



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET



- ▶ PLCC2
- ▶ 3020 Series
- ▶ Cool White (5700K)

NOW02S31



Release Date: 19 December 2013 Version: A1.1



### 3020 Series



#### FEATURES:

- **Package:** PLCC White SMT Package
- **Forward Current:** 60mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 22lm @60mA
- **Colour:** Cool White
- **CCT:** 5700K
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Yellow Diffused)
- **Operating Temperature:** -20~+80°C
- **Storage Temperature:** -30~+100°C
- **ESD:** 500V
- **Grouping parameters:**
  - Forward voltage
  - Luminous flux
  - CIE Chromaticity
- **Soldering methods:** IR Reflow soldering; wave soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 8mm tape with 2000/reel, ø180mm (7")

#### APPLICATIONS:

- LCD Backlighting
- General Lighting
- Commercial Lighting
- Residential Lighting
- Architectural Lighting
- Flash Lighting

**CHARACTERISTICS:**

## Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	$I_F$	60	mA
Peak Forward Current Duty 1/10@10KHz	$I_{FP}$	100	mA
Reverse Current @5V	$I_R$	50	$\mu$ A
Power Dissipation	PD	0.2	W
Electrostatic Discharge	ESD	500	V
Operating Temperature	$T_{OPR}$	-20~+80	°C
Storage Temperature	$T_{STG}$	-30~+100	°C
Colour Rendering Index	CRI	>80	---

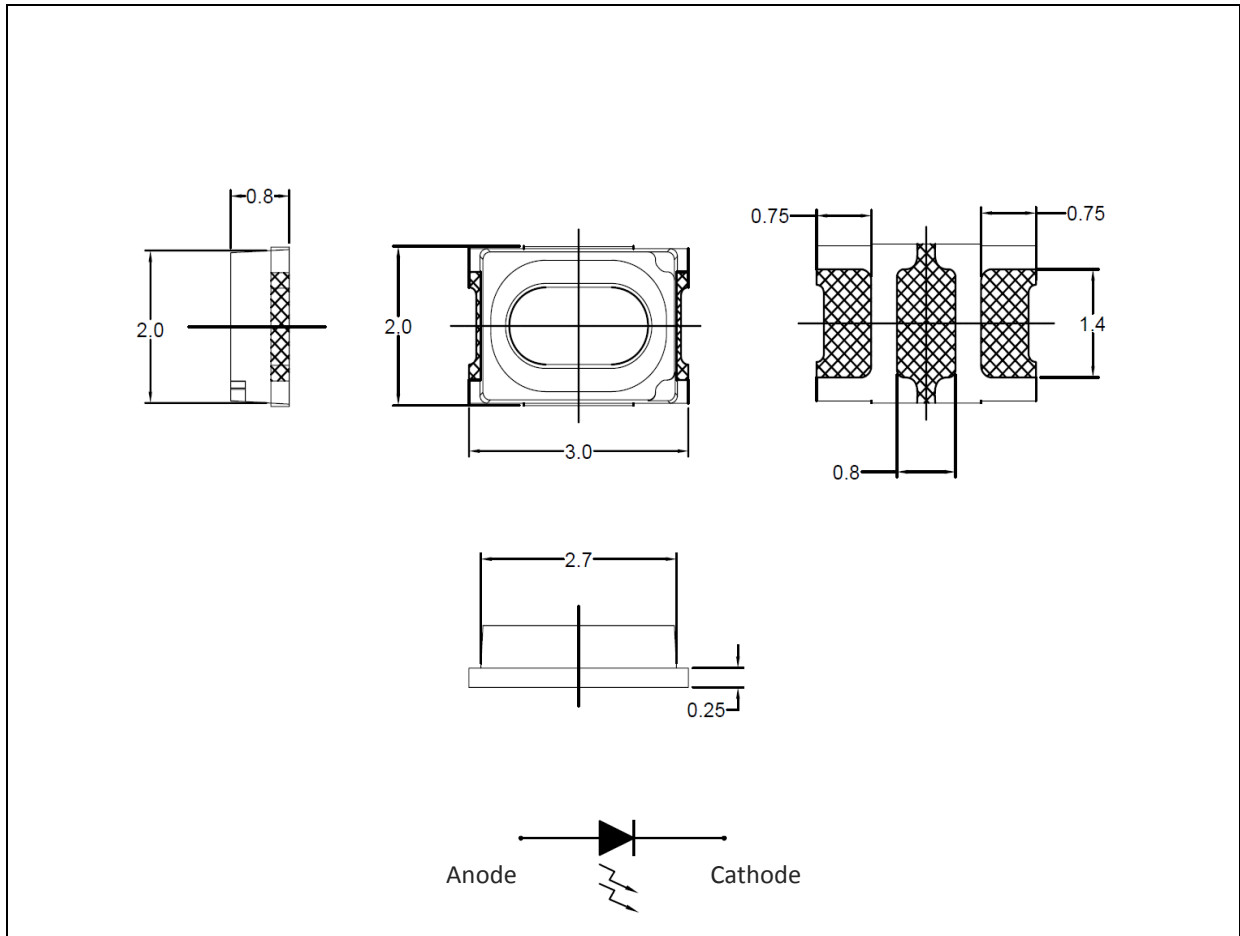
## Electrical &amp; Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	2.8	---	3.6	V	$I_F=60mA$
Luminous Flux	$\Phi_V$	18	22	---	lm	$I_F=60mA$
Chromaticity Coordinates	X	0.321	---	0.338	---	$I_F=60mA$
	Y	0.324	---	0.362		
Colour Temperature	CCT	5310	5700	6020	K	$I_F=60mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=60mA$

1. Luminous intensity ( $I_v$ )  $\pm 15\%$ , Forward Voltage ( $V_f$ )  $\pm 0.1V$ , Viewing angle( $2\theta_{1/2}$ )  $\pm 5\%$ , CRI  $\pm 3$
2. IS standard testing

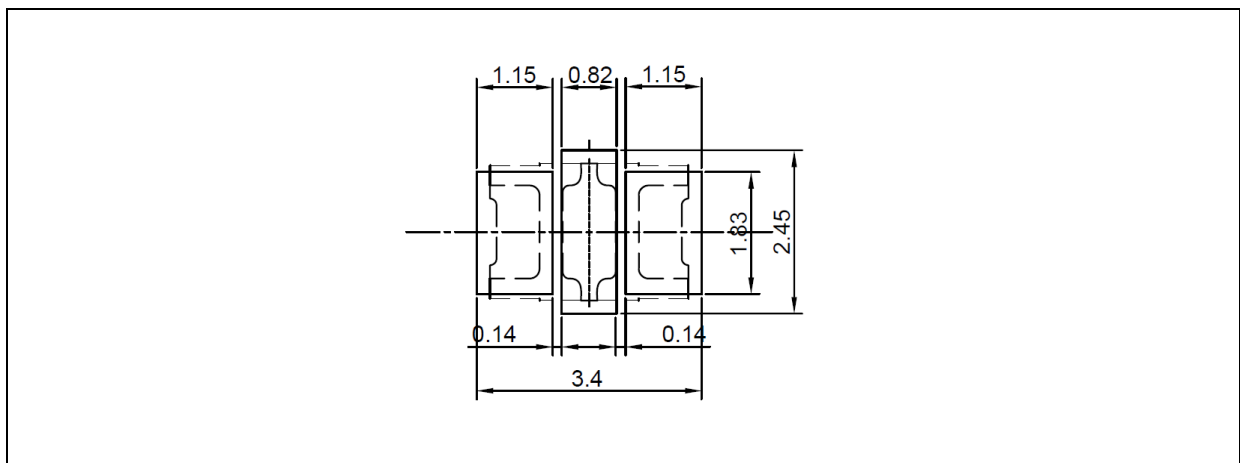
## OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$ , unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$  with angle tolerance  $\pm 0.5^\circ$ .

**BINNING GROUPS:**

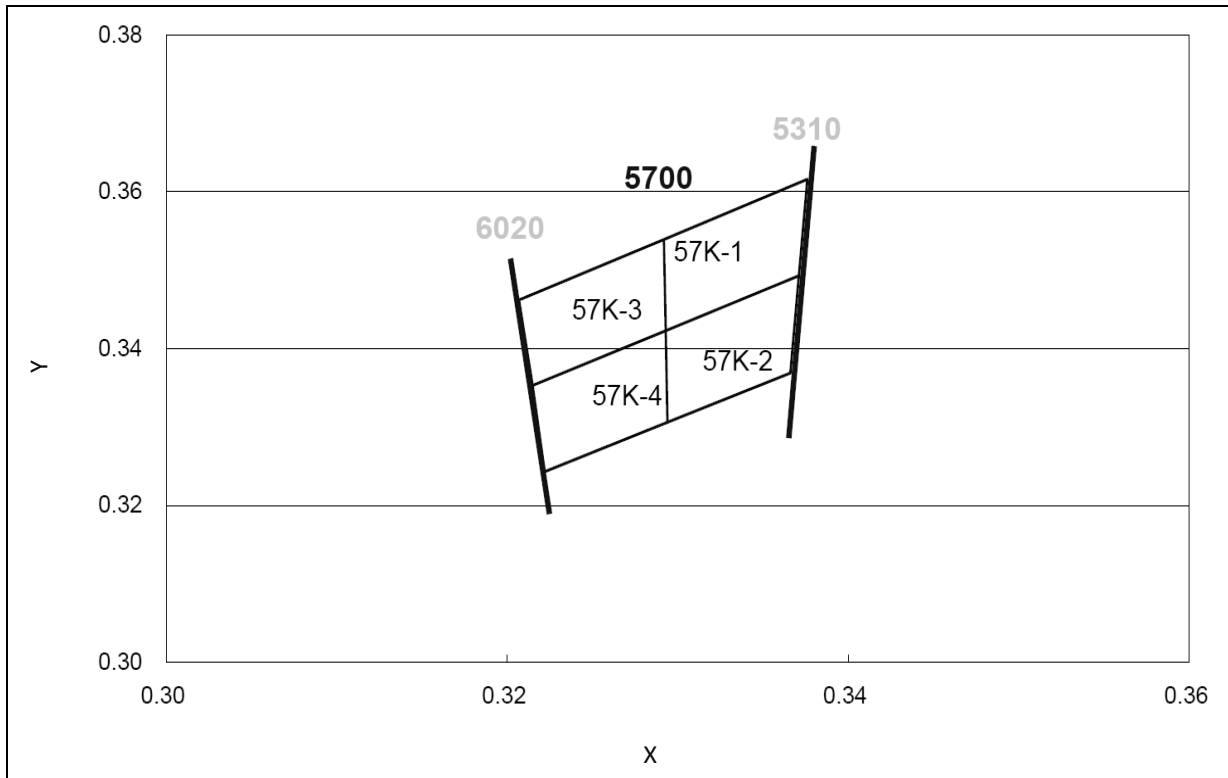

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 Forward Voltage Classifications ( $I_F = 60\text{mA}$ ):

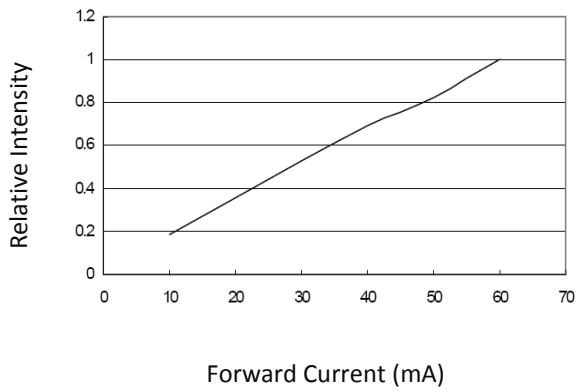
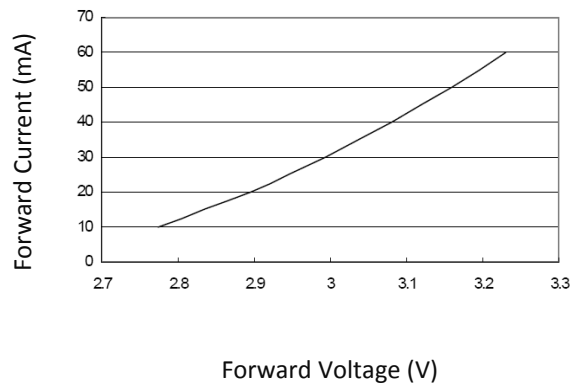
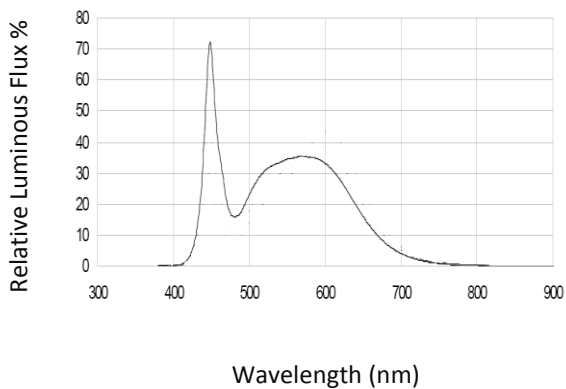
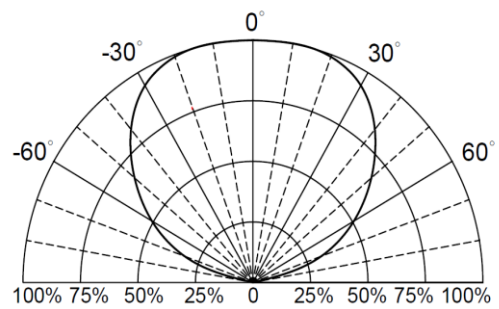
Code	Min.	Max.	Unit
1	2.8	2.9	V
2	2.9	3.0	
3	3.0	3.1	
4	3.1	3.2	
5	3.2	3.3	
6	3.3	3.4	
7	3.4	3.5	
8	3.5	3.6	

 Luminous Flux Classifications ( $I_F = 60\text{mA}$ ):

Code	Min.	Max.	Unit
F18D	18	20	lm
F20D	20	22	
F22D	22	24	
F24D	24	26	
F26D	26	28	
F28D	28	30	

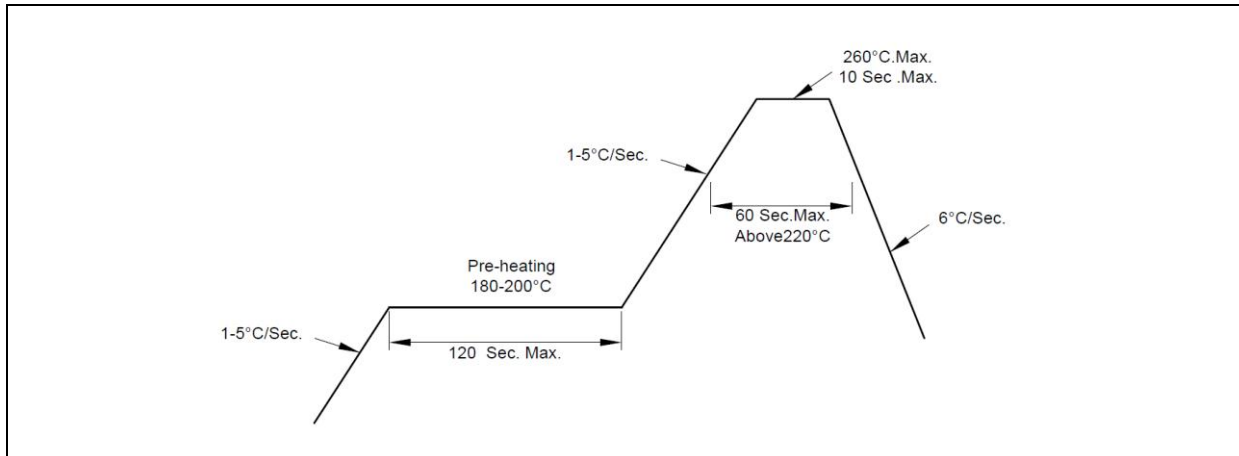
**CIE CHROMATICITY DIAGRAM:**

 Chromaticity Coordinates Classifications ( $I_F = 60\text{mA}$ ):

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
57K-1	0.3376	0.3616	0.3292	0.3539	0.3293	0.3423	0.3371	0.3493
57K-2	0.3371	0.3493	0.3293	0.3423	0.3294	0.3306	0.3366	0.3369
57K-3	0.3292	0.3539	0.3207	0.3462	0.3215	0.3353	0.3293	0.3423
57K-4	0.3293	0.3423	0.3215	0.3353	0.3222	0.3243	0.3294	0.3306

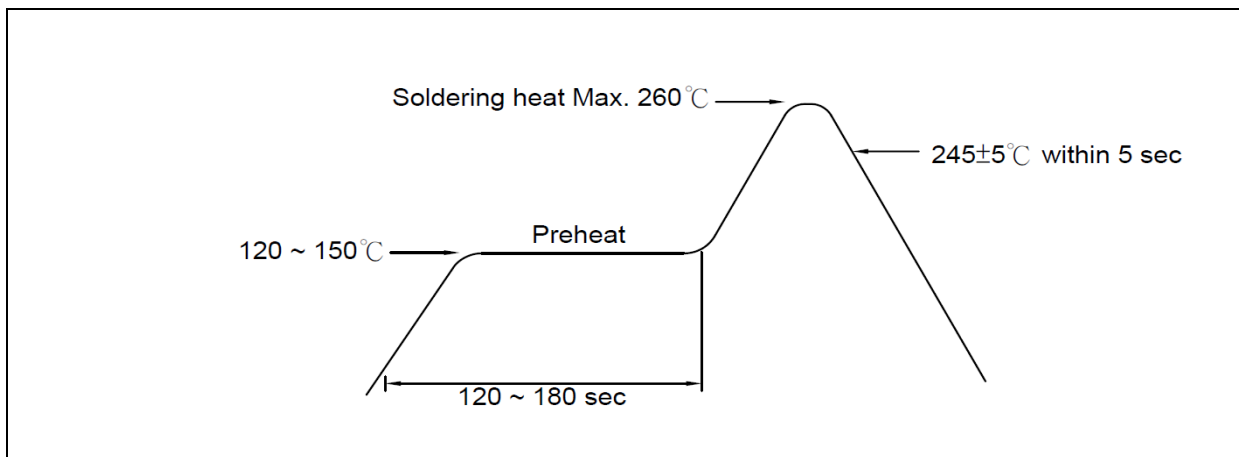
**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Intensity v.s. Forward Current**

**Forward Current v.s. Forward Voltage**

**Luminous Spectrum**

**Directive Radiation**


## RECOMMENDED SOLDERING PROFILE:

### Lead-free Solder:



### Wave Solder:

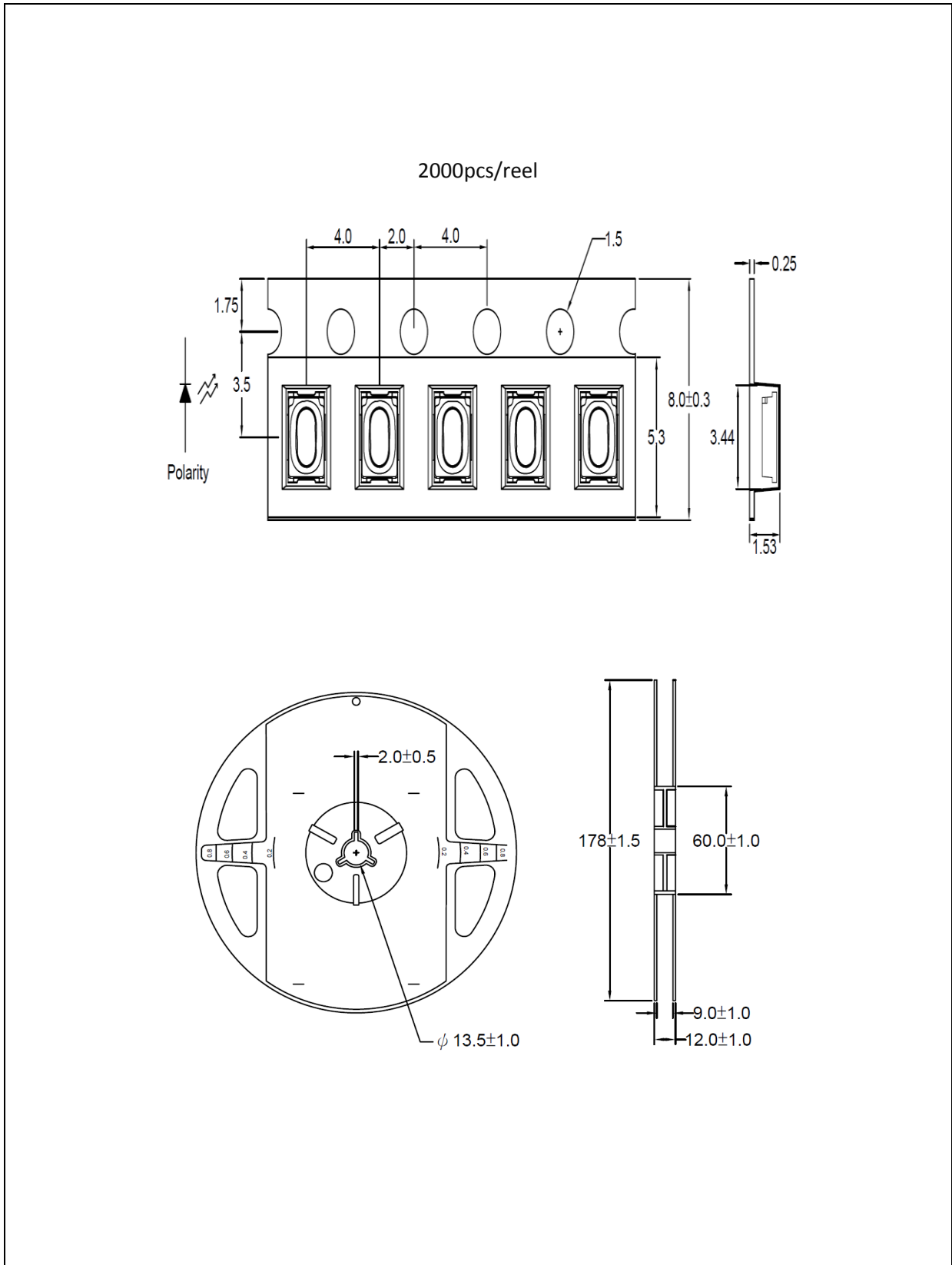


### Note:

1. Maximum reflow soldering: 2 times.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.

**PACKING SPECIFICATION:**

Reel Dimension:





## PRECAUTIONS OF USE:

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### 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 month 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 desiccating agent and apply baking at 60°C±5°C for 15hrs 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:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) 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-electrostatic glove is recommended when handling 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.