I_V = 150 mcd, V_F = 3.4 V
Through-hole LED

SELK2FB10C-D

Data Sheet

Description

The SELK2FB10C-D is a through-hole bluish white LED. The product includes a protection diode for ESD protection.

Features

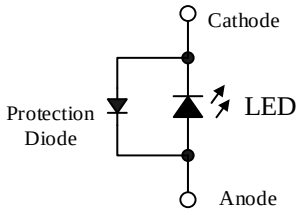
- Color ----------Bluish White
- Lens Color ----------Clear
- Luminous Intensity, I_V----150 mcd (typ.) (I_F = 10 mA)
- Forward Voltage, V_F--------- 3.4 V (typ.) (I_F = 10 mA)
- Chromaticity (x, y)----------(0.1800, 0.1600)
- Viewing Angle, $2\theta_{1/2}$---------- 40 deg
- RoHS Compliant
- Pb-free, Soldering
- High Reliability

Applications

- Switch
- Indicator
- Illumination

Package

φ3 mm Round



Not to scale

Absolute Maximum Ratings

Unless specifically noted, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation	P_D		114	mW
Forward Current	I_F		30	mA
Forward Current Reduction	ΔI_F	$T_A \geq 25$ °C	−0.45	mA/°C
Pulse Forward Current	I_{FP}	Frequency = 1 kHz Pulse Width ≤ 100 µs	100	mA
Reverse Current	I_R		1	mA
Operating Temperature	T_{OP}		−40 to 85	°C
Storage Temperature	T_{STG}		−40 to 100	°C

Electrical / Optical Characteristics

Unless specifically noted, T_A = 25 °C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F = 10 mA	—	3.4	3.8	V
Reverse Voltage	V_R	I_R = 1 mA	—	0.8	—	V
Luminous Intensity	I_V	I_F = 10 mA	72	150	—	mcd
Chromaticity	x	I_F = 10 mA	—	0.1800	—	—
	y		—	0.1600	—	—
Viewing Angle	$2\theta_{1/2}$	I_F = 10 mA	—	40	—	deg

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.121	—	g

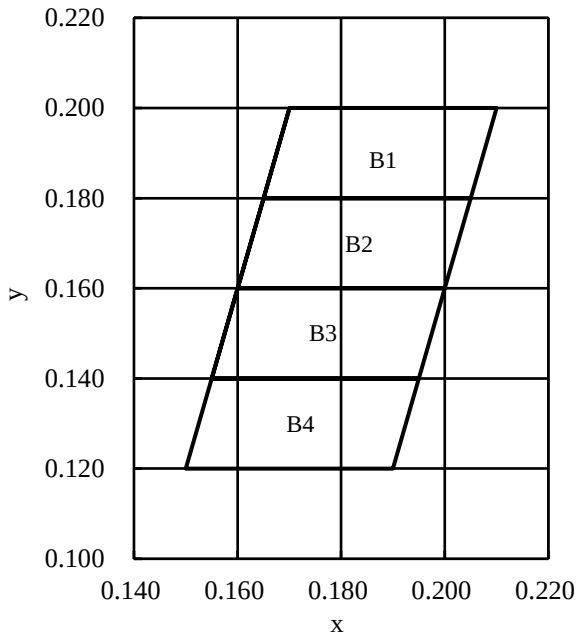
Luminous Intensity Bins

Bin Number	Luminous Intensity Range	Unit
C	72 to 144	mcd
D	96 to 192	mcd
E	128 or more	mcd

Chromaticity Bins

The values have a tolerance of ±0.01%.

Bin Number	x	y
B1	0.1700	0.2000
	0.1650	0.1800
	0.2050	0.1800
	0.2100	0.2000
B2	0.1650	0.1800
	0.1600	0.1600
	0.2000	0.1600
	0.2050	0.1800
B3	0.1600	0.1600
	0.1550	0.1400
	0.1950	0.1400
	0.2000	0.1600
B4	0.1550	0.1400
	0.1500	0.1200
	0.1900	0.1200
	0.1950	0.1400



Derating Curves

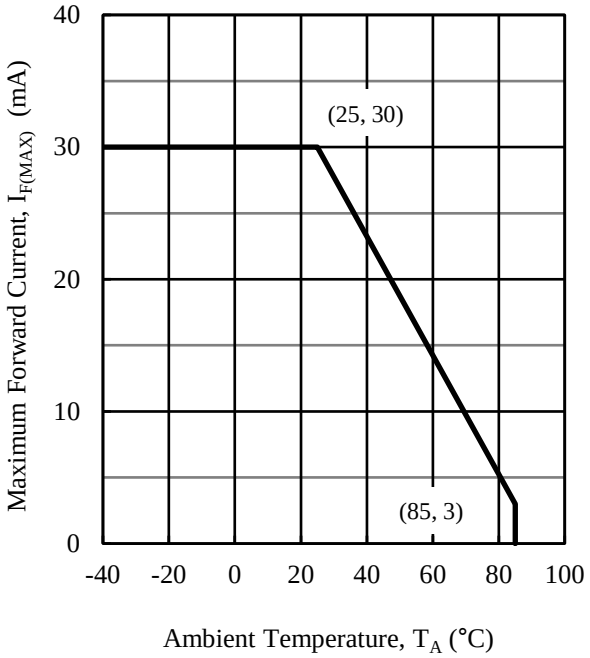


Figure 1. $I_{F(MAX)}$ vs. T_A

Characteristic Curves

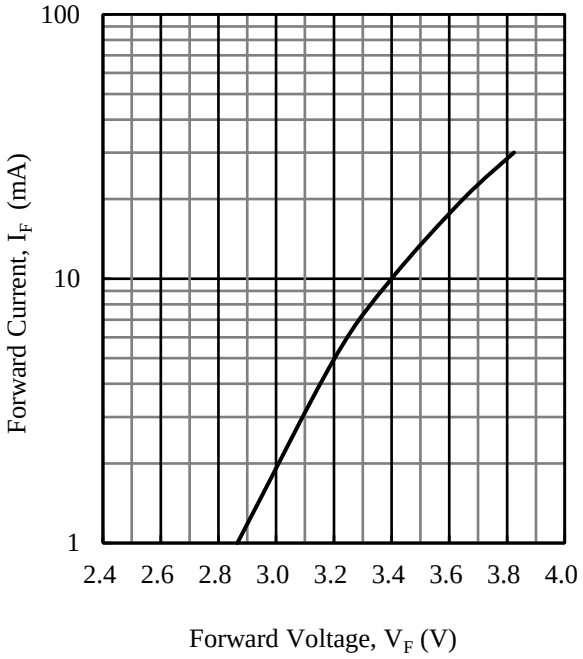


Figure 2. I_F vs. V_F

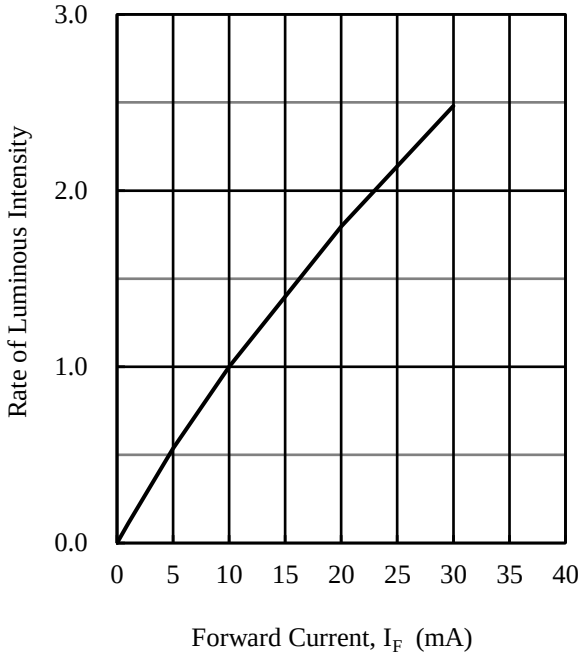


Figure 3. Rate of Luminous Intensity vs. I_F

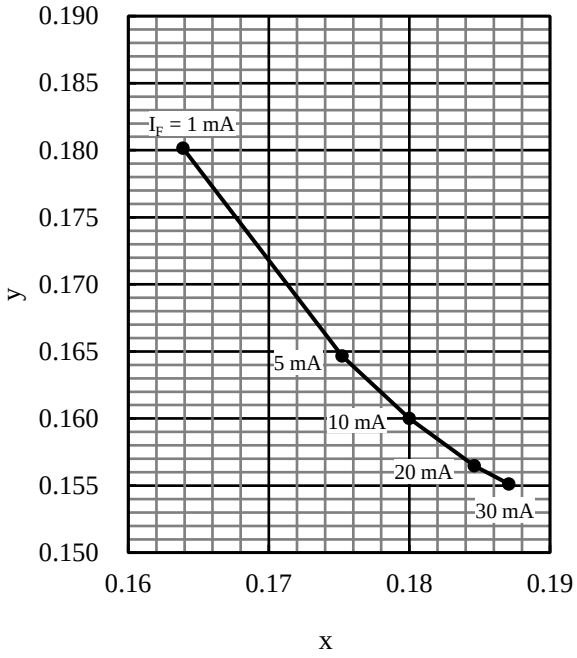


Figure 4. I_F vs. Chromaticity

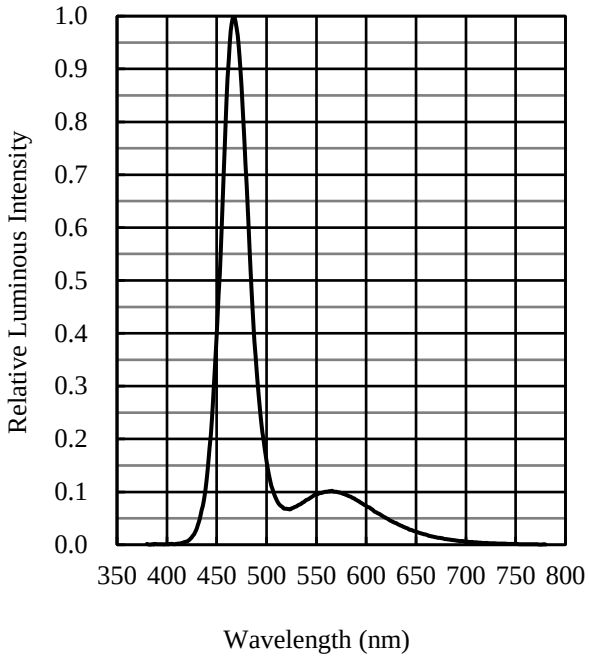


Figure 5. Spectrum

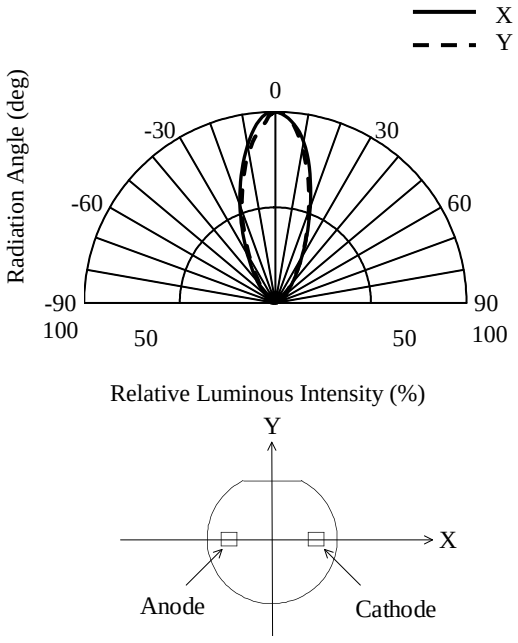
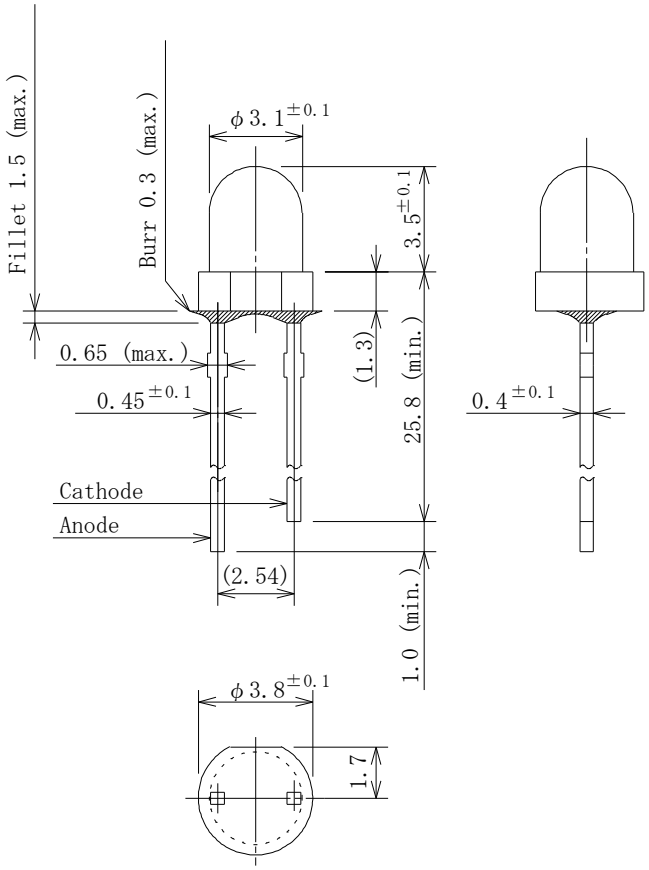


Figure 6. Directivity

Physical Dimensions

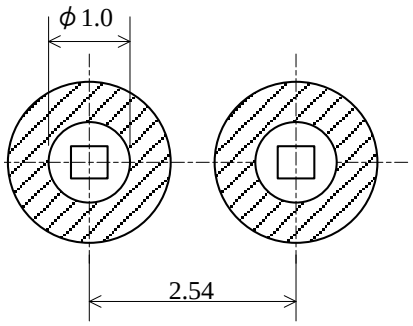
● **Through-hole (φ3 mm Round)**



NOTES:

- Dimensions in millimeters
- Unless specifically noted, tolerance is ±0.3.
- RoHS compliant

● **Land Pattern Example**



NOTES:

- Dimensions in millimeters
- All the dimensions without tolerance are for reference only.

Soldering Conditions

- When soldering the products, it is required to minimize the working time within the following limits:

  - Flow:
    Preheat: 90 °C / 120 s
    Solder heating: 250 °C / 3 s
  - Soldering iron: 350 ± 10 °C / 3 s, 1 time

  Be sure to ensure a distance of ≥5.5 mm between the encapsulating resin and the solder.

- The following are the considerations in fixing the chip parts to be mounted on the same board as the product. When fixing such chip parts with an adhesive before soldering, extreme care should be taken not to heat the product before the adhesive is firmly cured (e.g., while it is being cured). Firstly, fix the chip parts other than the products with an adhesive. Secondly, heat to cure the adhesive before mounting the product. Finally, mount and solder the product. If there is no choice but to simultaneously heat the product and other chip parts for curing the adhesive, perform the simultaneous heating under the conditions listed below without any external force, stress, or excessive vibration applied to the product. After the adhesive is cured, cool the product to a room temperature and then perform soldering.

  - Solder heating temperature: ≤120 °C
  - Solder heating time: ≤60 s

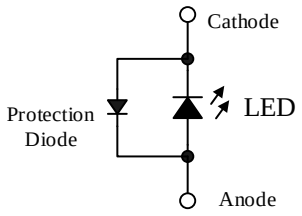
- A hole pitch to be formed on a board should be identical to the pin pitch of the product.
- When mounting the product on a double-sided board, do not use plated through holes.

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. A glass transition of the product's encapsulating resin will occur at temperatures from about 120 °C to 130 °C. When the resin temperature exceeds these temperatures, the resin softens rapidly. Therefore, applying stress or excessive vibration to the resin or pin at high temperatures may cause a shift in the pin alignment or a wire breakage.
- 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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