



**EVERLIGHT ELECTRONICS CO.,LTD.**

# DATA SHEET

**PART NO. : 25-21/Y2C-APRB/2A**

**DATE :**

**DEPARTMENT : R.D.3**

**REVISION : 1.0**

<b>RECEIVED</b>			
<input checked="" type="checkbox"/> MASS PRODUCTION			
<input type="checkbox"/> PRELIMINARY			
<input type="checkbox"/> CUSTOMER DESIGN			
DEVICE NUMBER : DSE-251-Y01			
PAGE : 11			
CUSTOMER	DESIGNER	CHECKER	APPROVER
	JESSICA CHANG	JEFF TSAI	CHARLES CHANG

REV	DESCRIPTION	RELEASE DATE

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TEL : 886-2-2267-2000,2266-9936 ( 22 Lines )

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<http://www.everlight.com>



**Package Type:**

SMD For PCB Type

11-21	19-215
12-21	19-215A
12-215	19-217A
15-21	22-21
15-215	23-21
16-213	23-21B
17-21	24-21
17-215	25-21
19-21	27-21
19-21A	42-21

**Dominant Wavelength Groups:**

According to the difference wavelength to define  
 None: No definition  
 A : Standard wavelength definition.  
 B : Range of wavelength definition is more narrowly than group A.  
 C : Range of wavelength definition is more narrowly than group A, but the value is different with group B.  
 F : The wavelength definition in special specification.

The dominant wavelength data did not including ±1nm testing tolerance.

**Test Forward Current:**

None: 20 mA  
 Y : 5 mA  
 Z : 10 mA

**Taping Quantity:**

- 1: 1000 pcs (Taping)
- 2: 2000 pcs (Taping)
- 3: 3000 pcs (Taping)
- 5: 5000 pcs (Taping)
- C : 1500 pcs (Taping)
- D : 10000 pcs (Taping)

**Packing Method :**

- A: Reverse-side placement
- B: Reverse-side placement (Anode toward the sprocket hole)
- C: Right-side placement
- D: Right-side placement (Anode toward the sprocket hole)
- T: Top-side placement
- R: Top-side placement (Anode toward the sprocket hole)

19 - 21 / B H C - A N1 P2 M / 3 T

**Emission Color:**

- R: Red (λ d: 640nm, 630nm, 625nm)
- S: Sunset Orange (λ d: 615nm, 605nm)
- Y: Yellow (λ d: 595nm, 590nm)
- G: Green (λ d: 570nm, 565nm, 560nm, 525nm, 505nm)
- B: Blue (λ d: 470nm)
- W: White x=0.32 y=0.31

The ordinal number that base on diffence electro-optical characteristics within chip.

1,2 ..... 7,8,9, A,B.....X,Y,Z

**Resin Color:**

- C: Water Clear
- W: White Diffused
- D: Diffused

**Luminous Intensity Groups:**

- |                   |     |                   |
|-------------------|-----|-------------------|
| C0: 0.28 ... 0.45 | R ⇨ | R1: 112 ... 140   |
| D0: 0.45 ... 0.70 | S ⇨ | R2: 140 ... 180   |
| E0: 0.70 ... 1.1  | T ⇨ | S1: 180 ... 225   |
| F0: 1.1 ... 1.8   | U ⇨ | S2: 225 ... 285   |
| G0: 1.8 ... 2.8   | V ⇨ | T1: 285 ... 360   |
| H0: 2.8 ... 4.5   | W ⇨ | T2: 360 ... 450   |
| J0: 4.5 ... 7.2   | X ⇨ | U1: 450 ... 565   |
| K0: 7.2 ... 11.5  | Y ⇨ | U2: 565 ... 715   |
| L1: 11.5 ... 14.5 |     | V1: 715 ... 900   |
| L2: 14.5 ... 18.0 |     | V2: 900 ... 1120  |
| M1: 18.0 ... 22.5 |     | W1: 1120 ... 1420 |
| M2: 22.5 ... 28.5 |     | W2: 1420 ... 1800 |
| N1: 28.5 ... 36.0 |     | X1: 1800 ... 2250 |
| N2: 36.0 ... 45.0 |     | X2: 2250 ... 2850 |
| P1: 45.0 ... 57.0 |     | Y1: 2850 ... 3600 |
| P2: 57.0 ... 72.0 |     | Y2: 3600 ... 4500 |
| Q1: 72.0 ... 90.0 |     |                   |
| Q2: 90.0 ... 112  |     |                   |

Unit: mcd

The luminous intensity data did not including ±15% testing tolerance.

**Forward Voltage Groups:**

None: No definition

The VF definition as follows:

		Unit: V			
Forward Voltage Group	Bin	Min.	Max.		
C	0	1.55	1.75		
	1	1.75	1.95		
	2	2.15	2.35		
	3	2.35	2.55		
	4	2.55	2.75		
M	5	2.75	3.05		
	6	3.05	3.35		
	7	3.35	3.65		
	8	3.65	3.95		
N	9	2.50	2.70		
	10	2.70	2.90		
	11	2.90	3.10		
	12	3.10	3.30		
	13	3.30	3.50		
	14	3.50	3.70		
	P	15	2.70	2.85	
		16	2.85	3.00	
		17	3.00	3.15	
		18	3.15	3.30	

The forward voltage data did not including ±0.1V testing tolerance.

# ANNEX



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REV.: 2.0

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■ Dominant Wavelength Groups:

Y1,Y2,Y5		Range			
Dom . Wavelength Groups		Bin	Min.	Max.	Unit
A	C	D3	585.5	588.5	nm
		D4	588.5	591.5	nm
		D5	591.5	594.5	nm

Y3		Range			
Dom . Wavelength Group		Bin	Min.	Max.	Unit
A		D4	588.5	591.5	nm
		D5	591.5	594.5	nm
		D6	594.5	597.5	nm
		D7	597.5	600.5	nm

■ Forward Voltage Groups:

Forward Voltage Groups				Range						
				Bin	Min.	Max.	Unit			
N	F	K	R	A	00	1.55	1.75	V		
					0	1.75	1.95	V		
				B	1	1.95	2.15	V		
					2	2.15	2.35	V		
					3	2.35	2.55	V		
					4	2.55	2.75	V		
				M	E	D	5	2.75	3.05	V
							6	3.05	3.35	V
							7	3.35	3.65	V
							8	3.65	3.95	V
				J	H	P	9	2.50	2.70	V
							10	2.70	2.90	V
							11	2.90	3.10	V
							12	3.10	3.30	V
13	3.30	3.50	V							
14	3.50	3.70	V							
V	W	X	Y	15	2.70	2.85	V			
				16	2.85	3.00	V			
				17	3.00	3.15	V			
				18	3.15	3.30	V			



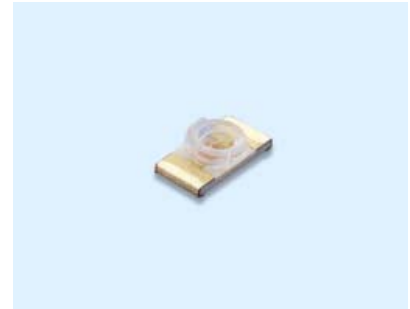
# Technical Data Sheet

## Reverse Package Chip LED

25-21/Y\_\_C Series \*1

### Features

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.



### Descriptions

- The 25-21 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

### Applications

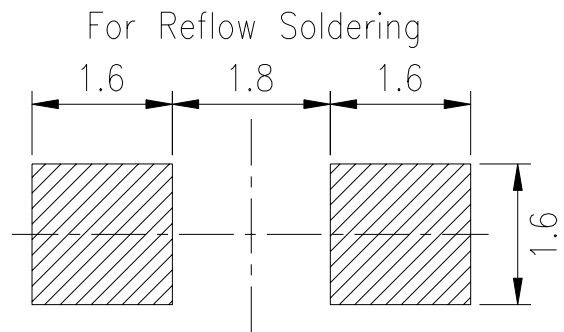
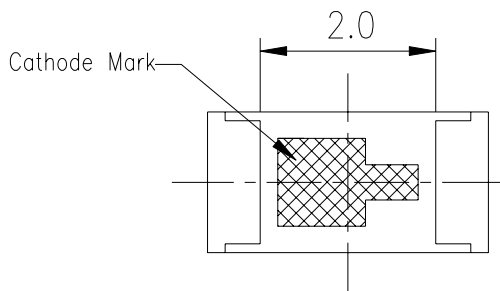
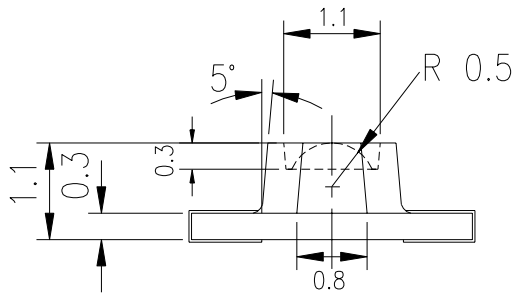
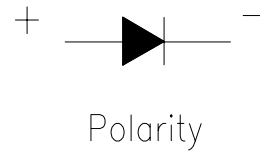
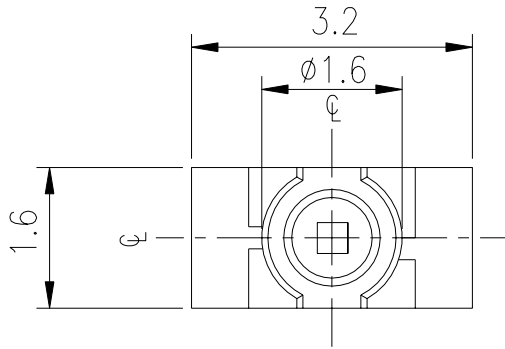
- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

### Device Selection Guide

Part No.	Chip		Lens Color
	Material	Emitted Color	
25-21/Y1C	GaAsP/GaP	Yellow	Water Clear
25-21/Y2C	AlGaInP	Brilliant Yellow	
25-21/Y3C		Yellowish Brown	

\*1. The series is included 25-21/Y1C,25-21/Y2C, and 25-21/Y3C.

Package Outline Dimensions



**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm

**Absolute Maximum Ratings (Ta=25°C)**

Series	Parameter	Symbol	Rating	Unit
25-21/Y_C Series	Reverse Voltage	V <sub>R</sub>	5	V
25-21/Y_C Series	Forward Current	I <sub>F</sub>	25	mA
25-21/Y1C			30	
25-21/Y_C Series	Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
25-21/Y_C Series	Storage Temperature	T <sub>stg</sub>	-40 ~ +90	°C
25-21/Y_C Series	Soldering Temperature	T <sub>sol</sub>	260 (for 5 seconds)	°C
25-21/Y_C Series	Electrostatic Discharge	ESD	2000	V
25-21/Y_C Series	Power Dissipation	P <sub>d</sub>	60	mW
25-21/Y1C			100	
25-21/Y_C Series	Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	60	mA

**25-21/Y\_C Series**
**Electro-Optical Characteristics (Ta=25°C)**

Part No.	Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
25-21/Y1C	Peak Wavelength	$\lambda_p$	----	585	----	nm	If=20mA
25-21/Y2C				591			
25-21/Y3C				598			
25-21/Y1C	Dominant Wavelength	$\lambda_d$	----	590	----	nm	
25-21/Y2C				589			
25-21/Y3C				595			
25-21/Y1C	Spectrum Radiation Bandwidth	$\Delta \lambda$	----	35	----	nm	
25-21/Y2C				15			
25-21/Y3C				16			
25-21/Y_C Series	Viewing Angle	$2\theta_{1/2}$	----	60	----	deg	
25-21/Y_C Series	Forward Voltage	V <sub>F</sub>	----	2.0	2.4	V	
25-21/Y_C Series	Reverse Current	I <sub>R</sub>	----	----	10	$\mu A$	V <sub>R</sub> =5V

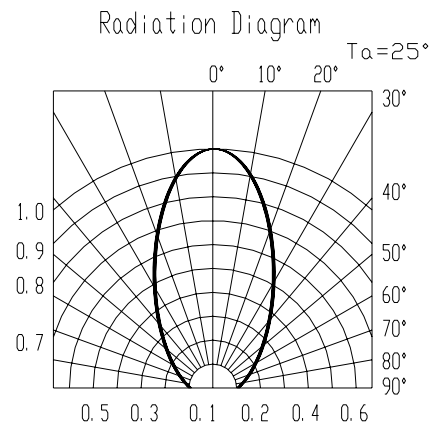
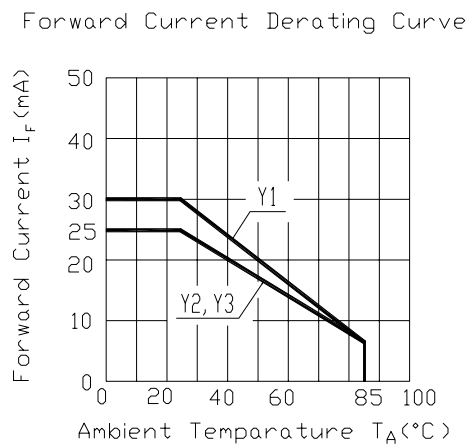
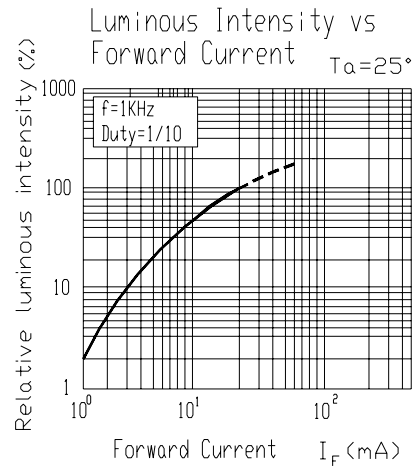
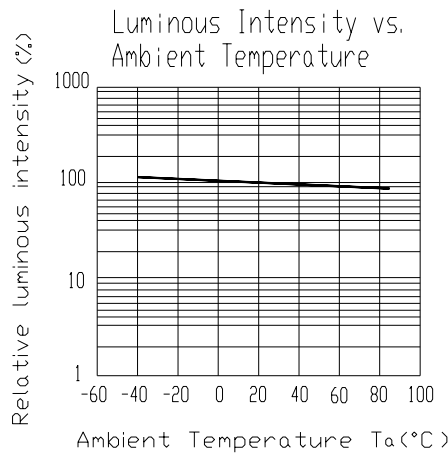
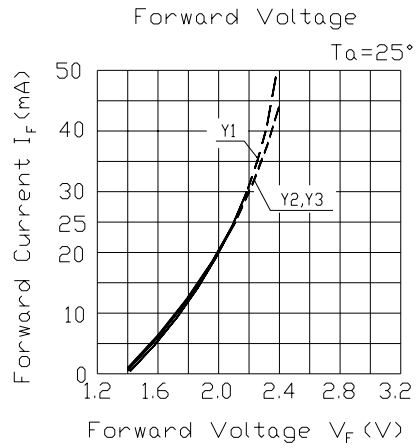
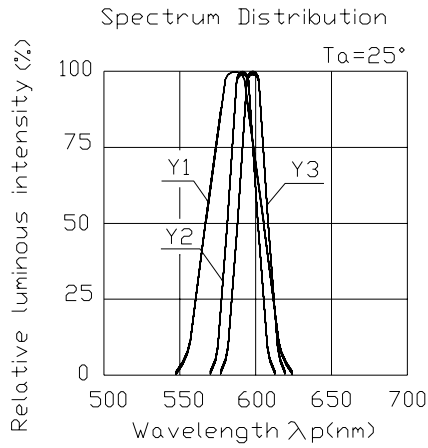
**25-21/Y\_\_C Series****25-21/Y\_\_C Series Explain Of Luminous Intensity:****IF=20mA**

Part No.	Parameter	Symbol	Typ.	Bin Code	Min.	Max.	Unit
25-21/Y1C-J0L	Luminous Intensity	Iv	6	J0	4.5	7.2	mcd
				K0	7.2	11.5	
				L	11.5	18.0	
25-21/Y2C-PR	Luminous Intensity	Iv	110	P	57.0	72.0	mcd
				Q	72.0	112	
				R	112	180	
25-21/Y2C-QS	Luminous Intensity	Iv	170	Q	72.0	112	mcd
				R	112	180	
				S	180	285	
25-21/Y2C-RT	Luminous Intensity	Iv	250	R	112	180	mcd
				S	180	285	
				T	285	450	
25-21/Y3C-PR	Luminous Intensity	Iv	110	P	57.0	72.0	mcd
				Q	72.0	112	
				R	112	180	
25-21/Y3C-QS	Luminous Intensity	Iv	170	Q	72.0	112	mcd
				R	112	180	
				S	180	285	
25-21/Y3C-RT	Luminous Intensity	Iv	250	R	112	180	mcd
				S	180	285	
				T	285	450	

**Note:**The luminous intensity data did not including  $\pm 15\%$  testing tolerance.



Typical Electro-Optical Characteristics Curves

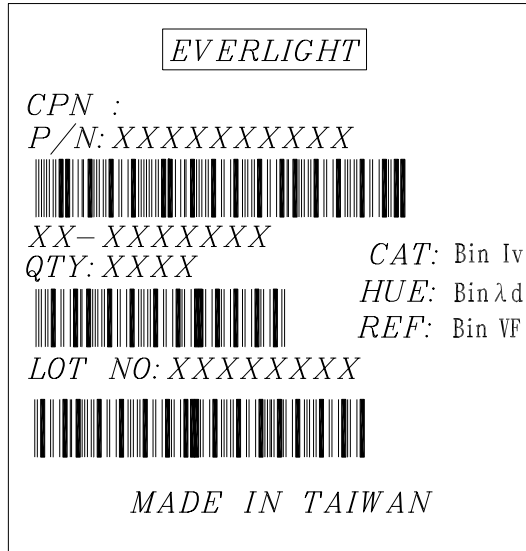


**Label explanation**

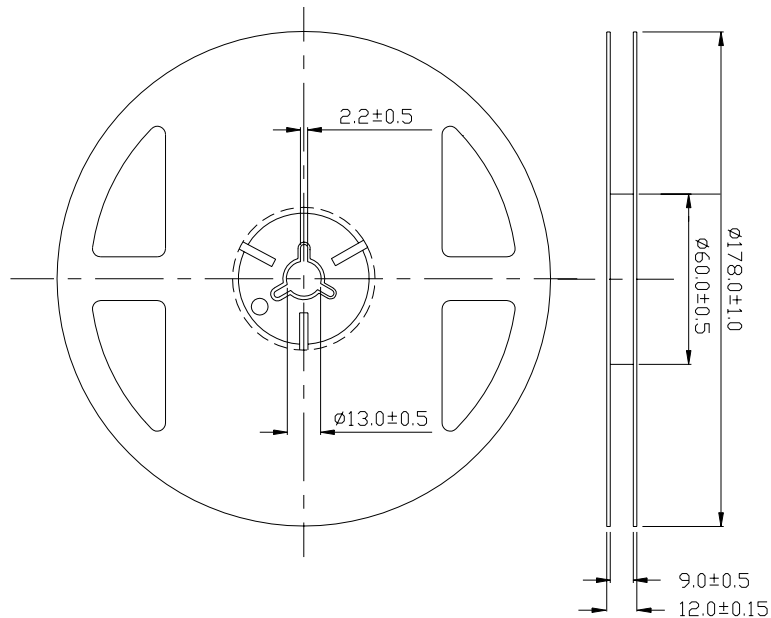
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**

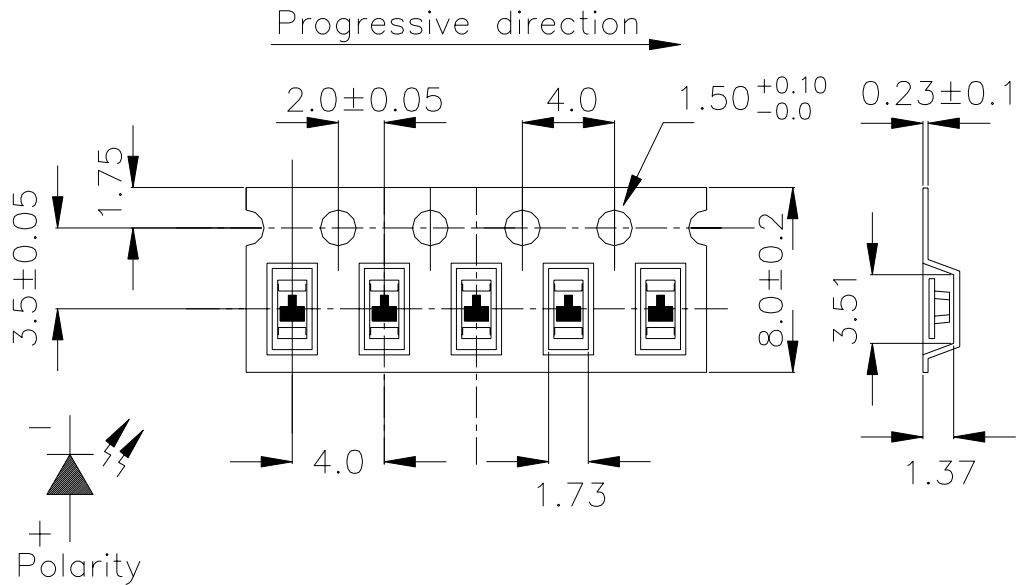


**Reel Dimensions**



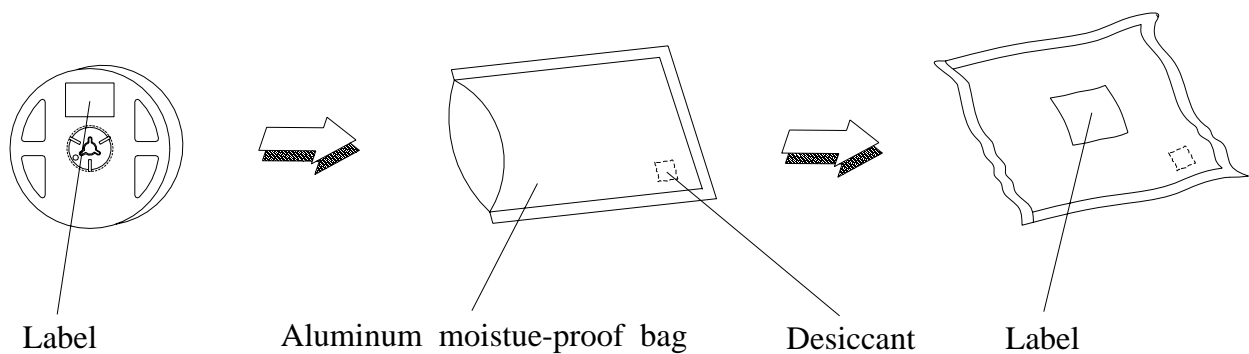
**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm

**Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel**



**Note:** The tolerances unless mentioned is ±0.1mm ,Unit = mm

**Moisture Resistant Packaging**



**Reliability Test Items And Conditions**

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 240°C ±5°C 5sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H : +100°C 5min ∫ 10 sec L : -10°C 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp. : -40°C	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	IF = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C/R.H85%	1000 Hrs.	22 PCS.	0/1

### Precautions For Use

#### 1. Over-current-proof

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change ( Burn out will happen ).

#### 2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.

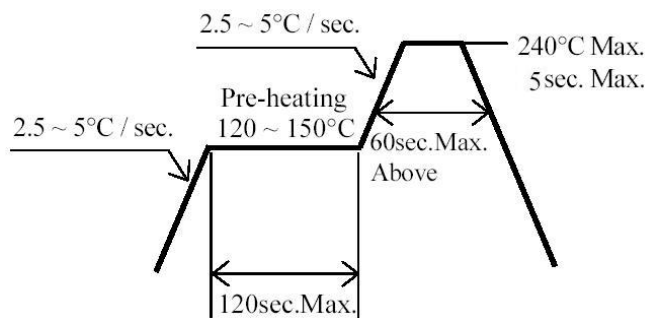
2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5°C for 24 hours.

#### 3. Soldering Condition

##### 3.1 Lead solder temperature profile



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

3.3 When soldering, do not put stress on the LEDs during heating.

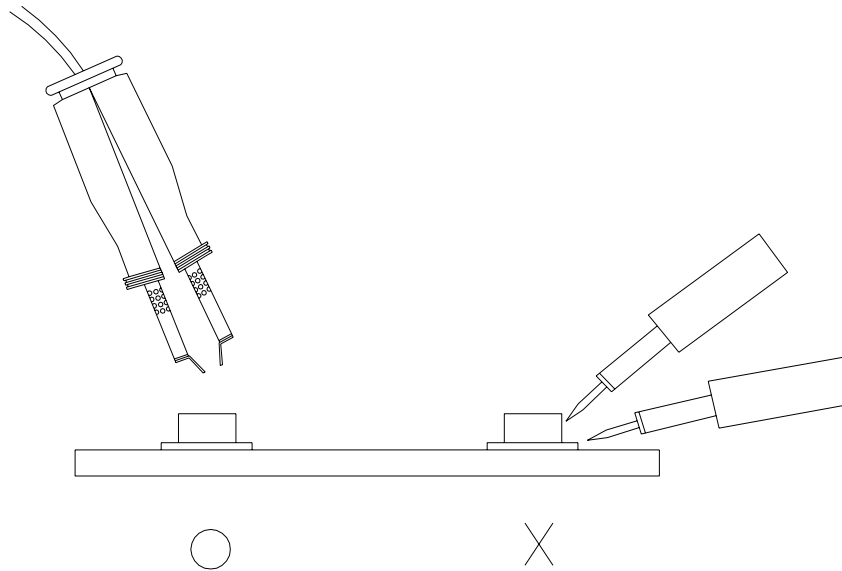
3.4 After soldering, do not warp the circuit board.

#### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 280°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

**5.Repairing**

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



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