

Customer :

Specification for Approval

Part Name : WD51MJF-5075B

Customer : _____ 2015. ____ . ____ .

Checked	Checked	Approved	Remark
/	/	/	

WOOREE E & L Co., Ltd. _____ 2015. ____ . ____ .

Designed	Checked	Checked	Approved
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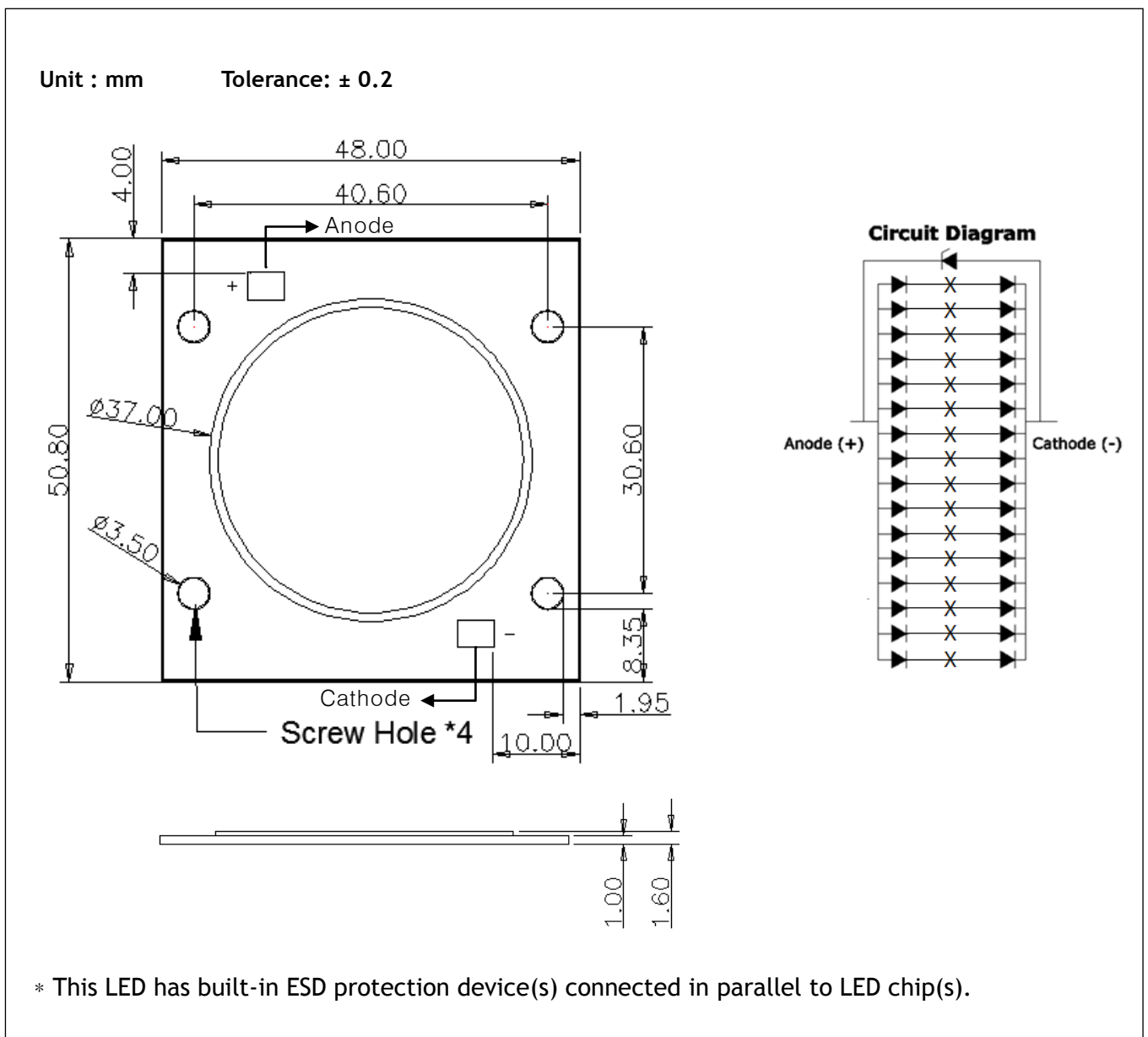
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1. Features

- Package size is 50.8 * 48.0 * 1.6t (mm)
- Lead (Pd) free product - RoHS compliant
- View angle ($\Delta\theta : 120^\circ \times 120^\circ$) for uniform illuminance
- Low thermal resistance
- High-power LED in COB technology
- Application : Street lamp / Highway lamp / Security lamp / Down Light
Other applications

2. Outline Dimension



3. Absolute maximum ratings

Item	Symbol	Absolute Maximum Ratings	Unit
Forward Current	I_F	2.6	A
Pulse Forward Current	I_{FP*1}	3.9	A
Power Dissipation	P_D	161	W
Operating Temperature	T_{opr}	-30 ~ +40	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Junction Temperature	T_J	130	°C

*1. Pulse Width \leq 10msec, Duty \leq 10%

4. Electrical/Optical characteristics

($T_a=25^\circ\text{C}$)

Item	Symbol	Condition	Value			Unit
			Min	Typ	Max	
Luminous Flux*1-1)	I_v	$I_F=2.4A$	15,000	16,500	-	lm
Forward Voltage *1-2)	V_F	$I_F=2.4A$	52	57	62	V
Color Temperature *1-3) [CIE 1931 Coordinates]	CCT	$I_F=2.4A$	4745	5028	5311	K
Viewing Angle	$2\theta_{1/2}$	$I_F=2.4A$	-	120	-	Deg.
Color Rendering Index	R_a	$I_F=2.4A$	75	-	-	-
Thermal Resistance	$R_{th,j-s*2}$	$I_F=2.4A$	-	0.3	-	°C/W

*1. Equipment measured tolerance

- 1) Luminous Flux is $\pm 5\%$
- 2) Forward voltage is $\pm 5\%$
- 3) Color Temperature is $5028 \pm 283K$ (5000K)

*2. $R_{th,j-s}$ is Thermal Resistance (Junction - Slug)

5. Ranks

(1) Forward Voltage

(Ta=25℃)

Rank	Condition	Min.	Max.	Unit
0	I _F = 2.4A	52.0	57.0	V
1		57.0	62.0	

(2) Luminous Flux

(Ta=25℃)

Rank	Condition	5000K
150	I _F =2.4A Unit : lm	15,000 - 16,000
160		16,000 - 17,000
170		17,000 - 18,000

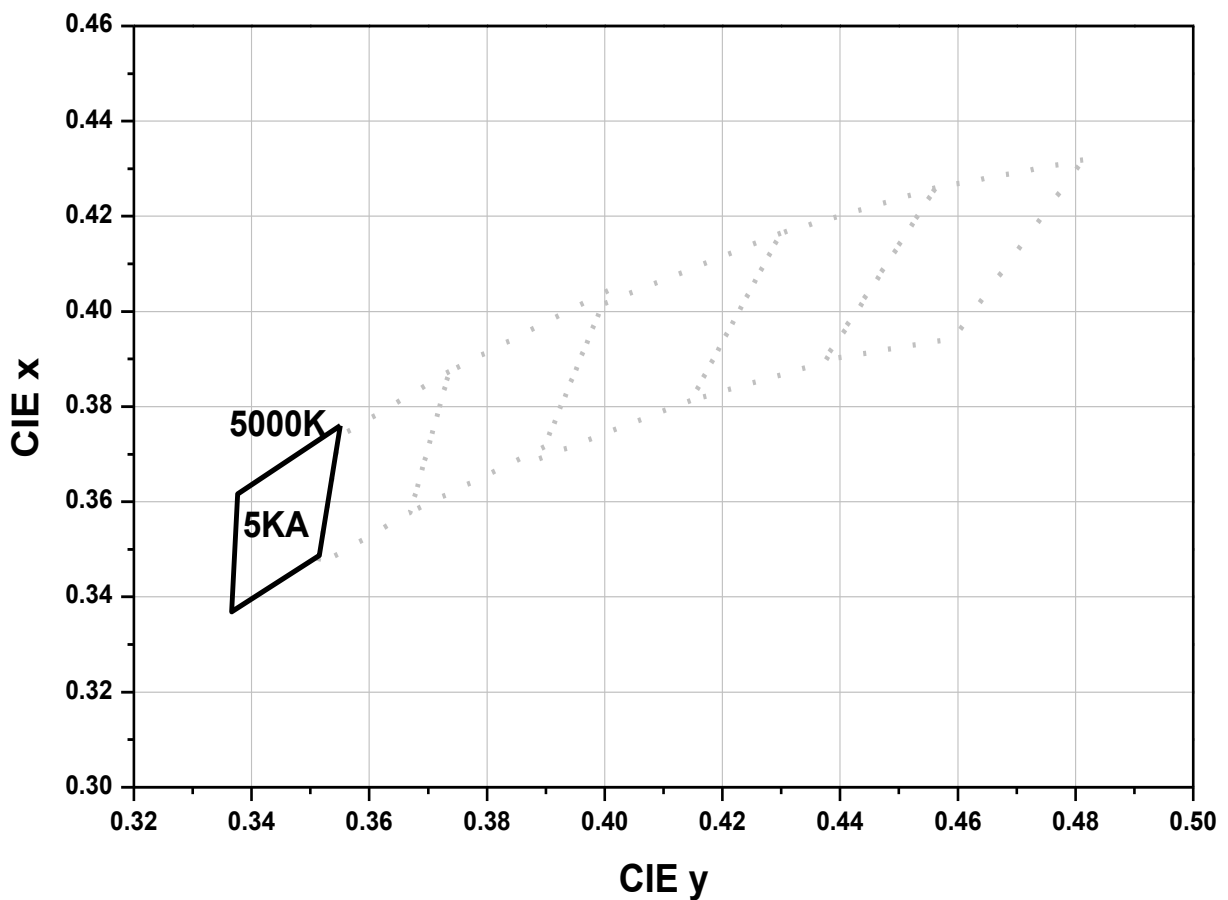
(3) Chromaticity coordinates

($I_F = 2.4A$, $T_a = 25^\circ C$)

5000K	
5KA	
Cx	Cy
0.3551	0.3760
0.3376	0.3616
0.3366	0.3369
0.3515	0.3487
0.3551	0.3760

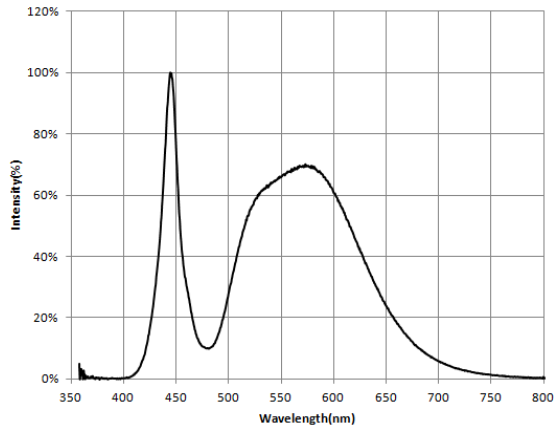
(4) Chromaticity Coordinates Diagram

($I_F = 2.4A$, $T_a = 25^\circ C$)



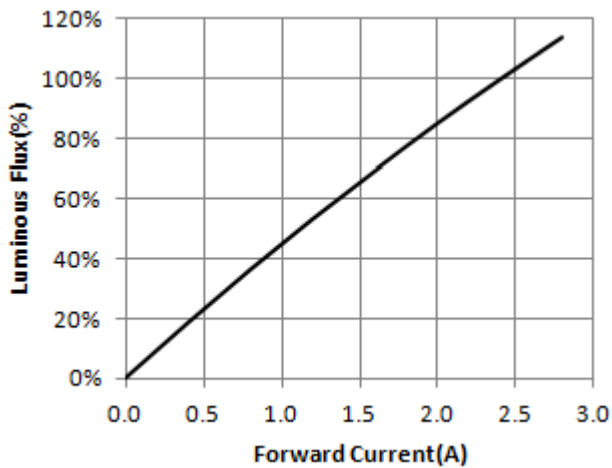
6. Color Spectrum

($I_F=2.4A$, $T_a = 25^\circ C$)

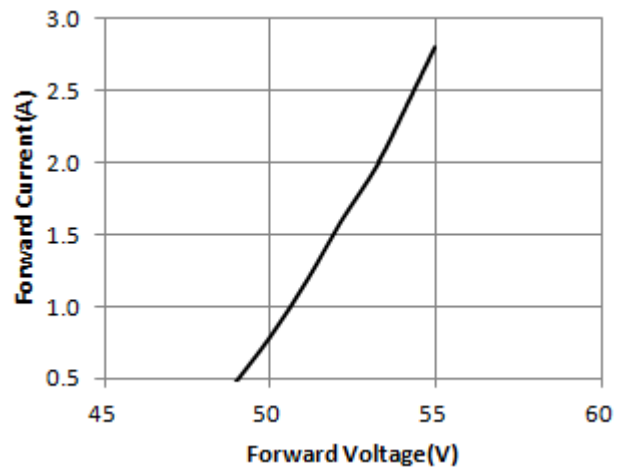


7. Characteristic Diagrams

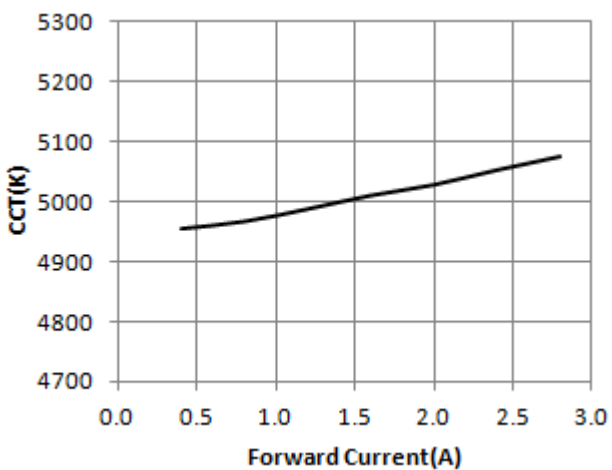
(1) Luminous Flux vs. Forward Current



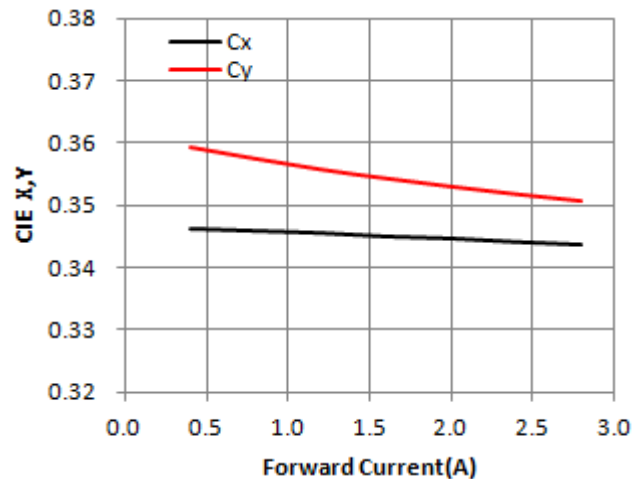
(2) Forward Current vs. Forward Voltage



(3) CCT vs. Forward Current

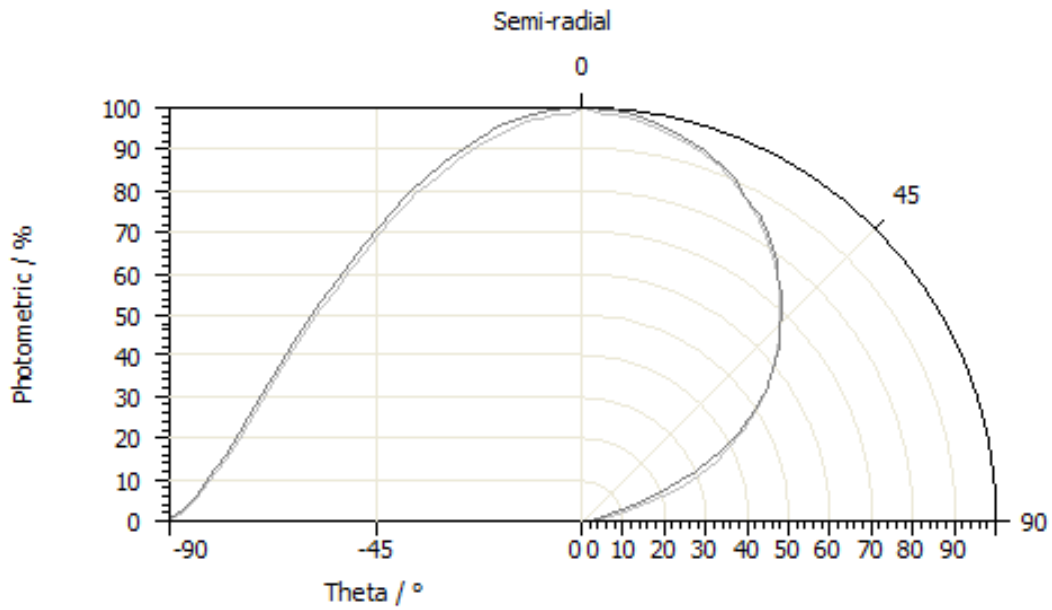


(4) CIE x,y vs. Forward Current

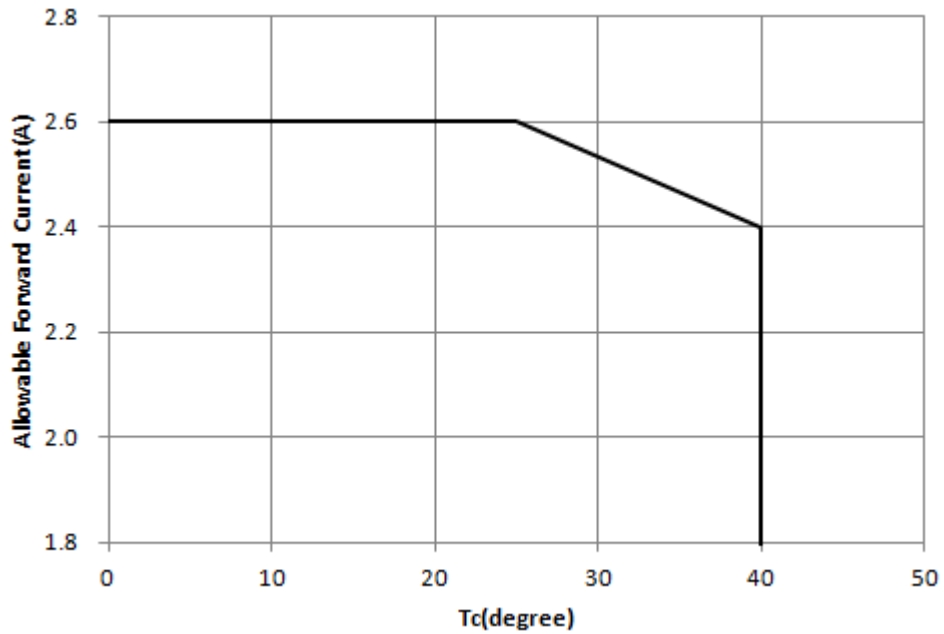


(5) Radiation Pattern

($I_F=1.5A, T_a=25^\circ C$)



(6) Derating curve



8. Precautions to taken

(1) Recommend soldering conditions

Hand Soldering	
Temperature Soldering Time	Max. 340℃ Max. 3sec (at 1time)

(2) Moisture Proof Package

When moisture is absorbed into the COB package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture proof package is used to keep moisture to a minimum in the package. A package of a moisture absorbent material(silica gel) is inserted into the Antistatic bag. The silica gel changes its color from blue to pink as it absorbs moisture.

(3) Storage

[Storage conditions]

Before opening the package

The LEDs should be kept at 30℃ or less and 90% RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material(silica gel) is recommended.

After opening the package

The LEDs should be kept at 30℃ or less and 70% RH or less. The LEDs should be soldered within 168 hours(7days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with package of moisture absorbent material(silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.

WOOREE E&L part's electrodes and PCBs are silver plated copper alloy.

The silver surface may be affected by environments which contain corrosive substances.

Please avoid conditions which may cause the LED to corrode, tarnish or discolor.

The corrosion or discoloration might lower solderability or might affect on optical Characteristics.

Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

(4)Heat Generation

Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in the specification.

The operating current should be decided after considering the ambient maximum temperature of LEDs.

9. Reliability

(1) Test items and results

NO	Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
1	Temperature Cycle	JEITA ED-4701 100 105	-40℃~25℃~100℃~25℃ 30min. 5min. 30min. 5min	200 cycles	0/5
2	High Temperature Storage	JEITA ED-4701 200 201	Ta=100℃	1000 hrs	0/5
3	Temperature Humidity Storage	JEITA ED-4701 100 103	Ta=85℃, RH=85%	1000 hrs	0/5
4	Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40℃	1000 hrs	0/5
5	Steady State Operating Life	-	Ta=25℃, I _F =2.4A	1000 hrs	0/5
6	Steady State Operating Life of High Temperature	-	Ta=40℃, I _F =2.4A	1000 hrs	0/5
7	Electro-Static Discharge Threshold	ESD (HBM)	1500Ω, 100pF (Forward/ Reverse)	6KV	0/5

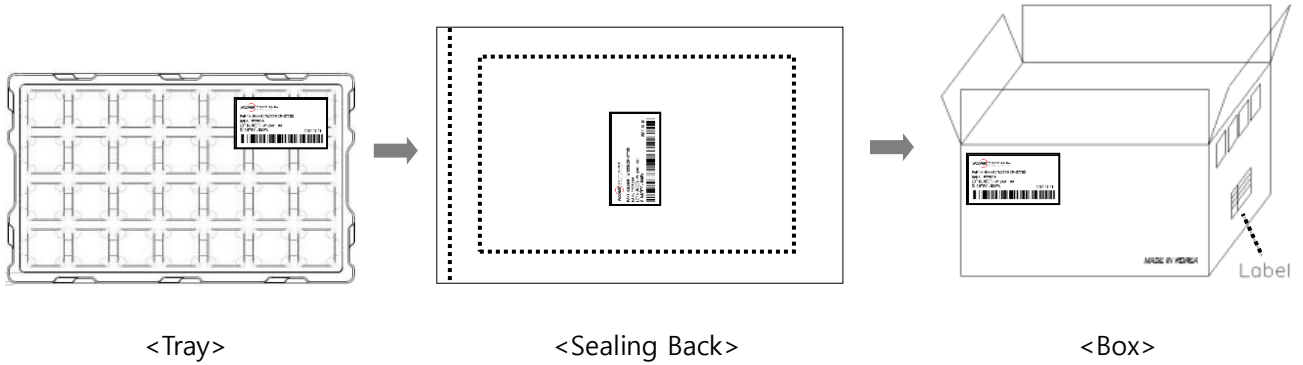
(2) Criteria for judging the damage

ITEM	Symbol	Test Condition	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	I _F =2.4A		USL *1 × 1.1
Luminous Flux	lm	I _F =2.4A	LSL*2 × 0.7	

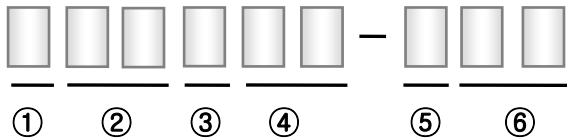
*1) U.S.L.: Upper Standard Level *2) L.S.L.: Lower Standard Level

10. Packing

(1) Label Information

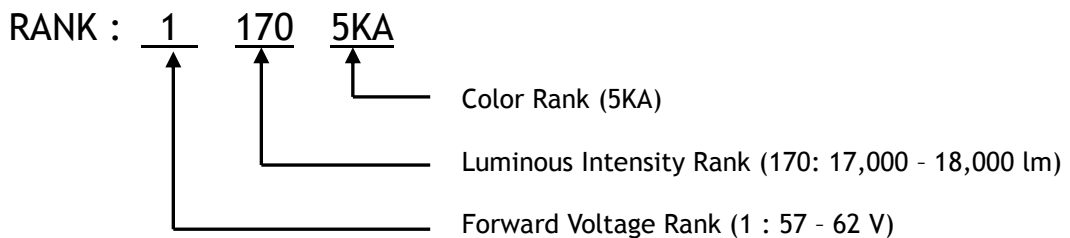


(2) Lot Number



- ① WOOREE LED Initial
- ② Year (14 for 2014, 15 for 2015)
- ③ Month (A for Jan., B for Feb., ... , M for Dec.)
- ④ Day (01 for 1, ..., 31 for 31)
- ⑤ Product Number (0 , 1) : Normal Lot : “ 0 “ , Merge Lot : “ 1 ”
- ⑥ Product Number (01,02,03, ... ,99)

(3) Rank Code description



11. Revision History

Spec NO.			
Title	Specification for Approval		
Times	Date	Summary of revision	Remarks
1		INITIAL ISSUE	R(0)