

## Description

The SEP1FC1402-DT2A is a surface mount bluish white LED. The product includes a protection diode for ESD protection.

## Features

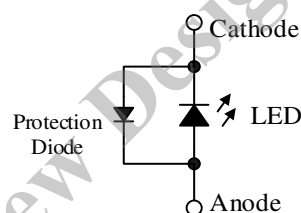
- Color-----Bluish White
- Luminous Intensity,  $I_V$ ---280 mcd (typ.) ( $I_F = 10 \text{ mA}$ )
- Forward Voltage,  $V_F$ ----- 3.0 V (typ.) ( $I_F = 10 \text{ mA}$ )
- Chromaticity (x, y)----- (0.179, 0.154)
- Viewing Angle,  $2\theta_{1/2}$ ----- 120 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

## Applications

- Automotive Interior
- Switch
- Indicator

## Package

Dimensions (L × W × H): 3.5 × 2.8 × 1.2 mm



Not to scale

Not Recommended for New Designs

## SEP1FC1402-DT2A

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	$P_D$		105	mW
Forward Current	$I_F$		30	mA
Forward Current Reduction	$\Delta I_F$	$T_A \geq 67\text{ }^\circ\text{C}$	-0.83	mA/ $^\circ\text{C}$
Pulse Forward Current	$I_{FP}$	Frequency = 1 kHz Pulse Width $\leq 100\text{ }\mu\text{s}$	70	mA
Reverse Current	$I_R$		10	mA
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	$V_F$	$I_F = 10\text{ mA}$	—	3.0	3.5	V
Reverse Voltage	$V_R$	$I_R = 1\text{ mA}$	—	0.8	—	V
Luminous Intensity	$I_V$	$I_F = 10\text{ mA}$	194	280	403	mcd
Chromaticity	x	$I_F = 10\text{ mA}$	—	0.179	—	—
	y		—	0.154	—	—
Viewing Angle	$2\theta_{1/2}$	$I_F = 10\text{ mA}$	—	120	—	deg
Thermal Resistance	$\theta_{(J-A)}$		—	200	—	$^\circ\text{C/W}$

### Luminous Intensity Bins

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

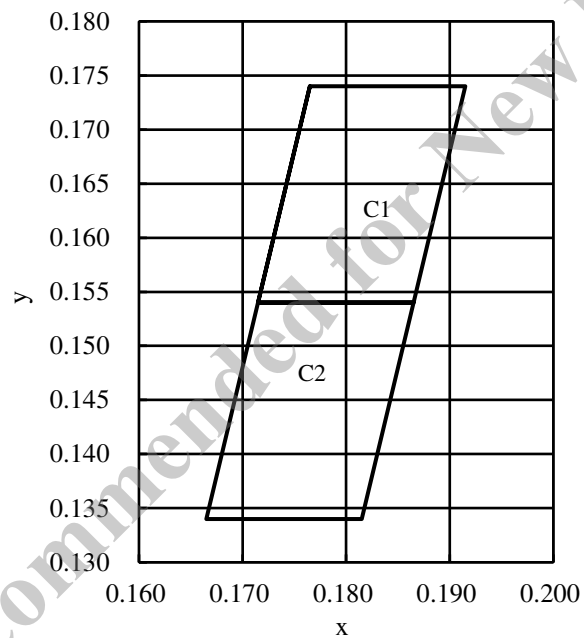
Bin Number	Luminous Intensity Range	Unit
D	194 to 280	mcd
E	280 to 403	mcd

## SEP1FC1402-DT2A

### Chromaticity Bins

The values have a tolerance of  $\pm 0.01$ .

Bin Number	x	y
C1	0.1765	0.1740
	0.1715	0.1540
	0.1865	0.1540
	0.1915	0.1740
C2	0.1715	0.1540
	0.1665	0.1340
	0.1815	0.1340
	0.1865	0.1540



Derating Curves

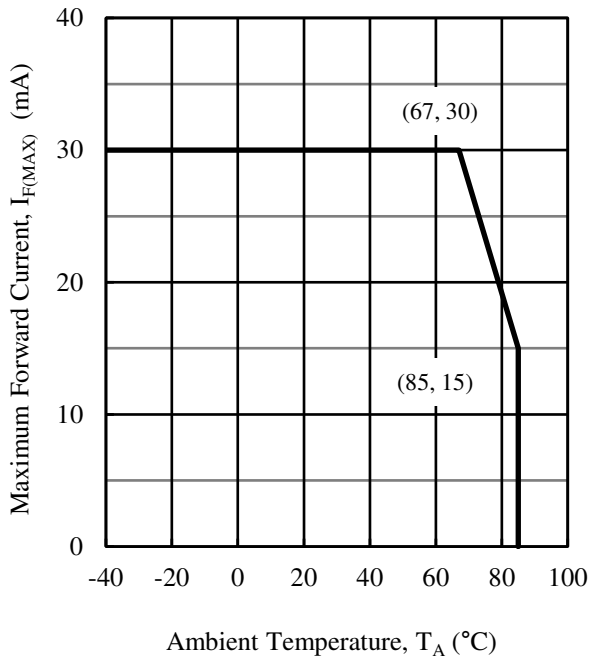


Figure 1.  $I_{F(MAX)}$  vs.  $T_A$

Characteristic Curves

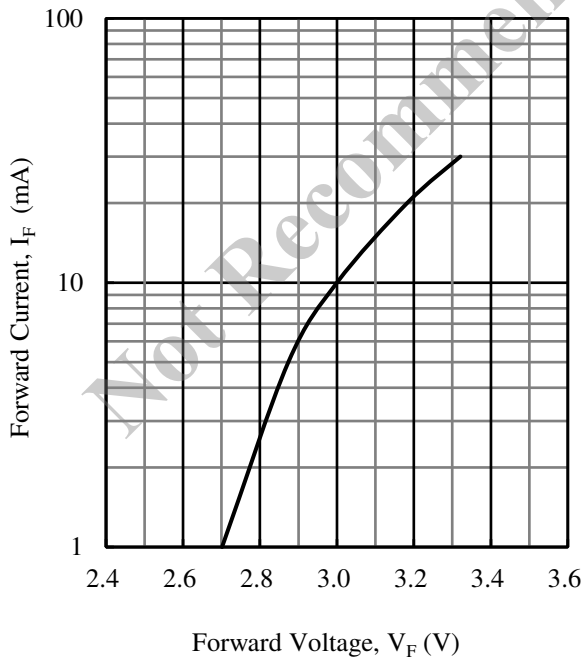


Figure 2.  $I_F$  vs.  $V_F$

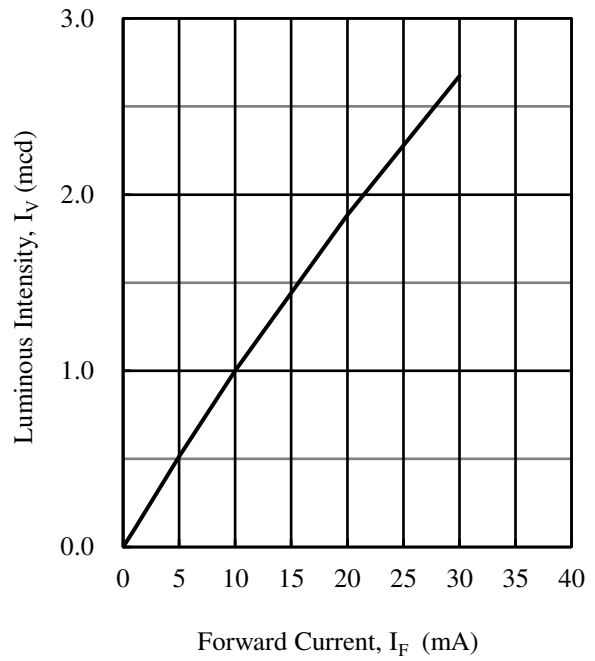


Figure 3.  $I_V$  vs.  $I_F$

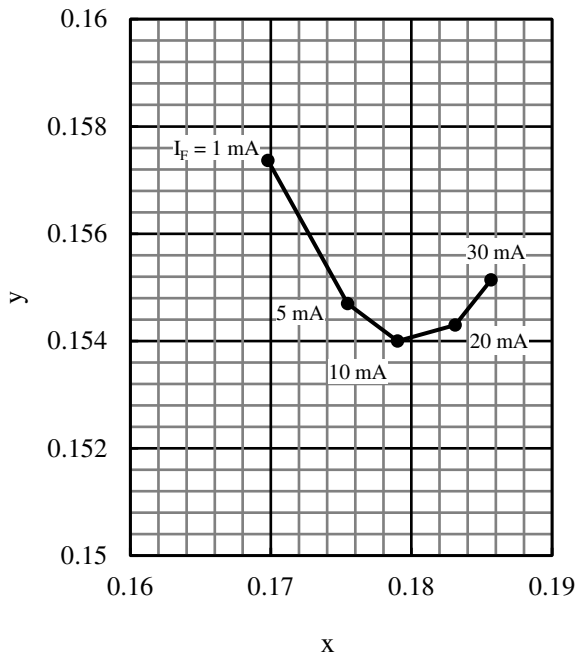


Figure 4.  $I_F$  vs. Chromaticity

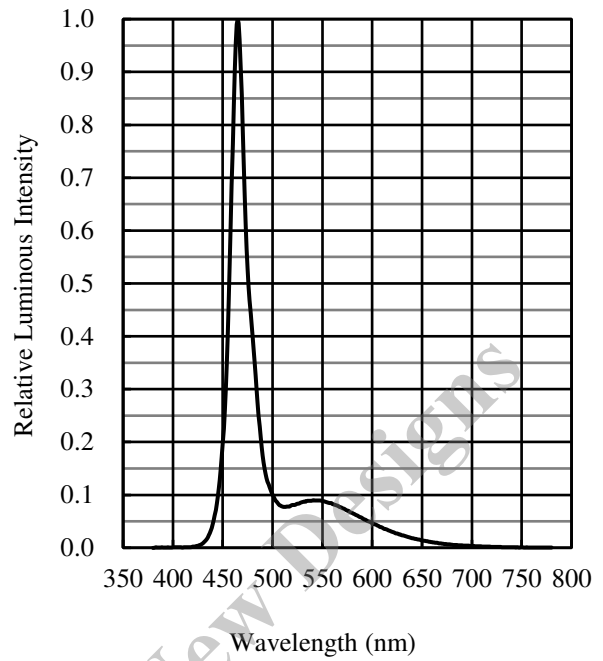


Figure 5. Spectrum

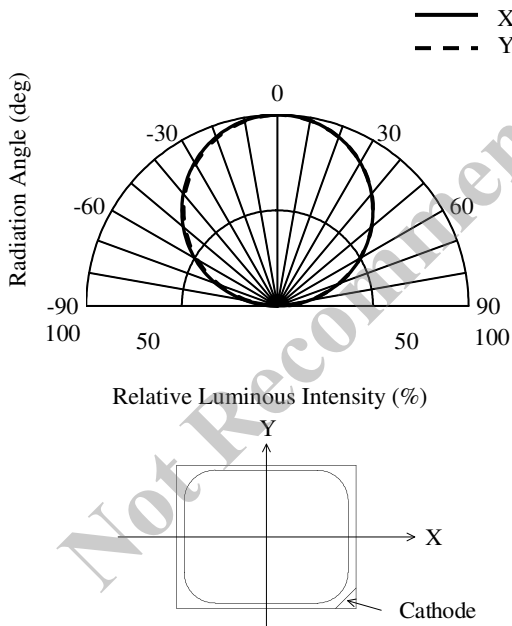
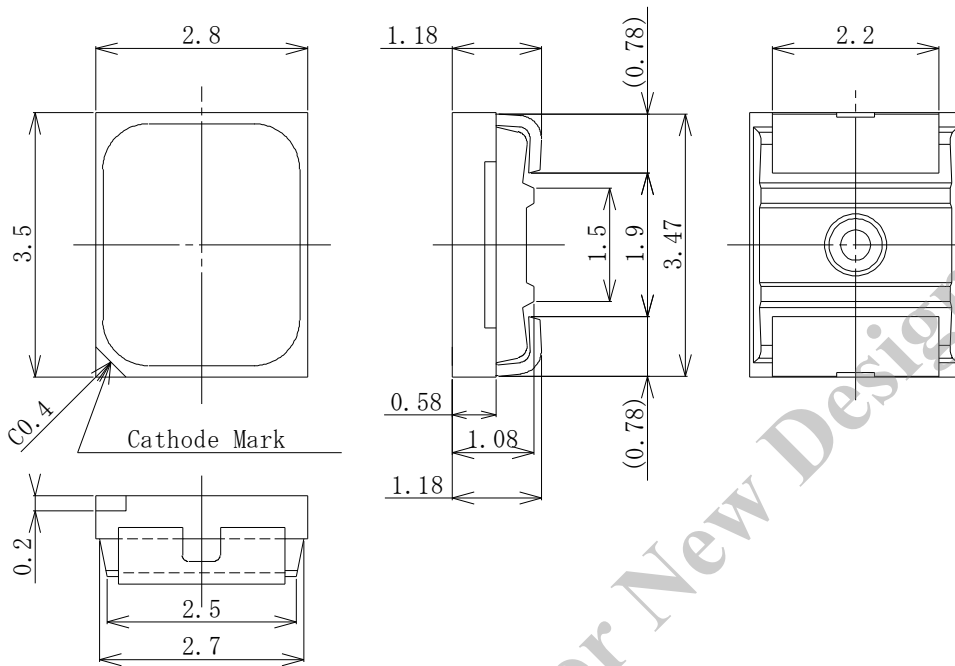


Figure 6. Directivity

# SEP1FC1402-DT2A

## Physical Dimensions

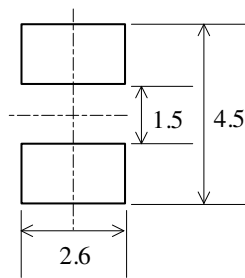
- Surface Mount (3.5 × 2.8 × 1.2 mm)



### NOTES:

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

- Land Pattern Example



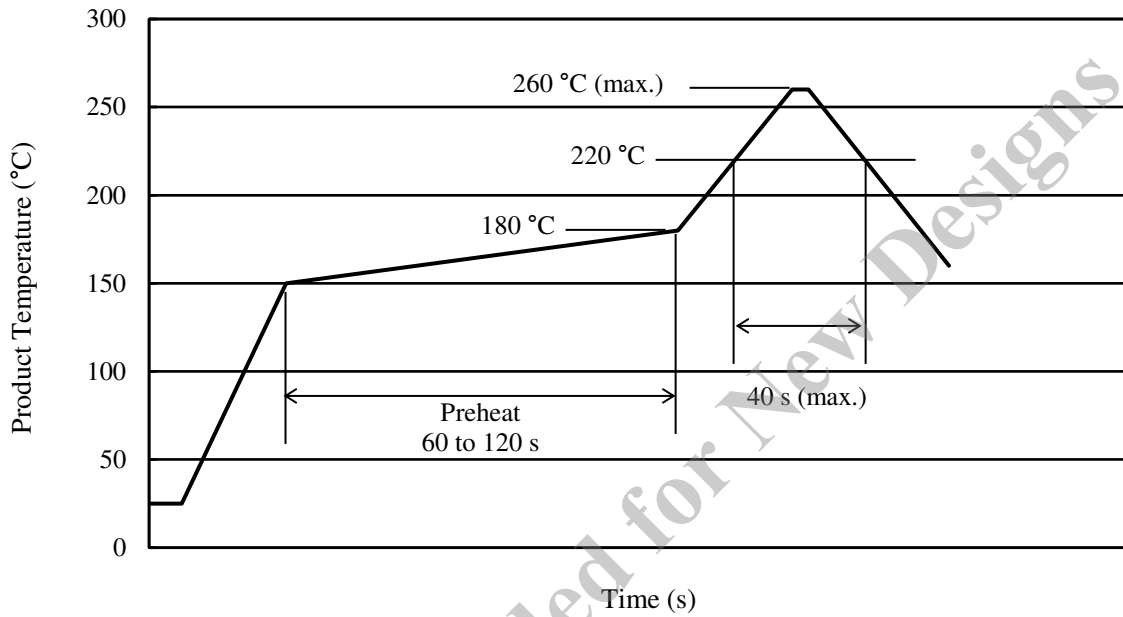
Unit: mm

### 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



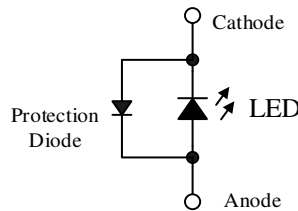
Not Recommended for New Designs

## Precautions for Use

### • Measures for Electrostatic Discharge (ESD)

Generally, InGaN-based elements such as blue LEDs are very sensitive to ESD. For enhanced ESD withstand capability, this product is designed to include a surge protection diode as shown in the figure below. Therefore, the following ESD withstand capabilities are ensured:  $\geq 200$  V on machine model ( $C = 200$  pF,  $R = 0 \Omega$ ), and  $\geq 2000$  V on human body model ( $C = 100$  pF,  $R = 1.5$  k $\Omega$ ). Note that, however, all the values mentioned above are not guaranteed.

When using the product, care should be taken not to apply a voltage in the opposite direction of the LED. If a voltage is applied in the opposite direction of the LED, the surge protection diode becomes conductive, and then an unintended current may flow through the set.



### • Other

- 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.



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