

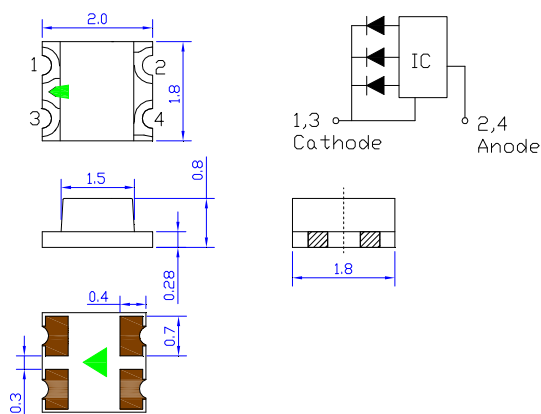
### ■ Features

- High Luminous LEDs
- 2.0 x 1.8 x 0.8mm Standard Directivity
- Flashing Type
- Superior Weather-resistance
- UV Resistant Epoxy
- Water clear Type

### ■ Applications

- Toys
- Games
- Audio
- Other Lighting

### ■ Outline Dimension

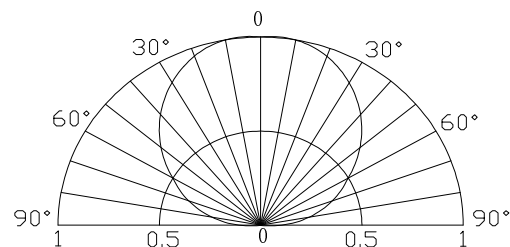


Notes: 1. All dimensions are in millimeters ;  
2. Tolerance is  $\pm 0.15$  mm unless otherwise noted.

### ■ Absolute Maximum Rating (Ta=25°C)

Item	Symbol	Value	Unit
Power Supply	Voltage	5	V
Operating Temperature	Topr	-30 ~ +85	°C
Storage Temperature	Tstg	-40~ +100	°C
Lead Soldering Temperature	Tsol	260°C/5sec	-

### ■ Directivity



### ■ Electrical -Optical Characteristics (Ta=25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
DC Forward Voltage	V <sub>dd</sub>	I <sub>F</sub> =20mA	3.3	3.8	5.0	V
Oscillator Frequency*	F <sub>led</sub>	I <sub>F</sub> =20mA	-	12	-	S
Duty Cycle	Duty	I <sub>F</sub> =20mA	-	-	-	-
Domi. Wavelength*	$\lambda_D$ (Red)	I <sub>F</sub> =20mA	620	625	630	nm
	$\lambda_D$ (Blue)	I <sub>F</sub> =20mA	465	470	475	nm
	$\lambda_D$ (Green)	I <sub>F</sub> =20mA	520	525	530	nm
Luminous Intensity*	I <sub>v</sub> (Red)	I <sub>F</sub> =20mA	100	150	-	mcd
	I <sub>v</sub> (Blue)	I <sub>F</sub> =20mA	50	90	-	mcd
	I <sub>v</sub> (Green)	I <sub>F</sub> =20mA	300	500	-	mcd
50% Power Angle	2 $\theta_{1/2}$	I <sub>F</sub> =20mA	-	120	-	deg

\*1 Tolerance of chromaticity coordinates is  $\pm 10\%$

\*2 Tolerance of luminous intensity is  $\pm 15\%$

## ■ Recommended Soldering Temperature – Time Profile (Reflow Soldering)

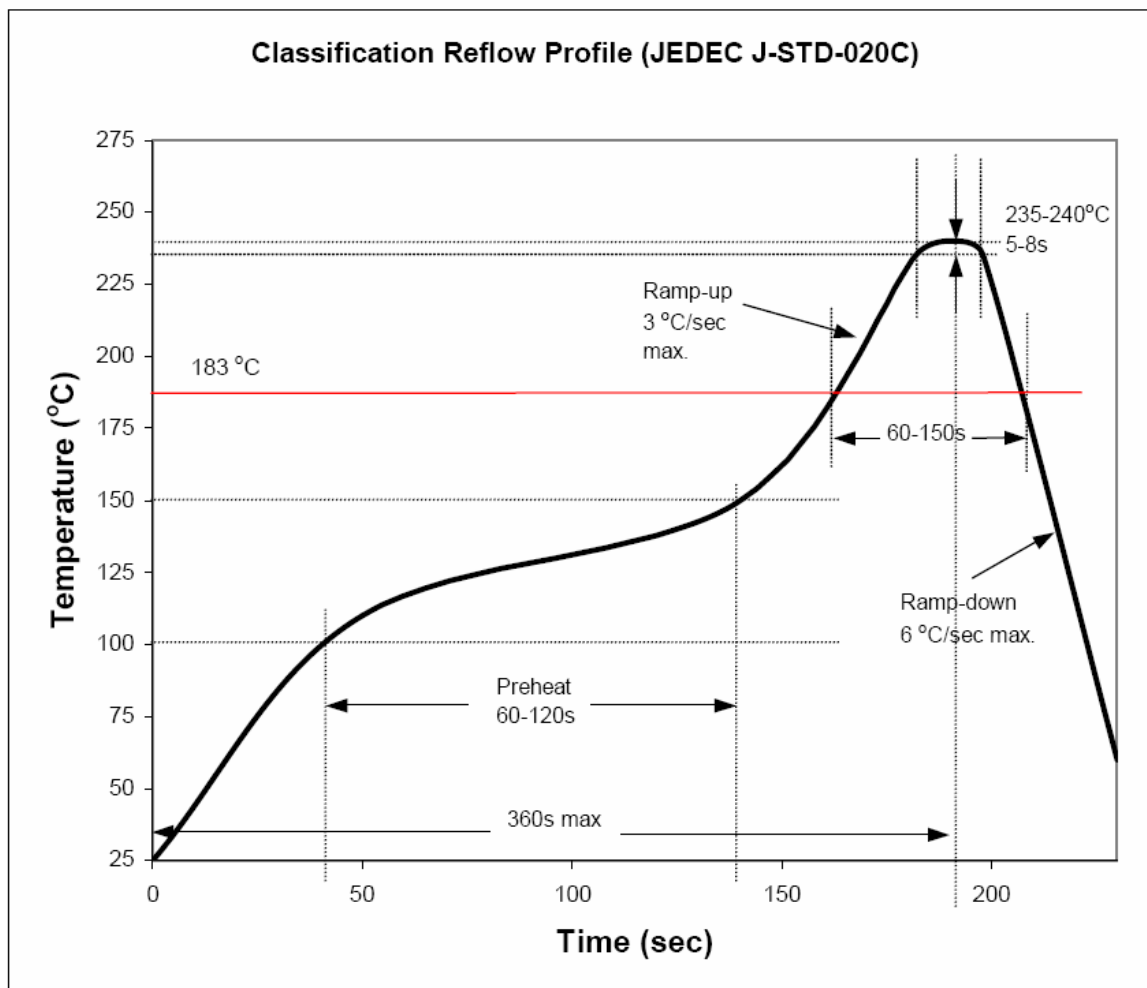
### Surface Mounting Condition

In automatic mounting of the SMD LEDs on printed circuit boards, any bending, expanding and pulling forces or shock against the SMD LEDs should be kept min. to prevent them from electrical failures and mechanical damages of the devices.

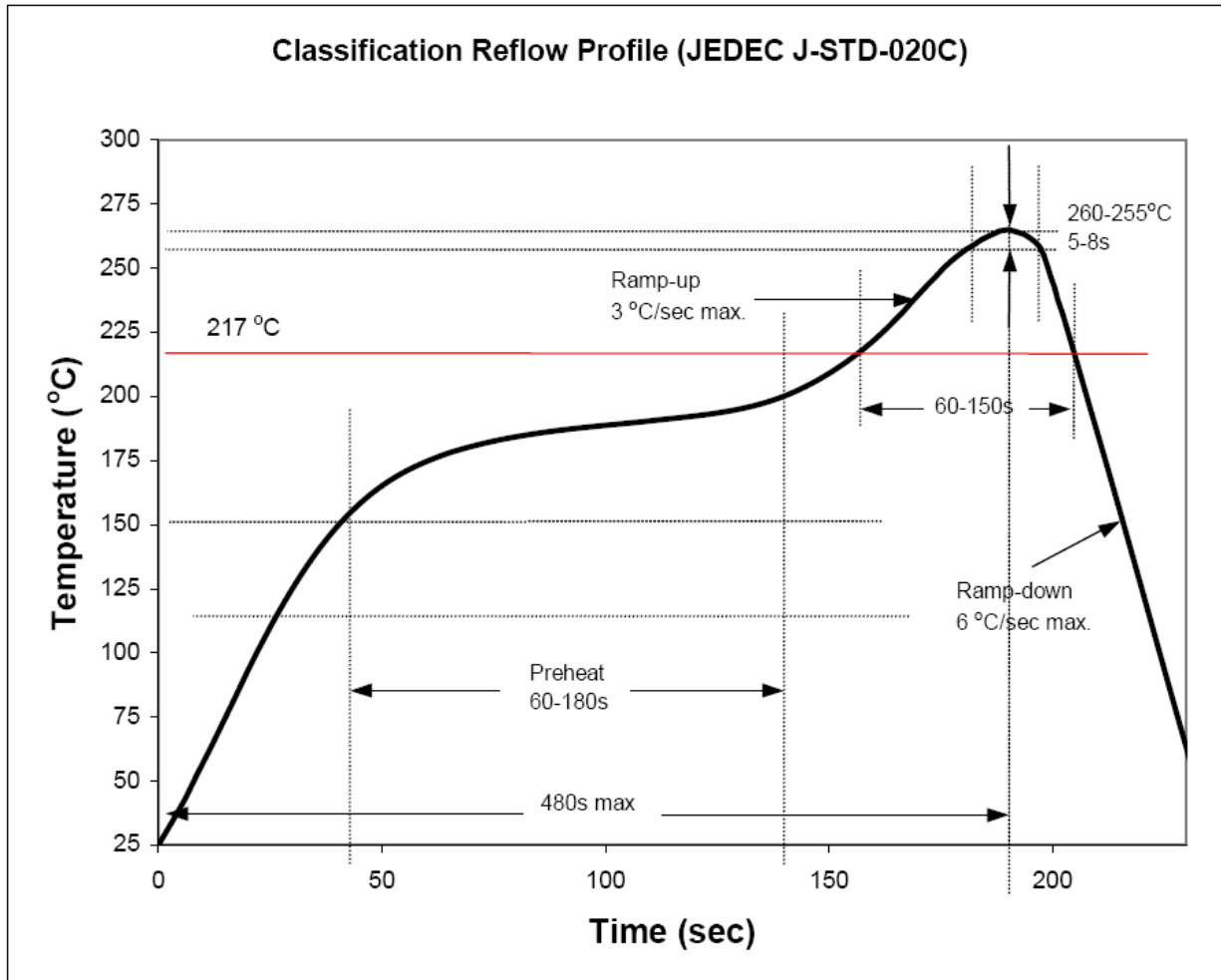
### Soldering Reflow

- Soldering of the SMD LEDs should conform to the soldering condition in the individual specifications.
- SMD LEDs are designed for Reflow Soldering.
- In the reflow soldering, too high temperature and too large temperature gradient such as rapid heating/cooling may cause electrical & optical failures and damages of the devices.
- We cannot guarantee the LEDs after they have been assembled using the solder dipping method.

### 1) Lead Solder



## 2) Lead-Free Solder



## 3) Manual Soldering conditions.

- Lead Solder

Max. 300 for Max. 3sec, and only one time. °C

- Lead-free Solder

Max. 350 for Max. 3sec, and only one time. °C

- There is possibility that the brightness of LEDs is decreased, which is influenced by heat or ambient atmosphere during reflow. It is recommended to use the nitrogen reflow method.

- After LEDs have been soldered, repair should not be done. As repair is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will be damaged by repairing or not.

- Reflow soldering should not be done more than two times.

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