



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
- ▶ Natural White (4000K)

NOW02S33



Release Date: 23 December 2013 Version: A1.1



3020 Series



FEATURES:

- **Package:** PLCC White SMT Package
- **Forward Current:** 60mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 23lm @60mA
- **Colour:** Natural White
- **CCT:** 4000K
- **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	μ 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	>70	---

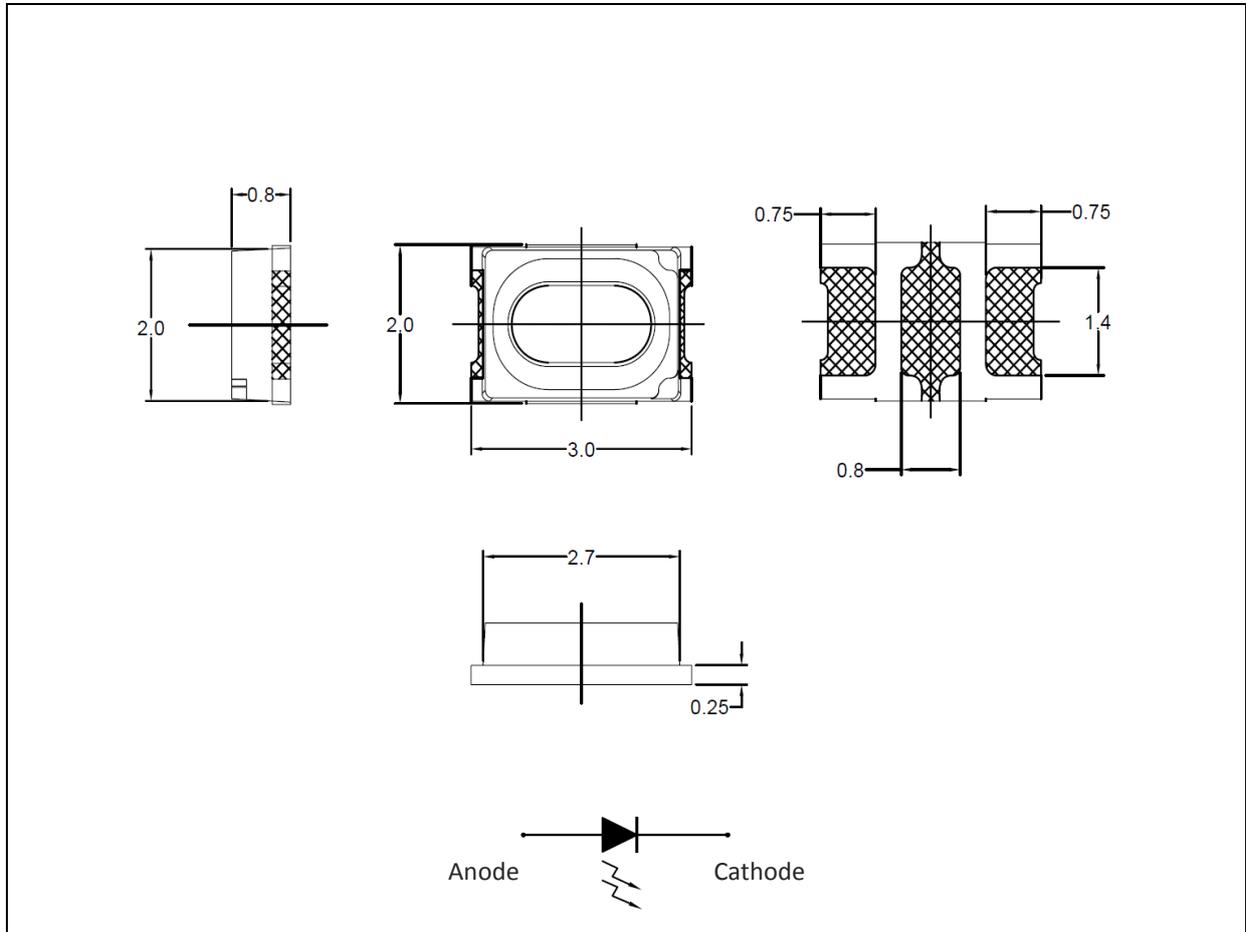
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	---	3.6	V	$I_F=60mA$
Luminous Flux	Φ_V	20	23	---	lm	$I_F=60mA$
Chromaticity Coordinates	X	0.367	---	0.401	---	$I_F=60mA$
	Y	0.357	---	0.404		
Colour Temperature	CCT	3710	4000	4260	K	$I_F=60mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=60mA$

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

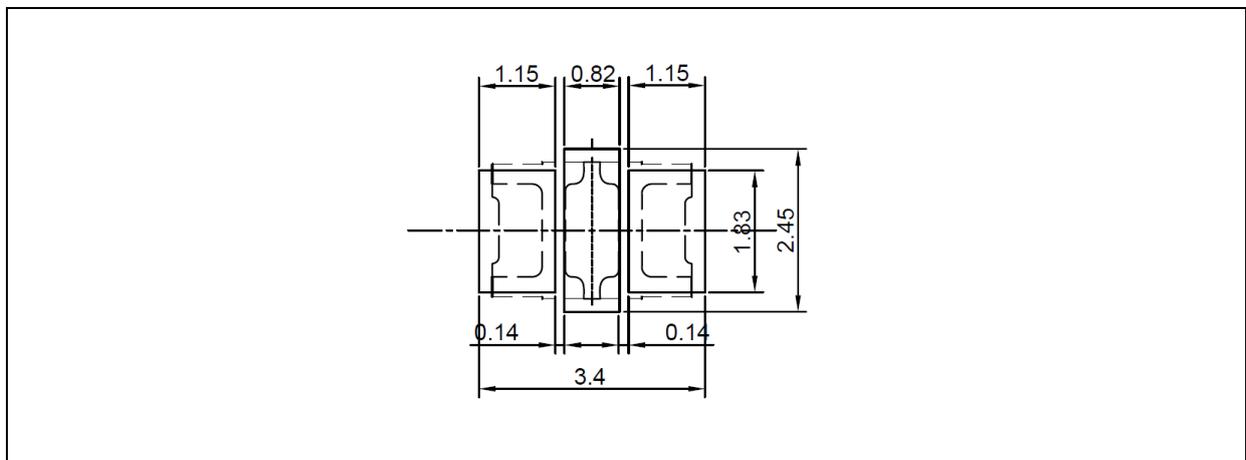
OUTLINE DIMENSION:

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 $\pm 0.5^\circ$.

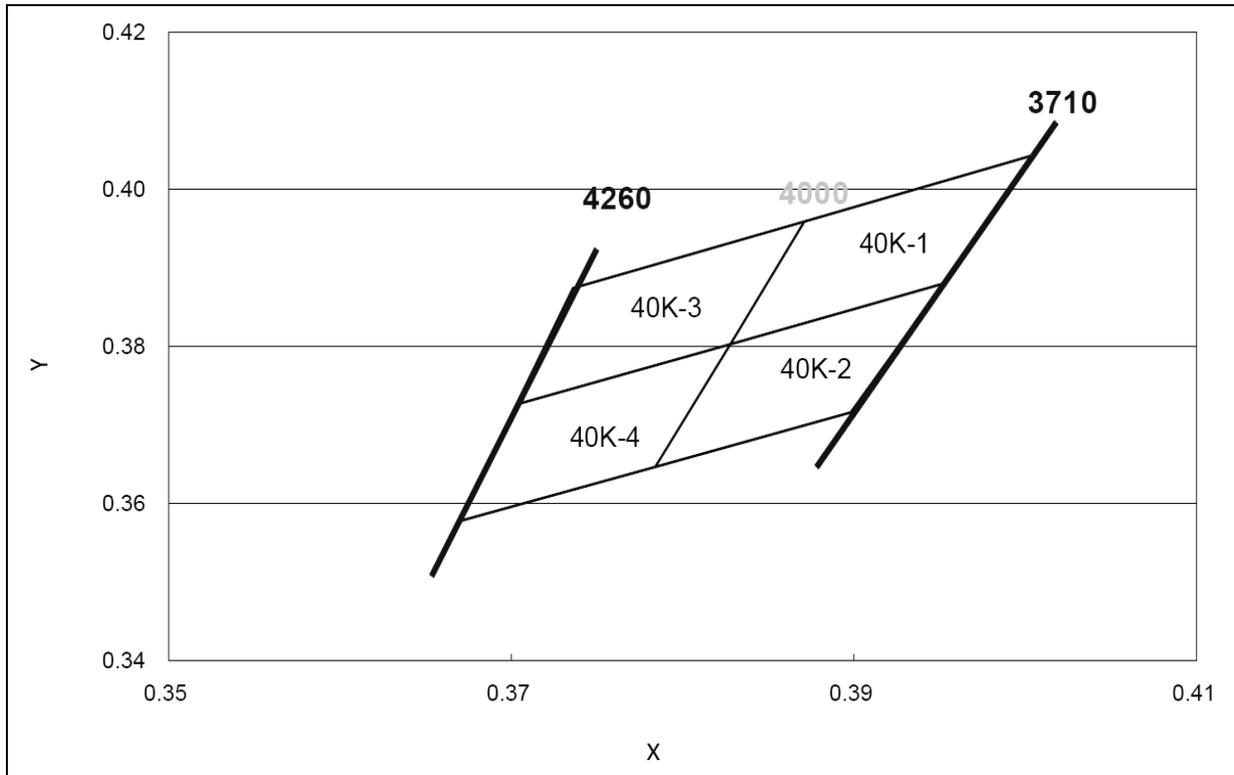
BINNING GROUPS:

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

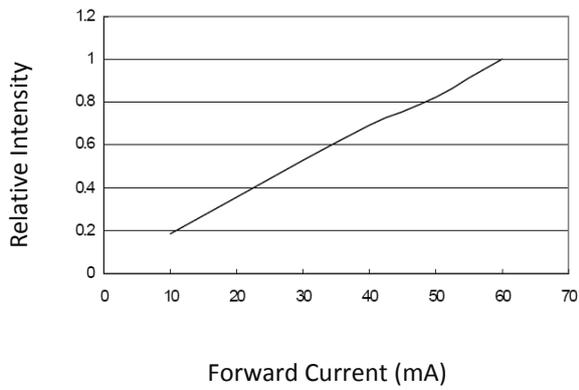
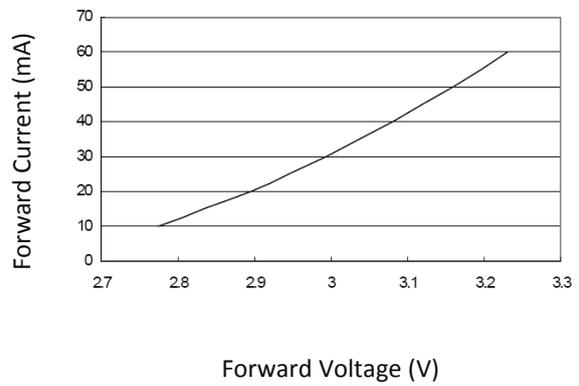
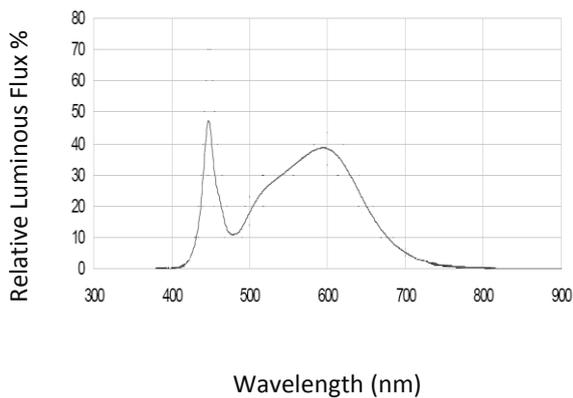
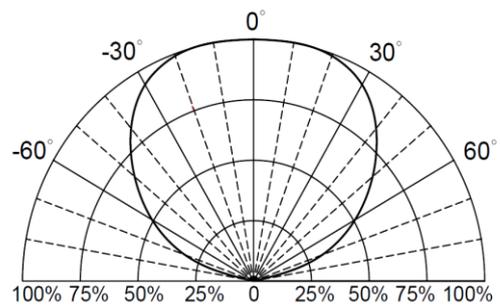
Code	Min.	Max.	Unit
1	2.8	2.9	V
2	2.9	3.0	
3	3.0	3.1	
4	3.1	3.2	
5	3.2	3.3	
6	3.3	3.4	
7	3.4	3.5	
8	3.5	3.6	

 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	

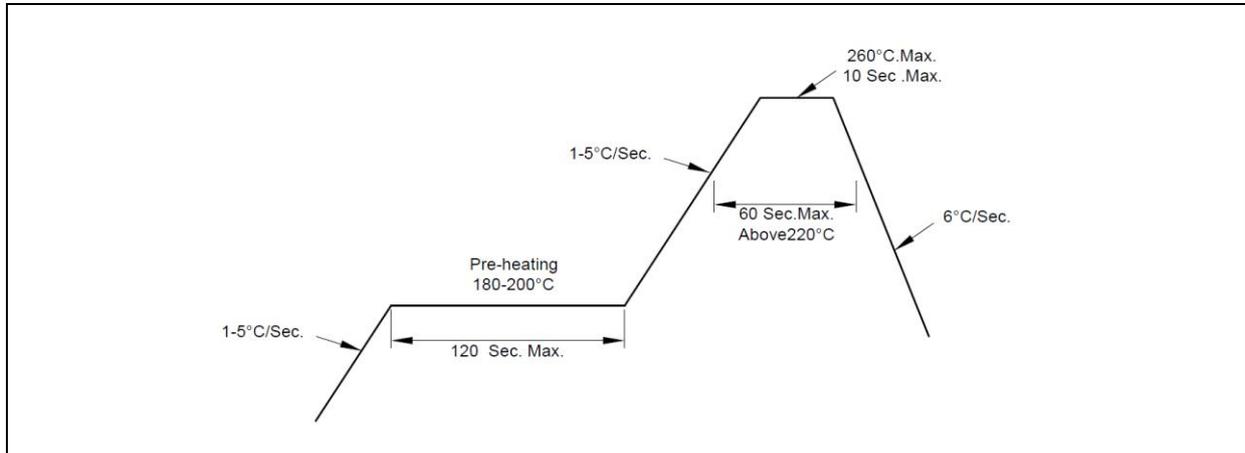
CIE CHROMATICITY DIAGRAM:

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

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
40K-1	0.4006	0.4044	0.3871	0.3959	0.3828	0.3803	0.3952	0.3880
40K-2	0.3952	0.3880	0.3828	0.3803	0.3784	0.3647	0.3898	0.3716
40K-3	0.3871	0.3959	0.3736	0.3874	0.3703	0.3726	0.3828	0.3803
40K-4	0.3828	0.3803	0.3703	0.3726	0.3670	0.3578	0.3784	0.3647

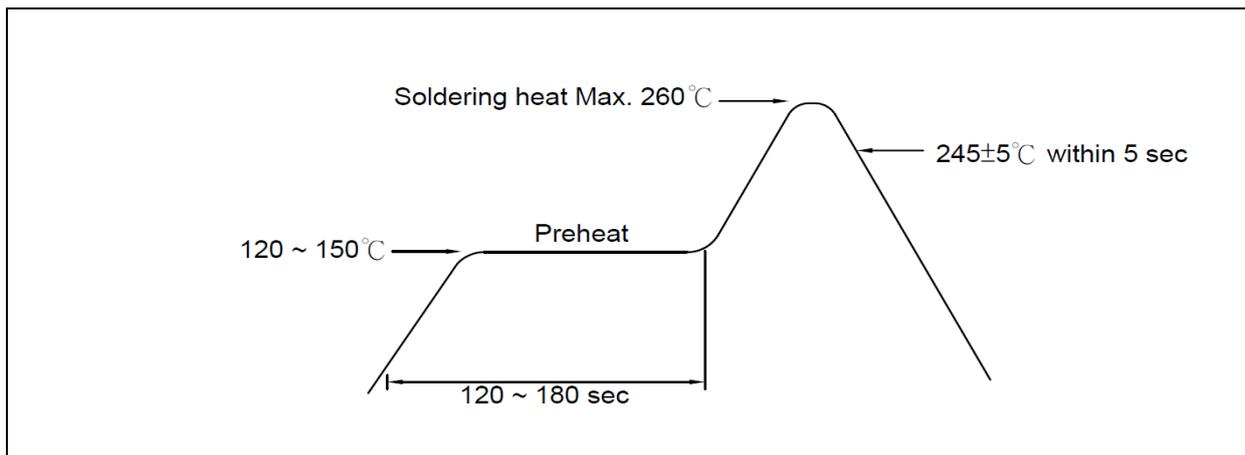
ELECTRO-OPTICAL CHARACTERISTICS:
Relative Intensity v.s. Forward Current

Forward Current v.s. Forward Voltage

Luminous Spectrum

Directive Radiation


RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



Wave Solder:

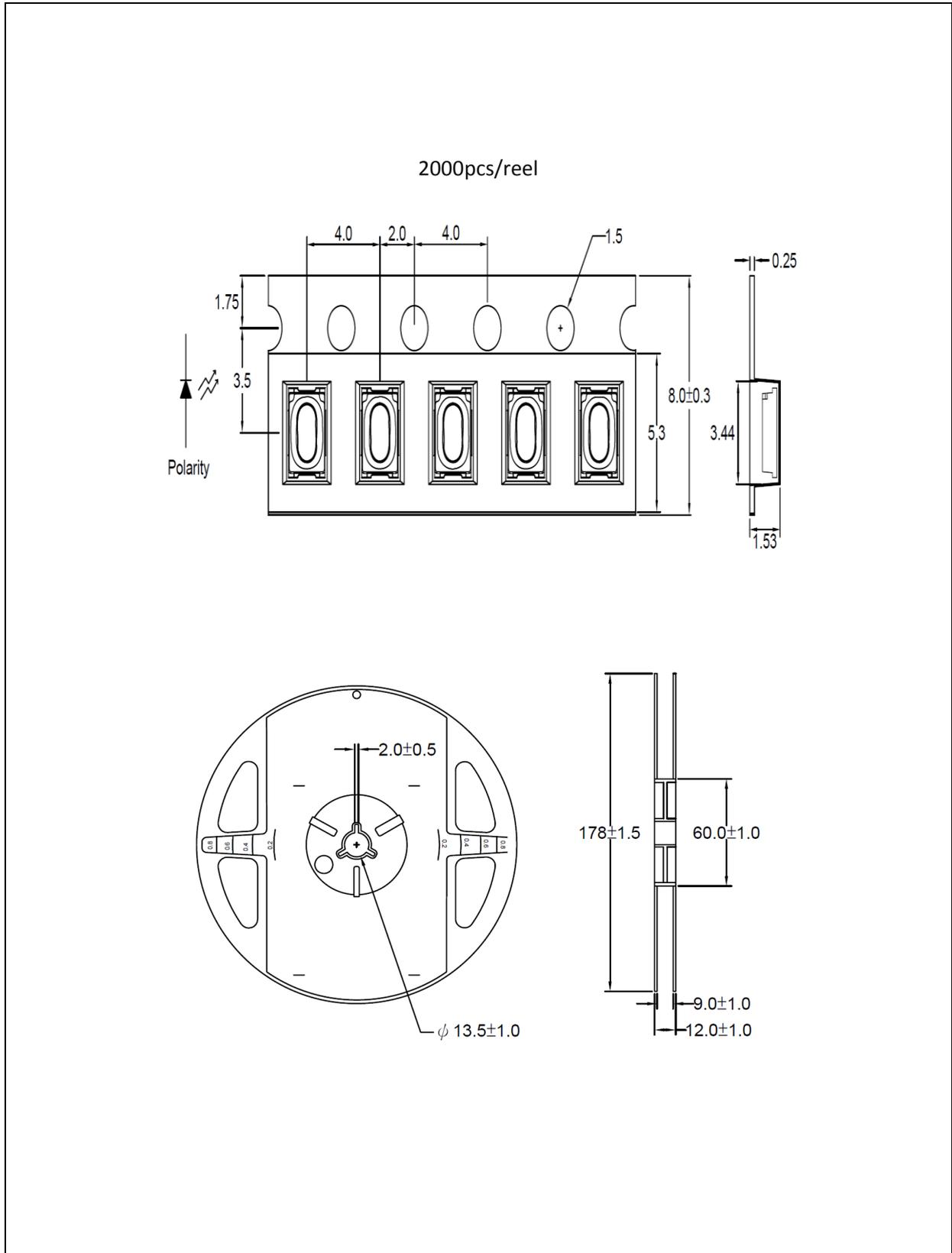


Note:

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:

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:

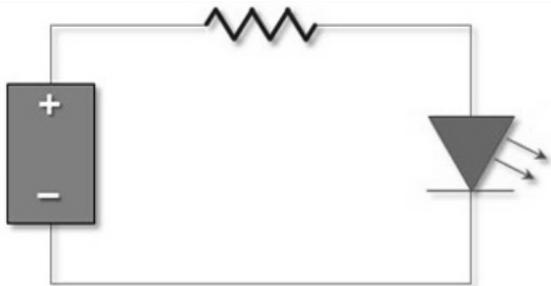
It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

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.