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

- ▶ PLCC6 Top View
- ▶ 5050 1.6t Series
- ▶ Cool White (6500K)

Release Date: 19 September 2022 Version: A1.1

N0W59S04

5050 1.6t Series

RoHS Compliant

FEATURES:

- **Package:** PLCC6 White SMT Package with Lens
- **Forward Current:** 3*20mA
- **Forward Voltage (typ.):** 3.1V
- **Luminous Intensity (typ.):** 7000mcd @20mA
- **Colour:** Cool White
- **CCT:** 6500K
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicone (Yellow Diffused)
  - 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 max.3000pcs/reel, ø178mm (7'')

APPLICATIONS:

- LED Display
- Indicator
- Traffic Display
- Decoration Lighting
- Office Lightning
- Light Strips

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 Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Power Dissipation	P_D	324	mW
Operating Temperature	T_{OPR}	-40~+80	°C
Storage Temperature	T_{STG}	-40~+85	°C

* per die

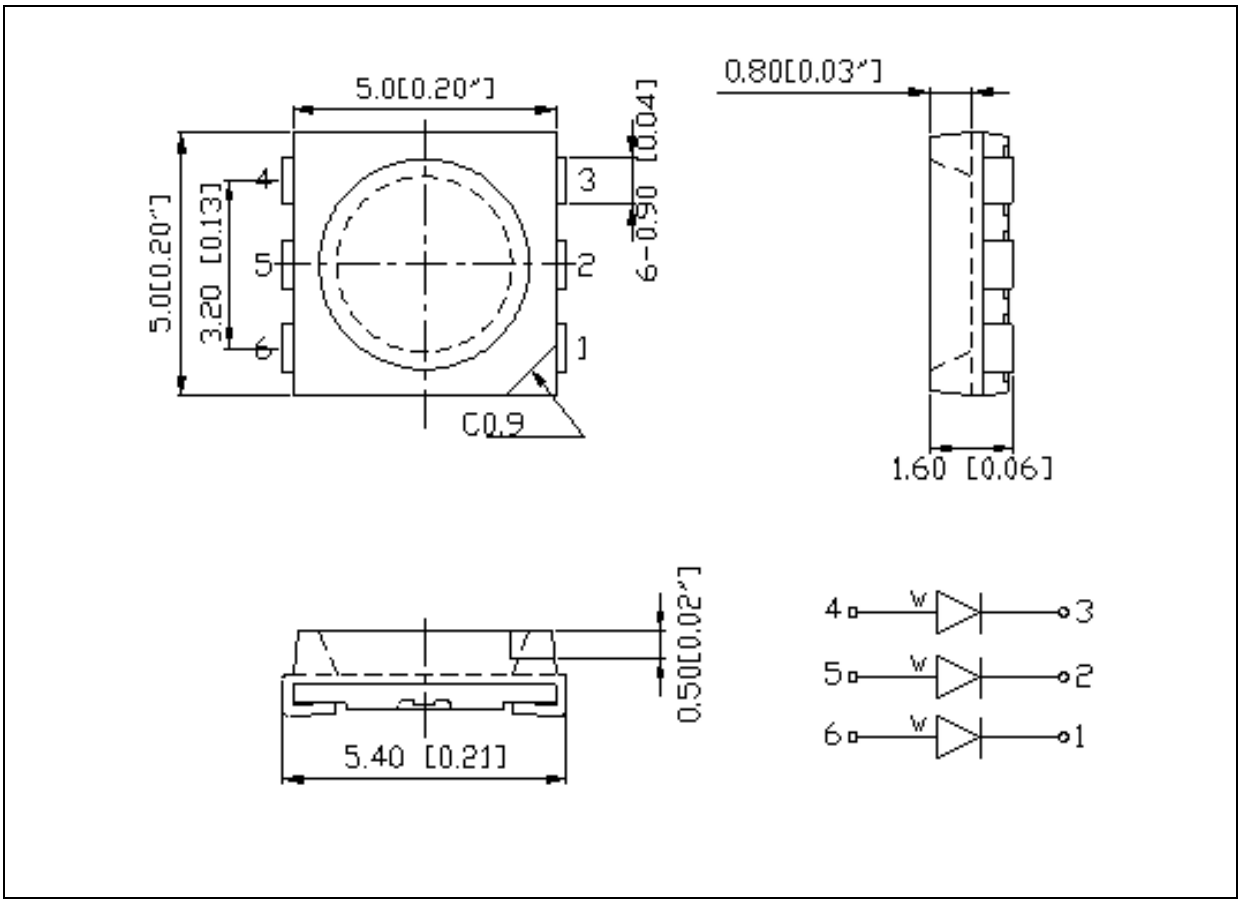
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.1	3.6	V	I_F=3*20mA
Luminous Intensity	I_V	3600	7000	9800	mcd	I_F=3*20mA
Luminous Flux	Φ_V	---	20	---	lm	I_F=3*20mA
Chromaticity Coordinates	X	---	0.3123	---	---	I_F=3*20mA
	Y	---	0.3282	---		
Colour Temperature	CCT	---	6500	---	K	I_F=3*20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=3*20mA

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

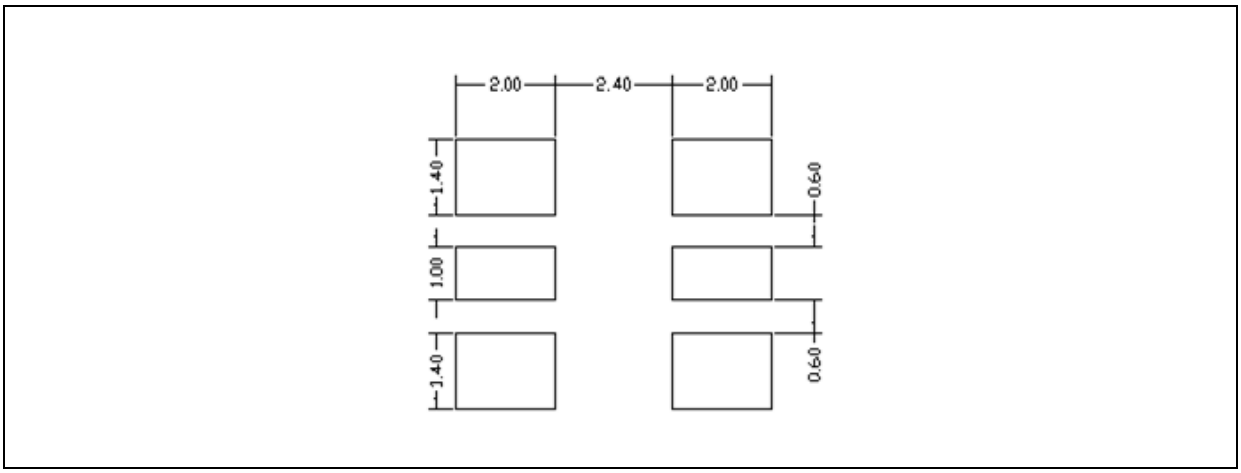
OUTLINE DIMENSION:

Package Dimension:



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

Recommended Soldering Pad Dimension:



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

BINNING GROUPS:

Forward Voltage Classifications (I_F = 3*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	

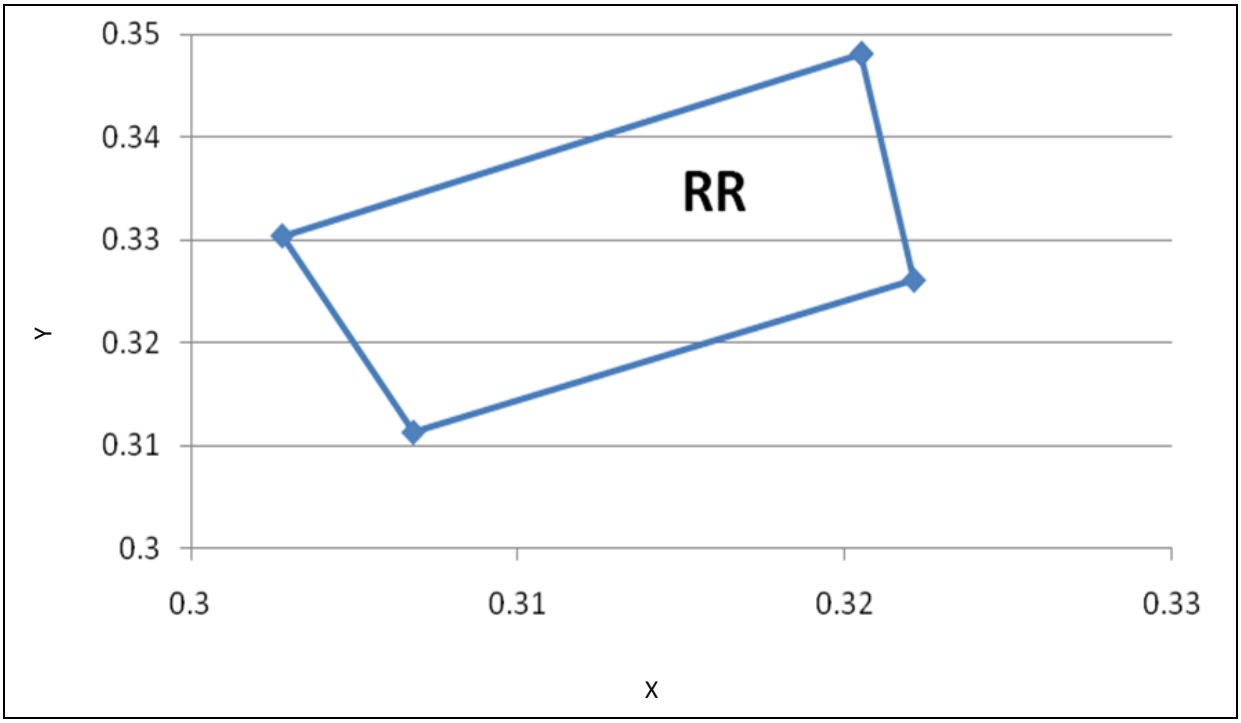
Luminous Intensity Classifications (I_F = 3*20mA):

Code	Min.	Max.	Unit
20	3600	4600	mcd
21	4600	6000	
22	6000	7800	
23	7800	9800	

Example Group Name on Label:

- **D22RR 60** = **D** (3.0~3.1V) ► **22** (6000~7800mcd) ► **RR** (X(0.3207~0.3376)/Y(0.3243~0.361 6) ► **60** (IF=60mA)

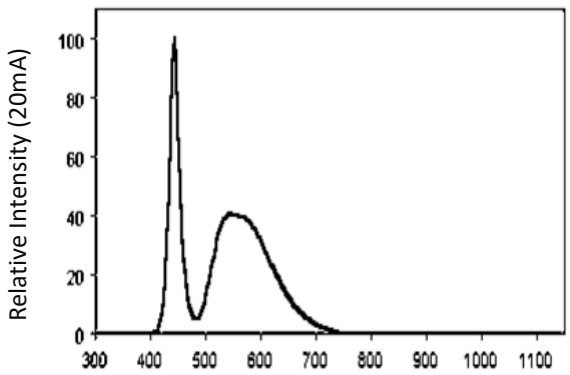
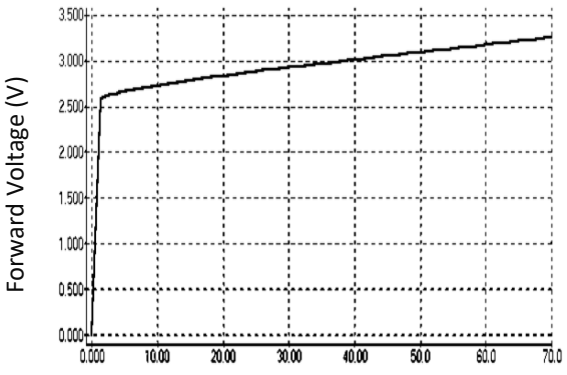
CIE CHROMATICITY DIAGRAM:

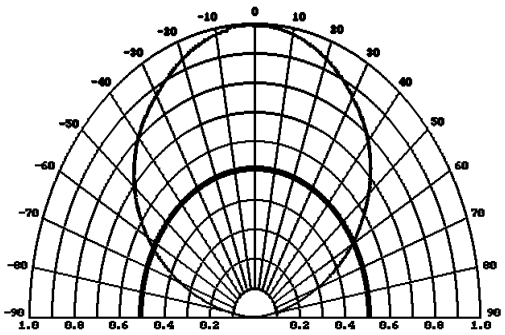


Chromaticity Coordinates Classifications (I_F = 3*20mA):

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
RR	0.3205	0.3481	0.3028	0.3304	0.3068	0.3113	0.3221	0.3261

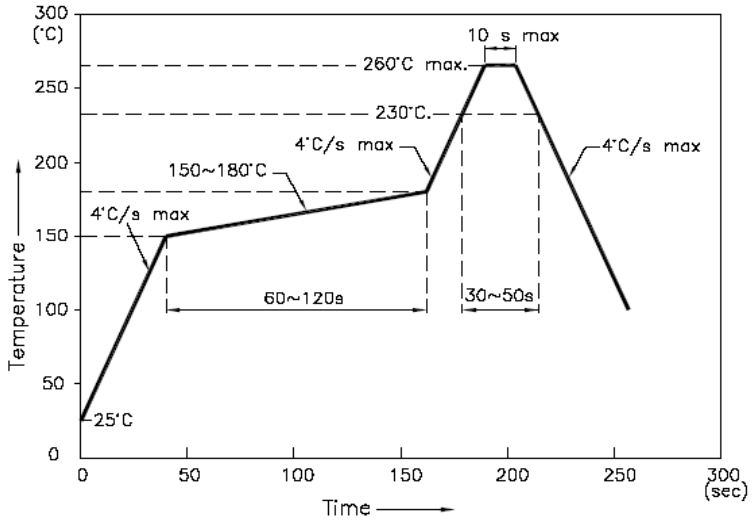
ELECTRO-OPTICAL CHARACTERISTICS:

Relative Spectral Distribution	Forward Current v.s. Forward Voltage
	

Directive Radiation


RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



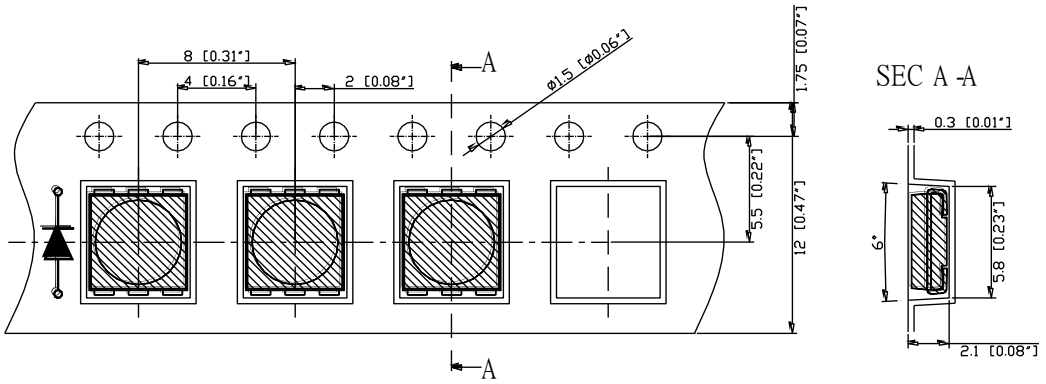
Note:

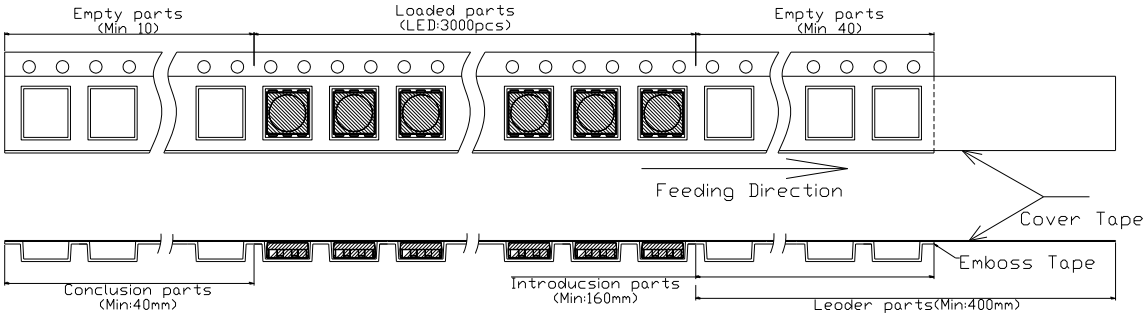
1. Maxima reflow soldering: 2 times.
2. Recommend soldering temperature is 240°C. The maximum soldering temperate should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

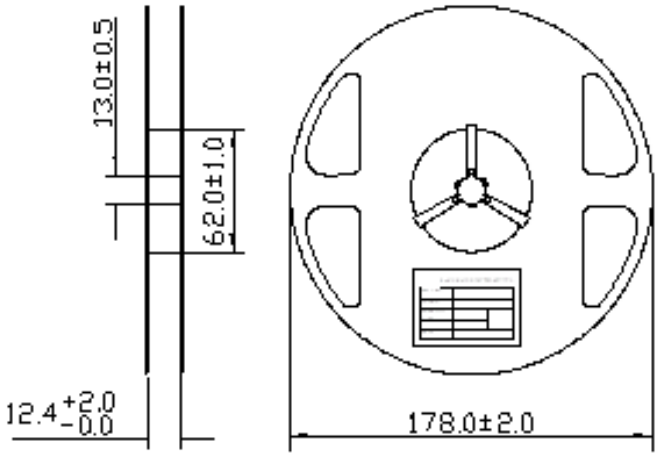
PACKING SPECIFICATION:

Reel Dimension:

Max.3000pcs/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 before use.

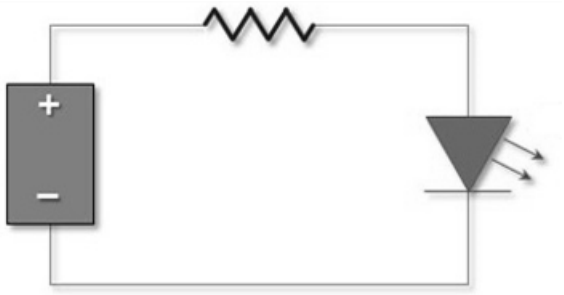
Baking:

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±3°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	21/04/2021	Datasheet set-up.
A1.1	19/09/2022	Revise casting colour.