BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

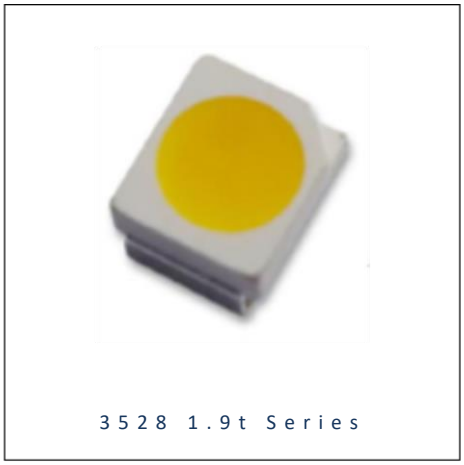
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- ▶ PLCC2 SMD
- ▶ 3528 1.9t Series
- ▶ Cool White 8400K

Release Date: 04 June 2022 Version: A1.1

N0W31S08



3528 1.9t Series

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RoHS Compliant

FEATURES:

- **Package:** Top View PLCC2 White SMD Package
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Intensity (typ.):** 2050mcd@20mA
- **Colour:** Cool White
- **Colour Temperature (CCT):** 7400~9900K
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Yellow Diffused)
  - L/T Finish: Ag plated
- **Operating Temperature:** -30~+80°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
  - Forward Voltage
  - Luminous Intensity
  - CIE Chromaticity
- **Soldering methods:** Reflow Soldering
- **Preconditioning:** MSL 5 according to J-STD020
- **Packing:** 8mm tape with max.2000/reel, ø180mm (7'')

APPLICATIONS:

- Portable Lighting
- Commercial Lighting
- Indoor Lighting
- Backlight for LCD
- General Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	30	mA
Pulse Forward Current @Duty 1/10, 0.1ms	I_{PF}	100	mA
Reverse Voltage	V_R	5	V
Reverse Current @10V	I_R	10	μA
Junction Temperature	T_j	110	°C
Electrostatic Discharge (HBM)	ESD	1000	V
Operating Temperature	T_{OPR}	-30~+80	°C
Storage Temperature	T_{STG}	-40~+100	°C
Soldering Temperature	T_{SOL}	260	°C

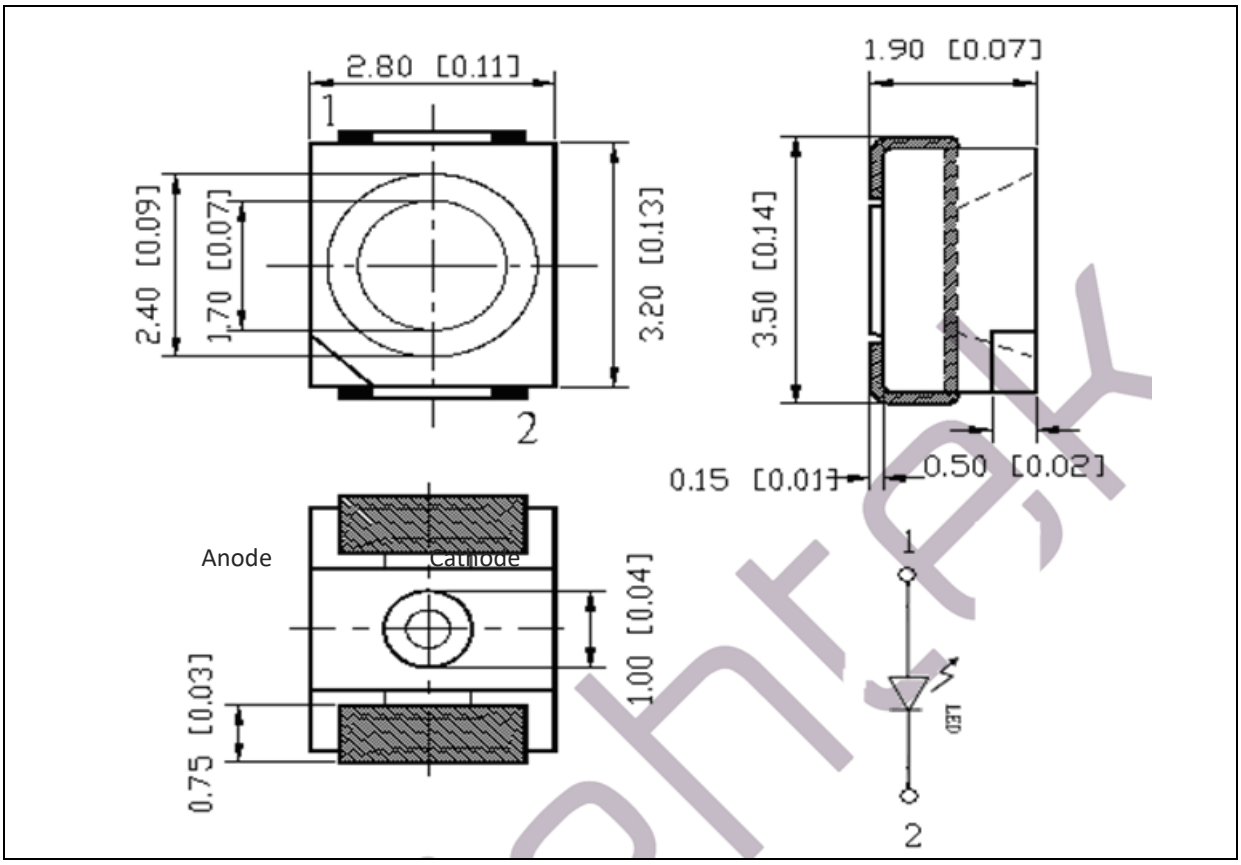
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.2	3.8	V	I_F=20mA
Luminous Intensity	I_V	1850	2050	---	mcd	I_F=20mA
Chromaticity Coordinates	X	---	0.2921	---	---	I_F=20mA
	Y	---	0.2986	---		
Colour Temperature	CCT	7400	8400	9900	K	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

1. Luminous Intensity (Φ_V) ±10%, Forward Voltage (V_F) ±0.1V, Colour Coordinate: ±0.005, Viewing Angle(2θ1/2) ±5%, CRI ±5

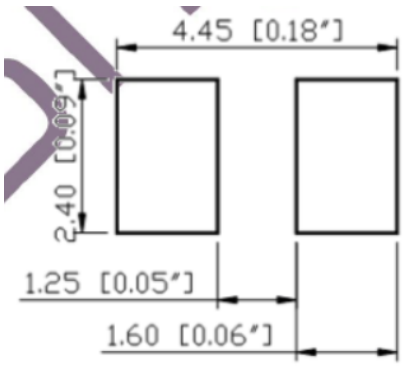
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.13mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad

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

BINNING GROUPS:

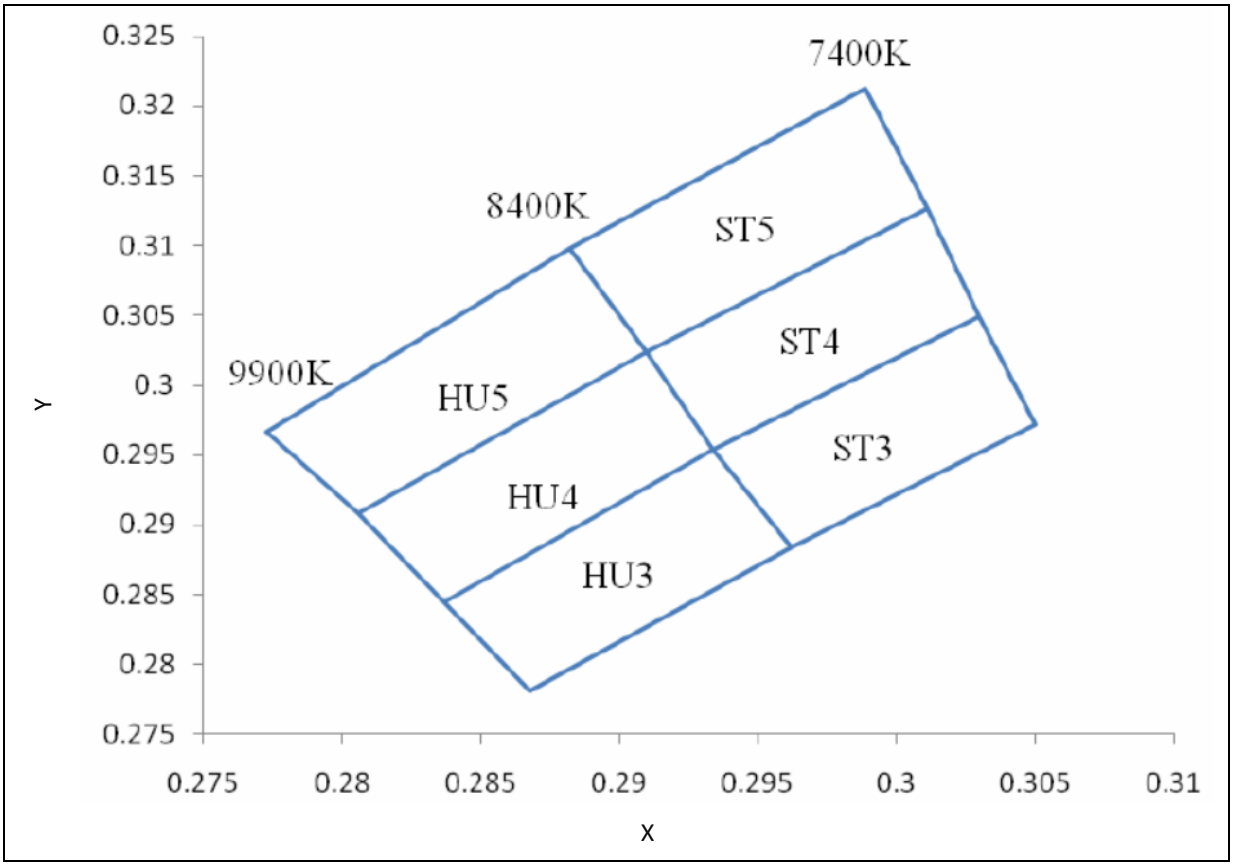
Forward Voltage Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
B	2.8	2.9	V
C	2.9	3.0	
D	3.0	3.1	
E	3.1	3.2	
F	3.2	3.3	
G	3.3	3.4	
H	3.4	3.5	
I	3.5	3.6	
J	3.6	3.7	
K	3.7	3.8	

Luminous Intensity Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
5	1850	2050	mcd
6	2050	2250	
7	2250	2450	
8	2450	2650	

CIE CHROMATICITY DIAGRAM:

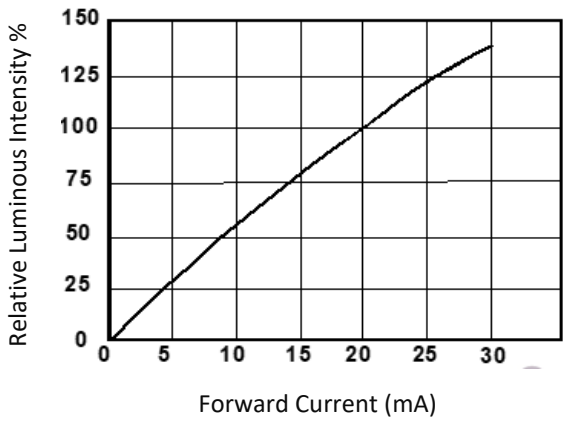


Chromaticity Coordinates Classifications (I_F = 20mA):

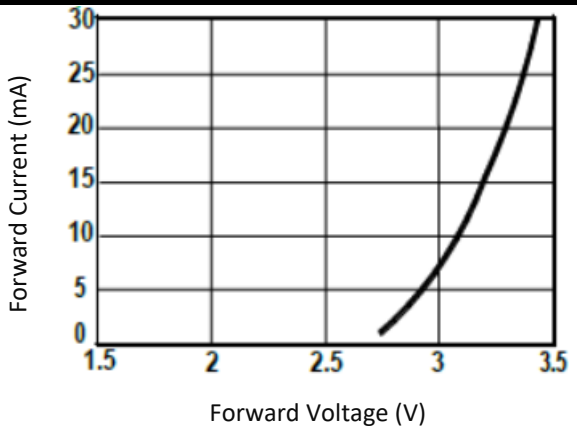
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
ST3	0.2934	0.2954	0.2962	0.2884	0.3050	0.3972	0.3030	0.3050
ST4	0.2910	0.3024	0.2934	0.2954	0.3030	0.3050	0.3011	0.3127
ST5	0.2882	0.3098	0.2910	0.3024	0.3011	0.3127	0.2989	0.3213
HU3	0.2837	0.2845	0.2868	0.2781	0.2962	0.2884	0.2934	0.2954
HU4	0.2806	0.2908	0.2837	0.2845	0.2934	0.2954	0.2910	0.3024
HU5	0.2773	0.2967	0.2806	0.2908	0.2910	0.3024	0.2882	0.3098

ELECTRO-OPTICAL CHARACTERISTICS:

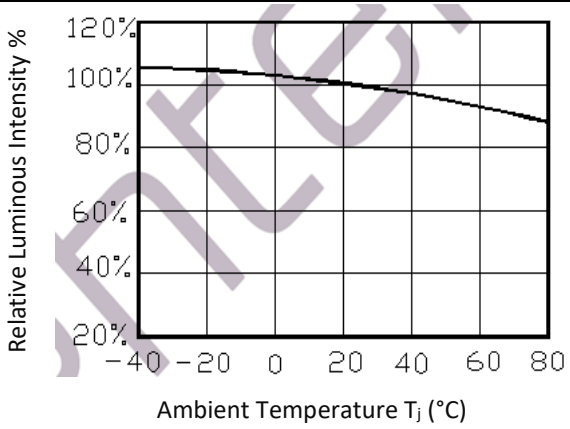
Relative Luminous Intensity v.s. Forward Current



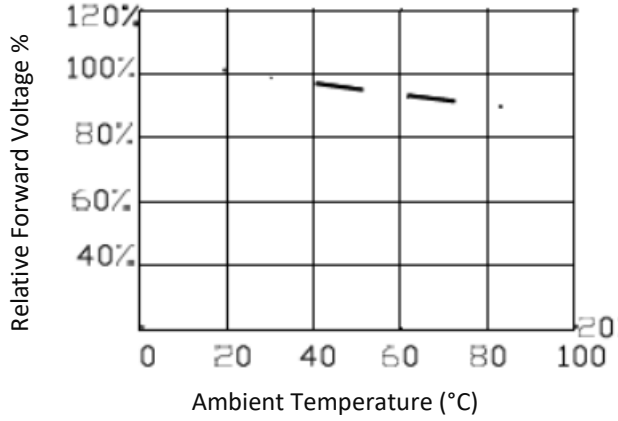
Forward Current v.s. Forward Voltage



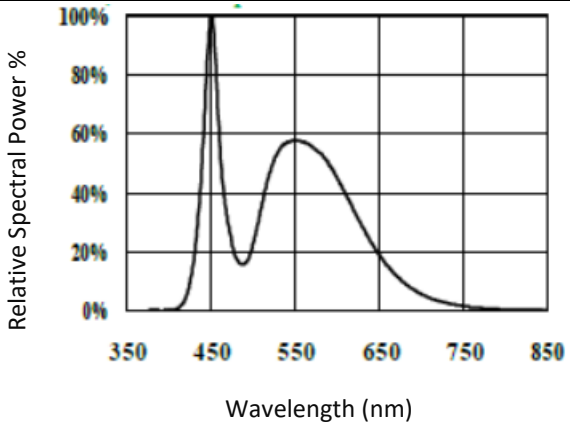
Relative Luminous Intensity v.s. Ambient Temp.



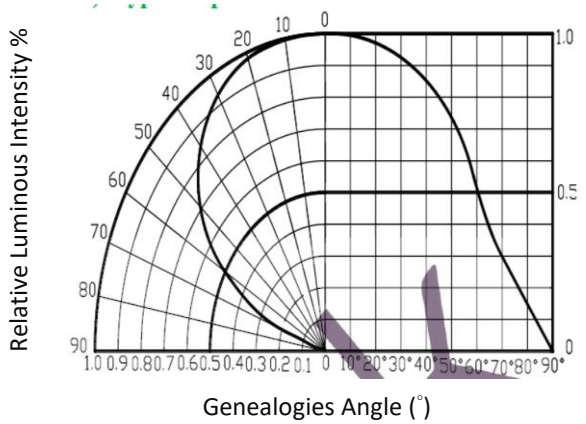
Relative Forward Voltage v.s. Ambient Temp.

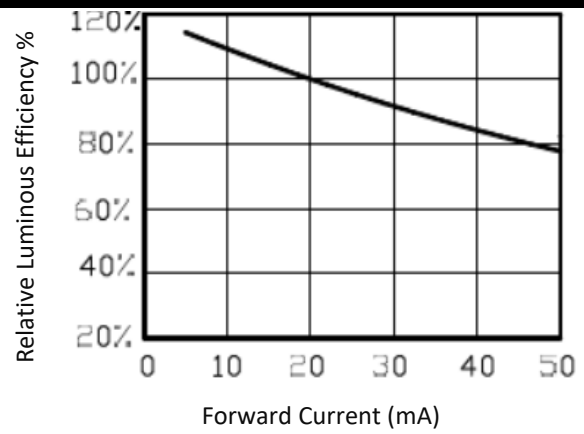
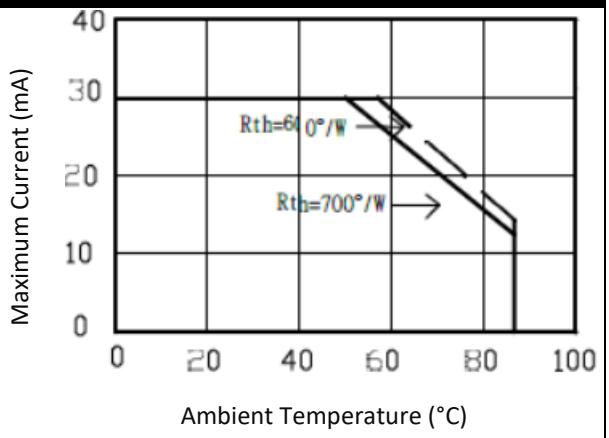


Relative Spectral Power v.s. Wavelength



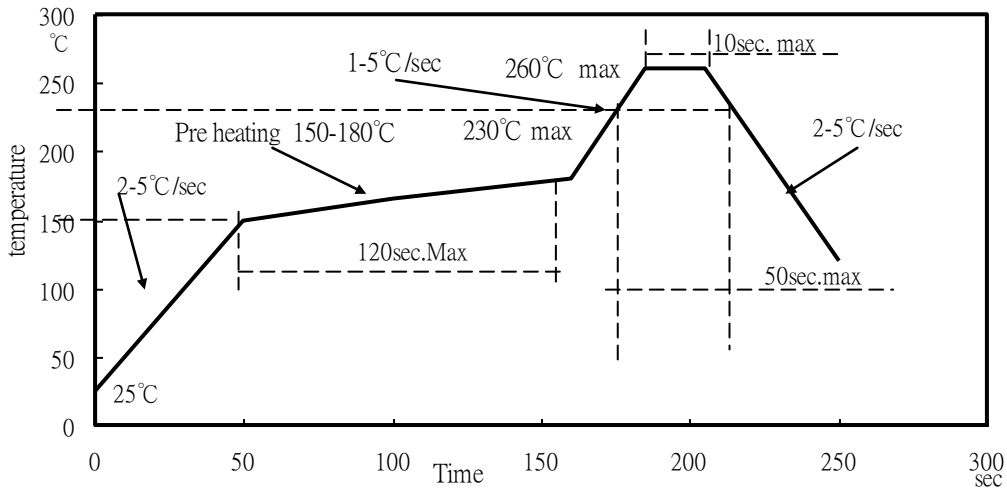
Directive Radiation



Relative Emission Efficiency v.s. Forward Current	Forward Current Derating Curve
	

RECOMMENDED SOLDERING PROFILE:

IR Reflow Lead-free Solder:



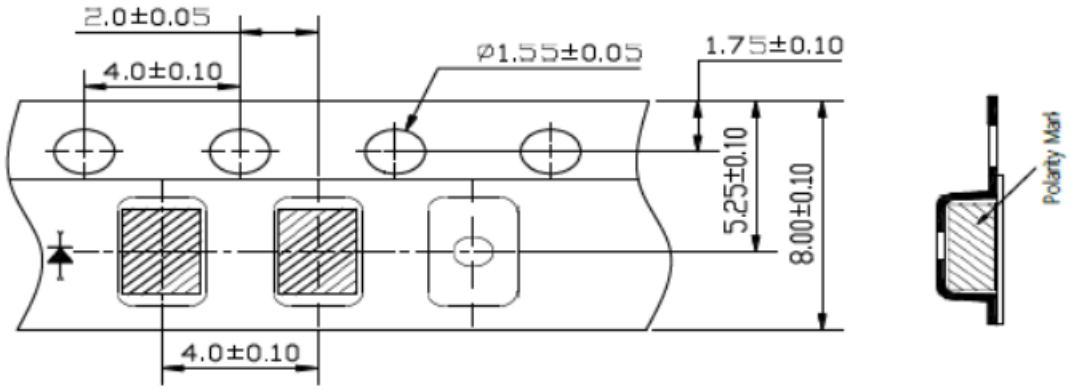
Note:

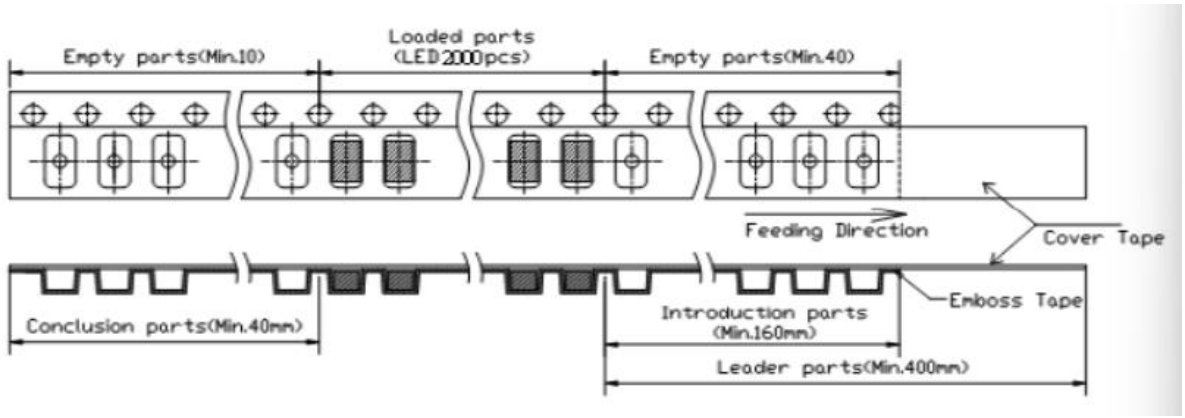
1. Recommended soldering temperature: 240°C. The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 3 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

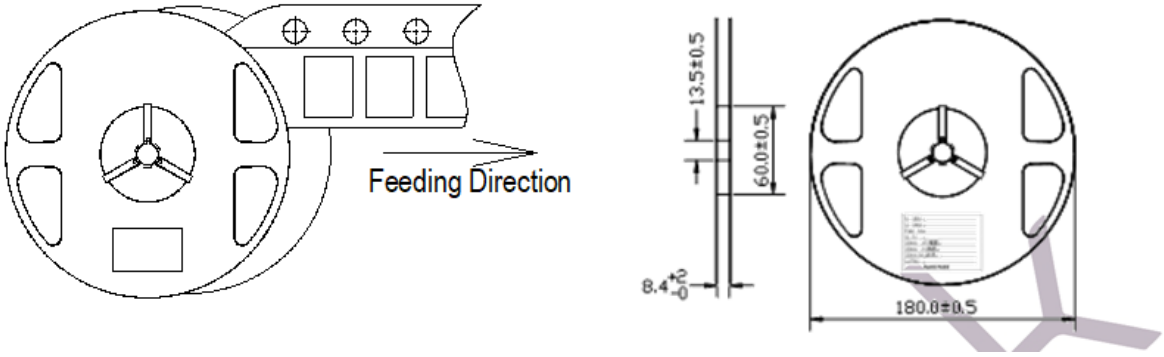
PACKING SPECIFICATION:

Reel Dimension:

Max.2000pcs/reel







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.

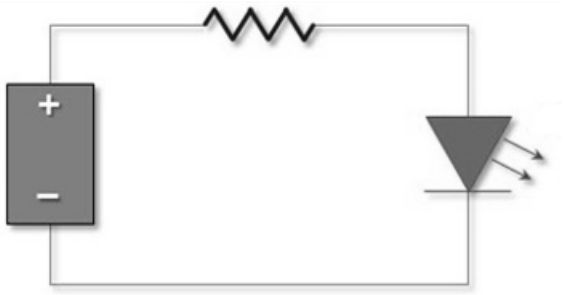
Baking:

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±3°C x 6hrs 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	29/07/2016	Datasheet set-up.
A1.1	04/06/2022	New datasheet format.