

$I_V = 200 \text{ mcd}$, $V_F = 2.0 \text{ V}$
Surface Mount LED
SECU1R0EC-SA



Data Sheet

Description

The SECU1R0EC-SA is a surface mount amber LED.

Package

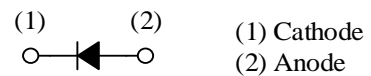
Dimensions (L × W × H): 3.0 × 1.4 × 1.2 mm

Features

- Color ----- Amber
- Luminous Intensity, I_V --- 200 mcd (typ.) ($I_F = 20 \text{ mA}$)
- Forward Voltage, V_F ----- 2.0 V (typ.) ($I_F = 20 \text{ mA}$)
- Dominant Wavelength, λ_D ----- 613 nm
- Viewing Angle, $2\theta_{1/2}$ ----- 120 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

Applications

- Automotive Interior
- Switch
- Indicator



Not to scale

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	ΔI_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	μA
Luminous Intensity	I_V	$I_F = 20\text{ mA}$	167	200	297	mcd
Dominant Wavelength	λ_D	$I_F = 20\text{ mA}$	—	613	—	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 20\text{ mA}$	—	120	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	220	—	$^{\circ}\text{C/W}$

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.0115	—	g

Luminous Intensity Bins

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

Bin Number	Luminous Intensity Range	Unit
D	167 to 223	mcd
E	223 to 297	mcd

Derating Curves

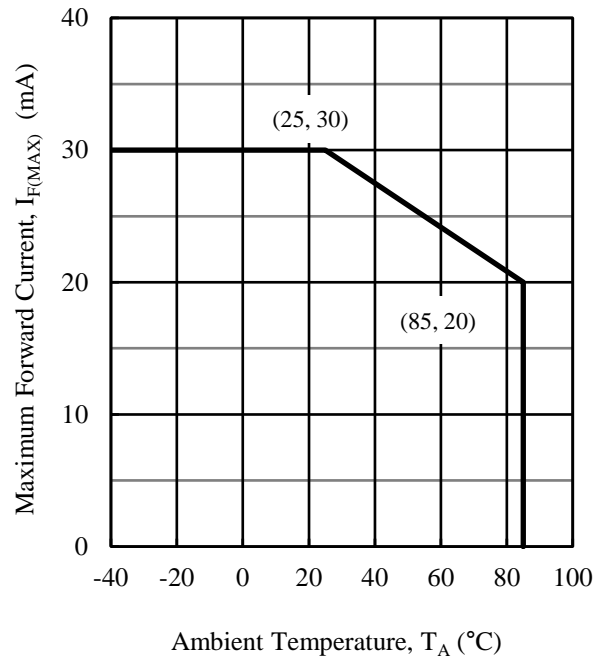


Figure 1. $I_{F(MAX)}$ vs. T_A

Performance Curves

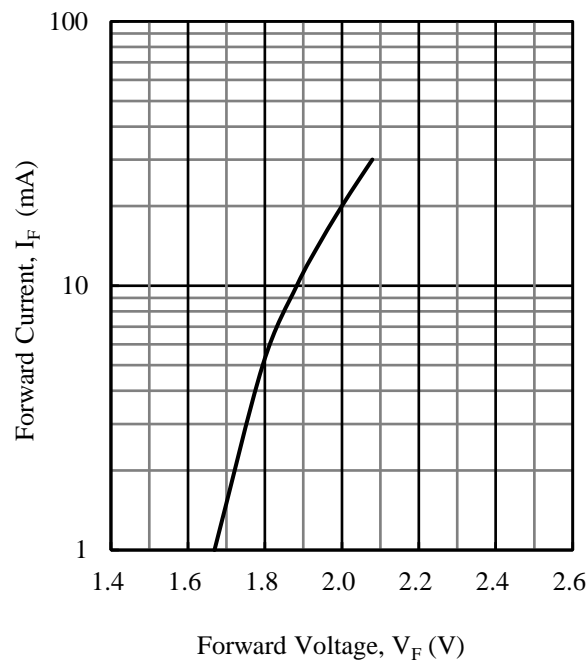


Figure 2. I_F vs. V_F

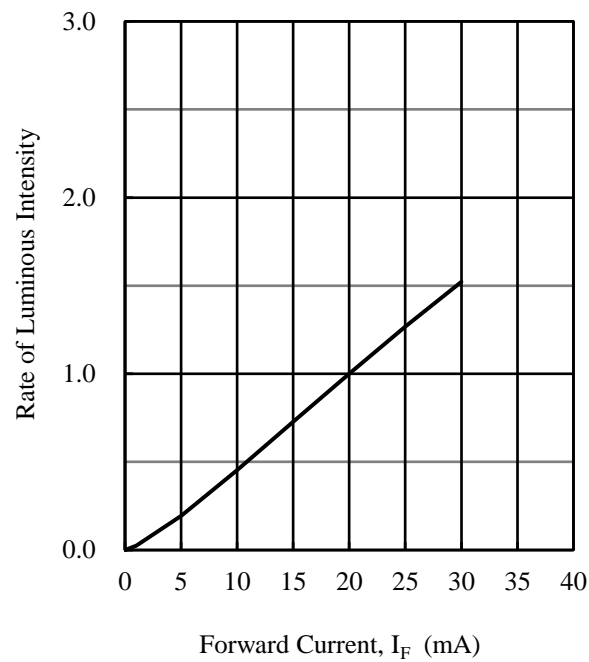


Figure 3. Rate of Luminous Intensity vs. I_F

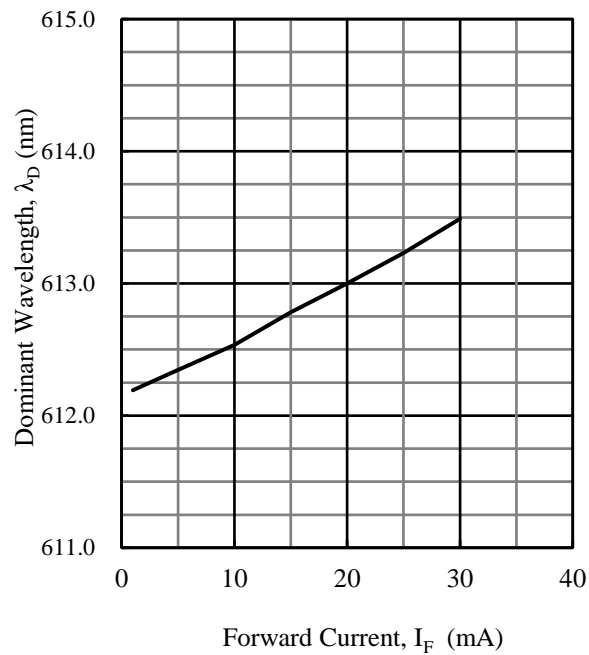


Figure 4. λ_D vs. I_F

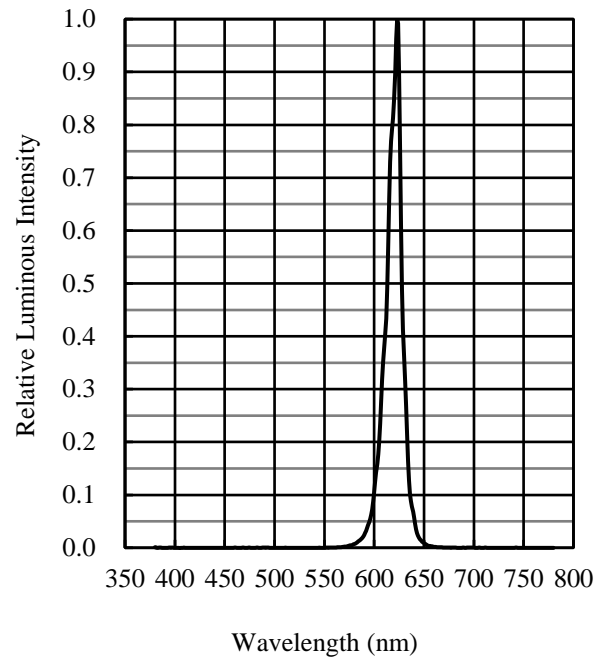


Figure 5. Spectrum

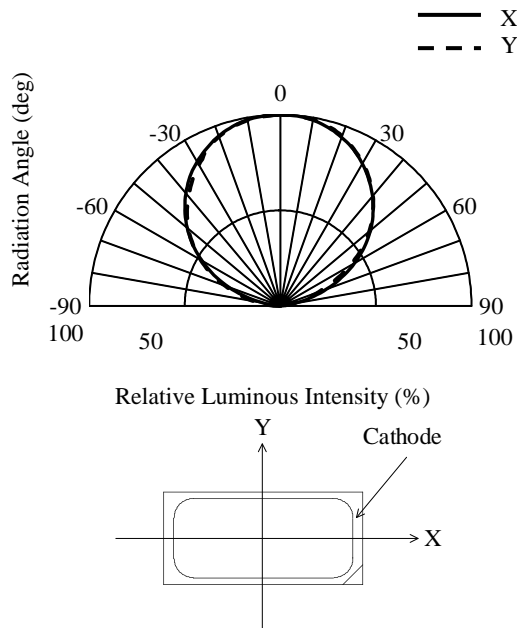
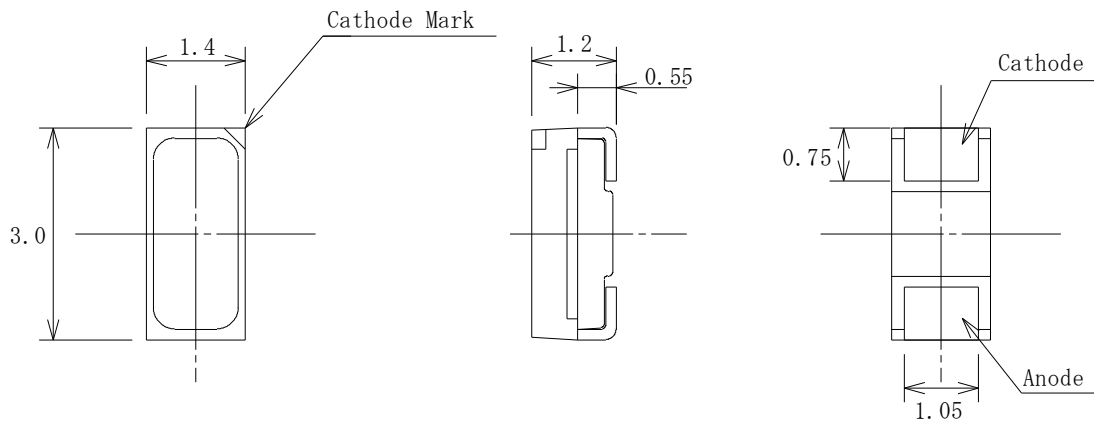


Figure 6. Directivity

Physical Dimensions

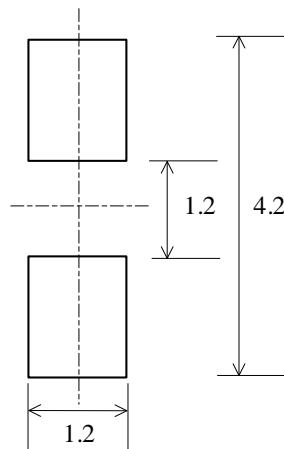
• Surface Mount ($3.0 \times 1.4 \times 1.2$ mm)



NOTES:

- Dimensions in millimeters
- Tolerance: ± 0.2 mm
- RoHS compliant
- MSL 3 (Moisture Sensitivity Level 3)

• Land Pattern Example



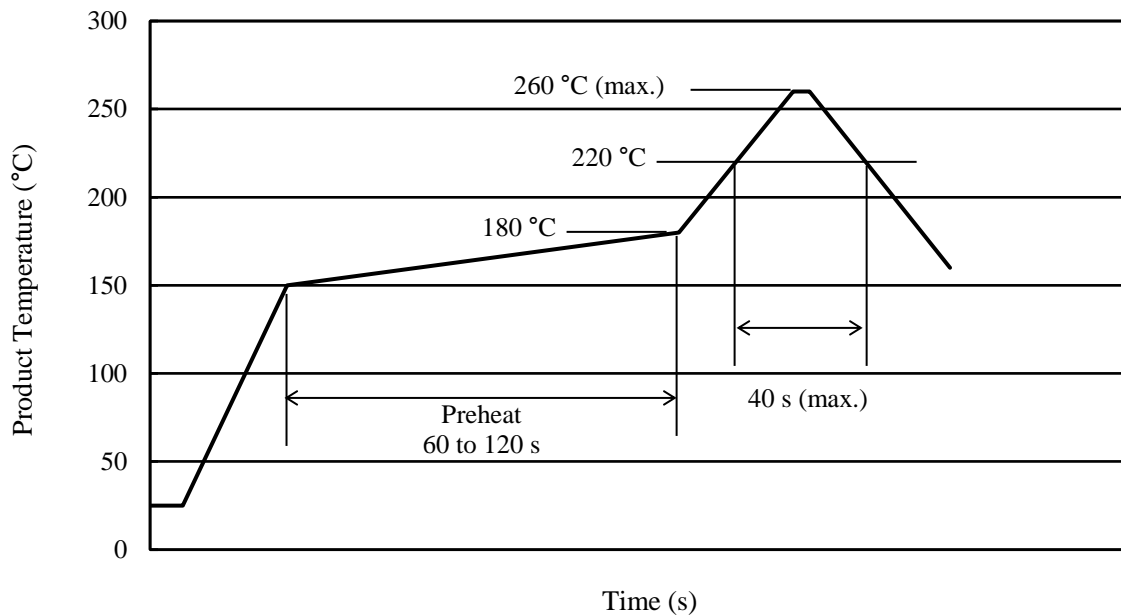
Unit: mm

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

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