BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

# PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

- ► Ceramic SMD
- ► 3535 2.30t
- ► Warm White 3500K

Release Date: 02 April 2025 Version: A1.1

# N0W62S85

3535 Ceramic Series

## 3535 Ceramic Series

RoHS Compliant

## FEATURES:

- **Package:** Top View Ceramic Package
- **Forward Current:** 350~1000mA
- **Forward Voltage (typ.):** 3.0V
- **Luminous Flux (typ.):** 152lm@350mA
- **Colour:** Warm White
- **Colour Temperature (typ.):** 3500K
- **Viewing Angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Yellow Diffused)
  - Package: Ceramic
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+85°C
- **Electrostatics Discharge (HBM):** 1000V
- **Grouping Parameters:**
  - Forward Voltage
  - Luminous Flux
  - CIE Chromaticity
- **Soldering Methods:** Reflow Soldering
- **MSL Level:** according to J-STD020 MSL 3
- **Packing:** 12mm tape with max.900/reel, ø165mm (6.5'')

## APPLICATIONS:

- General Lighting
- Portable Lighting
- Commercial Lighting
- Indoor Lighting
- Architecture Lighting
- High Bay Light

## CHARACTERISTICS:

Absolute Maximum Characteristics ($T_a$=25°C)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| DC Forward Current | $I_F$ | 1000 | mA |
| Pulse Forward Current (Duty 1/10, width≤100μS) | $I_{PF}$ | 1500 | mA |
| Power Dissipation | $P_D$ | 3400 | mW |
| Reverse Voltage | $V_R$ | 5 | V |
| Reverse Current @10V | $I_R$ | 10 | μA |
| Junction Temperature | $T_j$ | 125 | °C |
| Electrostatic Discharge (HBM) | ESD | 1000 | V |
| Thermal Resistance (Junction to Solder Point) | $R_{th(j-sp)}$ | 5 | °C/W |
| Operating Temperature | $T_{OPR}$ | -40~+105 | °C |
| Storage Temperature | $T_{STG}$ | -40~+85 | °C |
| Soldering Temperature | $T_{SOL}$ | 230/260 for 10S | °C |
| Colour Rendering Index | CRI | min. 80<br>typ. 82 | --- |

1. Rth(j-sp) is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

## CHARACTERISTICS:

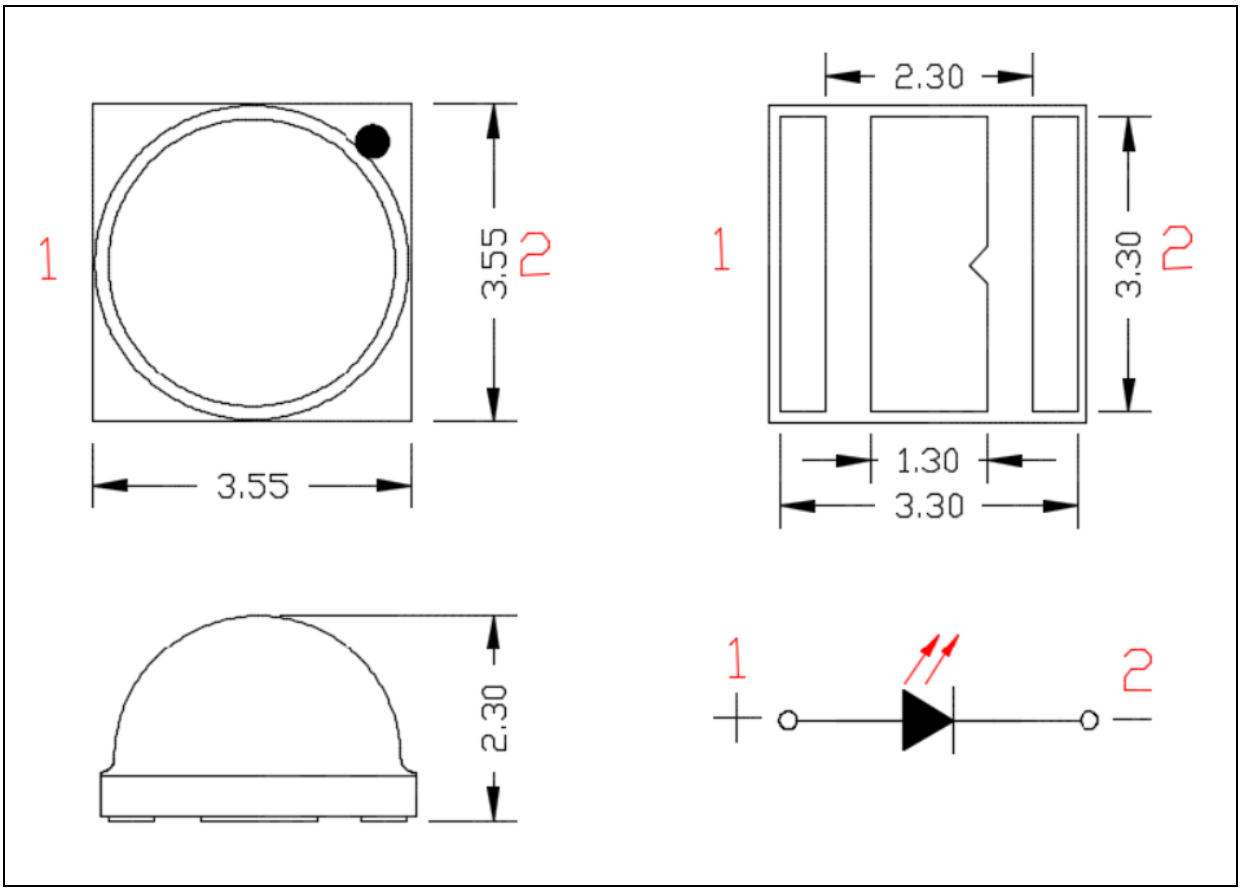
Electrical & Optical Characteristics ($T_a$=25°C)

| Parameter | Symbol | Values | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Forward Voltage | $V_F$ | 2.6 | 3.0 | 3.4 | V | $I_F$=350mA |
| Luminous Flux ($T_j$=25°C) | $\Phi_V$ | 139 | 152 | --- | lm | $I_F$=350mA |
| | | --- | 297 | --- | | $I_F$=700mA |
| Luminous Flux ($T_j$=85°C) | $\Phi_V$ | --- | 143 | --- | lm | $I_F$=350mA |
| | | --- | 266 | --- | | $I_F$=700mA |
| Chromaticity Coordinates | X | 0.3889 | --- | 0.4222 | --- | $I_F$=350mA |
| | Y | 0.3690 | --- | 0.4127 | | |
| Colour Temperature | CCT | --- | 3500 | --- | K | $I_F$=350mA |
| Viewing Angle | $2\theta_{1/2}$ | --- | 120 | --- | deg | $I_F$=350mA |

1. Luminous flux ($\Phi_V$) ±10%, Forward Voltage ($V_F$) ±0.1V, CRI ±2

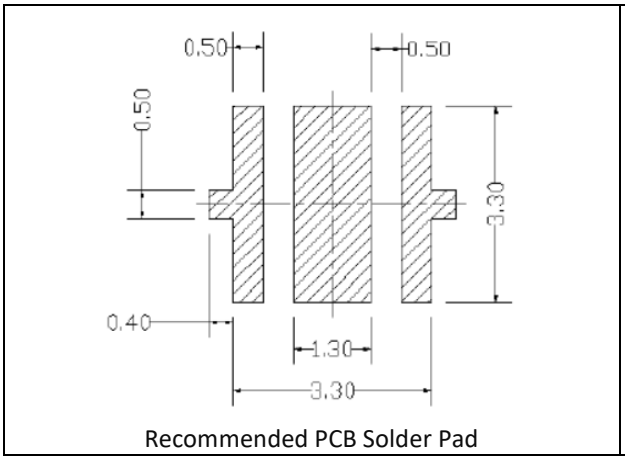
## OUTLINE DIMENSION:

Package Dimension:

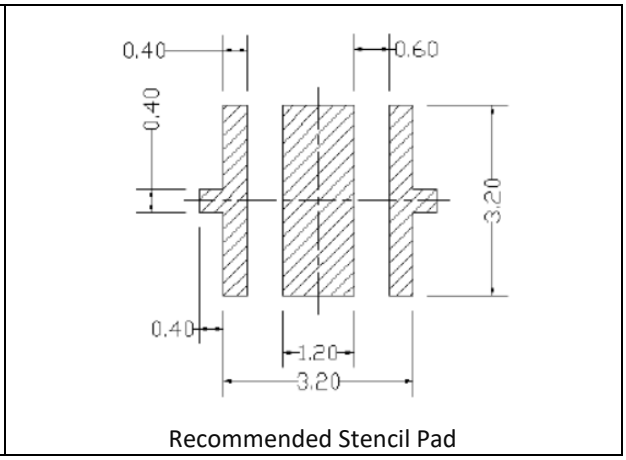



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:




Recommended PCB Solder Pad




Recommended Stencil Pad

1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

## BINNING GROUPS:

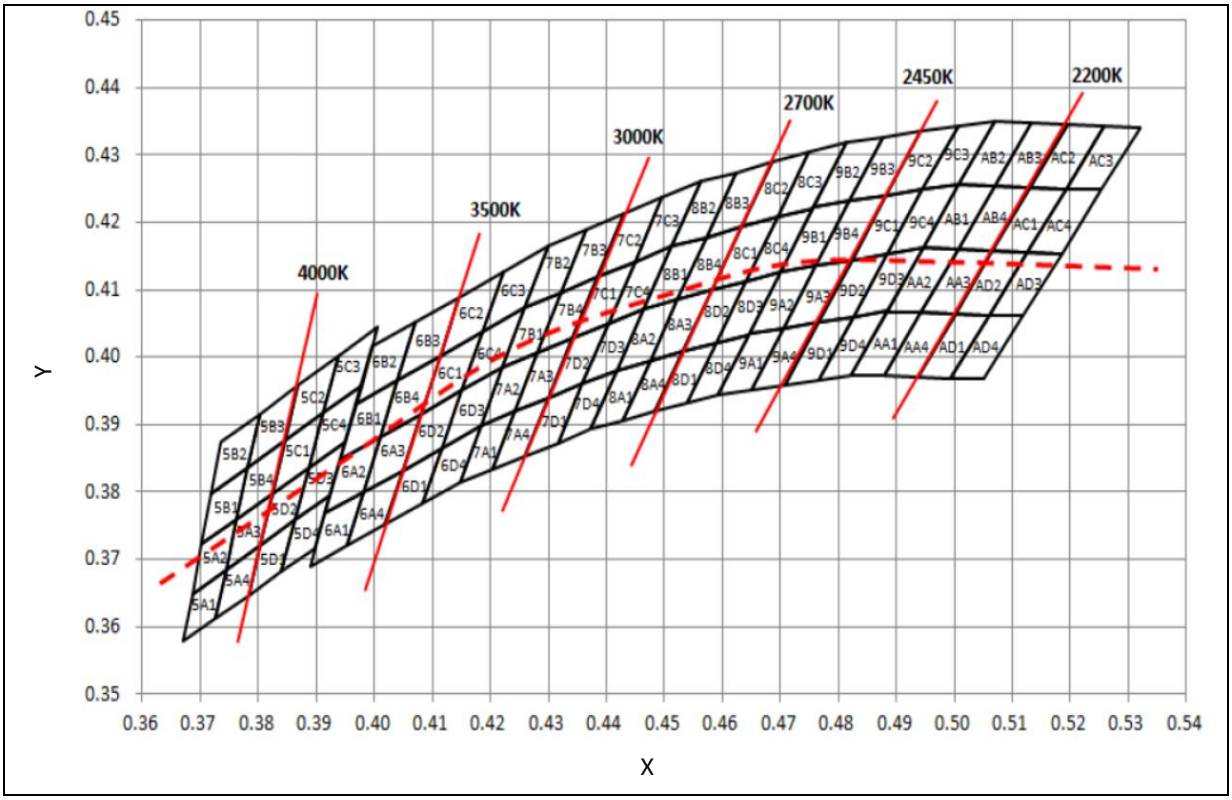
Forward Voltage Classifications ($I_F$ = 350mA):

| Code | Min. | Max. | Unit |
|---|---|---|---|
| G3 | 2.6 | 2.8 | V |
| H3 | 2.8 | 3.0 | |
| J3 | 3.0 | 3.2 | |
| K3 | 3.2 | 3.4 | |

Luminous Flux Classifications ($I_F$ = 350mA):

| Code | Min. | Max. | Unit |
|---|---|---|---|
| 2G | 139 | 148 | lm |
| 2H | 148 | 156 | |
| 2J | 156 | 164 | |
| 2K | 164 | 172 | |

## CIE CHROMATICITY DIAGRAM:




Chromaticity Coordinates Classifications ($I_F$ = 350mA):

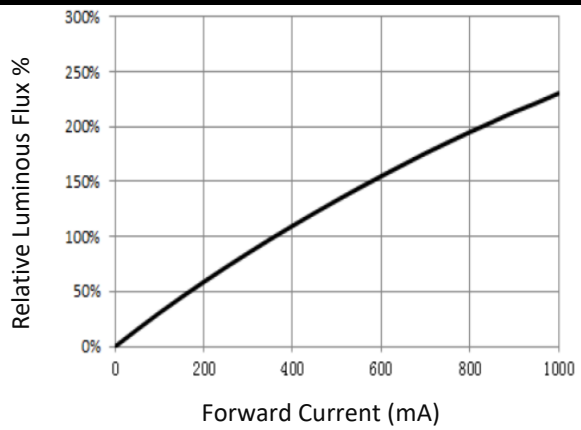
| | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | X | Y | X | Y | X | Y |
| 6C3 | 0.4186 | 0.4037 | 0.4222 | 0.4127 | 0.4299 | 0.4165 | 0.4259 | 0.4073 |
| 6C4 | 0.4150 | 0.3950 | 0.4186 | 0.4037 | 0.4259 | 0.4073 | 0.4221 | 0.3984 |
| 6D3 | 0.4116 | 0.3865 | 0.4150 | 0.3950 | 0.4221 | 0.3984 | 0.4183 | 0.3898 |
| 6D4 | 0.4082 | 0.3782 | 0.4116 | 0.3865 | 0.4183 | 0.3898 | 0.4147 | 0.3814 |
| 6C2 | 0.4113 | 0.4001 | 0.4146 | 0.4089 | 0.4222 | 0.4127 | 0.4186 | 0.4037 |
| 6C1 | 0.4080 | 0.3916 | 0.4113 | 0.4001 | 0.4186 | 0.4037 | 0.4150 | 0.3950 |
| 6D2 | 0.4048 | 0.3832 | 0.4080 | 0.3916 | 0.4150 | 0.3950 | 0.4116 | 0.3865 |
| 6D1 | 0.4017 | 0.3751 | 0.4048 | 0.3832 | 0.4116 | 0.3865 | 0.4082 | 0.3782 |
| 6B3 | 0.4040 | 0.3966 | 0.4071 | 0.4052 | 0.4146 | 0.4089 | 0.4113 | 0.4001 |
| 6B4 | 0.4010 | 0.3882 | 0.4040 | 0.3966 | 0.4113 | 0.4001 | 0.4080 | 0.3916 |
| 6A3 | 0.3981 | 0.3800 | 0.4010 | 0.3882 | 0.4080 | 0.3916 | 0.4048 | 0.3832 |
| 6A4 | 0.3953 | 0.3720 | 0.3981 | 0.3800 | 0.4048 | 0.3832 | 0.4017 | 0.3751 |

Chromaticity Coordinates Classifications ($I_F$ = 350mA):

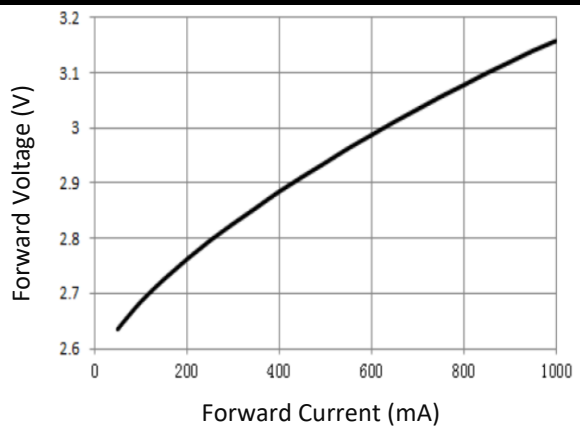
| | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | X | Y | X | Y | X | Y |
| 6B2 | 0.3968 | 0.3930 | 0.3996 | 0.4015 | 0.4071 | 0.4052 | 0.4040 | 0.3966 |
| 6B1 | 0.3941 | 0.3848 | 0.3968 | 0.3930 | 0.4040 | 0.3966 | 0.4010 | 0.3882 |
| 6A2 | 0.3915 | 0.3768 | 0.3941 | 0.3848 | 0.4010 | 0.3882 | 0.3981 | 0.3800 |
| 6A1 | 0.3889 | 0.3690 | 0.3915 | 0.3768 | 0.3981 | 0.3800 | 0.3953 | 0.3720 |

## ELECTRO-OPTICAL CHARACTERISTICS:

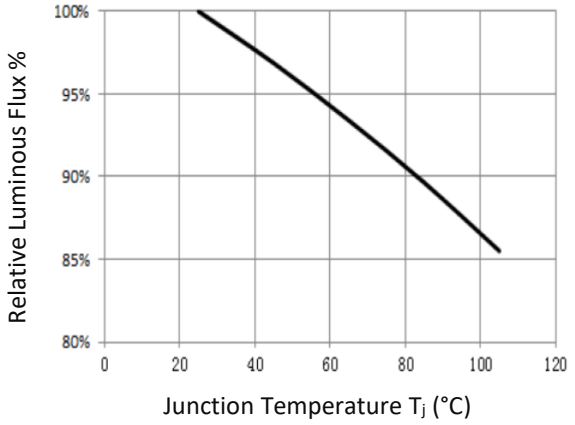
### Relative Luminous Flux v.s. Forward Current



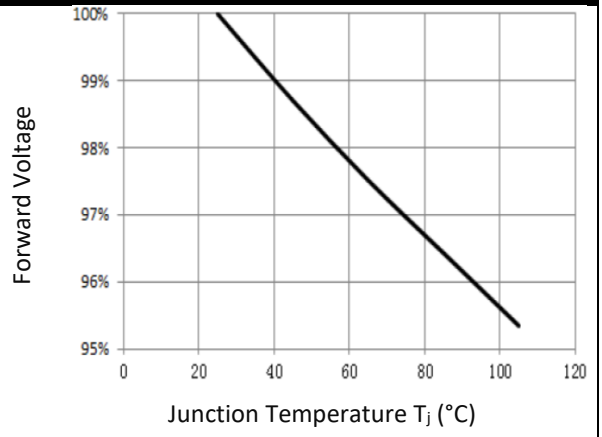

### Forward Current v.s. Forward Voltage



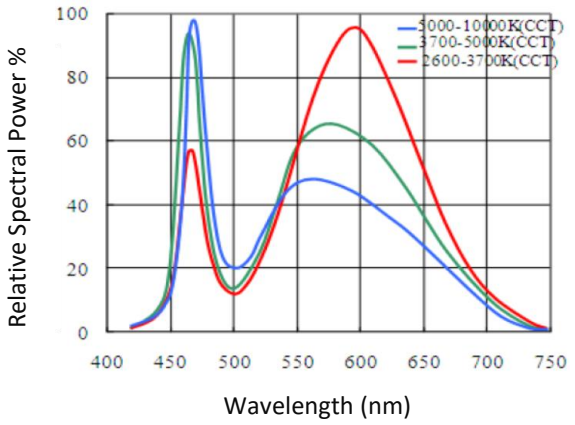

### Relative Luminous Flux v.s. Junction Temp.



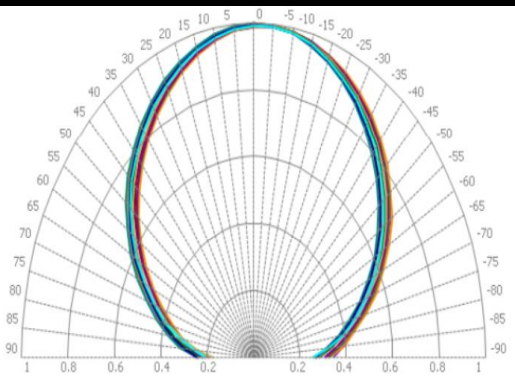

### Forward Voltage v.s. Junction Temp.

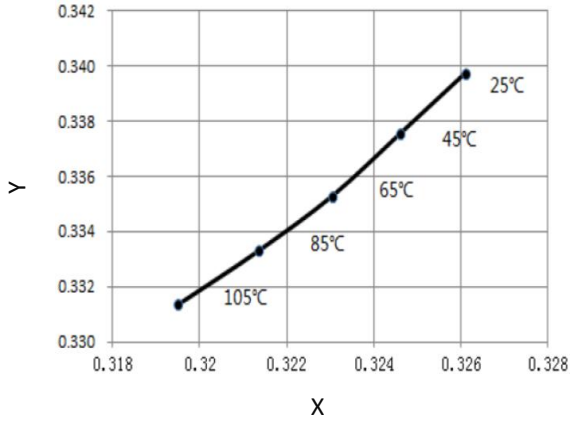
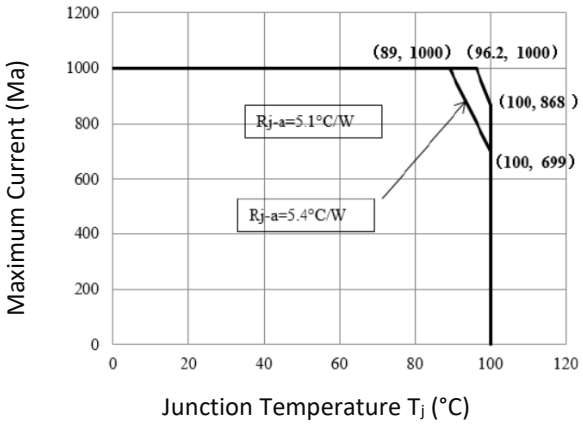



### Relative Spectral Power v.s. Wavelength



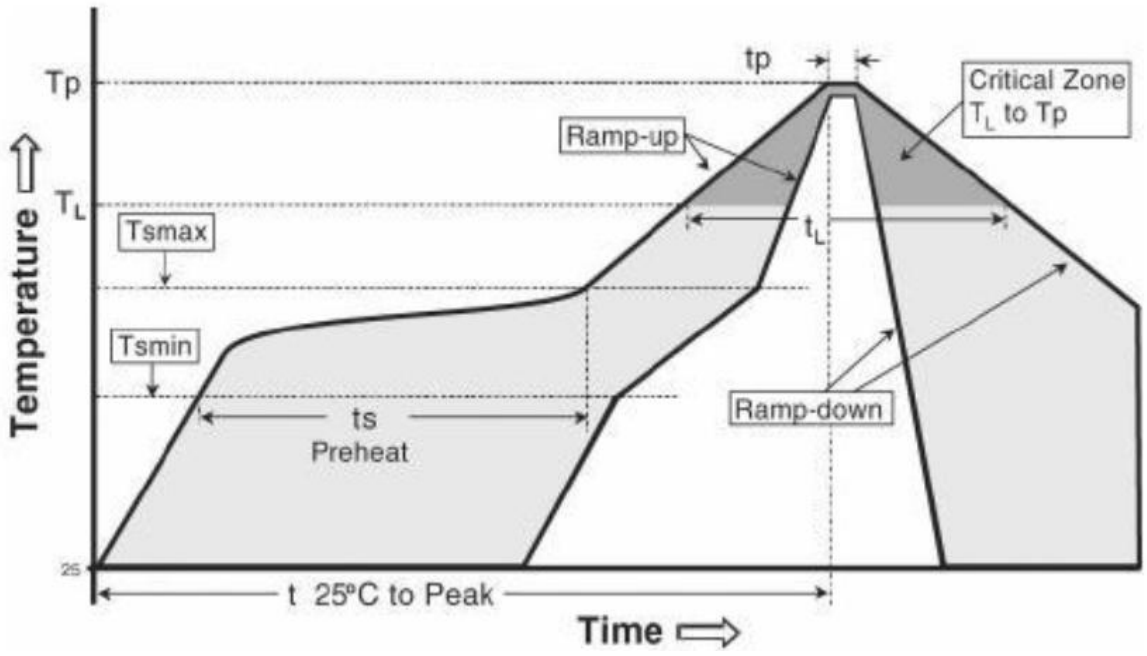

### Directive Radiation



| Ambient Temperature v.s. CIE X, Y Shift | Forward Current Derating Curve |
|---|---|
|  |  |

## RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:




| | |
|---|---|
| Temperature Min. ($T_{smin}$) | 150°C |
| Temperature Max. ($T_{smax}$) | 200°C |
| Period from $T_{smin}$ to $T_{smax}$ | 60-120 seconds |
| Ramp-up Rate ($T_L$ to $T_P$) | Max.3°C/second |
| Liquidous Temperature ($T_L$) | 217°C |
| Time Maintained above $T_L$ | 60-150 seconds |
| Peak Package Temperature ($T_P$) | Max.260°C |
| Time within 5°C of the Specified Classification Temperature $T_C$ | Max.30 seconds |
| Ramp-down Rate ($T_P$ to $T_L$) | Max.6°C/second |
| Time from 25°C to Peak Temperature | Max.8 mins |

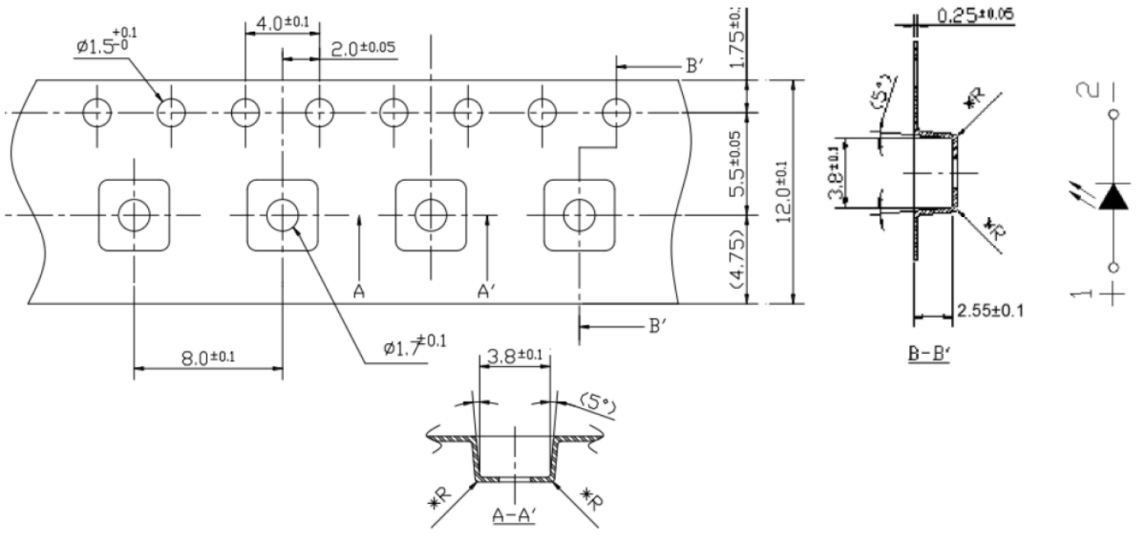
Note:

1. Maximum reflow soldering: 1 time.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.
3. Recommended soldering temperature: 240°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.

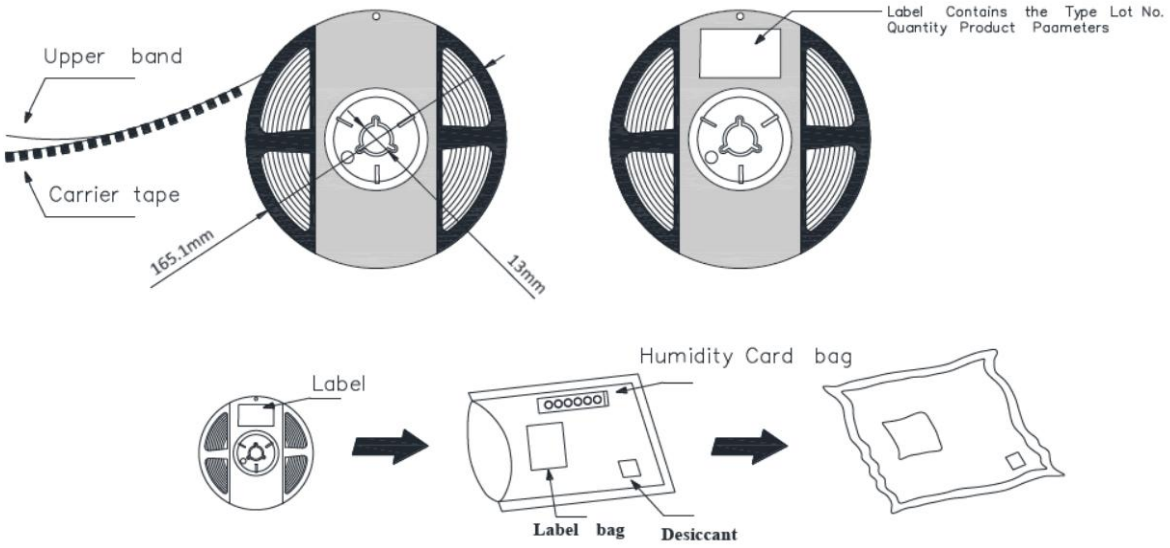
## PACKING SPECIFICATION:

Reel Dimension:

Max.900pcs/reel




1. Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ±0.25mm
2. Adhesion Strength of Cover Tape Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10˚ to the carrier tape.
3.



## PRECAUTIONS OF USE:

### Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with descanting agent <10% R.H. and apply baking before use.

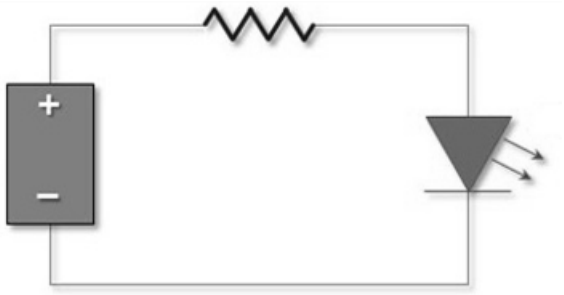
### Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:

- 60±5°C x 24hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

### Testing Circuit:




Must apply resistor(s) for protection (over current proof).

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

## REVISION RECORD:

| Version | Date | Summary of Revision |
|---|---|---|
| A1.0 | 11/10/2022 | Datasheet set-up. |
| A1.1 | 02/04/2025 | New datasheet format. |