

SPECIFICATIONS

(PRELIMINARY)

SMD TYPE TOP VIEW WHITE COLOR LED

Model : AT442A1GNE

Dongbu LED Co., Ltd.

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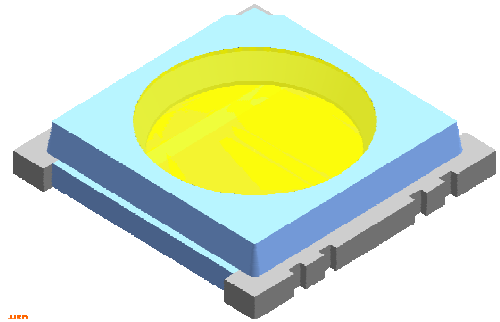
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1. General Description

(1) Features

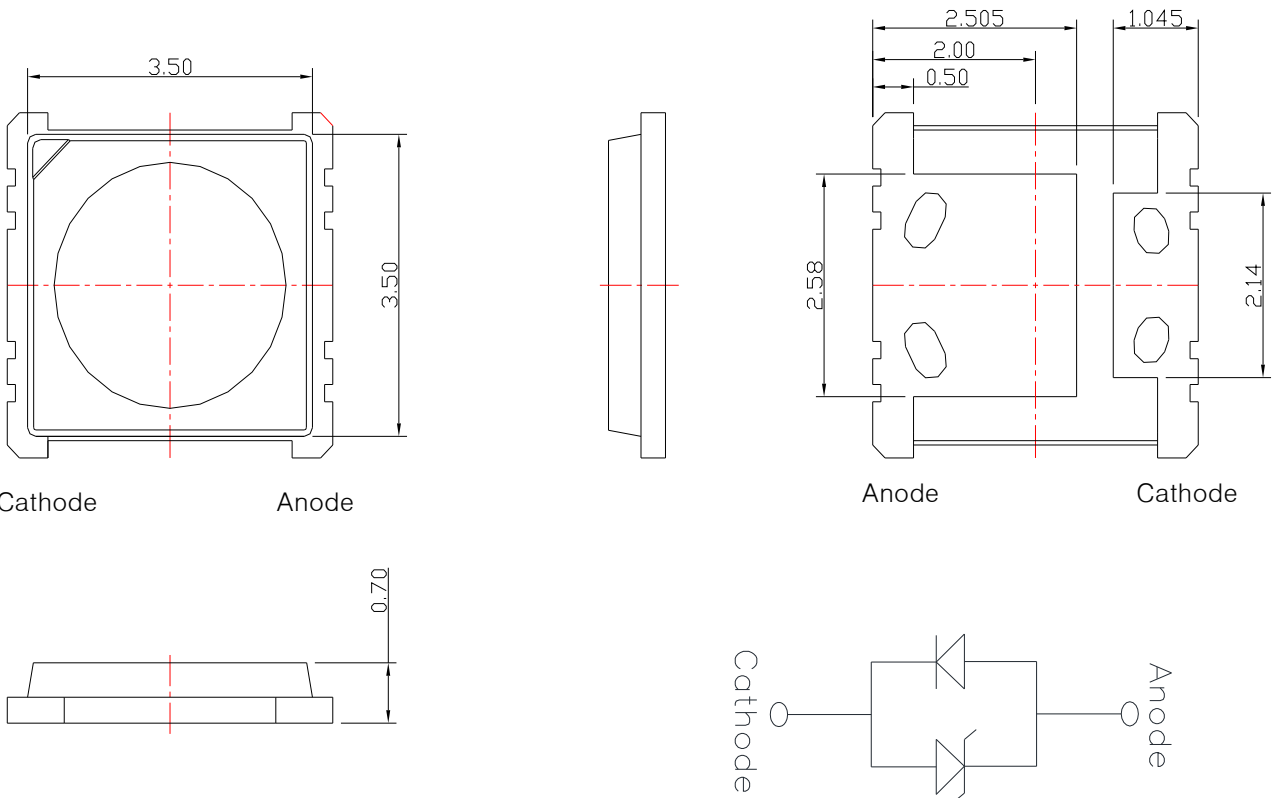
- Package Size - 3.5(L) × 3.5(W) × 0.7(T) mm
- White Emission Package (Top View)
- Ideal for backlighting and coupling in light guides
- Wide view angle ($2\theta_{1/2}=120\text{deg.}$)



(2) Applications

- Backlighting(LCD, switches, keys, displays)
- Coupling into light guides
- Especially, specified for direct-type LED backlights(Including secondary lens)

(3) Outline Dimensions



2. Specifications

(1) Absolute maximum ratings

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

Parameter	Symbol	Absolute maximum rating	Unit
Power Dissipation	P_D	1.5	W
DC Forward Current	I_F	400	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{OPR}	-30 to +85	$^\circ\text{C}$
Storage Temperature	T_{STG}	-40 to +100	$^\circ\text{C}$
Electrostatic Discharge(HBM)	ESD	± 4000	V

* Noted Absolute Maximum Ratings are reference data.

(Guarantee condition will be specified separately on request)

(2) Initial Electrical/Optical Characteristics

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage ⁽¹⁾	V_F	$I_F = 280\text{mA}$	3.1	-	3.5	V
Luminous Intensity ⁽²⁾	I_V	$I_F = 280\text{mA}$	-	27.0	-	cd
Luminous Flux	lm	$I_F = 280\text{mA}$		88.0		lm
Reverse Voltage	V_R	$I_R = 5\text{mA}$	0.7	-	1.2	V
Chromaticity Coordinate ⁽³⁾	C_x	$I_F = 280\text{mA}$	-	0.271	-	-
	C_y		-	0.244	-	-

notes (1) Forward Voltage Measurement allowance is $\pm 10\%$.

(2) Luminous Intensity Measurement allowance is $\pm 10\%$, Measuring equipment

3. Rank

(1) CIE Color Rank

(Ta = 25°C)

	C01			
Cx	0.2688	0.2638	0.2538	0.2588
Cy	0.2294	0.2194	0.2194	0.2294

	D01			
Cx	0.2738	0.2688	0.2588	0.2638
Cy	0.2394	0.2294	0.2294	0.2394

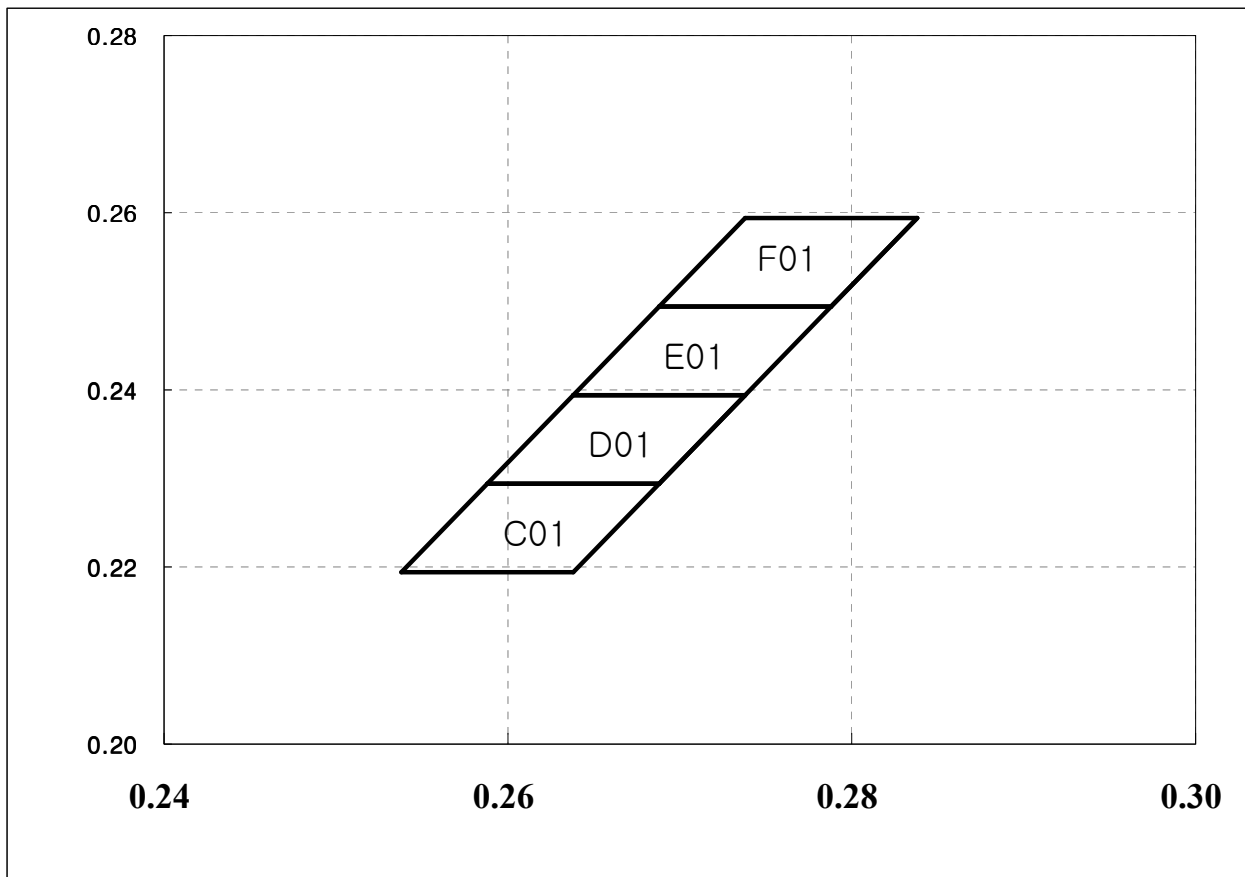
	E01			
Cx	0.2788	0.2738	0.2638	0.2688
Cy	0.2494	0.2394	0.2394	0.2494

	F01			
Cx	0.2838	0.2788	0.2688	0.2738
Cy	0.2594	0.2494	0.2494	0.2594

Notes (1) Chromaticity coordinates measurement allowance is ± 0.01 .

(Based on the measuring instruments of Dongbu LED)

(2) The Chromaticity coordinates refer to CIE 1931 chromaticity diagram.



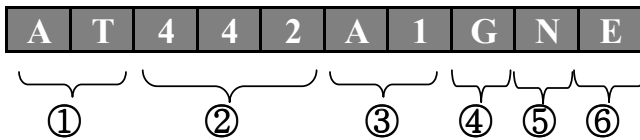
3. Rank

(2) Characteristics Rank

■ Forward voltage & Luminous intensity rank (T_a = 25 °C)

Parameter	Symbol	Condition	Rank	Min.	Max.	Unit
Forward Voltage	V _F	I _F = 280mA	V31	3.1	3.2	V
			V32	3.2	3.3	
			V33	3.3	3.4	
			V34	3.4	3.5	
Luminous Intensity	IV	IF = 280mA	25H	25,000	26,000	mcd
			26H	26,000	27,000	
			27H	27,000	28,000	
Luminous Flux	lm	IF = 280mA	Q84	84	86	lm
			Q86	86	88	
			Q88	88	90	
			Q90	90	92	
			Q94	92	94	

(3) Classification By name & Rank



- ① Dongbu TOPVIEW
- ② PKG.모델명
- ③ Phosphor 구분
- ④ Chip Maker 구분
- ⑤ Zener 실장 구분
- ⑥ 특성구분 Chip 실장수량

RANK Q88 E01 V32

Q88 Flux : 88 ~ 90 lm
E01 Cx, Cy
V32 V_F : 3.2~ 3.3V

Part No.: AT442A1GNE

Pb Free

Lot No. : xxxxxx

Q'ty : 1,000ea

Date : 20xx. xx. xx.

Rank : Q88 E01 V32



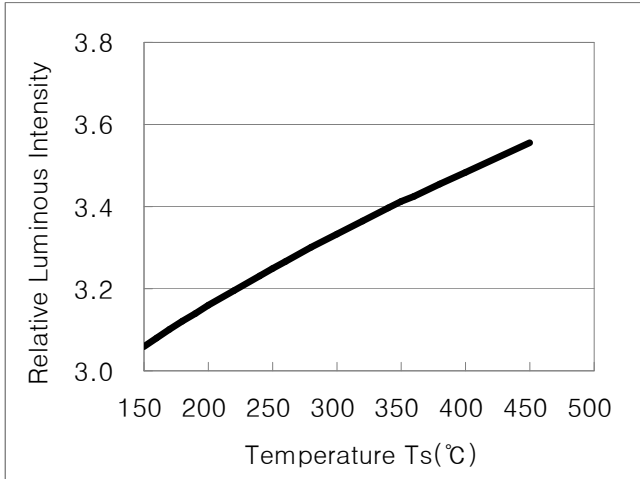
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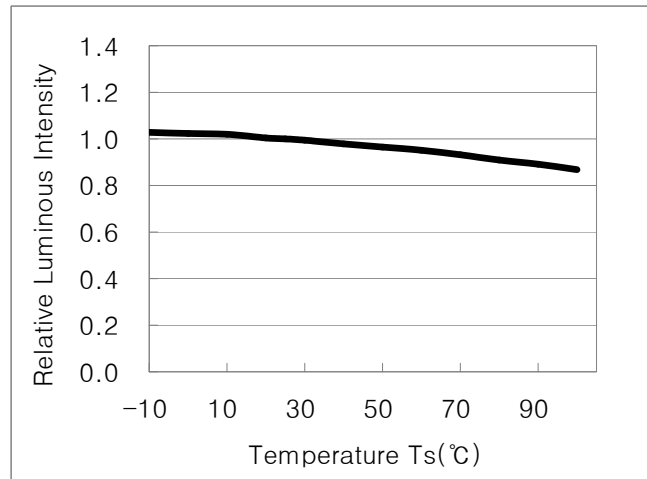
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4. Characteristics Diagrams

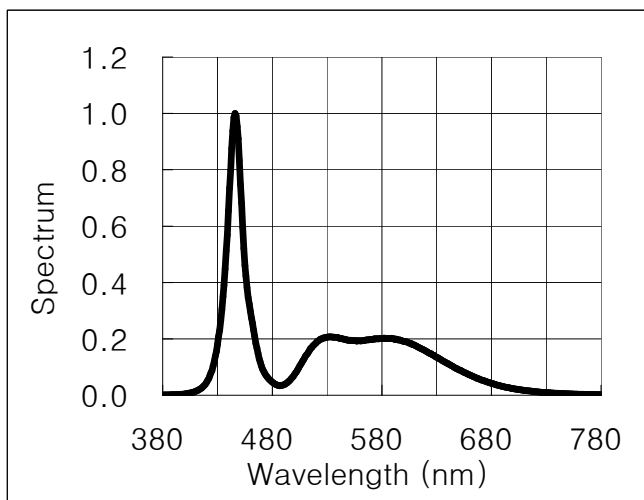
(1) Diagrams



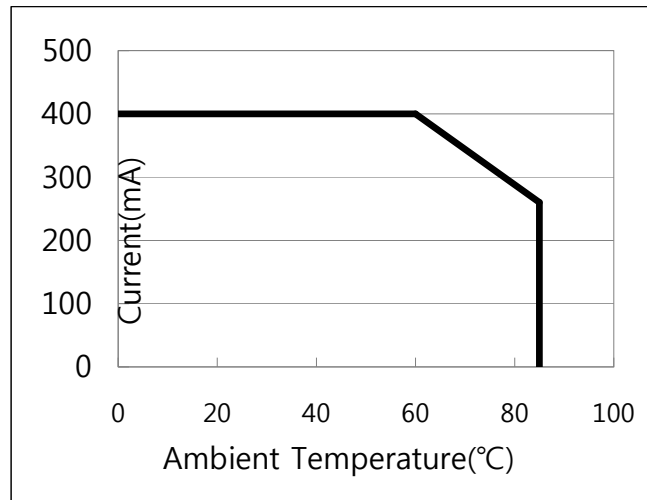
Forward Current vs Forward Voltage



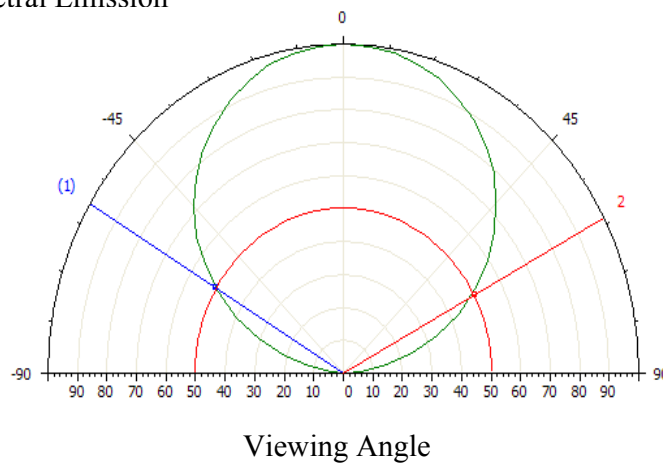
Relative Luminous Intensity vs Solder Point Temperature (°C)



Relative Spectral Emission



Forward Current vs. Ambient



5. Reliability

(1) Diagrams

(1) Test Items and Results

Test Item	Test Conditions	Note	Number of Damaged
Steady State Operating Life	Ta = 25 °C, I _F = 350mA	1,000 hrs	0/50
Steady State Operating Life of High Temperature	Ta = 65 °C, I _F = 350mA	1,000 hrs	0/50
Steady State Operating Life of High Temperature	Ta = 85 °C, I _F = 350mA	1,000 hrs	0/50
Steady State Operating Life of High Humidity Heat	Ta = 60 °C, RH = 90% I _F = 350mA	1,000 hrs	0/50
Steady State Operating Life of Low Temperature	Ta = -30 °C, I _F = 350mA	1,000 hrs	0/50
High Temperature Storage	Ta=100 °C	1,000 hrs	0/50
Low Temperature Storage	Ta=-40 °C	1,000 hrs	0/50
Temperature Humidity Storage	Ta=60 °C, RH=90%	1,000 hrs	0/50
Temperature Cycle	-45 °C~25 °C~125 °C~25 °C 30min, 5min, 30min, 5min	200 cycles	0/50
Moisture Resistance Cycle	30 °C/70%, 168hrs 後 Reflow(Tsld=260 °C, 10sec)	2 Time	0/50

(2) Criteria for Judging the Damage

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min.	Max.
Forward Voltage	V _F	I _F = 350mA	-	U.S.L. ⁽¹⁾ * 1.2
Luminous Intensity	I _v	I _F = 350mA	L.S.L. ⁽²⁾ * 0.7	-

Notes (1) U.S.L. : Upper Specification Level

(2) L.S.L. : Lower Specification Level

6. Soldering Conditions

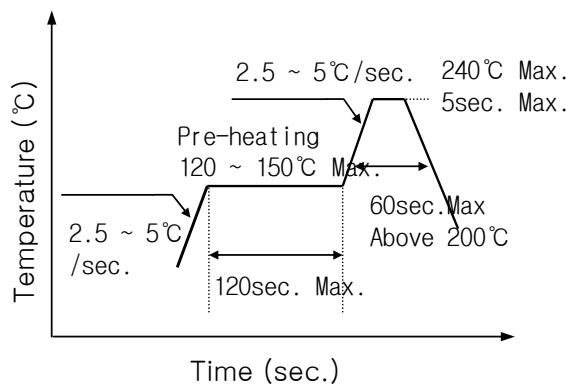
(1) Recommended Soldering Conditions

	Reflow Soldering		Hand Soldering	
	Lead Solder	Lead-Free Solder	Temperature Soldering time	300°C Max. 3 sec. Max. (one time only)
Pre-Heating	120 ~ 150 °C	180 ~ 200 °C		
Pre-Heat Time	120sec. Max.	120sec. Max.		
Peak Temperature	240 °C Max.	260 °C Max.		
Soldering Time	5sec. Max.	5sec. Max.		

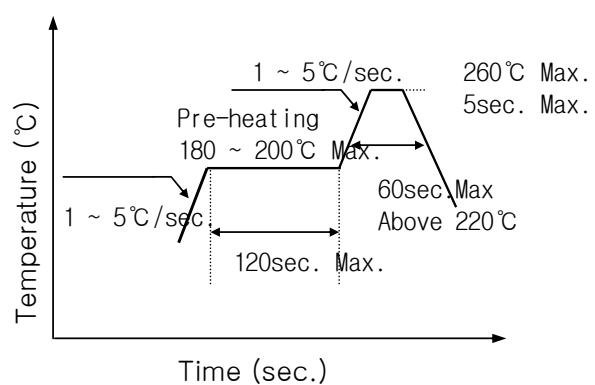
* After reflow soldering, Rapid cooling should be avoid.

(2) Recommended Reflow Soldering profile

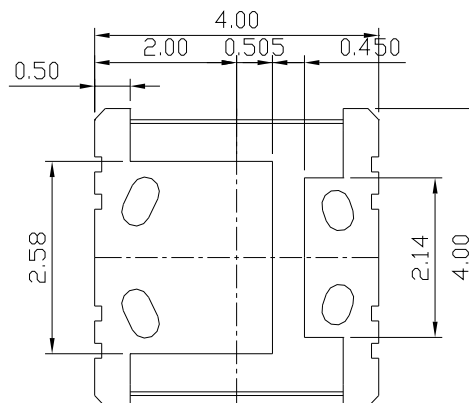
■ Lead Solder



■ Lead-Free Solder



(3) Recommended Soldering Pattern



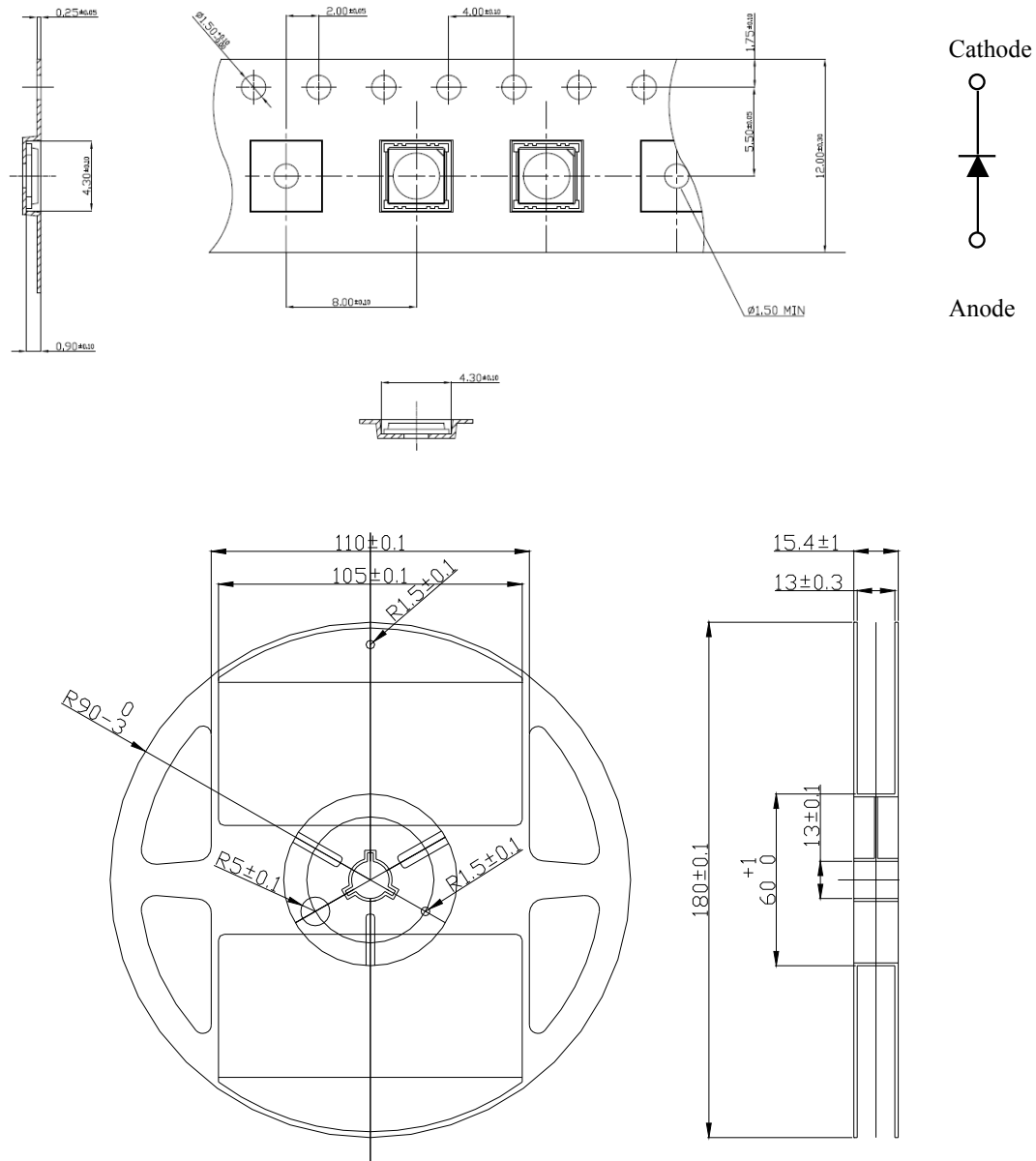
(4) Soldering Cautions

- Because of the zener diode, the isolation pad should not connect the other pad. .
- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not wrap the circuit board.
- The LEDs can be soldered on place using the reflow soldering method.
- Occasionally there is a brightness decrease cause by the influence of heat or ambient atmosphere during air reflow. It is recommend that the user use the nitrogen reflow method.
- After complete soldering, the product should be handled after cooling.(required to be handled under 60 °C

7. Packing

(1) Carrier Tape & Carrier Reel Dimensions

■ Carrier Tape



Notes

- (1) Quantity : Taping of 1 reel will be from 1,000 pcs to 5,000 pcs in unit of a number in the thousands.
- (2) Adhesion strength of cover tape is 0.1 ~ 0.7N(20gf ~60gf) when the cover tape is turned off from the carrier tape.

7. Packing

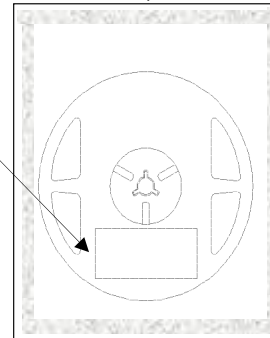
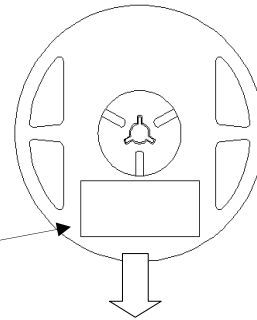
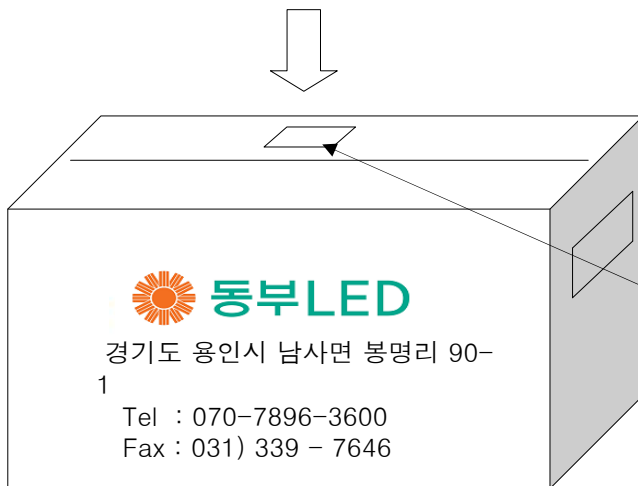
(2) Packing and Packaging

Label

Part No.: AT442A1GNE Pb Free
 Lot No. : xxxxxx
 Q'ty : 1,000ea
 Date : 20xx. xx. xx.



Rank : Q88 E01 V32

 A070327001  **Dongbu LED**
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Part No.: AT442A1GNE Pb Free
Q'ty : 8,000 ea
Rank Q'ty

No	Lot No	Rank	Q'ty
1	107057	Q88 E01 V32	1,000
2	107057	Q88 E01 V32	1,000
3	107057	Q88 E01 V32	1,000
4	107057	Q88 E01 V32	1,000
5	107057	Q88 E01 V32	1,000
6	107057	Q88 E01 V32	1,000
7	107057	Q88 E01 V32	1,000
8	107057	Q88 E01 V32	1,000

 S070723003

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Box List Pb Free
Q'ty : 64,000
Part No

No	Part No	Rank	Q'ty
1	AT442A1GNE	Q88 E01 V32	64,000

 L070723001

 MADE IN KOREA  **Dongbu LED**

Box Type	Inner Box	Outer Box	
		Medium	Large
Max. Packing Q'ty(pcs)	8,000	32,000	64,000

(1) The carrier tape winded on the reel are placed into an ESD protected pack with a silicagel and sealed by the thermal pressure sealer. Then this sealed pack is packaged in a cardboard box.

8. Precaution

(1) Static Electricity

These LEDs are highly susceptible to static electricity or surge voltage. So a wrist strap or an anti-electrostatic glove necessarily be used when handling the LEDs. Do not use the equipment that surge voltage is came into existence.

All devices and equipment that measure or mount the LEDs must be properly grounded.

After being assembled LEDs, it should be ascertained a electrical characteristic whether that are damaged by static electricity or not. It is easy to find the damaged LEDs by a light-on or VF test at forward a below 0.15mA current.

(2) Packing

The moisture that is absorbed into the LED products may cause a badness and damage to the optical characteristics of the LEDs. Therefore the moisture barrier aluminum bag is used to keep moisture in the packing. And a silicagel is inserted into a moisture barrier aluminum bag that sealed by the thermal pressure sealer.

(3) Cleaning

We greatly recommend IPA(solution) for LED cleaning and it should be limited exposure time for cleaning maximum 1 minute. (We can not guarantee the quality assurance if it has been used to other solution.)

It is recommended that isopropyl alcohol(IPA) be used as a solvent for cleaning the LEDs.

Do not clean the LEDs by the ultrasonic. When it use other solvents or is absolutely necessary ultrasonic, before cleaning, a pre-test should be done to confirm whether the LEDs are any damaged or not.

(4) Storage

In order to avoid the absorption of moisture, it is recommended to store LEDs in the moisture barrier aluminum bag is not opened.

Storage condition before opening the packing :

Temperature : below 30℃ , Humidity : 90%RH max

The LEDs should be used within a year.

Storage condition after opening the packing :

Temperature : below 30℃ , Humidity : 60%RH max

The products have to be used within one year from the date marked on label which is attached to reel or aluminium bag.

After opening the packing, the LEDs should be used within 168 hours(7days). If unused LEDs remain, they should be stored in the place kept away moisture.

If the LEDs have exceeded the above storage time, it should be used after to bake using the following conditions.

Baking condition : 60±5℃, more than 24 hours

8. Precaution

(5) Pick and Place

It should be avoided to rub or scratch the surface of resin by any hard material. It is possible that the LEDs are damaged to the optical characteristics.

(6) Heat

The LEDs are products that are generated heat. Please consider the heat generation of the LED when it is designed the PCB. After considering the ambient temperature and the heat generation of LEDs, the operating current should be decided

(7) Others

If the forward or reverse voltage which exceeds the absolute maximum rating is applied to the LEDs, that will cause the damage to the LEDs. It is possible that the damaged LEDs do not light on at the low current.

Be careful not to look the LEDs that the output power is strongly increased in the face. It is possible that eyesight has been getting weaker.

This specifications of the product may be revised without notice.

Light emitting part should not be exposed by physical contact. It can be the reason of material desquamation and progressive disconnection.

This LED is made for in-door use only. If the user wants the LED for out-door use, it is necessary to take additional treatment on the product after surface mounting technology(SMT).

This specification could be changed without a notice to the customer because of the inside circumstance of the company.