BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

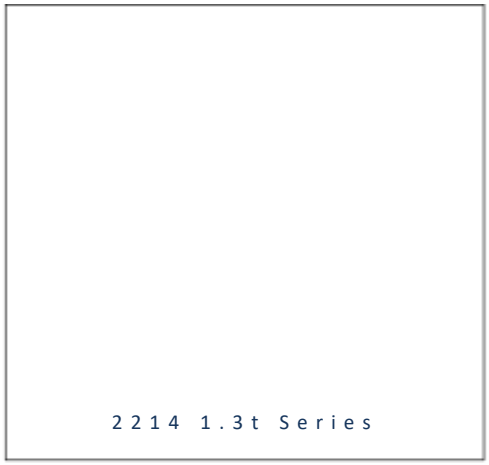
Brighten Up The World With LED!

PRODUCT DATASHEET

- ► PLCC2 Top View SMD
- ► 2214 1.3t
- ► Sky White (Ice Blue)

Release Date: 28 May 2022 Version: A1.1

N0W49S12Z



2214 1.3t Series

RoHS Compliant

AUTOMOTIVE AEC-Q102

FEATURES:

- **Package:** PLCC2 Single Colour Top View SMD
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.0V
- **Luminous Intensity (typ.):** 150mcd@20mA
- **Colour:** Sky White (Ice Blue)
- **Colour Temperature (CCT):** X:0.1826; Y:0.1731
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicone (Black Diffused)
  - Finishing: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD (HBM):** 6KV
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - CIE Chromaticity
- **Soldering methods:** Reflow
- **MSL:** acc. to JEDEC Level 2a
- **Packing:** 8mm tape with max.3000/reel, ø180mm (7'')

APPLICATIONS:

- Automotive
- Backlighting
- Indication Light
- Switch light
- Dashboard
- Decoration Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30	mA
Peak Forward Current Duty 1/10; width 0.1ms	I_{FP}	50	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Junction Temperature	T_j	115	°C
Thermal Resistance Junction to Solder Point	R_{th}	160	°C/W
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+105	°C

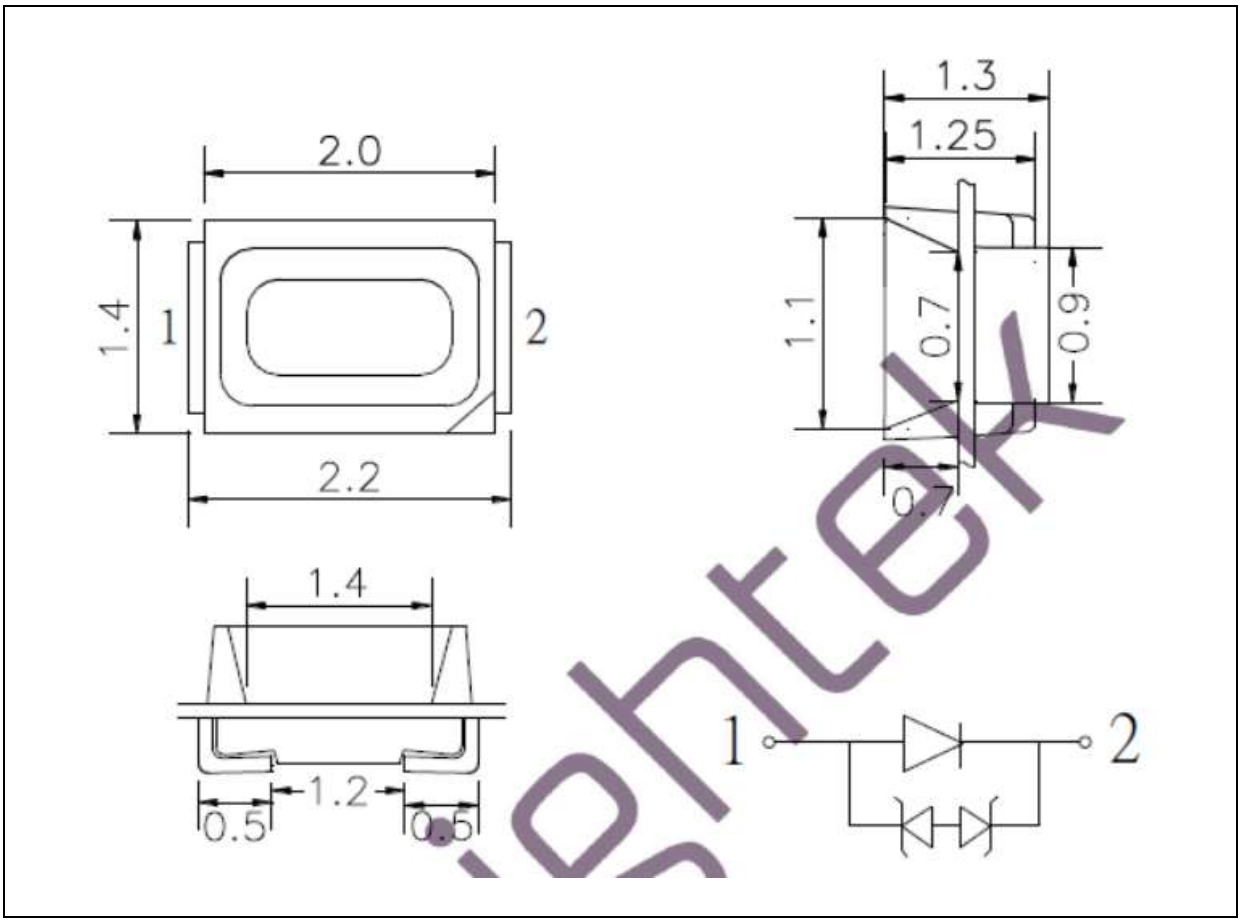
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.6	3.0	3.4	V	I_F=20mA
Luminous Intensity	I_V	90	150	---	mcd	I_F=20mA
Chromaticity Coordinates	X	---	0.1826	---	---	I_F=20mA
	Y	---	0.1731	---		
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

1. Luminous intensity (I_V) ±10%, Forward Voltage (V_F) ±0.1V.

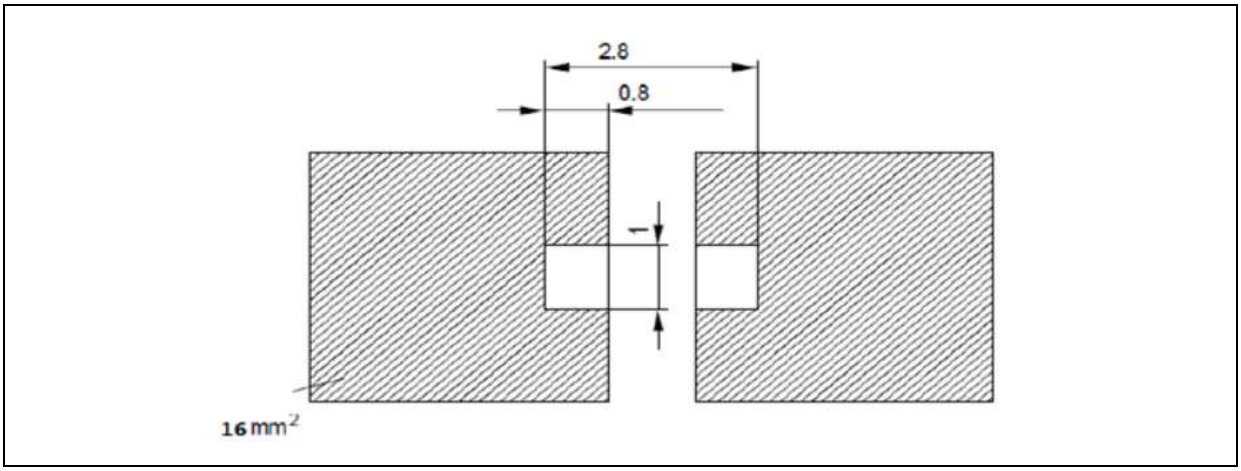
OUTLINE DIMENSION:

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:

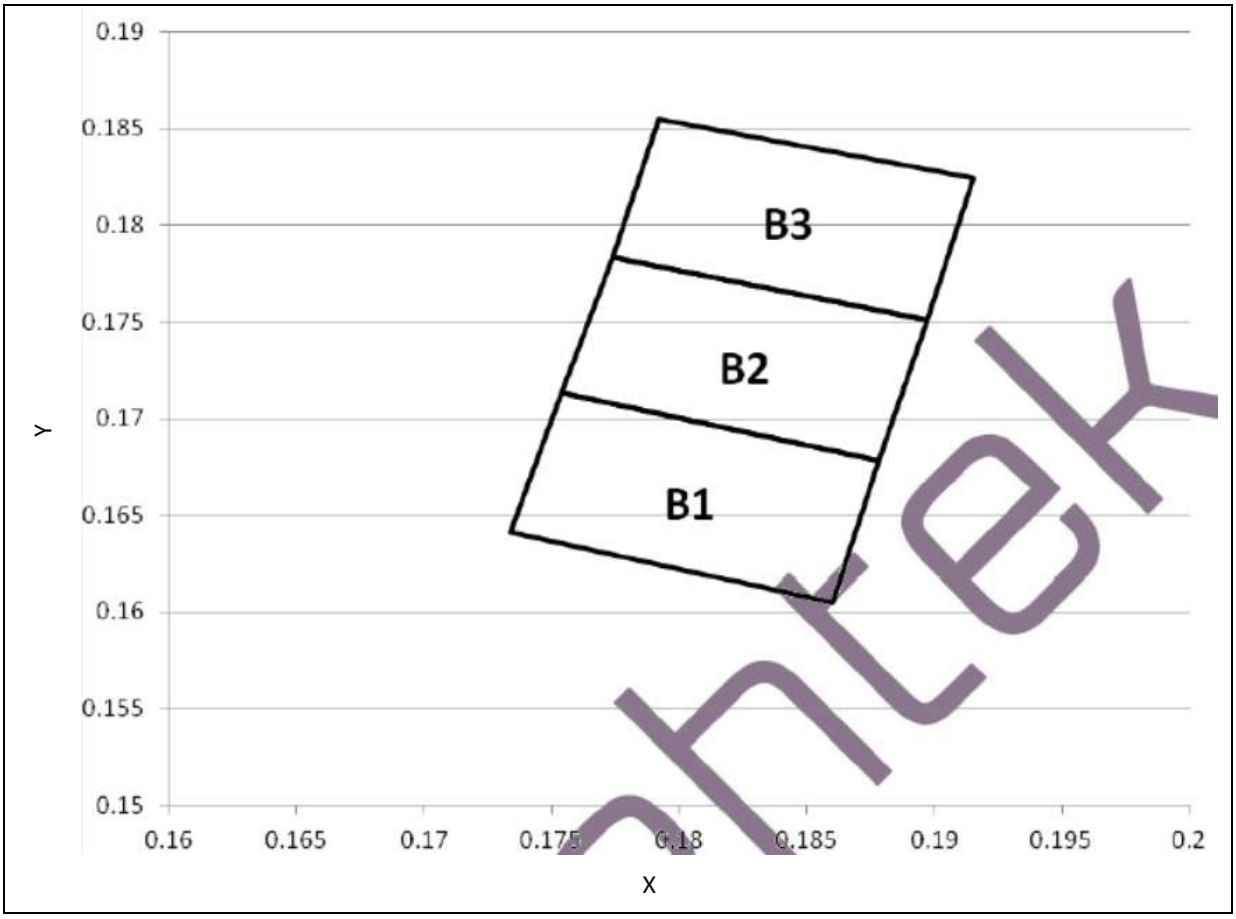
Forward Voltage Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
a	2.6	2.7	V
A	2.7	2.8	
B	2.8	2.9	
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	

Luminous Intensity Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
6	90	120	mcd
7	120	160	
8	160	210	
9	210	270	

CIE CHROMATICITY DIAGRAM:

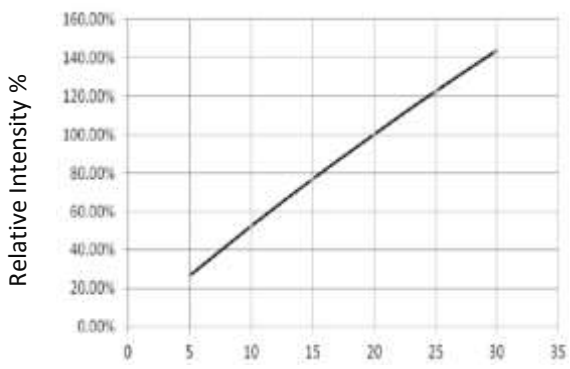


Chromaticity Coordinates Classifications (I_F = 20mA):

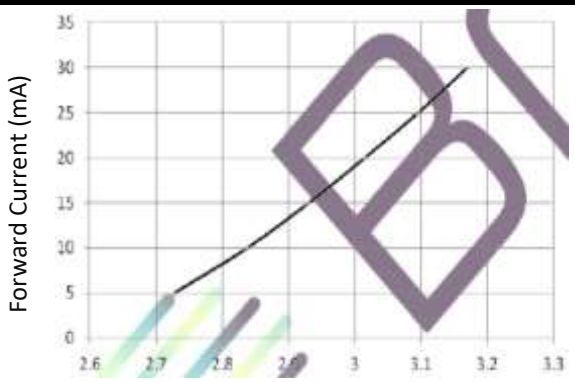
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
B1	0.1754	0.1713	0.1878	0.1678	0.1860	0.1605	0.1734	0.1641
B2	0.1774	0.1783	0.1897	0.1751	0.1878	0.1678	0.1754	0.1713
B3	0.1792	0.1855	0.1915	0.1824	0.1897	0.1751	0.1774	0.1783

ELECTRO-OPTICAL CHARACTERISTICS:

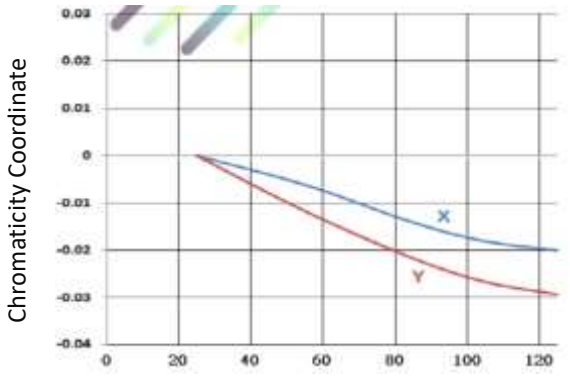
Relative Intensity v.s. Forward Current



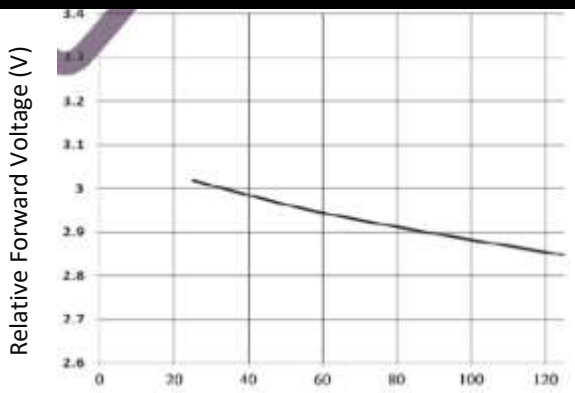
Forward Current v.s. Forward Voltage



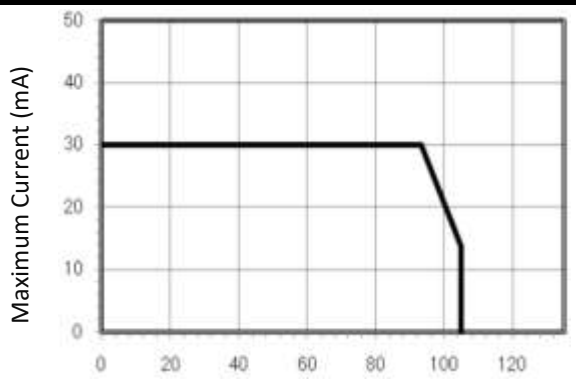
Temperature v.s. Chromaticity Coordinate



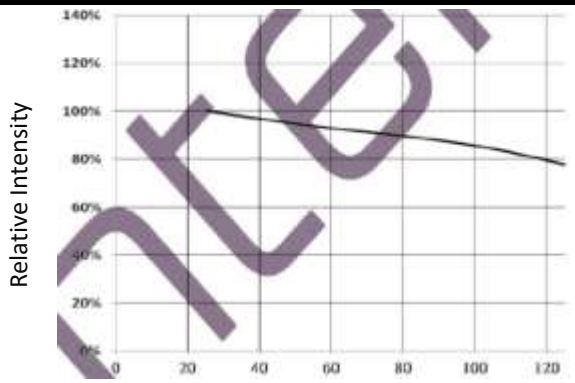
Relative Forward Voltage v.s. Temperature

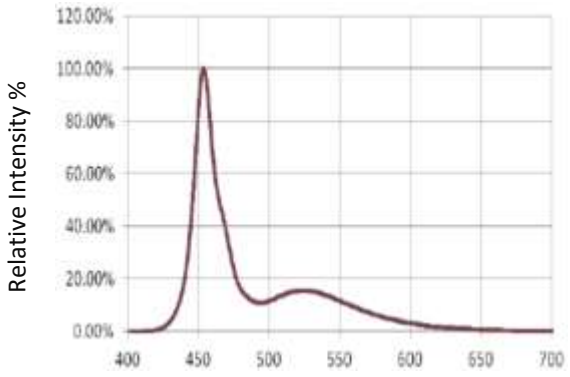
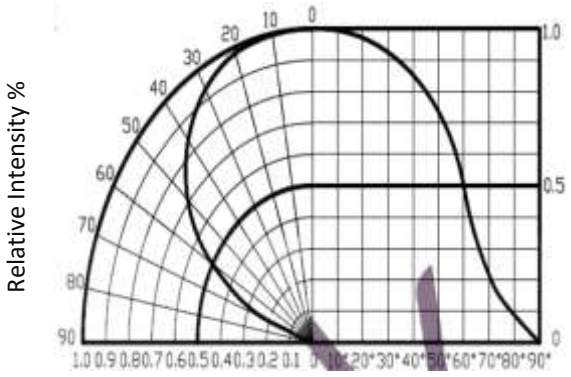


Temperature Derating Chart



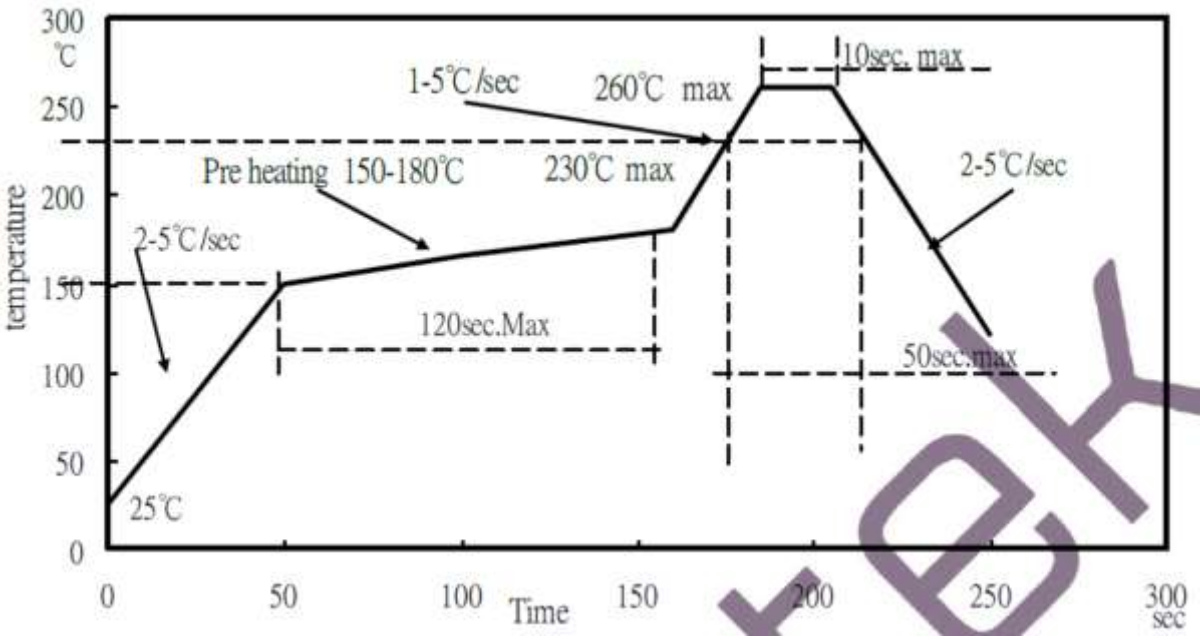
Relative Intensity Flux v.s. Ambient Temperature



Relative Intensity v.s. Wavelength	Relative Intensity v.s. Angular Displacement
	

RECOMMENDED SOLDERING PROFILE:

Reflow solder:



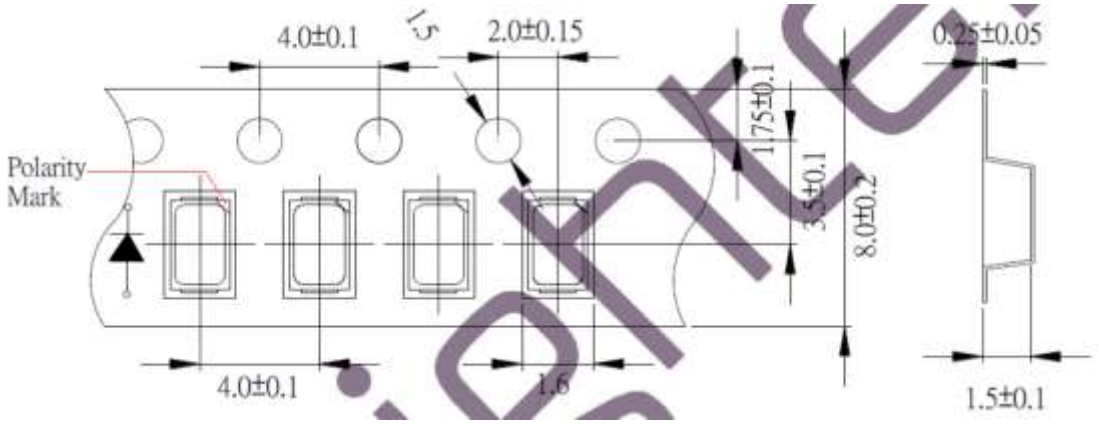
Note:

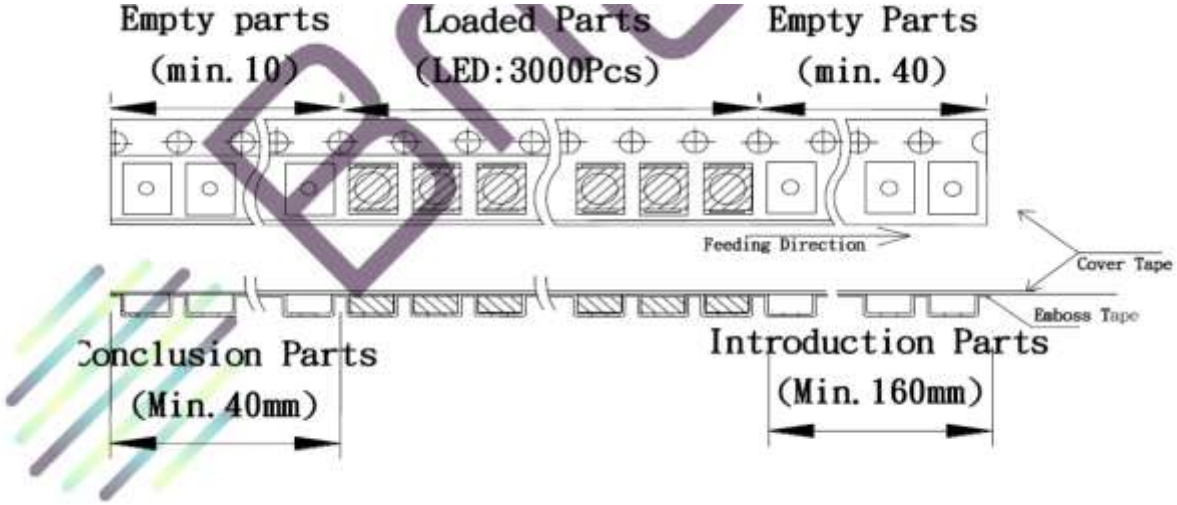
1. Recommend reflow temperature 240°C. The maximum soldering temperature should be limited to 260°C.
2. Maximum reflow soldering: 3 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

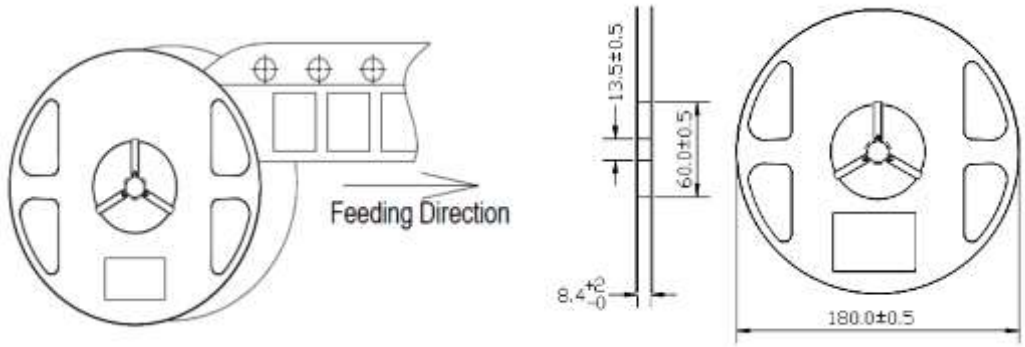
PACKING SPECIFICATION:

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 4 weeks. Otherwise, they should be kept in a damp-proof box with descanting agent <10% R.H. and apply baking before use.

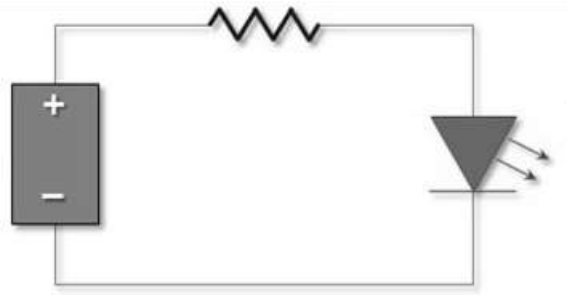
Baking:

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 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	15/05/2019	Datasheet set-up.
A1.1	28/05/2022	New datasheet format.