

$I_V = 88.0$  mcd,  $V_F = 3.1$  V  
Surface Mount LED  
**SECG1E07C-PD**

**Description**

The SECG1E07C-PD is a surface mount blue LED. The product includes a protection diode for ESD protection.

**Features**

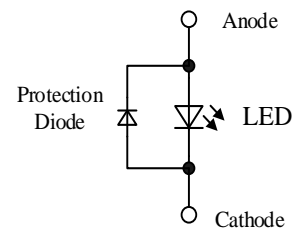
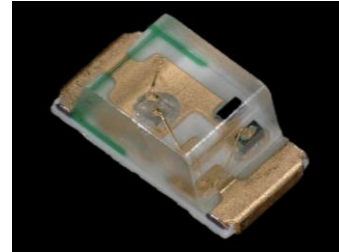
- Color-----Blue
- Luminous Intensity,  $I_V$ ---88.0 mcd (typ.) ( $I_F = 10$  mA)
- Forward Voltage,  $V_F$ ----- 3.1 V (typ.) ( $I_F = 10$  mA)
- Dominant Wavelength,  $\lambda_D$  ----- 465.0 nm
- Viewing Angle,  $2\theta_{1/2}$ ----- 140 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

**Applications**

- Automotive Interior
- Switch
- Indicator

**Package**

Dimensions (L × W × H): 1.6 × 0.8 × 0.7 mm



Not to scale

## SECG1E07C-PD

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		105	mW
Forward Current	$I_F$		30	mA
Forward Current Reduction	$\Delta I_F$	$T_A \geq 60\text{ }^\circ\text{C}$	-0.62	mA/ $^\circ\text{C}$
Pulse Forward Current	$I_{FP}$	Frequency = 1 kHz Pulse Width $\leq 100\text{ }\mu\text{s}$	50	mA
Reverse Current	$I_R$		10	mA
Operating Temperature	$T_{OP}$		-40 to 85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-40 to 100	$^\circ\text{C}$
Junction Temperature	$T_J$		110	$^\circ\text{C}$

### Electrical / Optical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	$V_F$	$I_F = 10\text{ mA}$	2.4	3.1	3.5	V
Reverse Voltage	$V_R$	$I_R = 1\text{ mA}$	—	0.8	—	V
Luminous Intensity	$I_V$	$I_F = 10\text{ mA}$	65.5	88.0	119.5	mcd
Dominant Wavelength	$\lambda_D$	$I_F = 10\text{ mA}$	462.5	465.0	470.0	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 10\text{ mA}$	—	140	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	450	—	$^\circ\text{C}/\text{W}$

### Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.00117	—	g

## SECG1E07C-PD

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### Luminous Intensity Bins

The values have a tolerance of  $\pm 10\%$ .

Bin Number	Luminous Intensity Range	Unit
E	65.5 to 80.0	mcd
F	80.0 to 97.8	mcd
G	97.8 to 119.5	mcd

### Wavelength Bins

The values have a tolerance of  $\pm 1$  nm.

Bin Number	Wavelength Range	Unit
B	462.5 to 465.0	nm
G1	465.0 to 467.5	nm
G2	467.5 to 470.0	nm

Derating Curves

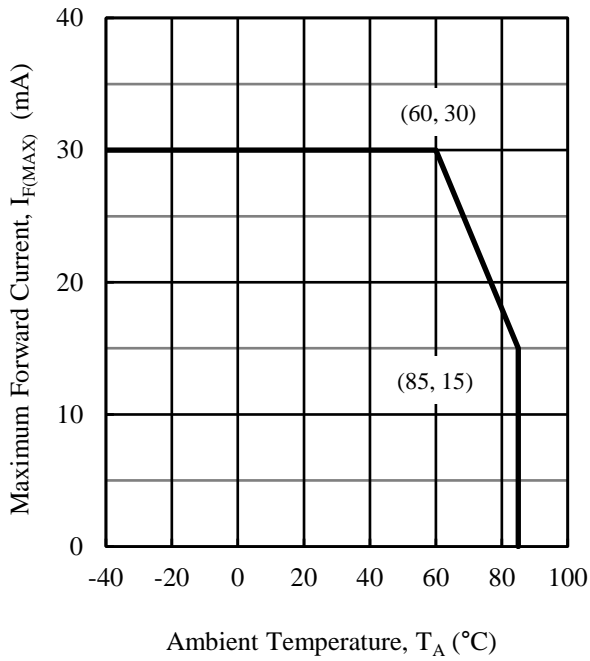


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Performance Curves

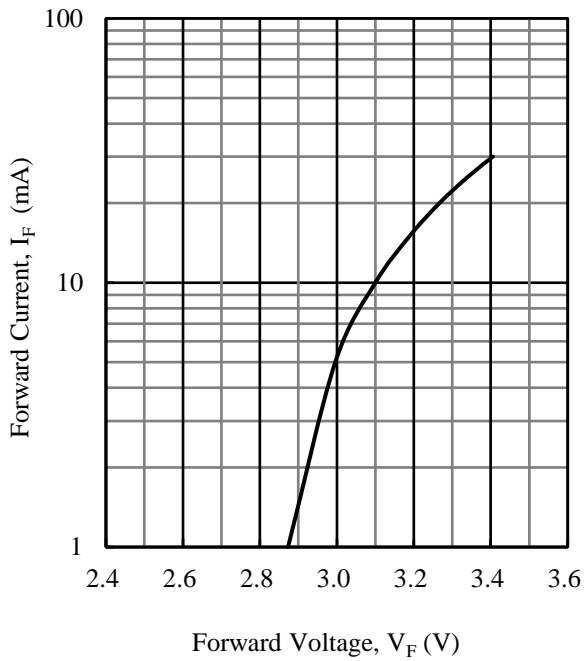


Figure 2.  $I_F$  vs.  $V_F$

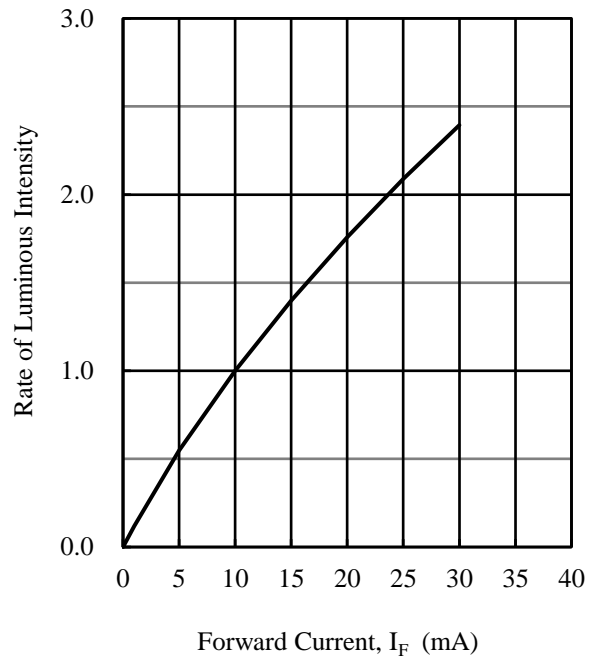


Figure 3. Rate of Luminous Intensity vs.  $I_F$

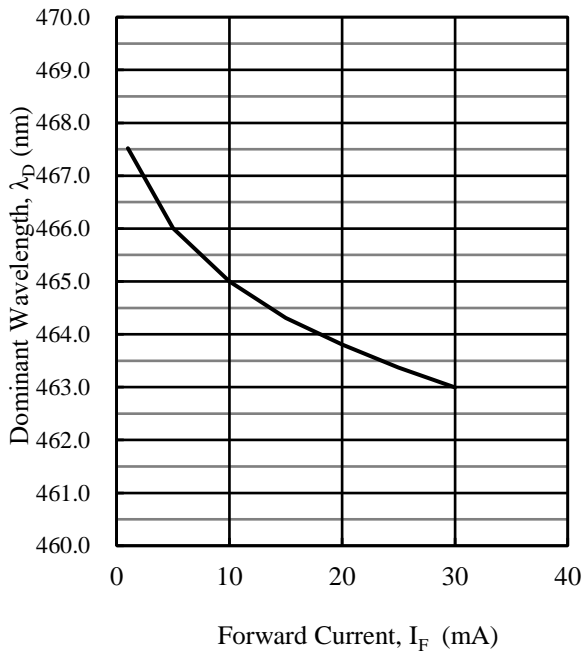


Figure 4.  $\lambda_D$  vs.  $I_F$

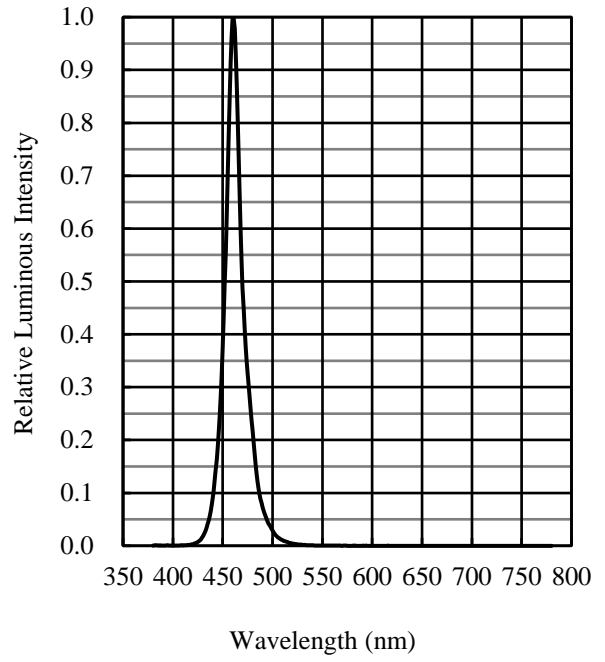


Figure 5. Spectrum

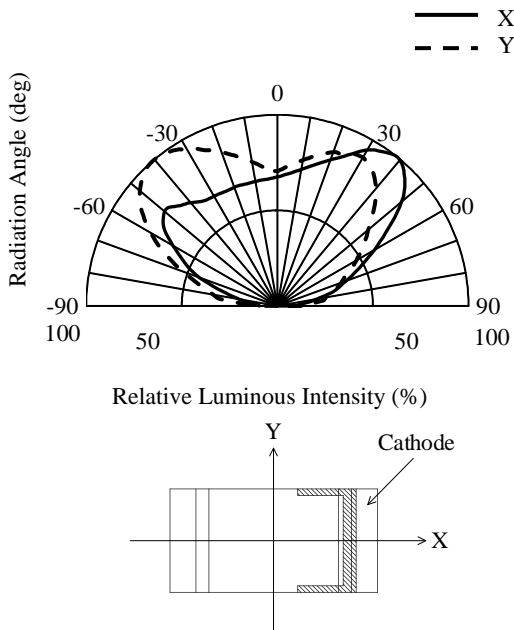
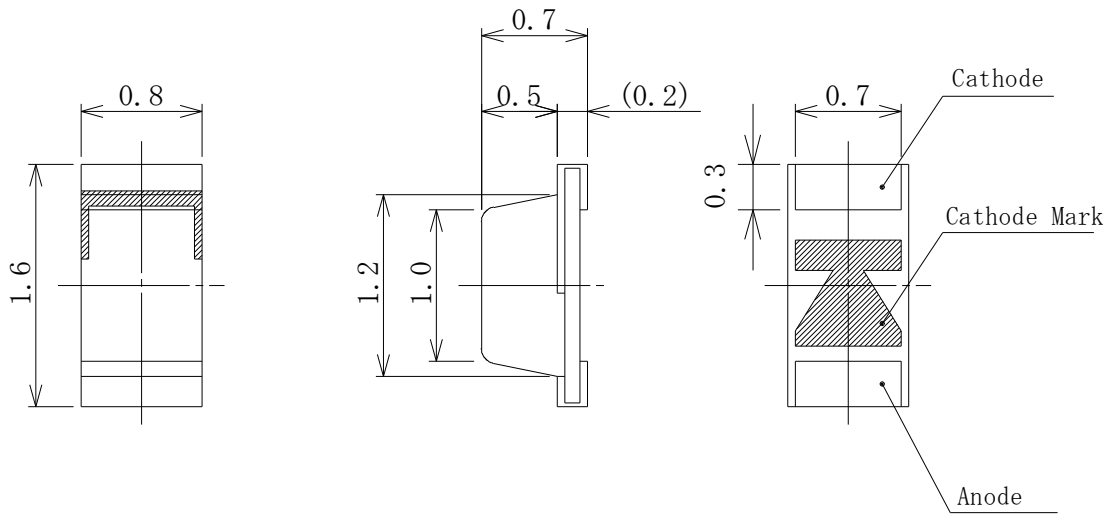


Figure 6. Directivity

# SECG1E07C-PD

## Physical Dimensions

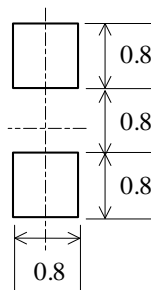
- Surface Mount (1.6 × 0.8 × 0.7 mm)



### NOTES:

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

- Land Pattern Example



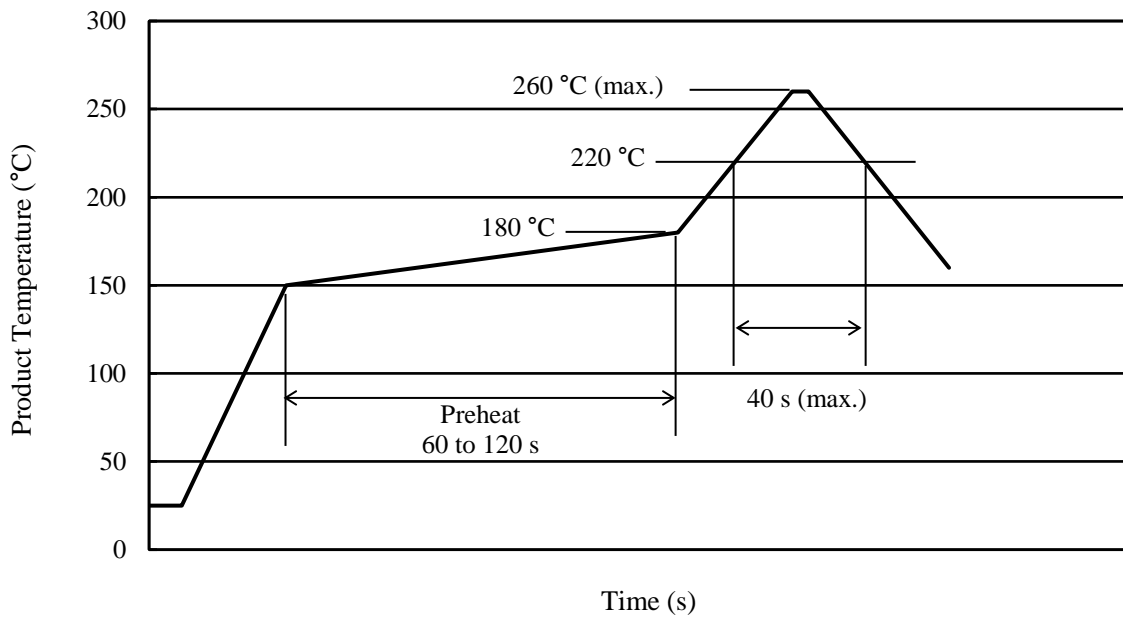
Unit: mm

### 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

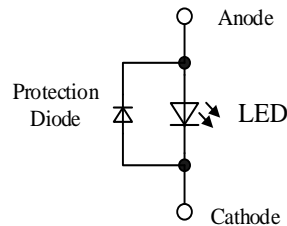


### Precautions for Use

#### • Measures for Electrostatic Discharge (ESD)

In general, InGaN-based elements such as blue LEDs are very sensitive to ESD. For enhanced ESD withstand capability, this product is designed to include a surge protection diode as shown in the figure below. Therefore, the following ESD withstand capabilities are ensured:  $\geq 200$  V on machine model ( $C = 200$  pF,  $R = 0 \Omega$ ), and  $\geq 2000$  V on human body model ( $C = 100$  pF,  $R = 1.5$  k $\Omega$ ). Note that, however, all the values mentioned above are not guaranteed.

When using the product, care should be taken not to apply a voltage in the opposite direction of the LED. If a voltage is applied in the opposite direction of the LED, the surge protection diode becomes conductive, and then an unintended current may flow through the set.



#### • 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.

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