

PRELIMINARY SPECIFICATIONS

SMD TYPE WHITE LED

Model : AT375A1GNE

Dongbu LED Co., Ltd.

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1. General Description

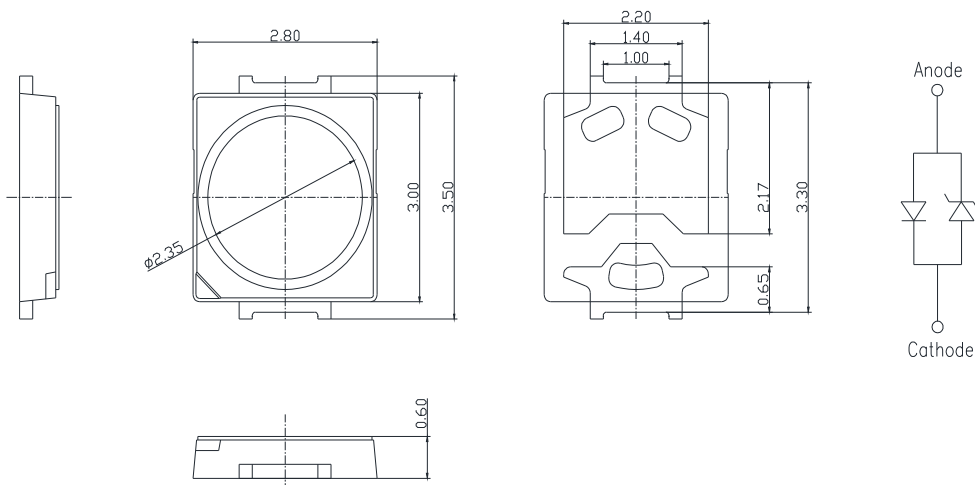
(1) Features

- Package Size - 3.5(L) × 2.8(W) × 0.6(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

Parameter	Symbol	Absolute maximum rating	Unit	Remark
Power Dissipation	P_D	1.40	W	
Forward Current	I_F	400	mA	
Peak Pulse Current ⁽¹⁾	I_{FP}	-	mA	
Reverse Voltage	V_R	1.2	V	$I_R=20\text{mA}$
Operating Temperature	T_{OPR}	-30 to +85	℃	
Storage Temperature	T_{STG}	-40 to +100	℃	

Notes (1) Duty ratio = 1/10, pulse width = 10msec

(2) Initial Electrical/Optical Characteristics

 (T_a=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage ⁽¹⁾	V _F	I _F = 260mA	3.0	3.25	3.5	V
Luminous Intensity ⁽²⁾	I _v	I _F = 260mA	19,000	-	26,000	mcad
Reverse Current	I _R	V _R = 1.2V	-	-	20	mA
Chromaticity Coordinate ⁽³⁾	C _x	I _F = 260mA	-	0.2857	-	-
	C _y		-	0.2469	-	-

notes (1) Forward Voltage Measurement allowance is ± 10%.

(2) Luminous Intensity Measurement allowance is ± 10%, Measuring equipment

: CAS140B(Instrument system)

(3) The coordinate refer to CIE 1931 chromaticity diagram.

(3) Characteristics Rank

■ Forward voltage & Luminous intensity rank

 (T_a=25°C)

Parameter	Symbol	Condition	Rank	Min.	Max.	Unit
Forward Voltage	V _F	I _F = 260mA	V30	3.0	3.1	V
			V31	3.1	3.2	
			V32	3.2	3.3	
			V33	3.3	3.4	
			V34	3.4	3.5	
Luminous Intensity	I _v	I _F = 260mA	H19	19,000	20,000	mcad
			H20	20,000	21,000	
			H21	21,000	22,000	
			H22	22,000	23,000	
			H23	23,000	24,000	
			H24	24,000	25,000	
			H25	25,000	26,000	

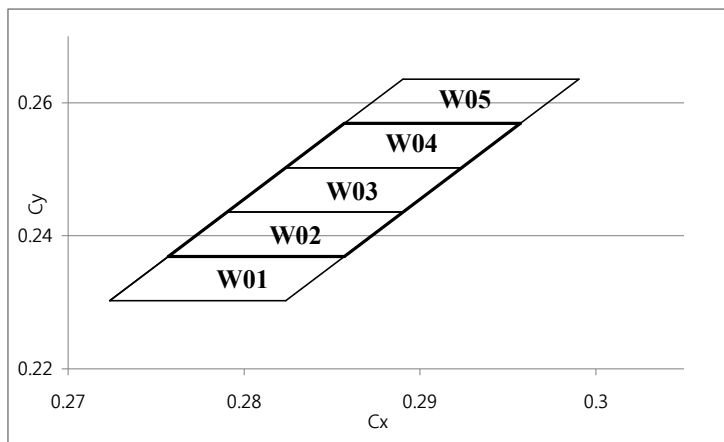
■ Color Rank

 (T_a=25°C)

	W01				W02				W03			
C _x	0.2724	0.2757	0.2857	0.2824	0.2757	0.2790	0.2890	0.2857	0.2790	0.2824	0.2924	0.2890
C _y	0.2302	0.2369	0.2369	0.2302	0.2369	0.2436	0.2436	0.2369	0.2436	0.2502	0.2502	0.2436
	W04				W05							
C _x	0.2824	0.2857	0.2957	0.2924	0.2857	0.2890	0.2990	0.2957				
C _y	0.2502	0.2569	0.2569	0.2502	0.2569	0.2636	0.2636	0.2569				

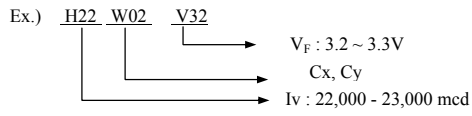
* Color Coordinates Measurement allowance is ±0.01

* Based on the measuring instruments of Dongbu LED

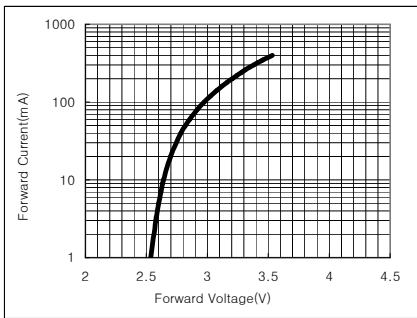


3. Rank

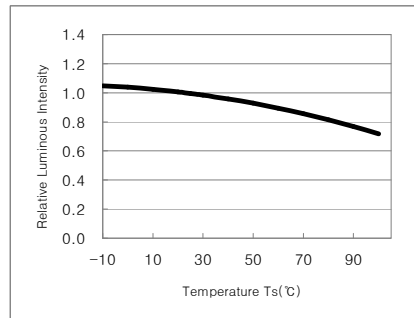
The rank inscription is composed of the follow method.



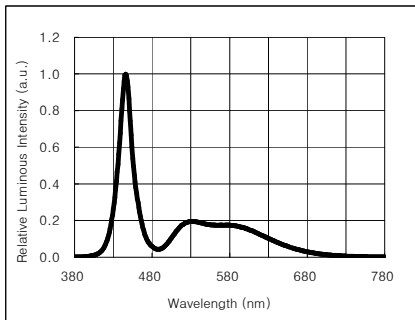
4. Characteristics Diagrams



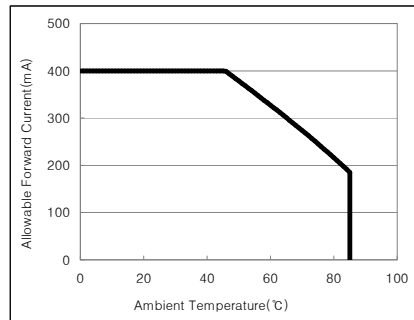
Forward Current vs Forward Voltage



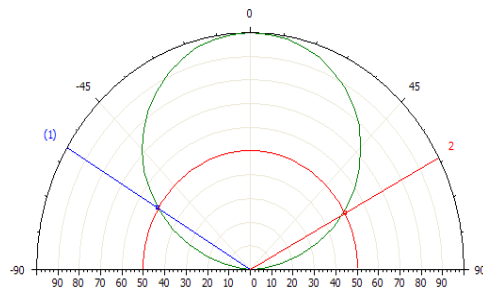
Relative Luminous Intensity vs Solder Point Temperature (°C)



Relative Spectral Emission



Forward Current vs. Ambient Temperature(°C)



Viewing Angle

5. Results of Reliability Tests

(1) Criteria for Judging the Damage

Parameter	Symbol	Condition	Criteria for Judgement	
			Min.	Max.
Forward Voltage	V_F	$I_F = 260\text{mA}$	-	U.S.L. ⁽¹⁾ * 1.2
Luminous Intensity	I_v	$I_F = 260\text{mA}$	L.S.L. ⁽²⁾ * 0.7	-
Reverse Current	I_R	$V_R = 5\text{V}$	-	20 μm

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

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

6. Soldering Conditions

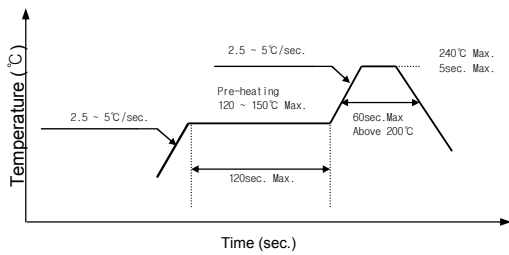
(1) Recommended Soldering Conditions

	Reflow Soldering		Hand Soldering
	Lead Solder	Lead-Free Solder	
Pre-Heating	120 ~ 150 °C	180 ~ 200 °C	Temperature Soldering time 350 °C Max. 3 sec. Max. (one time only)
Pre-Heat Time	120sec. Max.	120sec. Max.	
Peak Temperature	240 °C Max.	260 °C Max.	
Soldering Time	5sec. Max.	5sec. Max.	

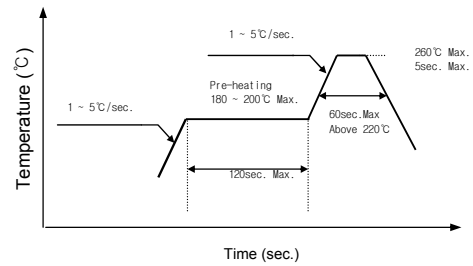
* After reflow soldering, Rapid cooling should be avoid.

(2) Recommended Reflow Soldering profile

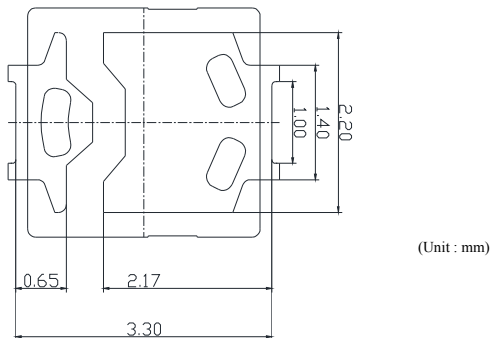
■ Lead Solder



■ Lead-Free Solder



(3) Recommended Soldering Pattern



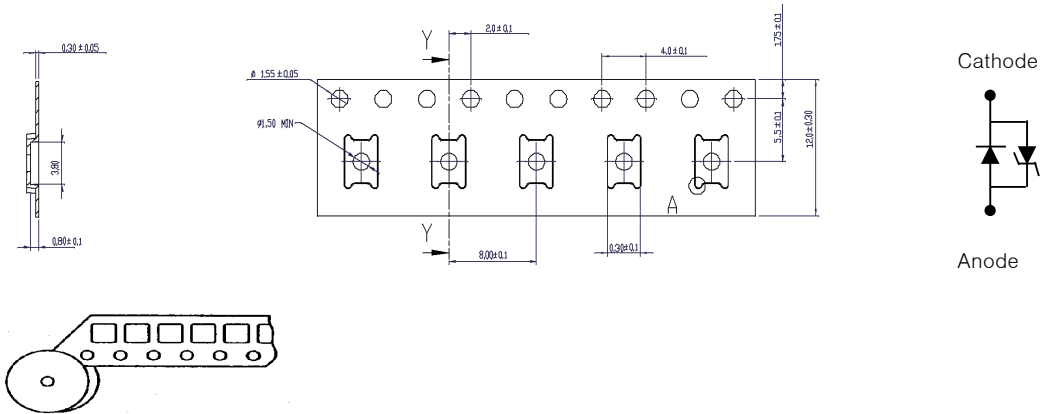
(4) Soldering Cautions

- 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.

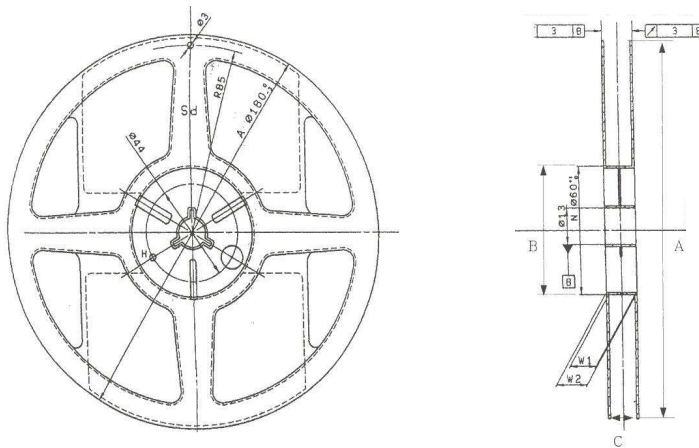
7. Packing

(1) Carrier Tape & Carrier Reel Dimensions

■ Carrier Tape

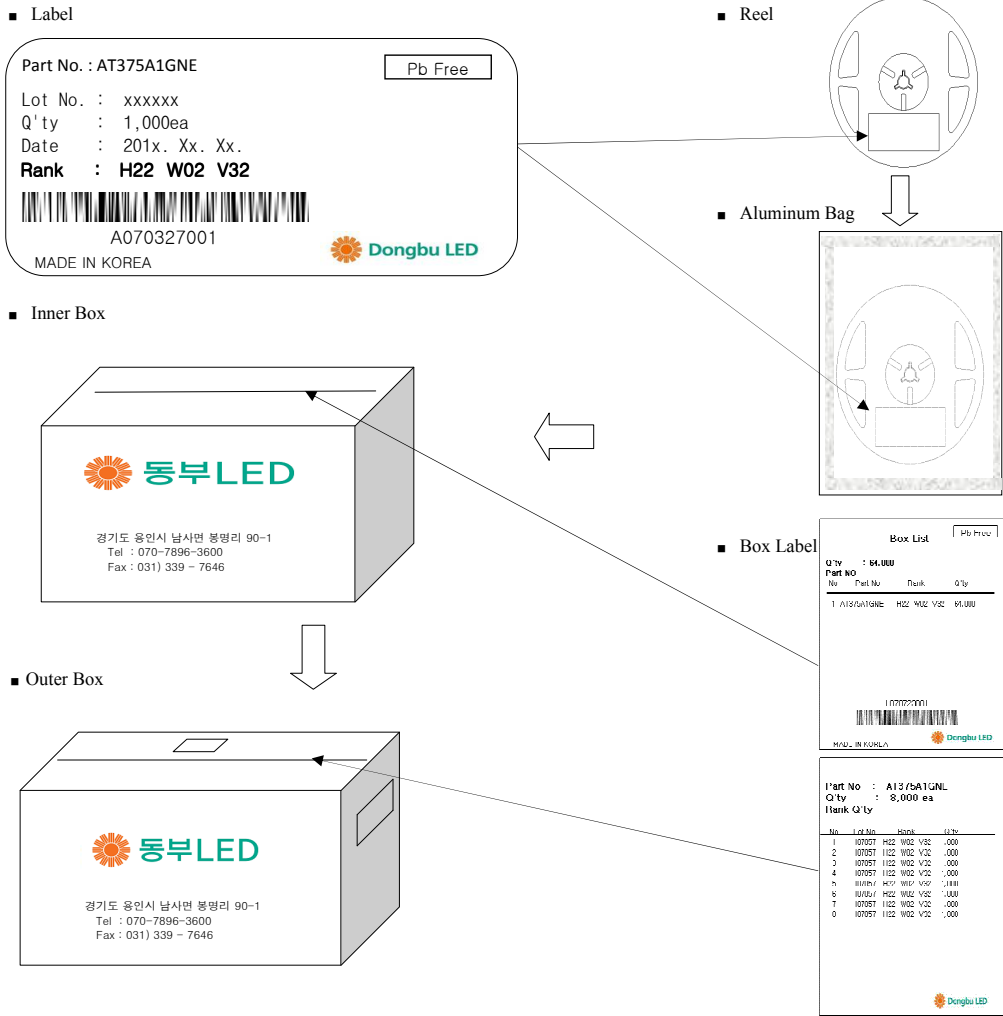


■ Carrier Reel



- Notes (1) Quantity : 1000pcs/reel
 (2) Adhesion strength of cover tape is 0.1 ~ 0.7N when the cover tape is turned off from the carrier tape.

(2) Packing and Packaging



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

(1) The carrier tape wound 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 1mA 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

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

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

(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 IFW current.

Be careful not to look the LEDs that the output pFwer 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.