

$I_V = 130 \text{ mcd}$ ,  $V_F = 2.0 \text{ V}$   
Surface Mount LED  
**SECU190EC-S**



**Data Sheet**

**Description**

The SECU190EC-S is a surface mount orange LED.

**Package**

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

**Features**

- Color -----Orange
- Luminous Intensity,  $I_V$ ---- 130 mcd (typ.) ( $I_F = 20 \text{ mA}$ )
- Forward Voltage,  $V_F$ ----- 2.0 V (typ.) ( $I_F = 20 \text{ mA}$ )
- Dominant Wavelength,  $\lambda_D$  ----- 590 nm
- Viewing Angle,  $2\theta_{1/2}$ ----- 120 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability



Not to scale

**Applications**

- Switch
- Indicator
- Backlight

Not Recommended for New Designs

## SECU190EC-S

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		75	mW
Forward Current	$I_F$		30	mA
Forward Current Reduction	$\Delta I_F$	$T_A \geq 25\text{ }^\circ\text{C}$	-0.167	mA/ $^\circ\text{C}$
Pulse Forward Current	$I_{FP}$	Frequency = 1 kHz Pulse Width $\leq 100\text{ }\mu\text{s}$	70	mA
Reverse Voltage	$V_R$		5	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	$V_F$	$I_F = 20\text{ mA}$	—	2.0	2.5	V
Reverse Current	$I_R$	$V_R = 5\text{ V}$	—	—	10	$\mu\text{A}$
Luminous Intensity	$I_V$	$I_F = 20\text{ mA}$	74	130	237	mcd
Dominant Wavelength	$\lambda_D$	$I_F = 20\text{ mA}$	587	590	593	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 20\text{ mA}$	—	120	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	220	—	$^\circ\text{C}/\text{W}$

### Luminous Intensity Bins

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

Bin Number	Luminous Intensity Range	Unit
C	75 to 100	mcd
D	100 to 133	mcd
E	133 to 178	mcd
F	178 to 237	mcd

### Wavelength Bins

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

Bin Number	Wavelength Range	Unit
Y	587 to 590	nm
R	590 to 593	nm

Derating Curves

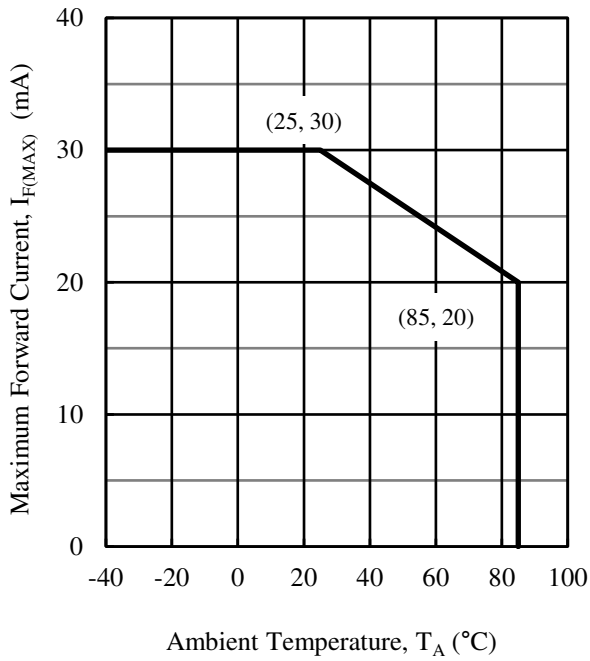


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Performance Curves

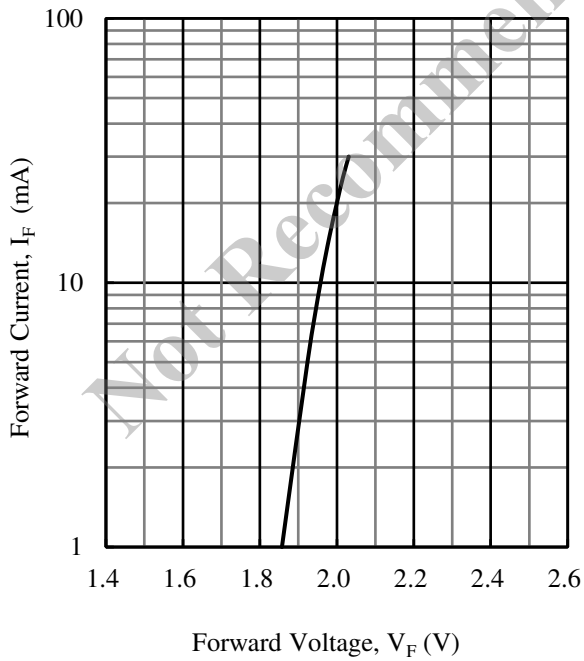


Figure 2.  $I_F$  vs.  $V_F$

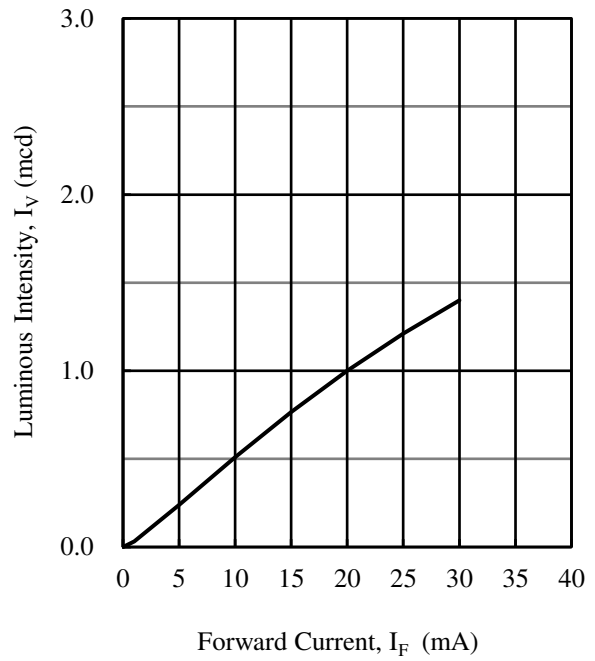


Figure 3.  $I_V$  vs.  $I_F$

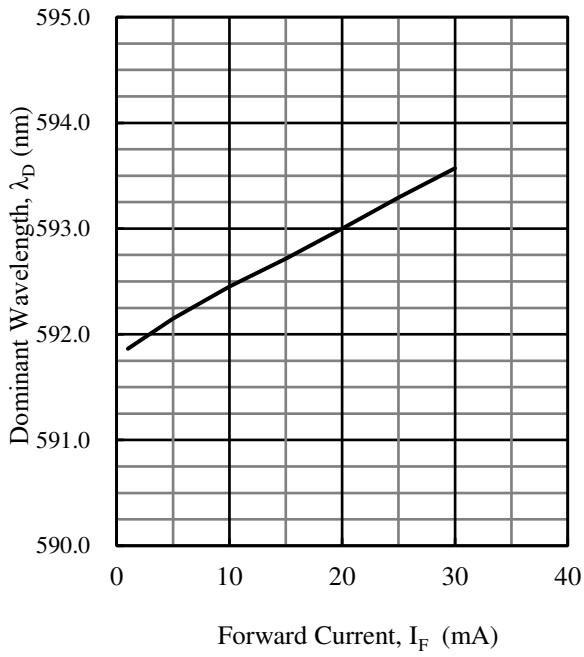


Figure 4.  $\lambda_D$  vs.  $I_F$

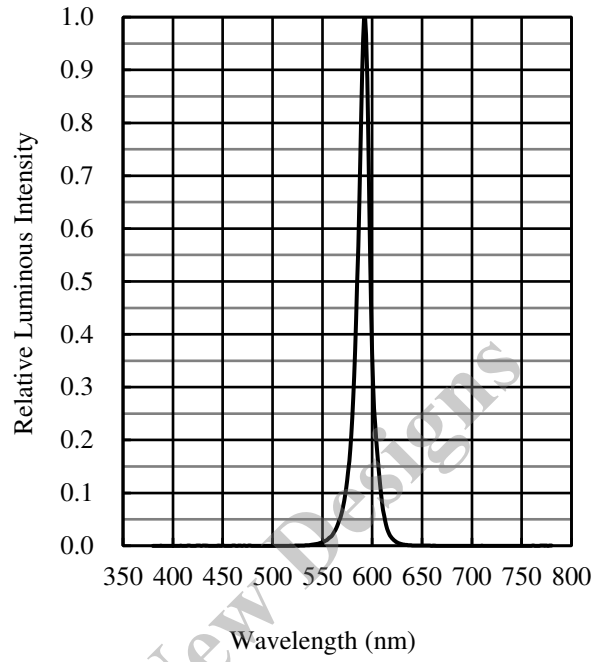


Figure 5. Spectrum

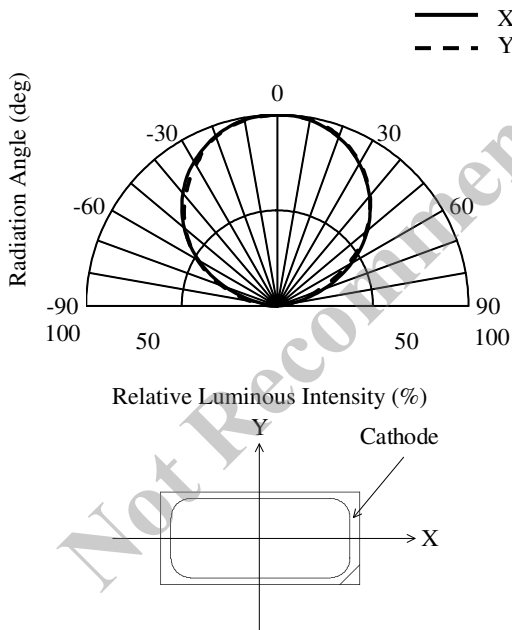
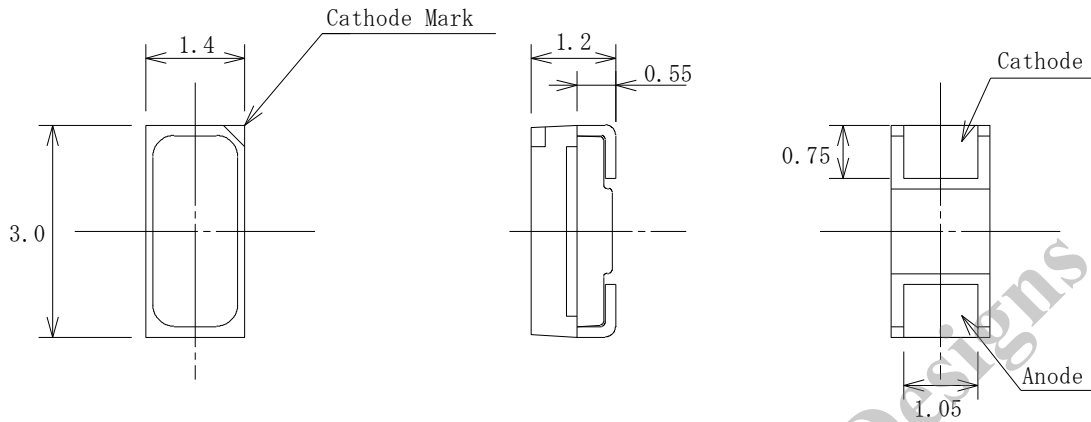


Figure 6. Directivity

# SECU190EC-S

## Physical Dimensions

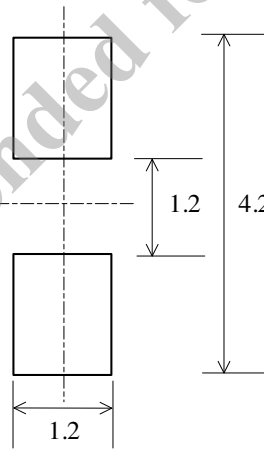
- Surface Mount (3.0 × 1.4 × 1.2 mm)



### NOTES:

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

- Land Pattern Example



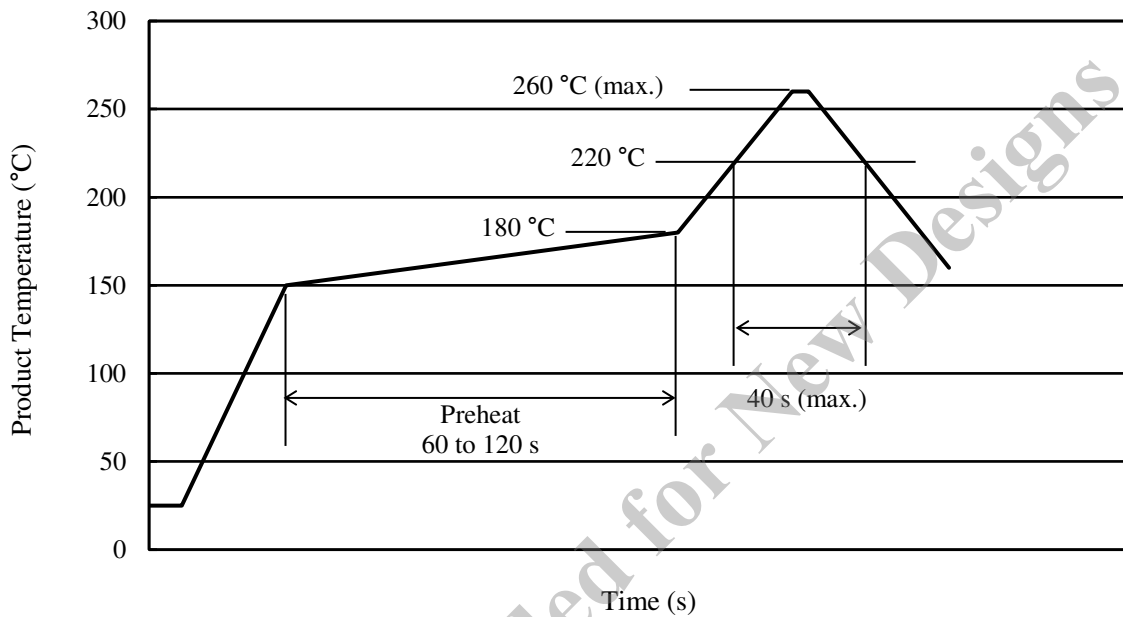
Unit: mm

**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**

- 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.
- When the product is used in applications where high-and-low current regulations are repeated for a long time, its luminous intensity lifetime may be shortened in low-current settings. Therefore, thorough verifications are required beforehand.
- As the product uses gallium arsenide (GaAs), the following must be considered dangerous and be avoided: burning or crushing the product; inhaling or swallowing the liquid or gas generated by any chemical treatment on the product.

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