

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

Description

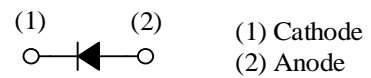
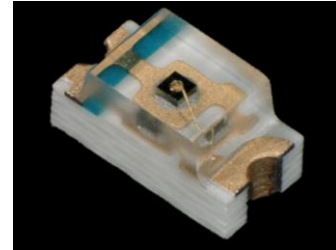
The SECU1211C-NH20 is a surface mount red LED.

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, λ_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 | ΔI_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 | μA |
| Luminous Intensity | I_V | $I_F = 20\text{ mA}$ | 417 | 450 | 591 | mcd |
| Dominant Wavelength* | λ_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 | — | $^\circ\text{C}/\text{W}$ |

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

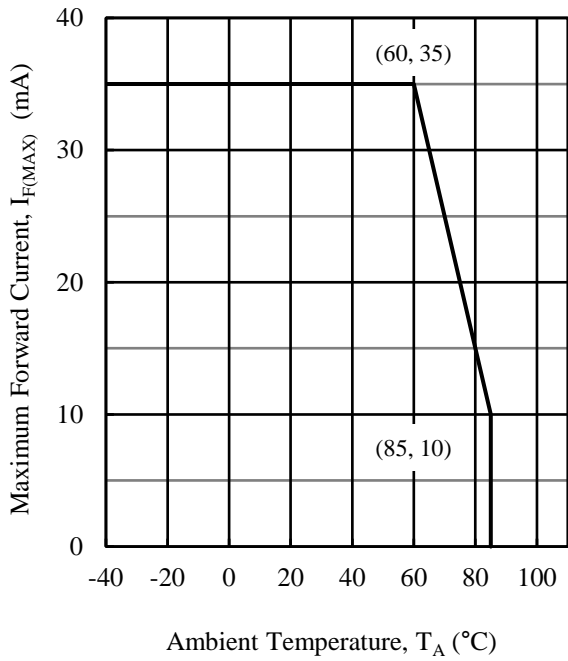


Figure 1. $I_{F(MAX)}$ vs. T_A

Characteristic Curves

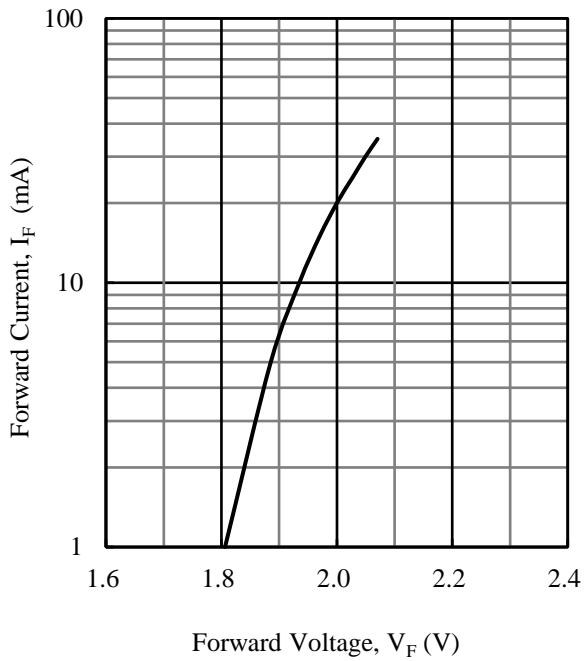


Figure 2. I_F vs. V_F

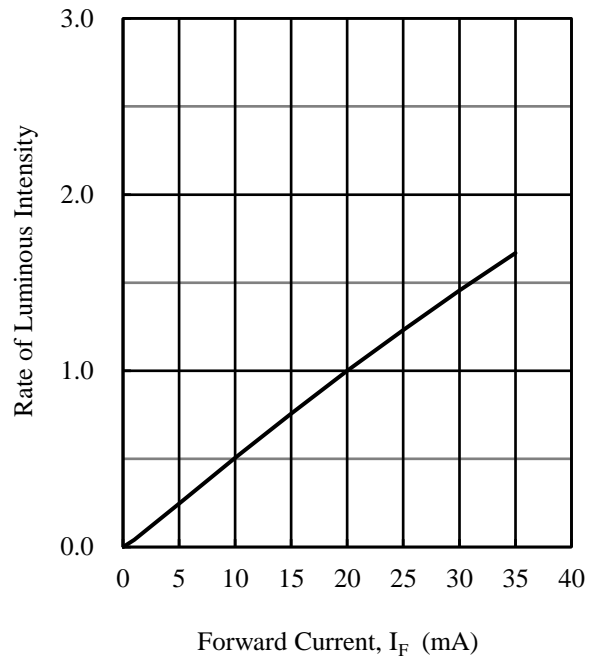


Figure 3. Rate of Luminous Intensity vs. I_F

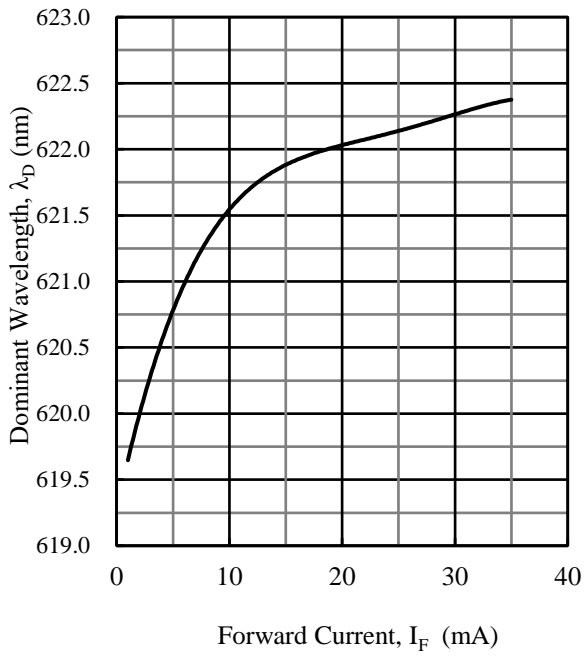


Figure 4. λ_D vs. I_F

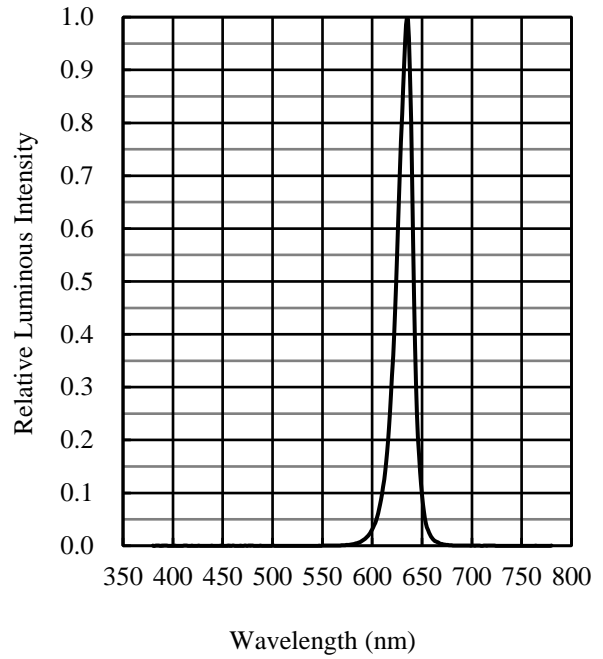


Figure 5. Spectrum

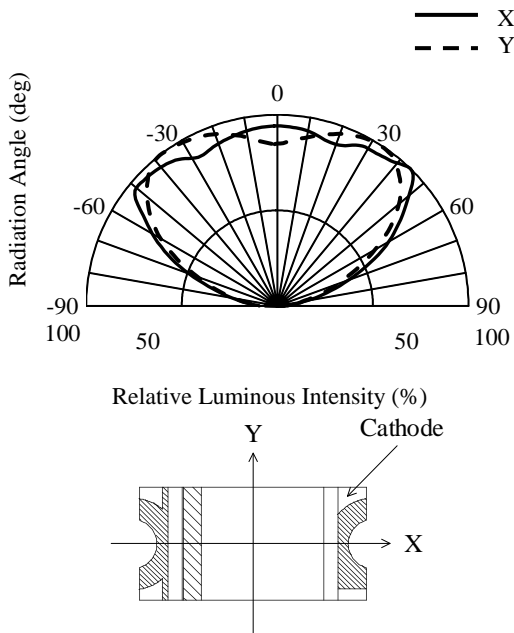
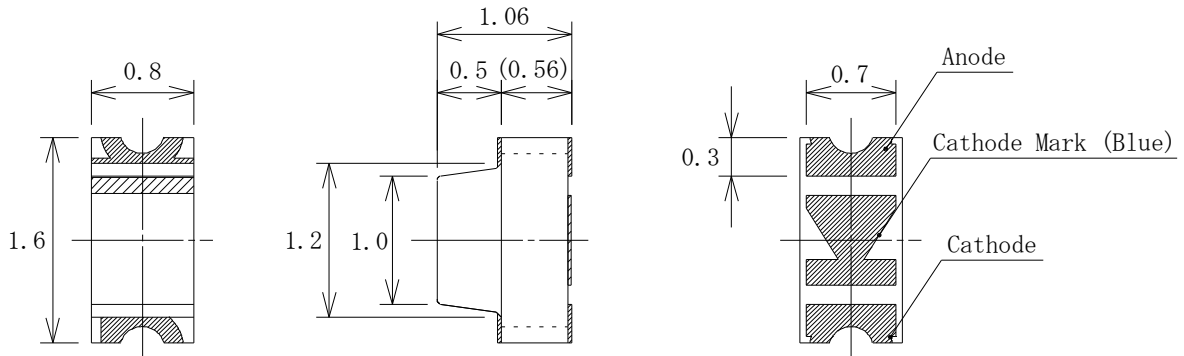


Figure 6. Directivity

SECU1211C-NH20

Physical Dimensions

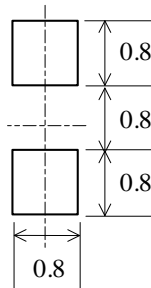
- Surface Mount (1.6 × 0.8 × 1.1 mm)



NOTES:

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

- Land Pattern Example



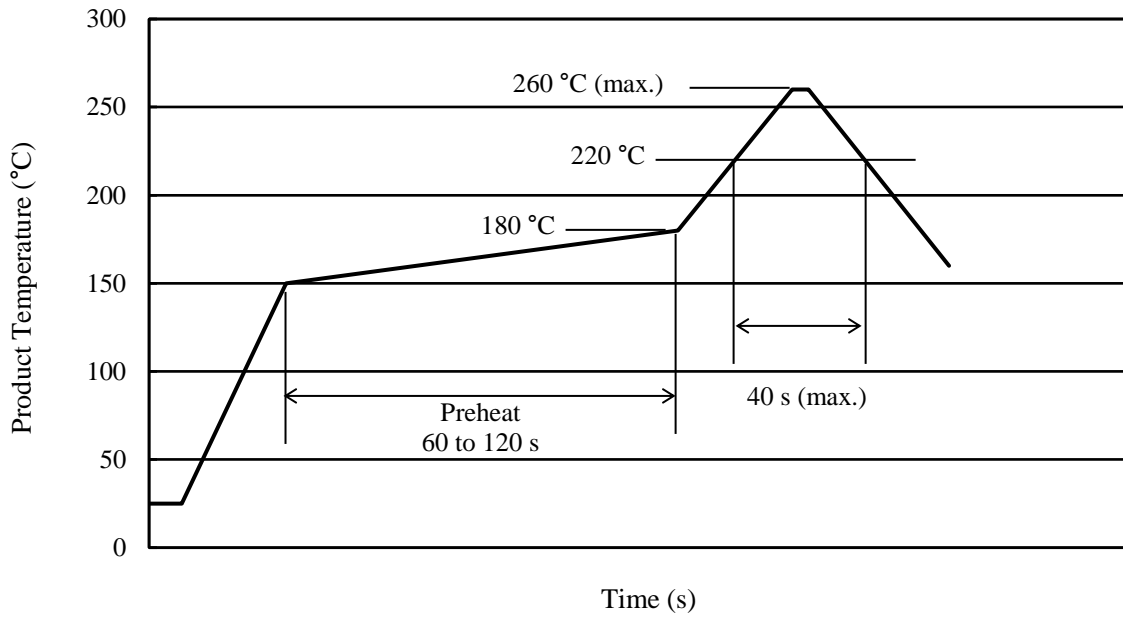
Unit: mm

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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