

**$I_V = 200 \text{ mcd}$ ,  $V_F = 2.8 \text{ V}$**   
**Surface Mount LED**  
**SECE1WBA1YPT**



**Data Sheet**

**Description**

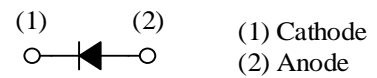
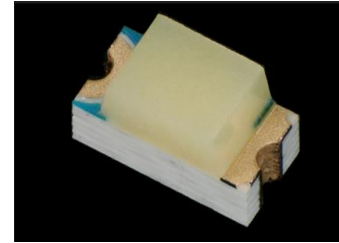
The SECE1WBA1YPT is a surface mount white LED.

**Package**

Dimensions (L × W × H): 1.6 × 0.8 × 1.1 mm

**Features**

- Color ----- White
- Luminous Intensity,  $I_V$ ----200 mcd (typ.) ( $I_F = 10 \text{ mA}$ )
- Forward Voltage,  $V_F$ ----- 2.8 V (typ.) ( $I_F = 10 \text{ mA}$ )
- Chromaticity (x, y)----- (0.267, 0.246)
- Viewing Angle,  $2\theta_{1/2}$ ----- 160 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability



**Applications**

- Automotive Interior
- Switch
- Indicator

Not to scale

## SECE1WBA1YPT

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		90	mW
Forward Current	$I_F$		25	mA
Forward Current Reduction	$\Delta I_F$	$T_A \geq 60\text{ }^\circ\text{C}$	-0.5	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 110	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-40 to 110	$^\circ\text{C}$
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	2.8	3.6	V
Reverse Current	$I_R$	$V_R = 3\text{ V}$	—	—	10	$\mu\text{A}$
Luminous Intensity	$I_V$	$I_F = 10\text{ mA}$	133	200	280	mcd
Chromaticity	x	$I_F = 10\text{ mA}$	—	0.267	—	—
	y		—	0.246	—	—
Viewing Angle	$2\theta_{1/2}$	$I_F = 10\text{ mA}$	—	160	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	450	—	$^\circ\text{C/W}$

### Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.00285	—	g

### Luminous Intensity Bins

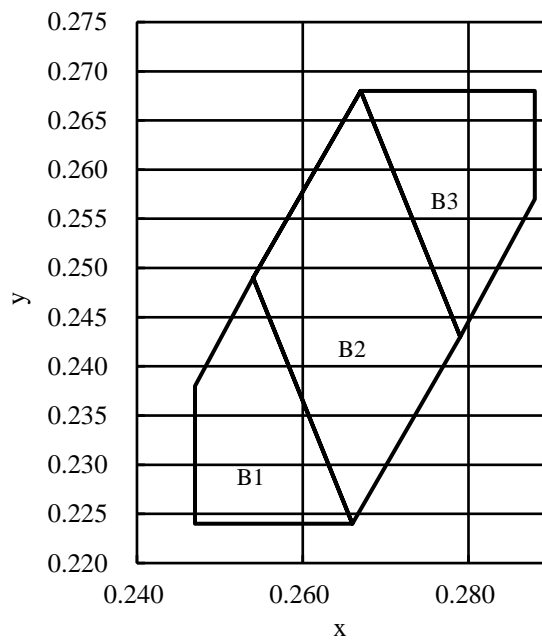
The values have a tolerance of  $\pm 10\%$ .

Bin Number	Luminous Intensity Range	Unit
C	133 to 200	mcd
D	200 to 280	mcd

**Chromaticity Bins**

The values have a tolerance of  $\pm 0.01$ .

Bin Number	x	y
B1	0.2540	0.2490
	0.2470	0.2380
	0.2470	0.2240
	0.2660	0.2240
B2	0.2670	0.2680
	0.2540	0.2490
	0.2660	0.2240
	0.2790	0.2430
B3	0.2670	0.2680
	0.2880	0.2680
	0.2880	0.2570
	0.2790	0.2430



Derating Curves

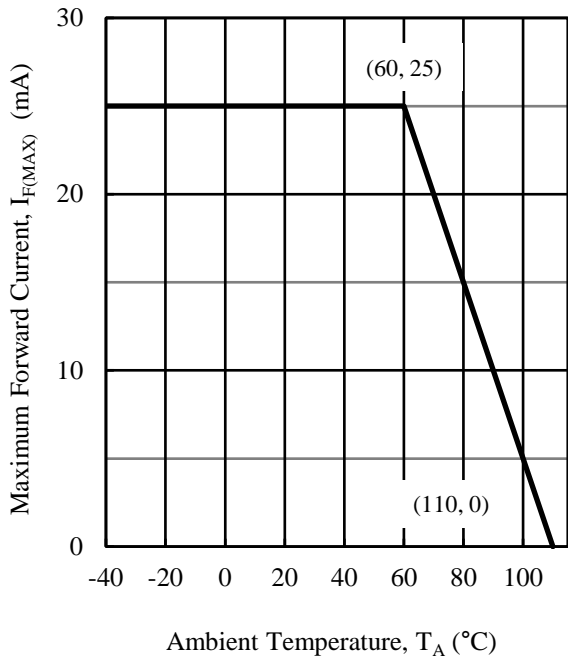


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Characteristic Curves

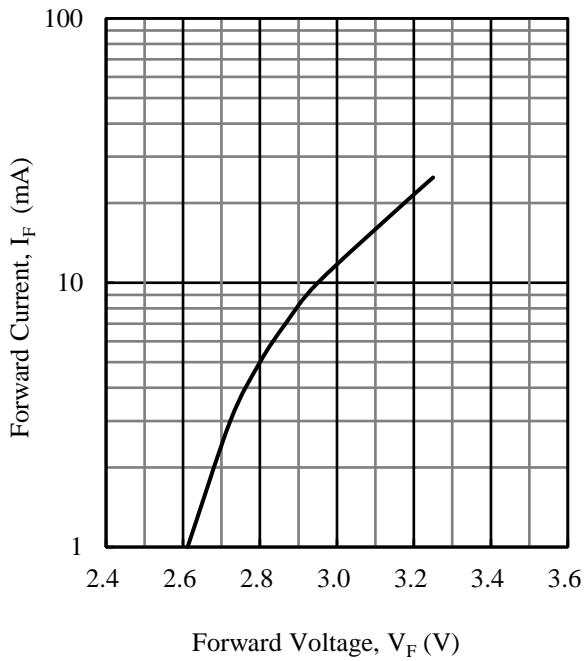


Figure 2.  $I_F$  vs.  $V_F$

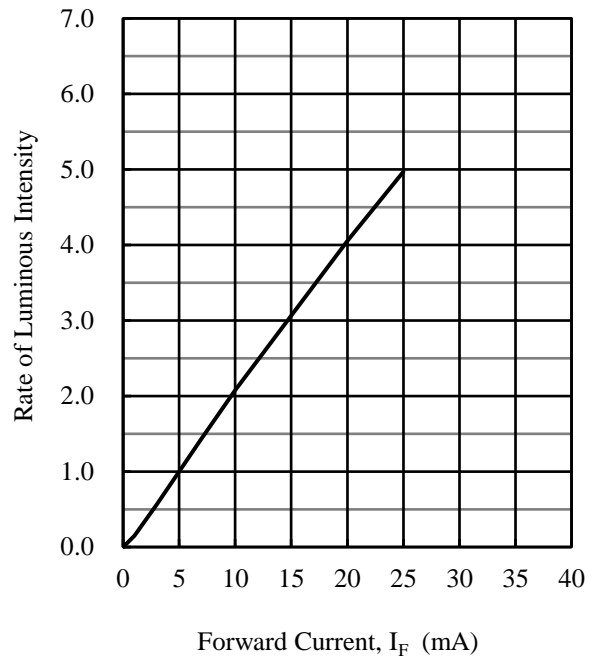


Figure 3. Rate of Luminous Intensity vs.  $I_F$

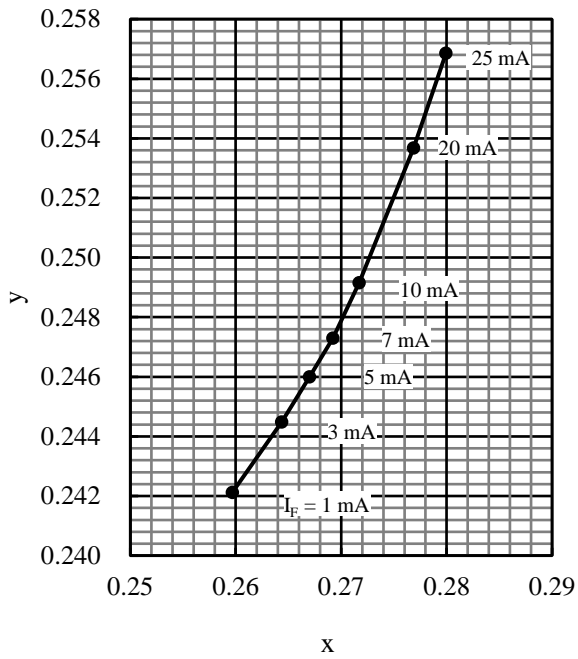


Figure 4.  $I_F$  vs. Chromaticity

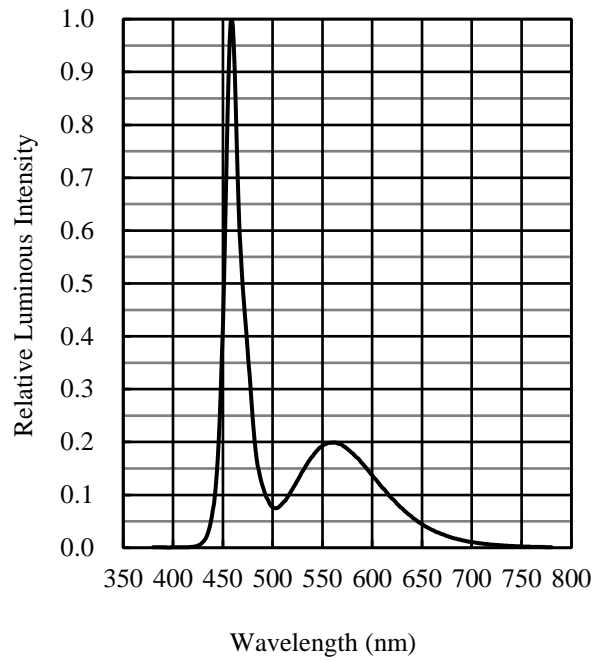


Figure 5. Spectrum

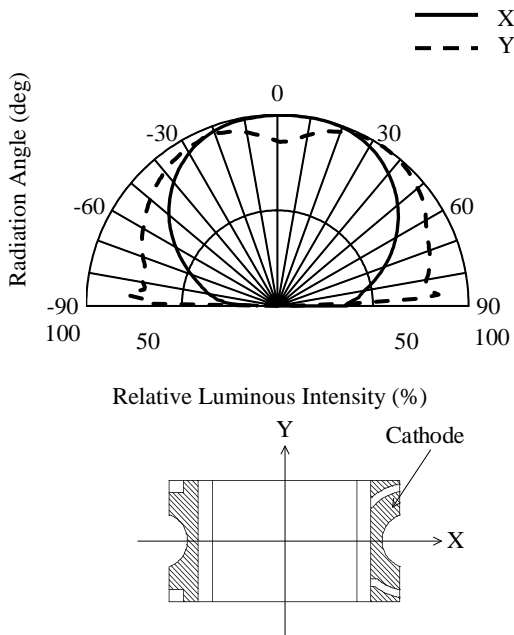
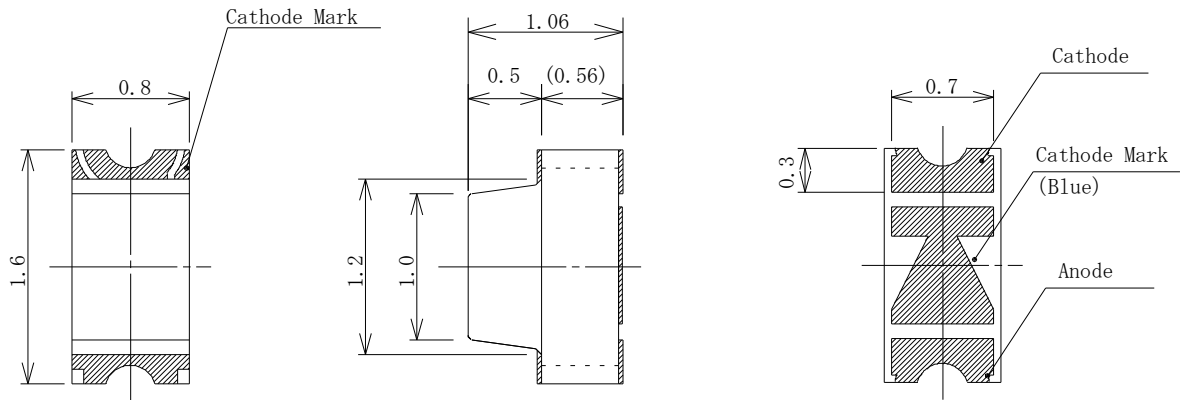


Figure 6. Directivity

# SECE1WBA1YPT

## Physical Dimensions

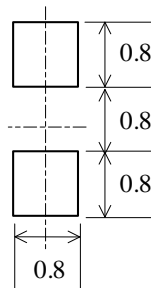
- Surface Mount (1.6 × 0.8 × 1.1 mm)



### NOTES:

- Dimensions in millimeters
- RoHS compliant
- MSL 3 (Moisture Sensitivity Level 3)

- Land Pattern Example



Unit: mm

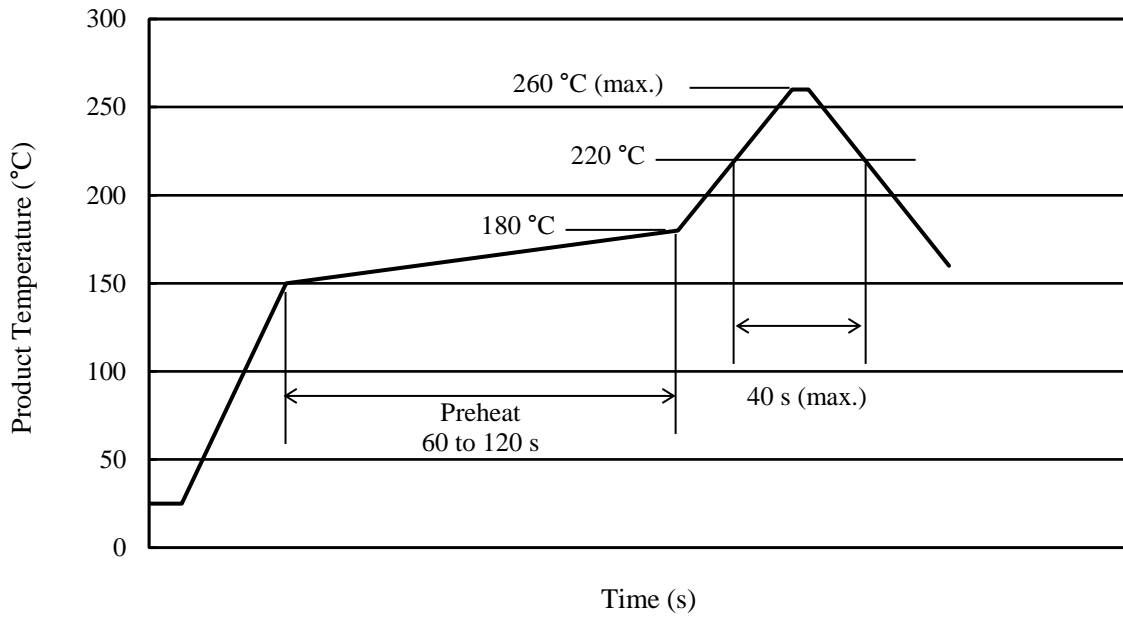
Figure 7. Land Pattern Example

### 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



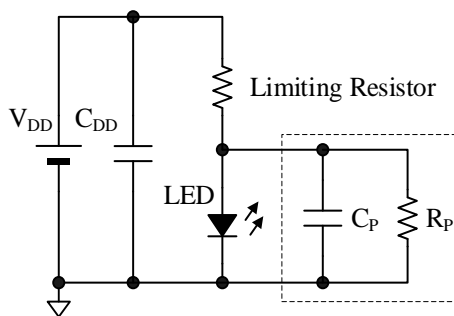
## Precautions for Use

### • Measures for Electrostatic Discharge (ESD)

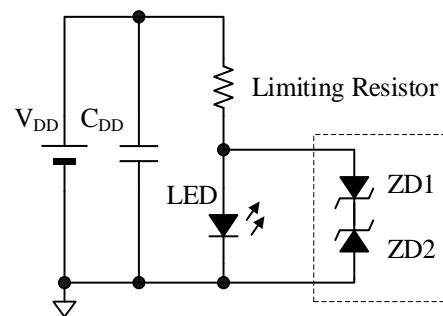
Because this product is sensitive to ESD, it is necessary to take adequate measures against ESD and surge for safe and proper handling. In particular, note that when a voltage that exceeds the absolute maximum rating is applied, the product may be damaged.

### • 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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