

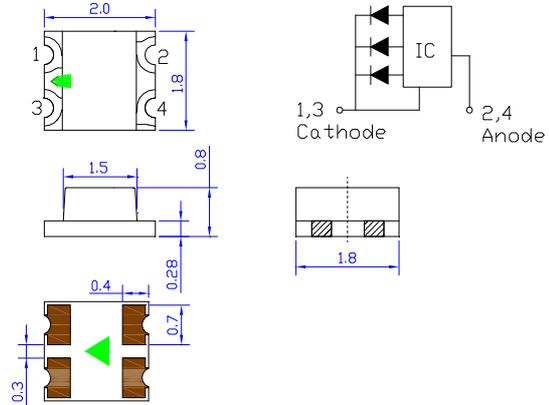
■ **Features**

- High Luminous LEDs
- 2.0 x 1.8 x 0.8mm Standard Directivity
- Flashing Type
- UV Resistant Epoxy
- Water Clear Type

■ **Applications**

- Toys
- Games
- Audio
- Other Lighting

■ **Outline Dimension**

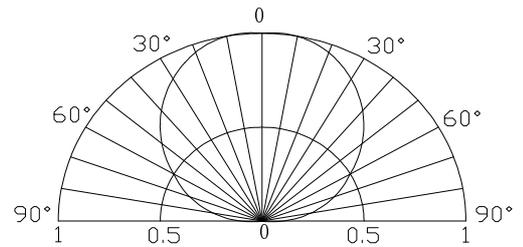


Notes: 1. All dimensions are in millimeters ;
2. Tolerance is ± 0.15 mm unless otherwise noted.

■ **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 _{dd}	I _F =20mA	3.3	3.8	5.0	V
Oscillator Frequency*	F _{led}	I _F =20mA	-	12	-	S
Duty Cycle	Duty	I _F =20mA	-	-	-	-
Domi. Wavelength*	λ_D (Red)	I _F =20mA	620	625	630	nm
	λ_D (Blue)	I _F =20mA	465	470	475	nm
	λ_D (Green)	I _F =20mA	520	525	530	nm
Luminous Intensity*	I _v (Red)	I _F =20mA	100	150	-	mcd
	I _v (Blue)	I _F =20mA	50	90	-	mcd
	I _v (Green)	I _F =20mA	300	500	-	mcd
50% Power Angle	$2\theta_{1/2}$	I _F =20mA	-	120	-	deg

*1 Tolerance of measurements of dominant wavelength is ± 1 nm

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

*3 Tolerance of measurements of forward voltage is ± 0.1 V

*4 Tolerance of measurements of frequency is $\pm 20\%$

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

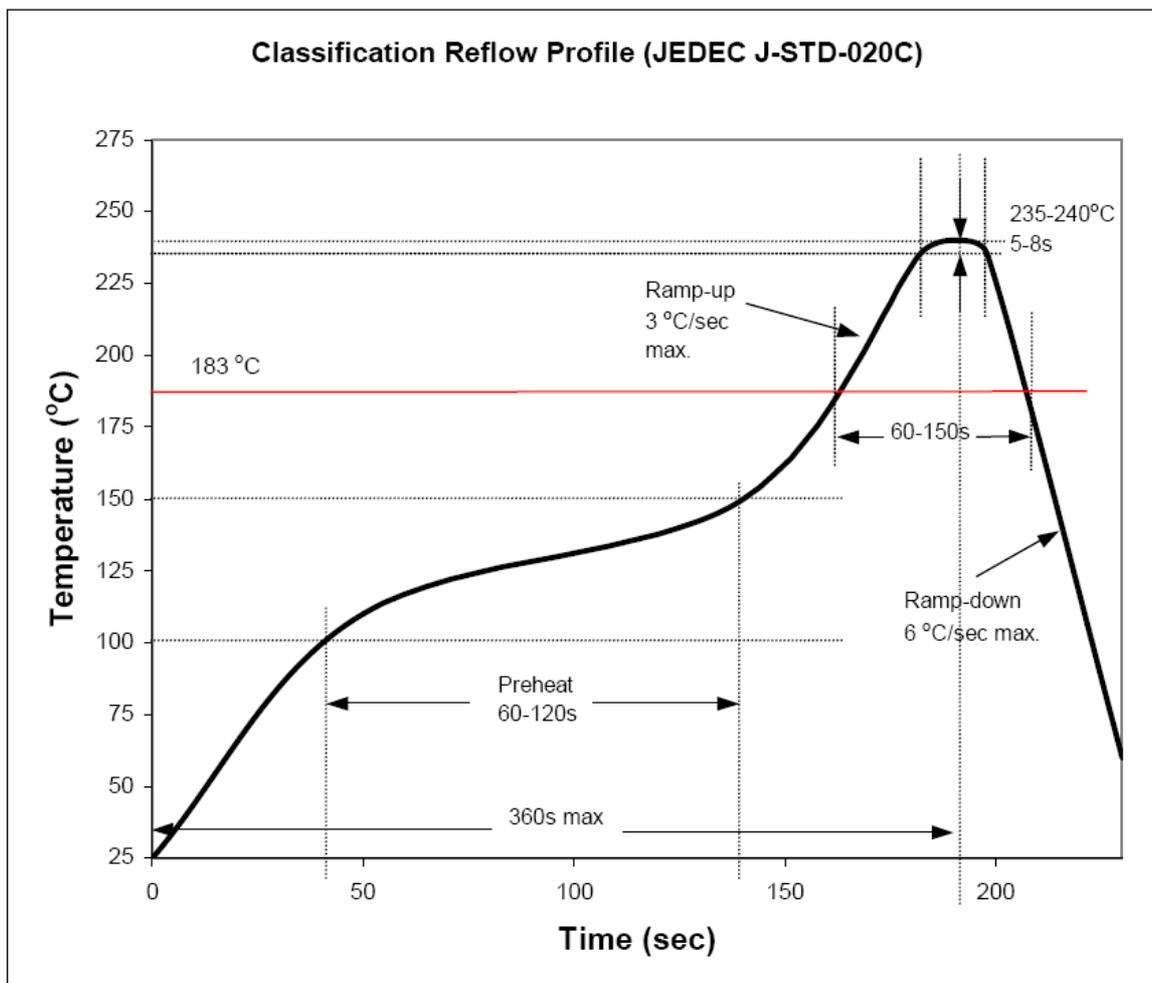
Surface Mounting Condition

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.

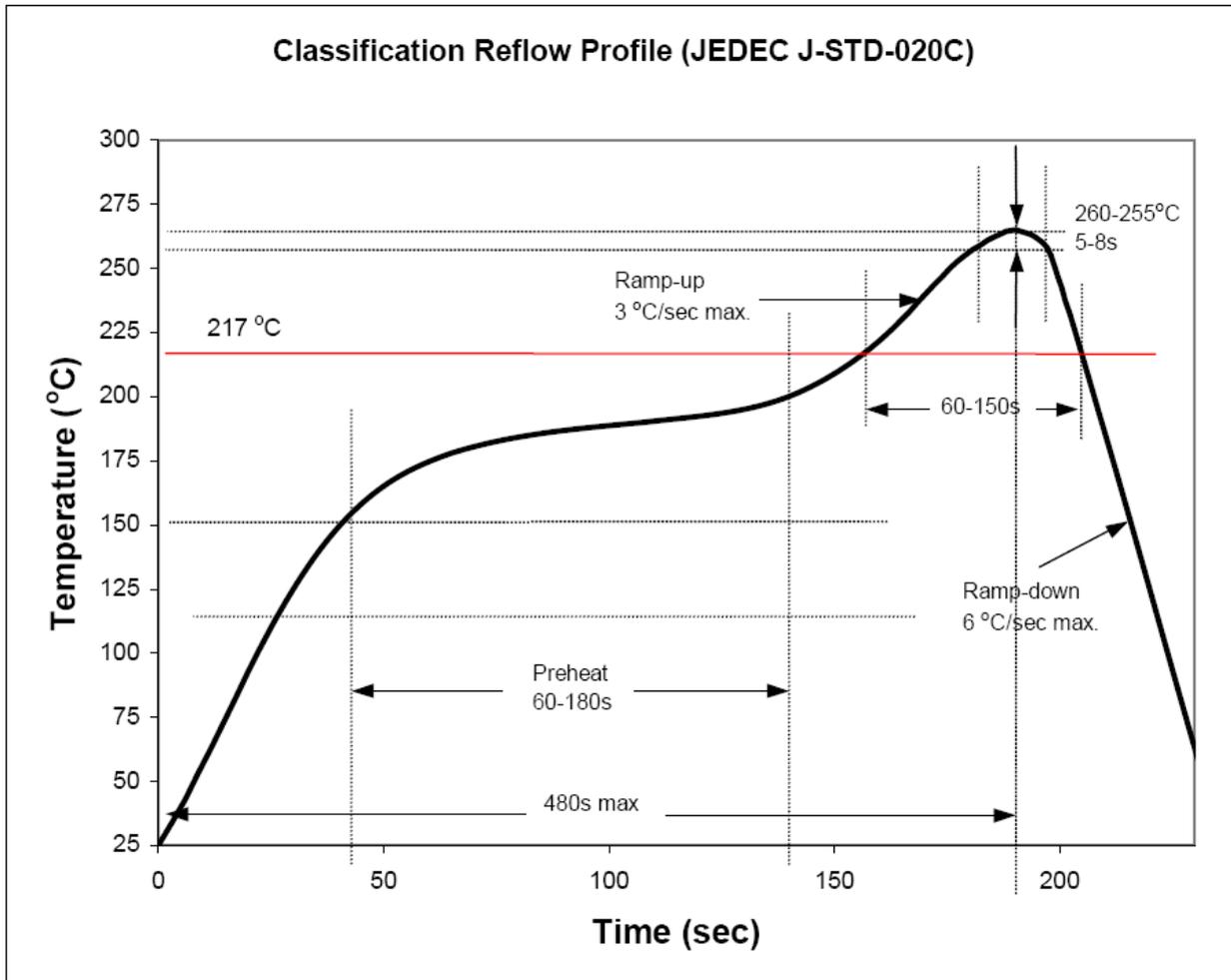
Soldering Reflow

- 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.

■ **Cautions:**

1. After open the package, the LED's floor life is 4 Weeks under 30°C or less and 60%RH or less(MSL:2a).
2. Heat generation must be taken into design consideration when using the LED.
3. Power must be applied resistors for protection, over current would be caused the optic damage to the devices and wavelength shift.
4. Manual tip solder may cause the damage to Chip devices, so advised that heat of iron should be lower than 15W with temperature control under 5 seconds at 230-260 deg. C.
(The device would be got damage in re working process, recommended under 5 seconds at 230-260 deg. C)
5. All equipment and machinery must be properly grounded. It is recommended to use a wristband or anti-electrostatic glove when handing the LED.
6. Use IPA as a solvent for cleaning the LED. The other solvent may dissolve the LED package and the epoxy, Ultrasonic cleaning should not be done.
7. Damaged LED will show unusual characteristics such as leak current remarkably increase, turn-on voltage becomes lower and the LED get unlight at low current.