

## Technical Data Sheet

### Top View LEDs

#### 67-21/LK2C-BX50702C6CB2/2T

#### Features

- P-LCC-2 package.
- Fluorescence Type
- High Luminous Intensity
- High Efficiency
- Pb-free.
- The product itself will remain within RoHS compliant version.



#### Descriptions

The white LED which was fabricated using a blue LED and a phosphor, and the phosphor is excited by blue light and emits yellow fluorescence.

The mixture of blue light and yellow light results in a white emission.

#### Applications

- OA Equipment
- Backlighting of Full Color LCD
- Automotive Equipment
- Replacement of Conventional Light Bulbs and Fluorescent Lamps

#### Device Selection Guide

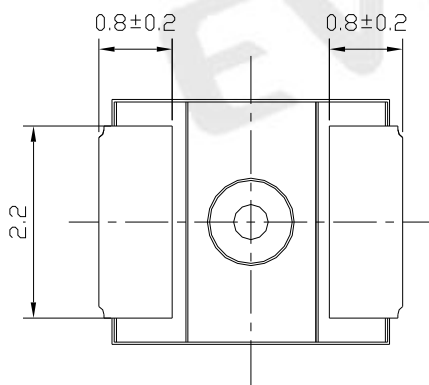
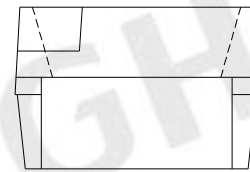
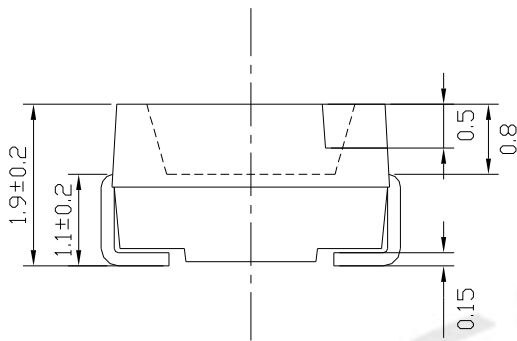
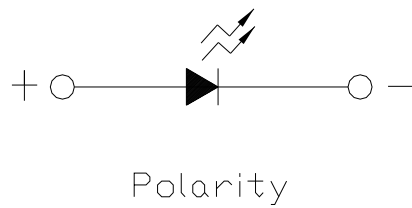
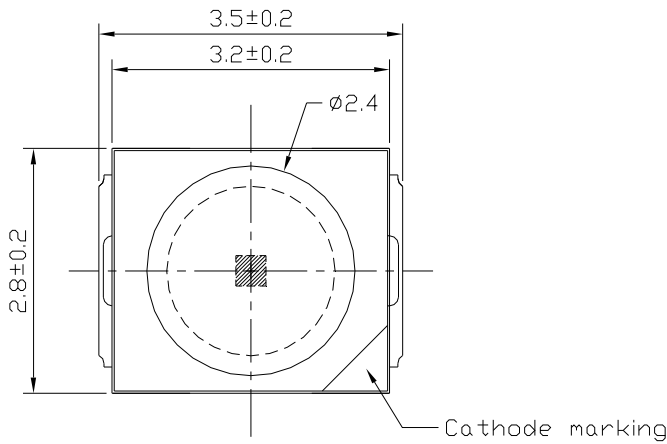
Chip	Emitted Color	Resin Color
Material		
InGaN	Pure White	Water Clear

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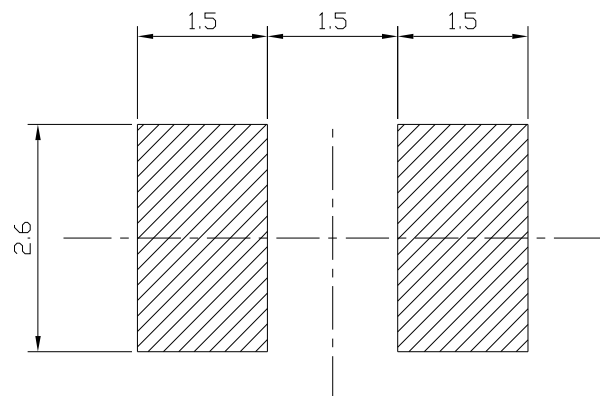
**Top View LEDs**

**67-21/LK2C-BX50702C6CB2/2T**

**Package Dimensions**



Recommended Solder Pad



**Note:** Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm

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#### Absolute Maximum Ratings (Ta=25 )

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	110	mW
Electrostatic Discharge	ESD	1000	V
Operating Temperature	Topr	-40 ~ +85	
Storage Temperature	Tstg	-40 ~ +90	
Soldering Temperature	Tsol	Reflow Soldering : 260 for 10 sec. Hand Soldering : 350 for 3 sec.	

#### Electro-Optical Characteristics (Ta=25 )

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Luminous Intensity	I <sub>V</sub>	2000	--	2600	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	--	120	--	deg	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	2.9	--	3.6	V	I <sub>F</sub> =20mA
Reverse Current	I <sub>R</sub>	--	--	50	μA	V <sub>R</sub> =5V
Color Rendering Index	----	70	----	----	----	I <sub>F</sub> =20mA

#### Note:

- 1.Tolerance of Luminous Intensity: ±11%
- 2.Tolerance of Forward Voltage: ±0.05V
- 3.Tolerance of Color Rendering Index : ± 2

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**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
2C	2000	2200	mcd	I <sub>F</sub> =20mA
4C	2200	2400		
6C	2400	2600		

**Bin Range of Forward Voltage**

Group	Bin Code	Min.	Max.	Unit	Condition
B2	36	2.9	3.0	V	I <sub>F</sub> =20mA
	37	3.0	3.1		
	38	3.1	3.2		
	39	3.2	3.3		
	40	3.3	3.4		
	41	3.4	3.5		
	42	3.5	3.6		

**Note:**

- 1.Tolerance of Luminous Intensity:  $\pm 11\%$
- 2.Tolerance of Forward Voltage:  $\pm 0.05V$

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Top View LEDs

**67-21/LK2C-BX50702C6CB2/2T**

Bin Range of Chromaticity Coordinates

**I<sub>F</sub>=20mA**

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
5000K ~5650K	V5-1	0.3290	0.3451	V5-3	0.3377	0.3583
		0.3289	0.3510		0.3379	0.3643
		0.3377	0.3583		0.3469	0.3717
		0.3374	0.3522		0.3464	0.3655
	V5-2	0.3289	0.3510	V5-4	0.3374	0.3522
		0.3288	0.3569		0.3377	0.3583
		0.3379	0.3643		0.3464	0.3655
		0.3377	0.3583		0.3458	0.3592
	V6-1	0.329	0.331	V6-3	0.3371	0.3450
		0.329	0.338		0.3374	0.3522
		0.3371	0.345		0.3458	0.3592
		0.3368	0.3378		0.3451	0.3517
	V6-2	0.3290	0.3380	V6-4	0.3368	0.3378
		0.3290	0.3451		0.3371	0.3450
		0.3374	0.3522		0.3451	0.3517
		0.3371	0.3450		0.3444	0.3442

Notes: Tolerance of Chromaticity Coordinates : ±0.01

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**Top View LEDs**

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**Bin Range of Chromaticity Coordinates**

**I<sub>F</sub>=20mA**

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
5650K ~6300K	W5-1	0.3160	0.3330	W5-3	0.3223	0.3448
		0.3155	0.3385		0.3220	0.3505
		0.3223	0.3448		0.3290	0.3570
		0.3225	0.3390		0.3290	0.3510
	W5-2	0.3155	0.3385	W5-4	0.3225	0.3390
		0.3150	0.3440		0.3223	0.3448
		0.3220	0.3505		0.3290	0.3510
		0.3223	0.3448		0.3290	0.3450
	W6-1	0.3170	0.3200	W6-3	0.3228	0.3323
		0.3165	0.3265		0.3225	0.3390
		0.3228	0.3323		0.3290	0.3450
		0.3230	0.3255		0.3290	0.3380
	W6-2	0.3165	0.3265	W6-4	0.3230	0.3255
		0.3160	0.3330		0.3228	0.3323
		0.3225	0.3390		0.3290	0.3380
		0.3228	0.3323		0.3290	0.3310

**Notes:** Tolerance of Chromaticity Coordinates : ±0.01

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**Bin Range of Chromaticity Coordinates**

**I<sub>F</sub>=20mA**

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
6300K ~7000K	X5-1	0.3050	0.3220	X5-3	0.3098	0.3330
		0.3040	0.3275		0.3090	0.3385
		0.3098	0.3330		0.3150	0.3440
		0.3105	0.3275		0.3155	0.3385
	X5-2	0.3040	0.3275	X5-4	0.3105	0.3275
		0.3030	0.3330		0.3098	0.3330
		0.3090	0.3385		0.3155	0.3385
		0.3098	0.3330		0.3160	0.3330
	X6-1	0.3080	0.3110	X6-3	0.3115	0.3215
		0.3065	0.3165		0.3105	0.3275
		0.3115	0.3215		0.3160	0.3330
		0.3125	0.3155		0.3165	0.3265
	X6-2	0.3065	0.3165	X6-4	0.3125	0.3155
		0.3050	0.3220		0.3115	0.3215
		0.3105	0.3275		0.3165	0.3265
		0.3115	0.3215		0.3170	0.3200

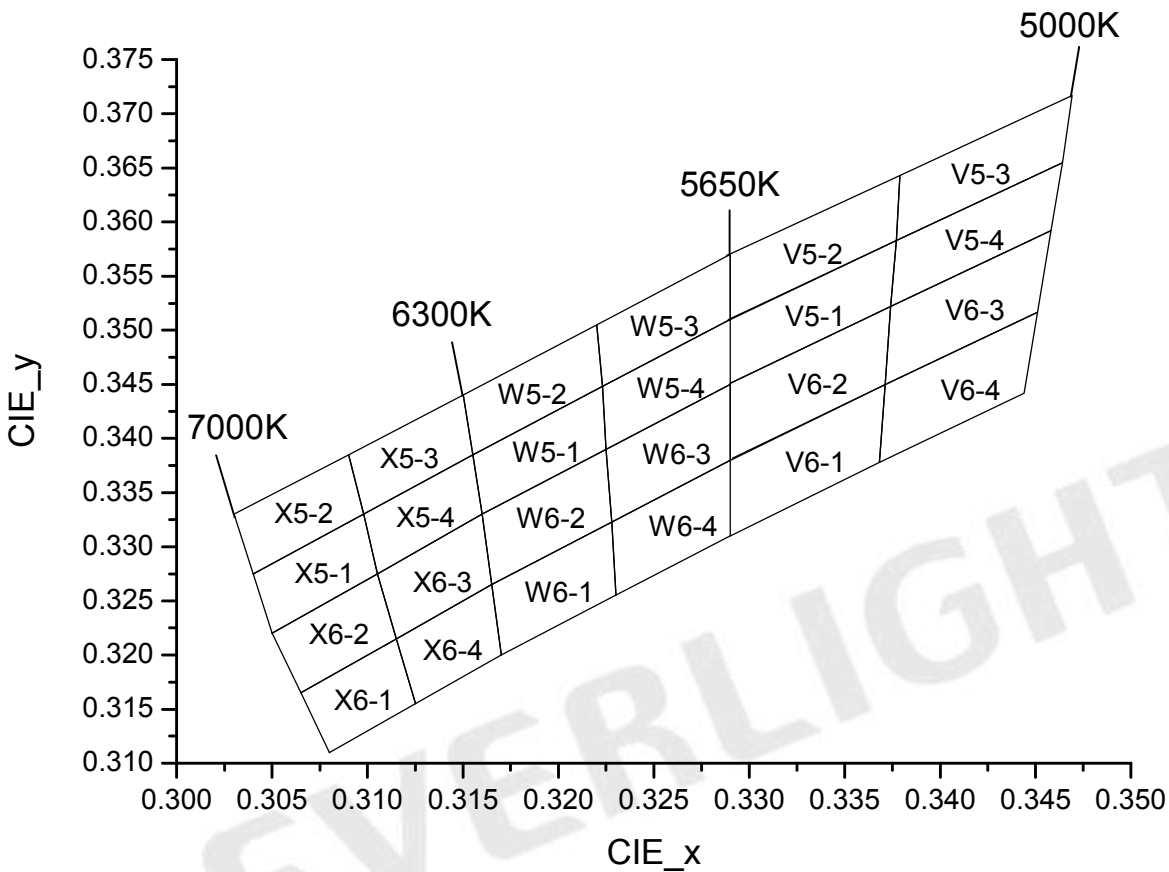
**Notes:** Tolerance of Chromaticity Coordinates : ±0.01

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**The C.I.E. 1931 Chromaticity Diagram**



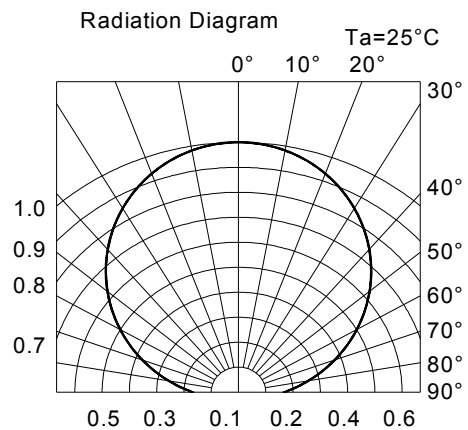
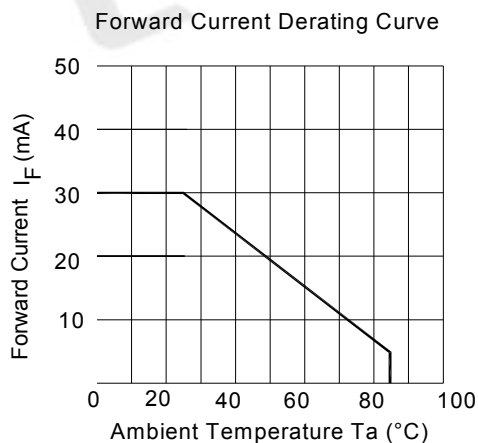
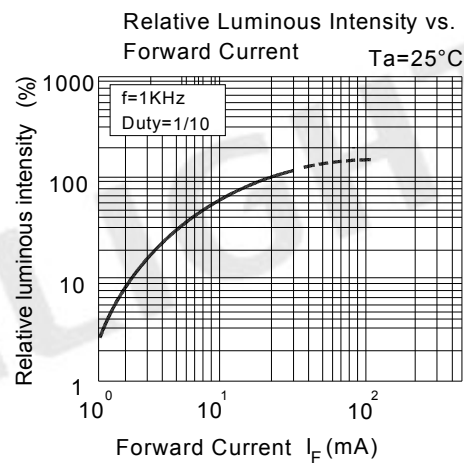
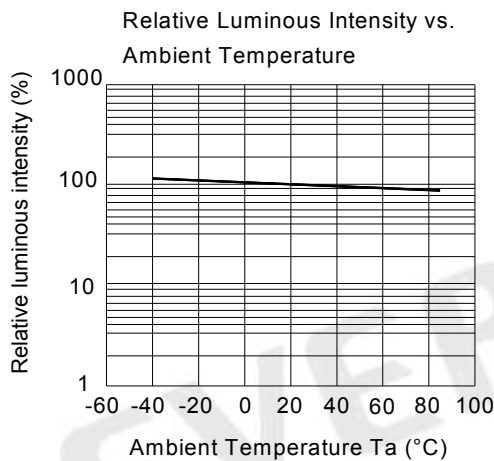
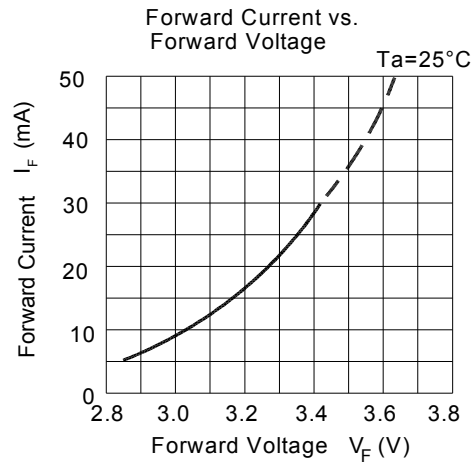
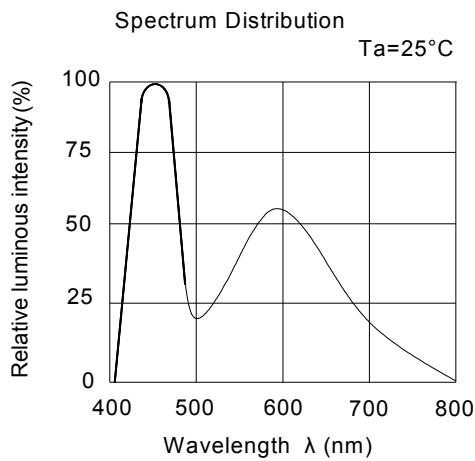


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**Top View LEDs**

**67-21/LK2C-BX50702C6CB2/2T**

**Typical Electro-Optical Characteristics Curves**



**Technical Data Sheet**

**Top View LEDs**

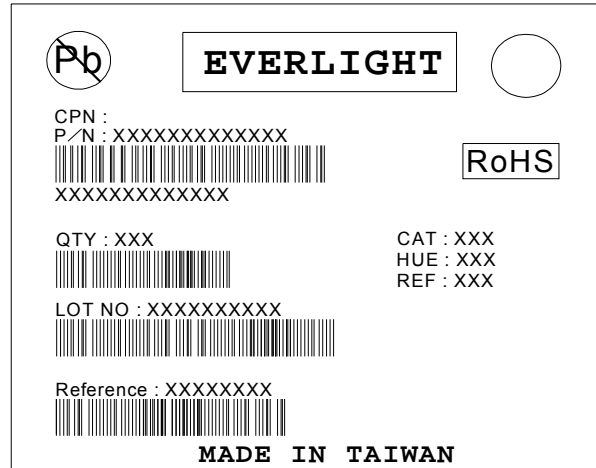
**67-21/LK2C-BX50702C6CB2/2T**

**Label Explanation**

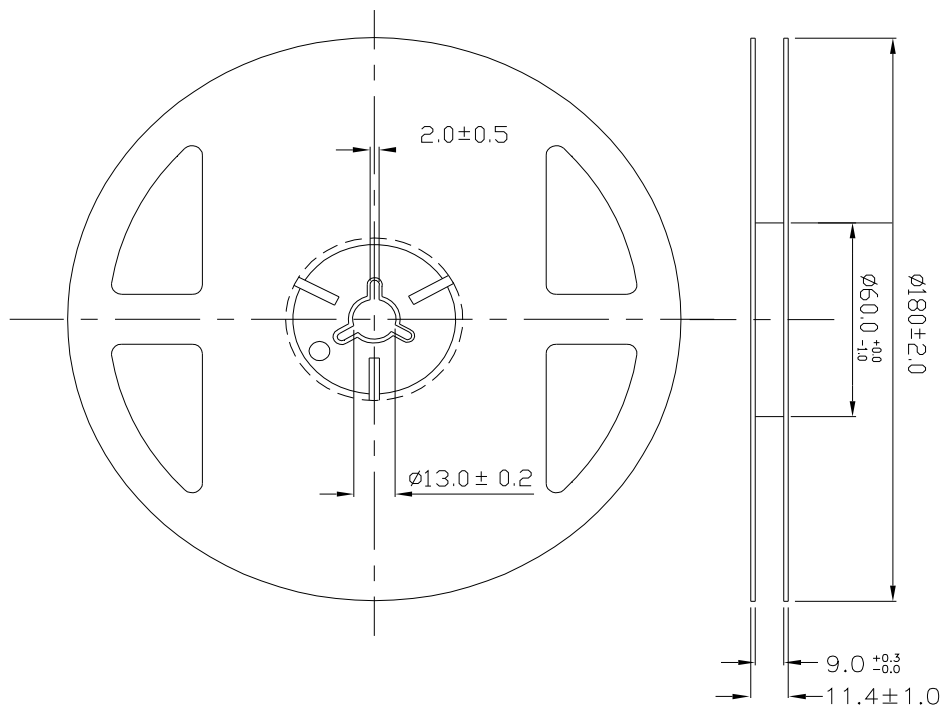
**CAT: Luminous Intensity Rank**

**HUE: Chromaticity Coordinates**

**REF: Forward Voltage Rank**



**Reel Dimensions**



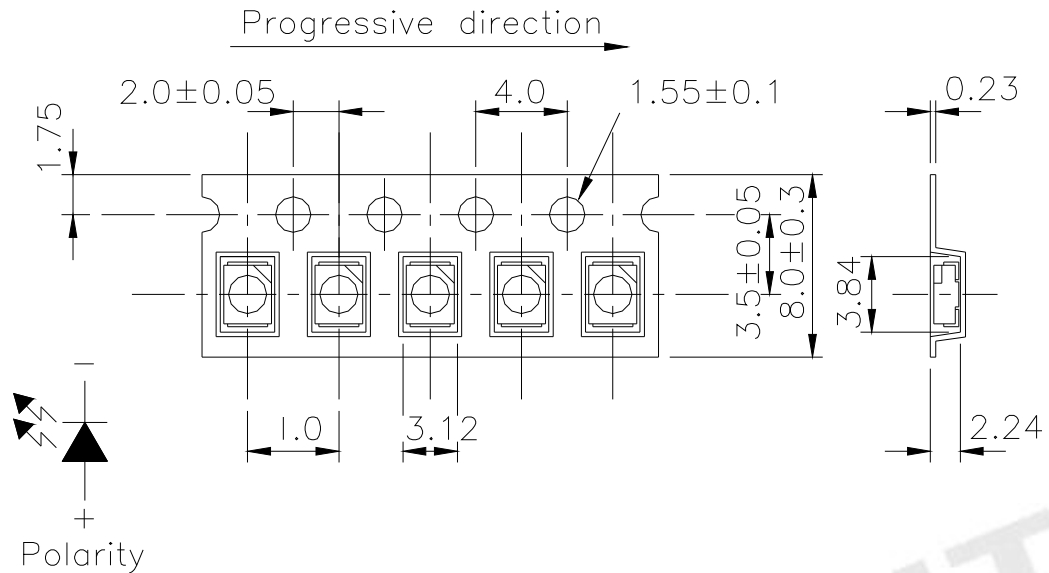
**Note:** Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm

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**Top View LEDs**

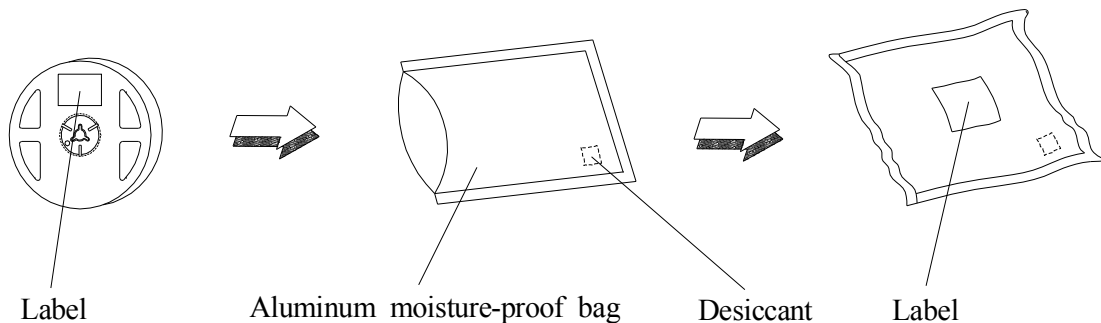
**67-21/LK2C-BX50702C6CB2/2T**

**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel.**



- Note:** 1. Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm  
2. Minimum packing amount is 500 or 1000 pcs per reel

**Moisture Resistant Packaging**



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#### 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. : 260 ±5 Max. 10 sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H : +100 15min 5 min L : -40 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H : +100 5min 10 sec L : -10 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp. : 100	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp. : -40	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	I <sub>F</sub> = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85 / 85%RH	1000 Hrs.	22 PCS.	0/1

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#### 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 or less and 90%RH or less.

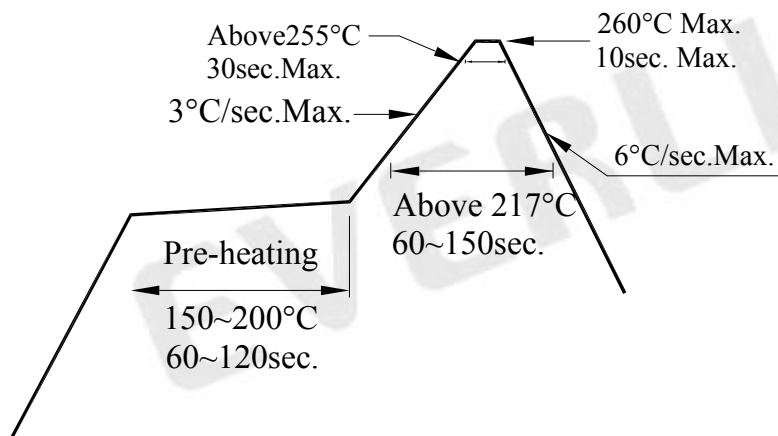
2.3 After opening the package: The LED's floor life are 168 hours under 30 or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 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 for 24 hours.

##### 3. Soldering Condition

##### 3.1 Pb-free 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.

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#### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350 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.

