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 SMD
- 5050 1.6t Series
- Natural White (5450K)

Release Date: 15 July 2022 Version: A1.1

N0W13S71

5050 1.6t Series

5050 1.6t Series

RoHS Compliant

FEATURES:

- **Package:** PLCC2 White SMD Package
- **Forward Current:** 20mA*3
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 21.7lm/6900mcd@60mA
- **Colour:** Natural White
- **Colour Temperature (CCT):** 5450K
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Yellow Diffused)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
  - Forward Voltage
  - Luminous Intensity
  - CIE Chromaticity
- **Soldering methods:** Reflow Soldering
- **MSL Level:** MSL5 according to JEDEC
- **Packing:** 12mm tape with max.1000/reel, ø180mm (7'')

APPLICATIONS:

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

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	30*3	mA
Pulse Forward Current	I_{PF}	100*3	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Junction Temperature	T_j	110	°C
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C
Colour Rendering Index	CRI	85	---

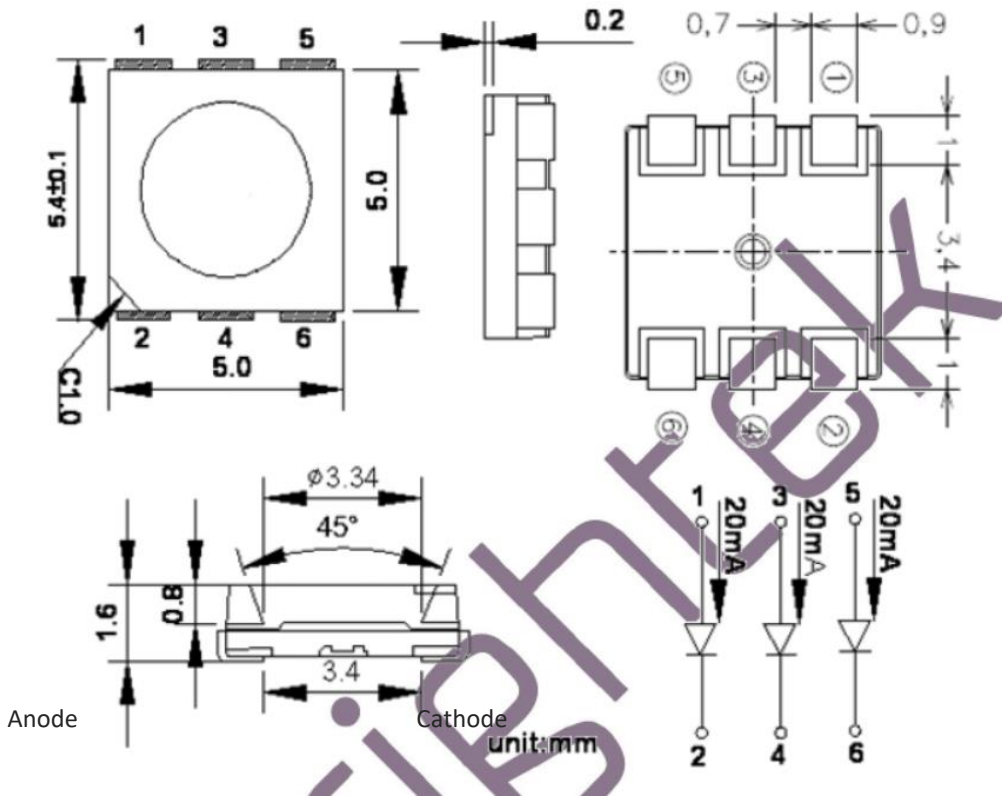
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.2	3.6	V	I_F=20mA*3
Luminous Intensity	I_V	4600	6900	---	mcd	I_F=20mA*3
Luminous Flux	Φ_V	---	21.7	---	lm	I_F=20mA*3
Chromaticity Coordinates	X	---	0.3338	---	---	I_F=20mA*3
	Y	---	0.3432	---		
Colour Temperature	CCT	5000	5450	6000	K	I_F=20mA*3
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA*3

1. Luminous flux (Φ_V) ±10%, Forward Voltage (V_F) ±0.1V

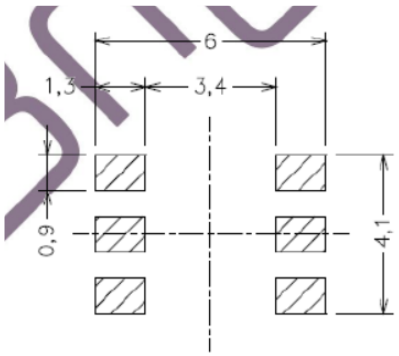
OUTLINE DIMENSION:

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:

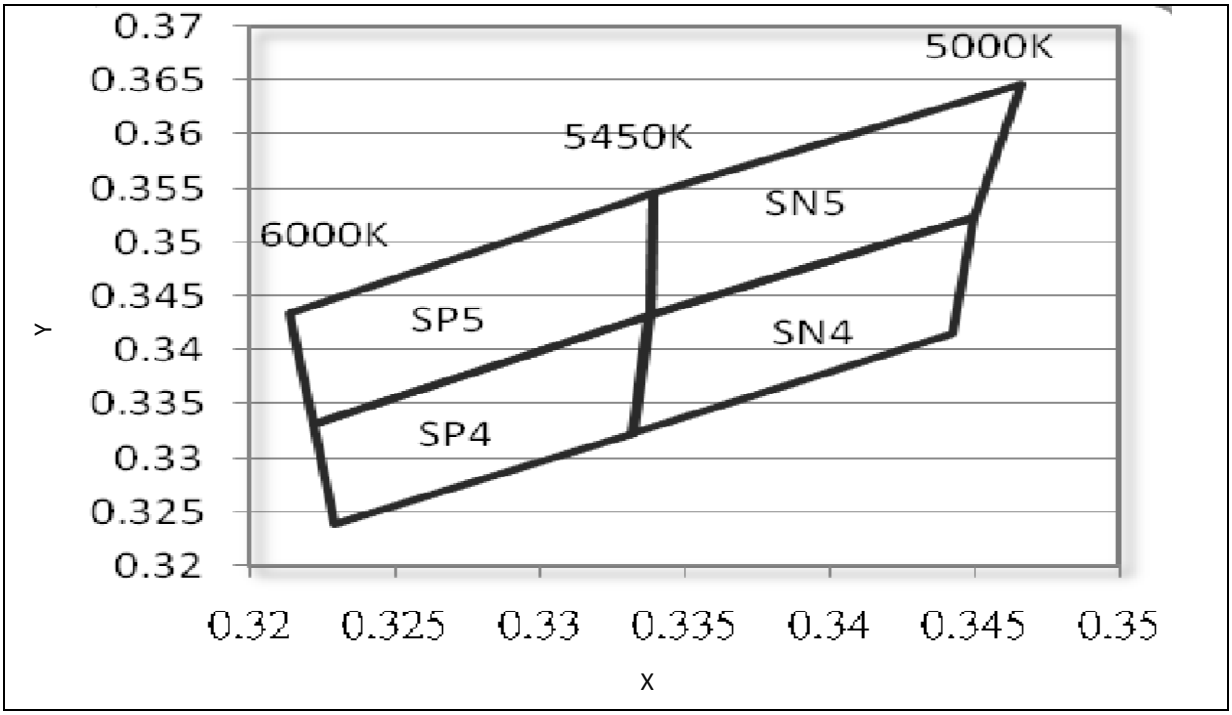
Forward Voltage Classifications (I_F = 20mA*3):

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 = 20mA*3):

Code	Min.	Max.	Unit
21	4600	6000	mcd
22	6000	7800	
23	7800	10100	

CIE CHROMATICITY DIAGRAM:



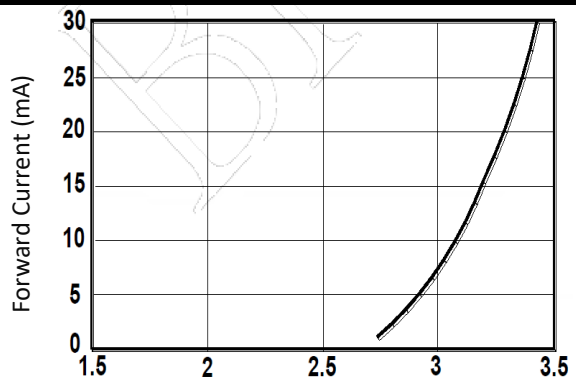
Chromaticity Coordinates Classifications (I_F = 20mA*3):

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
SP4	0.3222	0.3331	0.3229	0.3240	0.3332	0.3323	0.3338	0.3432
SP5	0.3214	0.3434	0.3222	0.3331	0.3338	0.3432	0.3339	0.3545
SN4	0.3338	0.3432	0.3332	0.3323	0.3443	0.3416	0.3450	0.3523
SN5	0.3339	0.3545	0.3338	0.3432	0.3450	0.3523	0.3466	0.3646

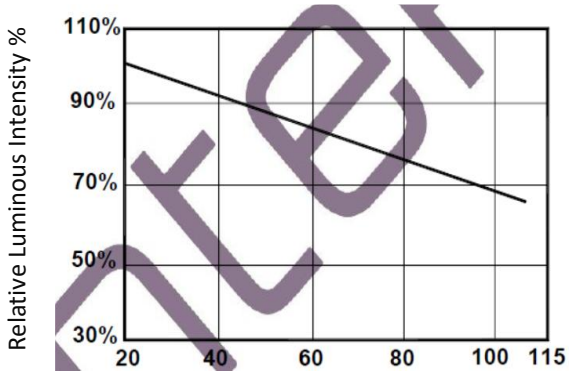
ELECTRO-OPTICAL CHARACTERISTICS:

Relative Luminous Intensity v.s. Forward Current

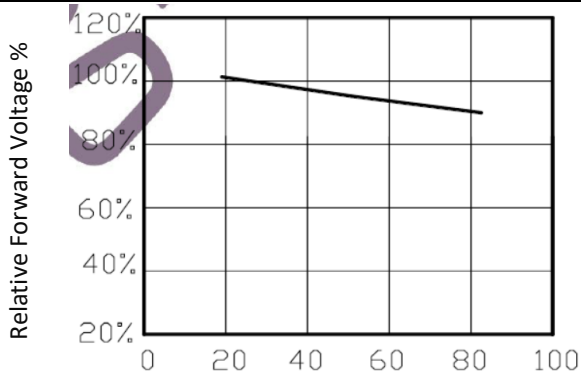
Forward Current v.s. Forward Voltage



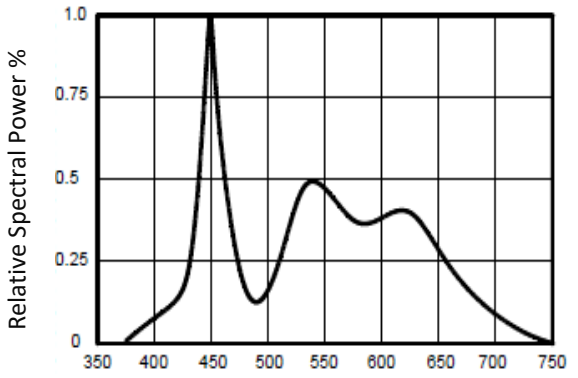
Relative Luminous Intensity v.s. Junction Temp.



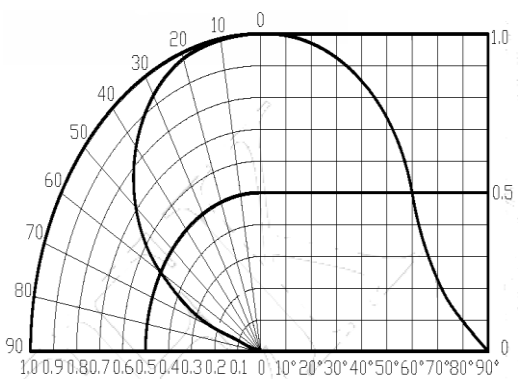
Relative Forward Voltage v.s. Ambient Temp.

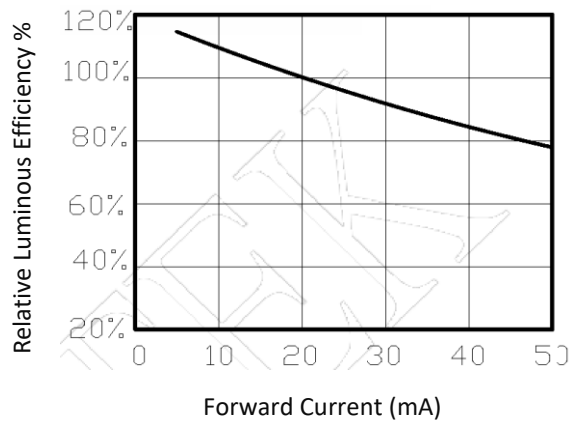
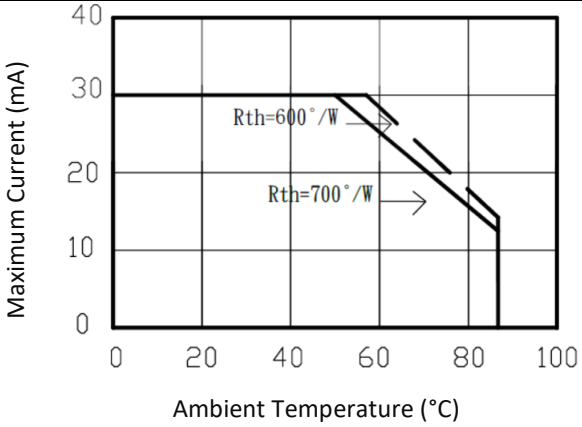


Relative Spectral Power v.s. Wavelength



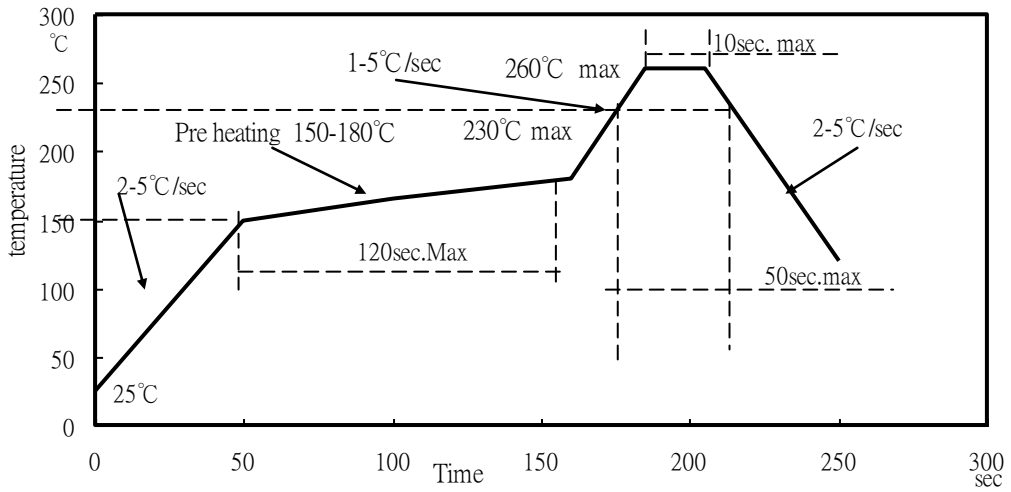
Directive Radiation



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

RECOMMENDED SOLDERING PROFILE:

IR Reflow Lead-free Solder:



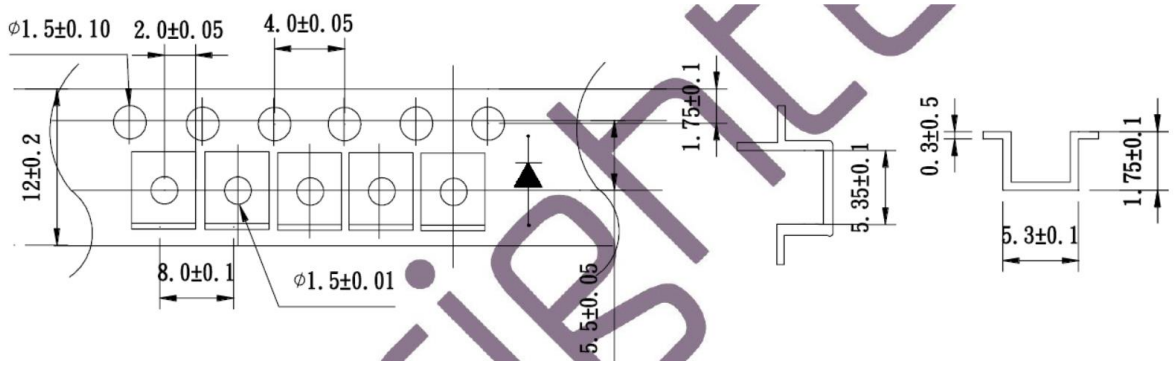
Note:

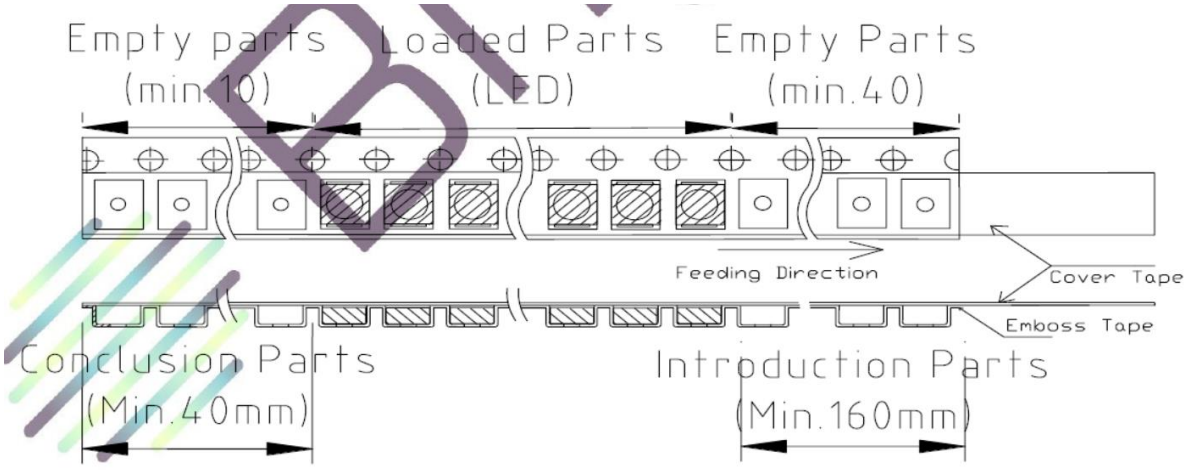
1. Maximum reflow soldering: 3 times.
2. Recommended reflow temperature: 240°C. Maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

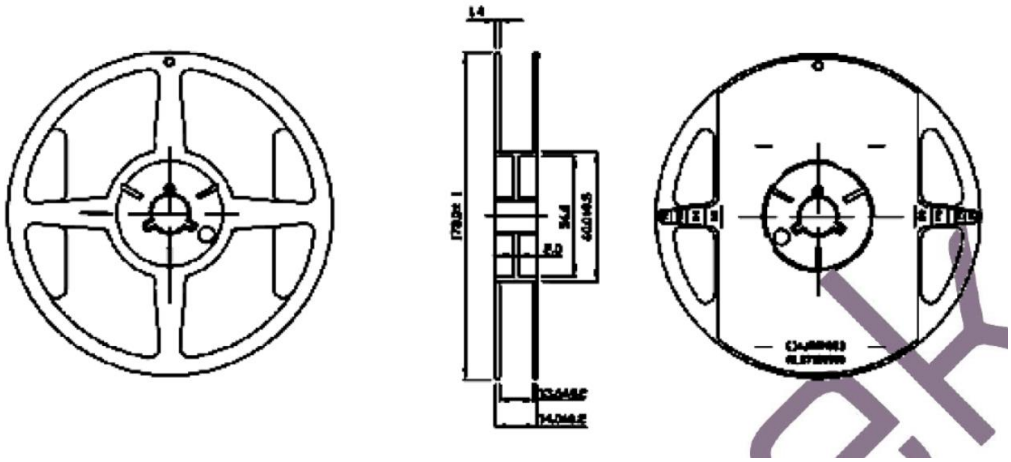
PACKING SPECIFICATION:

Reel Dimension:

Max.1000pcs/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.

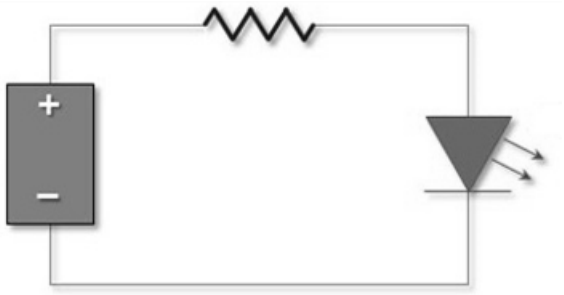
Baking:

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:

- 70±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	07/03/2016	Datasheet set-up.
A1.1	14/07/2022	New datasheet format.