I_V = 329 mcd, V_F = 2.9 V
Surface Mount LED

SECG1E13CP

Data Sheet

Description

The SECG1E13CP is a surface mount blue LED.

Features

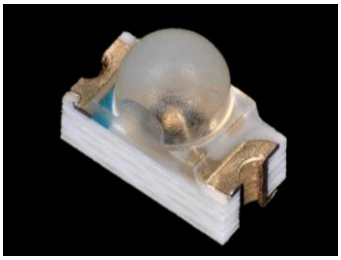
- Color ---------- Blue
- Luminous Intensity, I_V ----329 mcd (typ.) (I_F = 10 mA)
- Forward Voltage, V_F --------- 2.9 V (typ.) (I_F = 10 mA)
- Dominant Wavelength, λ_D ---------- 465 nm
- Viewing Angle, $2\theta_{1/2}$ ---------- 50 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

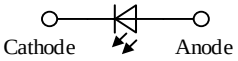
Applications

- Automotive Interior
- Switch
- Indicator

Package

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





Not to scale

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Absolute Maximum Ratings

Unless specifically noted, T_A = 25 °C.

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

Electrical / Optical Characteristics

Unless specifically noted, T_A = 25 °C.

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

Mechanical Characteristics

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

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Luminous Intensity Bins

The values have a tolerance of ±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

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Derating Curves

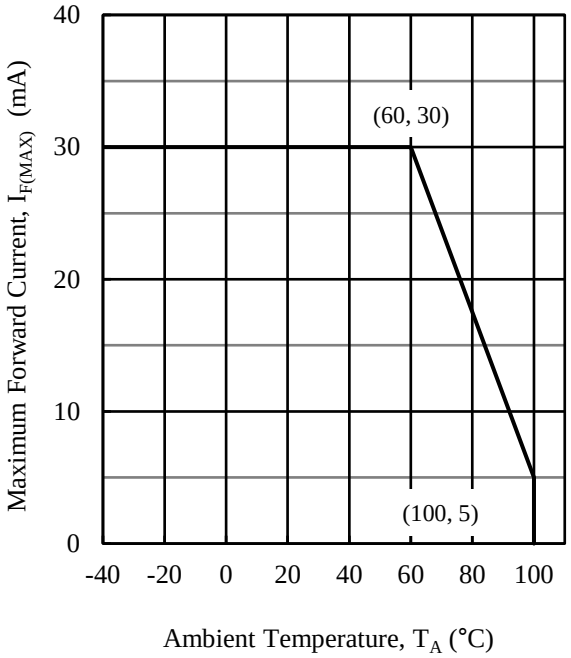


Figure 1. $I_{F(MAX)}$ vs. T_A

Characteristic Curves

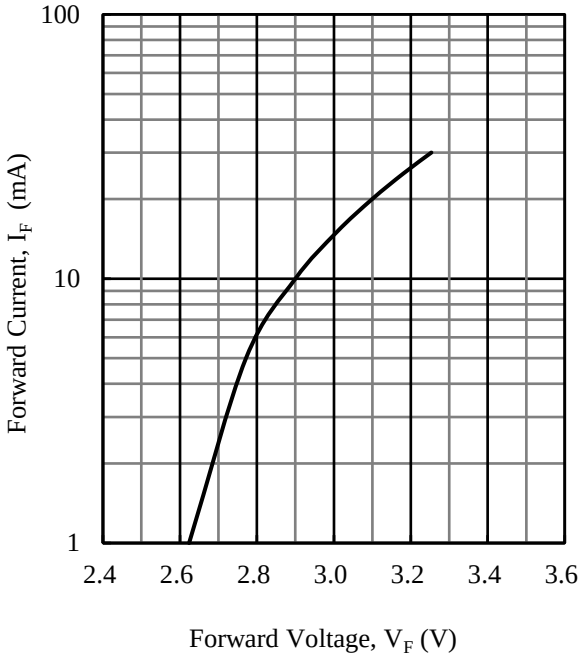


Figure 2. I_F vs. V_F

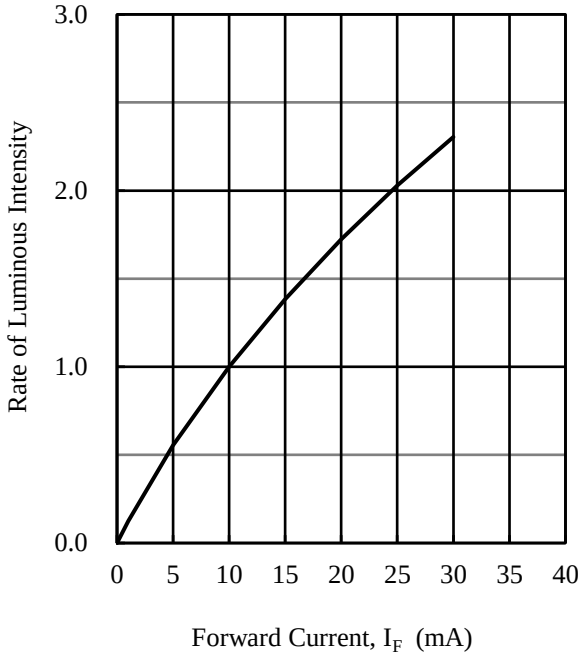


Figure 3. Rate of Luminous Intensity vs. I_F

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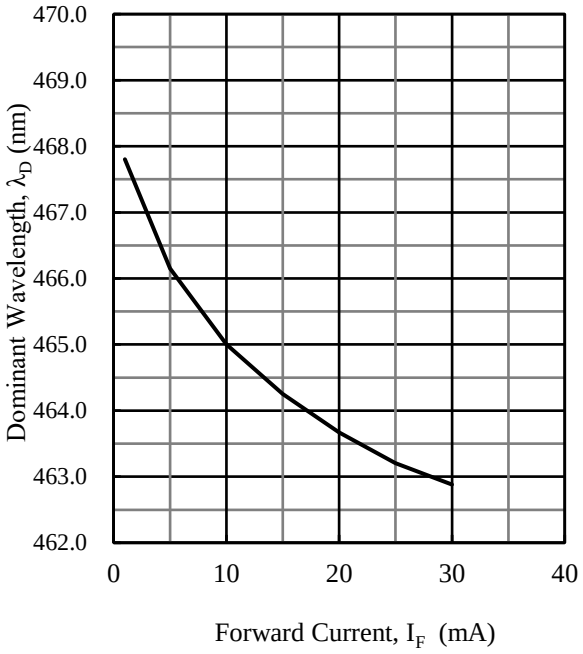


Figure 4. λ_D vs. I_F

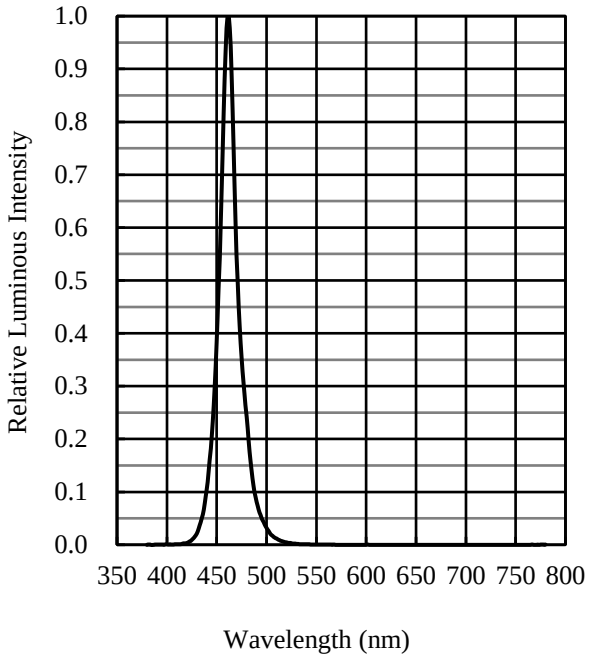


Figure 5. Spectrum

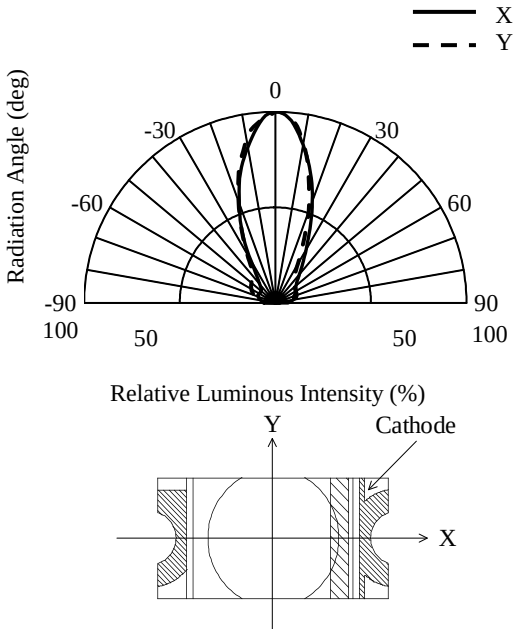


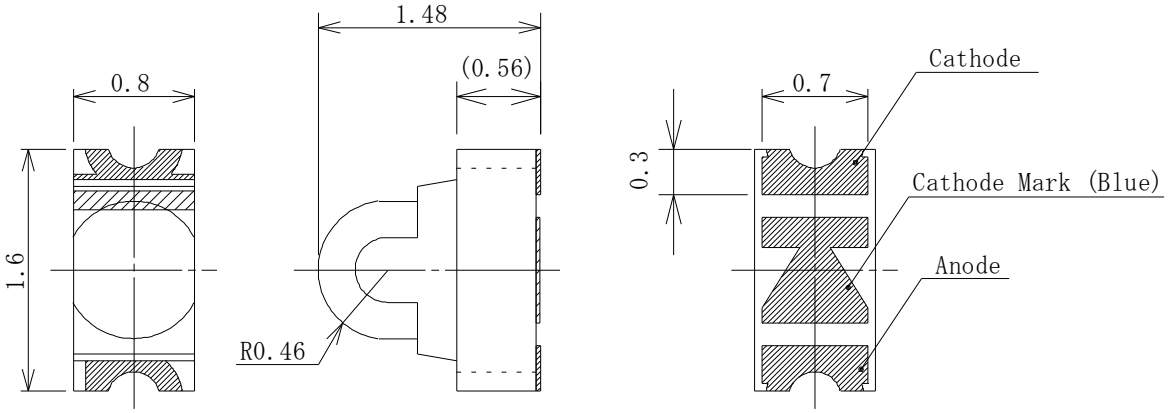
Figure 6. Directivity

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Physical Dimensions

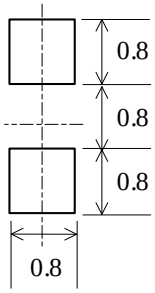
● **Surface Mount (1.6 × 0.8 × 1.5 mm)**



NOTES:

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

● **Land Pattern Example**



Unit: mm

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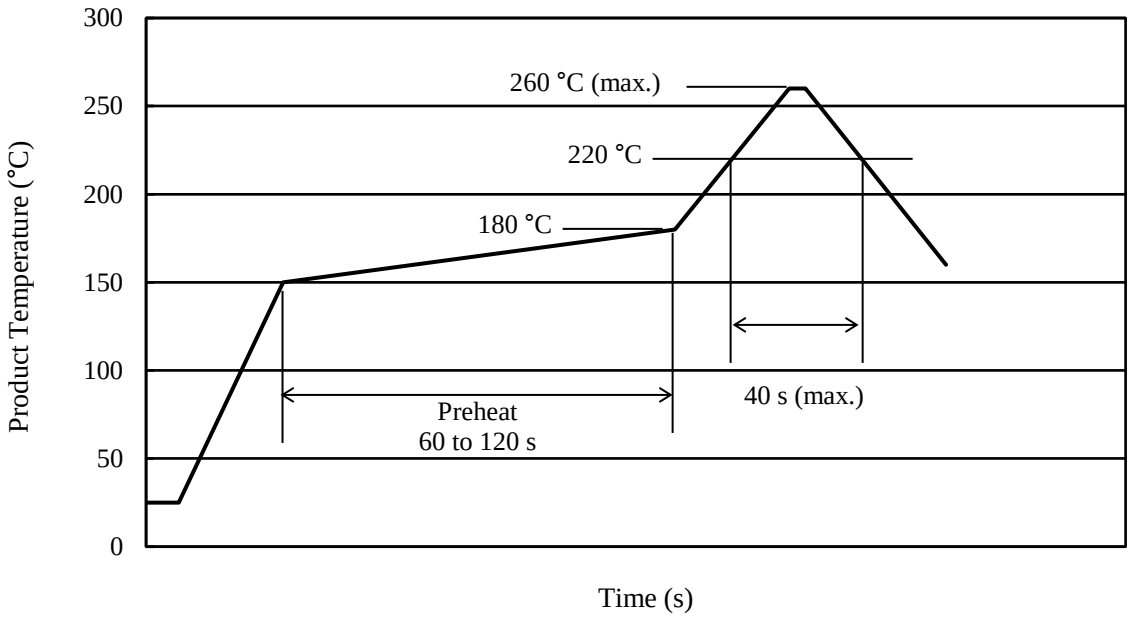
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Soldering Conditions

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**



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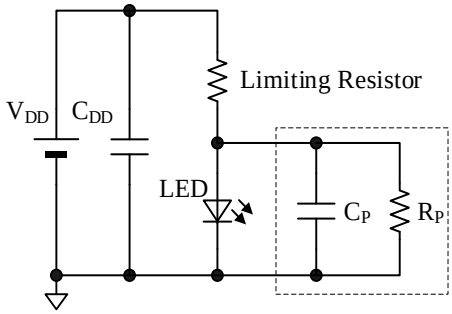
Precautions for Use

● **Measures for Electrostatic Discharge (ESD)**

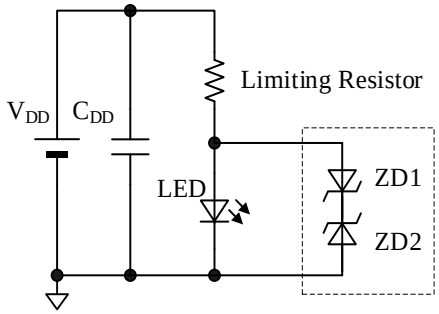
Because this product is sensitive to ESD, it is necessary to take adequate measures against ESD and surge for safe and proper handling. In particular, note that when a voltage that exceeds the absolute maximum rating is applied, the product may be damaged.

● **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 ≥0.01 μF, R_P = 10 kΩ)



Example of Adding Zener Diodes
(ZD1, ZD2: V_Z = 7 V to 8 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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