

Description

The SECG1E13CP is a surface mount blue LED.

Features

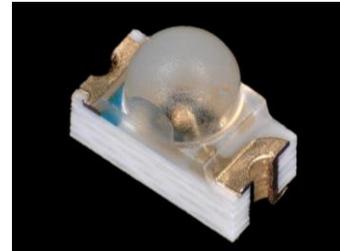
- Color ----- Blue
- Luminous Intensity, I_V ----329 mcd (typ.) ($I_F = 10 \text{ mA}$)
- Forward Voltage, V_F ----- 2.9 V (typ.) ($I_F = 10 \text{ mA}$)
- Dominant Wavelength, λ_D ----- 465 nm
- Viewing Angle, $2\theta_{1/2}$ ----- 50 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

Applications

- Automotive Interior
- Switch
- Indicator

Package

Dimensions (L × W × H): 1.6 × 0.8 × 1.5 mm
(Dome lens type)



Not to scale

SECG1E13CP

Absolute Maximum Ratings

Unless specifically noted, $T_A = 25\text{ }^\circ\text{C}$.

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	P_D		99	mW
Forward Current	I_F		30	mA
Forward Current Reduction	ΔI_F	$T_A \geq 60\text{ }^\circ\text{C}$	-0.625	mA/ $^\circ\text{C}$
Pulse Forward Current	I_{FP}	Frequency = 1 kHz Pulse Width $\leq 100\text{ }\mu\text{s}$	50	mA
Reverse Voltage	V_R		3	V
Operating Temperature	T_{OP}		-40 to 100	$^\circ\text{C}$
Storage Temperature	T_{STG}		-40 to 100	$^\circ\text{C}$
Junction Temperature	T_J		115	$^\circ\text{C}$

Electrical / Optical Characteristics

Unless specifically noted, $T_A = 25\text{ }^\circ\text{C}$.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 10\text{ mA}$	—	2.9	3.3	V
Reverse Current	I_R	$V_R = 3\text{ V}$	—	—	10	μA
Luminous Intensity	I_V	$I_F = 10\text{ mA}$	208	329	520	mcd
Dominant Wavelength	λ_D	$I_F = 10\text{ mA}$	460	465	470	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 10\text{ mA}$	—	50	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	450	—	$^\circ\text{C}/\text{W}$

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.00228	—	g

SECG1E13CP

Luminous Intensity Bins

The values have a tolerance of $\pm 20\%$.

Bin Number	Luminous Intensity Range	Unit
C	208 to 329	mcd
D	329 to 520	mcd

Wavelength Bins

The values have a tolerance of ± 2 nm.

Bin Number	Wavelength Range	Unit
B1	460 to 463	nm
B2	463 to 467	nm
B3	467 to 470	nm

Derating Curves

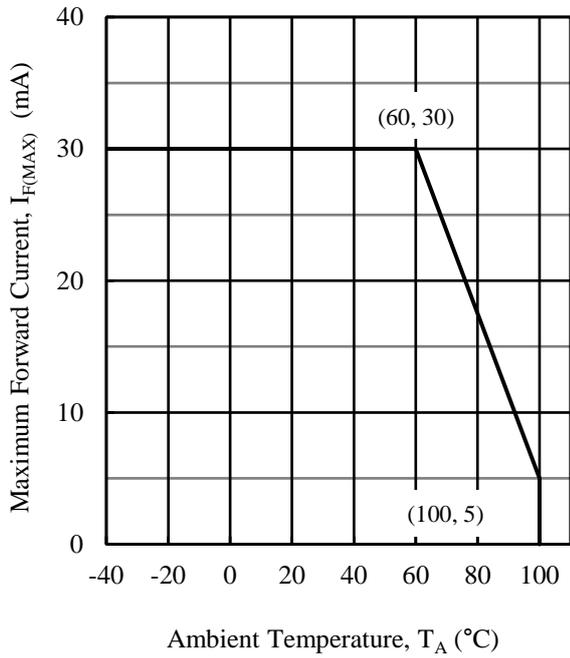


Figure 1. $I_{F(MAX)}$ vs. T_A

Characteristic Curves

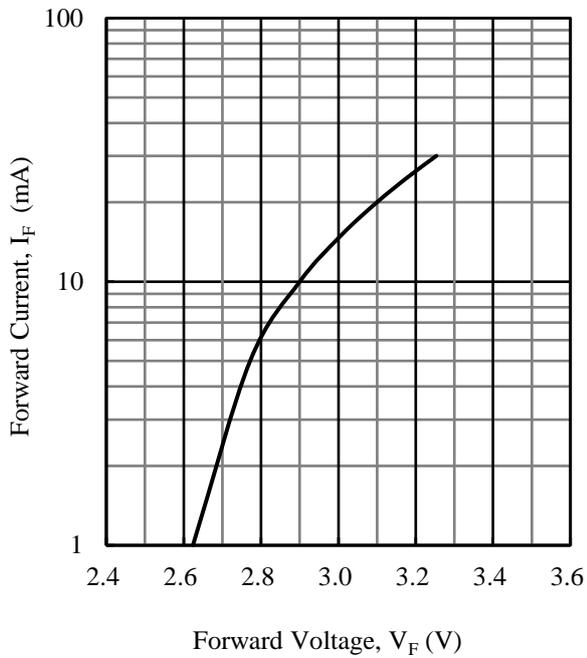


Figure 2. I_F vs. V_F

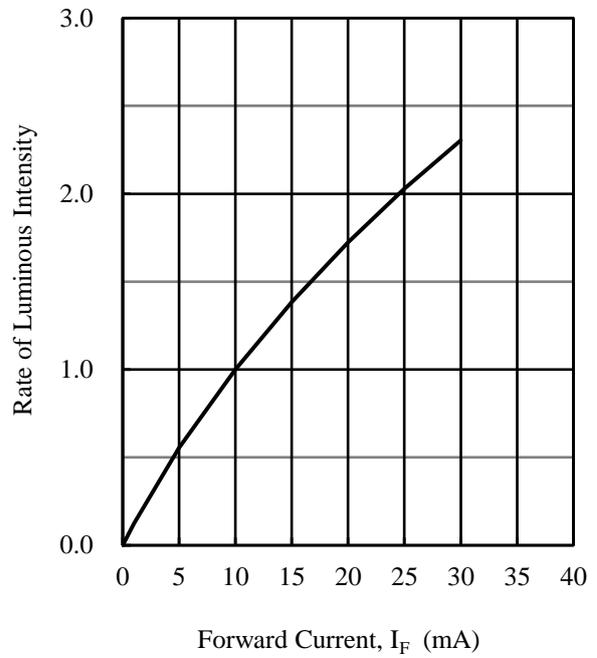


Figure 3. Rate of Luminous Intensity vs. I_F

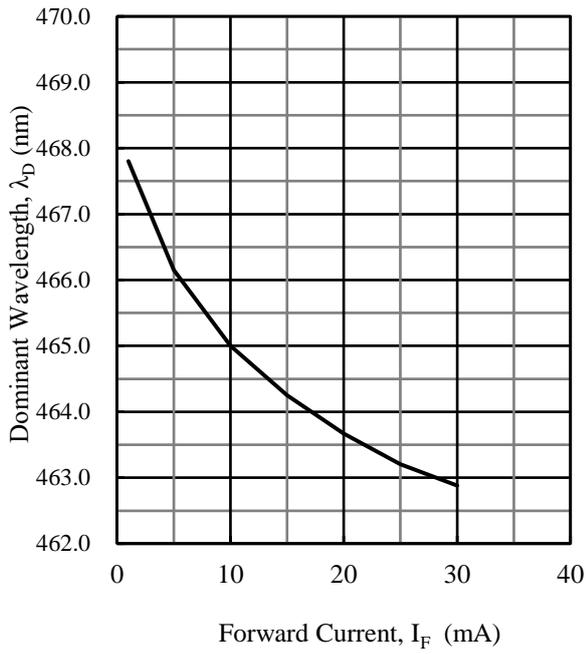


Figure 4. λ_D vs. I_F

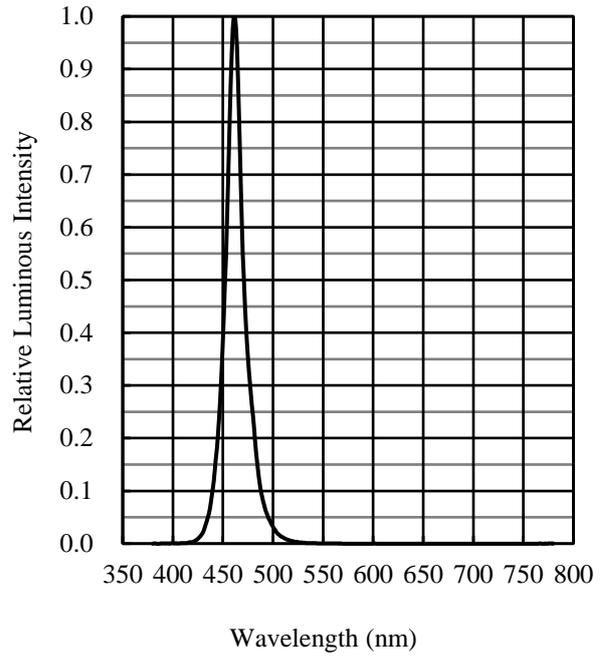


Figure 5. Spectrum

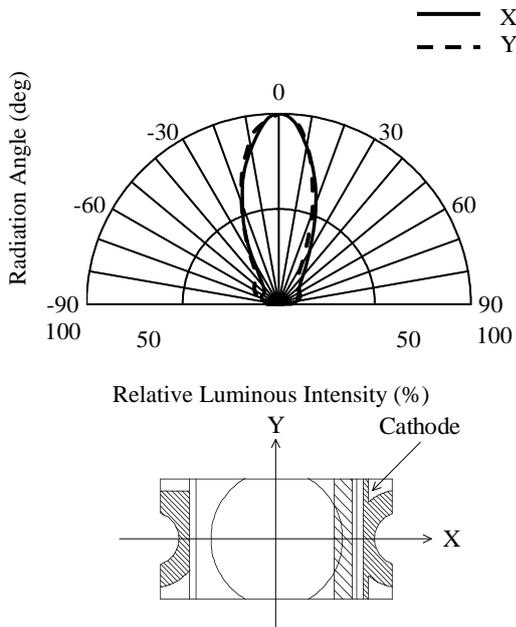
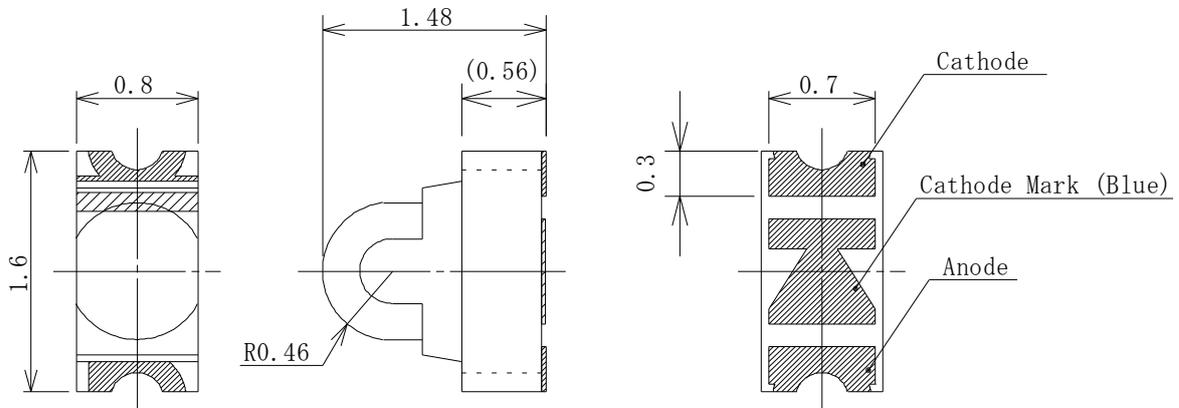


Figure 6. Directivity

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Physical Dimensions

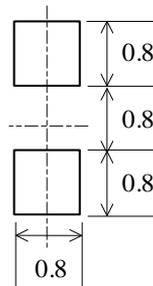
• Surface Mount (1.6 × 0.8 × 1.5 mm)



NOTES:

- Dimensions in millimeters
- Tolerance: ± 0.1 mm
- RoHS compliant
- MSL 3 (Moisture Sensitivity Level 3)

• Land Pattern Example



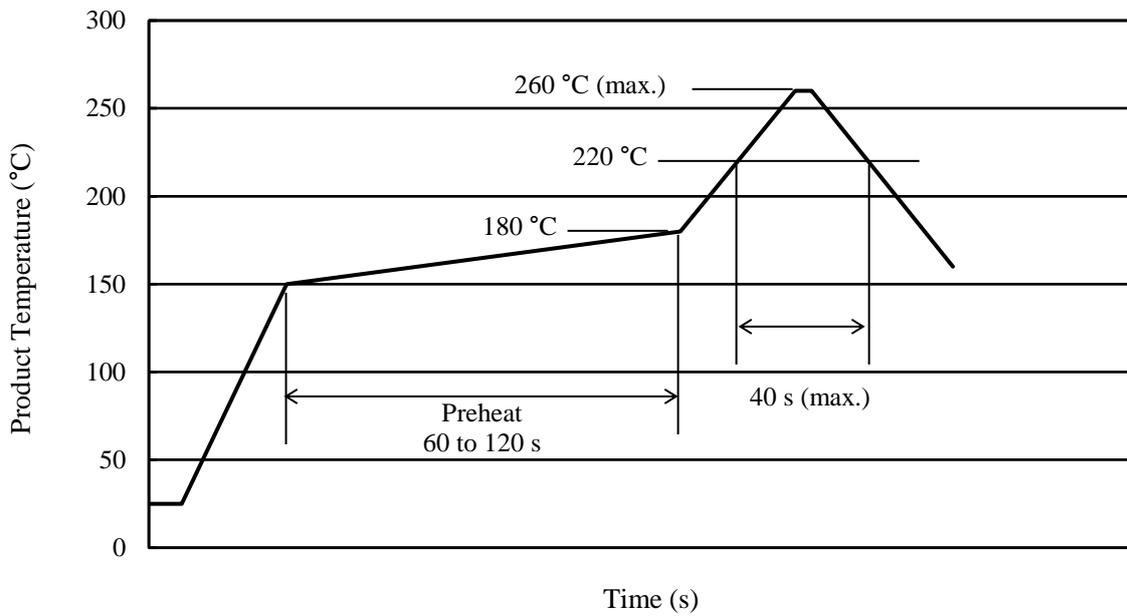
Unit: mm

Soldering Conditions

When soldering the products, it is required to minimize the working time within the following limits:

- Reflow:
 - Preheat: 150 to 180 °C / 60 to 120 s
 - Solder heating: 220 °C / 40 s (260 °C peak, 2 times)
- Soldering iron: 350 ±10 °C / 3 s, 1 time

● Reference Reflow Profile



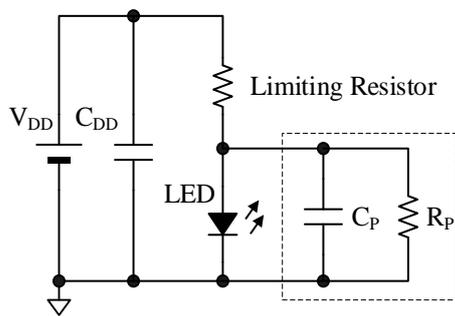
Precautions for Use

• Measures for Electrostatic Discharge (ESD)

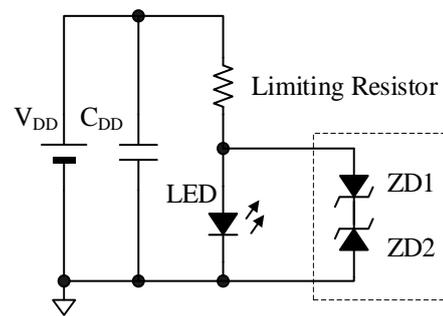
Because this product is sensitive to ESD, it is necessary to take adequate measures against ESD and surge for safe and proper handling. In particular, note that when a voltage that exceeds the absolute maximum rating is applied, the product may be damaged.

• Reference Protection Circuits for Electrostatic Discharge and Surge

The following figures show reference protection circuits that prevent the product from any damage due to ESD or surge. Note that these circuits are only examples; therefore, be sure to check the ESD and surge levels in your actual system and to take appropriate measures (e.g., adding a part) as needed.



Example of Adding Filter
($C_P \geq 0.01 \mu\text{F}$, $R_P = 10 \text{ k}\Omega$)



Example of Adding Zener Diodes
(ZD1, ZD2: $V_Z = 7 \text{ V to } 8 \text{ V}$)

• Other

- After soldering the product, care should be taken not to apply mechanical stress or excessive vibration until it cools to room temperature.
- Do not cool the product rapidly.
- When mounting the product on a board, mounting position and orientation should be taken into account so that any stress due to board warpage is not applied to the product.
- Do not touch the encapsulating resin of the product with sharp objects such as a tweezer or fingernails. Also, do not use the product again after removal.
- Do not touch the product after mounting it on a board.
- The product emits a high-power light. Therefore, care should be taken not to look at the light emission directly for a long time because it may hurt your eyes.
- Use the product at rated current (sorting current) as much as possible. When the product is used at a current lower than the rated current (sorting current), a variation in forward voltage or luminous intensity may increase. Therefore, care should be taken for such variation when you use the product at low current.
- When using the product, care should be taken not to apply a voltage in the opposite direction of the LED.

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