

## Product Description

- The 0603 SMD LED is much smaller, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- These LEDs have high reliability performance and are designed to work under a wide range of environmental conditions.
- Besides, lightweight makes them ideal for miniature applications. etc.

## Features

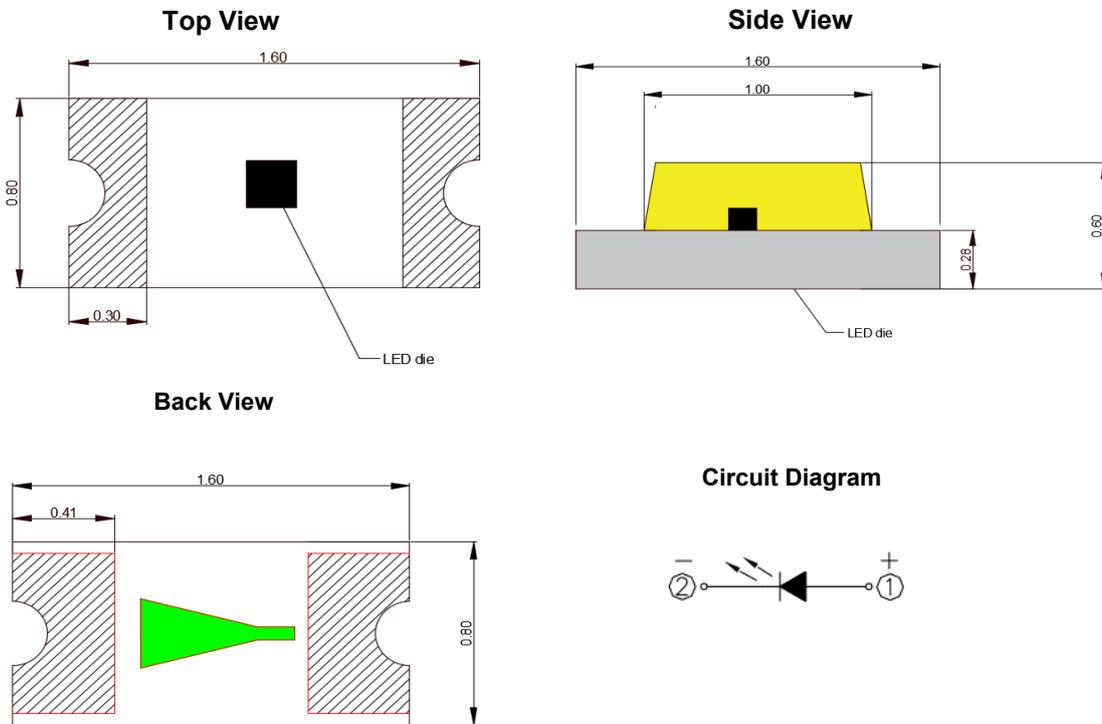
- Size(mm): 1.6\*0.8\*0.6mm
- Compatible with automatic placement equipment
- Moisture Sensitivity Level: 3
- Color type: White
- Viewing Angle:120°
- Pb-free
- RoHS and REACH compliant

## Applications

- Backlighting in dashboard and switch.
- Digital display for household appliance
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD
- General use

## MECHANICAL DIMENSIONS

All dimensions are in mm.



### Remark

The tolerance of all dimensions above is 0.1mm.



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Items	Symbol	Absolute Maxium Rating	Unit
Forward current	$I_F$	30	mA
Peak Forward Crrrent	$I_{FP}$	60	mA
Reverse voltage	$V_R$	5	V
Power dissipation	$P_D$	100	mW
Operating temperature	$T_{opr}$	-40 ~+85	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40~+100	$^\circ\text{C}$

Remark:1/10 Duty cycle, 0.1ms pulse width.

### TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Charateristics	Symbol	Condition	Unit	Minimum	Typical
Forward Volatge	$V_F$	$I_F=5\text{mA}$	V		2.8
Reverse Current	$V_R$	$V_R=5\text{V}$	uA		<1
Viewing Angle	$2\theta_{1/2}$	$I_F=5\text{mA}$			120
Luminous intensity	$I_V$	$I_F=5\text{mA}$	mcd	145	
Spectral Line Half-Width	$\Delta\lambda$		nm		15
Chromaticity Coordinate	x	$I_F=5\text{mA}$			0.2320
	y	$I_F=5\text{mA}$			0.2000
Color Temperature	CCT	$I_F=5\text{mA}$	K	40000	

\* Continuous reverse voltage can cause LED damage.

### INTENSITY BIN LIMIT

White(5mA)		
Bin code	Min.(mcd)	Max.(mcd)
WM1	145	175
WM2	175	210
WM3	210	250
WM4	250	300
WM5	300	360

\*Tolerance of measurement of luminous intensity is  $\pm 10\%$ .



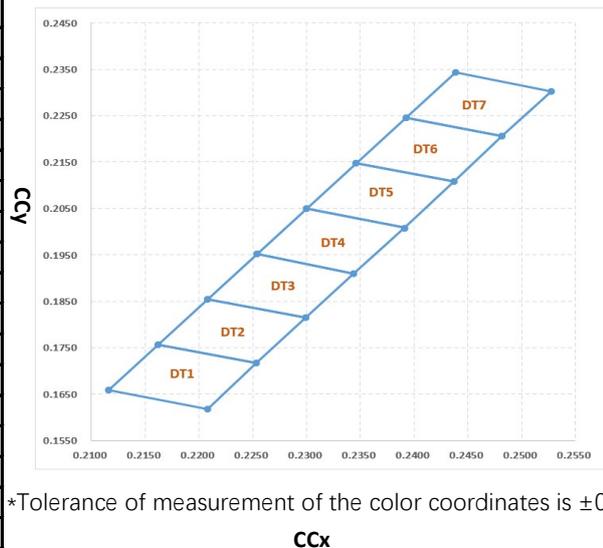
### VOLTAGE BIN LIMIT

Warm White(5mA)		
Bin code	Min.(V)	Max.(V)
WV1	2.6	2.7
WV2	2.7	2.8
WV3	2.8	2.9
WV4	2.9	3.0
WV5	3	3.1

\*Tolerance of measurement of voltage is  $\pm 0.05V$ .

### CHROMATICITY DIAGRAM

Bin Code	CCT	CCx	CCy
DT1	>100000	0.2116	0.1659
		0.2208	0.1618
		0.2253	0.1717
		0.2162	0.1756
DT2	>100000	0.2162	0.1756
		0.2253	0.1717
		0.2299	0.1814
		0.2208	0.1854
DT3	>100000	0.2208	0.1854
		0.2299	0.1814
		0.2344	0.1909
		0.2254	0.1952
DT4	>100000	0.2254	0.1952
		0.2344	0.1909
		0.2391	0.2008
		0.2300	0.2050
DT5	>100000	0.2300	0.2050
		0.2391	0.2008
		0.2437	0.2108
		0.2346	0.2148
DT6	74676-100000	0.2346	0.2148
		0.2437	0.2108
		0.2482	0.2206
		0.2393	0.2246
DT7	40000-74676	0.2393	0.2246
		0.2482	0.2206
		0.2528	0.2303
		0.2439	0.2343
		0.2116	0.1659

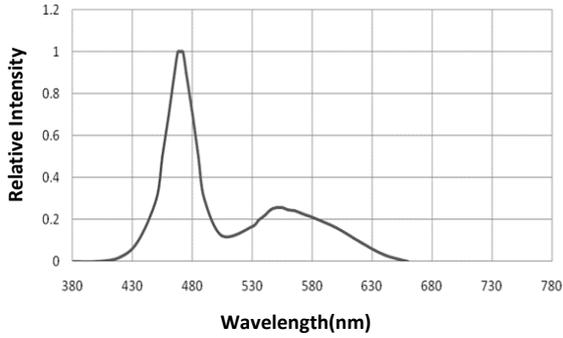




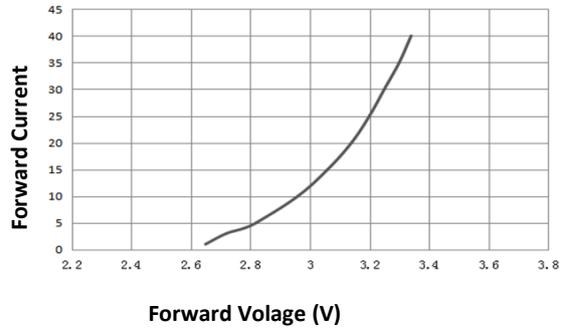
**TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURES(Ta=25°C)**

The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

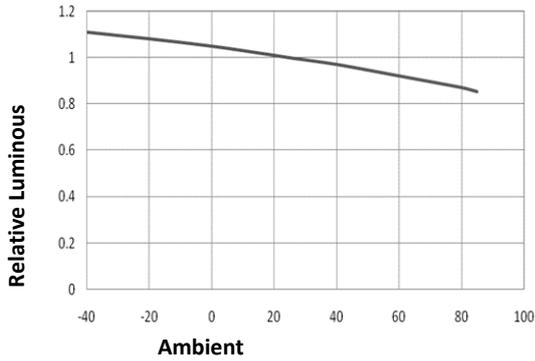
**Spectrum Distribution**



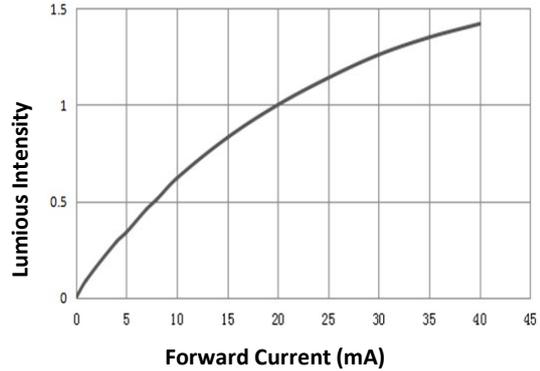
**Forward Current vs. Forward Voltage**



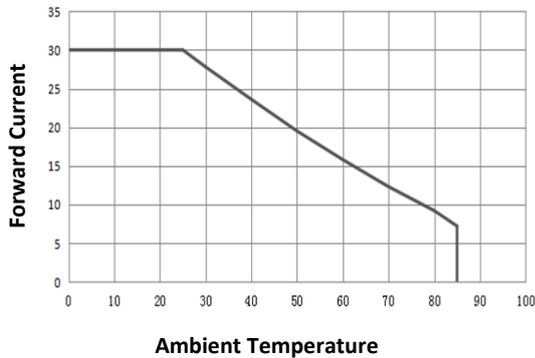
**Luminous Intensity vs. Ambient Temperature**



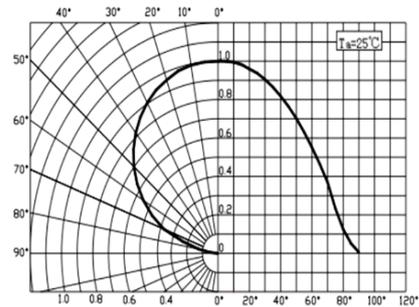
**Luminous Intensity vs. Forward Current**



**Forward Current Derating**

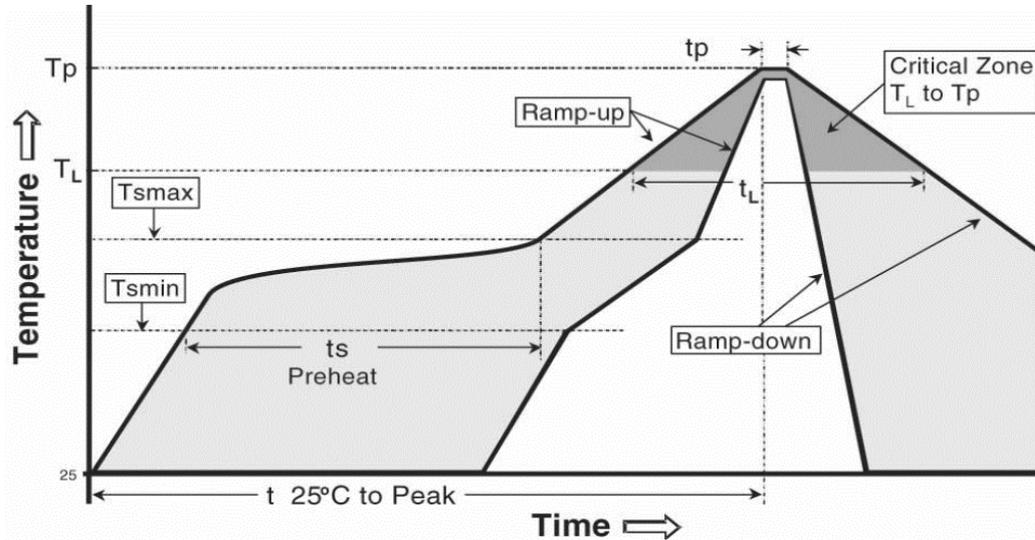


**Radiation Diagram**



## REFLOW SOLDERING

- The CHIP LED is rated as a MSL3 as general request product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.



IPC/JEDEC J-STD-020C

Profile Feature	Pb-Free Assembly
Average ramp-up rate( $T_{smax}$ to $T_p$ )	3°C/second max.
Preheat	
- Temperature Min( $T_{smin}$ )	150°C
- Temperature Max( $T_{smax}$ )	200°C
- Time( $T_{smin}$ to $T_{smax}$ )	60-180 seconds
Time maintained above	
- Temperature( $T_L$ )	217°C
- Time( $T_L$ )	60-150 seconds
Peak Temperature( $T_p$ )	260°C
Time within 5°C of actual peak Temperature( $t_p$ ) <sup>2</sup>	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to peak Temperature	8 minutes max.

## Moisture Sensitivity

- Beking recommends keeping CHIP LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBPs that contain CHIP LEDs do not need special storage for moisture sensitivity.
- Once the MBP is opened, CHIP LEDs may be stored as MSL 3 per IPC/JEDEC J-STD-020C, meaning they have one year of floor life in conditions of  $\leq 30$  °C/60% relative humidity (RH). Regardless of the storage condition, Beking LED recommends sealing any unsoldered CHIP LEDs in the original MBP.

## Handling

- The packaging sizes of these SMD products are very small. Users are required to handle with care.
- To avoid damaging the product's surface and interior device, it is recommended to choose a

## Repairing

Repair should not be recommended after SMT production. When repairing is needed, a double-head soldering iron should be used (as below figure). It should be assured before handing whether the electrical and optical characteristics of the LEDs will or will not be damaged by

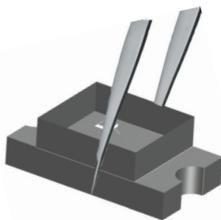


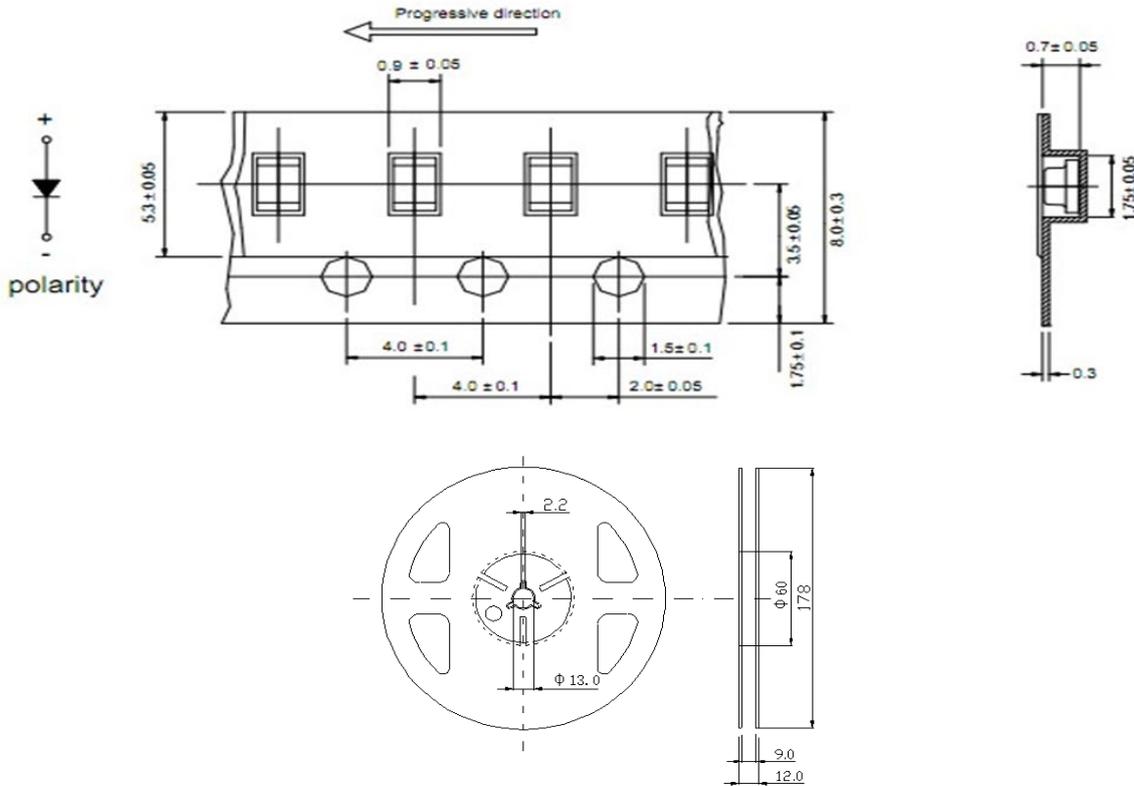
Fig.1 Pickig up a LED using an tweezer with care



Fig2. Repairing using a double-head soldering iron

**PACKING**

Carrier Tape Dimensions: Loaded quantity 4000pcs per reel.



All dimensions are in millimeters.  
Tolerance of measurement of all dimensions is  $\pm 0.1$ mm

