

## Deep UV LED Package (SCF35BUC00D1Z1)

### Product Introduction

Sanan SCF35BUC series deep ultraviolet packaging products are specially designed for applying with high radiation power and directivity requirements. The package surface mount device is made of special ultraviolet glass with optimized life time and performance of the product.

### Features & benefits

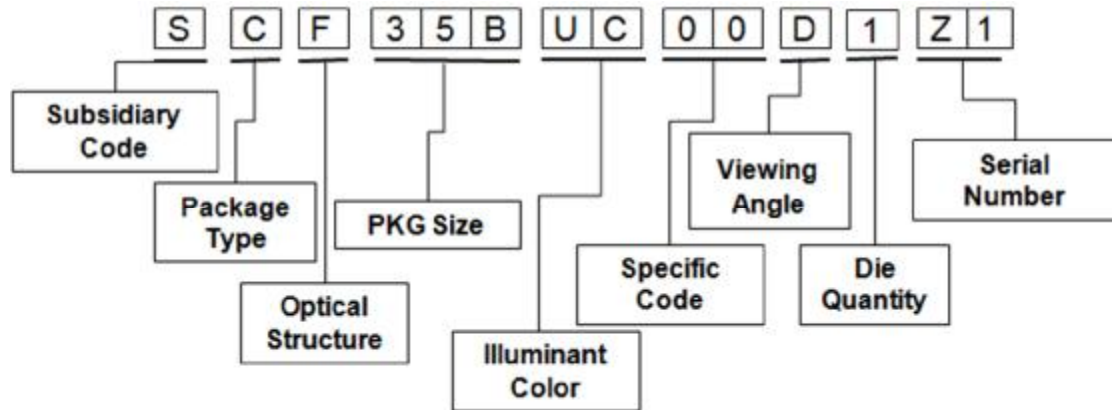
- I Customized emission wavelength
- I Industry standard 3.5mm x 3.5mm ceramic package
- I Wide viewing angle >130°
- I Standard SMD (PnP and reflow)
- I RoHS and REACH compliant

### Targets Applications

- I Water/ Air/ Surface sterilization and disinfection
- I Food & Pharmaceutical Processing
- I Medical Spectroscopy
- I Florescence analyzer
- I Horticulture lighting

## Product Nomenclature

The part number for Sanan SCF35BUC00D1Z1 series deep UV package products is explained as follows:



### Ordering information:

Part Number: SCF35BUC00D1Z1

Specification: Refer to Bin for Wavelength & Radiant Power & Forward Voltage

( 275BBA002C10 )

**Electro-Optical Characteristics @ 40mA**

| Parameter                                | Symbol          | Bin   | Min. | Typ. | Max. | Unit |
|--|-----------------|-------|------|------|------|------|
| Peak Wavelength                          | $\lambda_P$     | 270B  | 270  | -    | 275  | nm   |
|  |                 | 275B  | 275  | -    | 280  |      |
| Output Radiant Power                     | $P_{opt}$       | BA002 | 2    | -    | 4    | mW   |
|  |                 | BA004 | 4    | -    | 6    |      |
|  |                 | BA006 | 6    | -    | 8    |      |
| Forward Voltage                          | $V_F$           | C09   | 4.5  | -    | 5.0  | V    |
|  |                 | C10   | 5.0  | -    | 5.5  |      |
|  |                 | C11   | 5.5  | -    | 6.0  |      |
|  |                 | C12   | 6.0  | -    | 6.5  |      |
|  |                 | C13   | 6.5  | -    | 7.0  |      |
|  |                 | C14   | 7.0  | -    | 7.5  |      |
| FWHM                                     | $\Delta\lambda$ |       | -    | 9.5  | -    | nm   |
| Viewing Angle                            | $2\theta_{1/2}$ |       | -    | 130  | -    | °    |
| Thermal Resistance<br>( $T_j - T_{sp}$ ) | $R_{th}$        |       | -    | 25   | -    | °C/W |

**Notes:**

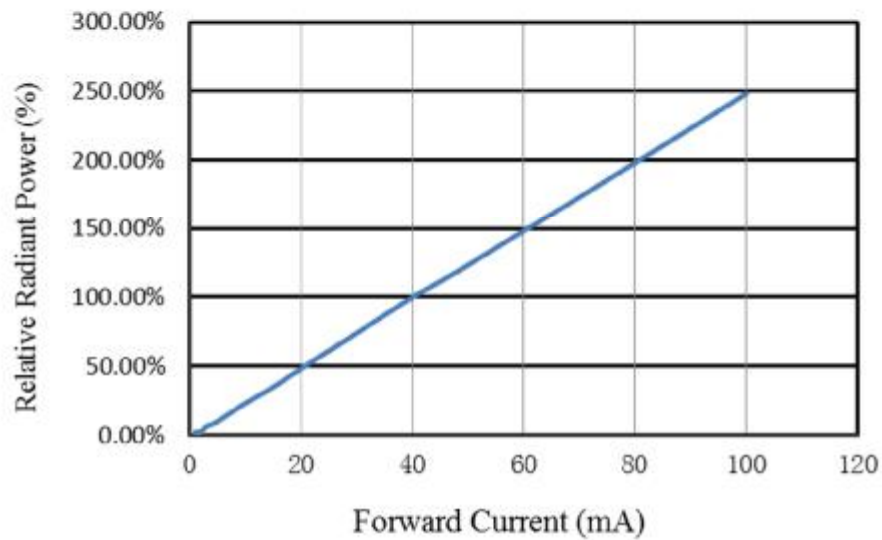
1. Radiant Flux Tolerance:  $\pm 10\%$
2. Forward Voltage Tolerance:  $\pm 0.1V$
3. Peak Wavelength Tolerance:  $\pm 1nm$
4. Viewing Angle Tolerance:  $\pm 5^\circ$
5. LEDs from the above ranks will be shipped. The rank combination ratio per shipment will be decided by Sanan

## Absolute Maximum Ratings

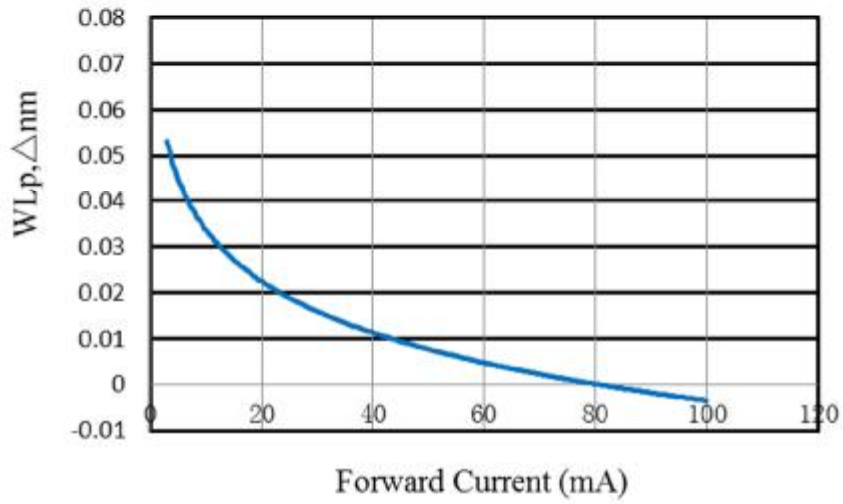
| Parameter             | Symbol       | Max. Ratings | Units |
|-----------------------|--------------|--------------|-------|
| Forward Current       | $I_F$        | 100          | mA    |
| Reverse Voltage       | $V_R$        | -5           | V     |
| Operating Temperature | $T_{op}$     | -40 ~85      | °C    |
| Storage Temperature   | $T_{stg}$    | -40 ~ 100    | °C    |
| Junction Temperature  | $T_j$        | 100          | °C    |
| Soldering temperature | $T_{solder}$ | 260          | °C    |

## Optical and Electrical Characteristics Curve

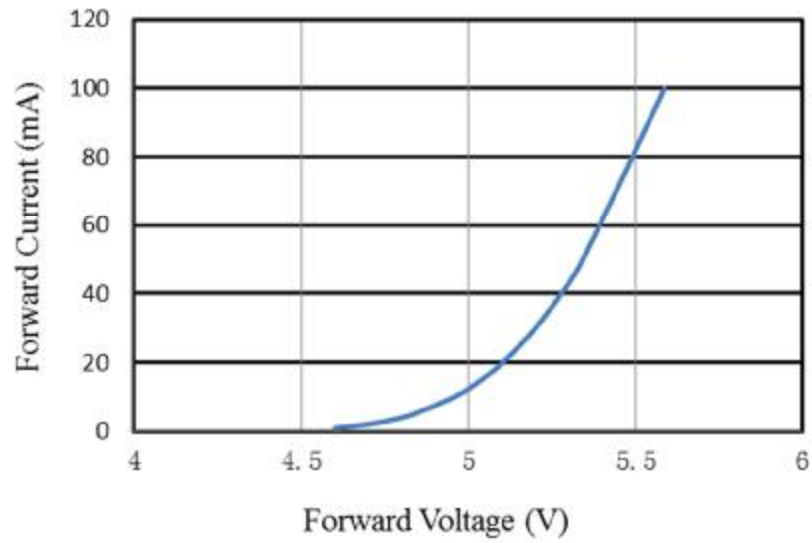
Relative Radiant Power VS Forward Current ( $T_a=25\text{ }^\circ\text{C}$ )



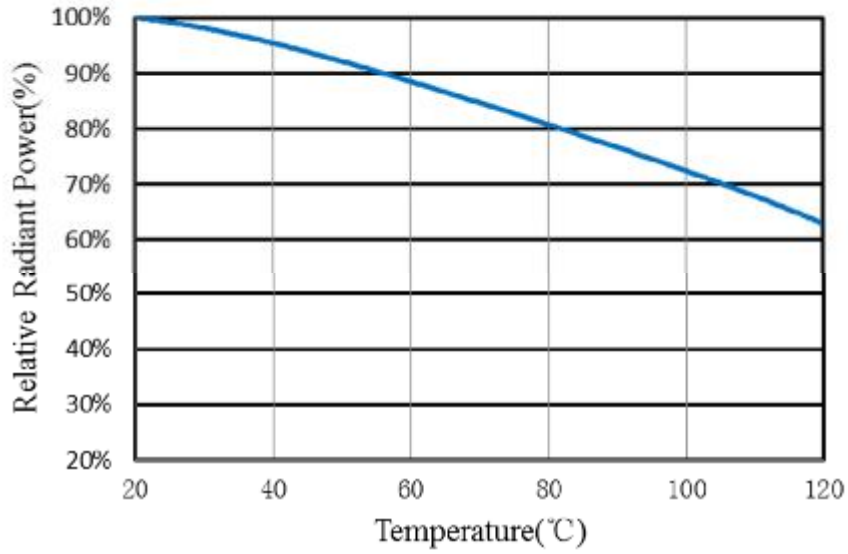
Wavelength  $\Delta$  Vs Forward Current ( $T_a=25^\circ\text{C}$ )



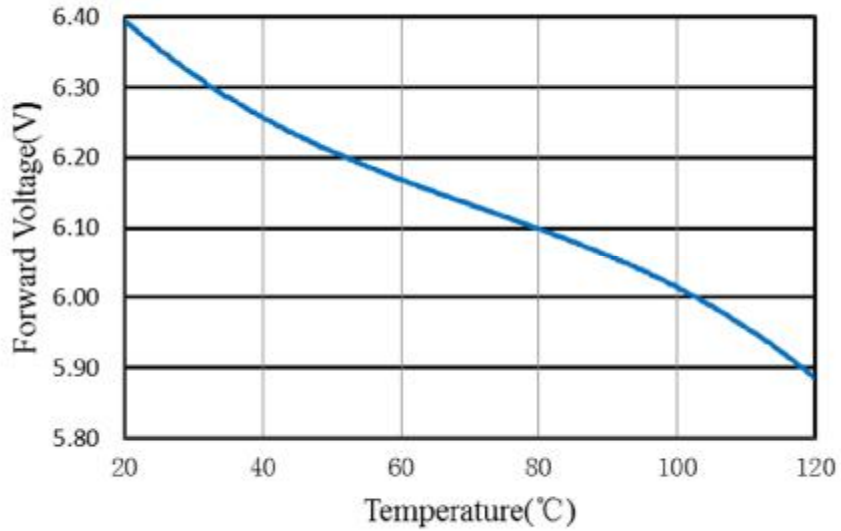
Forward Current VS Forward Voltage ( $T_a=25^\circ\text{C}$ )



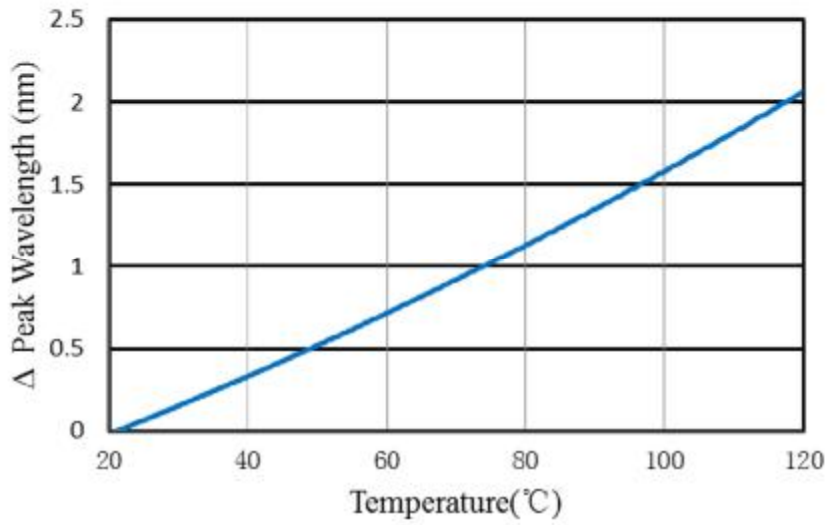
**Temperature vs. Relative Radiant Power**



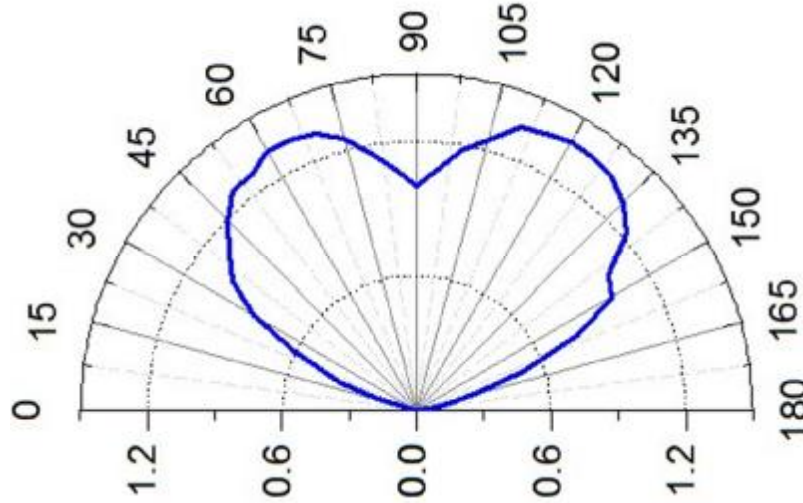
**Temperature vs. Forward Voltage**



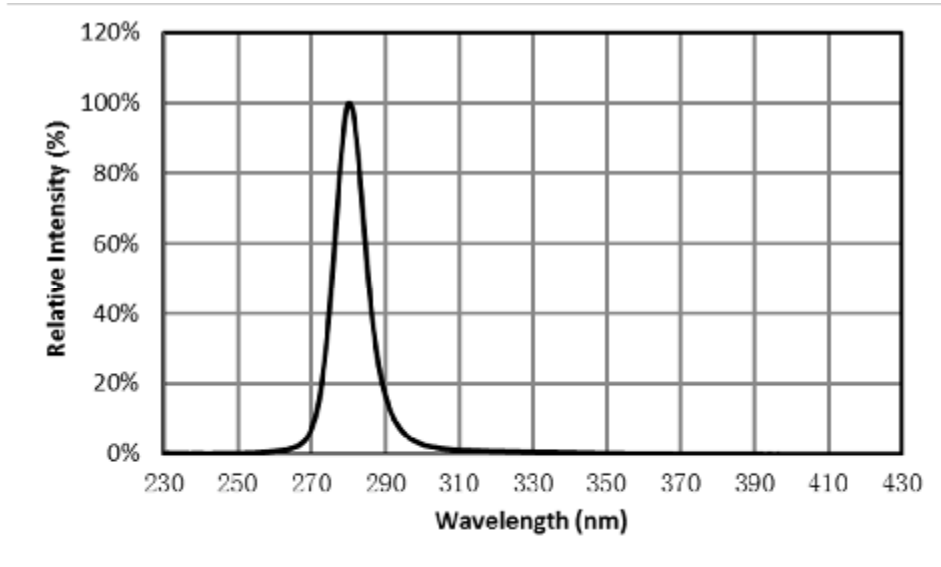
### Temperature vs. Peak Wavelength



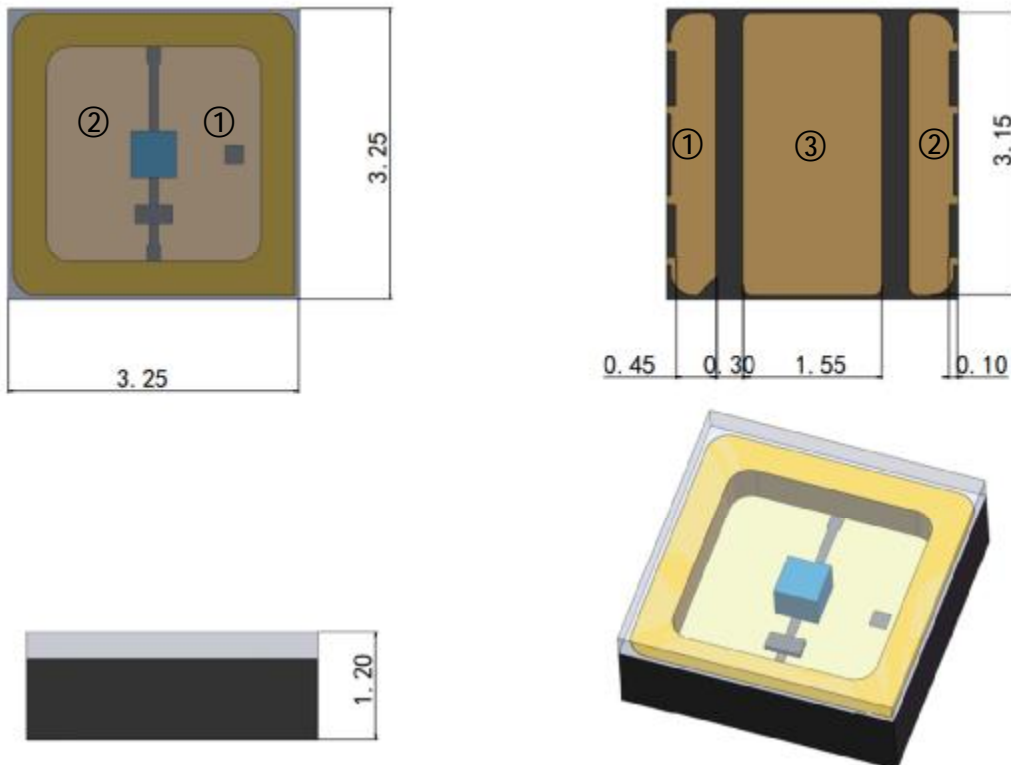
### Radiation Pattern @40mA



### Spectrum Distribution@40mA



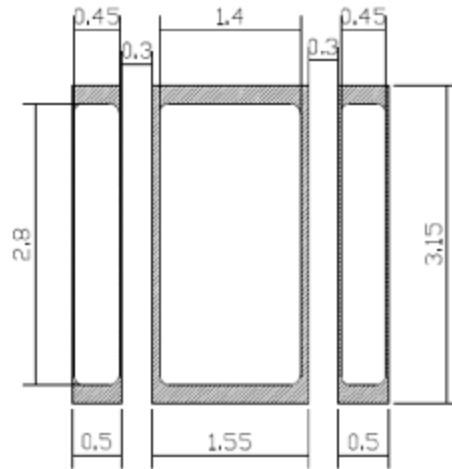
### Mechanical Dimensions (Unit: mm ; tolerance +/-0.1mm):



**Notes :** ① Cathode Pad , ② Anode Pad , ③ Heat Sink



**Recommended Solder Pad & Stencil Pattern (Unit: mm ; tolerance +/-0.1mm):**

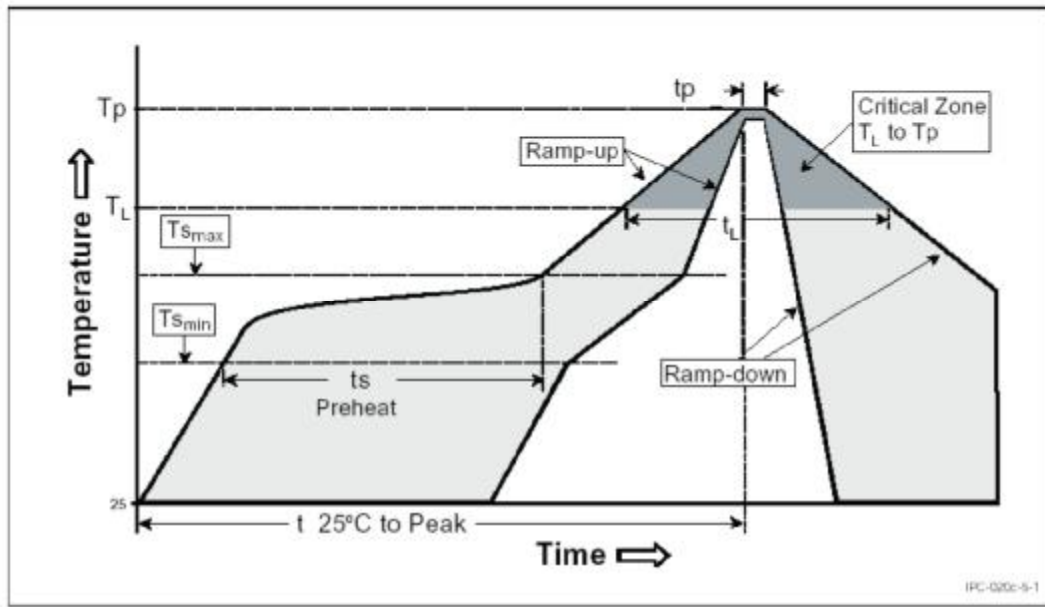


|                        |                         |
|------------------------|-------------------------|
| <b>Solder Pad</b>      | <b>3.15mm x 0.50mm</b>  |
|                        | <b>3.15mm x 1.55mm</b>  |
| <b>Stencil Pattern</b> | <b>2.80mm x 0.45mm</b>  |
|                        | <b>2.80mm x 1.40 mm</b> |

## Recommended Reflow Profile

As a general guideline, Sanan recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used.

Note that this general guideline may not apply to all PCB designs and configurations of reflow soldering equipment.



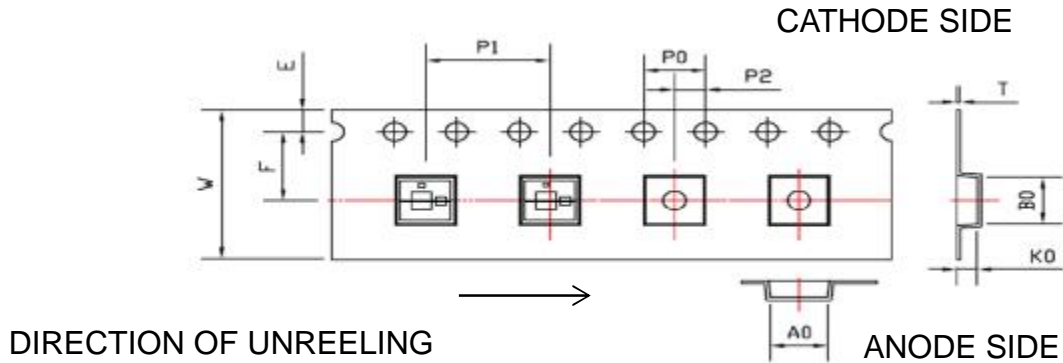
| Profile Setting                          | Pb-Free Profile |
|--|-----------------|
| Average Ramp-up Rate (Tsmmax to Tp)      | 1°C/sec         |
| Preheat Temperature Min (Tsmmin)         | 100-150°C       |
| Preheat Temperature Max (Tsmmax)         | 180-200°C       |
| Preheat Time (tsmin to tsmax)            | 60-120 sec      |
| Liquidus Temperature (TL)                | 217°C           |
| Time Maintained Above Time (tL)          | 50-80 sec       |
| Peak / Classification Temperature (TP)   | 260°C           |
| Time within 5°C of Actual Peak Temp (tP) | 20-40 sec       |
| Ramp-Down Rate                           | 2-3°C/sec       |
| Time 25°C Peak Temperature               | 4 min           |

## Reliability Test

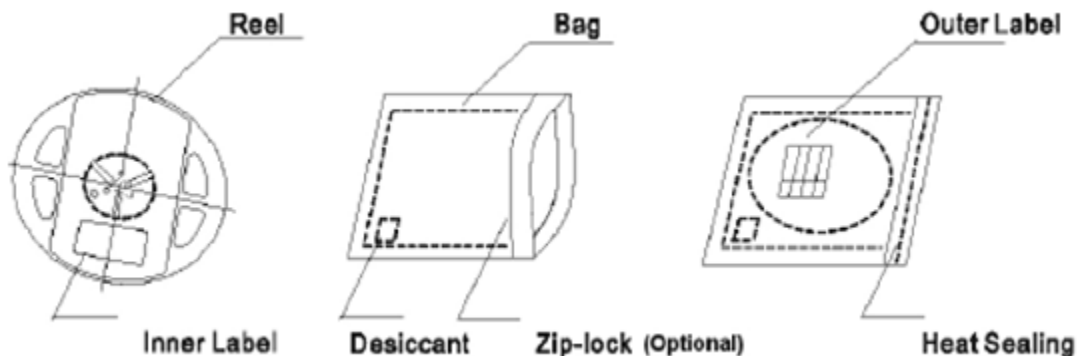
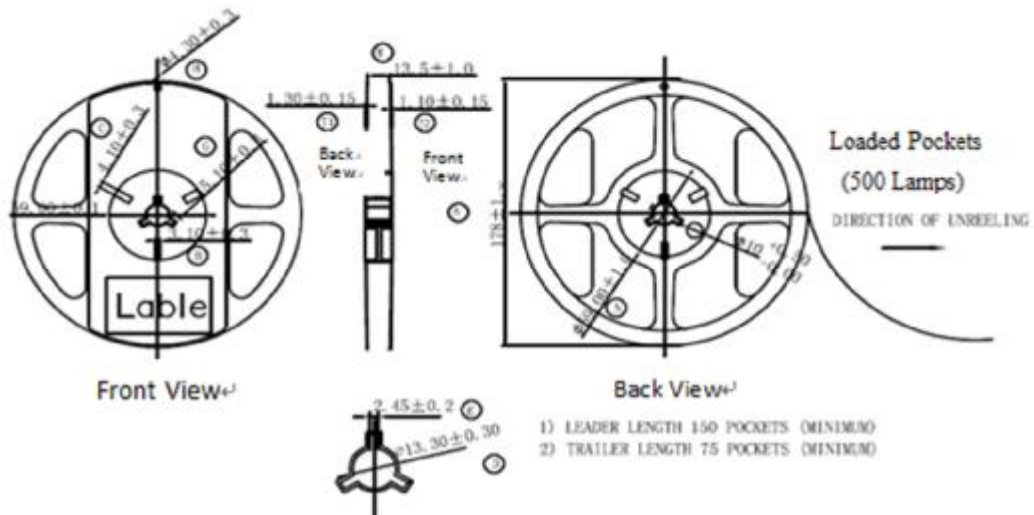
| Item                            | Conditions   | FailureCriteria  |
|---------------------------------|--|--|
| Room Temperature Operating Life | 25 °C, 40 mA, 1000Hrs  | Forward Voltage<br>Vf<110%<br>Radiant Power,<br>Popt>70% |
| High Temperature Storage        | 100 °C, 1000Hrs  |  |
| Low Temperature Storage         | -40 °C, 1000Hrs  |  |
| Temperature Cycles (100cycles)  | -40 °C (30 min) ~ +25 °C (5 min)<br>+100 °C (30 min) ~ +25 °C (5 min)                  |  |
| Moisture Sensitive Level(MSL)   | 3 time reflow, peak temperature +260 °C, 10s Pre-conditioning: +30 °C, 60% RH for 192h |  |
| Vibration Test                  | 20 Hz-2000 Hz-20Hz, 200m/s <sup>2</sup> , 4cycles, 4 min, each X, Y, Z                 |  |

## Tape & Reel Packaging

(Unit: mm)



| Symbol | A0               | B0              | K0              | P0              | P1               | P2              |
|--------|------------------|-----------------|-----------------|-----------------|------------------|-----------------|
| Spec   | $3.70 \pm 0.05$  | $3.73 \pm 0.05$ | $1.35 \pm 0.05$ | $4.00 \pm 0.10$ | $8.00 \pm 0.10$  | $2.00 \pm 0.05$ |
| Symbol | W                | T               | E               | F               | D0               | D1              |
| Spec   | $12.00 \pm 0.20$ | $0.25 \pm 0.05$ | $1.75 \pm 0.10$ | $5.50 \pm 0.10$ | $1.5 + 0.1 / -0$ | $1.5 \pm 0.05$  |



Notes: 500pcs/reel

## Notes for storage and retrieval

### UV Light

These devices are short wavelength Ultraviolet LED. During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes.

UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational.

Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses. Do not look directly at the front or at the LED's lens when LED is operational.

### Static Electricity (ESD)

Despite with built-in Zener protection diodes, UV LED are particularly sensitive to ESD (Electrostatic Discharge); static electricity and surge voltages seriously damage UV LEDs and can result in complete failure of the device. Precautions must be taken against ESD when handling or operating these devices.

### Operating Conditions

In order to ensure the correct functioning of these LEDs, compliance to the typical electrical specifications is paramount. UV LEDs are particularly sensitive to any current value that exceed the max operating specifications, and will cause damage and possible complete failure to the device. The use of current regulated drive circuits are strongly recommended when operating these devices. These LEDs are susceptible to heat generation. Provide adequate thermal management to ensure LEDs do not exceed maximum recommended temperatures. Operating LEDs at temperatures in excess of specification will result in damage and possible complete failure of the device.

**The following warning labels are attached to the product/system using ultraviolet.**




**Label Information**

## Sanan Optoelectronics


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|                     |                      |
|---------------------|----------------------|
| PN: SCF35BUC00D1Z1  | Spec: 275BBA002C10   |
| Lot Cd: NPTU2005009 | WIP ID: CS2006010001 |




|     | Min | Avg   | Max |      |
|-----|-----|-------|-----|------|
| PO: | 2   | 3     | 4   | [mw] |
| WP: | 275 | 277.5 | 280 | [nm] |
| VF: | 5   | 5.3   | 5.5 | [V]  |

I (mA) : 40



QTY: 500



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