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

ATTENTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

► PLCC2 Top View SMD

► 2214 1.3t

► Red (625nm)

N0R40S04

2 2 1 4   1 . 3 t   S e r i e s

2214 1.3t Series

RoHS Compliant   Pb   AUTOMOTIVE

FEATURES:

- **Package:** PLCC2 Single Colour Top View SMD
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 1.9V
- **Luminous Intensity (typ.):** 220mcd@20mA
- **Colour:** Red
- **Wavelength:** 625nm
- **Viewing angle:** 120°
- **Materials:**
  – Die: AlInGaP
  – Resin: Silicone (Water Clear)
  – Finishing: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD (HBM):** 2KV
- **Grouping parameters:**
  – Forward voltage
  – Luminous intensity
  – Dominant wavelength
- **Soldering methods:** Reflow
- **MSL:** acc. to JEDEC Level 2a
- **Packing:** 8mm tape with max.3000/reel, ø180mm (7'')

APPLICATIONS:

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

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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}	100	mA
Reverse Voltage	V_R	10	V
Reverse Current @10V	I_R	10	µA
Junction Temperature	T_j	125	°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	Min.	Typ.	Max.	Unit	Test Condition
Forward Voltage	V_F	1.7	1.9	2.5	V	I_F=20mA
Luminous Intensity	I_V	120	220	350	mcd	I_F=20mA
Dominant Wavelength	λ_D	620	---	630	nm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

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

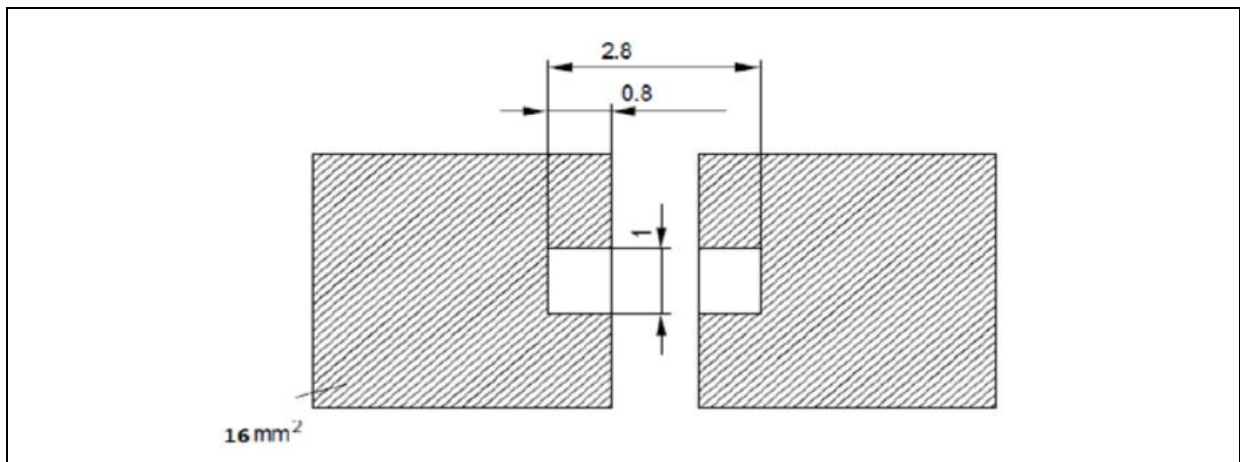## OUTLINE DIMENSION:

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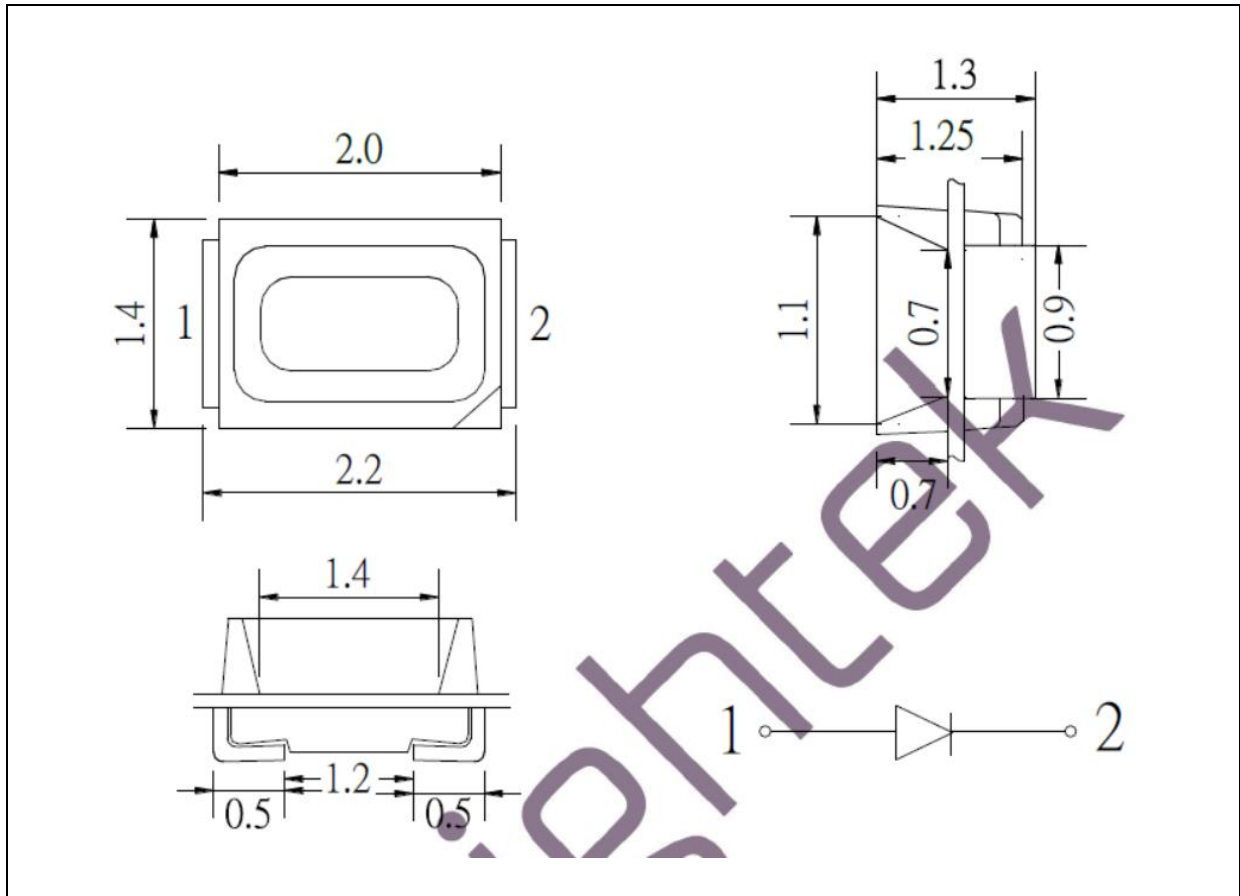
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:

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

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BINNING GROUPS:

Forward Voltage Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
A	1.7	1.8	V
B	1.8	1.9	
C	1.9	2.0	
D	2.0	2.1	
E	2.1	2.2	
F	2.2	2.3	
G	2.3	2.4	
H	2.4	2.5	

Luminous Intensity Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
7	120	160	mcd
8	160	210	
9	210	270	
10	270	350	

Dominant Wavelength Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
C	620	625	nm
D	625	630	

ELECTRO-OPTICAL CHARACTERISTICS:

Relative Intensity v.s. Forward Current

Relative Intensity vs Forward Current (mA)
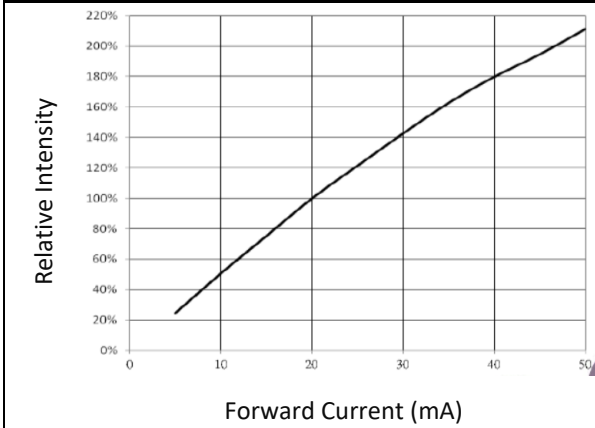
Forward Current v.s. Forward Voltage

Forward Current (mA) vs Forward Voltage (V)
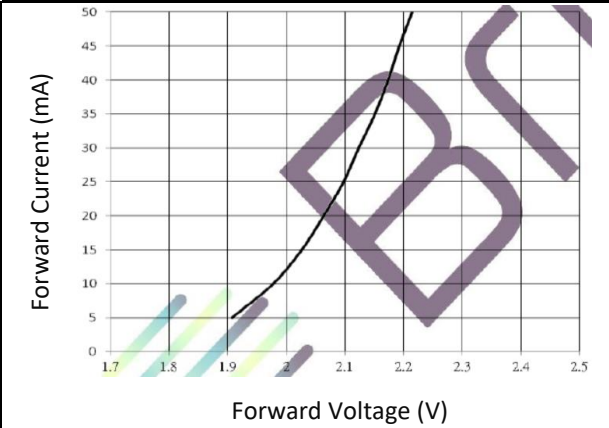
Ambient Temperature v.s. Wavelength

Wavelength (nm) vs Ambient Temperature (°C)
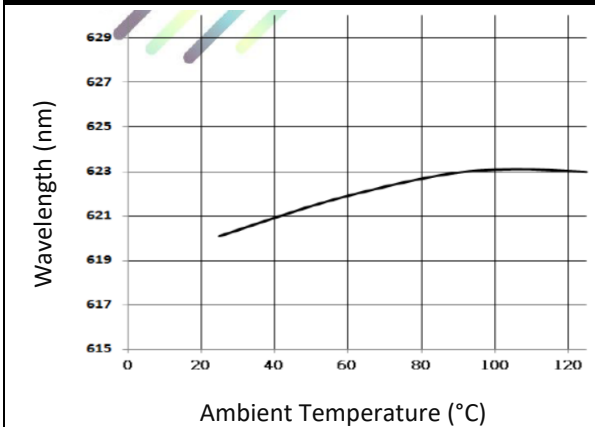
Relative Forward Voltage v.s. Temperature

Relative Forward Voltage (V) vs Ambient Temperature (°C)
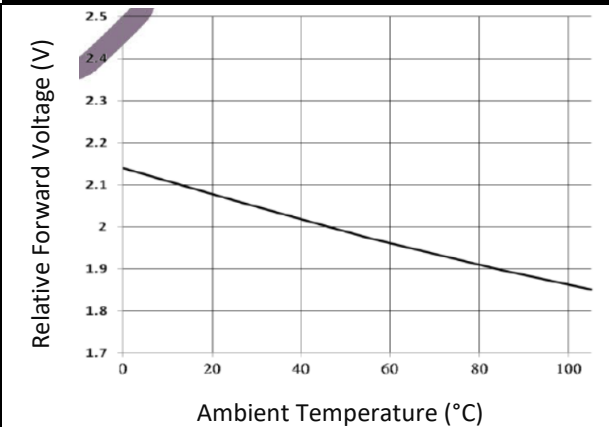
Temperature Derating Chart

Maximum Current (mA) vs Ambient Temperature (°C)
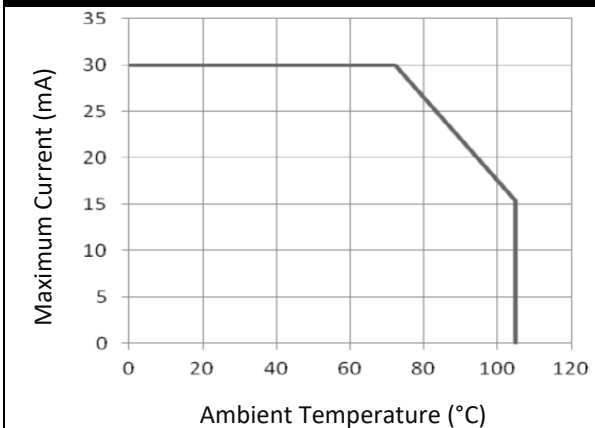
Relative Intensity Flux v.s. Ambient Temperature

Relative Intensity vs Ambient Temperature (°C)

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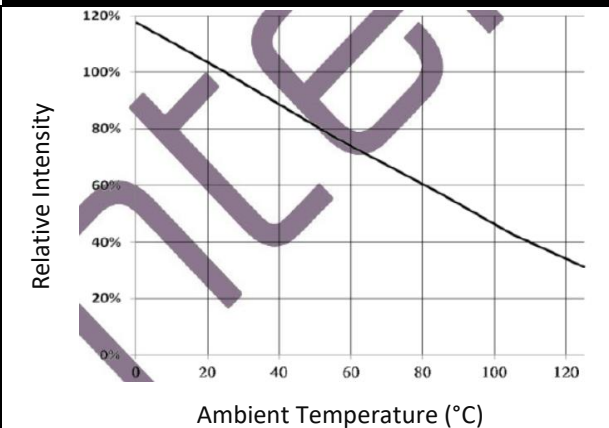
Relative Intensity v.s. Wavelength	Relative Intensity v.s. Angular Displacement
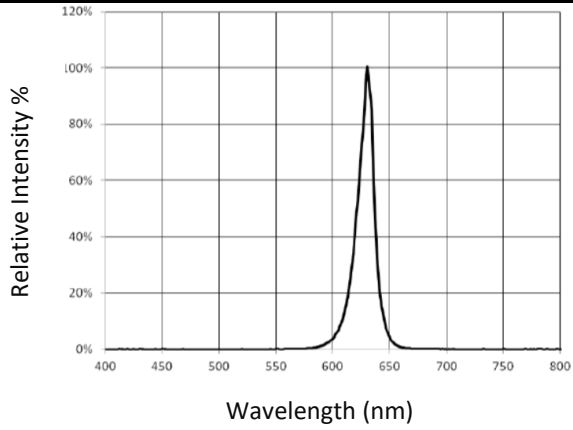
6
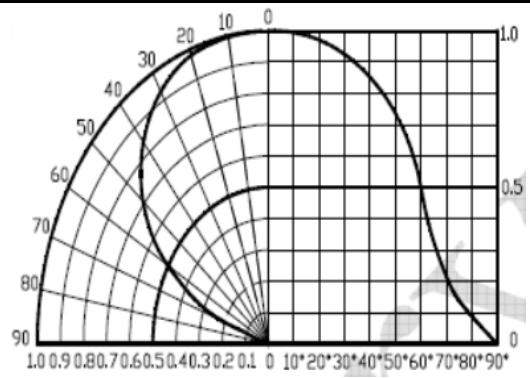
RECOMMENDED SOLDERING PROFILE:
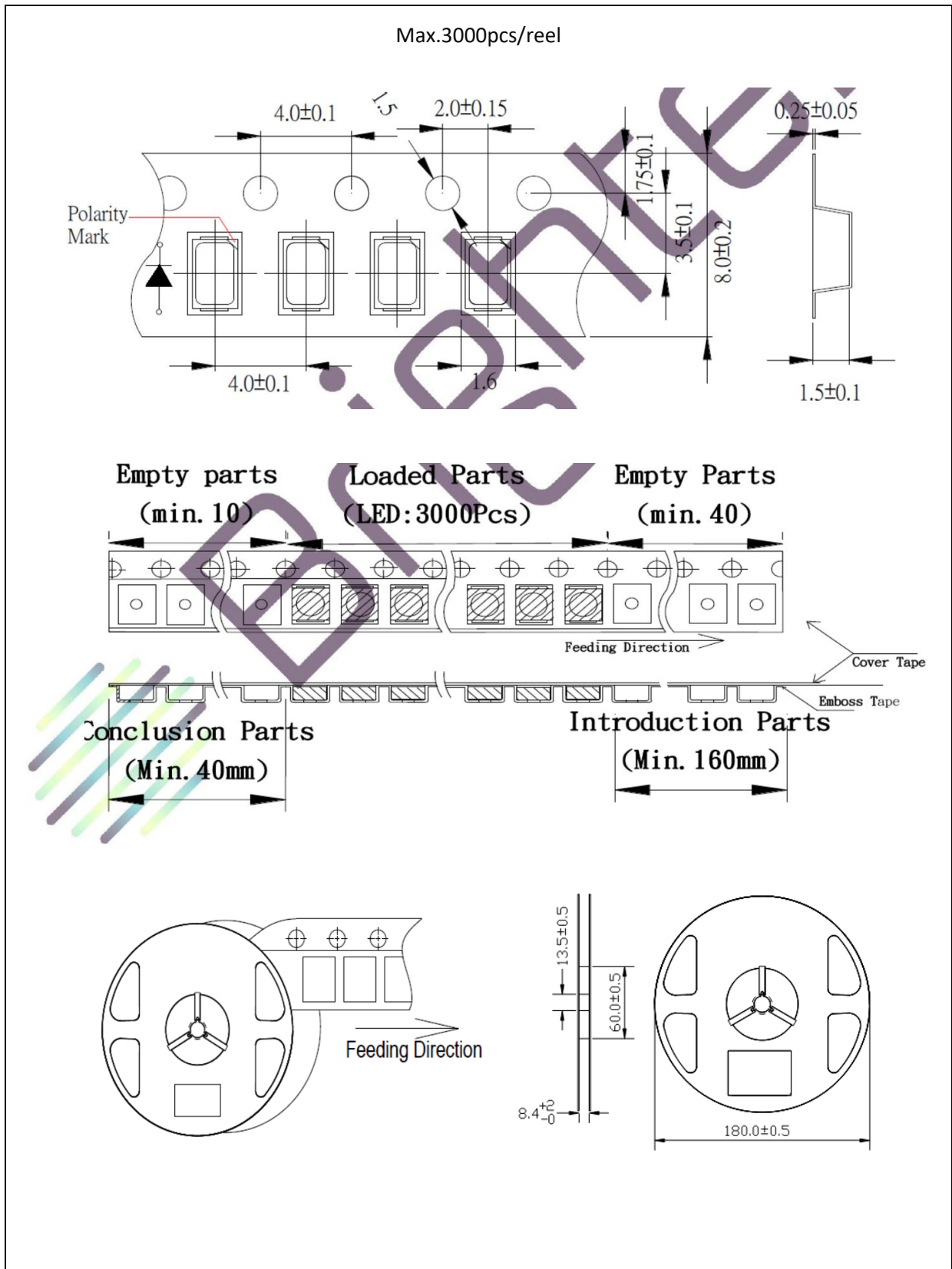
Reflow solder:
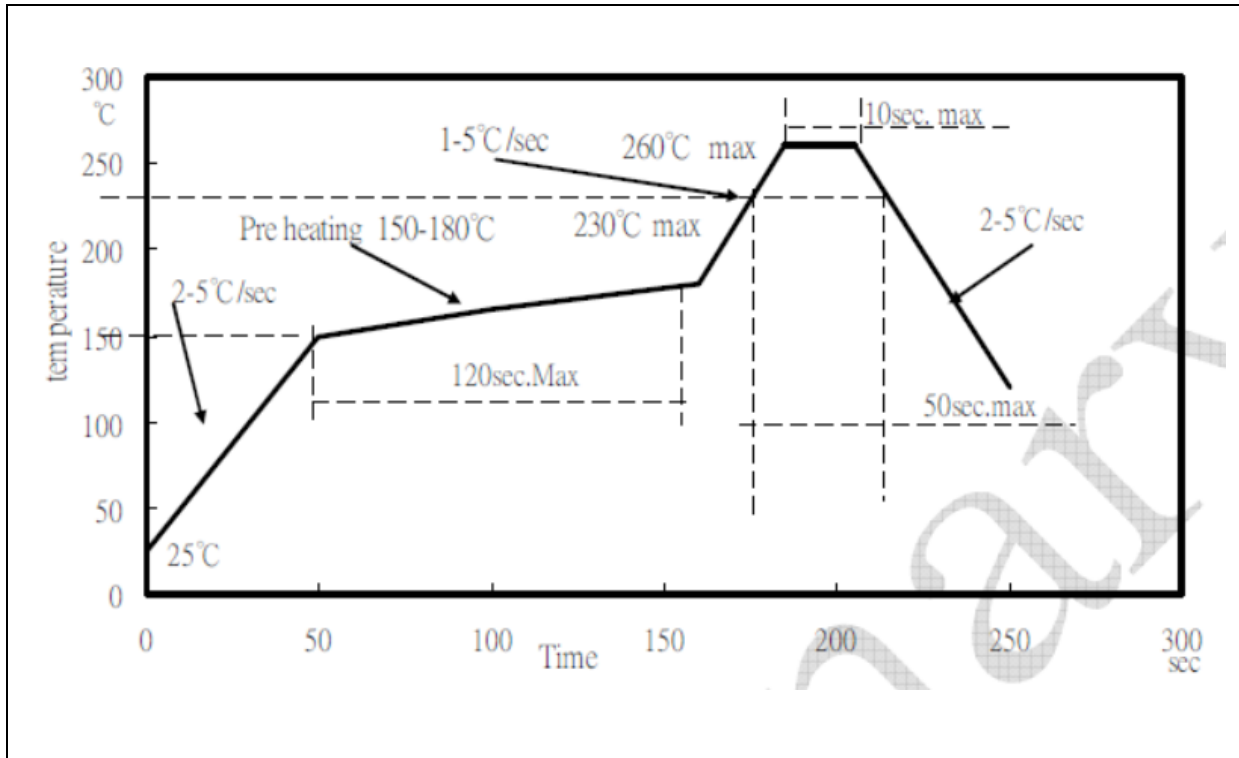
Note:

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.

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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 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.
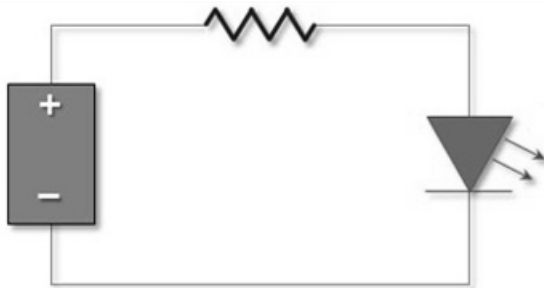
Baking:

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.

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REVISION RECORD:

Version	Date	Summary of Revision
A1.0	11/08/2020	Datasheet set-up.