

$\Phi_V = 3.3 \text{ lm}$ ,  $V_F = 2.20 \text{ V}$   
Surface Mount LED  
**SEP161424T**

## Description

The SEP161424T is a surface mount deep red LED. The product is suitable for LED lighting systems including light sources for inspection and decoration.

## Features

- Color-----Deep Red
- Luminous Flux,  $\Phi_V$  -----  $3.3 \text{ lm}$  (typ.) ( $I_F = 50 \text{ mA}$ )
- Forward Voltage,  $V_F$ ----- $2.20 \text{ V}$  (typ.) ( $I_F = 50 \text{ mA}$ )
- Peak Wavelength,  $\lambda_p$ -----  $652 \text{ nm}$
- Viewing Angle,  $2\theta_{1/2}$ -----  $120 \text{ deg}$
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

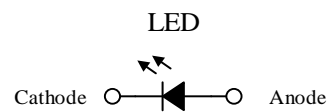
## Applications

LED lighting for industrial equipment, houses, and facilities, such as:

- Light Source for Inspection
- Light Source for Decoration

## Package

Dimensions (L × W × H):  $3.5 \times 2.8 \times 1.2 \text{ mm}$



Not to scale

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		140	mW
Forward Current	$I_F$		60	mA
Reverse Voltage	$V_R$		3	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	$V_F$	$I_F = 50\text{ mA}$	2.05	2.20	2.45	V
Reverse Current	$I_R$	$V_R = 3\text{ V}$	—	—	10	$\mu\text{A}$
Radiation Intensity	$I_e$	$I_F = 50\text{ mA}$	11.5	13.0	16.1	mW/sr
Luminous Flux	$\Phi_V$	$I_F = 50\text{ mA}$	—	3.3	—	lm
Peak Wavelength	$\lambda_P$	$I_F = 50\text{ mA}$	649	652	658	nm
Viewing Angle	$2\theta_{1/2}$	$I_F = 50\text{ mA}$	—	120	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	150	—	$^{\circ}\text{C/W}$

**Radiation Intensity Bins**

The values have a tolerance of  $\pm 10\%$ .

Bin Number	Radiation Intensity Range	Unit
1	11.5 to 12.1	mW/sr
2	12.1 to 12.7	mW/sr
3	12.7 to 13.3	mW/sr
4	13.3 to 13.9	mW/sr
5	13.9 to 14.6	mW/sr
6	14.6 to 15.4	mW/sr
7	15.4 to 16.1	mW/sr

**V<sub>F</sub> Bins**

The values have a tolerance of  $\pm 3\%$ .

Bin Number	V <sub>F</sub> Range	Unit
0A	2.05 to 2.25	V
0B	2.25 to 2.45	V

**Wavelength Bins**

The values have a tolerance of  $\pm 2\%$ .

Bin Number	Wavelength Range	Unit
DR	649 to 658	nm

Derating Curves

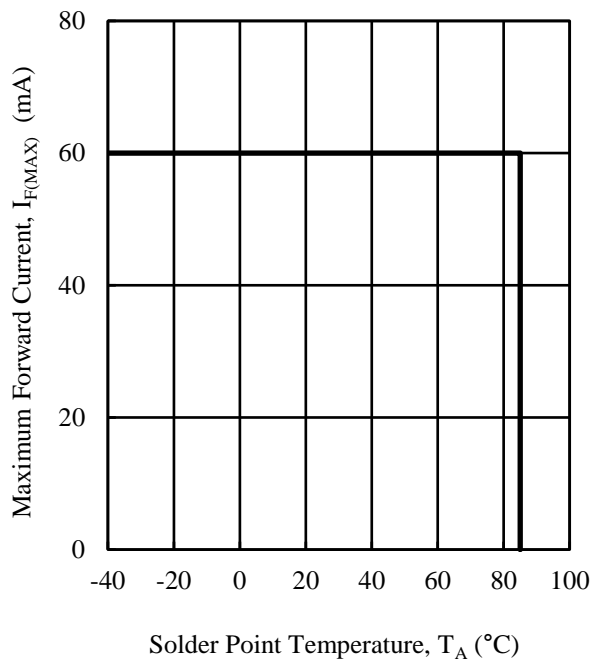


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Characteristic Curves

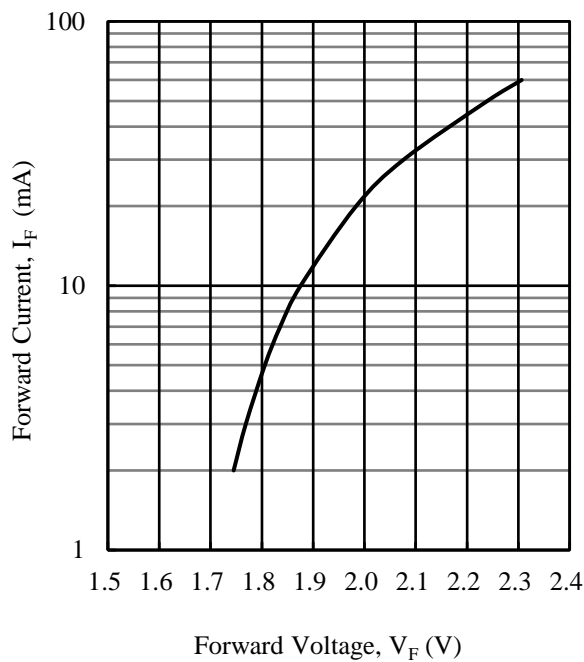


Figure 2.  $I_F$  vs.  $V_F$  ( $T_A = 25$  °C)

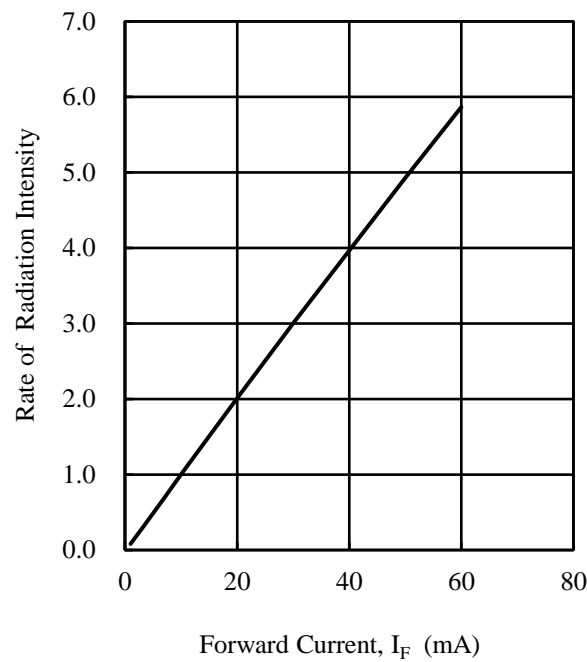


Figure 3. Rate of Radiation Intensity vs.  $I_F$  ( $T_A = 25$  °C)

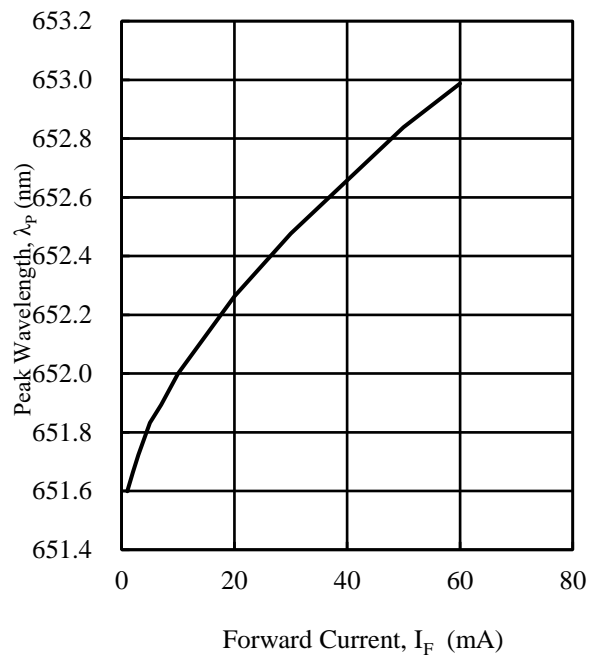


Figure 4.  $\lambda_p$  vs.  $I_F$  ( $T_A = 25\text{ }^{\circ}\text{C}$ )

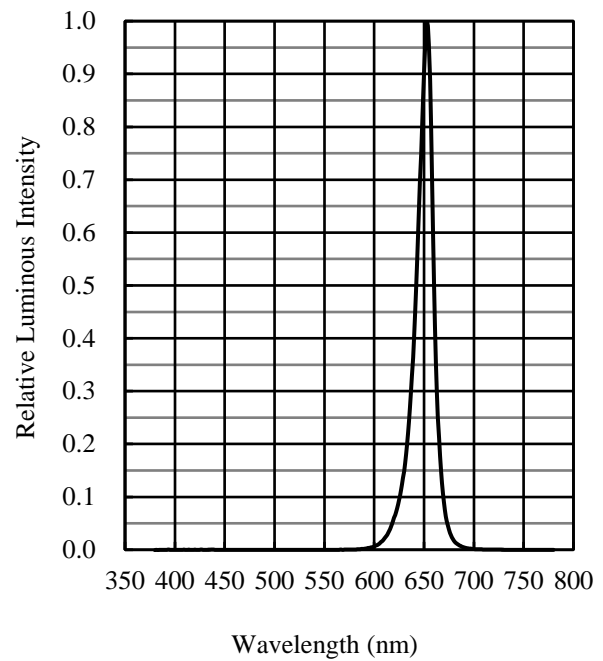


Figure 5. Spectrum ( $T_A = 25\text{ }^{\circ}\text{C}$ ,  $I_F = 50\text{ mA}$ )

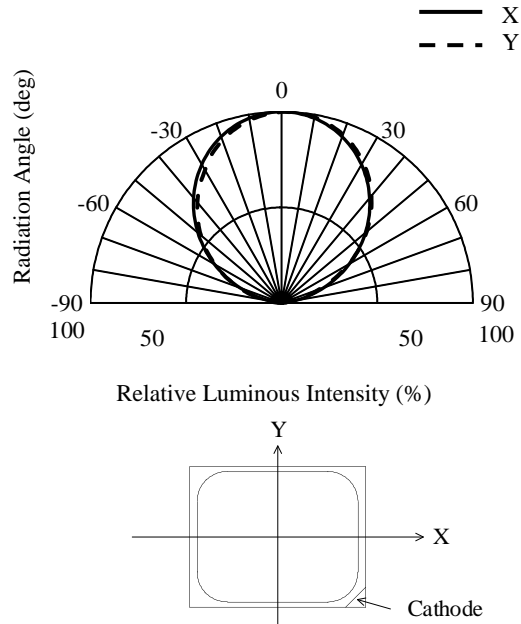
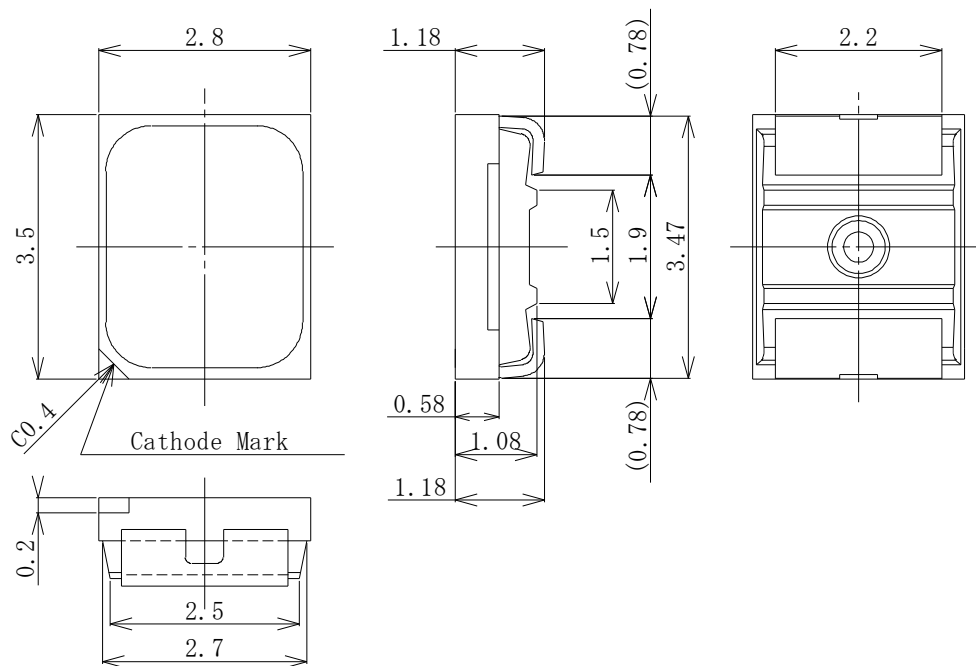


Figure 6. Directivity ( $T_A = 25\text{ }^{\circ}\text{C}$ ,  $I_F = 50\text{ mA}$ )

## Physical Dimensions

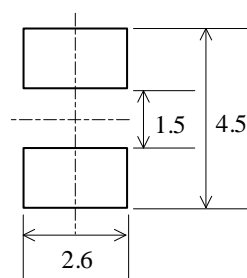
### • Surface Mount (3.5 × 2.8 × 1.2 mm)



### NOTES:

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

### • Land Pattern Example



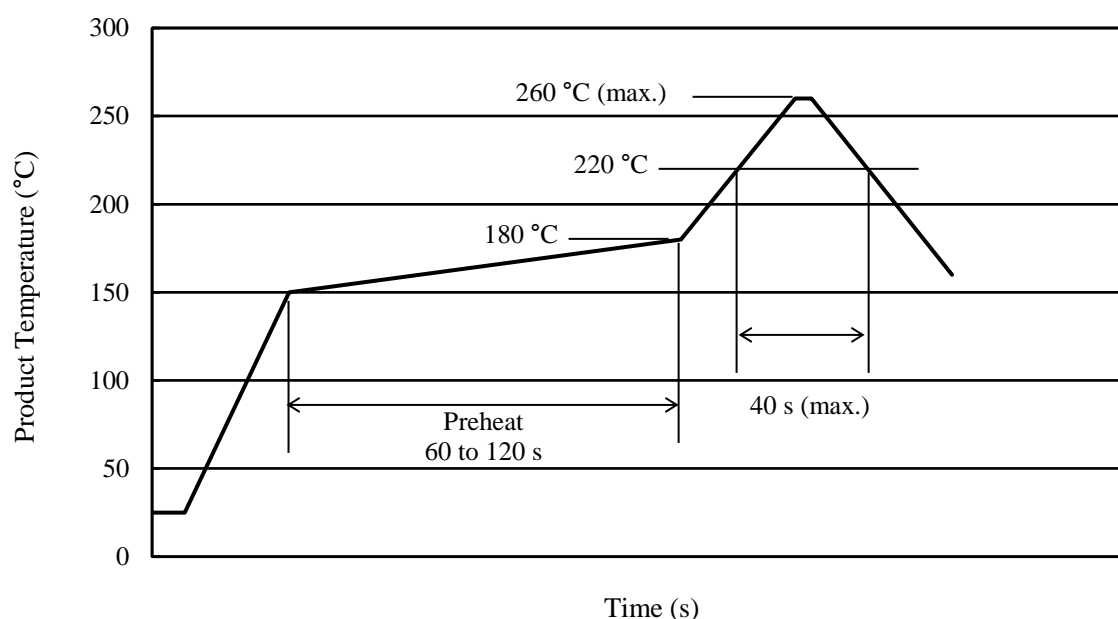
Unit: mm

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

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