

$I_V = 450 \text{ mcd}$ ,  $V_F = 2.0 \text{ V}$   
Surface Mount LED  
**SECU1211C-NH20**

**Description**

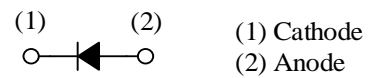
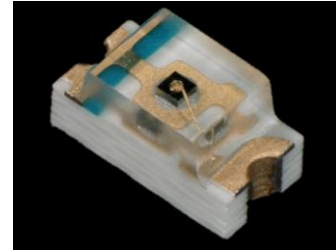
The SECU1211C-NH20 is a surface mount red LED.

**Features**

- Color -----Red
- Luminous Intensity,  $I_V$ ----450 mcd (typ.) ( $I_F = 20 \text{ mA}$ )
- Forward Voltage,  $V_F$ ----- 2.0 V (typ.) ( $I_F = 20 \text{ mA}$ )
- Dominant Wavelength,  $\lambda_D$  ----- 622 nm
- Viewing Angle,  $2\theta_{1/2}$ ----- 140 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

**Package**

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



Not to scale

**Applications**

- Automotive Interior
- Switch
- Indicator

## SECU1211C-NH20

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		84	mW
Forward Current	$I_F$		35	mA
Forward Current Reduction	$\Delta I_F$	$T_A \geq 60\text{ }^\circ\text{C}$	-1	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	2.4	V
Reverse Current	$I_R$	$V_R = 5\text{ V}$	—	—	10	$\mu\text{A}$
Luminous Intensity	$I_V$	$I_F = 20\text{ mA}$	417	450	591	mcd
Dominant Wavelength*	$\lambda_D$	$I_F = 20\text{ mA}$	620	622	632	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 20\text{ mA}$	—	140	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	340	—	$^\circ\text{C/W}$

### Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.00229	—	g

### Luminous Intensity Bins

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

Bin Number	Luminous Intensity Range	Unit
C	417 to 450	mcd
D	450 to 591	mcd

\* The values have a tolerance of  $\pm 1\text{ nm}$ .

Derating Curves

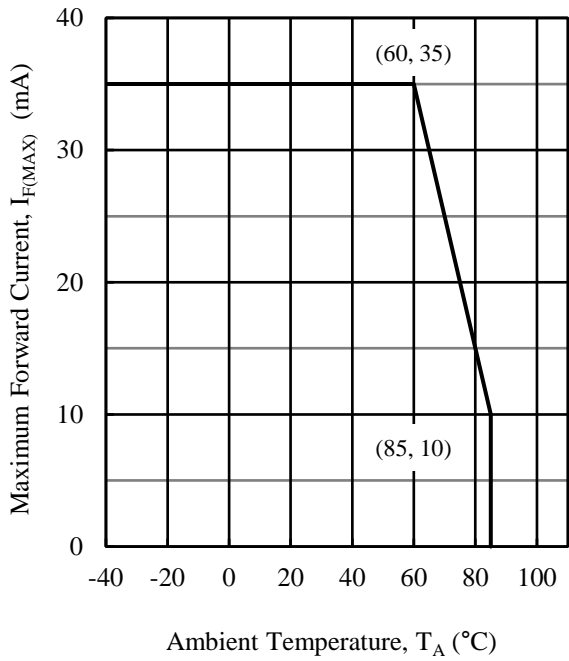


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Characteristic Curves

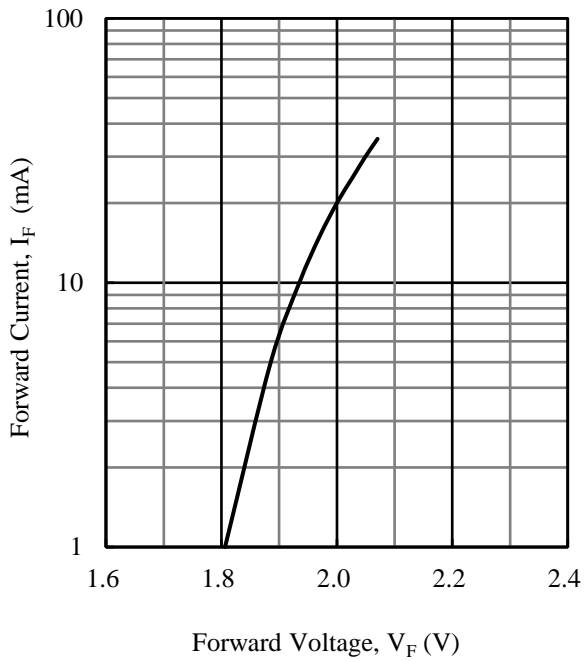


Figure 2.  $I_F$  vs.  $V_F$

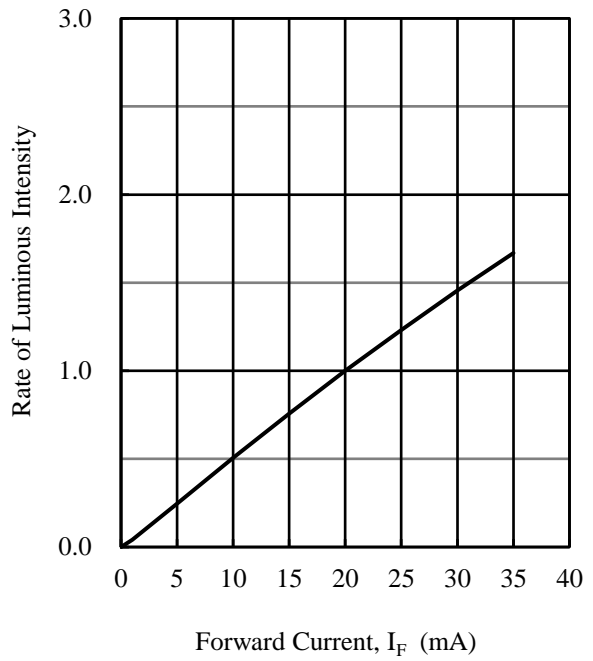


Figure 3. Rate of Luminous Intensity vs.  $I_F$

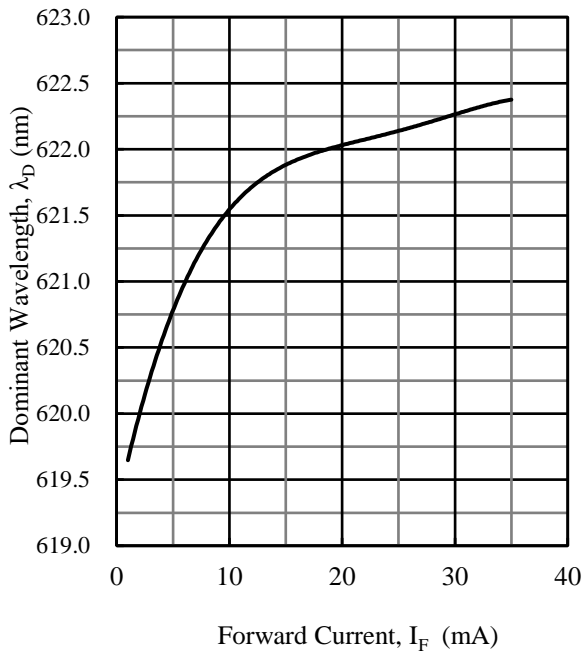


Figure 4.  $\lambda_D$  vs.  $I_F$

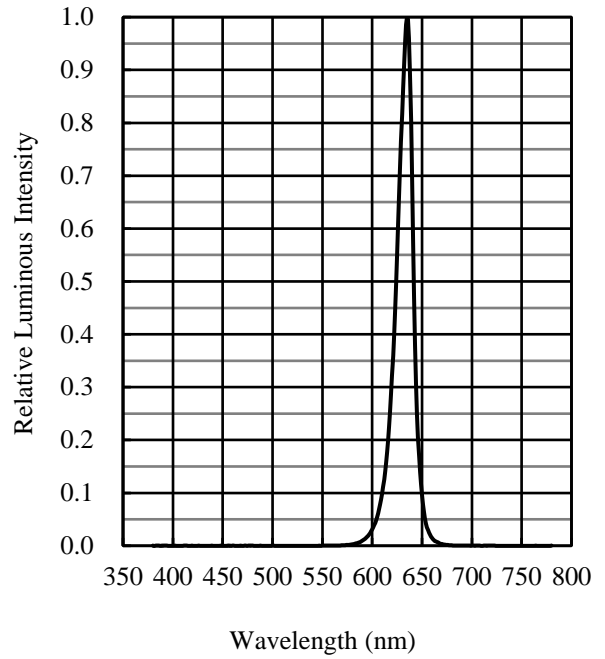


Figure 5. Spectrum

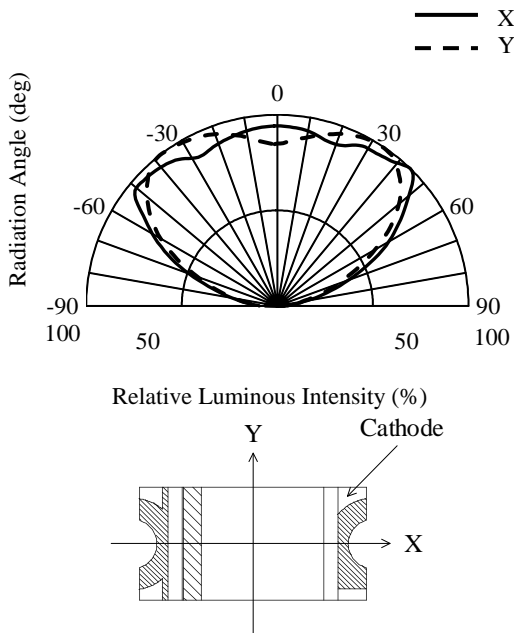
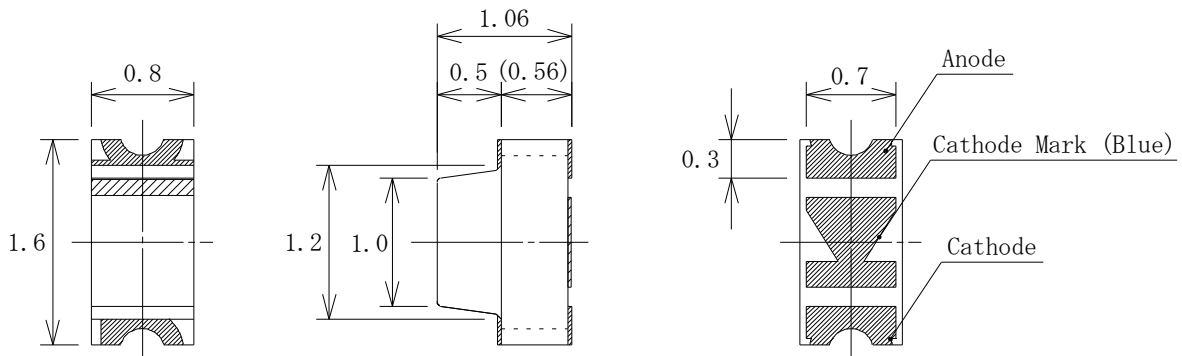


Figure 6. Directivity

# SECU1211C-NH20

## Physical Dimensions

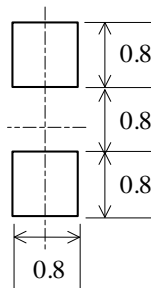
- Surface Mount ( $1.6 \times 0.8 \times 1.1$  mm)



### NOTES:

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

- Land Pattern Example



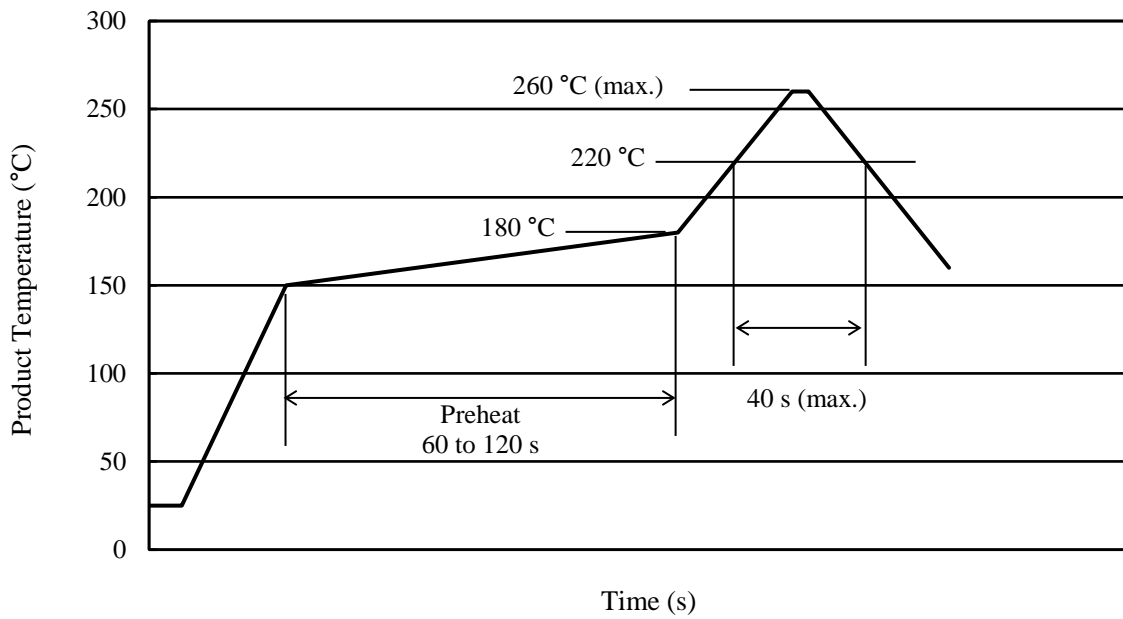
Unit: mm

**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

- 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.
- 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.
- When using the product, care should be taken not to apply a voltage in the opposite direction of the LED.

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