



**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



- ▶ PLCC6 SMD
- ▶ 3433 1.92t Series
- ▶ Red (640nm)

NOR49S87



Release Date: 03 October 2021 Version: A1.1



### 3433 1.92t Series

**RoHS**  
Compliant



#### FEATURES:

- **Package:** PLCC6 Top View White SMT Package
- **Forward Current:** 140mA
- **Forward Voltage (typ.):** 2.2V
- **Luminous Intensity (typ.):** 2200mcd@140mA
- **Colour:** Red
- **Wavelength (typ.):** 640nm
- **Viewing angle:** 120°
- **Materials:**
  - Resin: Silicon (Water Clear)
  - L/T Finish: 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:** IR Reflow
- **MSL:** acc. to JEDEC Level 2a (J-STD20D)
- **Packing:** 12mm tape with max.1000/reel, ø180mm (7")

#### APPLICATIONS:

- Automotive
- Decorative Lighting
- Backlighting
- Indicator
- Dashboard
- Display

## CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Forward Current	I <sub>F</sub>	200	mA
Pulse Forward Current Duty 1/10, width 0.1ms	I <sub>PF</sub>	240	mA
Reverse Voltage	V <sub>R</sub>	10	V
Reverse Current @10V	I <sub>R</sub>	10	μA
Junction Temperature	T <sub>J</sub>	125	°C
Electrostatics Discharge (HBM)	ESD	2000	V
Operating Temperature	T <sub>OPR</sub>	-40~+105	°C
Storage Temperature	T <sub>STG</sub>	-40~+105	°C
Soldering Temperature	T <sub>SD</sub>	260	°C
Thermal Resistance Junction/Soldering Point	R <sub>THJ-S</sub>	80	°C/W

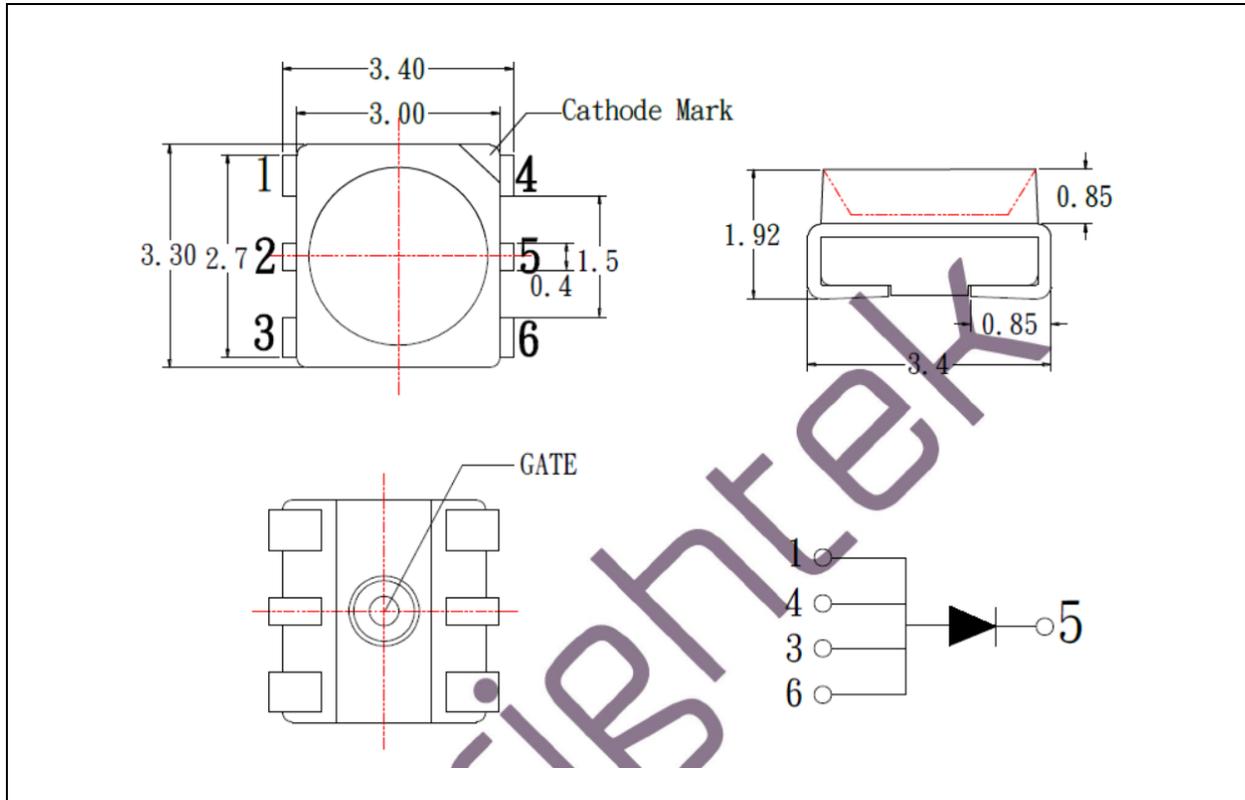
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V <sub>F</sub>	1.9	2.2	2.7	V	I <sub>F</sub> =140mA
Luminous Intensity	I <sub>v</sub>	1700	2200	---	mcd	I <sub>F</sub> =140mA
Luminous Flux	Φ <sub>v</sub>	---	6.5	---	lm	I <sub>F</sub> =140mA
Dominant Wavelength	λ <sub>D</sub>	635	---	650	nm	I <sub>F</sub> =140mA
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =140mA

1. Luminous intensity (I<sub>v</sub>) ±10%, Forward Voltage (V<sub>F</sub>) ±0.1V, Viewing angle(2θ<sub>1/2</sub>) ±5%, Wavelength ±1nm

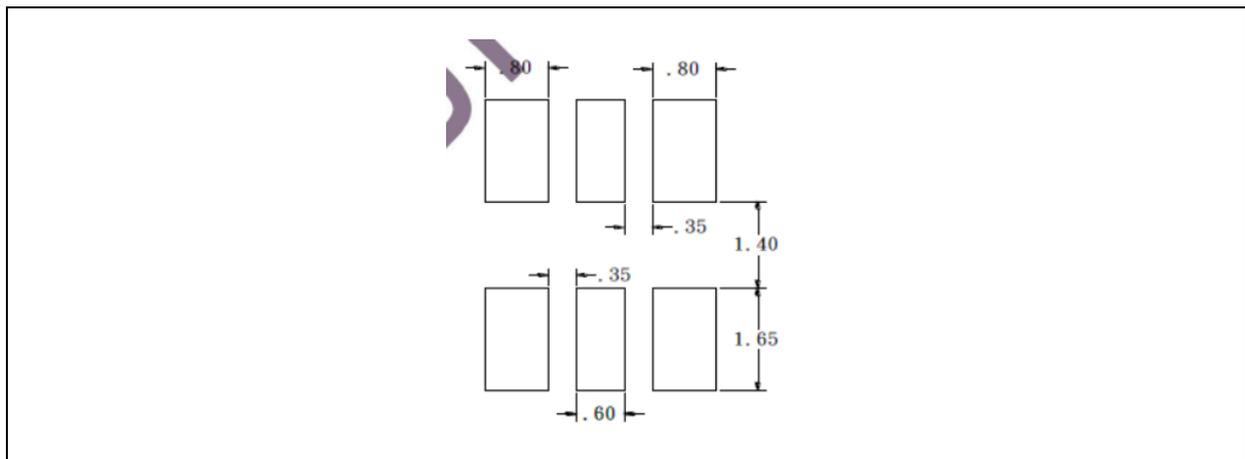
## OUTLINE DIMENSION:

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 ( $I_F = 140\text{mA}$ ):

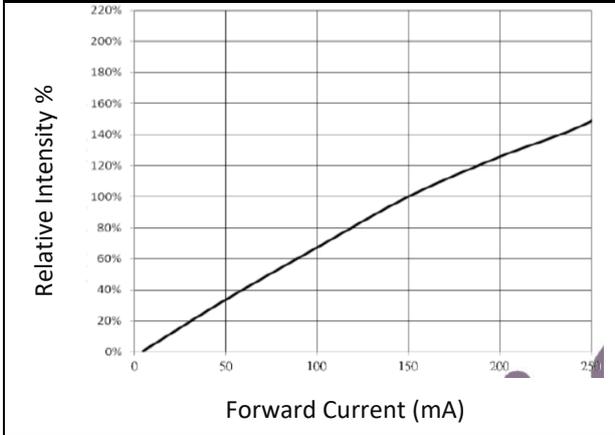
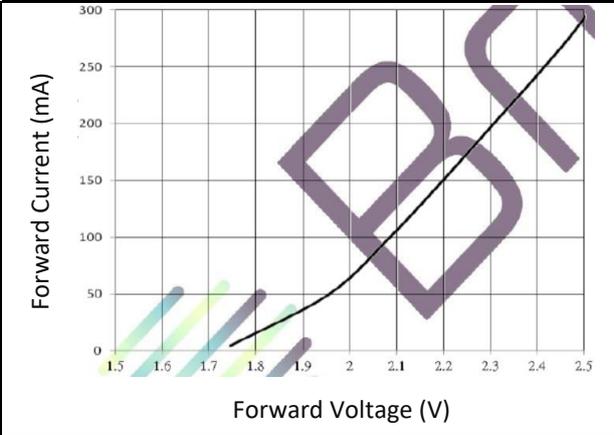
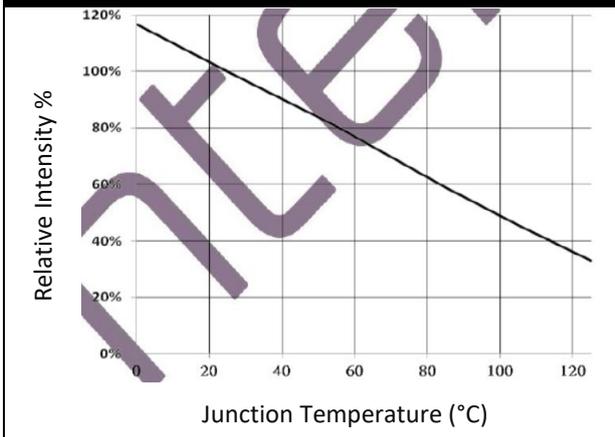
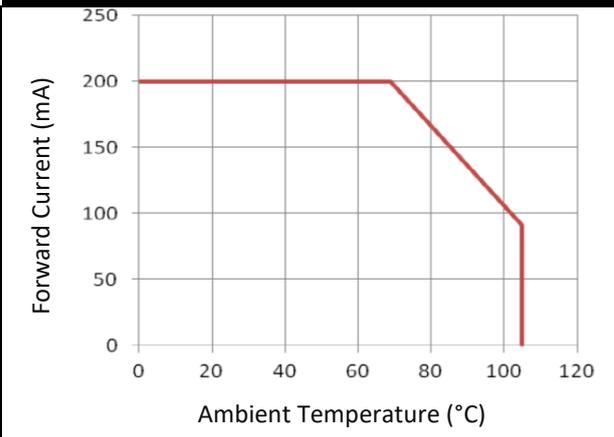
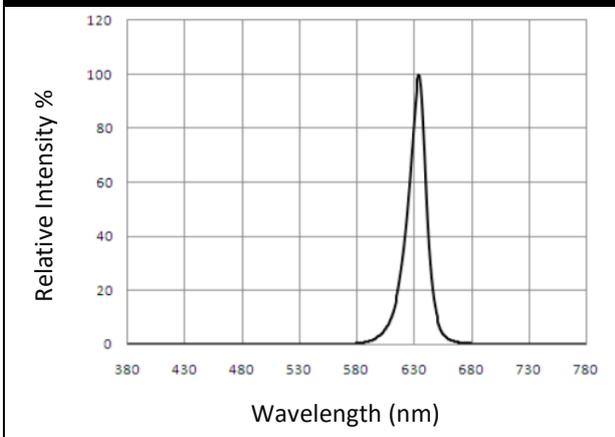
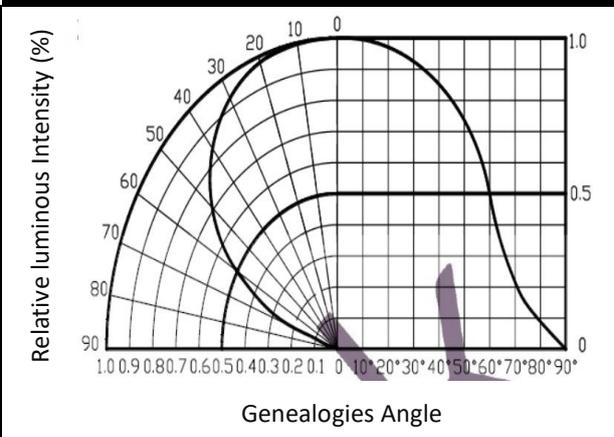
Code	Min.	Max.	Unit
D	1.9	2.1	V
E	2.1	2.3	
F	2.3	2.5	
G	2.5	2.7	

 Luminous Intensity Classifications ( $I_F = 140\text{mA}$ ):

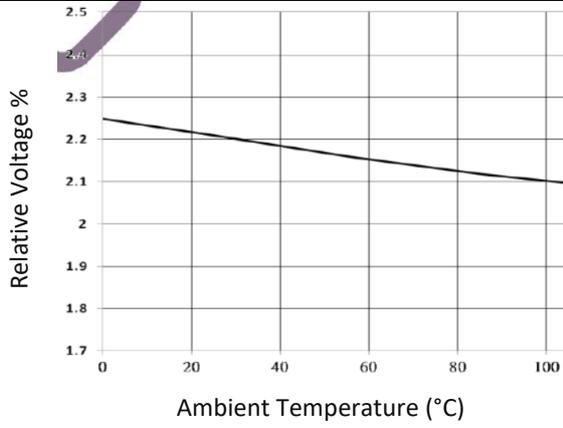
Code	Min.	Max.	Unit
17	1700	2200	mcd
18	2200	2800	
19	2800	3600	

 Dominant Wavelength Classifications ( $I_F = 140\text{mA}$ ):

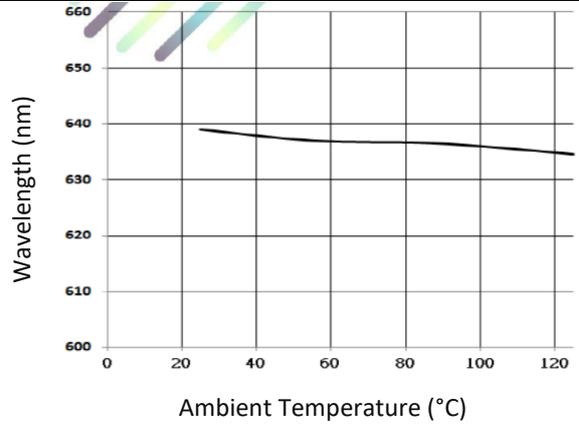
Code	Min.	Max.	Unit
F	635	640	nm
G	640	645	
H	645	650	

**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Intensity v.s. Forward Current**

**Forward Current v.s. Forward Voltage**

**Relative Intensity v.s. Temperature**

**Forward Current Derating Curve**

**Relative Intensity v.s. Wavelength**

**Directive Radiation**


Relative Voltage v.s. Temperature

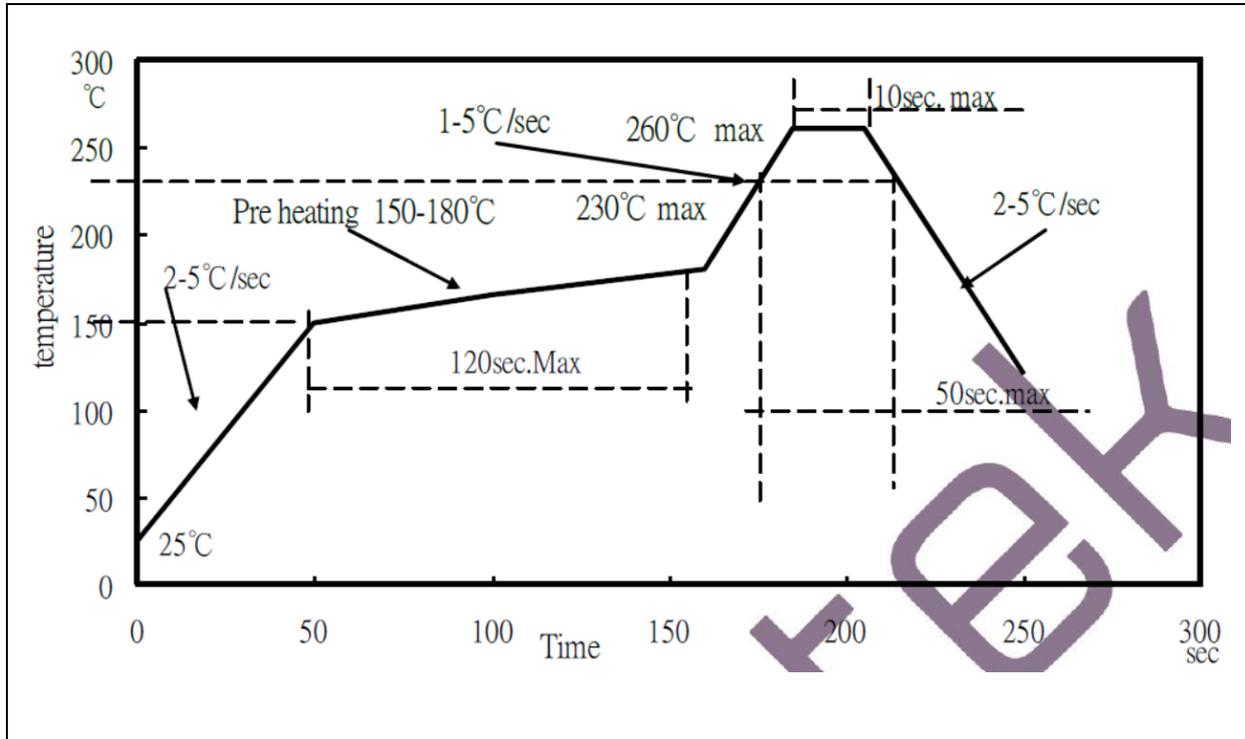


Wavelength Shift v.s. Temperature



## RECOMMENDED SOLDERING PROFILE:

IR Reflow Lead-free Solder:

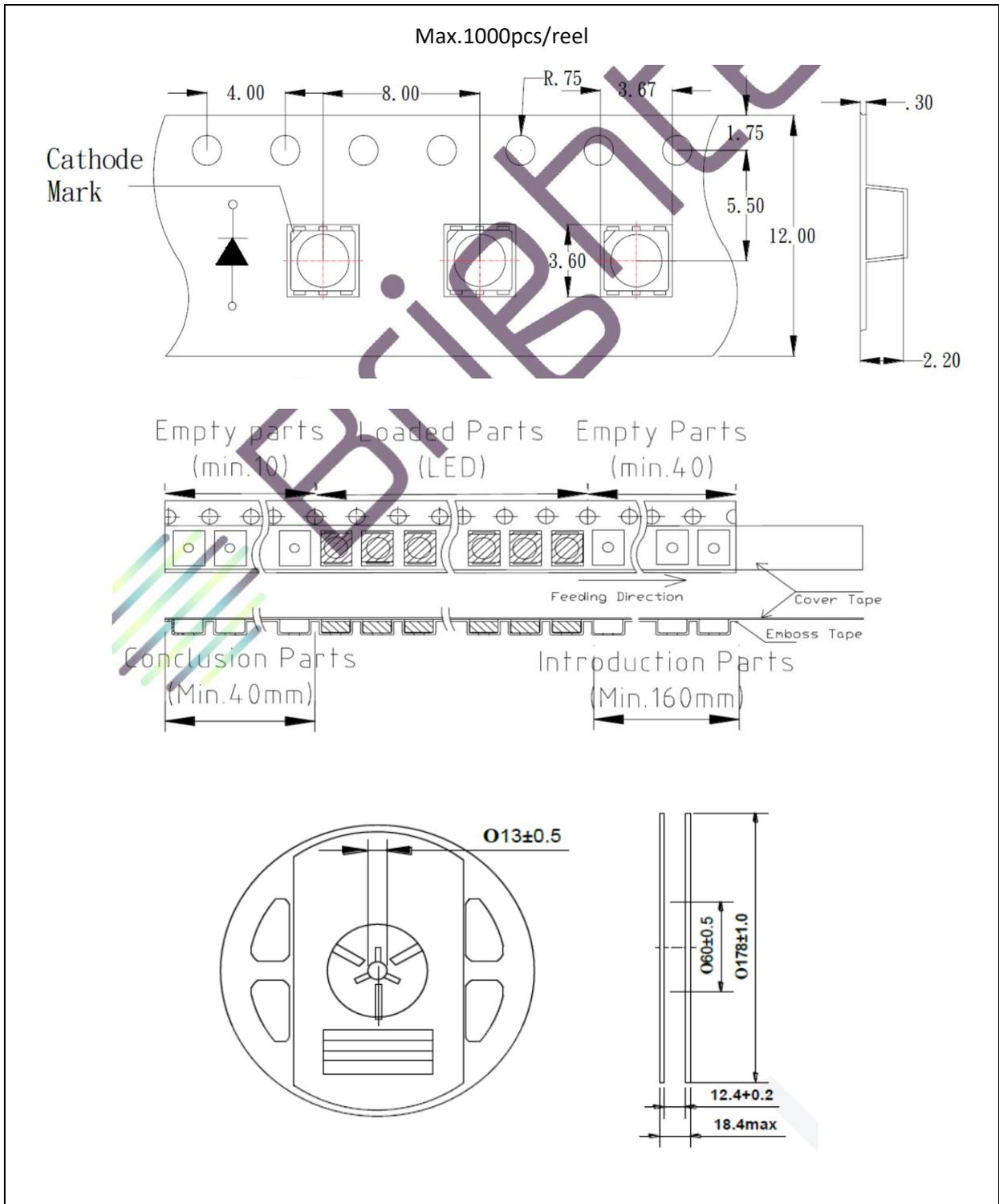


Note:

1. Maximum reflow soldering: 3 times.
2. Recommended reflow temperature 240°C. The 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:



## 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 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 desiccating agent <10% R.H. and apply baking before use.

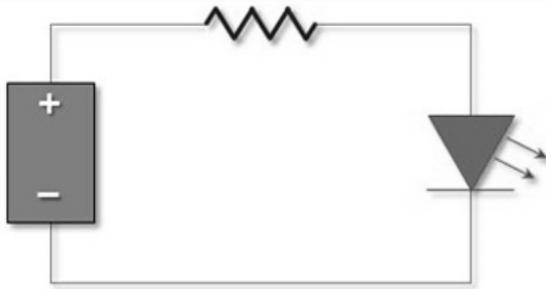
### Baking:

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, for 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-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	12/08/2019	Datasheet set-up.
A1.1	03/10/2021	New datasheet format.