

SPECIFICATIONS

Middle Power LED Series
3030

LM301B CRI 75



Features & Benefits

- 0.3 W class middle power LED
- Mold resin for high reliability
- Standard form factor for design flexibility (3.0 × 3.0 mm)

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1. Characteristics

1) Absolute Maximum Rating

Item	Symbol	Rating	Unit	Condition
Ambient / Operating Temperature	T_a	-40 ~ +85	°C	-
Storage Temperature	T_{stg}	-40 ~ +120	°C	-
LED Junction Temperature	T_j	110	°C	-
Forward Current	I_F	200	mA	-
Pulse Forward Current	I_{FP}	300	mA	Duty 1/10, pulse width 10ms
Assembly Process Temperature		260 <10	°C s	-
ESD (HBM)		±2	kV	-

2) Electro-optical Characteristics ($I_F = 65 \text{ mA}$, $T_s = 25^\circ\text{C}$)

Item	Unit	Rank	Bin	Min.	Typ.	Max.
Forward Voltage (V_F)	V	XA	AY	2.6	-	2.7
			AZ	2.7	-	2.8
			A1	2.8	-	2.9
Reverse Voltage (@ 5mA)	V			0.7	-	1.2
Color Rendering Index (R_a)	-			75	-	1.2
Thermal Resistance (junction to solder point)	°C/W				7.5	
Beam Angle	°				120	

Notes :

DongbuLED maintains measurement tolerance of: forward voltage = $\pm 0.1 \text{ V}$, luminous flux = $\pm 5 \%$, CRI = ± 3

3) Absolute Maximum Rating

Item	CRI	Nominal CCT(K)	SK		SL		SM	
			Min 36	Max. 38	Min 38	Max. 40	Min 40	Max. 42
Luminous Flux (Φ_v)	75	3000						
		4000						
		5000						
		5700						

Notes :

Dongbuled maintains measurement tolerance of: forward voltage = ± 0.1 V, luminous flux = ± 5 %, CRI = ± 3

2. Product Code Information

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S	P	M	W	H	D	3	2	A	M	D	4	X	A	R	0	S	0

Digit	PKG informaiont	Code	Specification
1 2 3	Dongbu Package Middle Power	SPM	
4 5	Color	WH	White
6	Product Version	D	Dispensing
7 8 9	Form Factor	32A	3.0 x 3.0 x 0.7mm / 2pad
10	Sorting Current (mA)	M	65mA
11	Chromaticity Coordinates	D	ANSI Standard, MacAdam 3 step ellipse bin, MacAdam 5 step ellipse bin
12	CRI	4	Min. 75
13 14	Forward Voltage (V)	XA	2.6 ~ 2.9 Bin Code: AY 2.6 ~ 2.7 AZ 2.7 ~ 2.8 A1 2.8 ~ 2.9
15 16	Color bin	V● 3000 T● 4000 R● 5000 Q● 5700 ● : "0" (Whole bin) or "K" (K Kitting)	Bin Code: VA,VB,VC,VD,VE,VF,VG,VH,VJ,VK,VL,VM TA,TB,TC,TD,TE,TF,TG,TH,TJ,TK,TL,TM RA,RB,RC,RD,RE,RF,RG,RH,RJ,RK,RL,RM QA,QB,QC,QD,QE,QF,QG,QH,QJ,QK,QL,QM
17 18	Luminous Flux	S0	Bin Code : SK 36.0 ~ 38.0 SL 38.0 ~ 40.0 SM 40.0 ~ 42.0

1) Luminous Flux Bins ($I_F = 65 \text{ mA}$, $T_S = 25^\circ\text{C}$)

CRI (Ra) Min.	Nominal CCT (K)	Product Code	Flux Bin	Flux Range (Φ_v , lm)
75	3000	SPMWHD32AMD4XAV●S0	SK	36.0 ~ 38.0
			SL	38.0 ~ 40.0
	4000	SPMWHD32AMD4XAT●S0	SL	38.0 ~ 40.0
			SM	40.0 ~ 42.0
	5000	SPMWHD32AMD4XAR●S0	SL	38.0 ~ 40.0
			SM	40.0 ~ 42.0
	5700	SPMWHD32AMD4XAQ●S0	SL	38.0 ~ 40.0
			SM	40.0 ~ 42.0

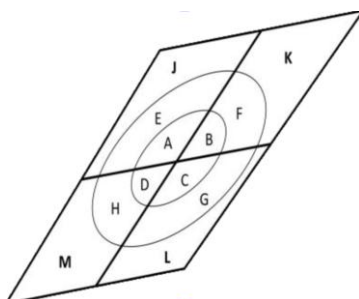
Notes :

"●" can be "0" (Whole bin) or "K" (K Kitting) of the color binning

2) Kitting Rule

- "K" Kitting Bin Concept

1. Under agreement between customer and Dongbuled can supply kitting bin (VF, Color, lm).
2. A forward voltage (VF) of kitting bin is combined by a pair of same VF rank such as (AY+AY), (AY+AZ), (AZ+AZ), (AZ+A1) or (A1+A1)
3. A Chromaticity Coordinates of kitting bin is mixed by kitting procedure. (below kitting simulation)
4. A luminous flux(lm) of kitting bin is combined by a pair of IV rank such as (SH+SH), (SH+SJ), (SJ+SJ), (SJ+SK), (SK+SK), (SK+SL), (SL+SL), (SL+SM) or (SM+SM)



- Binning Information

Item	Bin #1	Bin #2	Remark
VF	AY	AY	
	AY	AZ	
	AZ	AZ	
	AZ	A1	
	A1	A1	
CIE	H	K	
	F	M	
	E	L	
	G	J	
	E	G	
	F	H	
	MacA. 3step(A, B, C, D)	MacA. 3step(A, B, C, D)	
IV	SK	SK	
	SK	SL	
	SL	SL	
	SL	SM	
	SM	SM	

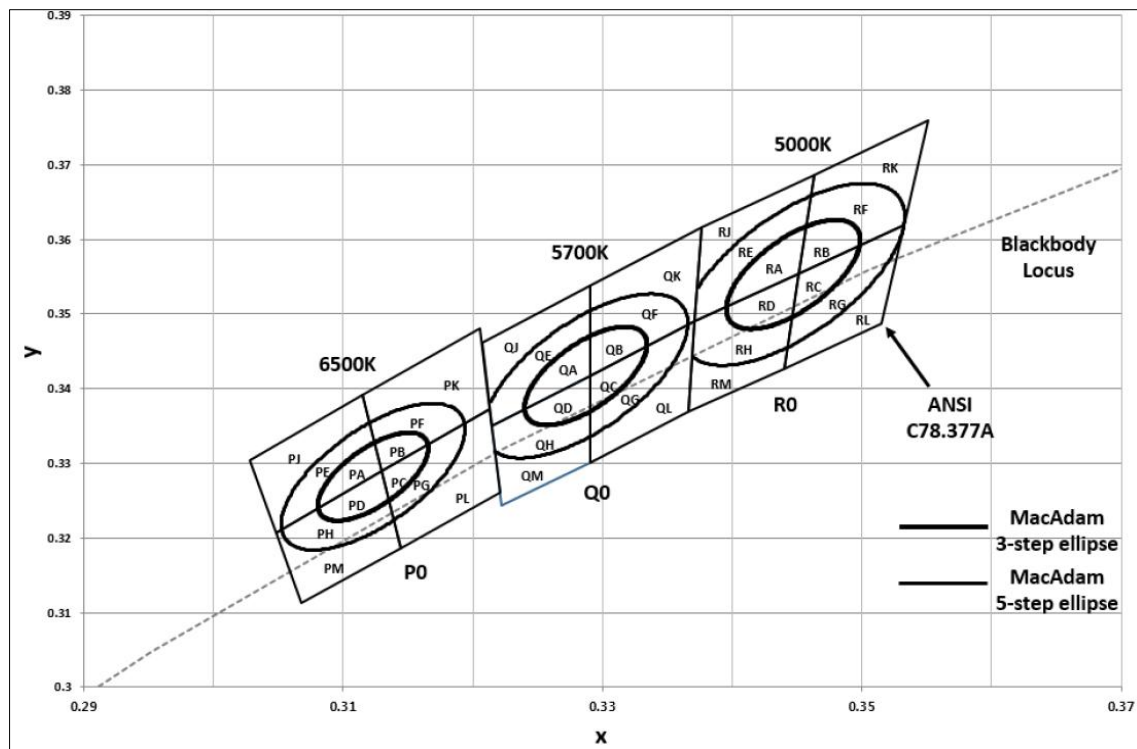
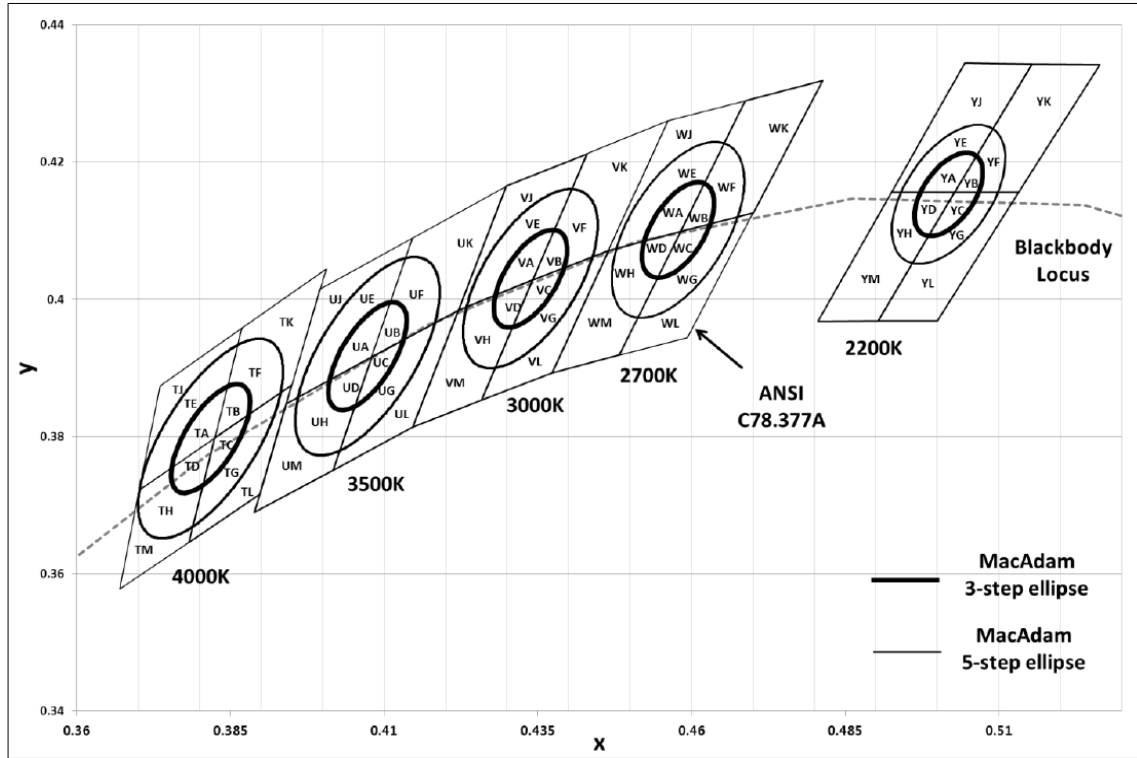
3) Color Bins ($I_F = 65 \text{ mA}$, $T_s = 25^\circ\text{C}$)

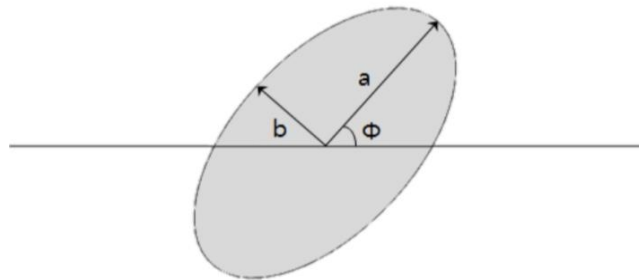
Min. CRI	Nominal CCT	Product Code	Color Rank	Chromaticity Bins
75	3000	SPMWHD32AMD4XAV0S0	V0 Whole Bind	VA,VB,VC,VD,VE,VF,VG,VH,VJ,VL,VK,VL,VM
		SPMWHD32AMD4XAVKS0	VK K Kitting	VA,VB,VC,VD,VE,VF,VG,VH,VJ,VL,VK,VL,VM
	4000	SPMWHD32AMD4XAT0S0	T0 Whole Bind	TA,TB,TC,TD,TE,TF,TG,TH,TJ,TL,TK,TL,TM
		SPMWHD32AMD4XATKS0	TK K Kitting	TA,TB,TC,TD,TE,TF,TG,TH,TJ,TL,TK,TL,TM
	5000	SPMWHD32AMD4XAR0S0	R0 Whole Bind	RA,RB,RC,RD,RE,RF,RG,RH,RJ,RL,RK,RL,RM
		SPMWHD32AMD4XARKS0	RK K Kitting	RA,RB,RC,RD,RE,RF,RG,RH,RJ,RL,RK,RL,RM
	5700	SPMWHD32AMD4XAQ0S0	Q0 Whole Bind	QA,QB,QC,QD,QE,QF,QG,QH,QJ,QL,QK,QL,QM
		SPMWHD32AMD4XAQKS0	QK K Kitting	QA,QB,QC,QD,QE,QF,QG,QH,QJ,QL,QK,QL,QM

4) Voltage Bins ($I_F = 65 \text{ mA}$, $T_s = 25^\circ\text{C}$)

CRI(Ra) Min.	Nominal CCT (K)	Product Code	Voltage Rank	Voltage Bin	Voltage Range (V)
75			XA	AY	2.6 ~ 2.7
				AZ	2.7 ~ 2.8
				A1	2.8 ~ 2.9

5) Chromaticity Region & Coordinates ($I_F = 65 \text{ mA}$, $T_s = 25^\circ\text{C}$)



6) Chromaticity Region & Coordinates ($I_F = 65 \text{ mA}$, $T_s = 25^\circ\text{C}$)


CCT 3000K					
MacAdam Ellipse (V3, V5)					
Step	CIE x	CIE y	θ	a	b
3-step	0.4338	0.4030	53.22	0.0083	0.0041
5-step	0.4338	0.4030	53.22	0.0139	0.0068

CCT 4000K					
MacAdam Ellipse (T3, T5)					
Step	CIE x	CIE y	θ	a	b
3-step	0.3818	0.3797	53.72	0.0094	0.0040
5-step	0.3818	0.3797	53.72	0.0157	0.0067

CCT 5000K					
MacAdam Ellipse (R3, R5)					
Step	CIE x	CIE y	θ	a	b
3-step	0.4338	0.4030	53.22	0.0083	0.0041
5-step	0.4338	0.4030	53.22	0.0139	0.0068

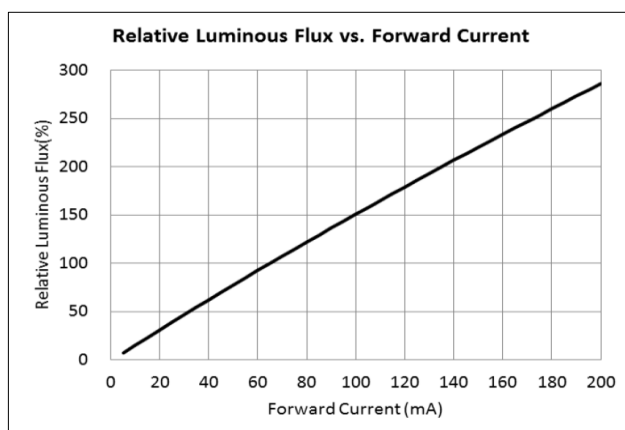
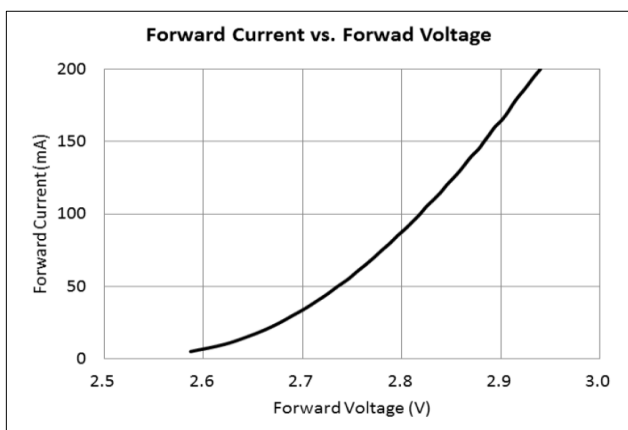
CCT 5700K					
MacAdam Ellipse (Q3, Q5)					
Step	CIE x	CIE y	θ	a	b
3-step	0.3818	0.3797	53.72	0.0094	0.0040
5-step	0.3818	0.3797	53.72	0.0157	0.0067

Notes :

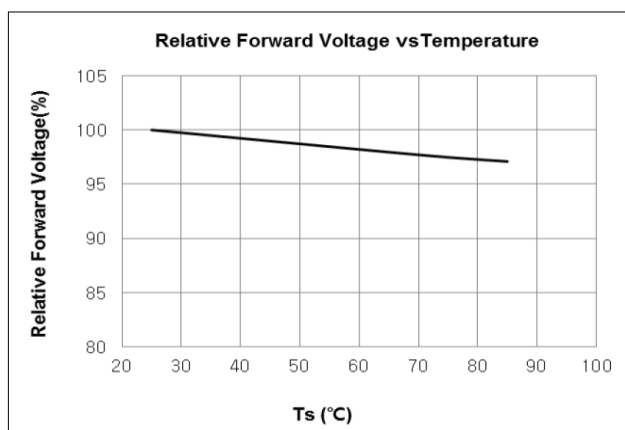
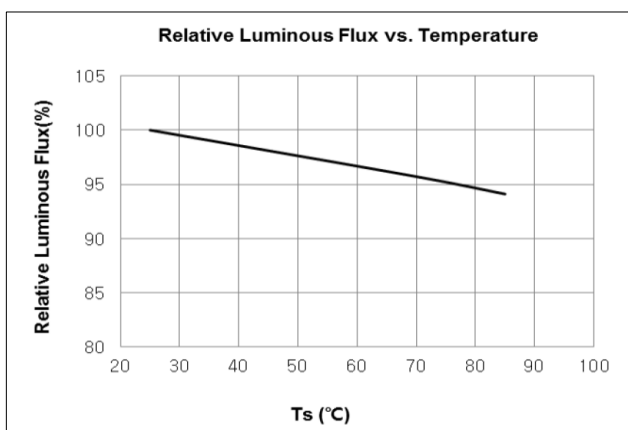
Dongbuled maintains measurement tolerance of: $C_x, C_y = \pm 0.005$

3. Typical Characteristics Graphs

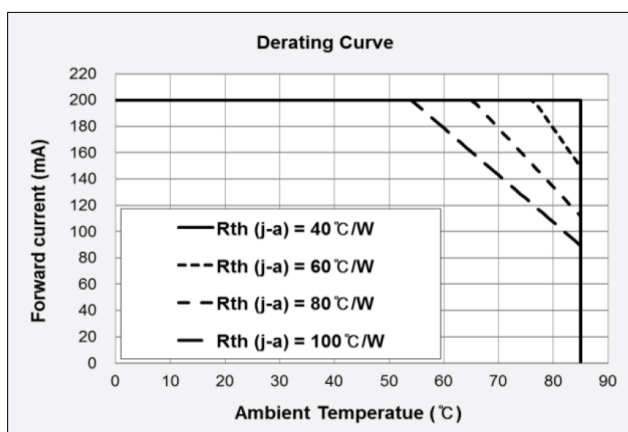
1) Forward Current Characteristics ($I_F = 65\text{mA}$, $T_s = 25^\circ\text{C}$)



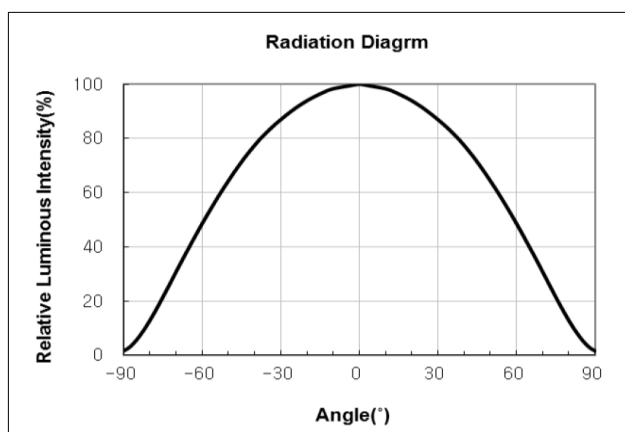
2) Temperature Characteristics ($I_F = 65\text{mA}$)



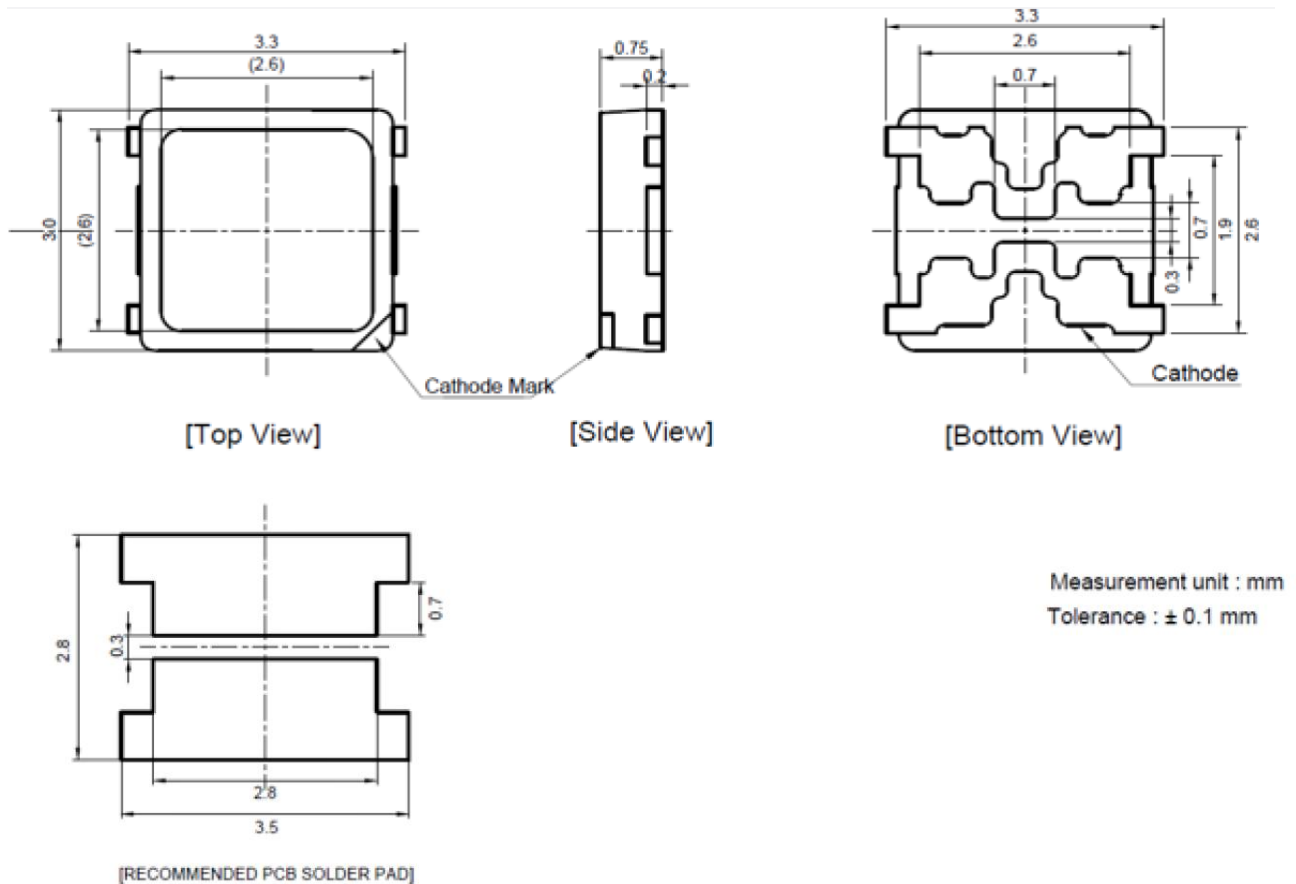
3) Derating Curve



4) Beam Angle Characteristics ($T_s = 25^\circ\text{C}$, $I_F = 65\text{mA}$)



4. Outline Drawing & Dimension



Notes:

- 1) This LED has built-in ESD protection device(s) connected in parallel to LED chip(s).
- 3) T_s point and measurement method:
 - ① Measure the nearest point to thermal pad as shown above. If necessary, remove PSR of PCB to reach T_s point.
 - ② All pads must be soldered to the PCB to dissipate heat properly, otherwise the LED can be damaged.

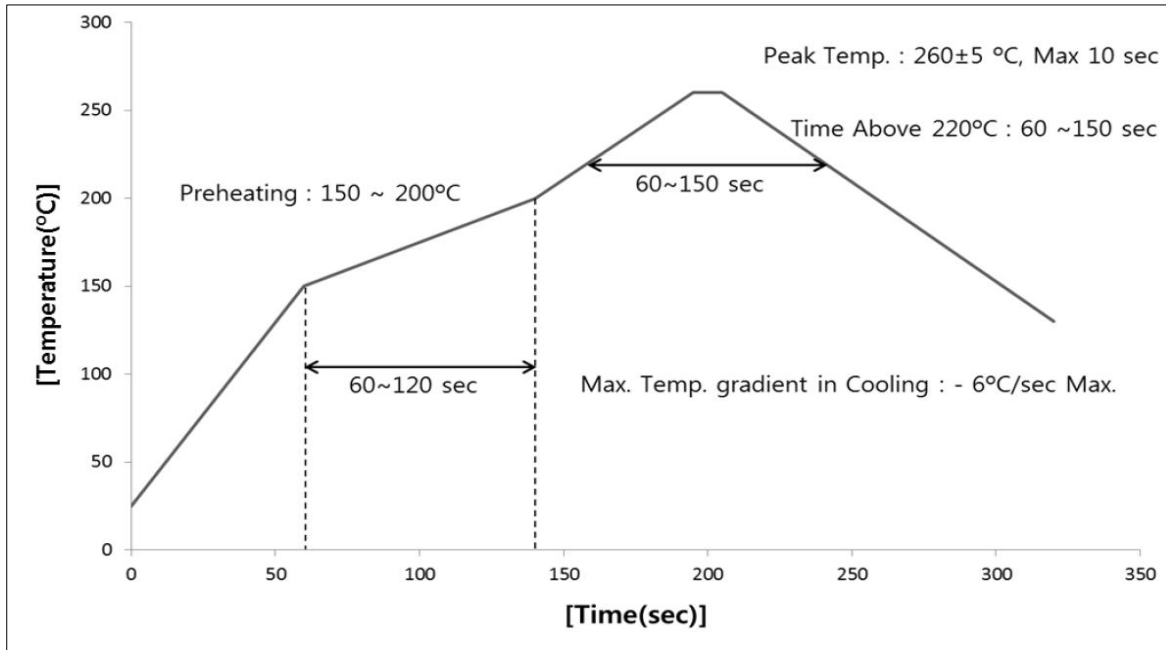
Precautions:

- 1) Pressure on the LEDs will influence to the reliability of the LEDs. Precautions should be taken to avoid strong pressure on the LEDs. Do not put stress on the LEDs during heating.
- 2) Re-soldering should not be done after the LEDs have been soldered. If re-soldering is unavoidable, LED's characteristics should be carefully checked before and after such repair.
- 3) Do not stack assembled PCBs together. Since materials of LEDs is soft, abrasion between two PCB assembled with LED might cause catastrophic failure of the LEDs.

5. Soldering Conditions

1) Reflow Conditions (Pb free)

Reflow frequency: 2 times max.



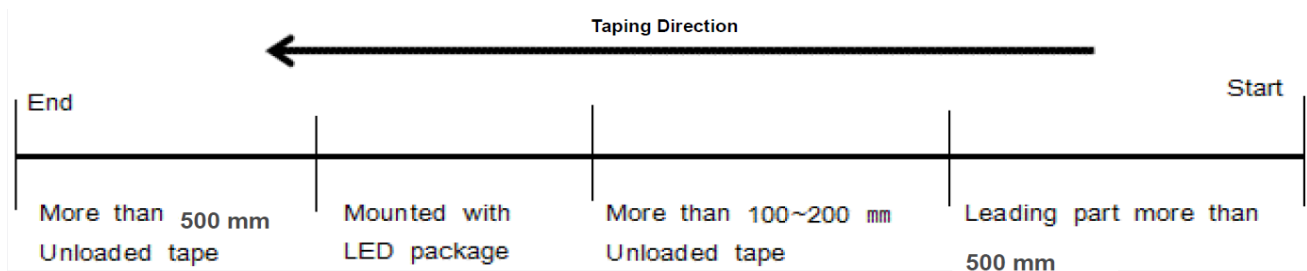
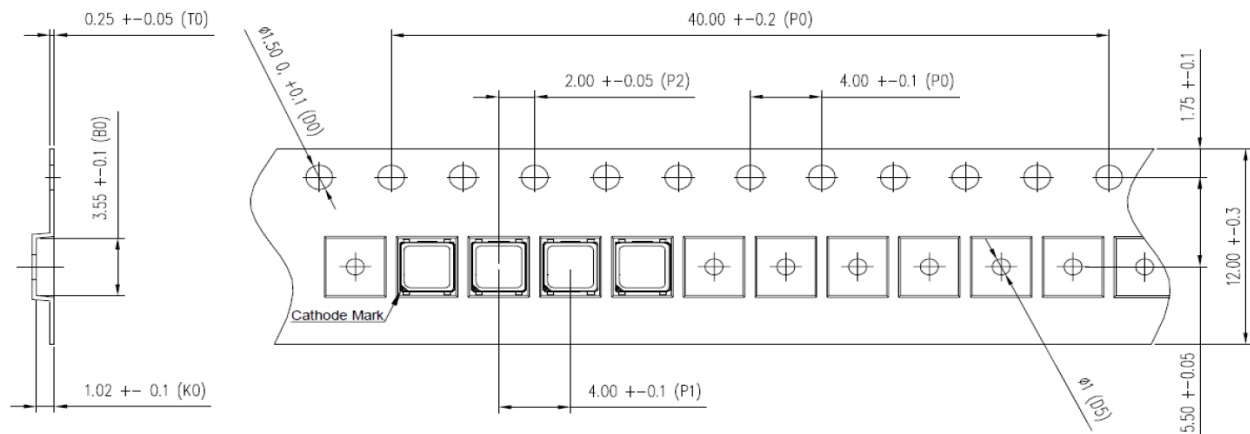
2) Manual Soldering Conditions

Not more than 5 seconds @ max. 300°C , under soldering iron

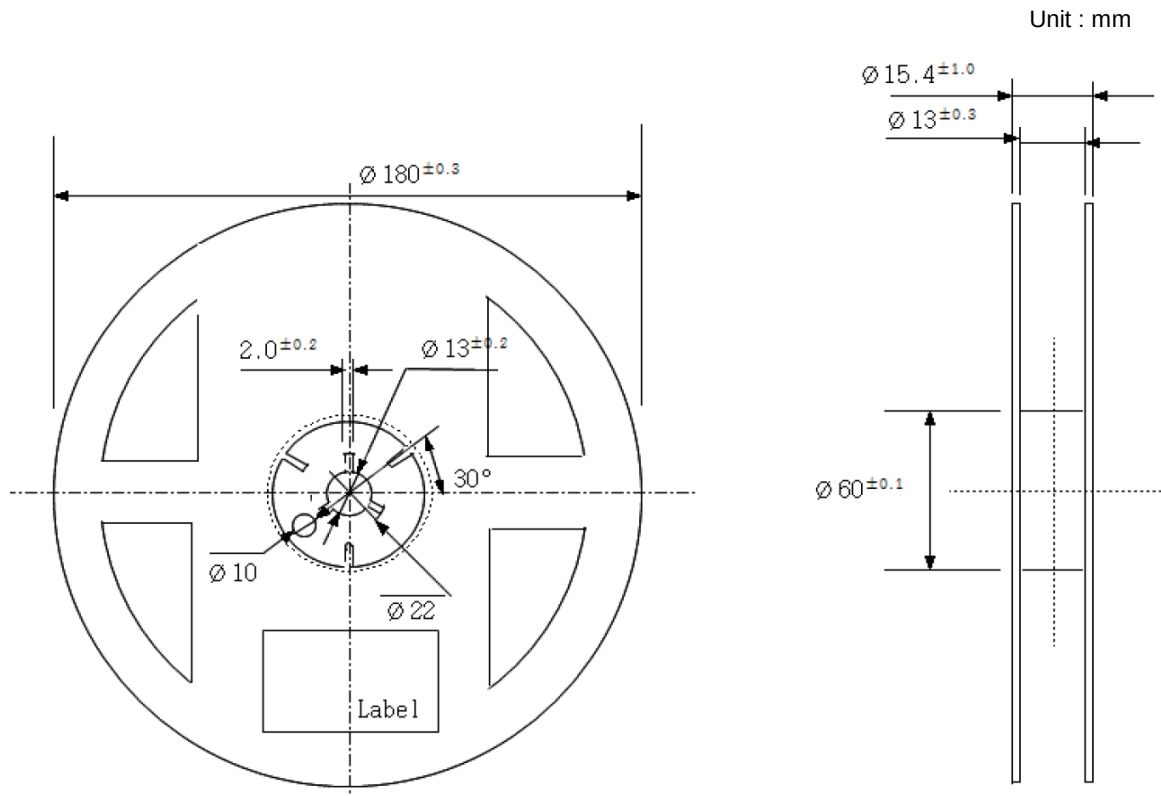
6. Tape & Reel

1) Taping Dimension

Unit : mm



2) Reel Dimension

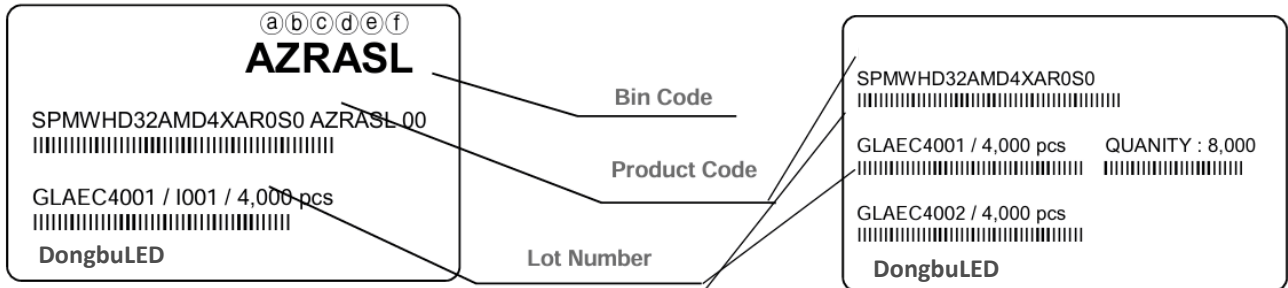


Notes:

- 1) Quantity The quantity / reel is 4,000 pcs
- 2) Cumulative tolerance : Cumulative tolerance / 10 pitches is ± 0.2 mm
- 3) Adhesion strength of cover tape: Adhesion strength is 0.1-0.7N when the cover tape is turned off from the carrier tape at 10° angle to the carrier tape
- 4) Packaging : P/N, Manufacturing data code no. and quantity are indicated on the aluminum packing bag

7. Label Structure

1) Label structure



Note:

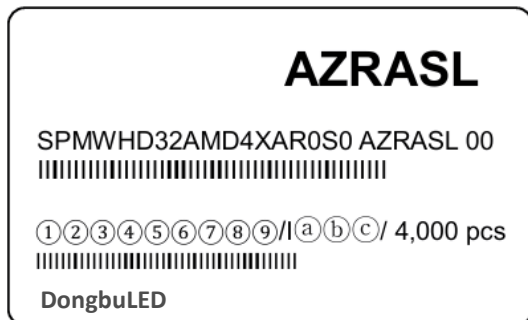
Denoted bin code and product code above is only an example (see description on page 4)

Bin Code:

- ⒶⒷ : Forward Voltage bin (refer to page 3)
- ⒸⒹ : Wavelength bin (refer to page 9-12)
- ⒺⒻ : Radiant Power bin (refer to page 4,5)

2) Lot Number

The lot number is composed of the following characters:



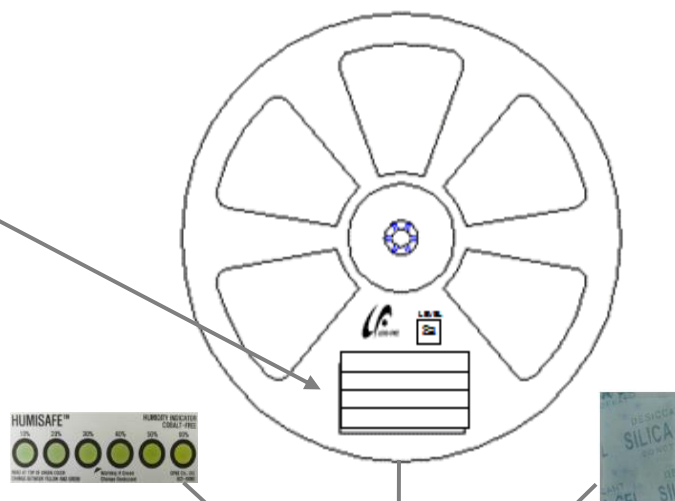
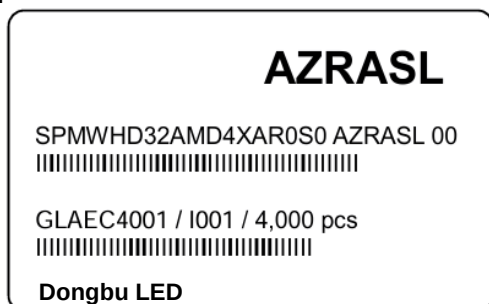
①②③④⑤⑥⑦⑧⑨ / I ⒶⒷⒸ / 1,000 pcs

- ① ② : Production site (GL: Tianjin, China , G4: Guangzhou, China , E H Hanoi Vietnam)
- ③ : Product state (A: Normal, B: Bulk, C: First Production, R: Reproduction, S: Sample)
- ④ : Year (H : 2023 , I : 2024 , J : 2025....)
- ⑤ : Month (1~9, A, B, C)
- ⑥ : Day (1~9, A, B ~V)
- ⑦⑧⑨ : Product serial number (001 ~999)
- ⒶⒷⒸ : Reel number (001 ~ 999)

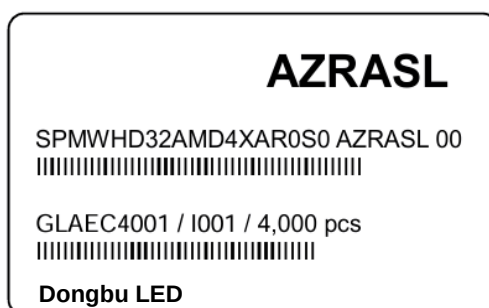
8. Packing Structure

1) Packing Process (The quantity of PKG on the Reel to be Max 4,000pcs)

Reel



Aluminum Vinyl Packing Bag

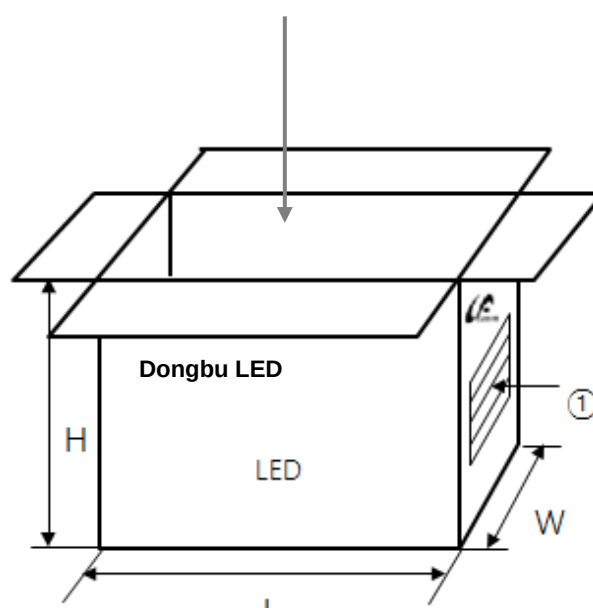
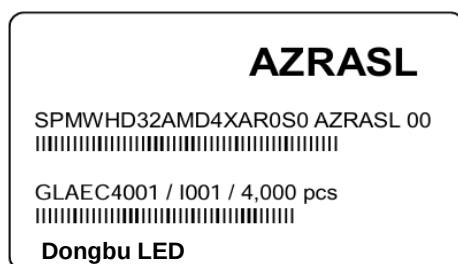


Outer Box

Type	Size (mm)			Note
	L	W	H	
7 inch L	245 ± 5	220 ± 5	182 ± 5	Up to 10 reels
7 inch S	245 ± 5	220 ± 5	86 ± 5	Up to 5 reels

Material: Paper (SW3B(B))

① Side Label



2) Packing Process for kitting (The quantity of PKG on the Reel to be Max 4,000pcs)

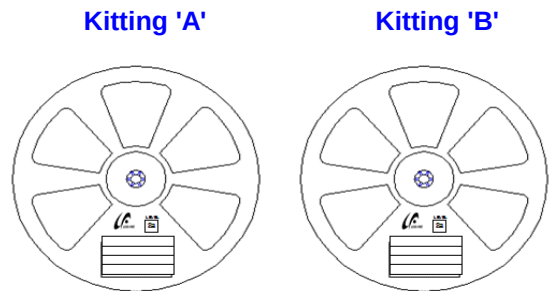
Reel

Kitting 'A'

AYRDSK
SPMWH32AMD4XARKS0 AYRDSK 00
GLAEC4001 / I001 / 4,000 pcs
DongbuLED

Kitting 'B'

AYRFSK
SPMWH32AMD4XARKS0 AYRFSK 00
GLAEC4002 / I001 / 4,000 pcs
DongbuLED



Aluminum Vinyl Packing Bag

Kitting 'A'

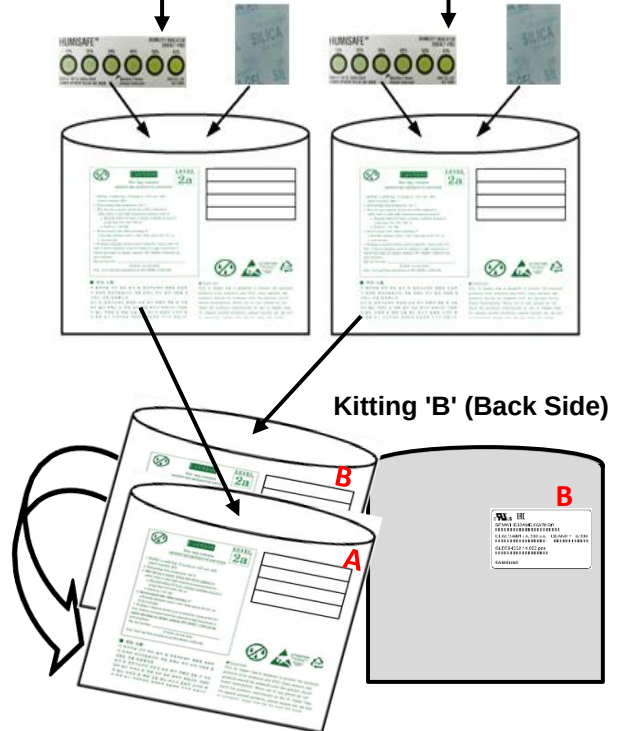
AYRDSK
SPMWH32AMD4XARKS0 AYRDSK 00
GLAEC4001 / I001 / 4,000 pcs
DongbuLED

Kitting 'B'

AYRFSK
SPMWH32AMD4XARKS0 AYRFSK 00
GLAEC4002 / I001 / 4,000 pcs
DongbuLED

Kitting 'B' (Back Side)

SPMWH32AMD4XARKS0
GLAEC4001 / 4,000 pcs QUANTITY : 8,000
GLEC94002 / 4,000 pcs
DongbuLED



Outer Box

Kitting 'A'

AYRDSK
SPMWH32AMD4XARKS0 AYRDSK 00
GLAEC4001 / I001 / 20,000 pcs
DongbuLED

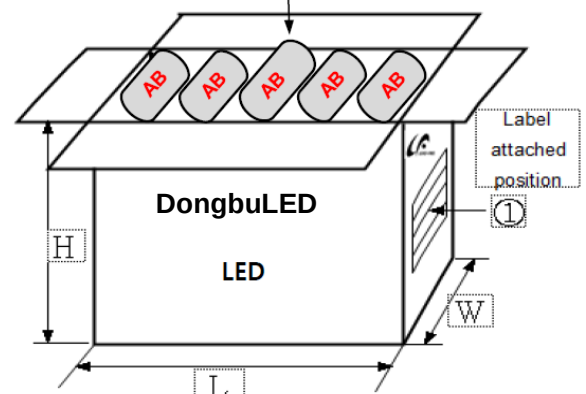
Kitting 'B'

AYRFSK
SPMWH32AMD4XARKS0 AYRFSK 00
GLAEC4002 / I001 / 20,000 pcs
DongbuLED

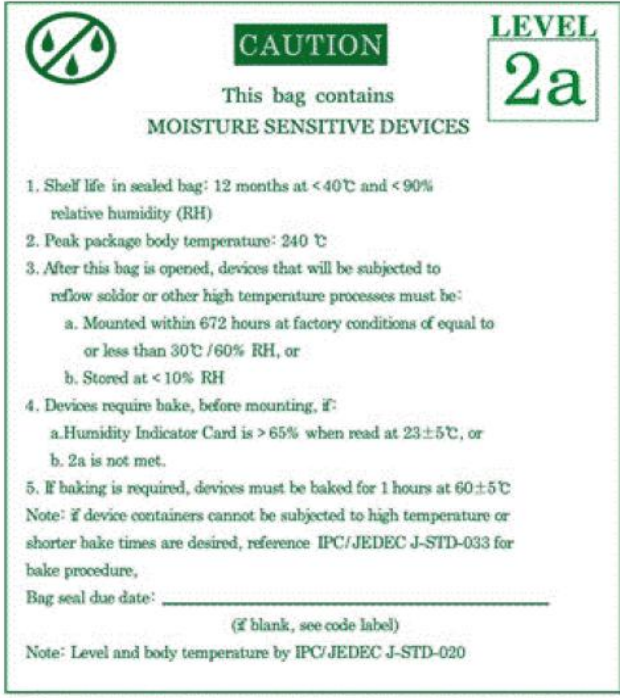
[Box Label]

Type	Size (mm)			Note
	L	W	H	
7 inch L	245 ± 5	220 ± 5	182 ± 5	Up to 10 reels

Material : Paper (SW3B(B))



2) Aluminum Vinyl Packing Bag



CAUTION
This bag contains
MOISTURE SENSITIVE DEVICES

LEVEL 2a

- Shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
- Peak package body temperature: 240 °C
- After this bag is opened, devices that will be subjected to reflow solder or other high temperature processes must be:
 - Mounted within 672 hours at factory conditions of equal to or less than 30°C /60% RH, or
 - Stored at <10% RH
- Devices require bake, before mounting, if:
 - Humidity Indicator Card is >65% when read at 23±5°C, or
 - 2a is not met.
- If baking is required, devices must be baked for 1 hours at 60±5°C

Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure.

Bag seal due date: _____
(If blank, see code label)

Note: Level and body temperature by IPC/JEDEC J-STD-020

AZRASL

SPMWH32AMD4XAR0S0 AZRASL 00
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

①②③④⑤⑥⑦⑧⑨/①②③④/ 4,000 pcs
XXXXXXXXXXXXXXXXXXXX

DongbuLED




ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC SENSITIVE
DEVICES



■ 주의 사항

이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.

습기 및 정전기로부터 제품을 보호 하기 위해서 개봉 후 사용하지 않는 자재는 본 팩에 넣어 보관 하시기 바랍니다. 사용하지 않는 자재를 본 팩에 넣을 때는 반드시 동봉된 드라이 팩과 함께 넣고 지퍼부분을 완전하게 밀봉하여 주시기 바랍니다.

■ Important

This Al Zipper bag is designed to protect the enclosed products from moisture and ESD. Once opened, the products should be soldered onto the printed circuit board immediately. When not in use, please do not leave the products unprotected by the Al Zipper Bag. To repack unused products, please ensure the zip-lock is completely sealed with the dry pack left inside.

3) Silica Gel & Humidity Indicator Card inside Aluminum Vinyl Bag



9. Precautions in Handling & Use

- 1) For over-current protection, users are recommended to apply resistors connected in series with the LEDs to mitigate sudden change of the forward current caused by shift of forward voltage.
- 2) This device should not be used in any type of fluid such as water, oil, organic solvent, etc. When cleaning is required, IPA is recommended as the cleaning agent. Some solvent based cleaning agent may damage the silicone resins used in the device.
- 3) When the device is in operation, the forward current should be carefully determined considering the maximum ambient temperature and corresponding junction temperature.
- 4) LEDs must be stored in a clean environment. Shelf life of sealed bags is 12 months at temperature 0~40 ° C, 0~90 % RH
- 5) After storage bag is opened, device subjected to soldering, solder reflow, or other high temperature processes must be:
 - a. Mounted within 672 hours (28 day s) at an assembly line with a condition of no more than 30 ° C / 60 % RH, or
 - b. Mounted within 24 hours (1 day) at an assembly line with a condition of more than 30 ° C / 70 % RH*Note 2, or
 - c. Stored at <10 % RH.

Package Type and Body Thickness	Moisture Sensitivity Level	Maximum Percent Relative Humidity						Temperature
		40%	50%	60%	70%	80%	90%	
Body Thickness <2.1mm	Level2a	∞	∞	28	1	1	1	30°C
		∞	∞	∞	2	1	1	25°C
		∞	∞	∞	2	2	1	20°C

- 6) Repack unused devices with anti-moisture packing, fold to close any opening and then store in a dry place.
- 7) Devices require baking before mounting, if humidity card reading is >60 % at 23 ± 5 ° C.
- 8) Devices must be baked for 1 hour at 60 ± 5 ° C, if baking is required.
- 9) The LEDs are sensitive to the static electricity and surge current. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices. Damaged LEDs may show some unusual characteristics such as increase in leakage current, lowered turn on voltage, or abnormal lighting of LEDs at low current.
- 10) VOCs (Volatile Organic Compounds) can be generated from adhesives, flux, hardener or organic additives used in luminaires (fixtures). Transparent LED silicone encapsulant is permeable to those chemicals and they may lead to a discoloration of encapsulant when they exposed to heat or light. This phenomenon can cause a significant loss of light emitted (output) from the luminaires. In order to prevent these problems, we recommend users to know the physical properties of materials used in luminaires and they must be carefully selected.
- 11) Risk of sulfurization (or tarnishing)
 The LED from Samsung uses a silver-plated lead frame and its surface color may change to black (or dark colored) when it is exposed to sulfur (S), chlorine (Cl) or other halogen compound. Sulfurization of lead frame may cause intensity degradation, change of chromaticity coordinates and, in extreme cases, open circuit. It requires caution. Due to possible sulfurization of lead frame, LED should not be used and stored together with oxidizing substances made of materials such as rubber, plain paper, lead solder cream, etc.