

$I_V = 350 \text{ mcd}$, $V_F = 3.2 \text{ V}$
Surface Mount LED
SECG1E0EC-S



Preliminary

Data Sheet

Description

The SECG1E0EC-S is a surface mount blue LED.

Package

Dimensions (L × W × H): 3.0 × 1.4 × 1.2 mm

Features

- Color ----- Blue
- Luminous Intensity, I_V ----350 mcd (typ.) ($I_F = 20 \text{ mA}$)
- Forward Voltage, V_F ----- 3.2 V (typ.) ($I_F = 20 \text{ mA}$)
- Dominant Wavelength, λ_D ----- 467 nm
- Viewing Angle, $2\theta_{1/2}$ ----- 120 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability



Applications

- Switch
- Indicator
- Backlight



(1) Cathode
(2) Anode

Not to scale

SECG1E0EC-S

Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	P_D		114	mW
Forward Current	I_F		30	mA
Forward Current Reduction	ΔI_F	$T_A \geq 25\text{ }^\circ\text{C}$	-0.33	mA/ $^\circ\text{C}$
Pulse Forward Current	I_{FP}	Frequency = 1 kHz Pulse Width $\leq 100\text{ }\mu\text{s}$	70	mA
Reverse Voltage	V_R		3	V
Operating Temperature	T_{OP}		-40 to 85	$^\circ\text{C}$
Storage Temperature	T_{STG}		-40 to 100	$^\circ\text{C}$
Junction Temperature	T_J		100	$^\circ\text{C}$

Electrical / Optical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 20\text{ mA}$	—	3.2	3.8	V
Reverse Current	I_R	$V_R = 3\text{ V}$	—	—	10	μA
Luminous Intensity	I_V	$I_F = 20\text{ mA}$	250	350	593	mcd
Dominant Wavelength	λ_D	$I_F = 20\text{ mA}$	462	467	472	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 20\text{ mA}$	—	120	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	300	—	$^\circ\text{C}/\text{W}$

Luminous Intensity Bins

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

Bin Number	Luminous Intensity Range	Unit
C	250 to 333	mcd
D	333 to 445	mcd
E	445 to 593	mcd

Wavelength Bins

The values have a tolerance of $\pm 2\text{ nm}$.

Bin Number	Wavelength Range	Unit
B	462 to 467	nm
G	467 to 472	nm

Derating Curves

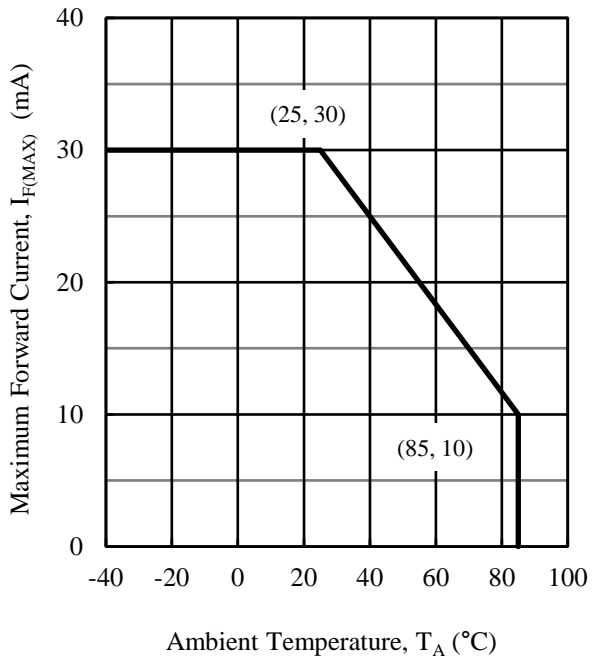


Figure 1. $I_{F(MAX)}$ vs. T_A

Performance Curves

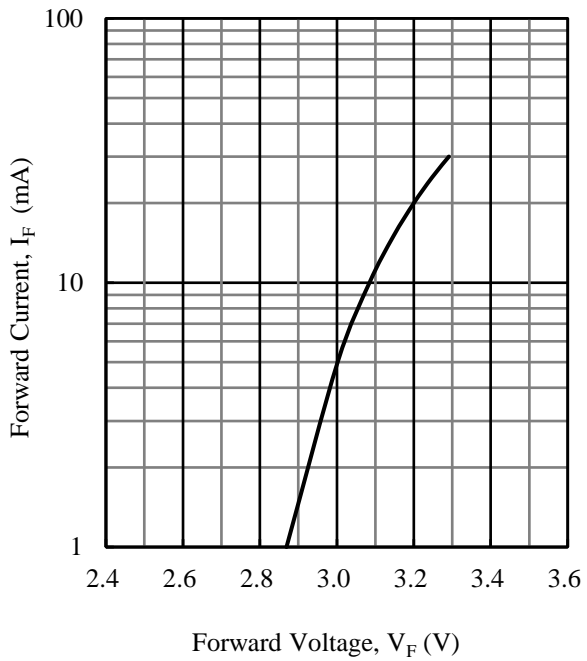


Figure 2. I_F vs. V_F

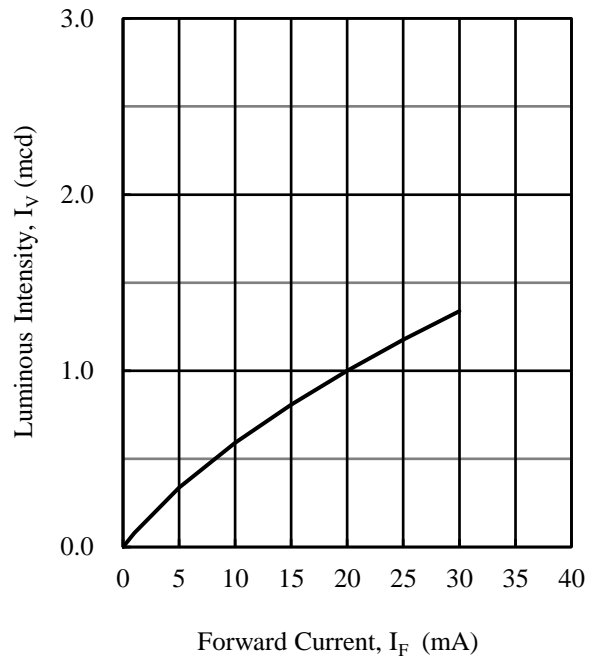


Figure 3. I_V vs. I_F

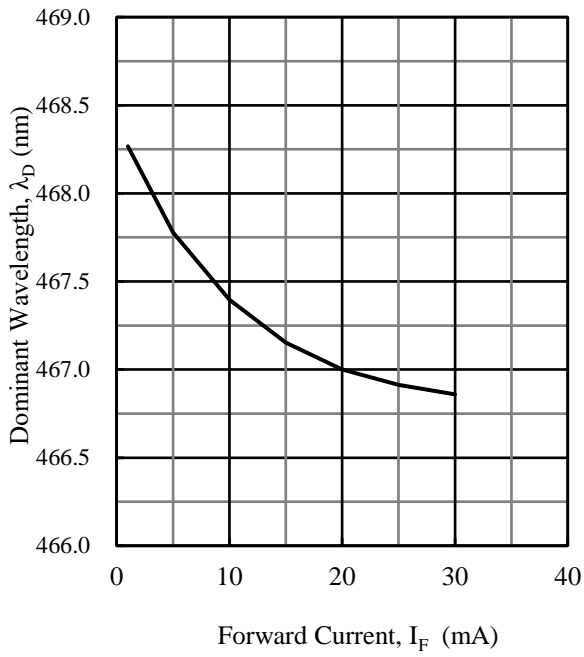


Figure 4. λ_D vs. I_F

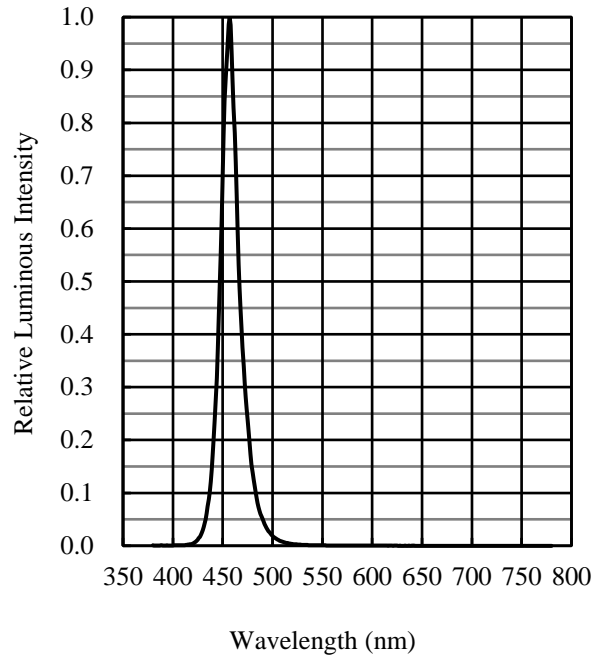


Figure 5. Spectrum

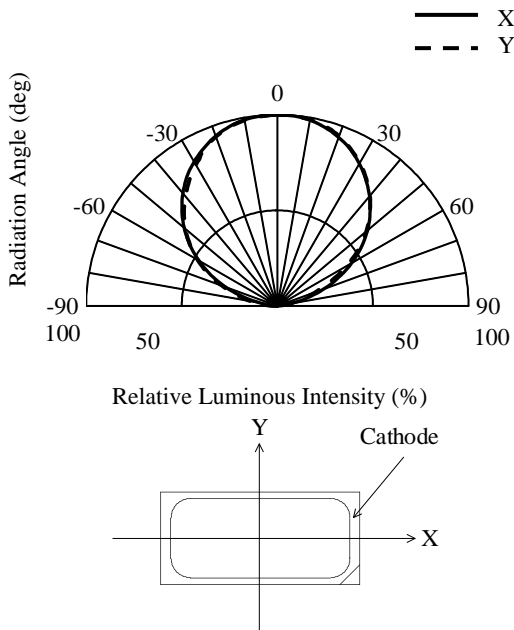
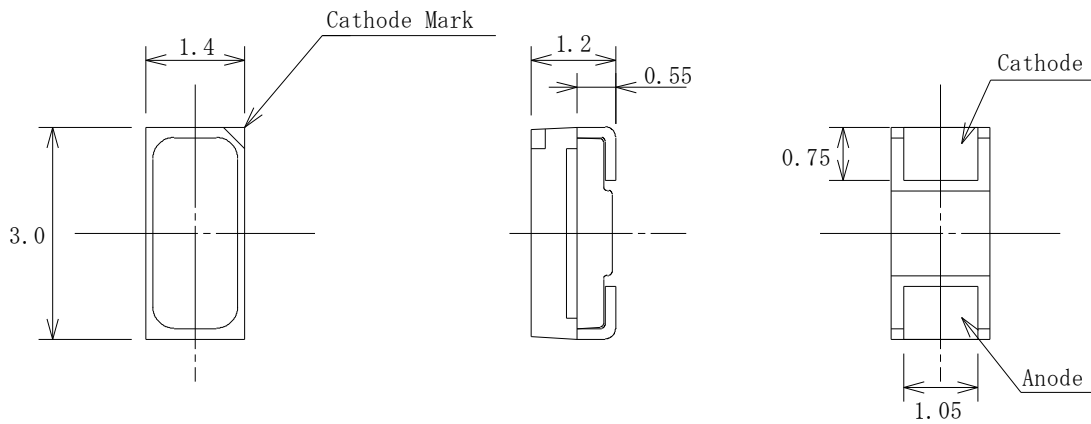


Figure 6. Directivity

SECG1E0EC-S

Physical Dimensions

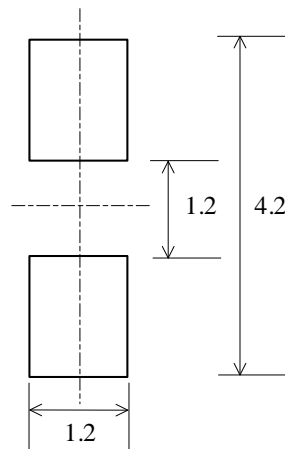
- Surface Mount (3.0 × 1.4 × 1.2 mm)



NOTES:

- Dimensions in millimeters
- Unless specifically noted, tolerance is ± 0.2 .
- RoHS compliant
- MSL 3 (Moisture Sensitivity Level 3)

- Land Pattern Example



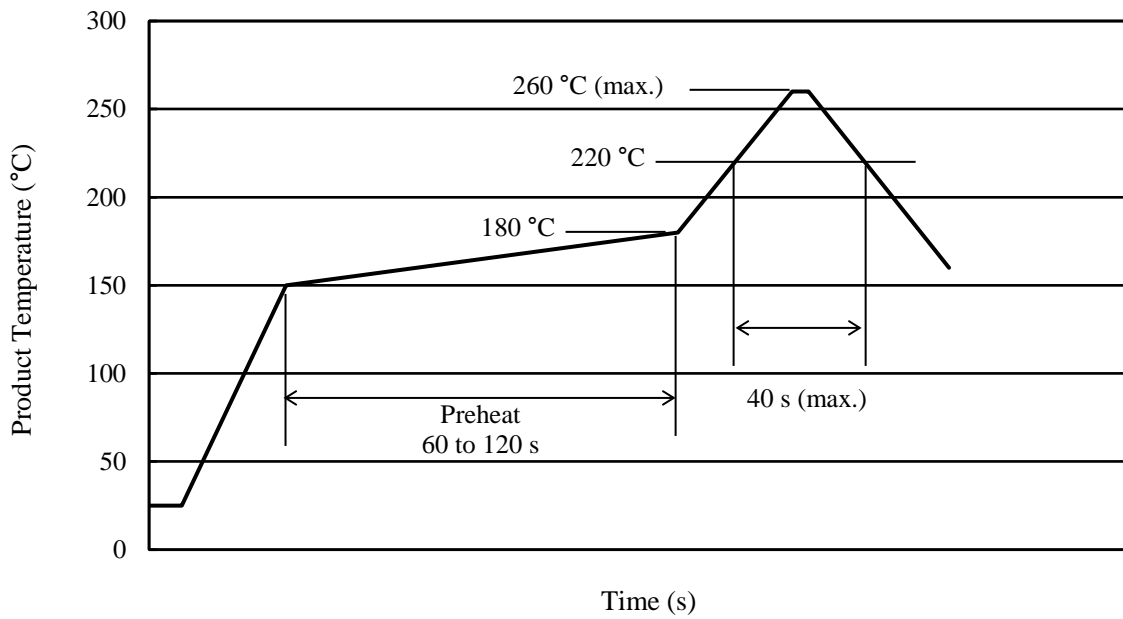
Unit: mm

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



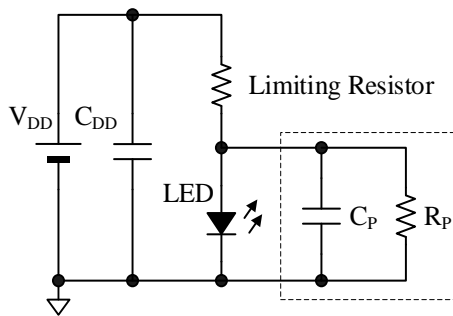
Precautions for Use

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

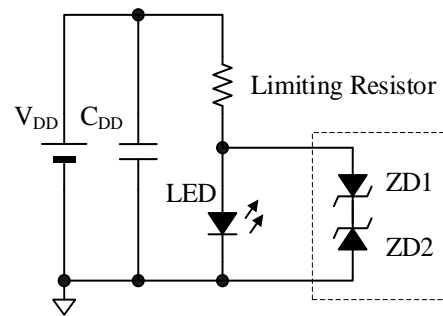
Because this product is sensitive to ESD, it is necessary to take adequate measures against ESD and surge for safe and proper handling. In particular, note that when a voltage that exceeds the absolute maximum rating is applied, the product may be damaged.

● **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 ≥ 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 the product comes into contact with material containing sulfide or is exposed to an atmosphere containing sulfide gas, the following may be caused: discoloration in the silver plating of the metal parts inside and outside the package; change in the brightness and tint of the original luminescent color.

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