**$I_V$ = 40.0 mcd, $V_F$ = 2.8 V**
**Surface Mount LED**

# SECG1FA07YPDT2

**Data Sheet**

## Description

The SECG1FA07YPDT2 is a surface mount bluish white LED. The product includes a protection diode for ESD protection.

## Features

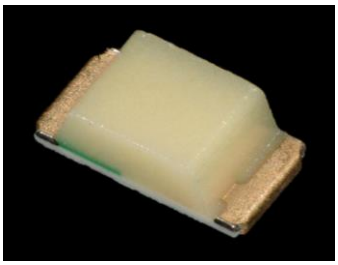
- Color ---------- Bluish White
- Luminous Intensity, $I_V$ ---- 40.0 mcd (typ.) ($I_F$ = 5 mA)
- Forward Voltage, $V_F$ ---------- 2.8 V (typ.) ($I_F$ = 5 mA)
- Chromaticity (x, y) ---------- (0.195, 0.180)
- Viewing Angle, $2\theta_{1/2}$ ---------- 160 deg
- MSL 3
- RoHS Compliant
- Pb-free, Reflow Soldering
- High Reliability

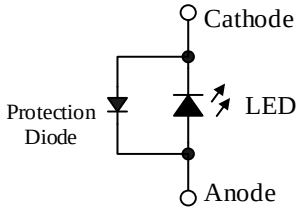
## Applications

- Automotive Interior
- Switch
- Indicator

## Package

Dimensions (L × W × H): 1.6 × 0.8 × 0.7 mm






Not to scale

## Absolute Maximum Ratings

Unless specifically noted, $T_A$ = 25 °C.

| Parameter | Symbol | Conditions | Rating | Unit |
|---|---|---|---|---|
| Power Dissipation | $P_D$ | | 102 | mW |
| Forward Current | $I_F$ | | 30 | mA |
| Forward Current Reduction | $\Delta I_F$ | $T_A \geq 60$ °C | −0.62 | mA/°C |
| Pulse Forward Current | $I_{FP}$ | Frequency = 1 kHz<br>Pulse Width ≤ 100 μs | 50 | mA |
| Reverse Current | $I_R$ | | 10 | mA |
| Operating Temperature | $T_{OP}$ | | −40 to 100 | °C |
| Storage Temperature | $T_{STG}$ | | −40 to 100 | °C |
| Junction Temperature | $T_J$ | | 115 | °C |

## Electrical / Optical Characteristics

Unless specifically noted, $T_A$ = 25 °C.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Forward Voltage | $V_F$ | $I_F$ = 5 mA | 2.3 | 2.8 | 3.4 | V |
| Reverse Voltage | $V_R$ | $I_R$ = 1 mA | — | 0.8 | — | V |
| Luminous Intensity | $I_V$ | $I_F$ = 5 mA | 29.8 | 40.0 | 53.7 | mcd |
| Chromaticity | x | $I_F$ = 5 mA | — | 0.195 | — | — |
| | y | | — | 0.180 | — | — |
| Viewing Angle | $2\theta_{1/2}$ | $I_F$ = 5 mA | — | 160 | — | deg |
| Thermal Resistance | $\theta_{(J\text{-}A)}$ | | — | 450 | — | °C/W |

## Mechanical Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Package Weight | | — | 0.00124 | — | g |

## Luminous Intensity Bins

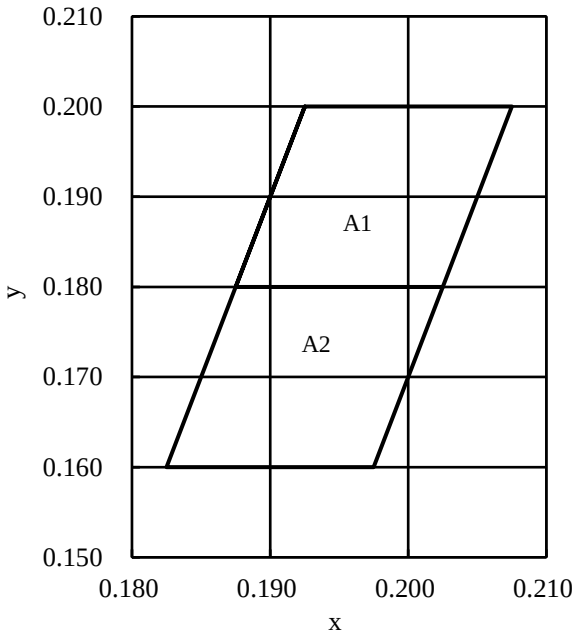
The values have a tolerance of ±20%.

| Bin Number | Luminous Intensity Range | Unit |
|---|---|---|
| C | 29.8 to 40.0 | mcd |
| D | 40.0 to 53.7 | mcd |

## Chromaticity Bins

The values have a tolerance of ±0.01.

| Bin Number | x | y |
|---|---|---|
| A1 | 0.1925 | 0.2000 |
| | 0.1875 | 0.1800 |
| | 0.2025 | 0.1800 |
| | 0.2075 | 0.2000 |
| A2 | 0.1875 | 0.1800 |
| | 0.1825 | 0.1600 |
| | 0.1975 | 0.1600 |
| | 0.2025 | 0.1800 |



## Derating Curves

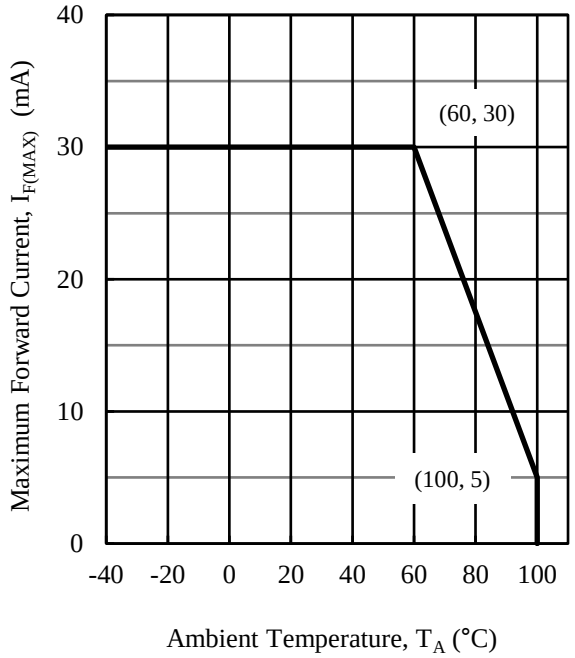



Figure 1. $I_{F(MAX)}$ vs. $T_A$

## Characteristic Curves

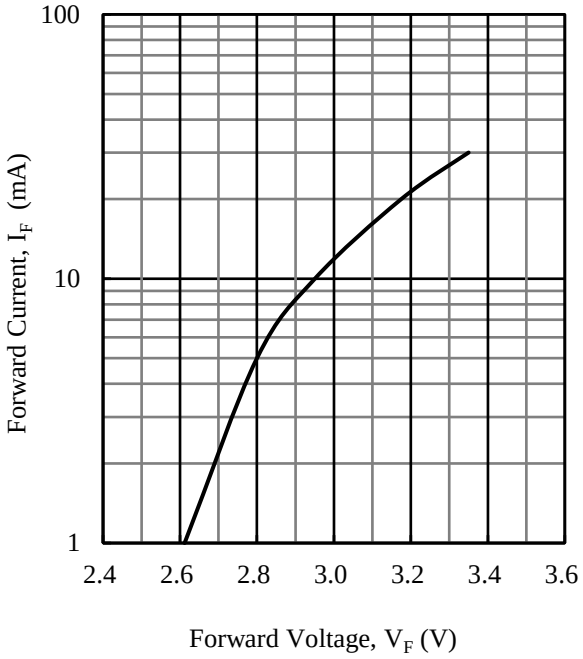



Figure 2. $I_F$ vs. $V_F$

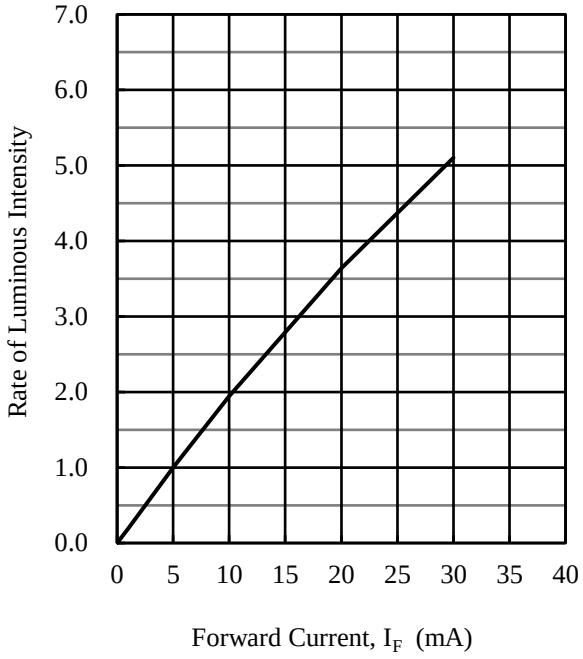



Figure 3. Rate of Luminous Intensity vs. $I_F$

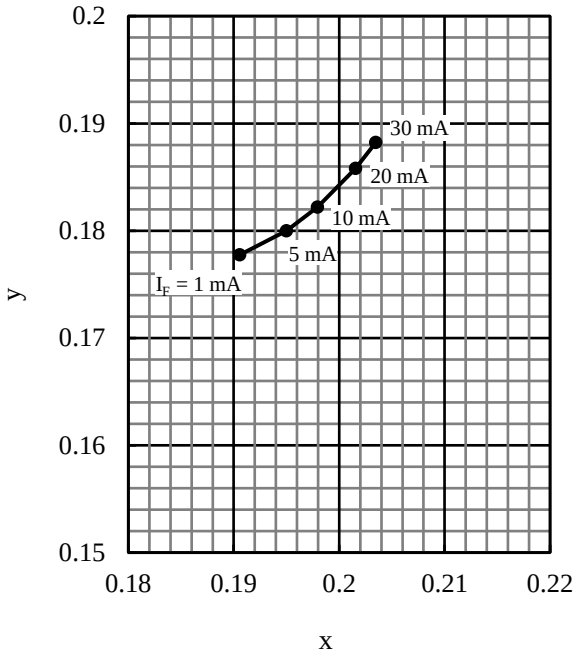



Figure 4. $I_F$ vs. Chromaticity

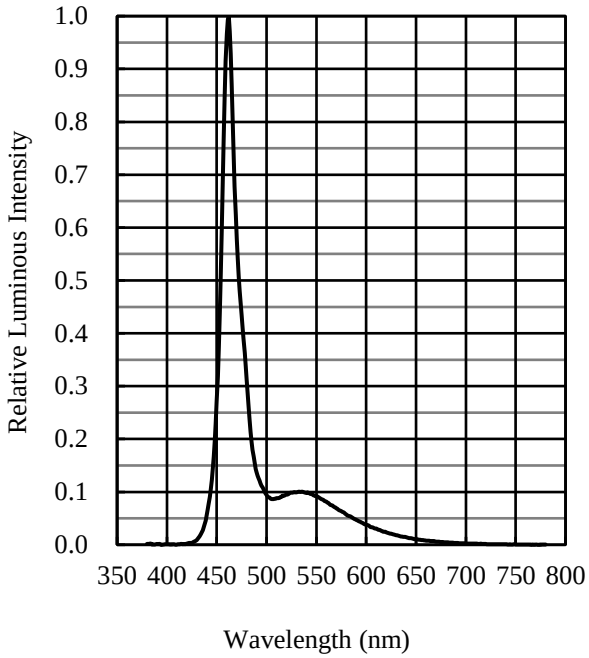



Figure 5. Spectrum

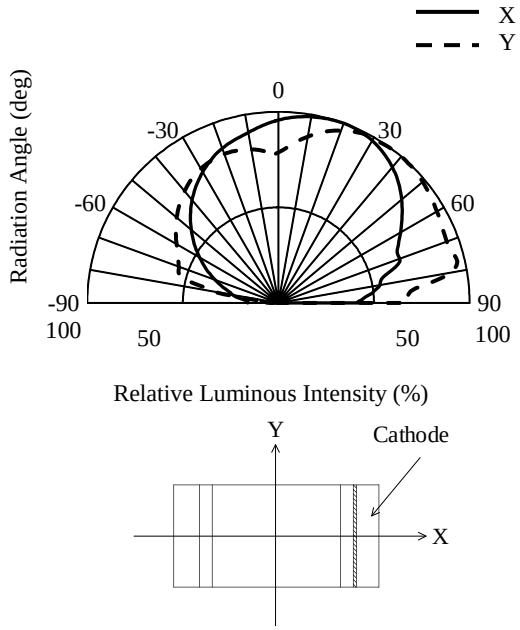


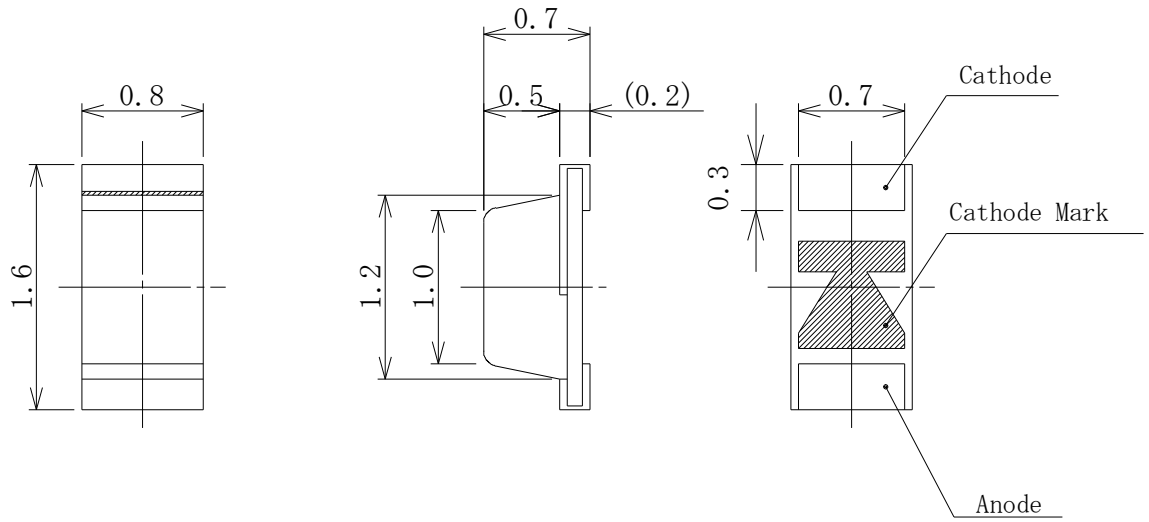




Figure 6. Directivity

## Physical Dimensions

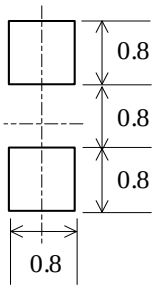
● **Surface Mount (1.6 × 0.8 × 0.7 mm)**




**NOTES:**

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

● **Land Pattern Example**



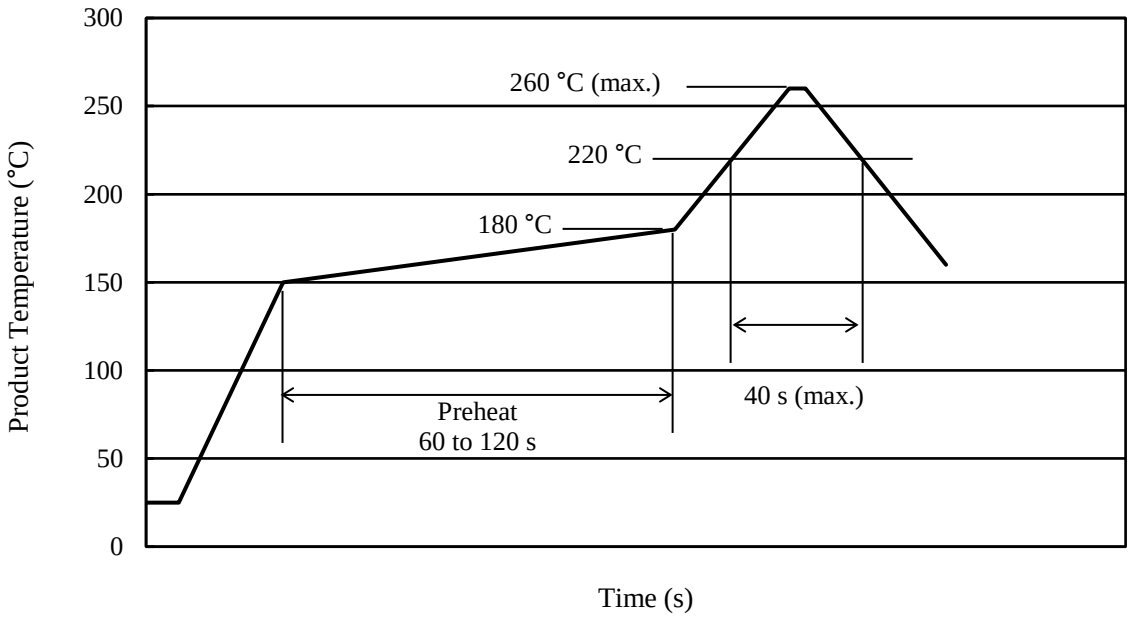

Unit: mm

## 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**

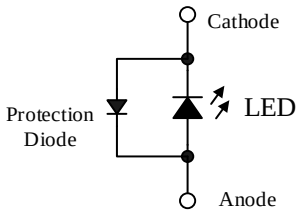


## Precautions for Use

● **Measures for Electrostatic Discharge (ESD)**

In general, 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: ≥200 V on machine model (C = 200 pF, R = 0 Ω), and ≥2000 V on human body model (C = 100 pF, R = 1.5 kΩ). 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.

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