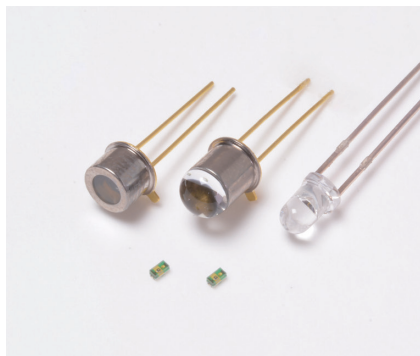


Infrared LED

L12509 series



Peak emission wavelength: 1.55 μm

The L12509 series is a high-power LED that emits infrared light at a peak wavelength of 1.55 μm. The LED is suitable for applications requiring use of infrared emitters with InGaAs photodiode.

Features

- High light output
- High reliability
- Compact, surface mount type package (1.6 × 0.8 × 0.7^t mm): L12509-0155G
- Compatible with lead-free reflow: L12509-0155G

Applications

- Gas detection
- Analytical instruments
- Near infrared lighting

Structure

Type no.	Package	Window material
L12509-0155G	Surface mount type glass epoxy	Silicone resin
L12509-0155K	TO-46	Borosilicate glass
L12509-0155L	TO-46	Lens type borosilicate glass
L12509-0155P	Plastic	Bullet-shaped epoxy resin

Absolute maximum ratings (Ta=25 °C unless otherwise noted)

Type no.	Reverse voltage V _R (V)	Forward current I _F (mA)	Forward current decrease rate Ta>25°C (mA/°C)	Pulse forward current I _{FP} ^{*1} (A)	Pulse forward current decrease rate Ta>25°C (mA/°C)	Power dissipation P (mW)	Operating temperature T _{opr} ^{*2} (°C)	Storage temperature T _{stg} ^{*2} (°C)	Solder temperature T _{sol} (°C)
L12509-0155G	1.0	80	0.8	0.5	5	150	-30 to +85	-40 to +100	250 (twice) ^{*3}
L12509-0155K			1.1	1.0	13				-
L12509-0155L			1.0	1.0	10				-
L12509-0155P			1.0	1.0	10				-30 to +100

*1: Pulse width=10 μs, duty ratio=1%

*2: No dew condensation.

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.

*3: JEDEC J-STD-033C MSL 2a, see P.8

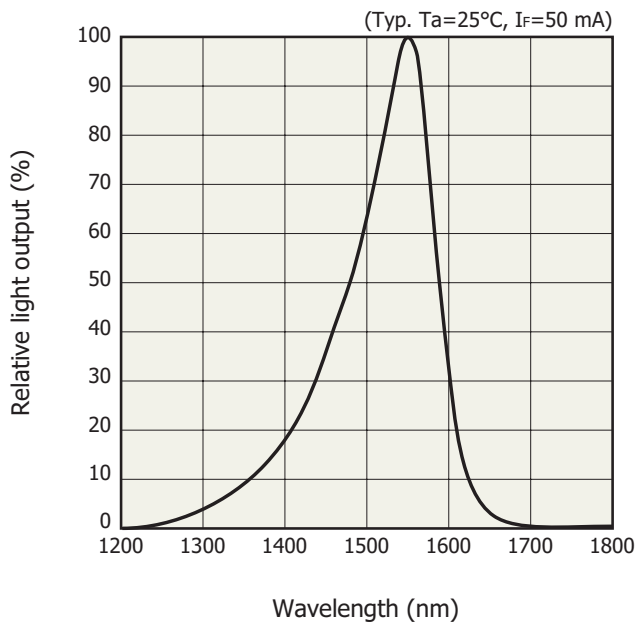
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

Type no.	Peak emission wavelength λ_p If=50 mA			Spectral half width $\Delta\lambda$ If=50 mA	Radiant flux ϕ_e If=50 mA		Radiant intensity I_e If=50 mA		Forward voltage V_F If=50 mA		Reverse current I_R $V_R=1$ V	Cutoff frequency f_c^{*4}	
	Min. (nm)	Typ. (nm)	Max. (nm)	Typ. (nm)	Min. (mW)	Typ. (mW)	Min. (mW/str)	Typ. (mW/str)	Typ. (V)	Max. (V)	Max. (μ A)	Min. (MHz)	Typ. (MHz)
L12509-0155G	1500	1550	1600	120	2.2	3.0	-	-	0.8	1.2	10	10	15
L12509-0155K					1.3	1.9	-	-		1.3			
L12509-0155L					1.8	2.7	-	-		1.3			
L12509-0155P					-	3.8	10	16		1.2			

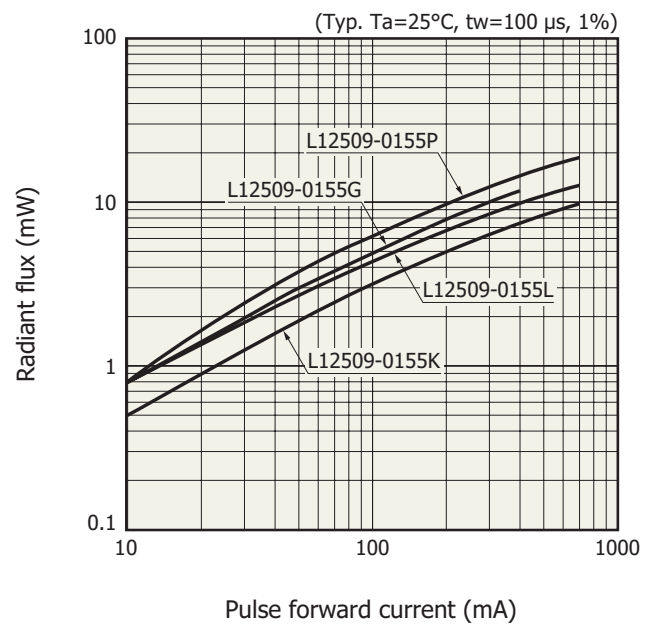
*4: If=50 mA \pm 10 mAp-p. Frequency at which the light output drops by 3 dB based on light output at 100 kHz

Emission spectrum



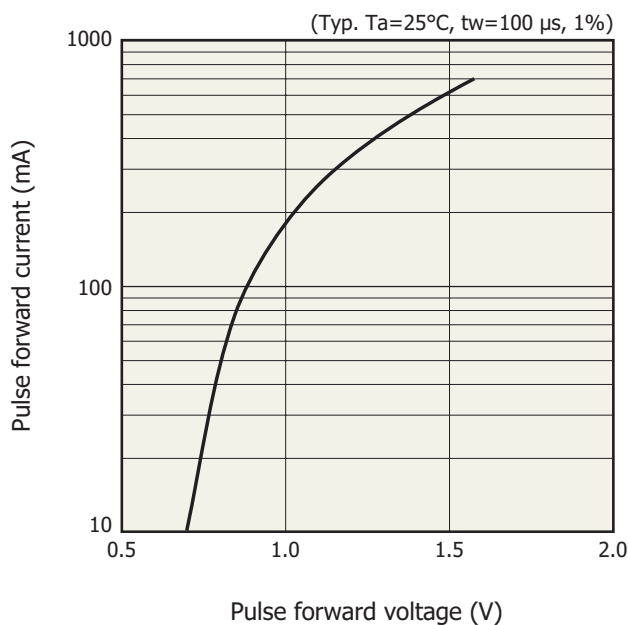
KLEDB0435EB

Radiant flux vs. pulse forward current



KLEDB0426ED

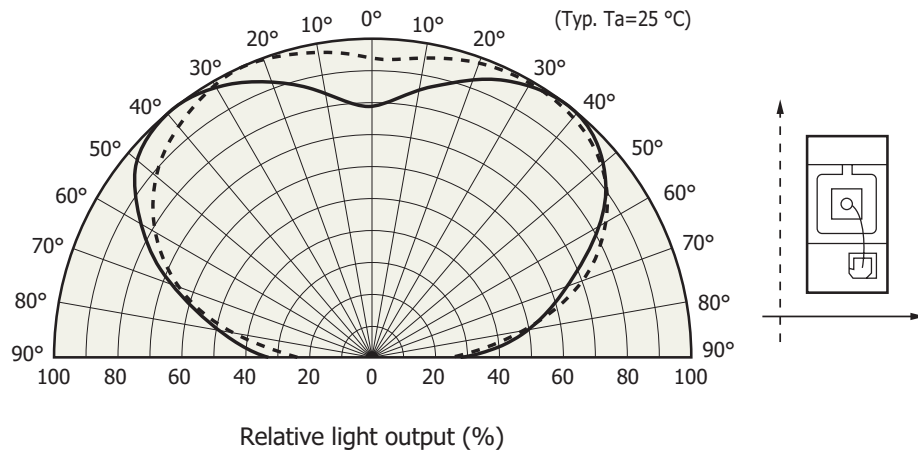
Pulse forward current vs. pulse forward voltage



KLEDB0427EA

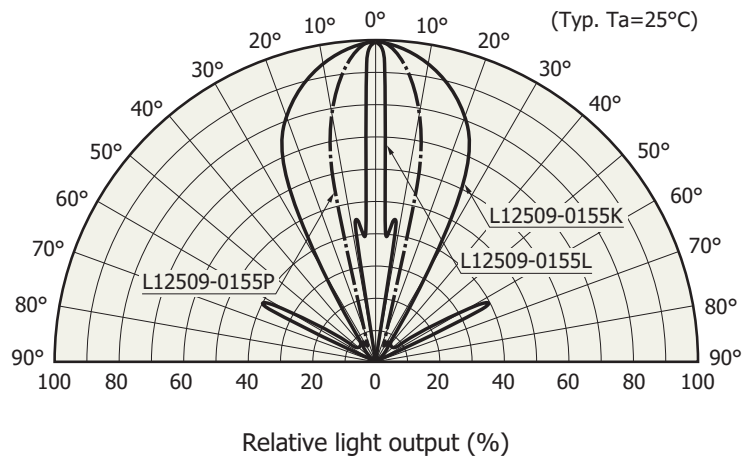
Directivity

L12509-0155G



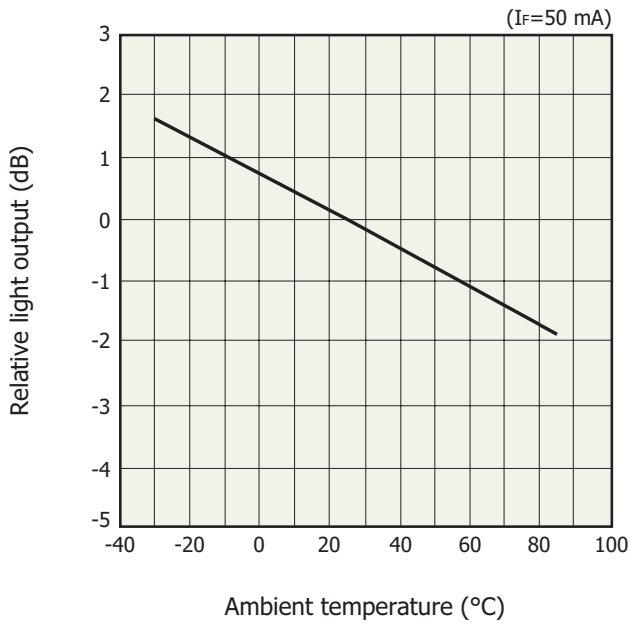
KLEDB0467EB

L12509-0155K/-0155L/-0155P

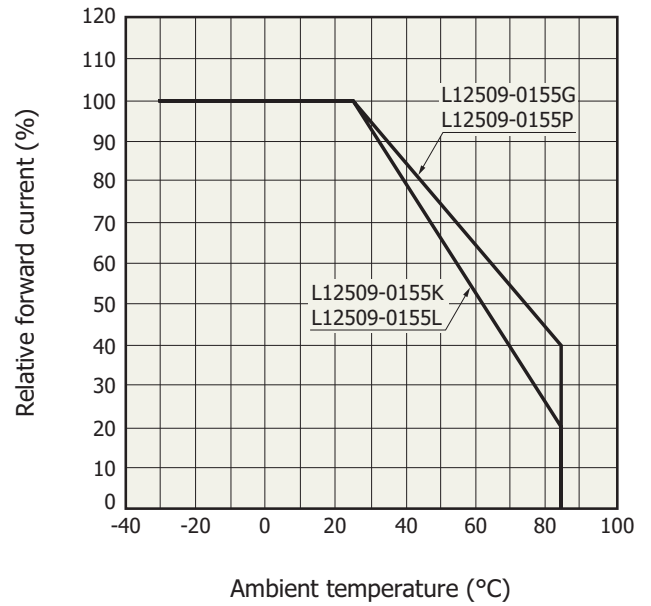


KLEDB0428EC

Light output vs. ambient temperature

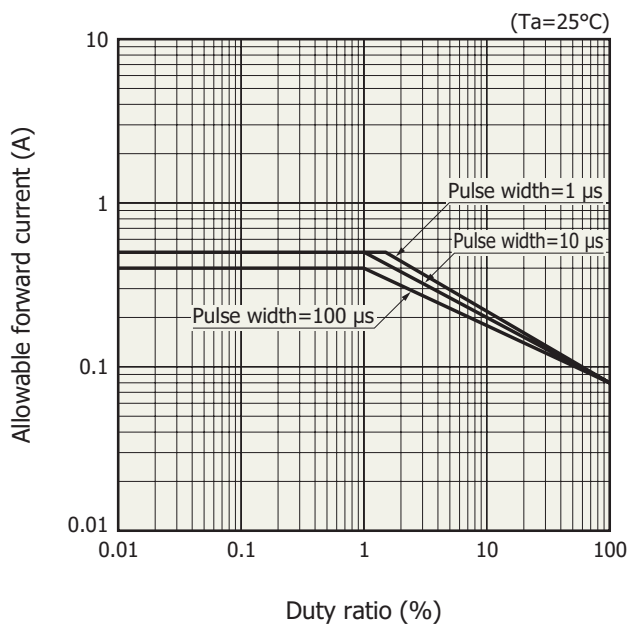


Allowable forward current vs. ambient temperature

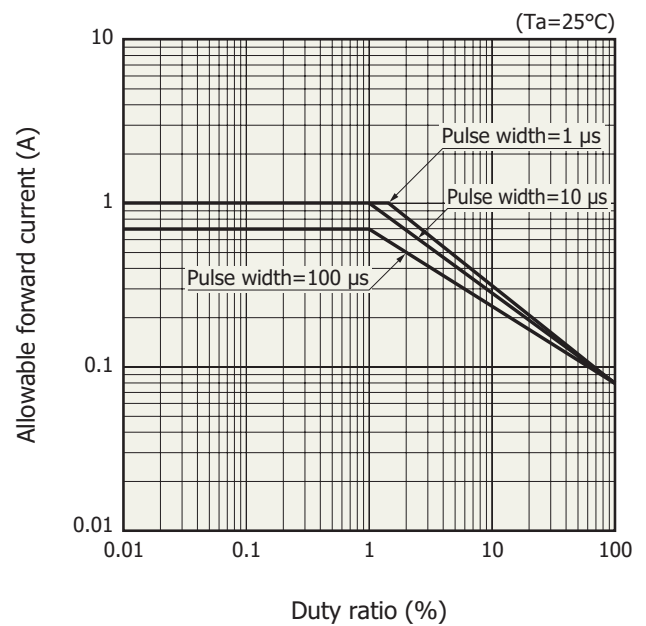


Allowable forward current vs. duty ratio

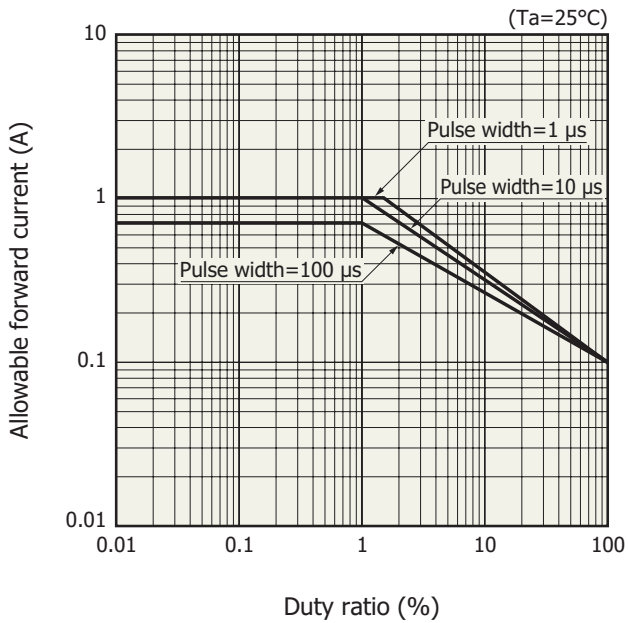
L12509-0155G



L12509-0155K/-0155L



L12509-0155P

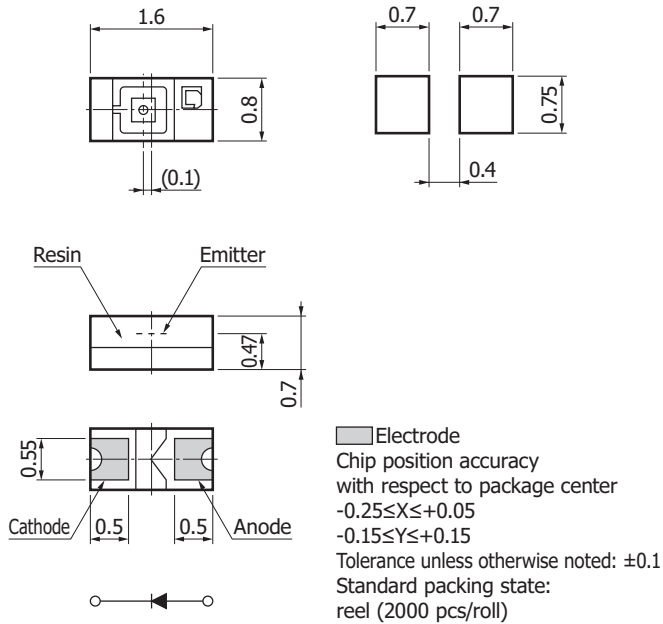


KLEDB0479EB

Dimensional outlines (unit: mm)

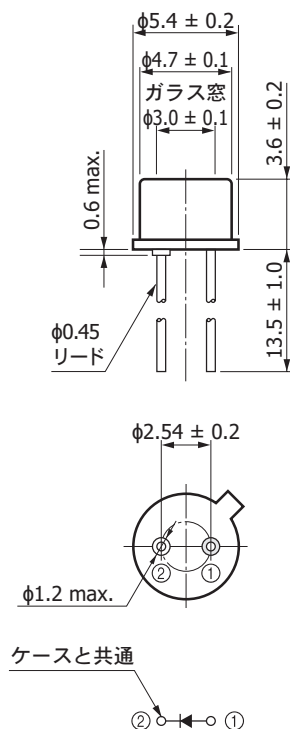
L12509-0155G

Recommended land pattern



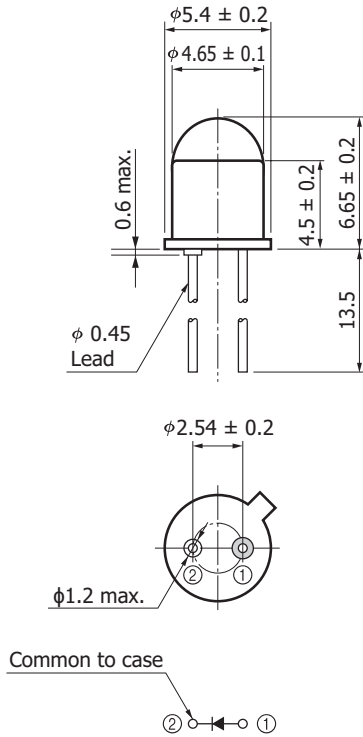
KLEDA0107EB

L12509-0155K



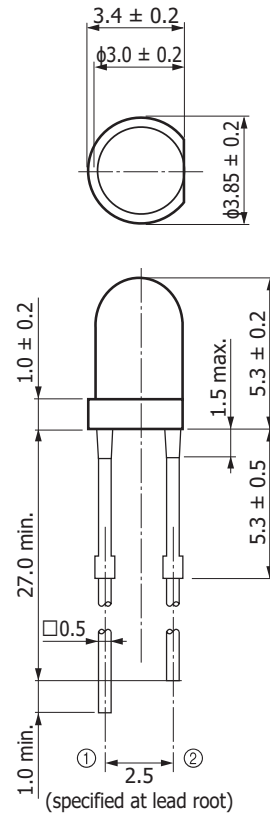
KLEDA0103EB

L12509-0155L



KLEDA0092EB

L12509-0155P



Standard packing state:
anti-static bag
(100 pcs/pack)



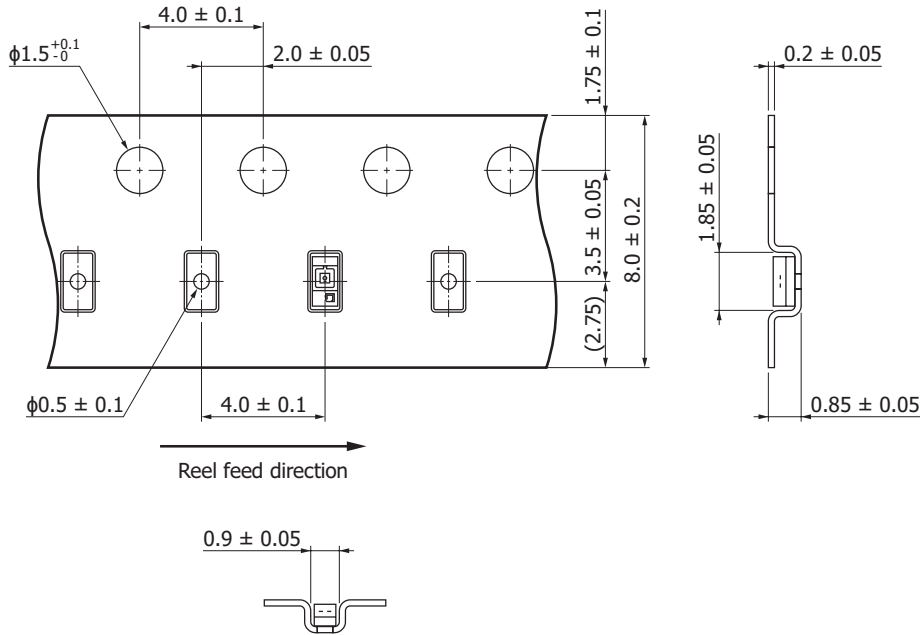
KLEDA0096EC

■ Standard packing specifications (L12509-0155G)

■ Reel (conforms to JEITA ET-7200)

Outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
φ180 mm	φ60 mm	8 mm	PS	Conductive

■ Embossed tape (unit: mm, material: PS, conductive)



KLEDC0063EA

■ Packing quantity

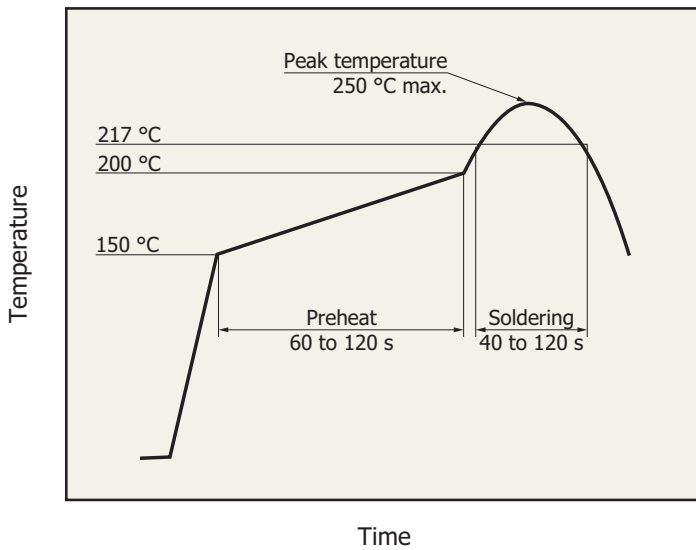
2000 pcs/reel

■ Packing state

Reel and desiccant in moisture-proof packaging (vacuum-sealed)

Recommended solering conditions

L12509-0155G



KLEDB0536EC

- After unpacking, store the device in an environment at a temperature range of 5 to 30 °C and a humidity of 60% or less, and perform reflow soldering within 4 week.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

L12509-0155K/-0155L

- Solder temperature: 260 °C (5 s or less, once)
Solder the leads at a point at least 1 mm away from the package body.

L12509-0155P

- Solder temperature: 230 °C (5 s or less, once)
Solder the leads at a point at least 2 mm away from the package body.

Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Baking (L12509-0155G)

If more than 3 months have passed in the unopened state or storage conditions are exceeded after opening the package, baking is required to remove moisture before reflow soldering. For the baking, refer to the related information "Surface mount type products."

Recommended baking conditions

- Temperature: 150 °C (3 hours, once)

Note: Before setting the baking conditions, perform experiments to confirm that no problems occur with the product.

Related information

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

■ Precautions

- Disclaimer
- Safety consideration
- Surface mount type products
- Compound opto-semiconductors (photosensors, light emitters)

■ Technical information

- LED / Technical note

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

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.

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