

$I_V = 160$ mcd, $V_F = 2.0$ V
Surface Mount LED
SECU1R11C-S20

Description

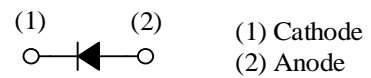
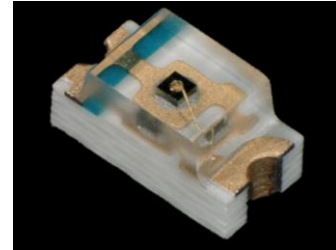
The SECU1R11C-S20 is a surface mount red LED.

Features

- Color -----Red
- Luminous Intensity, I_V ----160 mcd (typ.) ($I_F = 20$ mA)
- Forward Voltage, V_F ----- 2.0 V (typ.) ($I_F = 20$ mA)
- Dominant Wavelength, λ_D ----- 613 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

SECU1R11C-S20

Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	P_D		72	mW
Forward Current	I_F		30	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		115	$^\circ\text{C}$

Electrical / Optical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 20\text{ mA}$	1.8	2.0	2.4	V
Reverse Current	I_R	$V_R = 5\text{ V}$	—	—	10	μA
Luminous Intensity	I_V	$I_F = 20\text{ mA}$	131	160	240	mcd
Dominant Wavelength*	λ_D	$I_F = 20\text{ mA}$	611	613	616	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		—	0.00224	—	g

Luminous Intensity Bins

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

Bin Number	Luminous Intensity Range	Unit
D	131 to 196	mcd
E	196 to 240	mcd

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

Derating Curves

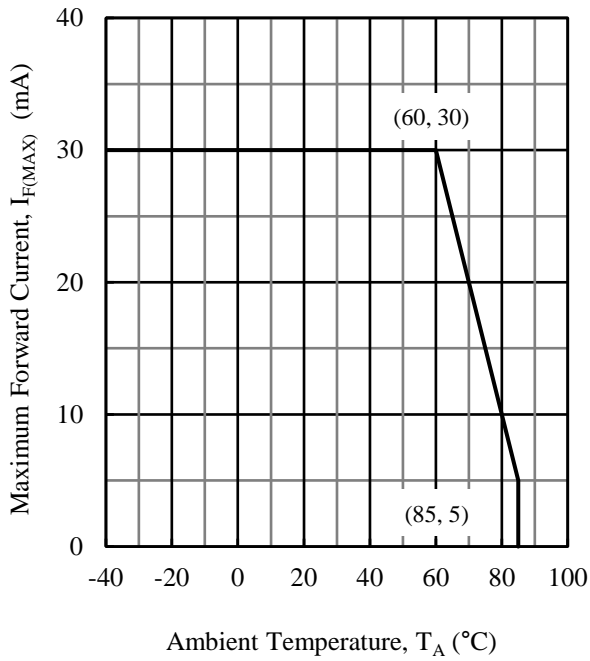


Figure 1. $I_{F(MAX)}$ vs. T_A

Characteristic Curves

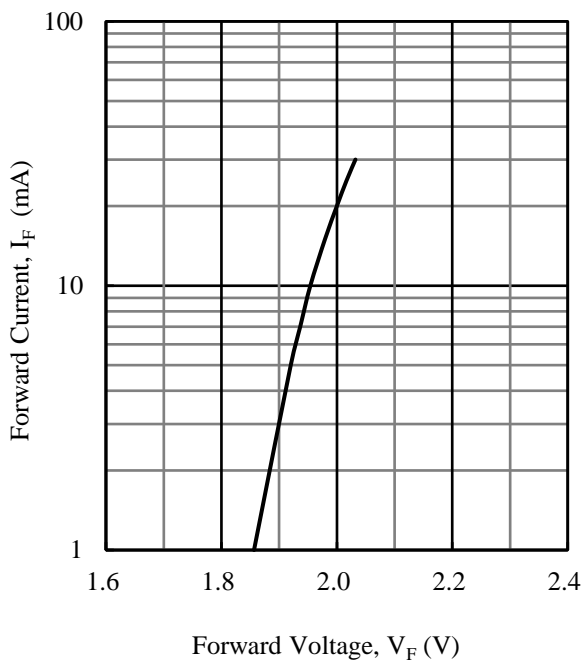


Figure 2. I_F vs. V_F

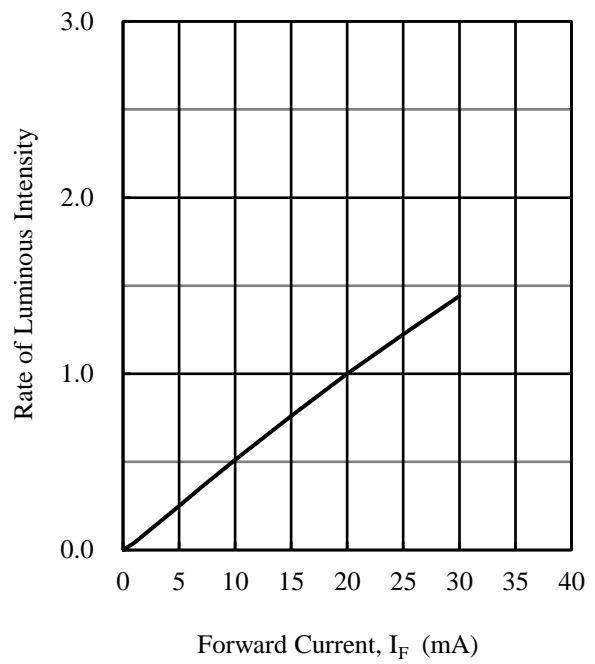


Figure 3. Rate of Luminous Intensity vs. I_F

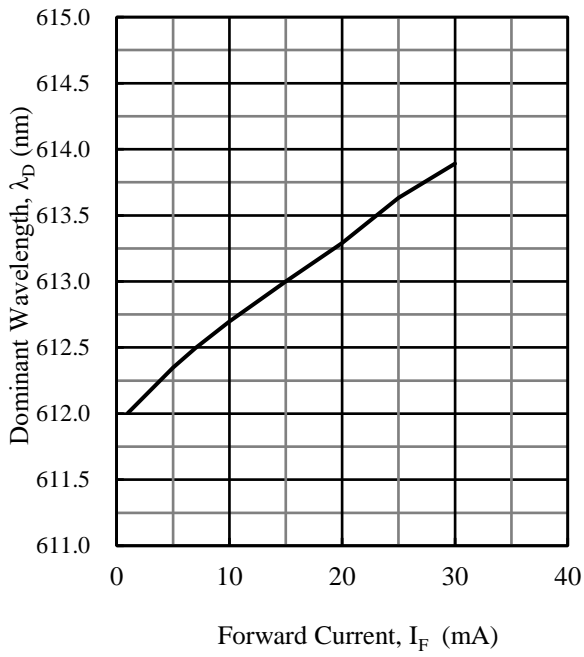


Figure 4. λ_D vs. I_F

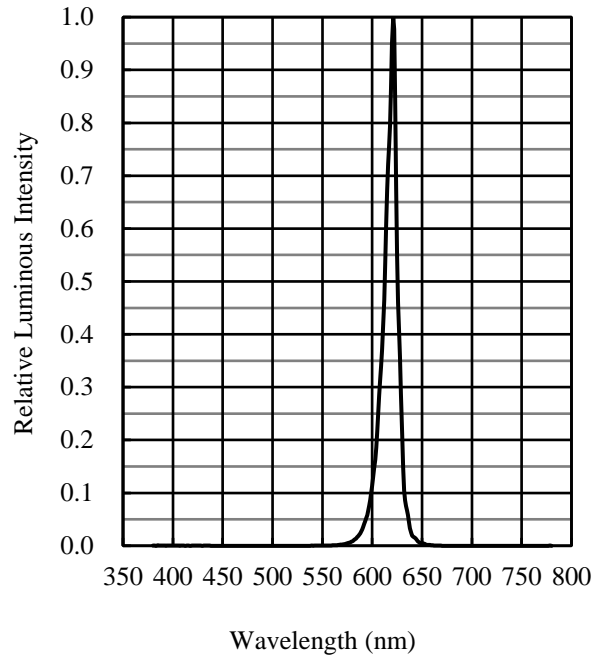


Figure 5. Spectrum

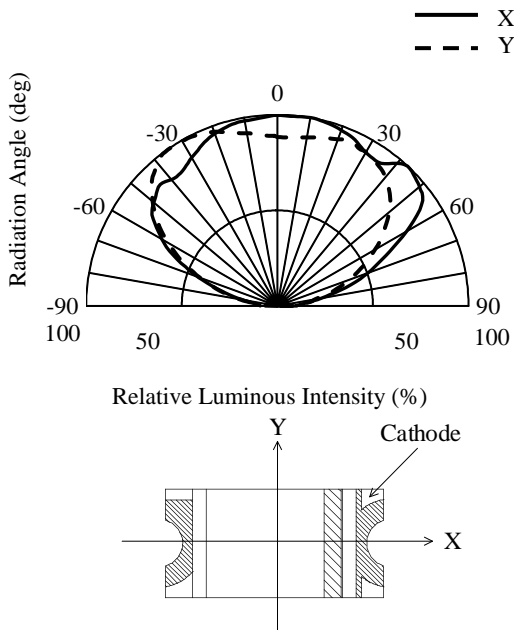
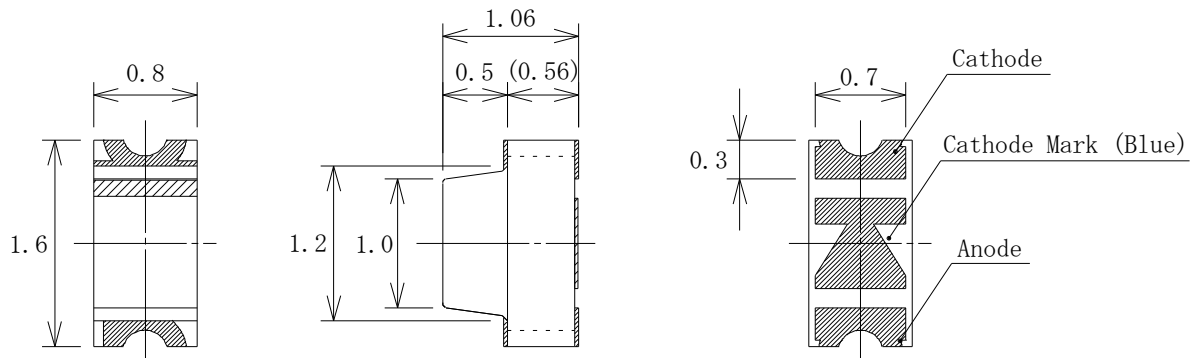


Figure 6. Directivity

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Physical Dimensions

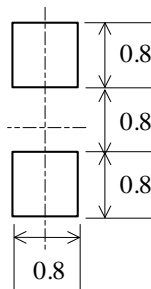
- Surface Mount (1.6 × 0.8 × 1.1 mm)



NOTES:

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

- Land Pattern Example



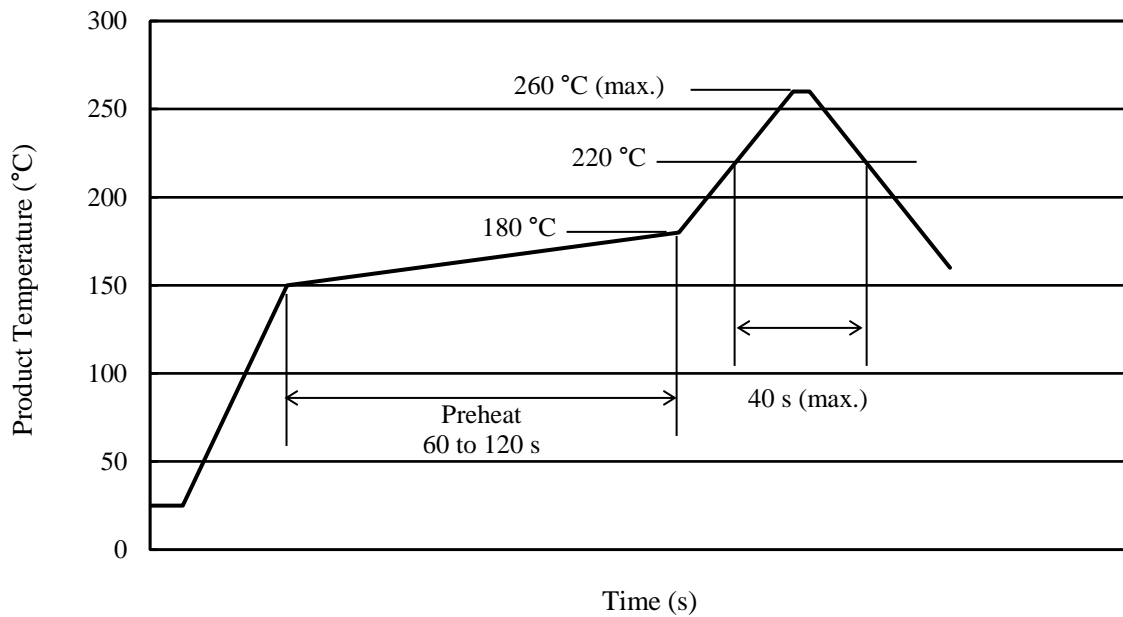
Unit: mm

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.
- 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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