

Surface Mounted Chip LED
Model No. : CL-SP150DBW
■ Features :

- Compatible with automatic placement equipment
- Compatible with reflow solder process

■ Applications :

- Automotive_Telecommunication
- Indicators
- LCD Back-lights
- Illuminations

| | | |
|---------------|-------------|----------------|
| Dice Material | Light Color | Lens Color |
| InGaN | White | Color Diffused |

Absolute Maximum Ratings
(Ta=25°C)

| Item | Symbol | Maximum | Unit |
|--|------------------|------------|-------|
| Power Dissipation | P _D | 100 | mW |
| Continuous Forward Current | I _F | 25 | mA |
| Peak Forward Current (1/10 Duty Cycle 0.1ms Pulse Width) | I _{FP} | 100 | mA |
| Reverse Voltage | V _R | 5 | V |
| Derating Linear From 25°C | | 0.4 | mA/°C |
| Operating Temperature Range | T _{opr} | -30 to +80 | °C |
| Storage Temperature Range | T _{stg} | -40 to +85 | °C |

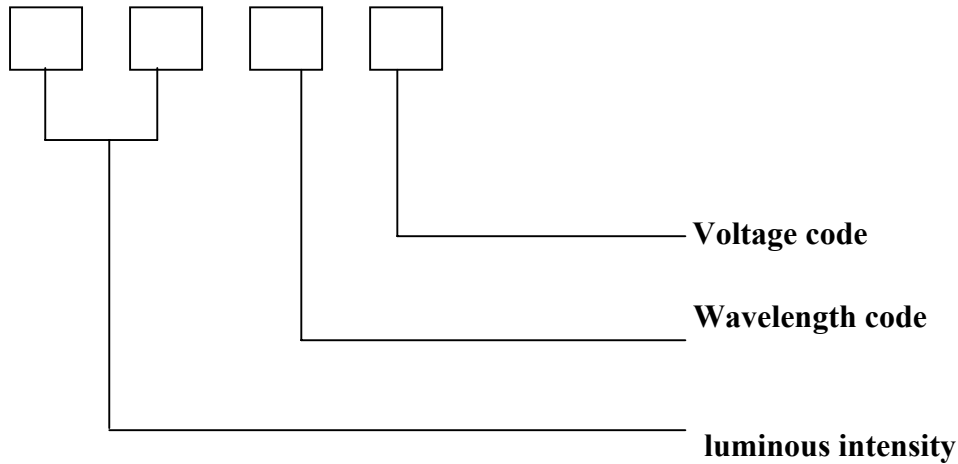
Electrical / Optical Characteristics
(Ta=25°C)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------|----------------|-----------|------|------|------|------|
| Forward Voltage | V _F | IF=20mA | | 3.30 | 4.20 | V |
| Reverse Current | I _R | VR=5V | | | 10 | uA |
| Chromaticity coordinate | X | IF=10mA | | 0.29 | | nm |
| Chromaticity coordinate | Y | IF=10mA | | 0.29 | | nm |
| Viewing Angle | 2θ 1/2 | IF=20mA | | 130 | | Deg |
| Luminous Intensity | I _v | IF=20mA | 285 | 450 | | mcd |

| | | | |
|-------|----------------|-----------|------------|
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| | | D | 2007/02/01 |
| | APPROVAL : | CHECK : | EDIT : |
| | | | |

◆ **Packing coding principle**

Notice: Bin code: **luminous intensity / wavelength / voltage.**



◆ **The Luminous Intensity Grade of White Chip-LED Products**

● Test Condition : @ 20mA

| Range,mcd | Bin code |
|-----------|----------|
| 360/450 | N2 |
| 450/570 | P1 |

◆ **Dominant Wavelength Grade of White Chip-LED Products**

● I type @ 20mA

| BIN | CIE | Top | Righ | Bott | Left | BIN | CIE | Top | Righ | Bott | Left |
|-----|-----|-------|-------|-------|-------|-----|-----|-------|-------|-------|-------|
| B1 | X | 0.287 | 0.283 | 0.307 | 0.309 | B2 | X | 0.309 | 0.307 | 0.330 | 0.330 |
| | Y | 0.295 | 0.305 | 0.331 | 0.317 | | Y | 0.317 | 0.331 | 0.360 | 0.339 |
| C1 | X | 0.296 | 0.287 | 0.309 | 0.313 | C2 | X | 0.313 | 0.309 | 0.330 | 0.330 |
| | Y | 0.276 | 0.295 | 0.317 | 0.297 | | Y | 0.297 | 0.317 | 0.339 | 0.318 |

◆ **Forward Voltage Grade of White Chip-LED Products**

● I type @ 20mA

| BIN | Range | BIN | Range |
|-----|---------|-----|---------|
| 2 | 2.9~3.0 | 5 | 3.2~3.3 |
| 3 | 3.0~3.1 | 6 | 3.3~3.4 |
| 4 | 3.1~3.2 | 7 | 3.4~3.5 |

◆ **Descriptions :**

- The Chip-LED Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature application, etc.

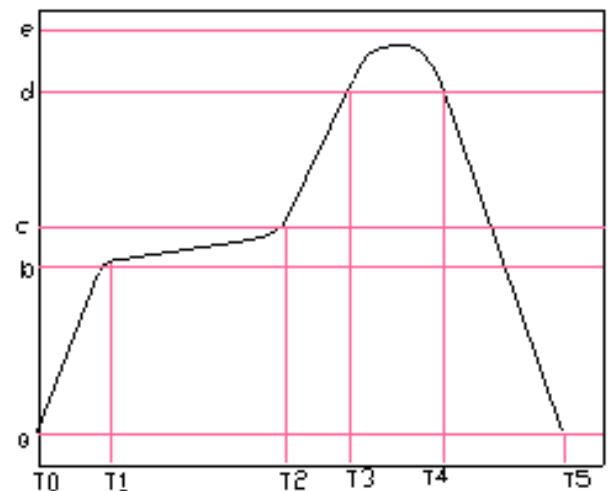
◆ **Reliability Test Items And Conditions :**

| NO. | Item | Test Conditions | Test Hours / Cycle | Sample Q'ty | Ac / Re |
|-----|----------------------------------|--|--------------------|-------------|---------|
| 1 | Solder Heat | TEMP : 260°C±5°C | 5 sec | 36 pcs | 0 / 1 |
| 2 | Temperature Cycle | H : +100°C 30min. ∫ 5min. L : -40°C 30min. | 50 cycle | 36 pcs | 0 / 1 |
| 3 | Thermal Shock | H : +100°C 5min. ∫ 10sec L : -40°C 5min. | 50 cycle | 36 pcs | 0 / 1 |
| 4 | High Temperature Storage | TEMP : 100°C | 1000 hrs | 36 pcs | 0 / 1 |
| 5 | Low Temperature Storage | TEMP : -40°C | 1000 hrs | 36 pcs | 0 / 1 |
| 6 | DC Operating Life | I _F = 20mA | 1000 hrs | 36 pcs | 0 / 1 |
| 7 | High Temperature / High Humidity | 85°C / 90~95%R.H. | 1000 hrs | 36 pcs | 0 / 1 |

◆ **Reflow Temp. / Time : :**

Please refer to the following figure :

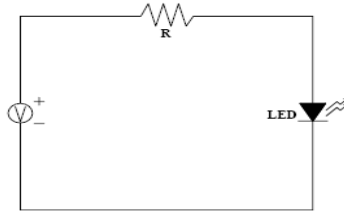
| Temp.(°C) | | Time(Sec) | |
|------------|-----|--------------|----------------|
| a | 25 | T0~T1 | Max. 3°C/sec |
| b | 150 | T1~T2 | 90~130 sec |
| c | 200 | T2~T3 | Max. 3°C/sec |
| d | 220 | T3~T4 | Max. 30~50 sec |
| e | 250 | | |
| | | T4~T5 | Max. -3°C/sec |
| Blet Speed | | 70~90 cm/min | |



◆ **Precautions For Use :**

- Over - current - proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen)



- Storage

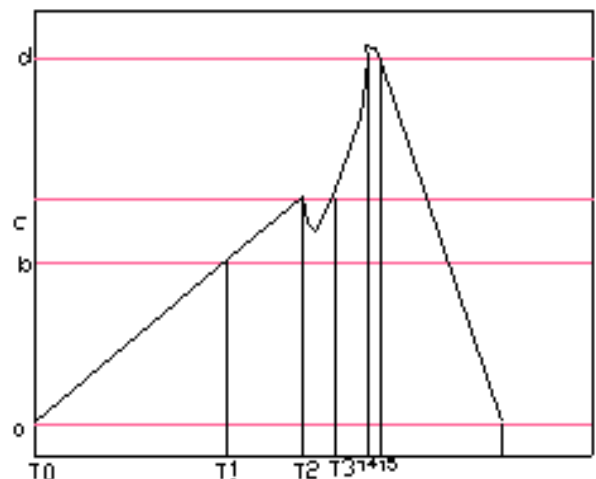
1. The operation of temperature and R.H. are : $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$, R.H.60% Max..
2. Once the package is opened, the products should be used within 72 hrs. Otherwise, they should be kept in a dampproof box with desiccating reagent. Considering the tape life, we suggest our customers to use our products within 1 year (from production date) .
3. It's recommended to bake before soldering when the package is unsealed after 72 hrs. The condition is : $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 24hrs.

◆ **Soldering Iron :**

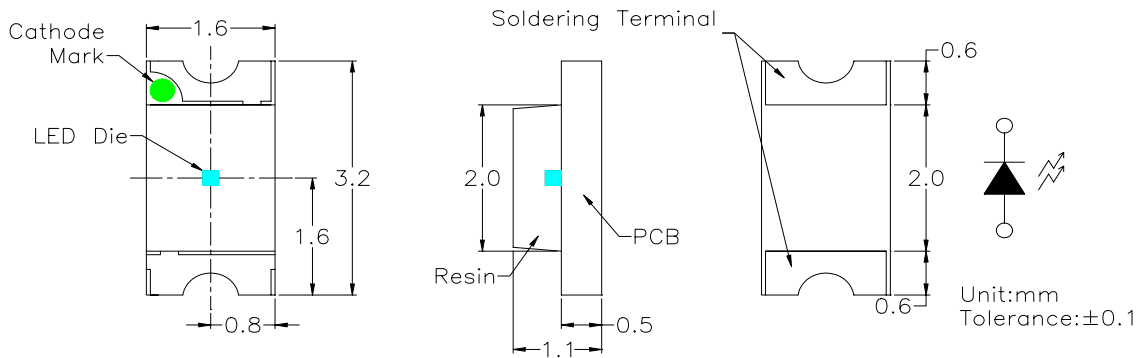
- Temperature at tip of iron : 300°C Max. (25W Max.)
- Soldering time : $5 \pm 1\text{sec}$.

◆ **Wave Soldering Temp. / Time :**

| Temp.($^{\circ}\text{C}$) | | Time(Sec) | |
|-----------------------------|--------------|-----------|-------------|
| a | 25 | T1~T2 | 60 ± 20 |
| b | 130 ± 10 | T2~T3 | |
| c | 185 | T3~T6 | |
| d | 250 ± 3 | T4~T5 | 3 ± 2 |
| | | | |

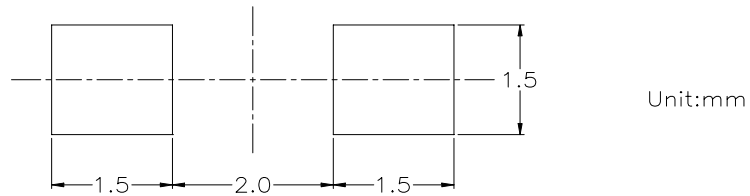


◆ Package Dimensions of Device



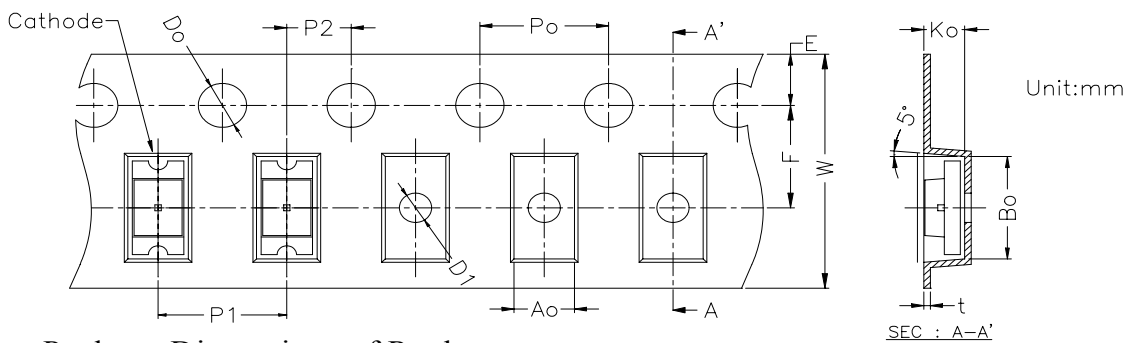
1. Soldering terminal may shift in x, y direction.
2. Polarity referring onto the cathode mark is reversed on the UR/HR/SR

◆ Recommended Soldering Pad Dimensions

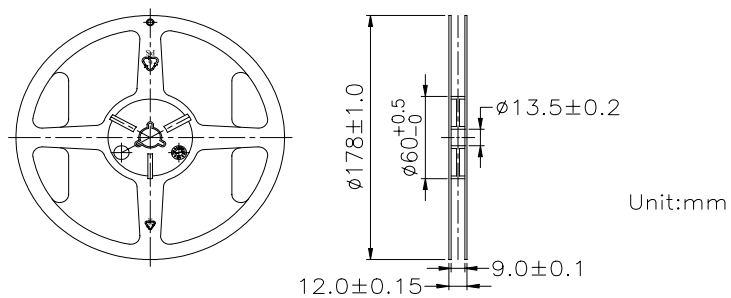


◆ Tape Specification : 3000pcs Per Reel

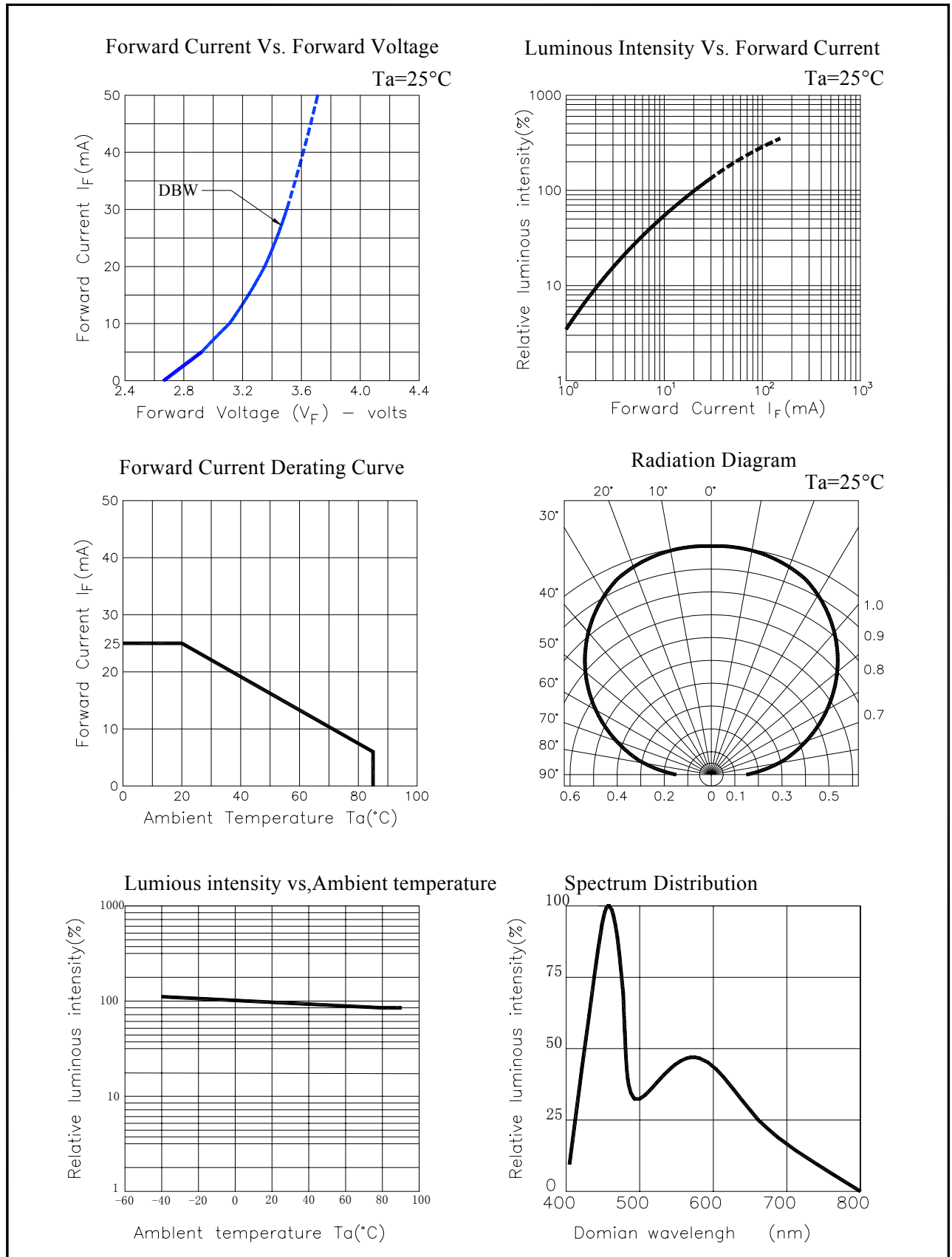
| Packing Size | | | | | | | | | | | | | |
|--------------|-------|-------|-------|-------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Item | W | P1 | E | F | Do | D1 | Po | 10Po | P2 | Ao | Bo | Ko | t |
| Spec. | 8.00 | 4.00 | 1.75 | 3.50 | 1.50 | 1.00 | 4.00 | 40.00 | 2.00 | 1.85 | 3.45 | 1.27 | 0.22 |
| Tolerance | ±0.20 | ±0.10 | ±0.10 | ±0.05 | $^{+0.10}_{-0.00}$ | ±0.05 | ±0.05 | ±0.20 | ±0.05 | ±0.10 | ±0.10 | ±0.10 | ±0.05 |



◆ Package Dimensions of Reel :



◆ Typical Electro-Optical Characteristic Curves: SP110Series



◆ Packing and Shipping Spec.

