1. Scope of Application

These specifications are applied to the chip type LED lamp , model CLL600-0101A1-50CM1A2

2. Part code

CLL600-0101A1-50CM1A2

[1] [2] [3] [4] [5] [6] [7]

[1]Series
CLL : LED for general lighting

[2]Outline dimensions
600 : 2.0(L) x 0.8(W) x 0.9(H)

[3]Dies in series quantity
01 : 1

[4]Dies in parallel quantity
01 : 1

[5]Correlated color temperature
50 : 5000K

[6]Chromaticity range
C : Low Watt CE Chromaticity range

[7]CRI
M1 : Ra Min 80 Type

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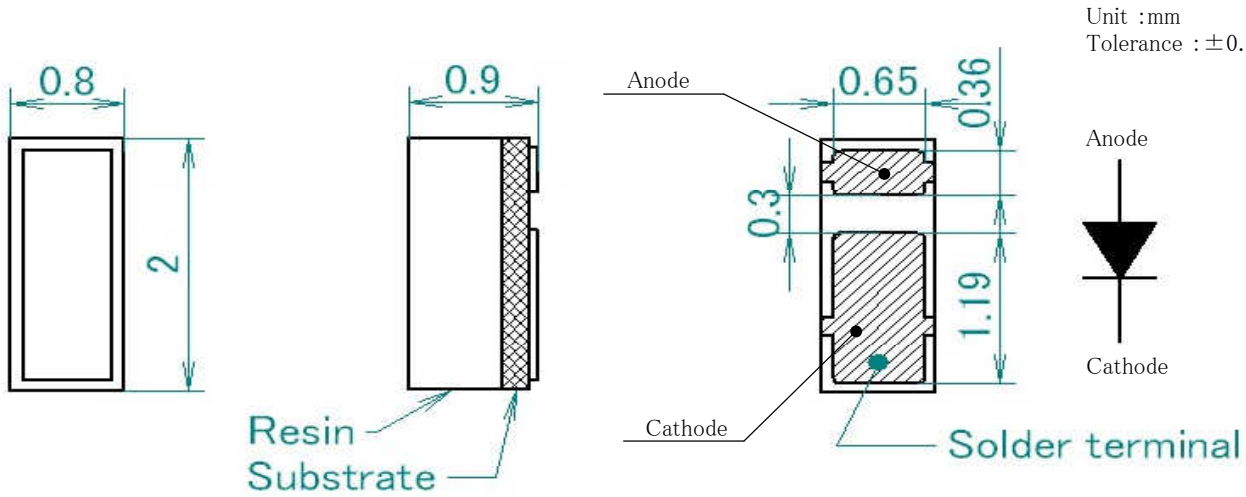
3. Outline drawing



4. Performance

(1) Absolute Maximum Rating

Parameter	Symbol	Raiting Value	Unit	
Power Dissipation	P_D	340	mW	
Forward Current	I_F	100	mA	
Forward Pulse Current	I_{FP}	120	mA	*1
Reverse Voltage	V_R	5	V	
Operating Temperature	T_{OP}	-30 ～ +85	C	
Storage Temperature	T_{ST}	-40 ～ +100	C	
Junction Temperature	Tj_{Max}	120	C	*2

*1 Forward Current : Duty<=1/10 , Pulse Width<=10msec
*2 D.C. Current : $Tj = Tc + Rj\text{-}c \times P_D$

Pulse Current : $Tj = Tc + Rj\text{-}c \times Pw$(Power Dissipation / One-Pulse) × Duty
*Ts : Solder terminal(Anode)temperature

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(2) Electro-optical Characteristics Ts=25C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=80mA	2.9	3.2	3.5	V
Reverse Current	I_R	V_R=5V	-	-	100	μA
Thermal Resistance	Rj-s *1	Junction-solder	-	90	-	C/W
Luminous Flux	φ_V	I_F=80mA	20.8	26.0	32.5	lm
General Color Rendering Index	Ra	I_F=80mA	80	85	-	-

*1 Thermal Resistance : Junction - Solder terminal (Anode)

Ranking (Condition : I_F=80mA , Ts=25C)

Parameter	Symbol	Rank	Min.	Max.	Unit
Forward Voltage	V_F	Q	2.9	3.1	V
		R	3.1	3.3	
		S	3.3	3.5	
Luminous Flux	φv	B	20.8	24.7	lm
		C	24.7	28.6	
		D	28.6	32.5	

Chromaticity coordinates (Condition : I_F=80mA ,Ts=25C)

Color Rank	x	y	Color Rank	x	y
1	0.343	0.366	2	0.355	0.376
	0.331	0.356		0.343	0.366
	0.331	0.339		0.342	0.347
	0.342	0.347		0.352	0.356

Color Rank	x	y	Color Rank	x	y
3	0.342	0.347	4	0.352	0.356
	0.331	0.339		0.342	0.347
	0.331	0.322		0.340	0.329
	0.340	0.329		0.350	0.336

*1 The tolerance of measurement at our tester is VF±3% , φv±7% , Chromaticity(x,y)±0.01

delivered.

Except designation of a delivery proportion of each rank.

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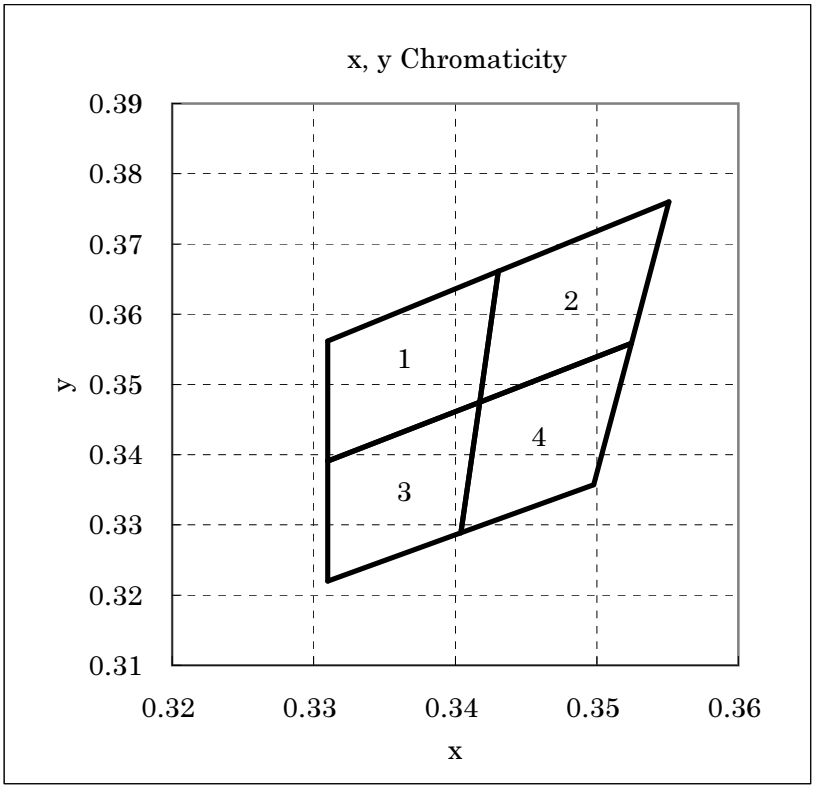

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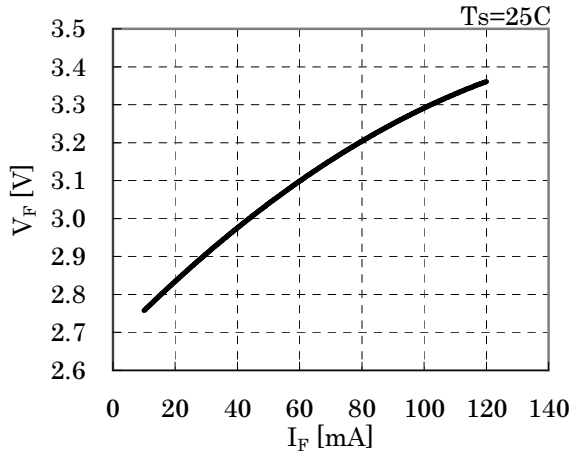
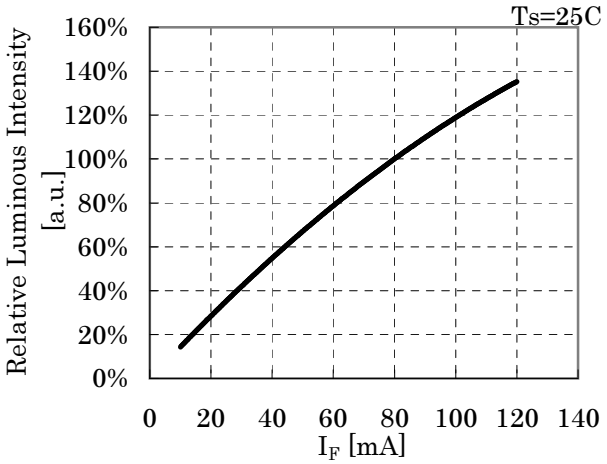
5. Characteristics

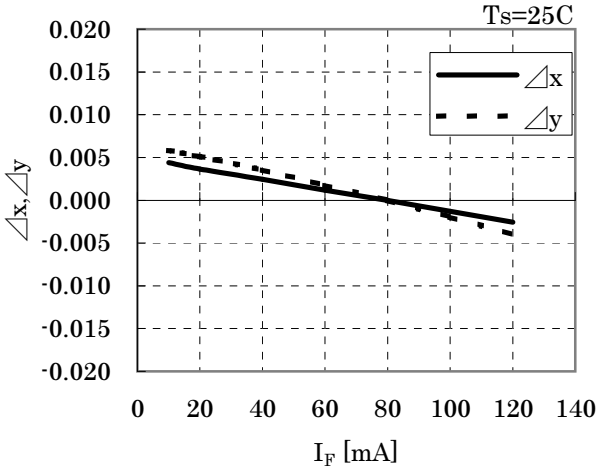
・Forward Current vs. Forward Voltage



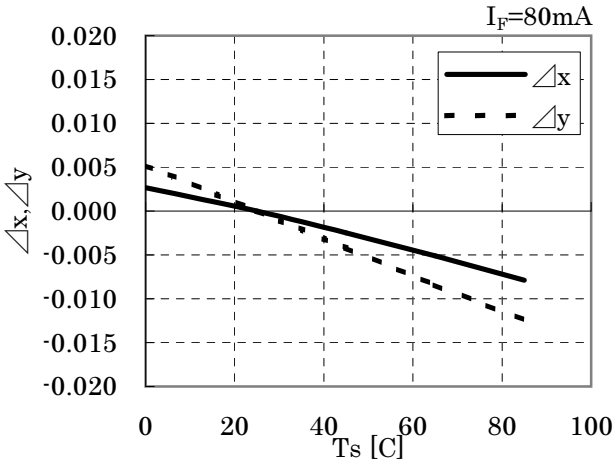
・Forward Current vs. Relative Luminous Intensity



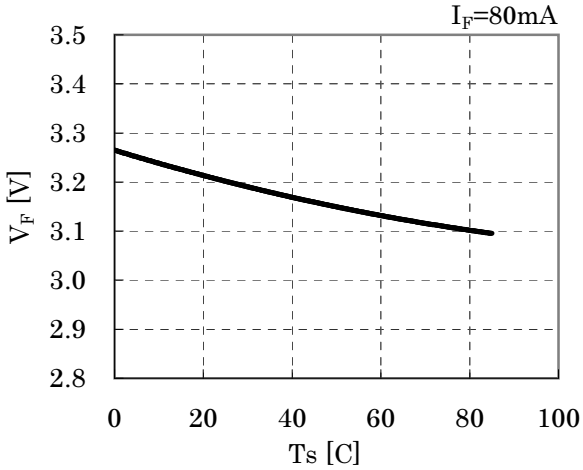
・Forward Current vs. Chromaticity Coordinate



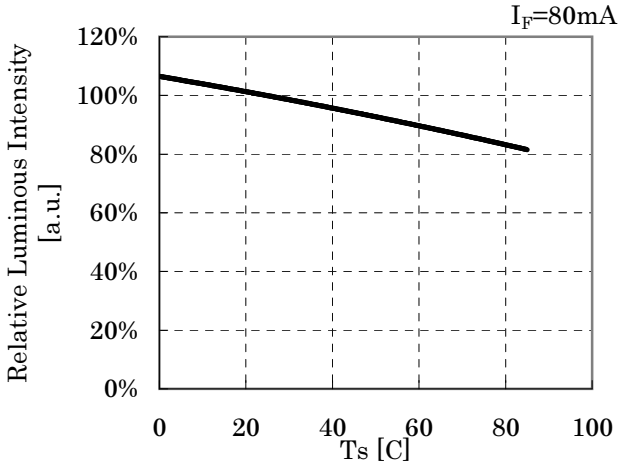
・Solder Temperature vs. Chromaticity Coordinate



・Solder Temperature vs. Forward Voltage



・Solder Temperature vs. Relative Luminous Intensity



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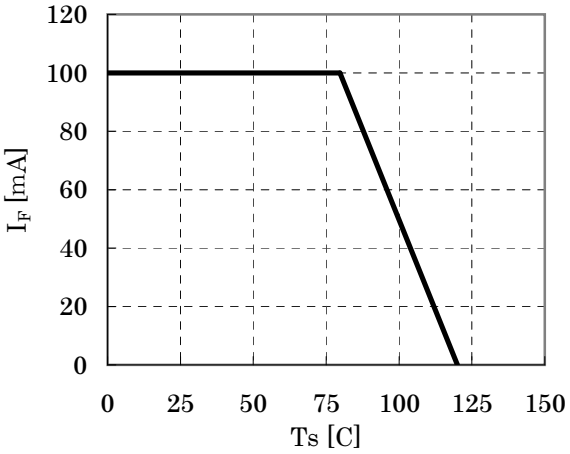
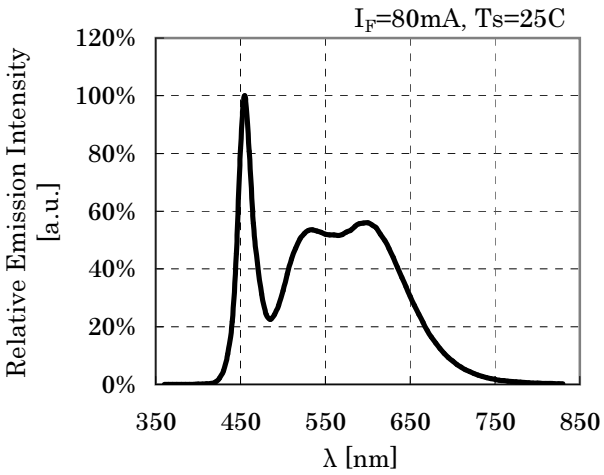
・Solder Temperature vs. Allowable Forward Current

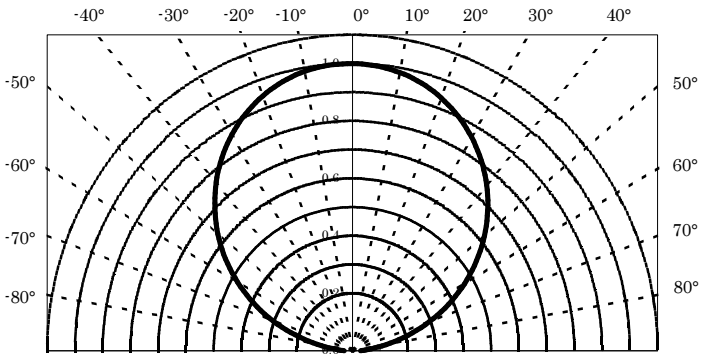


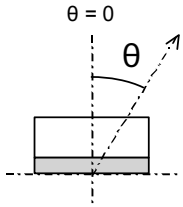
・Spectrum



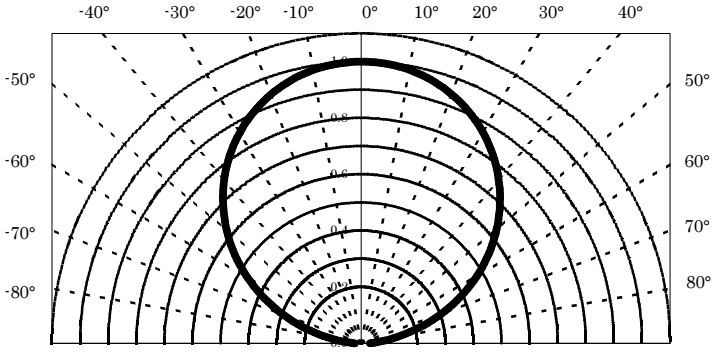
・Directive Characteristic

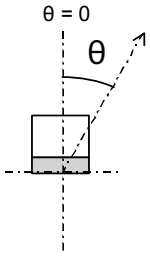
I_F=80mA Ts=25℃





I_F=80mA Ts=25℃





LED chip is mounted on White color PCB.

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6. Reliability

(1) Details of the tests

Test Item	Test Condition
Continuous Operation Test	Ta=60C, I_F=80mA , 1000 hours(with Al-fin)
	Ta=80C, I_F=80mA , 1000 hours(with Al-fin)
Low Temperature Storage Test	Ta=-40C , 1000 hours
High Temperature Storage Test	Ta=100C, 1000 hours
Moisture-proof Test	Ta=60C, 90%RH, 1000 hours
Thermal Shock Test	Ta=-40C 30minutes～100C 30minuets, 100cycle

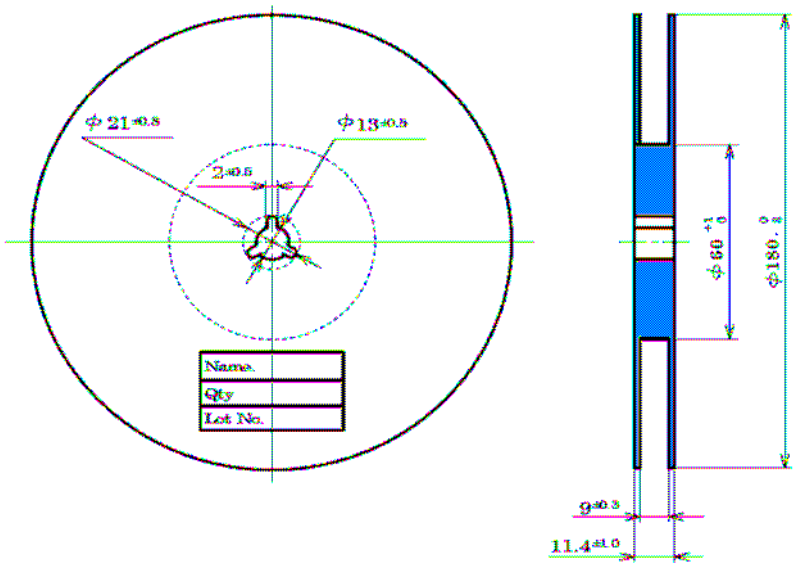
(2) Judgment Criteria of Failure for Reliability Test Ta=25C

Measuring Item	Symbol	Measuring Condition	Judgment Criteria for Failure
Forward Voltage	V_F	I_F=80mA	> U×1.2
Reverse Current	I_R	V_F=5V	> U×2
Luminous Flux	ϕ V	I_F=80mA	< S×0.7

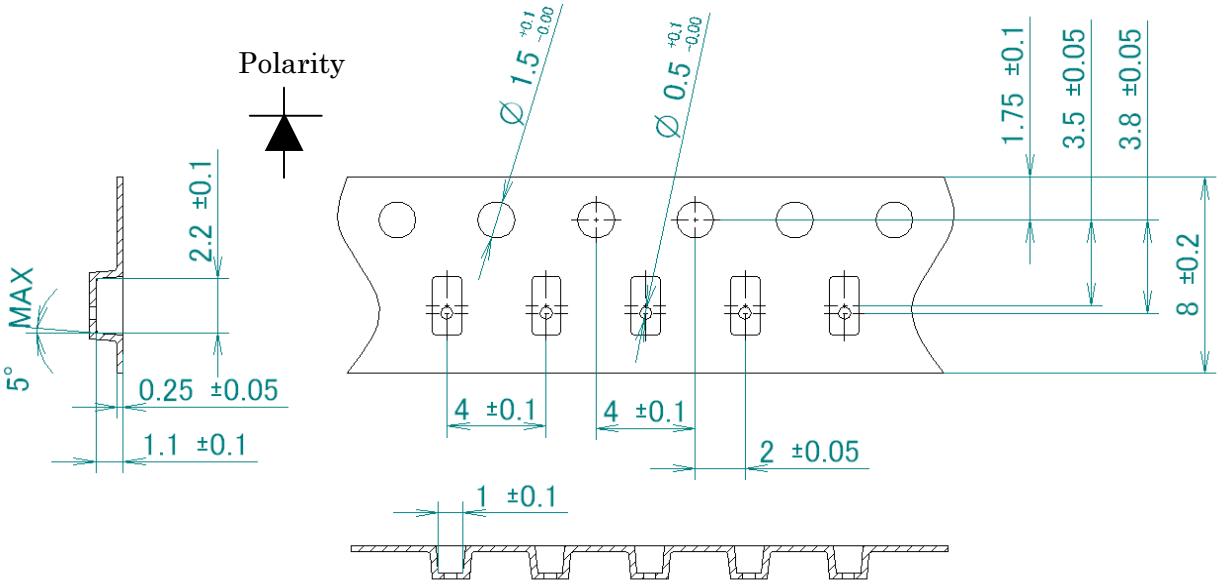
U defines the upper limit of the specified characteristics. S defines the initial value.

7. Taping Specifications (in accordance with JIS standard)

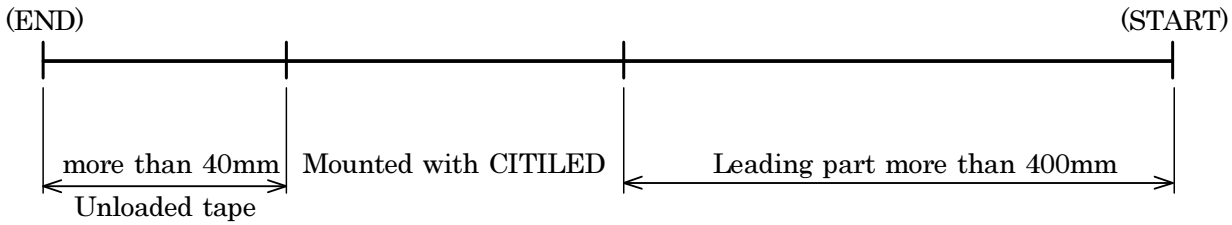
(1) Shape and Dimensions of Reel (Unit: mm)



(2) Dimensions of Tape (Unit: mm)



(3) Configuration of Tape



(4) Quantity: 2500pcs/reel

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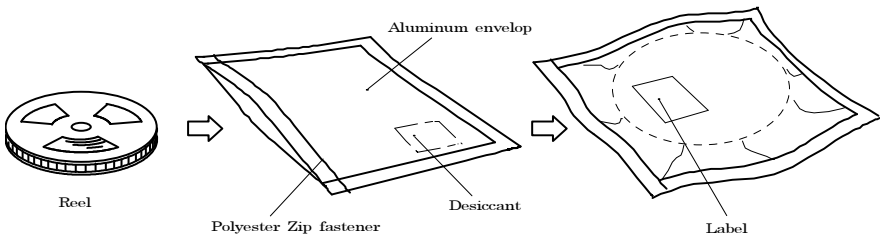
8. Packing Specifications

8-1. Moisture-proof Packing

To prevent moisture absorption during transportation and storage, reels are packed in aluminum envelopes which contain a desiccant with a humidity indicator.



8-2. Storage

To prevent moisture absorption, it is strongly recommended that reels (in bulk or taped) should be stored in the dry box (or the desiccator) with a desiccant as the appropriate storage place. If not, the following is recommended.

Temperature : 5~30C
Humidity : 60%RH max.

The devices should be mounted as soon as possible after unpacking. If you store the unpacked reels, please store them in the dry box or seal them into the envelop again.

9. Precautions

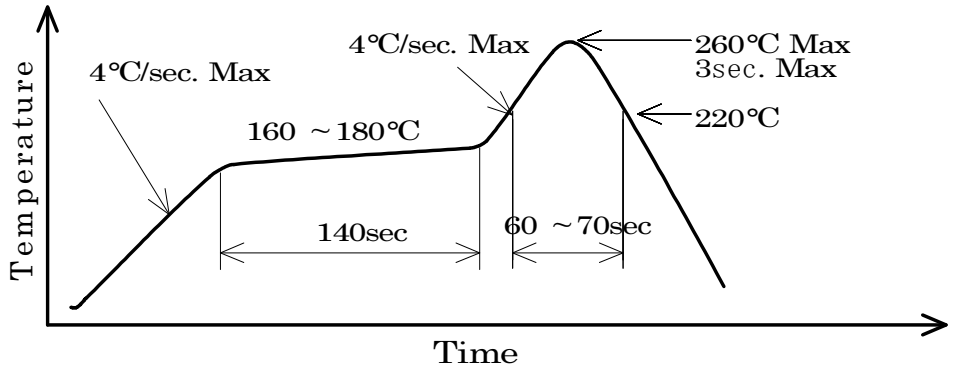
9-1. Soldering

(1) Lead free soldering

1) Following soldering paste is recommended
Melting temperature : 216 ~ 220C.
Composition : Sn 3.5Ag 0.75Cu

2) The temperature profile at the top surface of the parts is recommended as shown below.

3) It is requested that products should be handled after their temperature has dropped down to the normal room temperature



9-2. Washing

(1) When washing after soldering is needed, following conditions are requested.

a) Washing solvent: Pure Water

b) Temperature, time: 50C or less × 30 seconds max.

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9-3. Eye Safety

- The International Electrical Commission (IEC) published in 2006 IEC 62471 *"2006 Photobiological safety oflamps and lamp systems"* which includes LEDs within its scope. When sorting single LEDs according to IEC 62471, most LEDs can be classified as belonging to either Exempt Group or Risk Group 1.

- Optical characteristics of LEDs such as radiant flux, spectrum and light distribution are factors that affect the risk group determination of the LED, and especially a high-power LED, that emits light containing blue wavelengths, may have properties equivalent to those of Risk Group 2.

- Great care should be taken when directly viewing an LED that is driven at high current, has multiple uses as a module or when focusing the light with optical instruments, as these actions may greatly increase the hazard to your eyes.

- In addition, LED sources that were included within the scope of IEC 60825-1 / Edition 1.2 "laser safety standard", published 2001 were removed from the scope of the IEC 60825-1 / Edition 2.0 revised 2007.

- However, keep in mind that some countries and regions have adopted standards based on the IEC laser safety standard IEC 60825-1:2001 which includes LEDs within its scope.

9-4. Other directions

(1) It is requested to avoid any stress added to the resin portion while it is heated.

(2) It is requested to avoid any friction by sharp metal nail etc. to the resin portion.

(3) If the product might to be used under the following conditions, the customer must evaluate its appropriateness them. This product is not designed for use under the following conditions. in places where the product might:
- get wet due to rain
- suffer from damage caused by salt.
- be exposed to corrosive gas such as Cl, H2S, NH3, SO2, Nox and so on.
- be exposed to dust, fluid or oil.

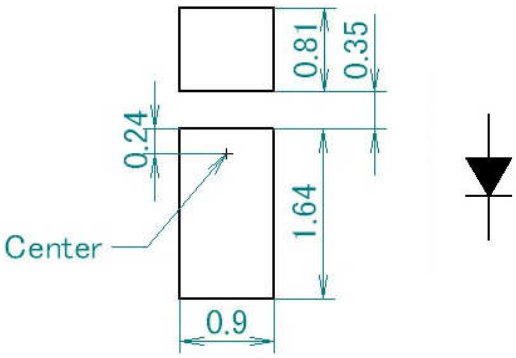
10. Designing precautions

1. The current limiting resistor should be placed in the circuit so that is driven within its rating. Also avoid reverse voltage (over-current) applied instantaneously when ON or OFF.

2. When pulse driving current is applied, average current consumption should be within the rating. Also avoid reverse voltage applied when put off.

3. Recommended soldering pattern

< For reflow soldering >

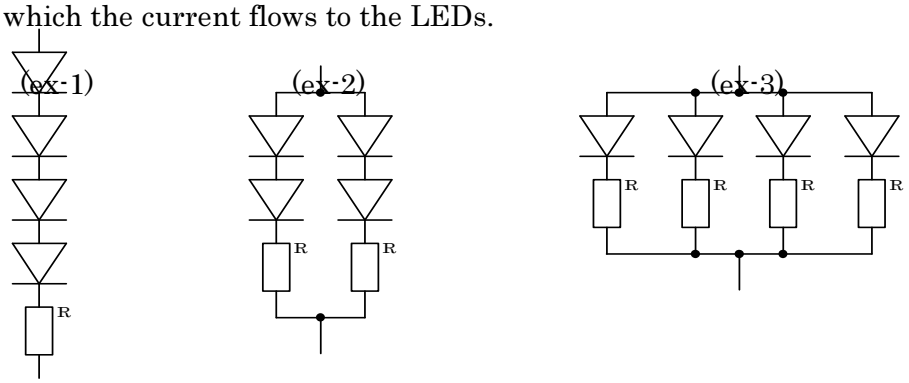


Unit : mm

Mountability and solderability need to be optimized with actual conditions such as amount of solder, reflow temperature applied in the process.

4. When assembling the circuit board into the finished products, care must be taken to avoid the component parts from touching other parts.

5. When using multiple LEDs, it is required to connect a current limiting resistor on each path which the current flows to the LEDs.



6. Other
This product complies with RoHS directives.

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11. Precautions with regard to product use

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