

APPROVAL SHEET

AOT MODEL NAME	3006
AOT PART NUMBER	3006C-B401
CUSTOMER NAME	General
DATE	2021 / Oct
Version	01

MAKER			CUSTOMER			
Prepared	Checked	Approved				
Sam Kuo	Claire Hung	Sinfan Lo				

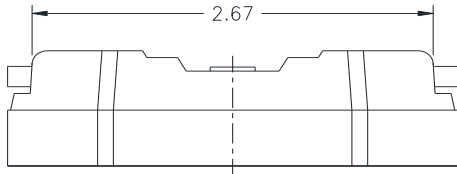
AOT Headquarters
No. 13, Gongye 5th. Road, Hsinchu Industrial Park, Hukou Shiang,
Hsinchu Hsien 303, Taiwan, R.O.C.
TEL: +886-3-597-6988 / FAX: +886-3-598-7392

Package Outline

Model name: **3006C-B401**

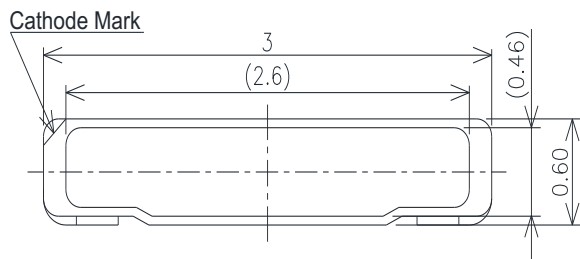
Unit: mm, Tolerance: ± 0.1 mm

Front view

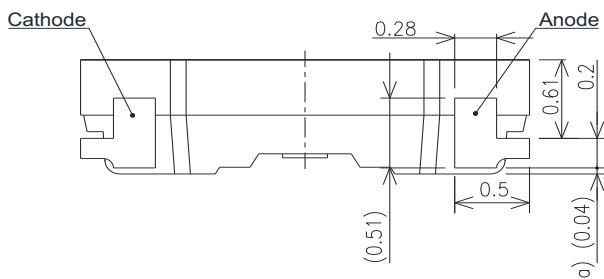


Cathode (2)  Anode (1)

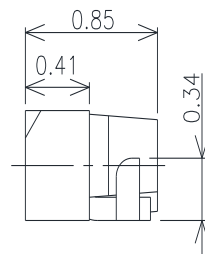
Top view



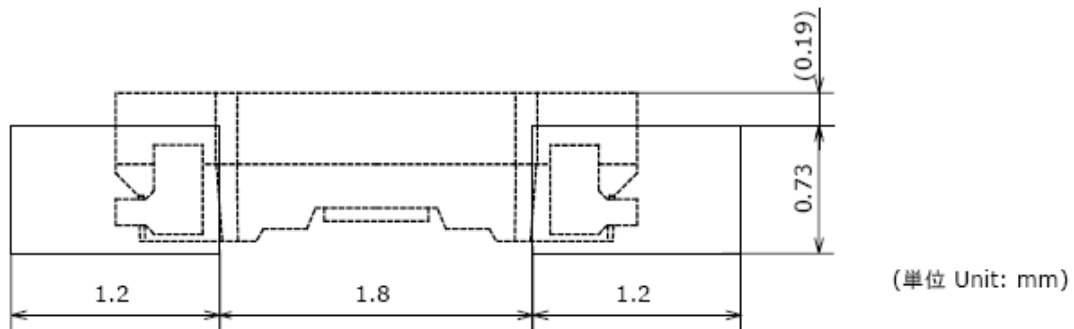
Back view



Side view



Recommended Soldering Pad design (Unit :mm)



Item	Materials
Package	High Temperature Resistant Plastic, PPA.
Encapsulating	Silicone Resin(without phosphor)
Electrode	Cu Alloy With Ni, Ag Plating.

- SMD type Side-View white LED.
- Lead frame package with individual 2 pins.
- Wide viewing angle(120°)
- Compatible with reflow soldering.
- Complies with RoHS Directive.
- The Encapsult surface should be under the package surface, and should not expose the wire.
- Compact package outline (L x W x H) of 3.0 mm x 0.85mm x 0.6 mm.

Optical/Electronic Characteristics (T_A=25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V _F	I _F =20mA	2.7	-	3	V
Luminous Flux	Φ _V	I _F =20mA	36.00	-	41.00	mW
Reverse Current	I _R	V _R = -7V	-	-	0.05	μA

* Tolerance of measurements of the Forward Voltage is ± 0.05 V.

* Tolerance of measurements of the Radiant Flux is ± 5%.

Absolute Maximum Ratings (T_A=25°C)

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	I _F	30	mA
Peak Forward Current (Duty 1/10@ 10ms)	I _{PF}	100	mA
*Reverse Voltage	V _R	5	V
Power Dissipation	P _D	90	mW
Operating Temperature	T _{opr}	-40~+85	°C
Storage Temperature	T _{stg}	-40~+100	°C
Soldering Temperature	T _{slid}	Reflow Soldering : 260°C for 10sec Hand Soldering : 350°C for 3sec	
Junction Temperature	T _j	105	°C
Forward Voltage at Low Current	VF2	>1.9 (@1 μA)	V

* I_{FP} Conditions: Pulse Width ≤ 10msec, and duty ≤ 1/10

* Max condition is not guarantee for life time

Group Definition of Forward Voltage

Rank	Condition	VF(V)	
V7	T _A =25°C I _F =20mA	2.7	2.8
V8		2.8	2.9
V9		2.9	3.0

Group Definition of Brightness

Rank	Condition	Luminous Intensity	
		Φ _e (mW)	
		Min.	Max.
B36	T _A =25°C I _F =20mA	36	37
B37		37	38
B38		38	39
B39		39	40
B40		40	41

Group Definition of Wavelength

Rank	Condition	Wd(nm)	
W1	T _A =25°C I _F =20mA	450.00	452.50
W2		452.50	455.00
W3		455.00	457.50

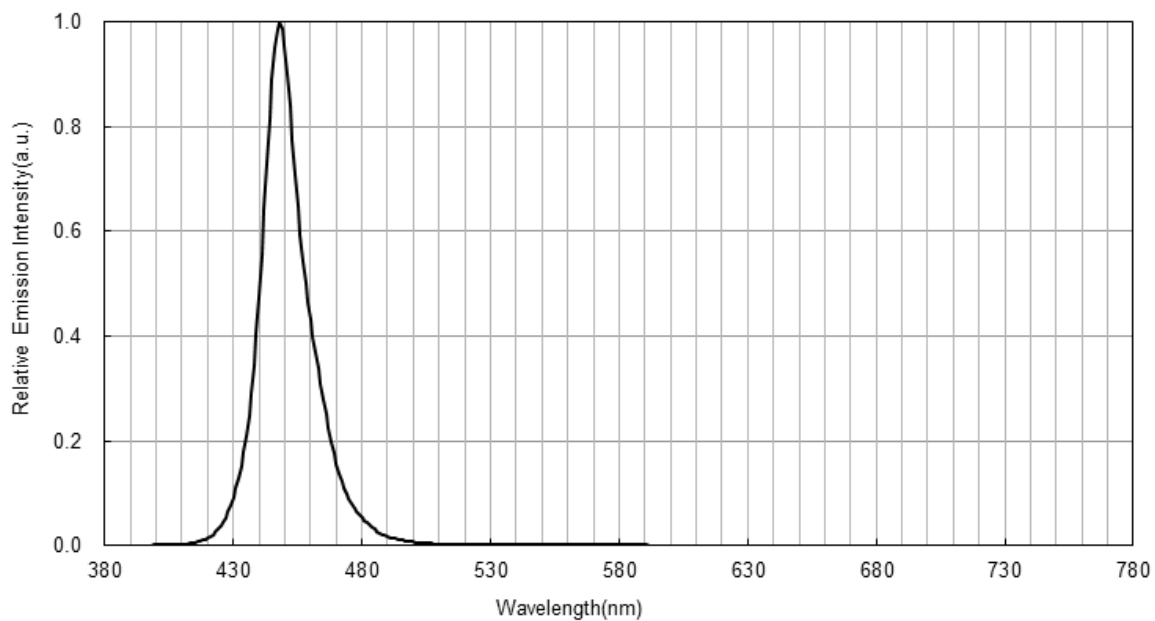
*The tolerance limit of Wd: ±1nm.

*A shipment shall consist of LEDs in a combination of above ranks.

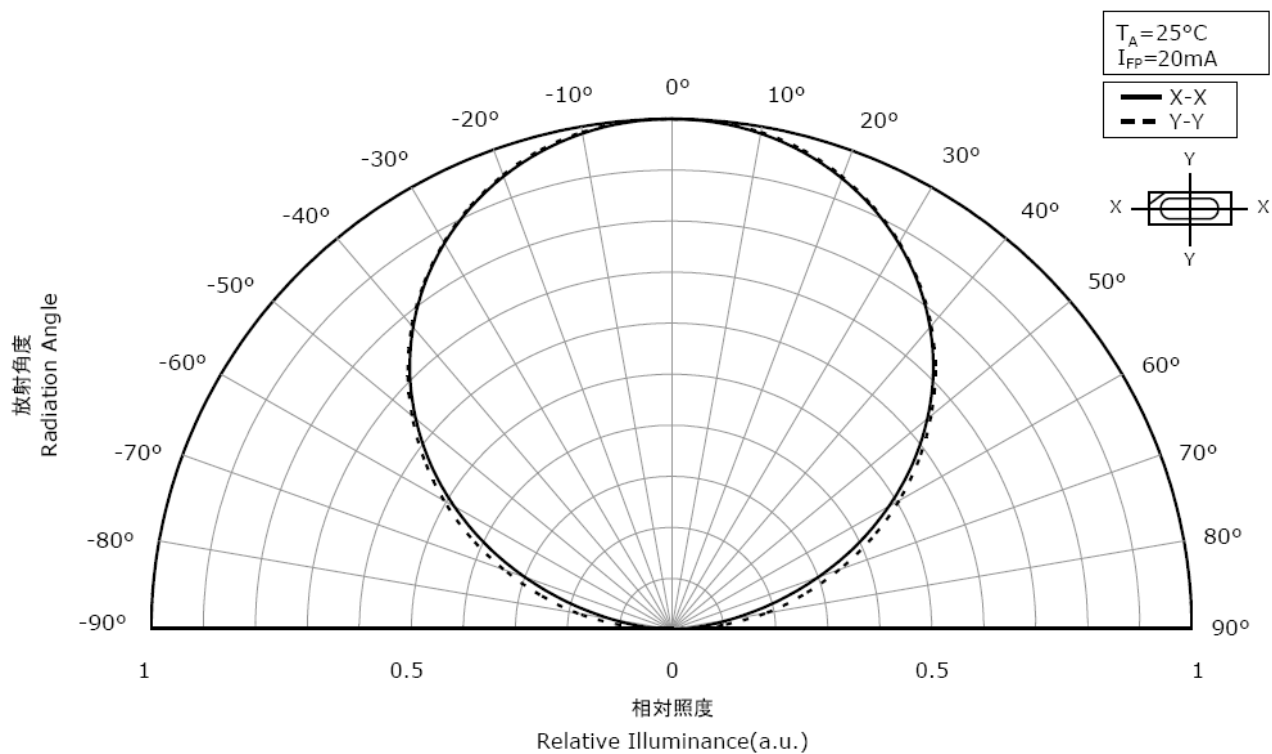
*The percentage of each rank in the shipment shall be determined by AOT.

*The ranking information of LEDs can be found on the reel label.

Spectrum ($T_A=25^\circ\text{C}$, $I_{FP}=20\text{mA}$)



Radiation Pattern



Recommended Reflow Soldering Conditions

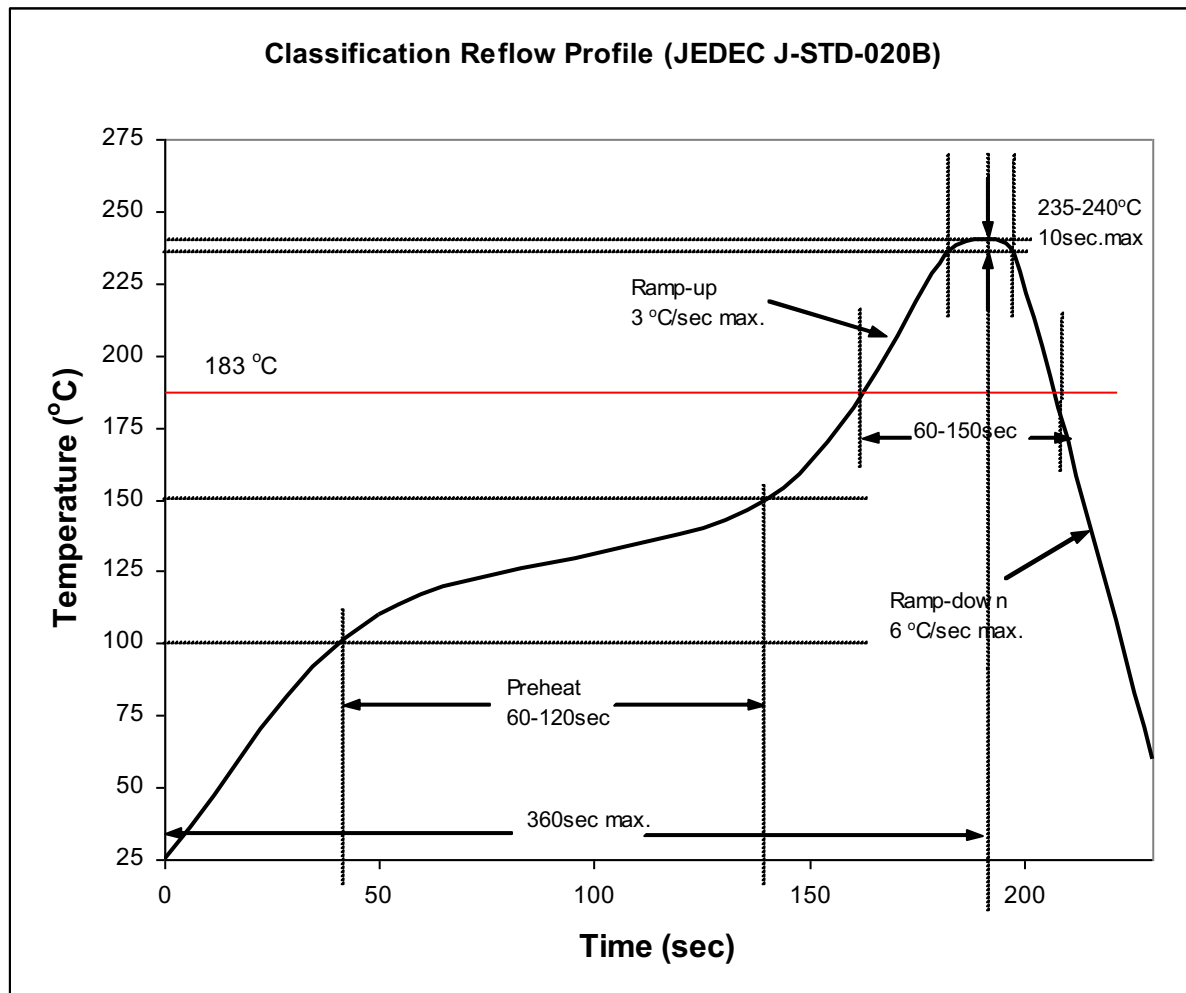
Surface Mounting Condition

In automatic mounting of the SMD LEDs on printed circuit boards, any bending, expanding and pulling forces or shock against the SMD LEDs should be kept min. to prevent them from electrical failures and mechanical damages of the devices.

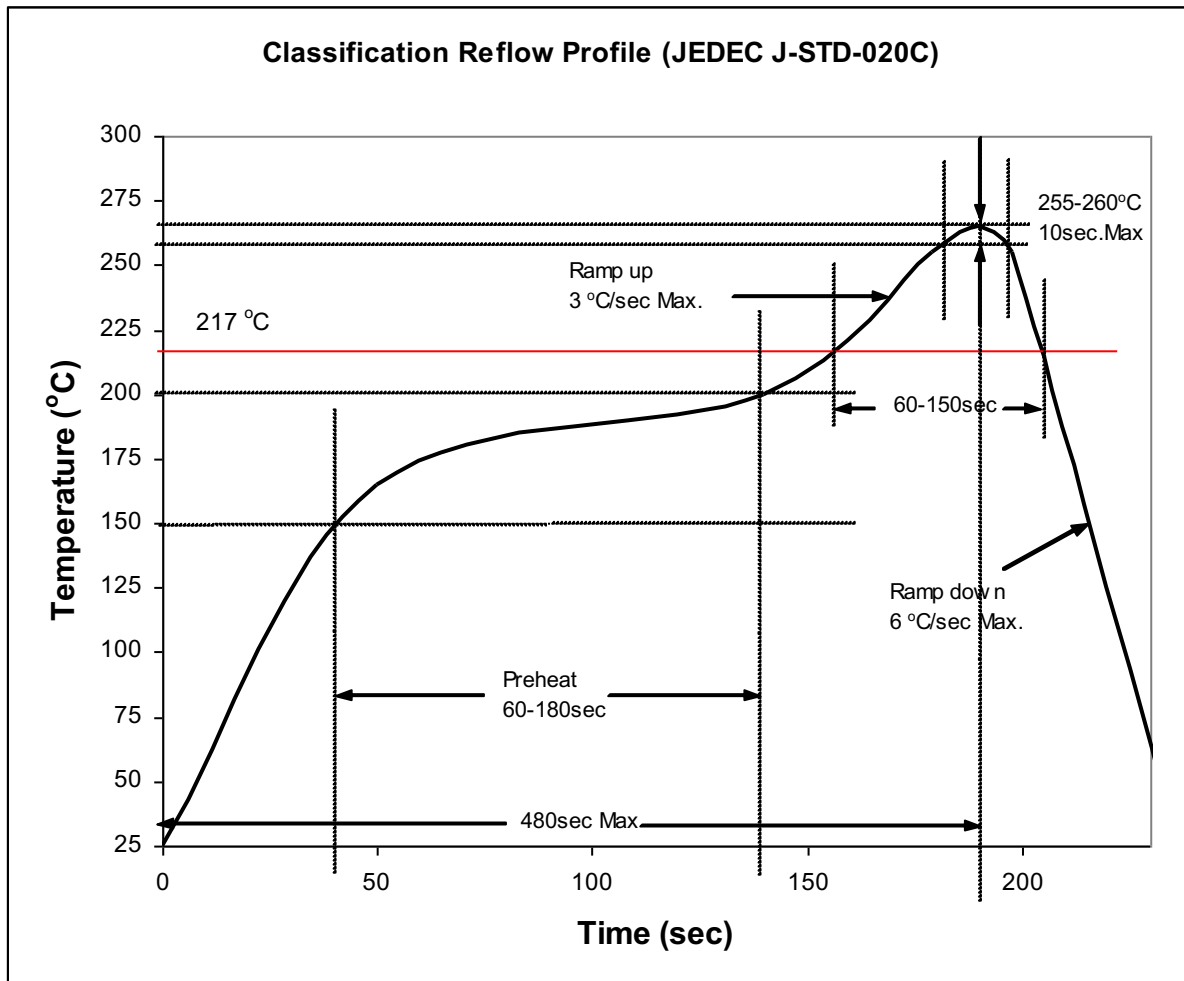
Soldering Reflow

- Soldering of the SMD LEDs should conform to the soldering condition in the individual specifications.
- SMD LEDs are designed for Reflow Soldering.
- In the reflow soldering, too high temperature and too large temperature gradient such as rapid heating/cooling may cause electrical & optical failures and damages of the devices.
- AOT cannot guarantee the LEDs after they have been assembled using the solder dipping method.

1) Lead Solder



2) Lead-Free Solder



3) Manual Soldering Conditions

- Lead Solder

Max. 300 °C for Max. 3sec, and only one time.

- Lead-free Solder

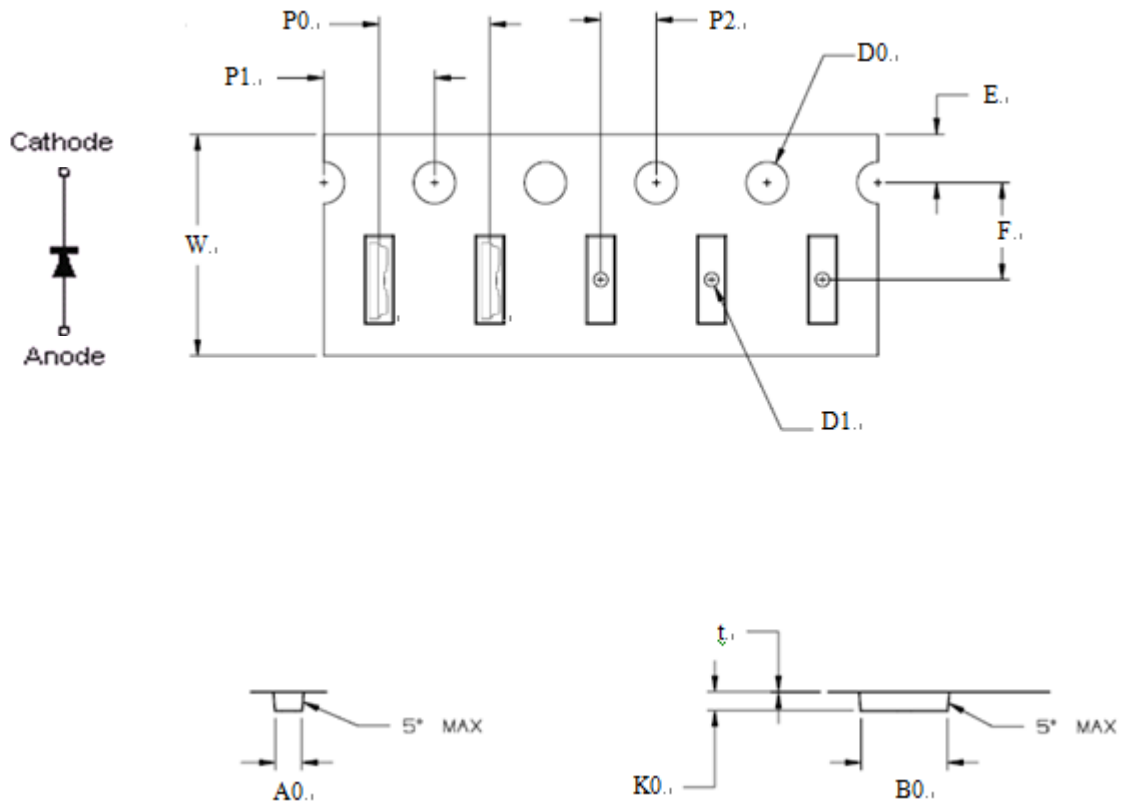
Max. 350 °C for Max. 3sec, and only one time.

- There is possibility that the brightness of LEDs is decreased, which is influenced by heat or ambient atmosphere during reflow. It is recommended to use the nitrogen reflow method.

- After LEDs have been soldered, repair should not be done. As repair is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will be damaged by repairing or not.

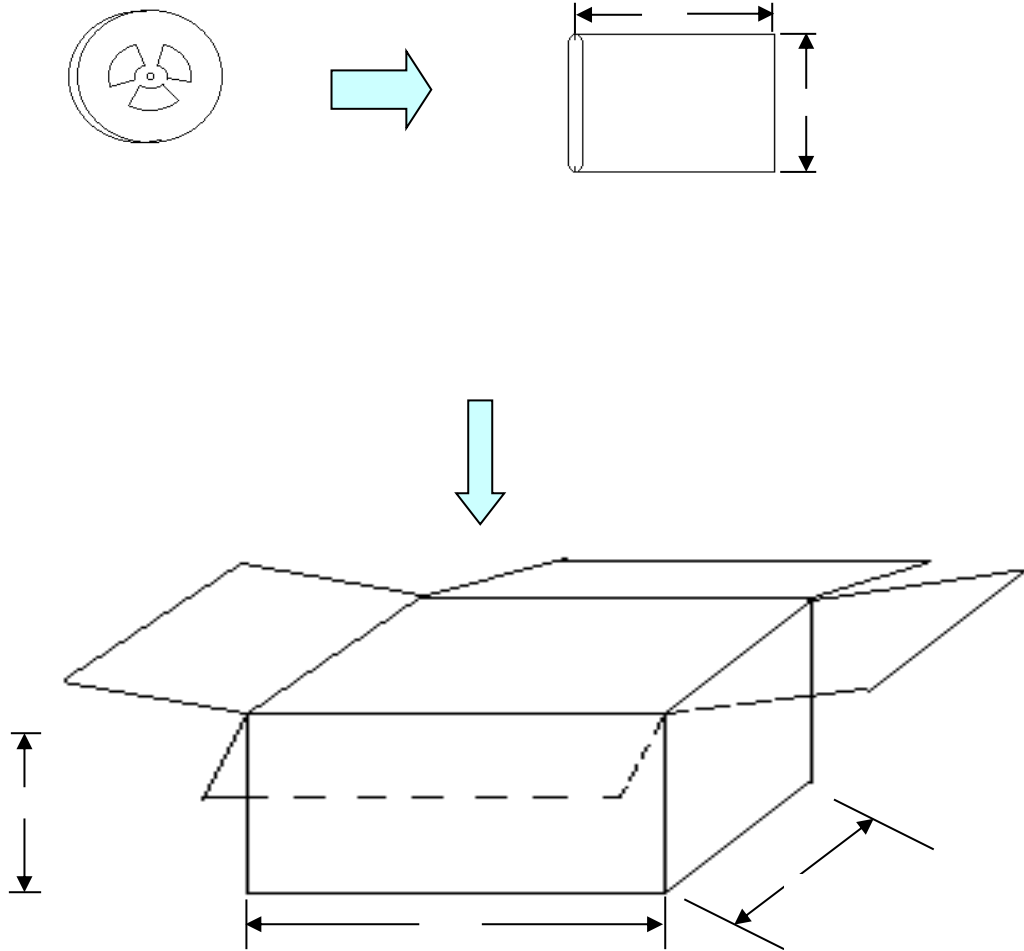
- Reflow soldering should not be done more than two times.

Dimensions (Unit :mm)



Item	Spec.	Tolerance(mm)	Item	Spec.	Tolerance(mm)
W	8.00	+0.3/-0.1	P2	2.00	±0.05
E	1.75	±0.10	P0x10	40.0	-
F	3.50	±0.05	t	0.20	±0.05
D0	1.50	+0.10/-0.00	A0	0.95	±0.05
D1	0.5	+0.05/-0.00	B0	3.11	±0.05
P0	4.00	±0.10	K0	0.55	±0.05
P1	2.00	±0.05			

Packing Formation



Reliability Test

No.	Test Item	Standard Test Method	Test Condition	Note	Number of Damaged
1	Room Temp. Life Test	Internal Ref.	$T_A=25^{\circ}\text{C}, I_F=20\text{mA}$	1000hrs	0/20
2	High Temp. Operating	JESD22-A108	$T_A=65^{\circ}\text{C}, I_F=20\text{mA}$	1000hrs	0/20
3	High Temp. Operating	JESD22-A108	$T_A=85^{\circ}\text{C}, I_F=8.5\text{mA}$	1000hrs	0/20
4	High Temp. Storage	JESD22-A103	$T_A=100^{\circ}\text{C}$	1000hrs	0/20
5	Low Temp. Operating	JESD22-A108	$T_A=-40^{\circ}\text{C}, I_F=20\text{mA}$	1000hrs	0/20
6	High Temp. and High Humidity Operation	JESD22-A119	60°C 95%RH, $I_F=20\text{mA}$	1000hrs	0/20
7	Temperature and humidity cycle test	IEC68-2-38	$25^{\circ}\text{C} \sim 65^{\circ}\text{C} \sim -10^{\circ}\text{C}$, 90% RH 24hr per cycle	10 cycle	0/20
8	Thermal Cycle Test	JESD22-A106	100°C 30min~ -40°C 30min Transform time 5min	300cycles	0/20

Criteria for Judging Damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	V_F	$I_F=20\text{mA}$	-	*U.S.L \times 1.1
Reverse Current	I_R	$V_R=5\text{V}$	-	*U.S.L \times 2.0
Luminous Intensity	I_v	$I_F=20\text{mA}$	*L.S.L \times 0.7	-

* U.S.L: Upper Standard Level

* L.S.L: Lower Standard Level

CAUTIONS

(1) Moisture Proof Package

The moisture proof package should be used to prevent moisture in the package as the moisture may Cause damage to optical characteristics of the LEDs.

The aluminum bag with zipper is used for moisture proof package. And, the moisture absorbent Material, Silica gel, is inserted into aluminum bag.

(2) Storage:

Storage Conditions

Before opening the package:

The LEDs should be kept at 30°C or less than 90%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material is recommended.

After opening the package:

After open the package, the LED should be kept at 30°C, 60%RH or less. The LED should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, it should be stored in moisture proof condition.

(3) Heat Generation

Thermal design of the end products is of paramount importance. The heat generation must be taken into design consideration when using the LED. The coefficient of the 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.

(4) Static Electricity

Static electricity or surge voltage damages the LEDs. All equipment and machinery must be properly grounded. It is recommended to use a wristband or anti-electrostatic glove when handling the LEDs. When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find static-damaged LEDs by a light-on test or a Vf test at a lower current. (Below 1mA is recommended).

Criteria: Vf >1.9V at If=1 μ A

(5) Cleaning

Use isopropyl alcohol as a solvent for cleaning the LEDs. The other solvent may dissolve the LEDs package and the epoxy.

Ultrasonic cleaning should not be done.

(6) Electrostatic Discharge (ESD)

The products are sensitive to static electricity or surge voltage, An ESD event may damage its die or reduce its reliability performance. When handling the products, measures against electro static discharge, including the followings, are strongly recommended.

Eliminating the charge;

Wrist strap, ESD footwear and garments, ESD floors

Grounding the equipment and tools at workstation

ESD table / shelf mat (conductive materials)

Proper grounding techniques are required for all devices, equipment and machinery used in the assembly of the products, Also note that surge protection should be considered in the design of customer products.

If tools or equipment contain insulating materials, such as glass or plastic, proper measures against electro static discharge, including the followings are strongly recommended.

Dissipating the charge with conductive materials

Preventing the charge generation with moisture

Neutralizing the charge with ionizer

(7) Others

When using the LEDs, it must care that the reverse voltage will not exceed the absolute maximum rating.

The LED light is enough to injure human eyes, so it should avoid looking at LED light directly.

NOTE.

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