

## SMD ■ Side View LEDs

### BL-2604DN1PM3C-XXXXXXXXXXXXXXXXXX



#### Features

- . Side view white LED
- . White SMT package
- . Lead frame package with individual 2 pins
- . Wide viewing angle
- . Soldering methods: IR reflow soldering
- . Pb-free
- . The product itself will remain within RoHS compliant version.
- . Compliance with EU REACH.
- . Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

#### Descriptions

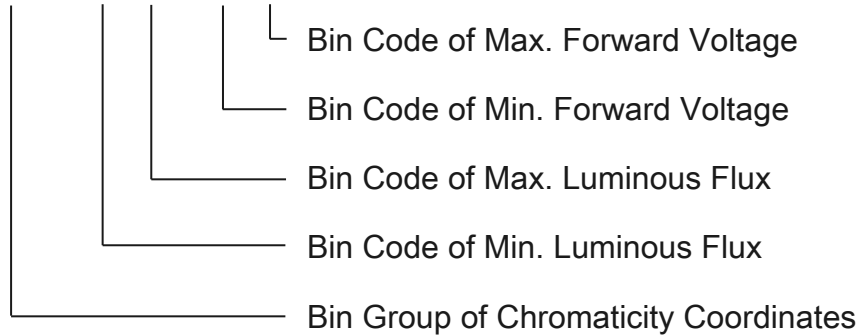
- . Due to the package design, 2604 has wide viewing angle, low power consumption and white LEDs are devices that are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

#### Applications

- . Mobile Phones
- . Indicators

**Coding:**

BL-2604DN1PM3C-XXXX XXX XX XXX XX



**Device Selection Guide**

Chip	Emitted Color	Resin Color
InGaN	Pure White	Water Clear

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

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	$I_F$	30	mA
Peak Forward Current (Duty 1/10 @10ms)	$I_{FP}$	60	mA
Power Dissipation	$P_d$	110	mW
Operating Temperature	$T_{opr}$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +100	°C
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

Notes: \*1The products are sensitive to static electricity and must be carefully taken when handling products.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	$\Phi$	6.75	-----	9.00	lm	
Viewing Angle	2 $\theta$ 1/2	-----	115	-----	deg	IF=20mA
Forward Voltage	V <sub>F</sub>	2.70	-----	3.40	V	
Reverse Current	I <sub>R</sub>	-----	-----	1	$\mu$ A	V <sub>R</sub> =5V

**Notes:**

1. Tolerance of Luminous Flux:  $\pm$  5%
2. Tolerance of Forward Voltage:  $\pm$  0.05V

### Bin Range of Luminous Flux

Bin Code	lm(Min.)	lm(Max.)	Unit	Condition	mcd(Min.)	mcd(Max.)
B67	6.75	7.00			2415	2505
B70	7.00	7.25			2505	2595
B72	7.25	7.50			2595	2685
B75	7.50	7.75			2685	2775
B77	7.75	8.00	lm	IF=20mA	2775	2865
B80	8.00	8.25			2865	2955
B82	8.25	8.50			2955	3045
B85	8.50	8.75			3045	3135
B87	8.75	9.00			3135	3225

**Note:** Tolerance of Luminous Flux:  $\pm$  5%

### Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
D27	2.70	2.80		
D28	2.80	2.90		
D29	2.90	3.00		
D30	3.00	3.10	V	I <sub>F</sub> =20mA
D31	3.10	3.20		
D32	3.20	3.30		
D33	3.30	3.40		

**Note:** Tolerance of Forward Voltage:  $\pm 0.05V$

EVERLIGHT

### Chromaticity Coordinates of Bin Code

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
E3	0.2694	0.2350	F3	0.2765	0.2476
	0.2623	0.2224		0.2694	0.2350
	0.2562	0.2258		0.2633	0.2384
	0.2633	0.2384		0.2704	0.2510
G3	0.2836	0.2602	H3	0.2907	0.2728
	0.2765	0.2476		0.2836	0.2602
	0.2704	0.2510		0.2775	0.2636
	0.2775	0.2636		0.2846	0.2762
J3	0.2978	0.2854	K3	0.3049	0.2980
	0.2907	0.2728		0.2978	0.2854
	0.2846	0.2762		0.2917	0.2888
	0.2917	0.2888		0.2988	0.3014
L3	0.3120	0.3106	M3	0.3191	0.3232
	0.3049	0.2980		0.3120	0.3106
	0.2988	0.3014		0.3059	0.3140
	0.3059	0.3140		0.3130	0.3266

**Note:** Tolerance of Chromaticity Coordinates:  $\pm 0.01$

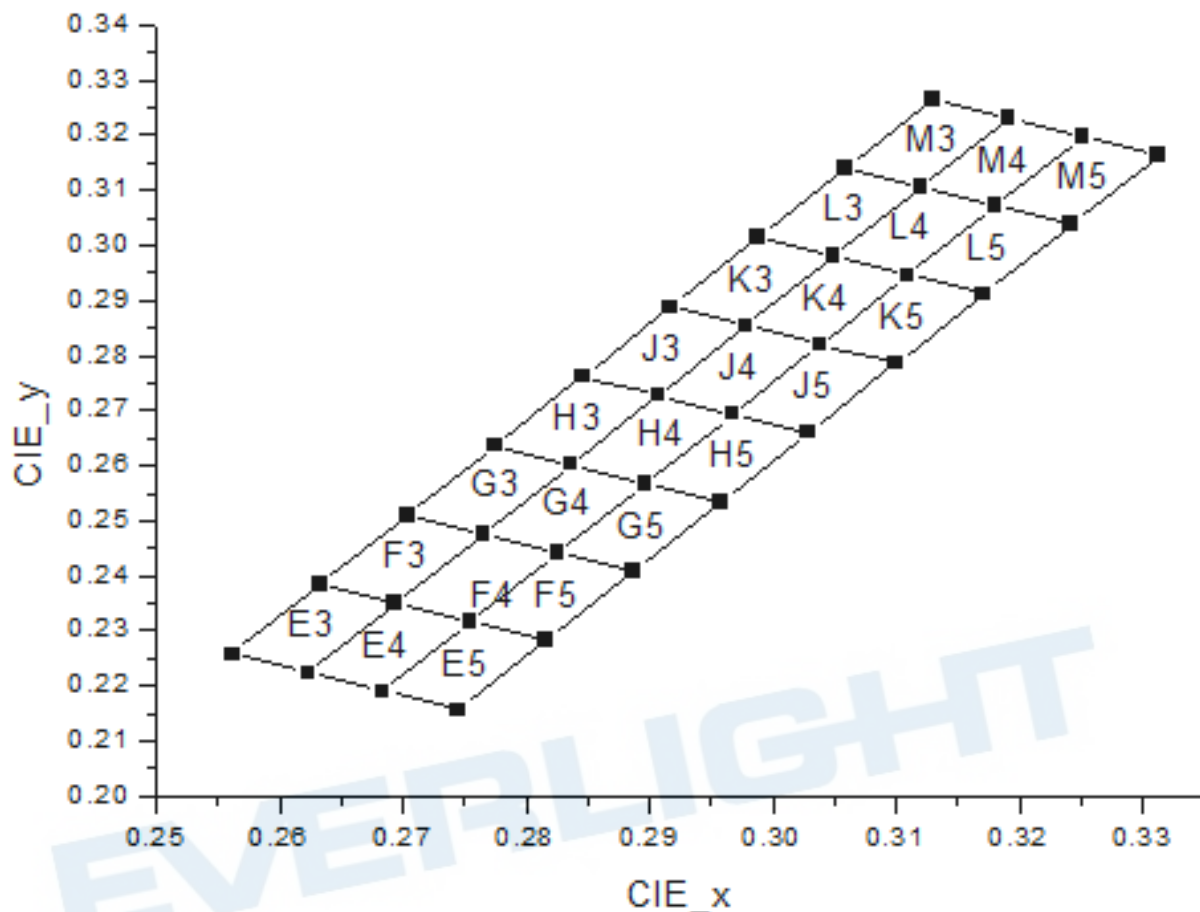
Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
E4	0.2755	0.2316	F4	0.2826	0.2442
	0.2684	0.2190		0.2755	0.2316
	0.2623	0.2224		0.2694	0.2350
	0.2694	0.2350		0.2765	0.2476
G4	0.2897	0.2568	H4	0.2968	0.2694
	0.2826	0.2442		0.2897	0.2568
	0.2765	0.2476		0.2836	0.2602
	0.2836	0.2602		0.2907	0.2728
J4	0.3039	0.2820	K4	0.3110	0.2946
	0.2968	0.2694		0.3039	0.2820
	0.2907	0.2728		0.2978	0.2854
	0.2978	0.2854		0.3049	0.2980
L4	0.3181	0.3072	M4	0.3252	0.3198
	0.3110	0.2946		0.3181	0.3072
	0.3049	0.2980		0.3120	0.3106
	0.3120	0.3106		0.3191	0.3232

**Note:** Tolerance of Chromaticity Coordinates:  $\pm 0.01$ .

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
E5	0.2755	0.2316	F5	0.2826	0.2442
	0.2684	0.2190		0.2755	0.2316
	0.2745	0.2156		0.2816	0.2282
	0.2816	0.2282		0.2887	0.2408
G5	0.2897	0.2568	H5	0.2968	0.2694
	0.2826	0.2442		0.2897	0.2568
	0.2887	0.2408		0.2958	0.2534
	0.2958	0.2534		0.3029	0.2660
J5	0.3039	0.2820	K5	0.3110	0.2946
	0.2968	0.2694		0.3039	0.2820
	0.3029	0.2660		0.3100	0.2786
	0.3100	0.2786		0.3171	0.2912
L5	0.3181	0.3072	M5	0.3252	0.3198
	0.3110	0.2946		0.3181	0.3072
	0.3171	0.2912		0.3242	0.3038
	0.3242	0.3038		0.3313	0.3164

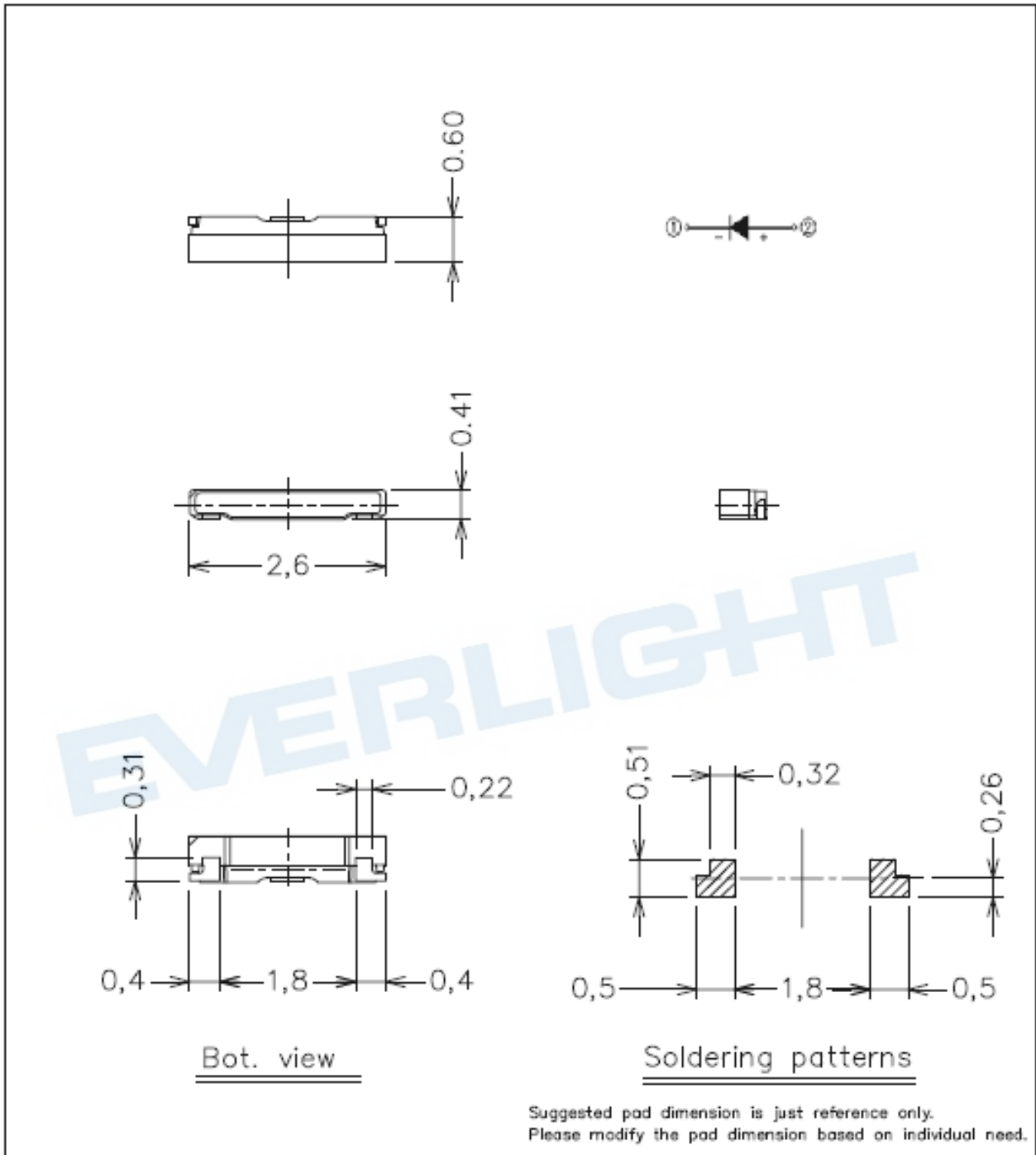
**Note:** Tolerance of Chromaticity Coordinates:  $\pm 0.01$ .

### Chromaticity Coordinates of Bin Code





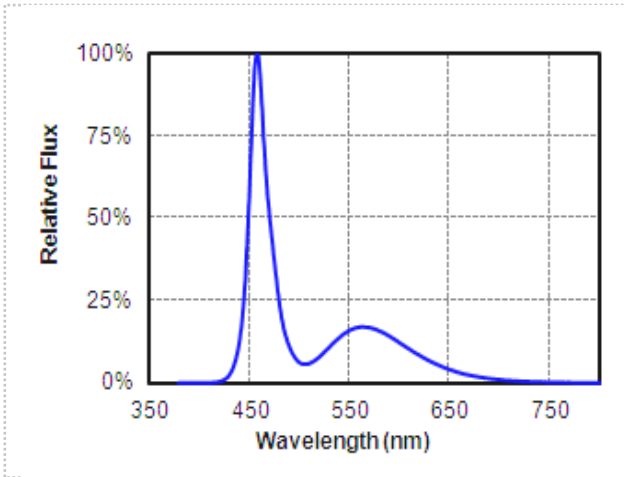
**Package Outline Dimensions**



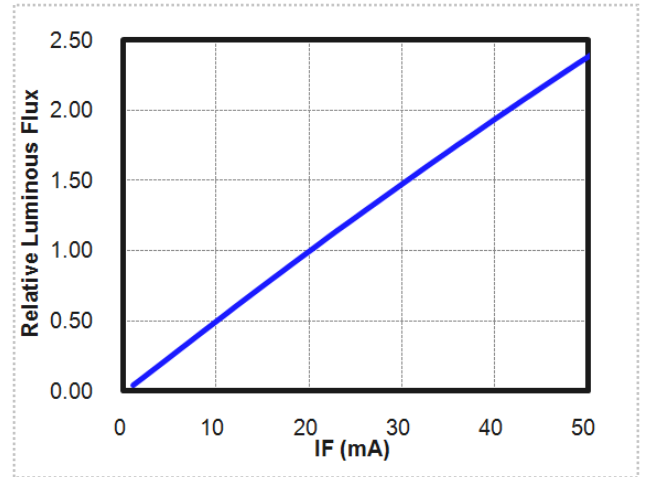
**Note:** The tolerances unless dimensions are  $\pm 0.1\text{mm}$ .

## Typical Electro-Optical-Thermal Characteristics Curves

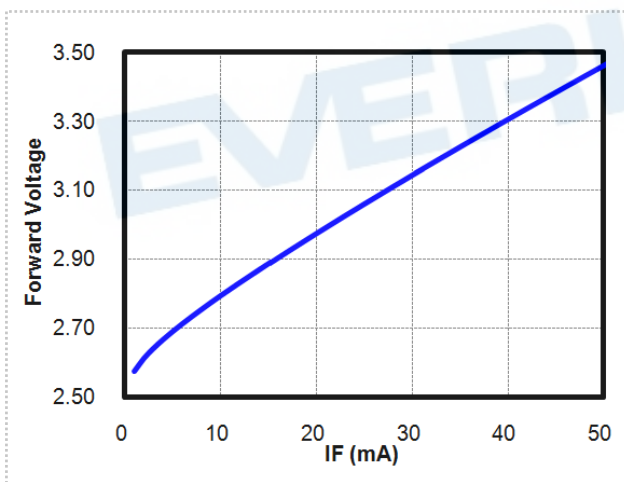
1. Spectrum Distribution  
 ( $T_A=25^\circ\text{C}$ ,  $I_F=20\text{mA}$ )



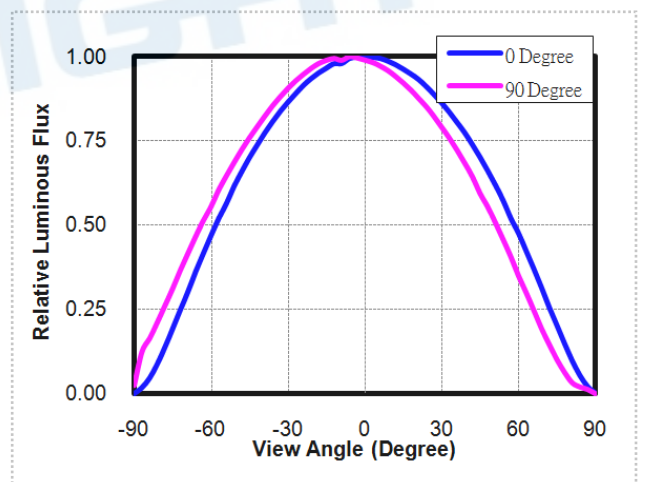
2. Relative Luminous Flux vs. Forward Current  
 ( $T_A=25^\circ\text{C}$ )



3. Relative Forward Voltage vs. Forward Current  
 ( $T_A=25^\circ\text{C}$ )

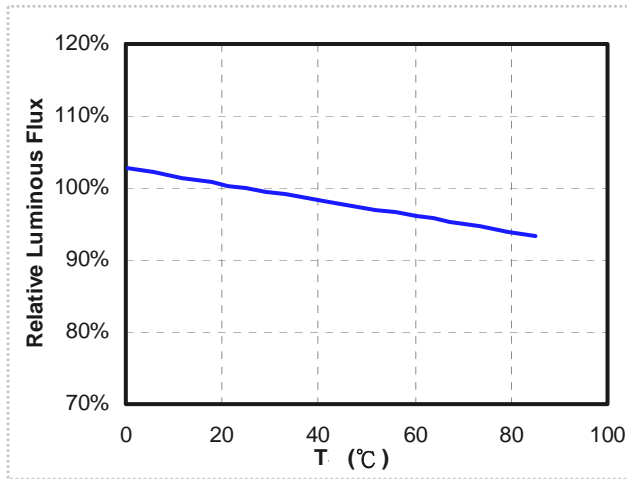


4. Radiation Diagram  
 ( $T_A=25^\circ\text{C}$ ,  $I_F=20\text{mA}$ )

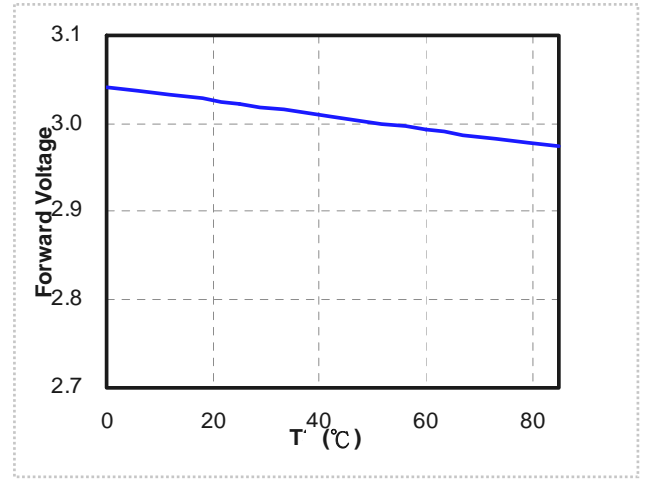


## Typical Electro-Optical-Thermal Characteristics Curves

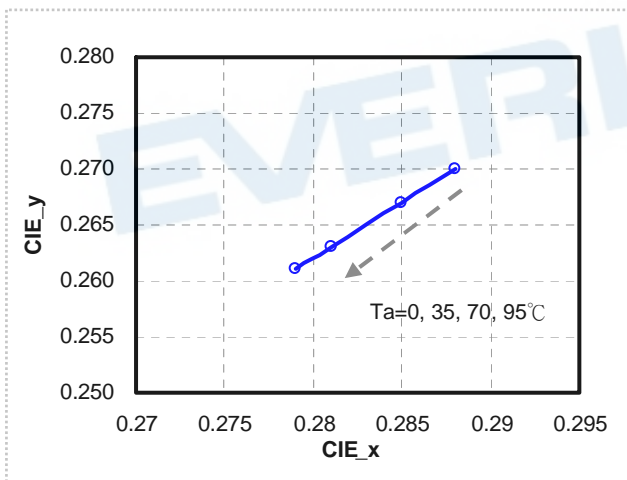
5. Relative Luminous Flux vs. Ambient Temperature  
 ( $I_F=20\text{mA}$ )



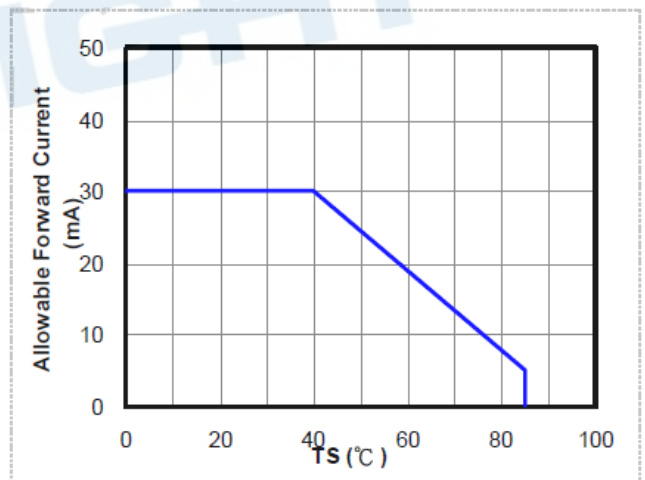
6. Forward Voltage vs. Ambient Temperature  
 ( $I_F=20\text{mA}$ )



7. Chromaticity Coordinates vs. Ambient Temperature  
 ( $I_F=20\text{mA}$ )



8. Forward Current De-rating Curve

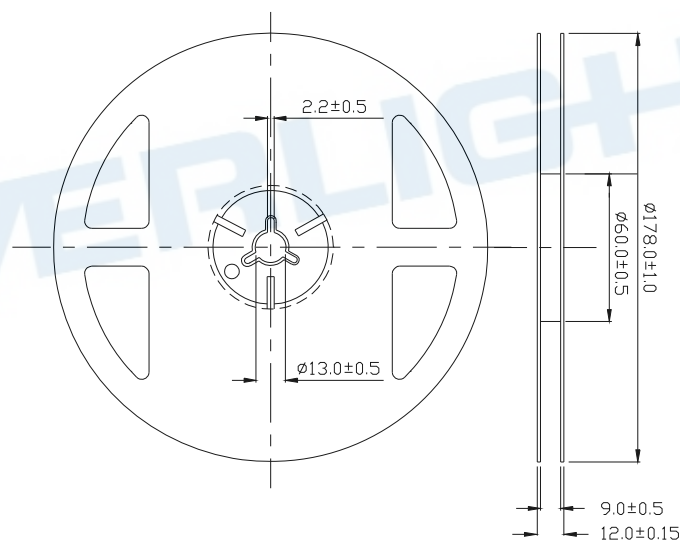


### Label Explanation

CAT: Luminous Flux Rank  
 HUE: Chromaticity Coordinates  
 REF: Forward Voltage Rank



### Reel Dimensions

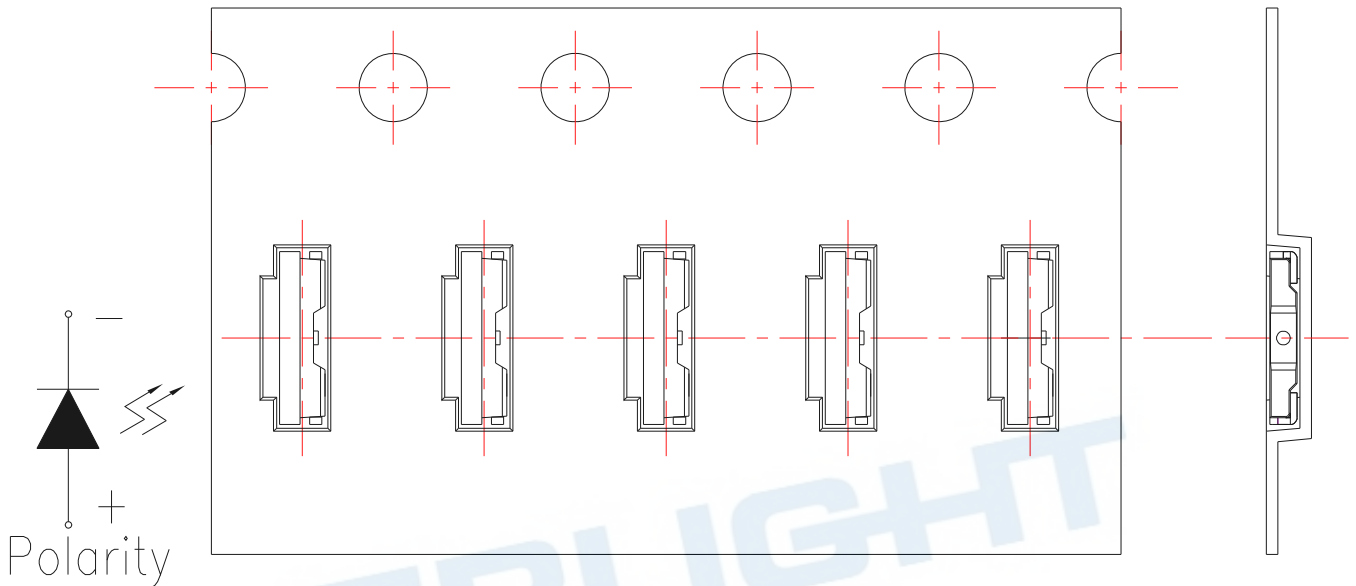


**Note:** The tolerances unless dimension are  $\pm 0.1\text{mm}$ .

### Carrier Tape Dimensions:

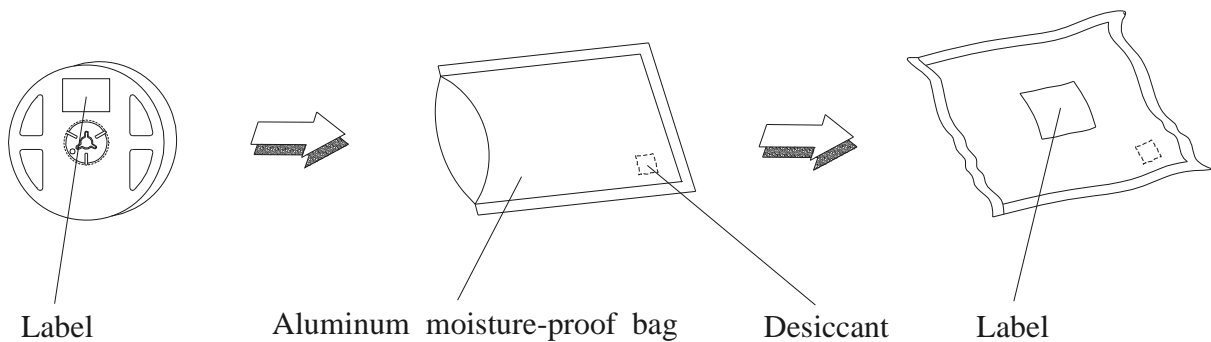
Loaded Quantity 250 up/500/1000/2000 pcs. Per Reel

Progressive direction



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

### Moisture Resistant Packaging



Note: Actual photo of standard packing bag

## Reliability Test Items and Conditions

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

Confidence level : 90%

LTPD : 10%

NO	Item	Test Condition		Test Hours / Times	Criteria	
		Temp./ Humidity	IF (mA)		I <sub>v</sub> @20 mA	V <sub>F</sub> @20mA
1	Reflow Soldering	T = 260°C, Max. 10sec.		2 time	<±10%	<±10%
2	Temperature cycle	-40°C 30min.	~ (5min.)	100°C 30min.	200 cycles	I <sub>v</sub> > 70%, V <sub>F</sub> < 110%,
3	Thermal Shock	-10°C 20min.	~ (<15sec.)	100°C 20min.	200 cycles	
4	Low Temp. Storage	Ta= -40°C		--	1000 hrs	
5	High Temp. Storage	Ta= 100°C		--	1000 hrs	
6	Temp. Humidity Storage	Ta= 60°C/ 90%RH		--	1000 hrs	
7	Steady State Operating Life of Low Temp.	Ta= -40°C		20	1000 hrs	
8	Steady State Operating Life Condition 1	Ta= 25°C/ Room Humidity		20	1000 hrs	
9	Steady State Operating Life Condition 2	Ta= 60°C		20	1000 hrs	
10	Steady State Operating Life of High Temp.	Ta= 85°C		5	1000 hrs	
11	Steady State Operating Life of High Humidity Heat	Ta= 60°C/ 90%RH		20	1000 hrs	

Notes:

1. Sampling for each test item: 22 (pcs.)
2. Test board: PCB board thickness=1.0mm, copper layer thickness=0.07mm, R<sub>th j-a</sub>= 380°C/W.
3. Measurements are performed after allowing the LEDs to return to room temperature

## 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.

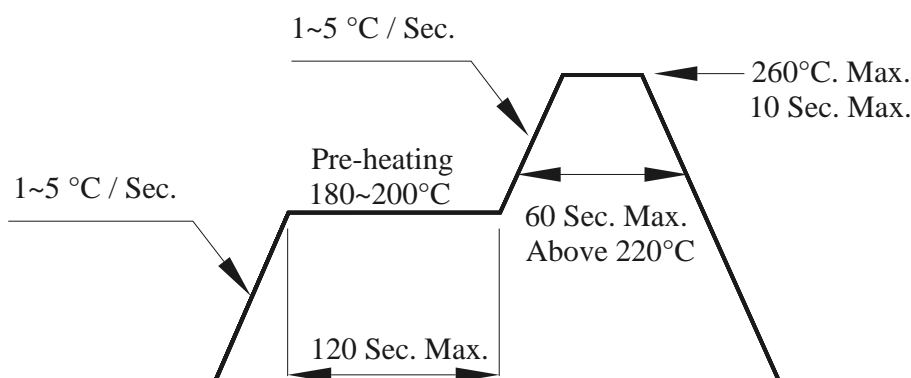
2.2 Before opening the package: The LEDs should be used within one year and kept at 30°C or less and 70%RH or less.

2.3 After opening the package: We recommend that the LED should be soldered quickly (within 3 days). The soldering condition is 30°C 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°C for 24 hours. (One time only)

### 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.

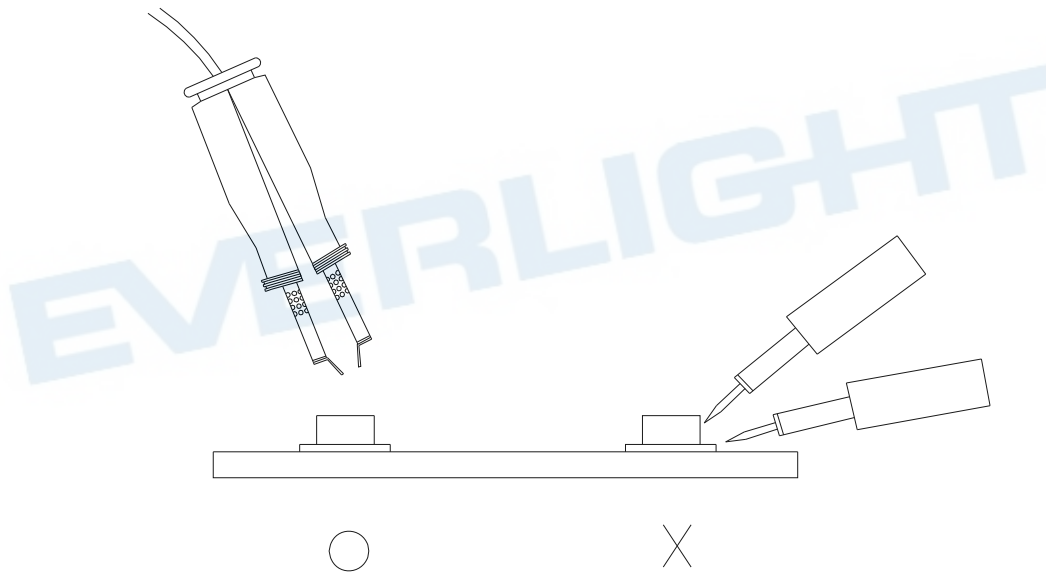
3.4 After soldering, do not warp the circuit board.

#### 4. Soldering Iron

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



#### 6. Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.