LED with a microball lens cemented to the current confinement chip surface. This combination ensures narrow directivity and uniform emission. In particular, the L10596-02 uses a lens cap that delivers even narrower directivity. As a variant type not using a microball lens, the L10596-03 is also available with the LED chip potted with resin, which gives a small emission spot of ϕ160 µm. The L10569 series has a light-reflecting layer inserted between the emission section and the GaAs substrate, which increases the light output by 1.5 times (L10596-03: 1.3 times) that of conventional products.

Features

- **High radiant output power: L10596/-02: 3.0 mW (IF=50 mA typ.)**
- **Uniform emission**
- **Small emission spot: L10596: ϕ400 µm L10596-03: ϕ160 µm**
- **Narrow directivity (L10596/-02)**

Applications

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

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Condition	Value	Unit
Forward current	IF		80	mA
Reverse voltage	VR		3	V
Pulse forward current	IFP	Pulse width=10 µs Duty ratio=1%	0.45	A
Operating temperature	Topr	No dew condensation*1	-30 to +85	°C
Storage temperature	Tstg	No dew condensation*1 2	-40 to +100	°C

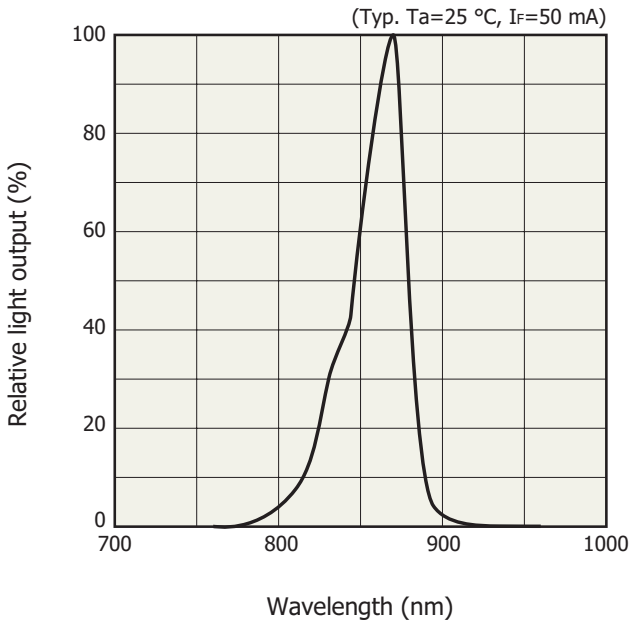
*1: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
*2: The L10596-03 is guaranteed to resist temperature cycle test of up to 5 cycles.
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	L10596			L10596-02			L10596-03			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak emission wavelength	λp	IF=50 mA	850	870	890	850	870	890	850	870	890	nm
Spectral half width	Δλ	IF=50 mA	-	35	50	-	35	50	-	35	50	nm
Forward voltage	VF	IF=50 mA	-	1.6	1.8	-	1.6	1.8	-	1.6	1.8	V
Pulse forward voltage	VFP	IF=0.45 A	-	3.3	4.1	-	3.3	4.1	-	3.3	4.1	V
Reverse current	IR	VR=3 V	-	-	10	-	-	10	-	-	10	µA
Radiant flux	ϕe	IF=50 mA	2.1	3.0	-	2.1	3.0	-	5.0	6.5	-	mW
Cut-off frequency*3	fc	IF=50 mA ± 10 mAp-p	10	15	-	10	15	-	10	15	-	MHz

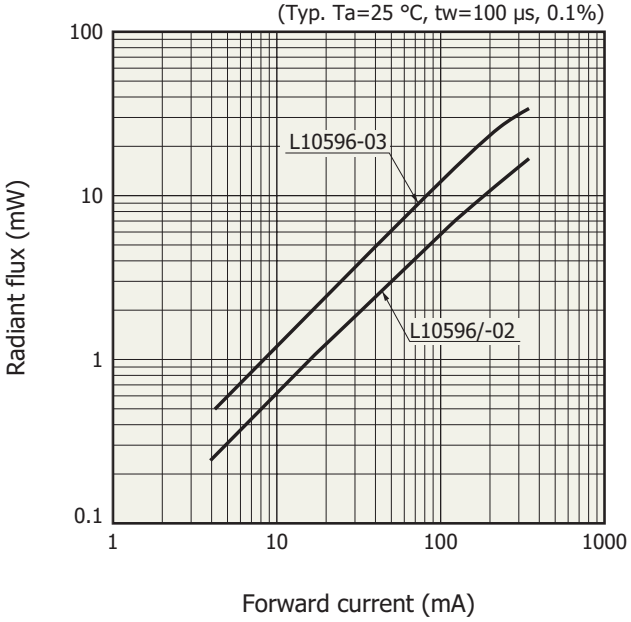
*3: Frequency at which the radiant output drops by 3 dB relative to the output at 100 kHz

Emission spectrum



KLEDB0304EA

Radiant flux vs. forward current



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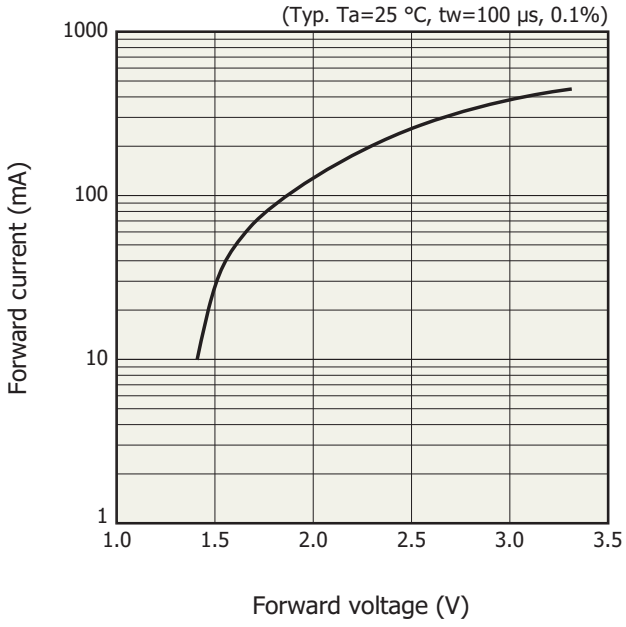
Forward current vs. forward voltage



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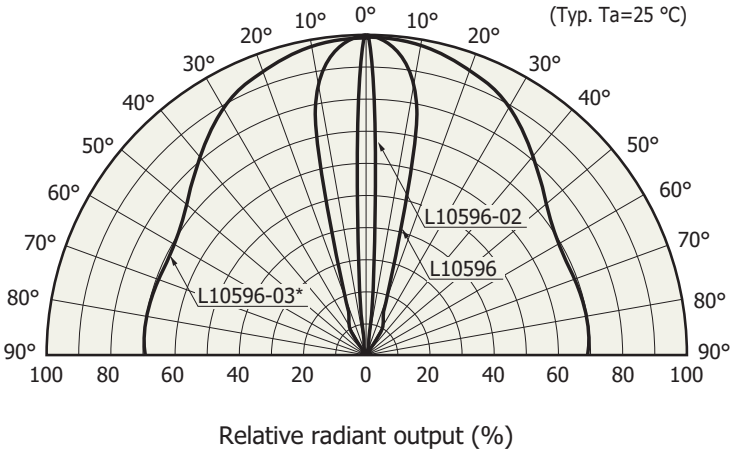
Directivity



* L10596-03: Except for reflection ingredient of the base

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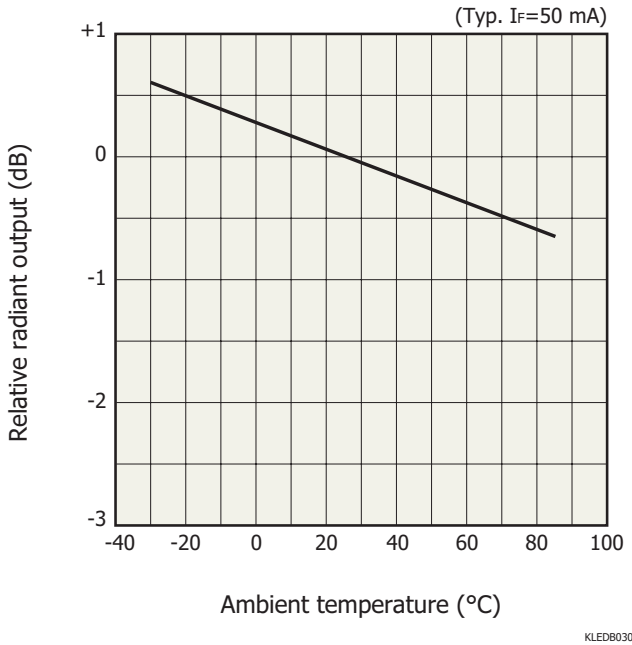
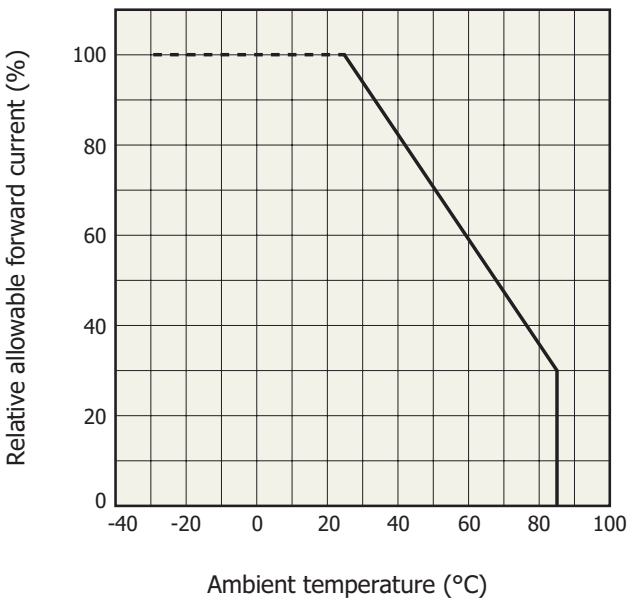
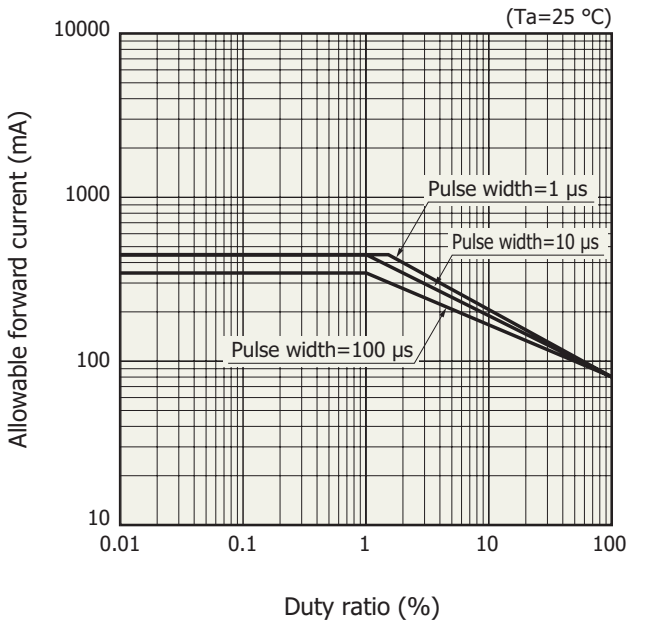
Radiant output vs. ambient temperature



Allowable forward current vs. ambient temperature

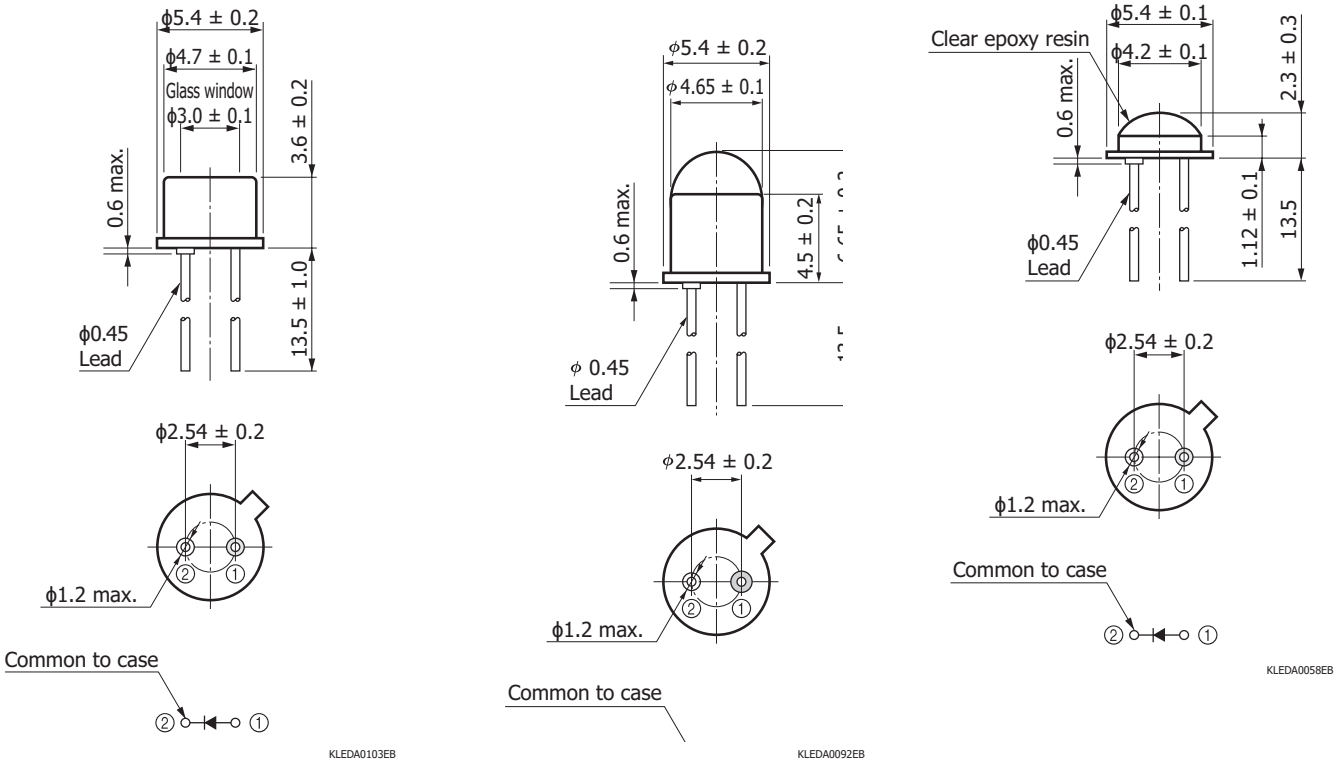


Allowable forward current vs. duty ratio



Dimensional outlines (unit: mm)

L10596	L10596-02	L10596-03



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

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