DATASHEET

SMD ▪ Top View LEDs
50-615TUMRFC/S4700-1/TR8-T

Features

- Top View White LEDs
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.

Description

Due to the package design, 50-615T has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- Backlight for LCD Monitor/TV
- Light pipe application
- Indicator and backlight in office and family equipment
- General use

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
InGaN	White	Water Clear

Absolute Maximum Ratings ($T_{Soldering}$=25℃)

Parameter	Sym bol	Rating	Unit
Reverse Voltage *1	V_R	5	V
Forward Current *1	I_F	65	mA
Peak Forward Current (Duty 1/10 @10ms) *1	I_{FP}	130	mA
Power Dissipation	P_d	221	mW
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +90	℃
Junction temperature	T_j	≦115	℃
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

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

Electro-Optical Characteristics (T_a=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Φ	16.25	-----	22.25	lm	I_F=65mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	I_F=65mA
Forward Voltage	V_F	2.8	-----	3.4	V	I_F=65mA
Reverse Current	I_R	-----	-----	10	μA	V_R=5V

Note:
1. Tolerance of Luminous flux: ±7%.
2. Tolerance of Forward Voltage: ±0.05V.

Bin Range of Luminous Flux

Bin Code	Min.	Max.	Unit	Condition
S	16.25	17	lm	I_F=65mA
T	17	17.75		
U	17.75	18.5		
V	18.5	19.25		
W	19.25	20		
X	20	20.75		
Y	20.75	21.5		
Z	21.5	22.25		

Note:
Tolerance of Luminous flux: ±7%.

Bin Range of Forward Voltage

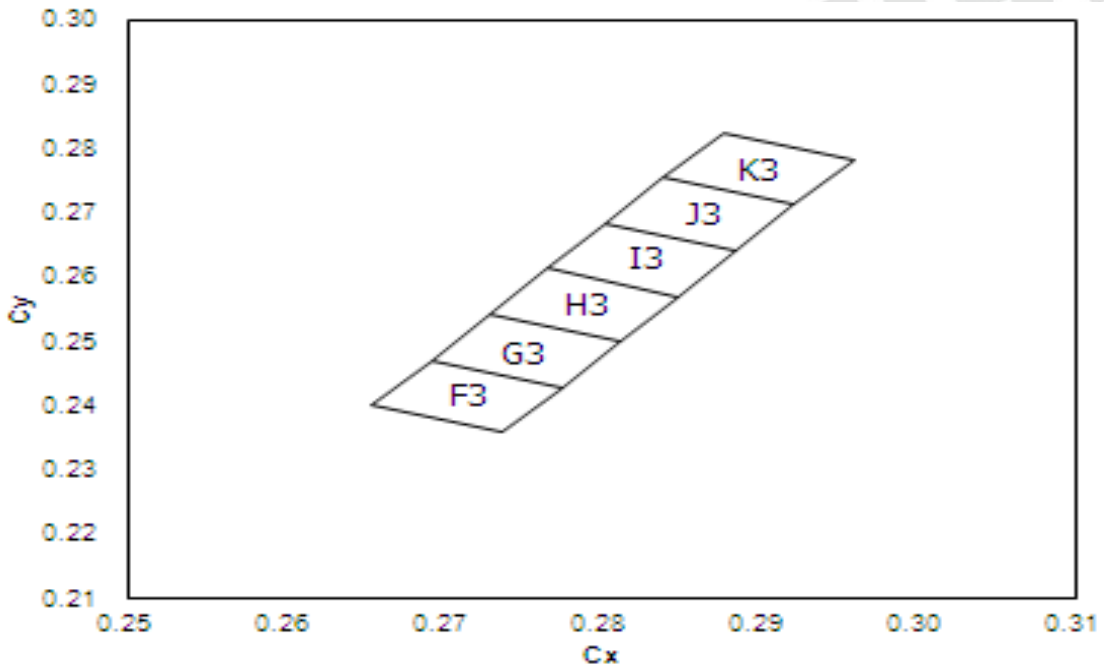
Bin Code	Min.	Max.	Unit	Condition
0	2.8	3	V	I_F=65mA
2	3	3.2		
4	3.2	3.4		

Note:
Tolerance of Forward Voltage: ±0.05V.

Bin Range of Chromaticity Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
F3	0.2738	0.2359	I3	0.2849	0.2572
	0.2655	0.2401		0.2766	0.2614
	0.2692	0.2472		0.2803	0.2685
	0.2775	0.2430		0.2886	0.2643
G3	0.2775	0.2430	J3	0.2886	0.2643
	0.2692	0.2472		0.2803	0.2685
	0.2729	0.2543		0.2840	0.2756
	0.2812	0.2501		0.2923	0.2714
H3	0.2812	0.2501	K3	0.2923	0.2714
	0.2729	0.2543		0.2840	0.2756
	0.2766	0.2614		0.2877	0.2827
	0.2849	0.2572		0.2960	0.2785

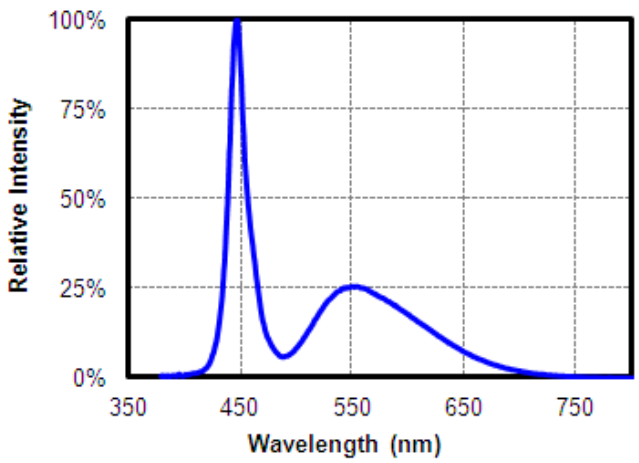
The C.I.E. 1931 Chromaticity Diagram



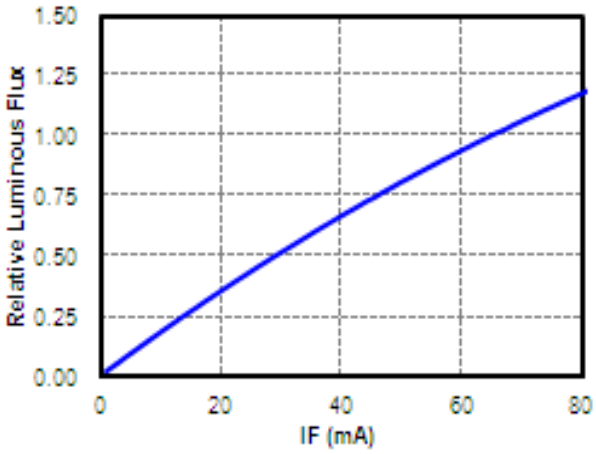
Note:
1. The value is based on driving current by 65mA.
2. Tolerance of Chromaticity Coordinates: ±0.005.

Typical Electro-Optical-Thermal Characteristics Curves

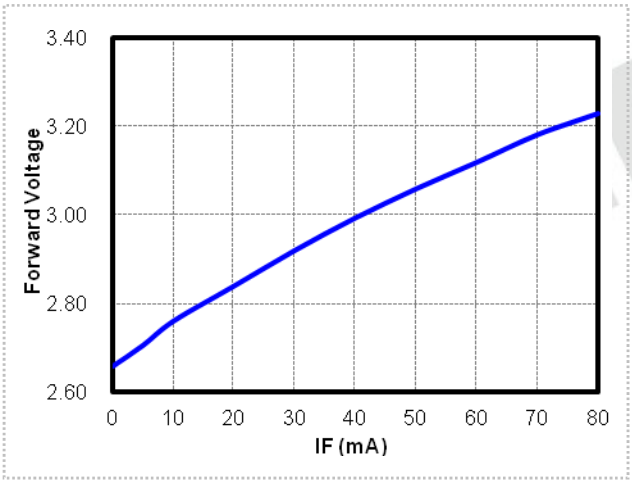
1. Spectrum Distribution
(T_A=25°C, I_F=65mA)



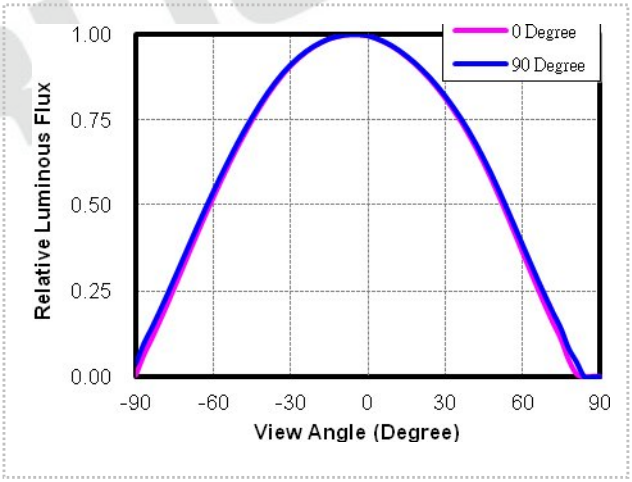
2. Relative Luminous Flux vs. Forward Current
(T_A=25°C)



3. Relative Forward Voltage vs. Forward Current
(T_A=25°C)

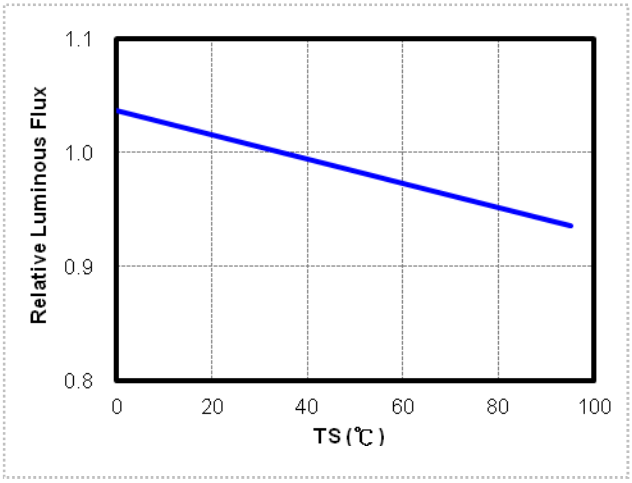


4. Radiation Diagram
(T_A=25°C, I_F=65mA)

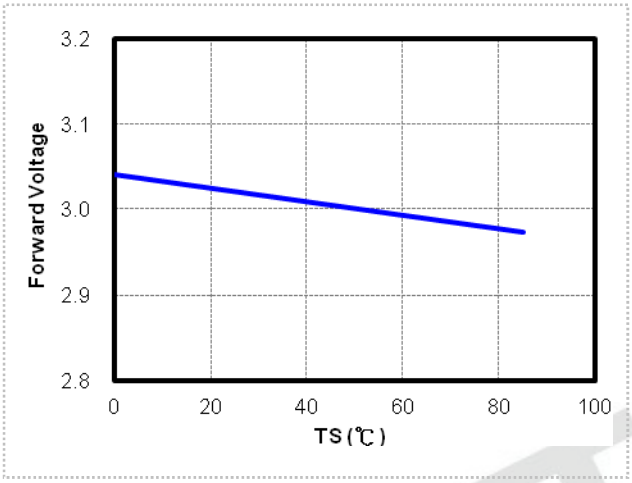


Typical Electro-Optical-Thermal Characteristics Curves

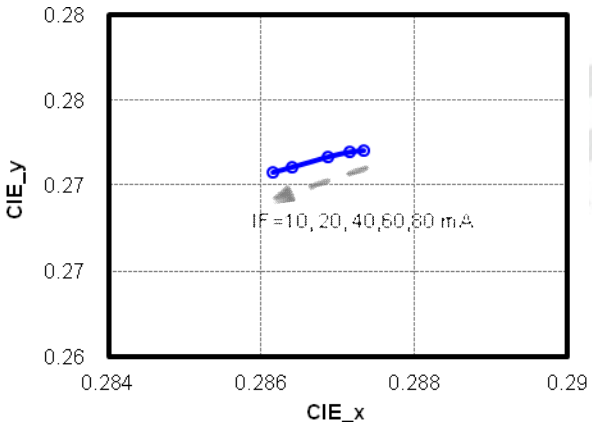
5. Relative Luminous Flux vs. Ambient Temperature (I_F=65mA)



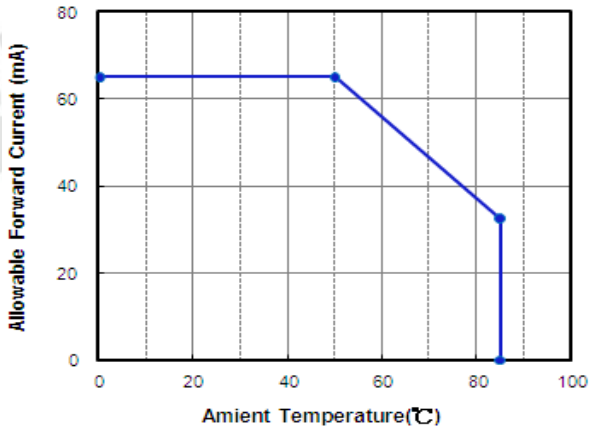
6. Forward Voltage vs. Ambient Temperature (I_F=65mA)



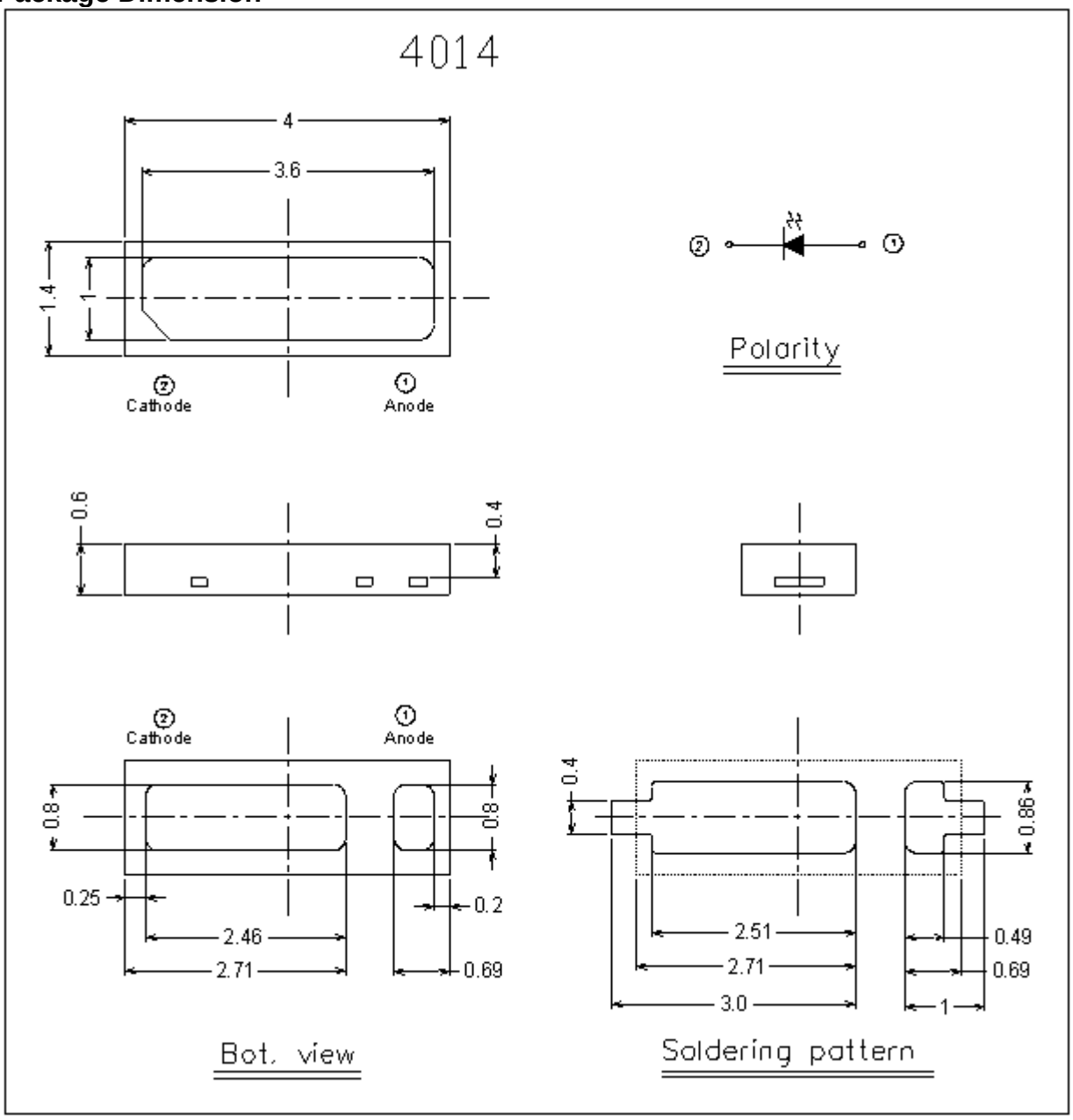
7. Chromaticity Coordinates vs. Ambient Temperature (I_F=65mA)



8. Forward Current De-rating Curve



Package Dimension



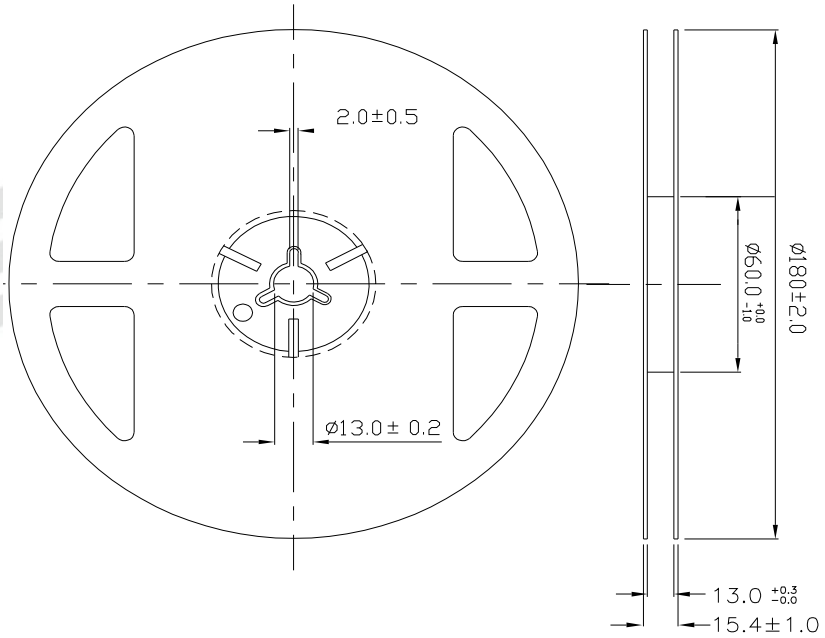
Note:
The tolerance unless mentioned is ±0.1mm, unit = mm

Moisture Resistant Packing Materials

Reel Label 內容：65mm x 90mm/銅版紙(需有背膠)

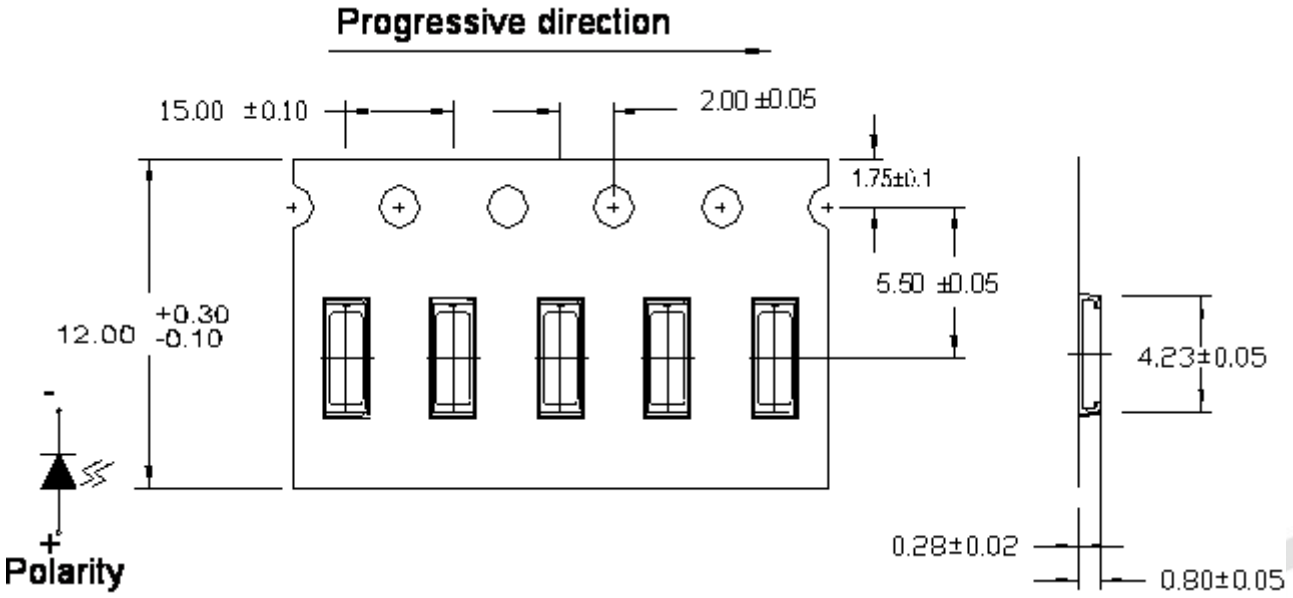
VENDOR	供應商代碼
CUS. P/N	客戶提供料號
MATERIAL NO.	依產品承認書的料號
LOT NO.	生產批號(編碼原則如下表)
BIN(VflvCIE)	依產品承認書定義
QUANTITY	數量
SN	生產序號 1~4 碼 : YYYY 西元年 5~6 碼 : MM 月 7~8 碼 : DD 日 9 碼 : A 固定碼 10~12 碼 : 000~999 流水號
DATE CODE	YYWW YY : 取西元年後兩碼 WW : 取週數兩碼
LOTBIN	LOT NO.& BIN 資訊整合列 生產批號–BIN

Reel Dimensions



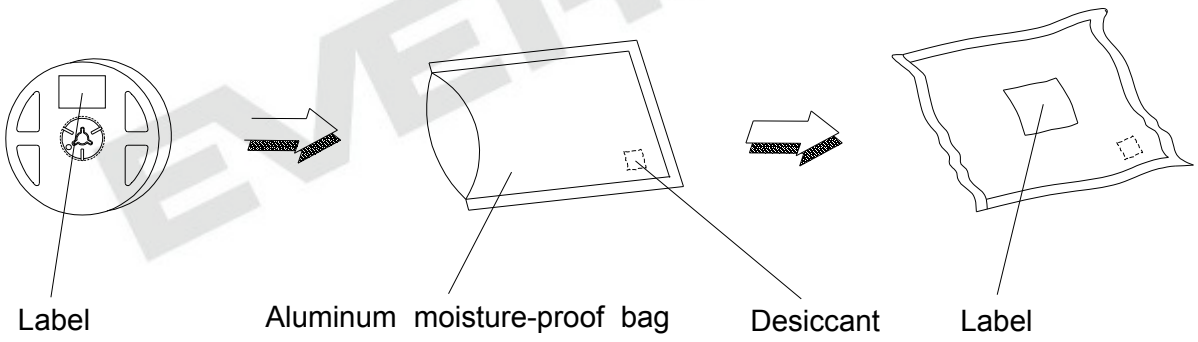
Note:
Tolerances unless mentioned ±0.1mm. Unit = mm

Carrier Tape Dimensions: Loaded Quantity 250 up/500/1000/2000 pcs. Per Reel



Note:
Tolerance unless mentioned is ±0.1mm; Unit = mm

Moisture Resistant Packing Process



Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

No.	Item	Test Conition		Test Hours/ Times	Criteria (at std. IF)
		Temp./ Humidity	IF (mA)		
1	Reflow Soldering	Temp.: 260°C±5°C Max. 10 sec.		2 times	△Iv < ±15% △VF < ±15%
2	Thermal Cycle	-40°C ~ 100°C 30min. (5min.) 30min.		200 cycles	Iv > 70%, VF ±10%,
3	Thermal Shock	-40°C ~ 100°C 20min. (<15sec.) 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	65	1000 hrs	
8	Steady State Operating Life Condition 1	TA=25°C/ Room Hum.	65	1000 hrs	
9	Steady State Operating Life Condition 2	TA=60°C	65	1000 hrs	
10	Steady State Operating Life of High Temp.	TA=85°C	30	1000 hrs	
11	Steady State Operating Life of High Humidity Heat	TA=60°C/ 90%RH	65	1000 hrs	

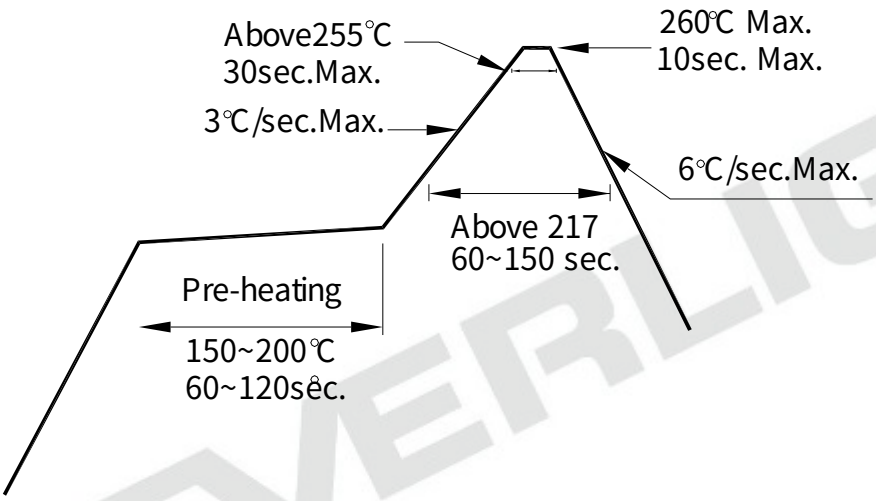
※ Sampling for each test item: 22 (pcs.)

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



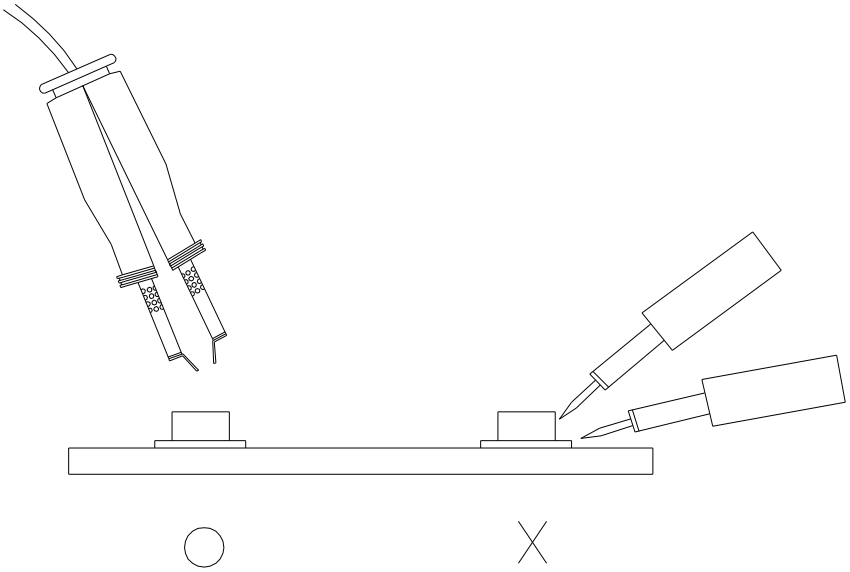
3.2 Reflow soldering should not be done more than two times.
3.3 When soldering, do not put stress on the LEDs during heating.
3.4 After soldering, do not warp the circuit board.

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

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