AMERICAN BRIGHT OPTOELECTRONICS CORP.

Specification for 2835PM Series

AB-2835PM-kkFxx

2835 PLCC 0.5W 3V white LED

Features:

- Top view white LED
- Thermally enhanced package design
- High luminous flux output
- High current capability
- Compact Package Size
- Wide viewing angle
- RoHS compliant

Applications:

- Interior Lighting
- Retrofits (replacement)
- General lighting
- Architectural / Decorative lighting

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Electro Optical Characteristics (I_F= 150mA, T_j=25℃)

CCT	CRI	Luminous Flux (lm)	
	min.	min.	Typ.
2200K	70	55	63
	80	55	60
	90	45	50
2700K	70	65	71
	80	60	67
	90	50	55
3000K	70	70	75
	80	65	73
	90	55	59
4000K	70	70	78
	80	70	75
	90	55	62
5000K	70	70	78
	80	70	75
	90	55	62
5700K	70	70	78
	80	70	75
	90	55	62
6500K	70	70	78
	80	70	75
	90	55	62

* Tolerance of measurements of the Luminous Flux is ±7%
* Ra measurement tolerance is ±2
* Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram

Naming System:

AB-2835PM-kkFxx-yy

kk: Color temperature

xx: CRI

yy: bin code

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Absolute Maximum Ratings (T_j=25℃)

Item	Symbol	Absolute Max. Rating	Unit
Forward Current	I_F	200	mA
Pulse Forward Current	I_{FP}	300	mA
Power Dissipation	PD	640	mW
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40~ +105	˚C
Storage Temperature	T_{stg}	-40~ +100	˚C
Junction Temperature	T_j	120	˚C
Soldering Temperature	T_{sld}	Reflow soldering: 230˚C or 260˚C for 10 sec	

* IFP condition with Pulse: Width≤100μs, Duty cycle≤1/10
* LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter range. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product
* All measurements were made under the standardized environment of American Bright LED

Electrical/Optical Characteristics (T_j=25℃)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_F	2.8	2.95	3.2	V	I_f = 150mA
Reverse Current	I_R	-	-	10	μA	V_R = 5V
Viewing Angle	$2\theta_{1/2}$	-	120	-	˚	I_f = 150mA
Thermal Resistance	R_{th} j-sp	-	16	-	˚C/W	I_f = 150mA
Electrostatic Discharge	ESD	1000	-	-	V	HBM

* Tolerance of measurements of the Forward Voltage is ±0.1V
* $2\theta_{1/2}$ is the off-axis where the luminous intensity is 1/2 of the peak intensity
* Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram
* R_{th} j-sp is the thermal resistance from LED junction to solder point on MCPCB with electrical power

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BIN Structure

Luminous Flux Ranks (I_F =150mA, T_j =25˚C)

CCT	CRI		Luminous Flux		
	Min.	Typ.	Code	Min.	Max
2200K	70	71	1R	55	60
			1S	60	65
			1T	65	70
	80	81	1R	55	60
			1S	60	65
			1T	65	70
	90	91	1P	45	50
			1Q	50	55
			1R	55	60
2700K	70	71	1T	65	70
			1W	70	75
			1X	75	80
	80	81	1S	60	65
			1T	65	70
			1W	70	75
	90	91	1Q	50	55
			1R	55	60
			1S	60	65
3000K	70	71	1W	70	75
			1X	75	80
			5A	80	85
	80	81	1T	65	70
			1W	70	75
			1X	75	80
	90	91	1R	55	60
			1S	60	65
			1T	65	70
4000K 5000K 5700K 6500K	70	71	1W	70	75
			1X	75	80
			5A	80	85
	80	81	1W	70	75
			1X	75	80
			5A	80	85
	90	91	1R	55	60
			1S	60	65
			1T	65	70

* Tolerance of measurements of the Luminous Flux is ±7%

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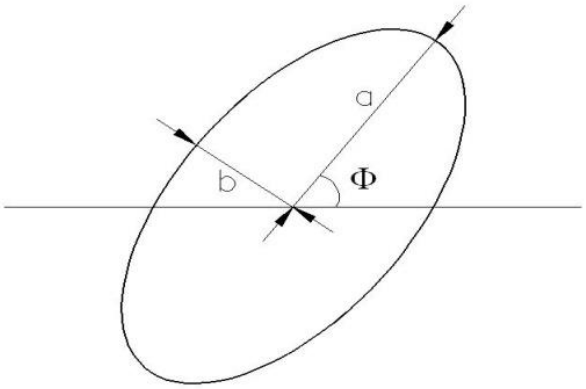
Forward Voltage Ranks (I_F = 150mA, T_j =25℃)

Code	Min.	Max.	Unit
B1	2.8	2.9	V
C1	2.9	3.0	V
D1	3.0	3.1	V
E1	3.1	3.2	V

* Tolerance of measurements of the Forward Voltage is ±0.1V

CIE Chromaticity Diagram (I_F = 150mA, T_j = 25℃)



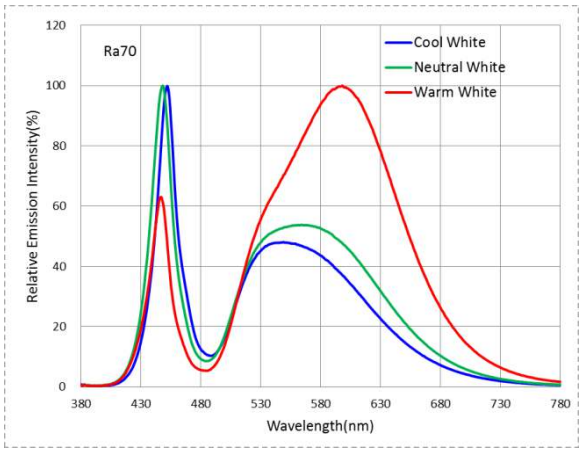
The color ranks have chromaticity ranges within 5-step MacAdam ellipse

Color Code	Center		Radius		Angle
	x	y	a	b	Φ
22R5	0.5051	0.4186	0.012500	0.00700	53.00
27R5	0.4620	0.4145	0.013500	0.00700	53.42
30R5	0.4383	0.4081	0.013900	0.00680	53.13
40R5	0.3875	0.3868	0.015650	0.00670	53.43
50R5	0.3507	0.3635	0.013700	0.00590	59.37
57R5	0.3348	0.3491	0.011175	0.00550	58.35
65R5	0.3187	0.3363	0.011150	0.00475	58.34

* Energy Star binning applied to all 2200~7000K

*Tolerance of measurements of the chromaticity Coordinate is±0.005

Fig 1. Color Spectrum (T_j=25℃)



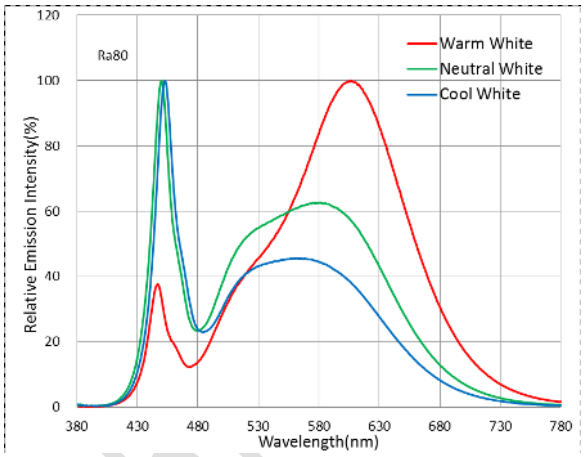
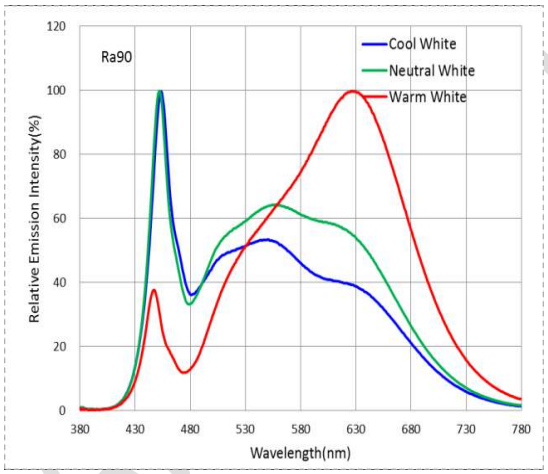


Fig 2. Viewing Angle Distribution, T_j = 25℃



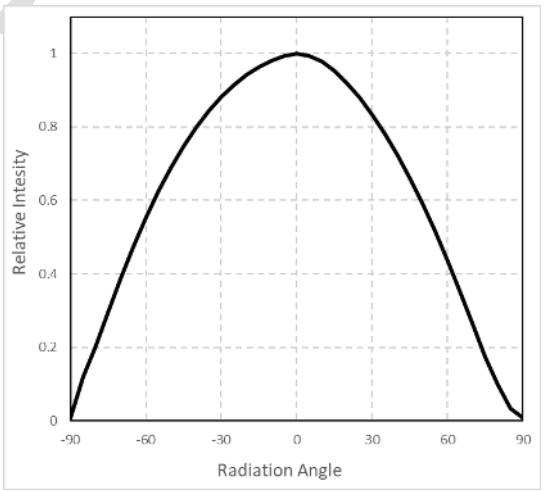


Fig 3. Forward Current vs. Relative Intensity, T_j = 25˚C

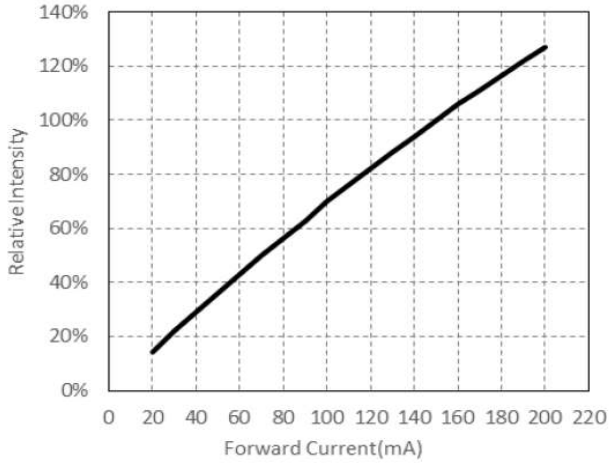


Fig 4. Forward Current vs. Forward Voltage, T_j = 25˚C

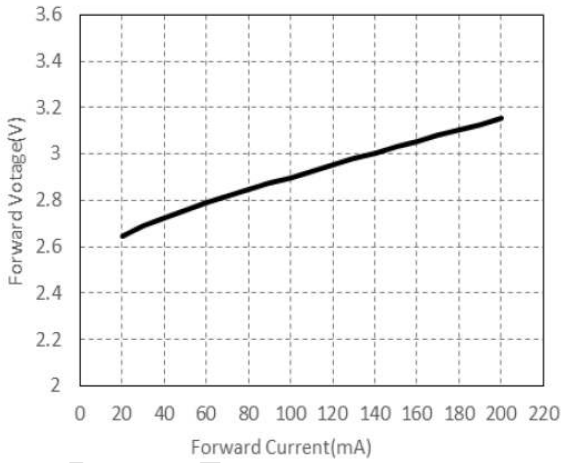


Fig 5. Soldering Temperature vs. Relative Luminous flux (I_F=65mA)

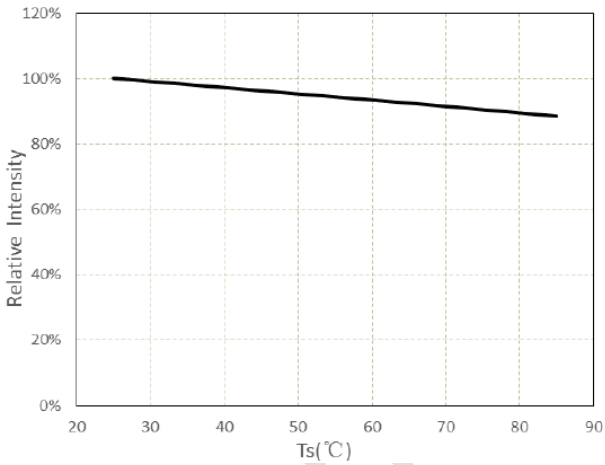


Fig 6. Soldering Temperature vs. Relative Forward Voltage (I_F=65mA)

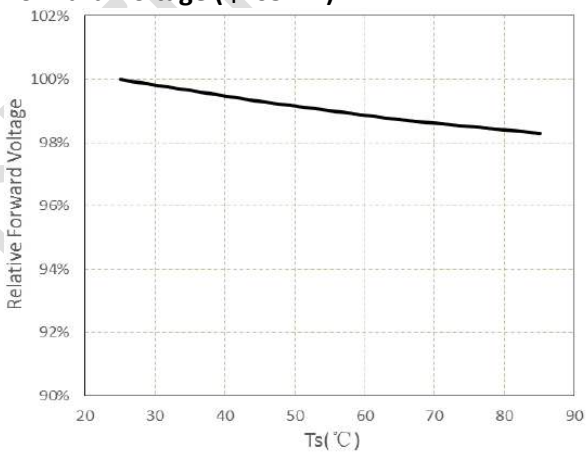
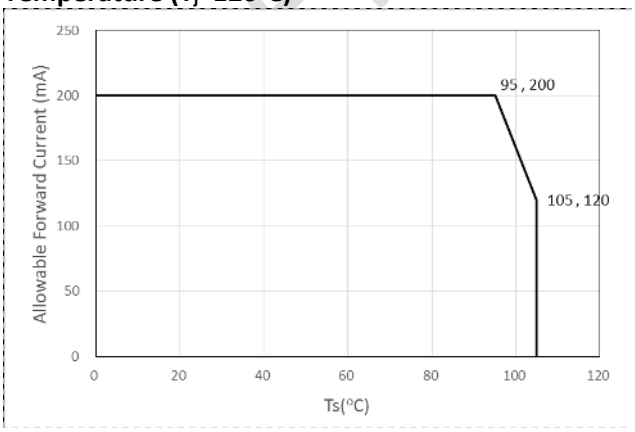
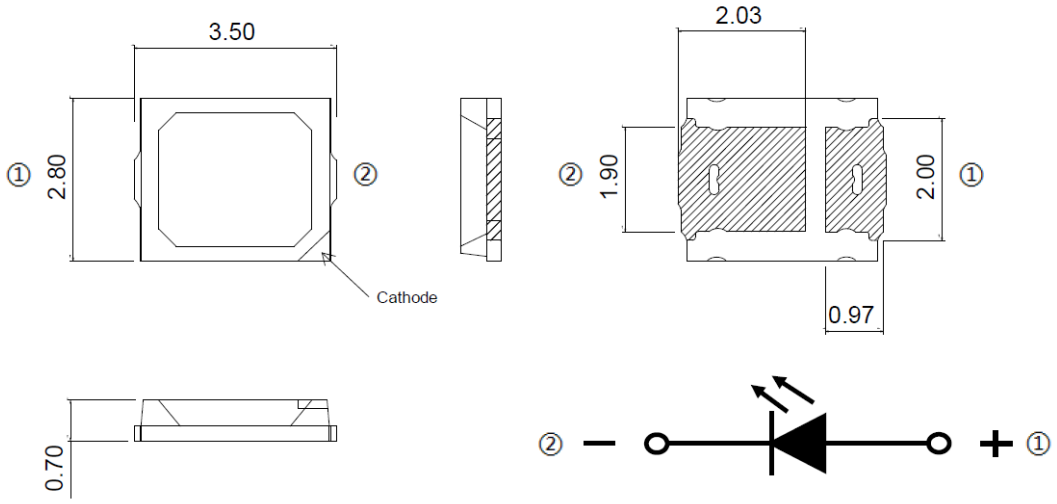


Fig 7. Allowable Forward Current vs. Soldering Temperature (T_j<120˚C)

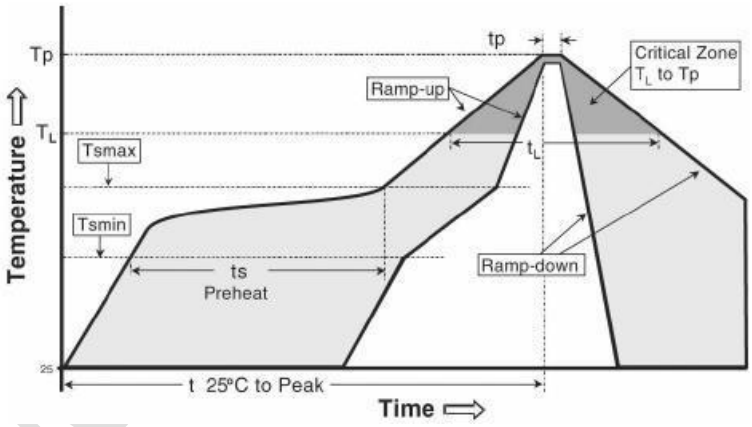


Package Dimensions



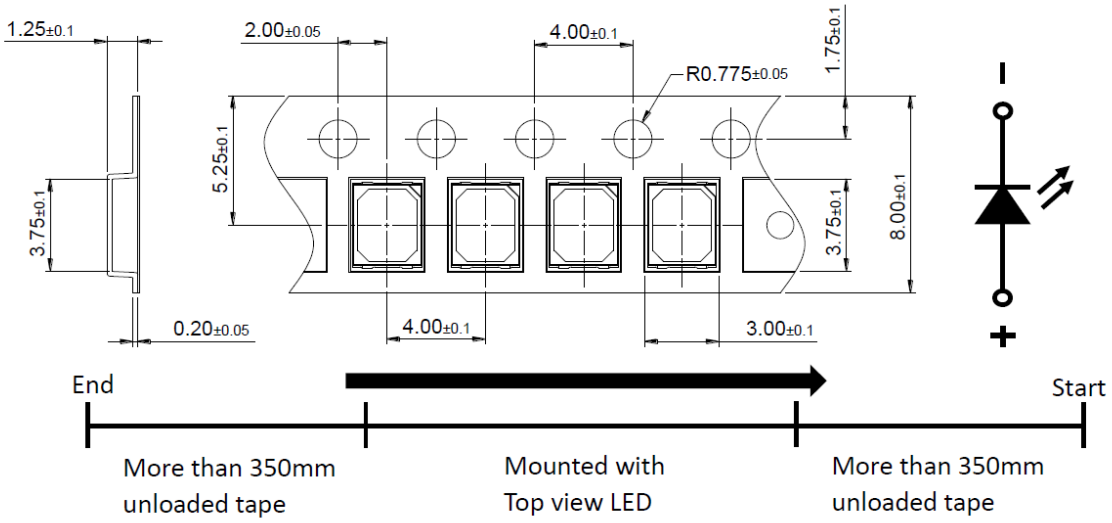
* The tolerance unless mentioned is ±0.1mm, unit = mm

Reflow Soldering Characteristics



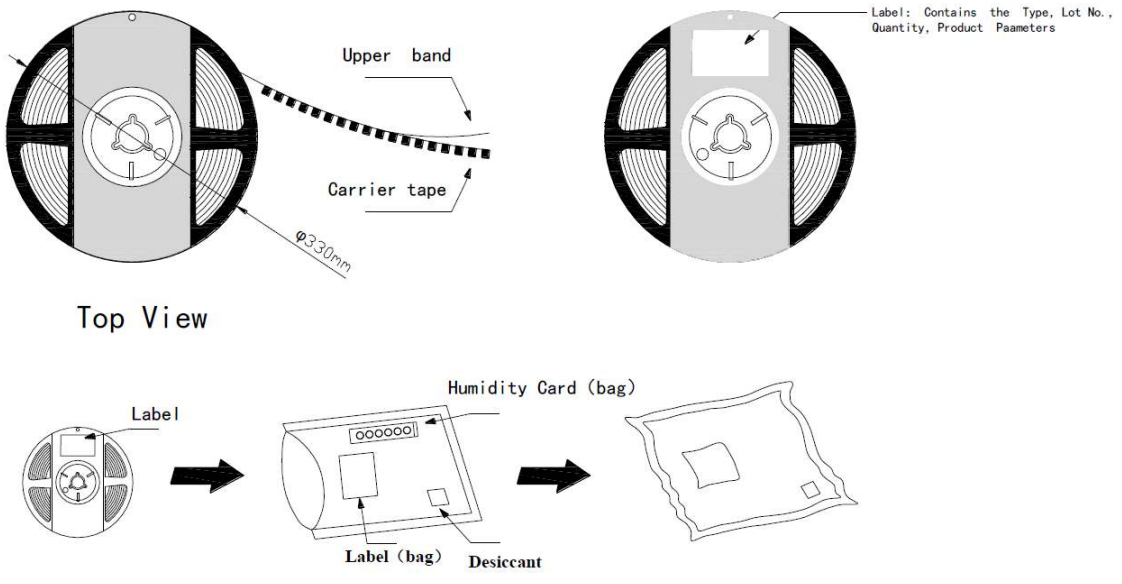
Reflow Soldering	
Temperature min ($T_{s,\ min}$)	150˚C
Temperature Max ($T_{s,\ Max}$)	200˚C
Time (t_s) from ($T_{s,\ min}$ to $T_{s,\ Max}$)	60-120 s
Ramp-up rate (T_L to T_p)	3˚C/s Max
Liquidous temperature (T_L)	217˚C
Time (T_L) maintained above T_L	60-150 s
Peak package body temperature	260˚C Max
Time (T_p) within 5˚C of the specified classification temperature (T_c)	30 s Max
Ramp-down rate (T_p to T_L)	6˚C/s Max
Time 25˚C to peak temperature	8 min. Max

Package Dimensions of Tape

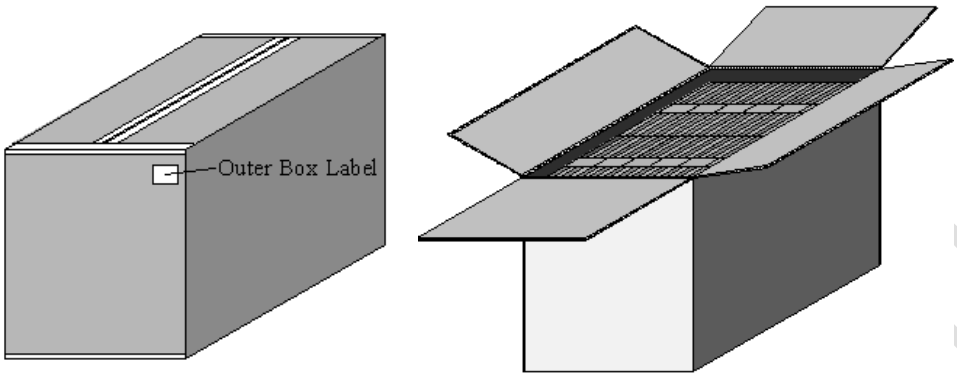


* Quantity: Max 16000pcs/Reel
* Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ±0.2mm
* Package: P/N, Manufacturing data Code No. and Quantity to be indicated on a waterproof Package.
* unit = mm

Package Dimensions of Reel



Packaging



***Capacity 18 reels per box**

Caution

1. Reflow soldering is recommended not to be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.

Notes on American Bright AB-2835PM Series soldering:

1. Recommend to use reflow machine.
2. Recommend to use heating plate soldering.
3. Manual soldering is not recommended.

Notes on reflow process:

1. To confirm whether the actual temperature curve in the reflow soldering conditions comply with recommended conditions. LEDs are guaranteed for one time reflow.
2. During reflow process do not apply force on LED active area.
3. After reflow process, PCB board should be cooled down before packing or storage.

Precaution for use

Storage

1. Before opening the package: The LED should be kept at 5˚C~30˚C and 60%RH or less.
2. After opening the package: The LED's lifetime is 168Hrs @30˚C or 60%RH. If unused LED remain, it should be stored in moisture proof packages JEDEC (**MSL 3**).
3.If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions: baking treatment: 60±5˚C for 24 hours.