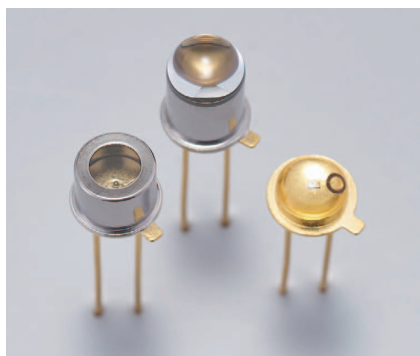


L10596 series



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 $\phi 160 \mu\text{m}$. The L10596 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 ($I_F=50 \text{ mA typ.}$)
- **Uniform emission**
- **Small emission spot:**
L10596: $\phi 400 \mu\text{m}$
L10596-03: $\phi 160 \mu\text{m}$
- **Narrow directivity (L10596/-02)**

Applications

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

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

Parameter	Symbol	Condition	Value	Unit
Forward current	I_F		80	mA
Reverse voltage	V_R		3	V
Pulse forward current	I_{FP}	Pulse width=10 μs Duty ratio=1%	0.45	A
Operating temperature	T_{op}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}	*1	-40 to +100	$^\circ\text{C}$

*1: The L10596-03 is guaranteed to resist temperature cycle test of up to 5 cycles.

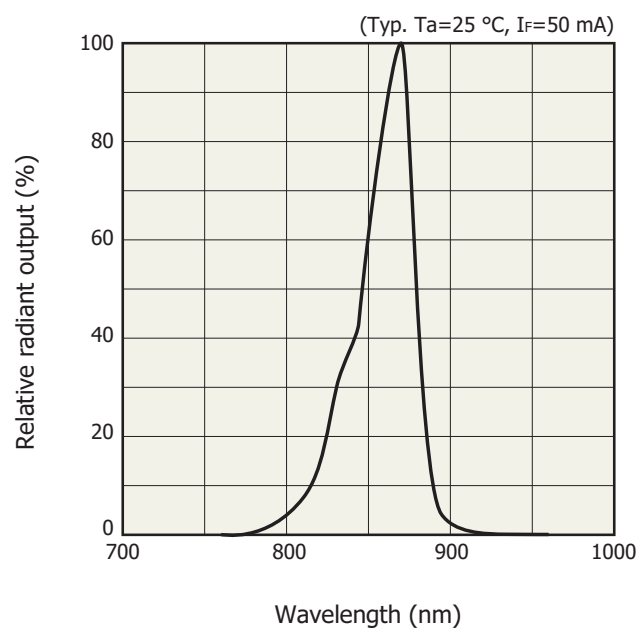
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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

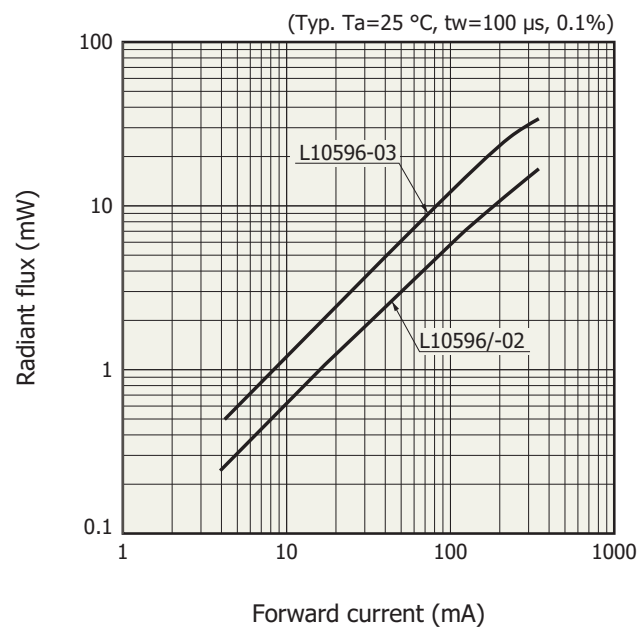
Parameter	Symbol	Condition	L10596			L10596-02			L10596-03			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak emission wavelength	λ_p	$I_F=50 \text{ mA}$	850	870	890	850	870	890	850	870	890	nm
Spectral half width	$\Delta\lambda$	$I_F=50 \text{ mA}$	-	35	50	-	35	50	-	35	50	nm
Forward voltage	V_F	$I_F=50 \text{ mA}$	-	1.6	1.8	-	1.6	1.8	-	1.6	1.8	V
Pulse forward voltage	V_{FP}	$I_F=0.45 \text{ A}$	-	3.3	4.1	-	3.3	4.1	-	3.3	4.1	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	3.0	-	2.1	3.0	-	5.0	6.5	-	mW
Cut-off frequency*2	f_c	$I_F=50 \text{ mA} \pm 10 \text{ mAp-p}$	10	15	-	10	15	-	10	15	-	MHz

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

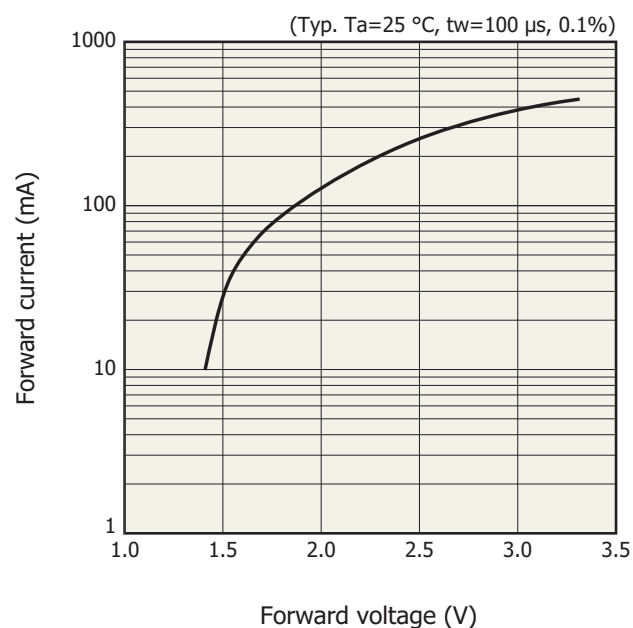
Emission spectrum



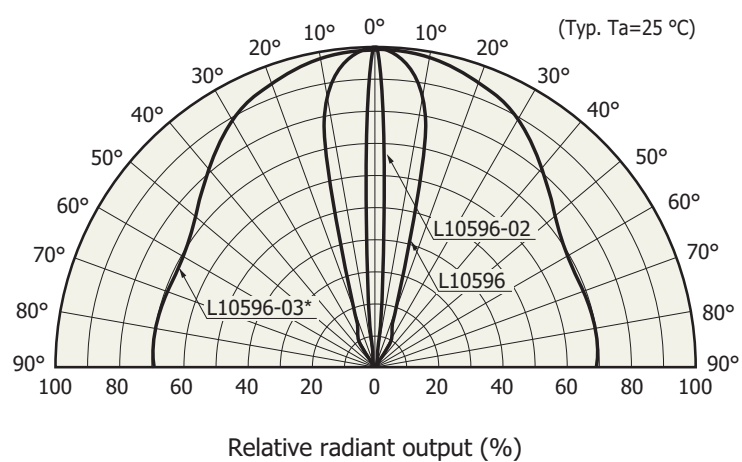
Radiant flux vs. forward current



Forward current vs. forward voltage

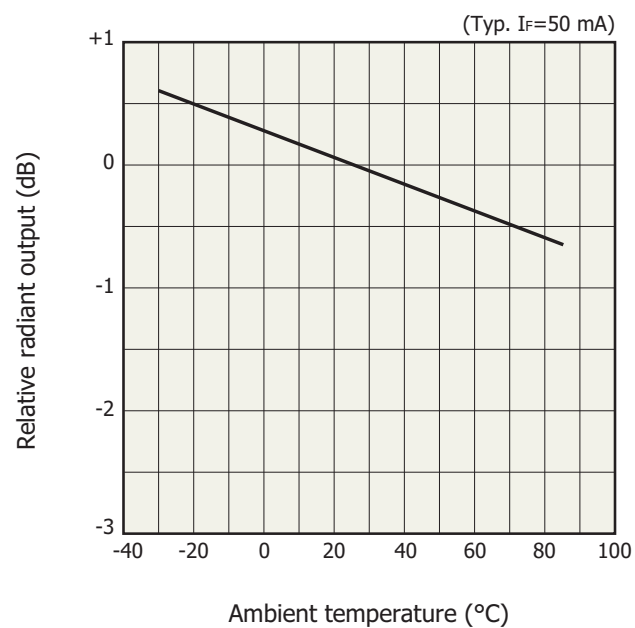


Directivity

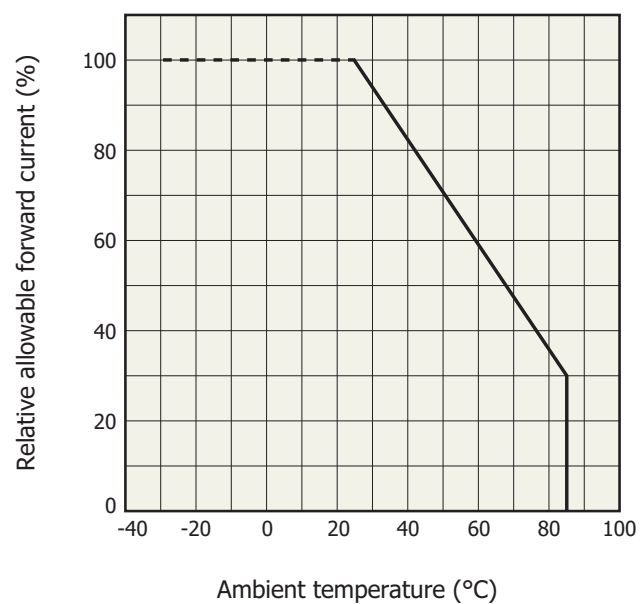


* L10596-03: Except for reflection ingredient of the base

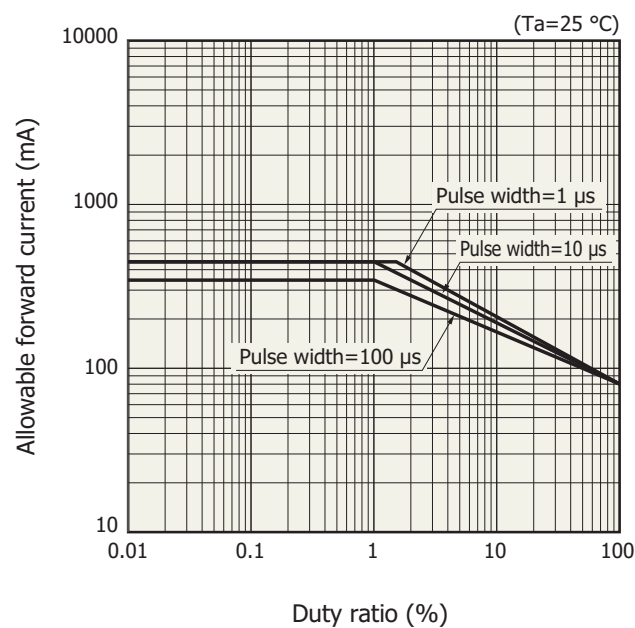
Radiant output vs. ambient temperature



Allowable forward current vs. ambient temperature

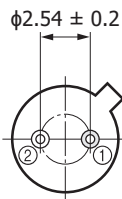
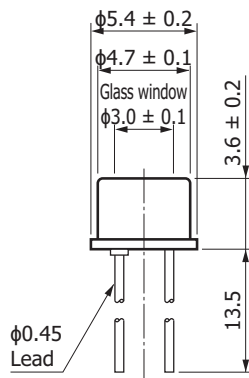


Allowable forward current vs. duty ratio



Dimensional outlines (unit: mm)

L10596

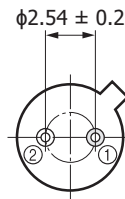
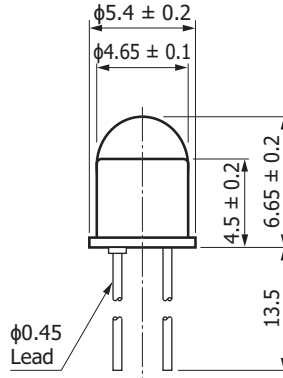


Common to case



KLEDA0060EA

L10596-02

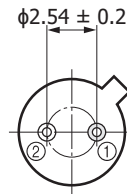
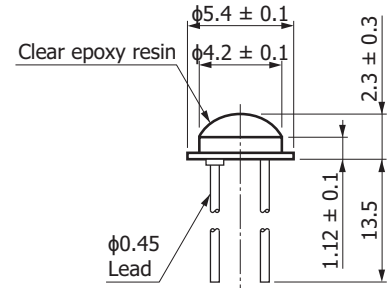


Common to case



KLEDA0059EA

L10596-03



Common to case



KLEDA0058EA

Related information

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

Precautions

- Disclaimer
- Metal, ceramic, plastic products

Information described in this material is current as of November, 2015.

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