



**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
- ▶ 3528+Lens Series
- ▶ Sky White (9900K)

NOW09S06



Release Date: 18 July 2014 Version: A1.1



### 3528+Lens Series

**RoHS**  
Compliant



#### FEATURES:

- **Package:** PLCC2 White SMT Package with Lens
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.3V
- **Luminous Intensity (typ.):** 2600mcd @20mA
- **Colour:** Sky White
- **CCT:** 9900K
- **Viewing angle:** 30°
- **Materials:**
  - Die: InGaN
  - Resin: Epoxy (Water Clear)
  - L/F Finish: Ag Plated
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+85°C
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - CIE Chromaticity
- **Soldering methods:** Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 12mm tape with 2000pcs/reel, ø330mm (13")

#### APPLICATIONS:

- LED Display
- Indicator
- Traffic Display
- Decoration Lighting

## CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Forward Current	$I_F$	30	mA
Peak Forward Current Duty 1/8@1KHz	$I_{FP}$	125	mA
Reverse Current @5V	$I_R$	10	$\mu$ A
Power Dissipation	$P_D$	111	mW
Operating Temperature	$T_{OPR}$	-40~+80	°C
Storage Temperature	$T_{STG}$	-40~+85	°C

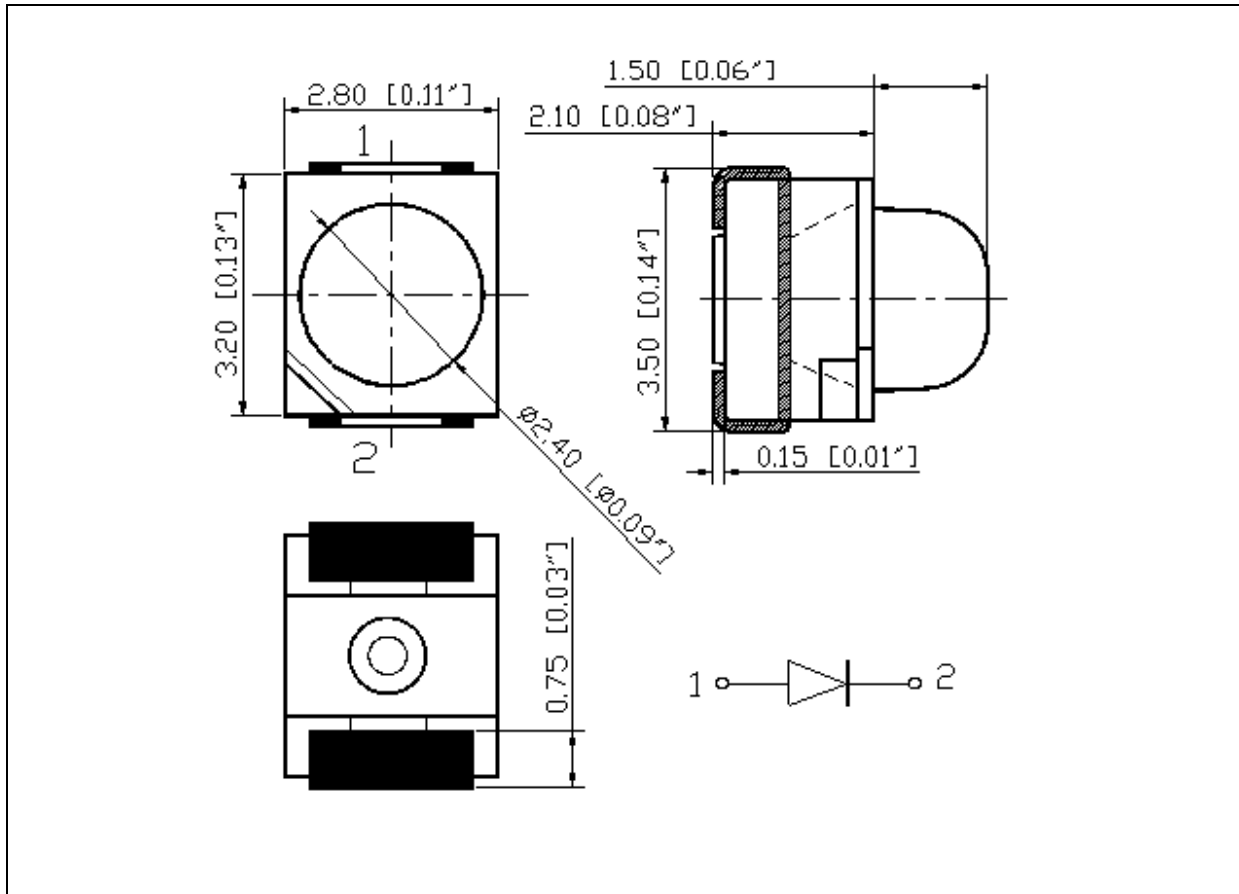
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	2.8	3.3	3.7	V	$I_F=20mA$
Luminous Intensity	$I_V$	1600	2600	4000	mcd	$I_F=20mA$
Chromaticity Coordinates	X	0.2500	0.2800	0.3300	---	$I_F=20mA$
	Y	0.2400	0.2900	0.3400		
Colour Temperature	CCT	5600	9900	46500	K	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	---	30	---	deg	$I_F=20mA$

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

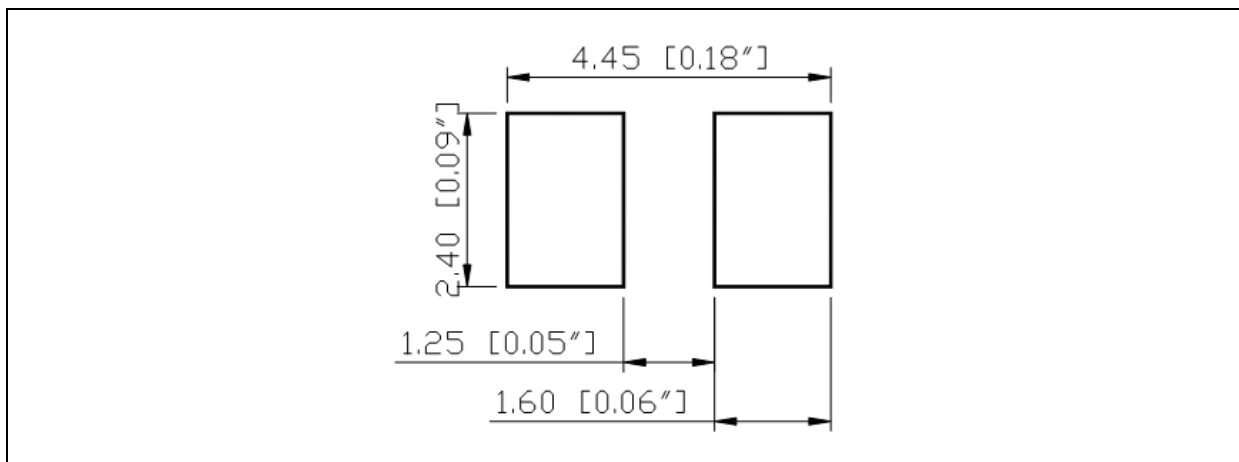
## OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.2\text{mm}$ , 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 ( $I_F = 20\text{mA}$ ):

Code	Min.	Max.	Unit
F	2.8	3.1	V
G	3.1	3.4	
H	3.4	3.7	

 Luminous Intensity Classifications ( $I_F = 20\text{mA}$ ):

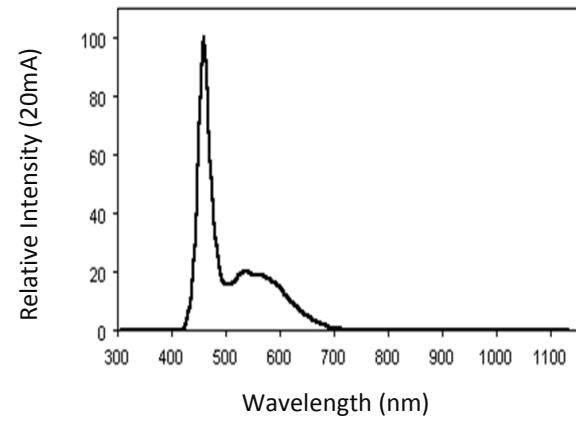
Code	Min.	Max.	Unit
V	1600	2000	mcd
W	2000	2500	
X	2500	3200	
Y	3200	4000	

 Chromaticity Coordinates Classifications ( $I_F = 20\text{mA}$ ):

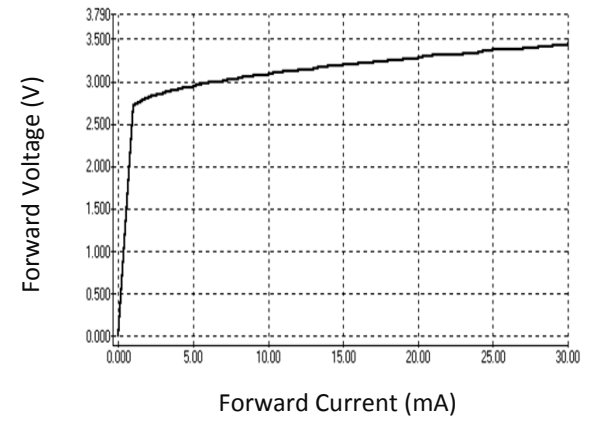
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
D	0.2500	0.2400	0.2500	0.3100	0.2700	0.3100	0.2700	0.2400
E	0.2700	0.2500	0.2700	0.3200	0.2900	0.3200	0.2900	0.2500
F	0.2900	0.2600	0.2900	0.3300	0.3100	0.3300	0.3100	0.2600
G	0.3100	0.2700	0.3100	0.3400	0.3300	.03400	0.3300	0.2700

**ELECTRO-OPTICAL CHARACTERISTICS:**

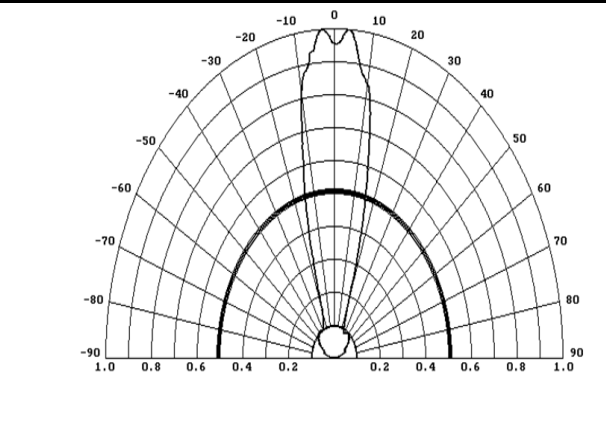
Relative Spectral Distribution



Forward Current v.s. Forward Voltage



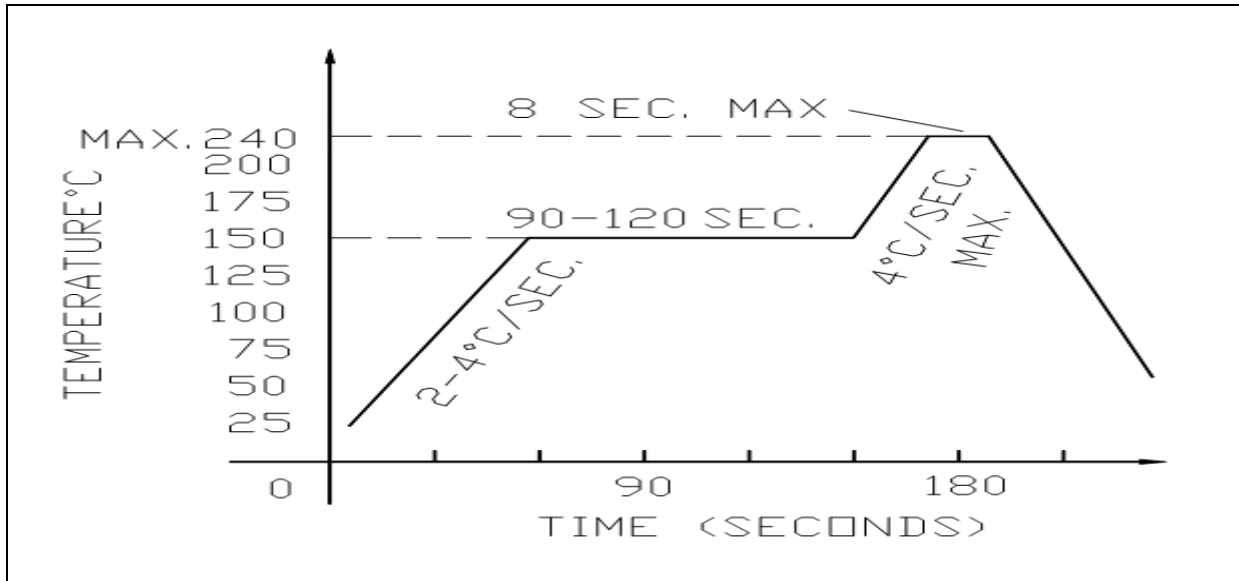
Directive Radiation



## RECOMMENDED SOLDERING PROFILE:

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Lead-free Solder:

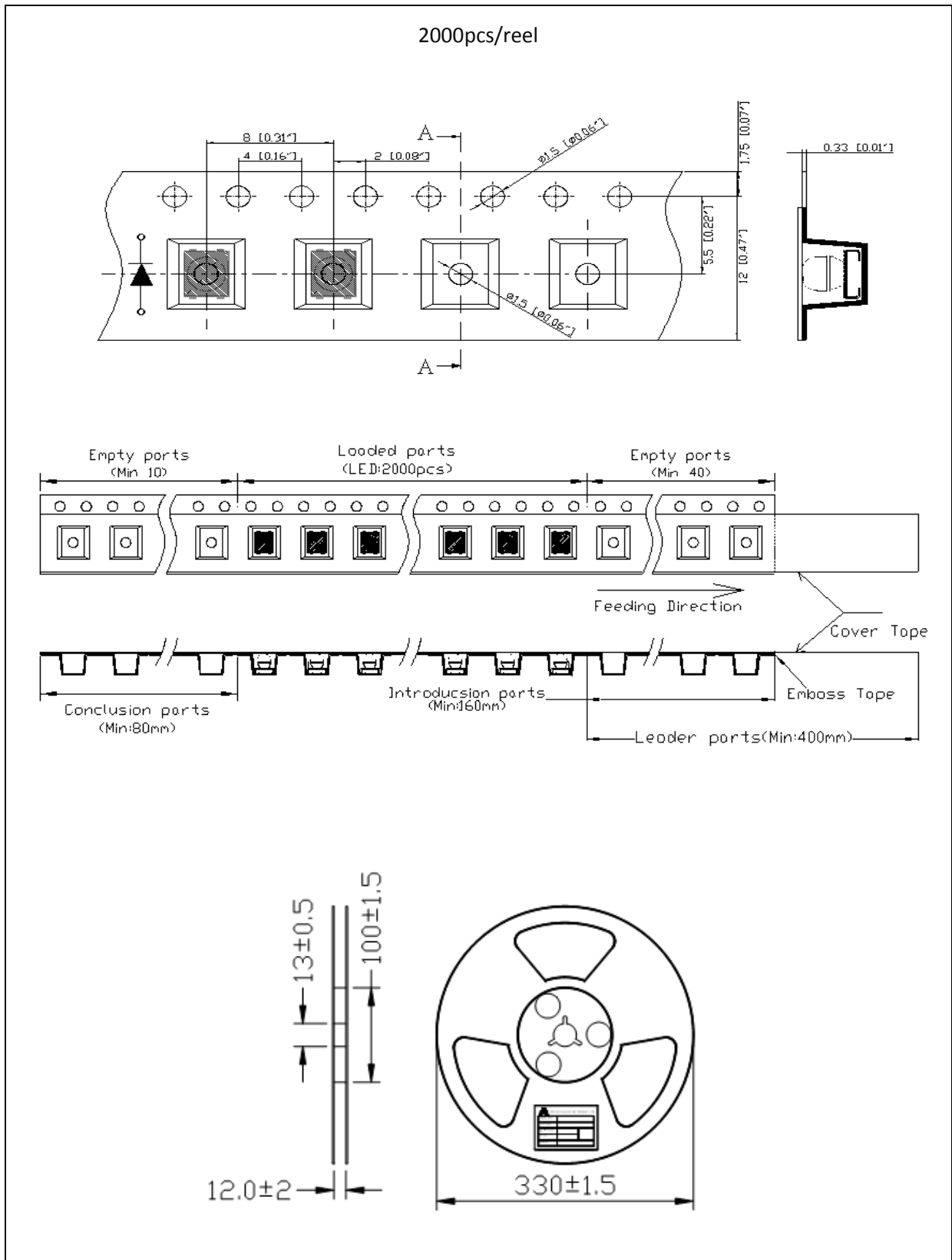


Note:

1. Maximum reflow soldering: 1 time.
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.



**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	20/05/2014	Datasheet set-up.
A1.1	18/07/2014	Change colour definition from "Cool White" to "Sky White".