DATASHEET

Top View LED
50-715TUN2C/S3579-001-T
(For Innolux Model name :4020TUN2C /S3579)

Features

•Top view white LED
•High luminous flux output
•High current capability
•White package
•Wide viewing angle
•Pb-free
•ESD Protection
•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).

Description

•Due to the package design, 50-715T package has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue chip 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

Product Number Explanation

50-715TUN2C / S3579-001 -T

Customer Serial Code

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
InGaN	Cold White	Water Clear

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage*1	V_R	5	V
Forward Current*1	I_F	280	mA
Peak Forward Current (Duty 1/4) *1	I_{FP}	500	mA
Power Dissipation	P_d	1092	mW
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Junction Temperature	T_j	≦125	℃
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	
Thermal Resistance (Junction to Lead)	Rth_{j-s}	Typ. 14 Max. 20	℃/W ℃/W
ESD*2	MM	100	V
ESD*3	HBM	2	KV

Notes：
1. For each die
2. TEST VOLTAGE : 200V ~ 800V (±), Step: 100V (±) (The test method refers to JEDEC EIA/JESD22-A115)
3. TEST VOLTAGE : 1000V ~ 8000V (±), Step: 1000V (±) (The test method refers to MIL-STD-883G Method 3015.8)

Electro-Optical Characteristics (Ta =25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux*1	Φ	46	50	56	lm	I_F=150mA
Forward Voltage*2	V_F	2.8	3.1	3.4	V	I_F=150mA
Forward Voltage	V_F	2.1	-----	-----	V	I_F=10uA
Reverse Current	Ir	-----	-----	1	uA	Vr =5V
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	

Notes：
1. Tolerance of Luminous Flux: ±7%
2. Tolerance of Forward Voltage: ±0.05V
3. The verification method: EL's group average of random sample (25ea) must be in the defining bin.

Bin Range of Luminous Flux

Bin Code	EL bin	Min.	Max.	Unit	Condition
E	E46	46	48	lm	I_F=150mA
F	E48	48	50		
G	E50	50	52		
H	E52	52	54		
I	E54	54	56		

Note： 1.Tolerance of Luminous Intensity: ±7%
2.The verification method: EL's group average of random sample (25ea) must be in the defining bin.

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
2	2.8	3.0	V	I_F=150mA
4	3.0	3.2		
6	3.2	3.4		

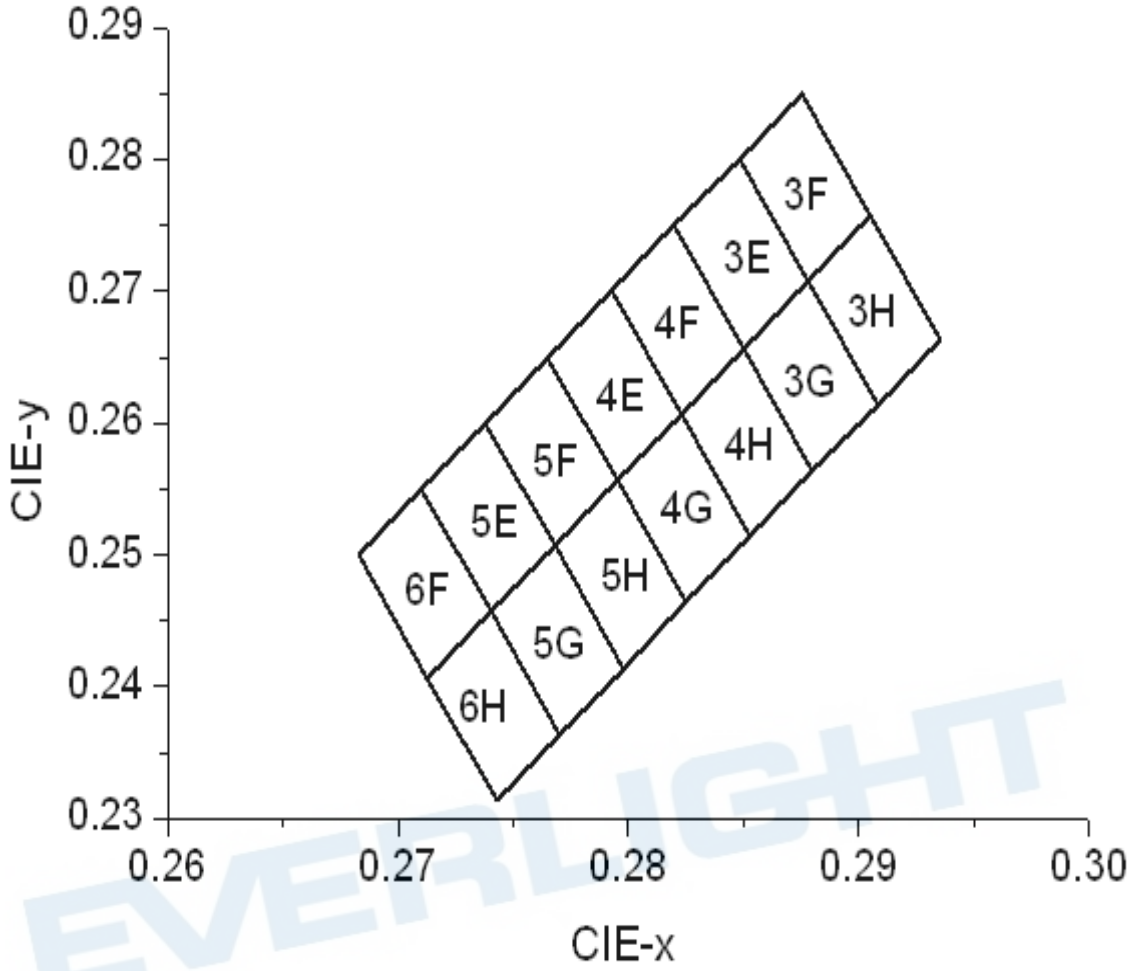
Note： 1.Tolerance of Forward Voltage: ±0.05V
2.The verification method: EL's group average of random sample (25ea) must be in the defining bin.

Bin Range of Chromaticity Coordinate

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
6F	0.2713	0.2407	6H	0.2743	0.2314
	0.2683	0.2500		0.2713	0.2407
	0.2710	0.2550		0.2740	0.2457
	0.2740	0.2457		0.2770	0.2364
5E	0.2740	0.2457	5G	0.2770	0.2364
	0.2710	0.2550		0.2740	0.2457
	0.2738	0.2600		0.2768	0.2507
	0.2768	0.2507		0.2798	0.2414
5F	0.2768	0.2507	5H	0.2798	0.2414
	0.2738	0.2600		0.2768	0.2507
	0.2765	0.2650		0.2795	0.2557
	0.2795	0.2557		0.2825	0.2464
4E	0.2795	0.2557	4G	0.2825	0.2464
	0.2765	0.2650		0.2795	0.2557
	0.2793	0.2700		0.2823	0.2607
	0.2823	0.2607		0.2853	0.2514
4F	0.2823	0.2607	4H	0.2853	0.2514
	0.2793	0.2700		0.2823	0.2607
	0.2820	0.2750		0.2850	0.2657
	0.2850	0.2657		0.2880	0.2564
3E	0.2850	0.2657	3G	0.2880	0.2564
	0.2820	0.2750		0.2850	0.2657
	0.2848	0.2800		0.2878	0.2707
	0.2878	0.2707		0.2908	0.2614
3F	0.2878	0.2707	3H	0.2908	0.2614
	0.2848	0.2800		0.2878	0.2707
	0.2875	0.2850		0.2905	0.2757
	0.2905	0.2757		0.2935	0.2664

Note：1.Tolerance of Chromaticity Coordinates: ±0.005
2.The verification method: EL's group average of random sample (25ea) must be in the defining bin.

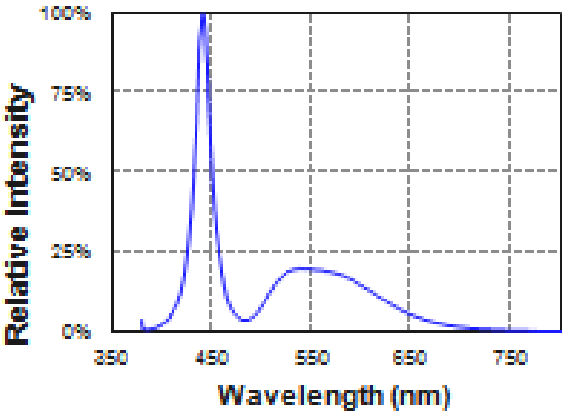
The C.I.E. 1931 Chromaticity Diagram



Typical Electro-Optical Characteristics Curve

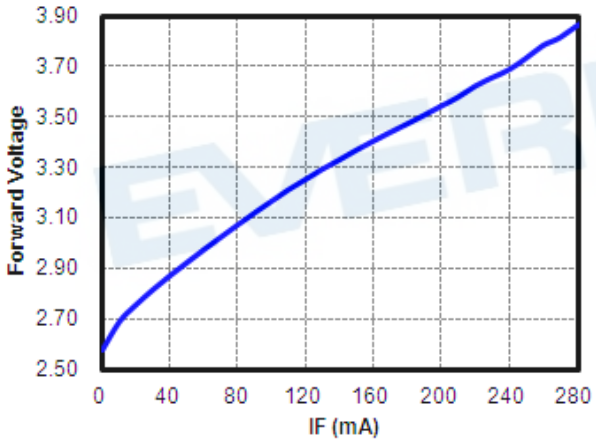
1. Spectrum Distribution

(T_A=25℃, I_F=150mA)



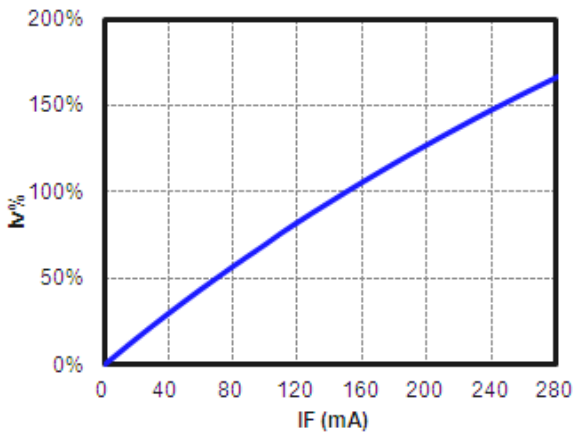
2. Relative Forward Voltage vs. Forward Current

(T_A=25℃)



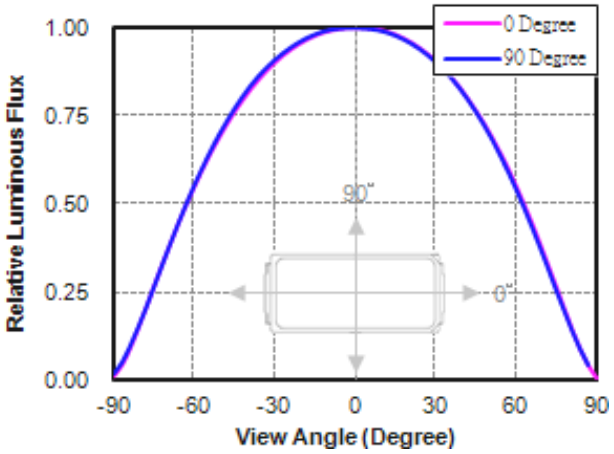
3. Relative Luminous Flux vs. Forward Current

(T_A=25℃)



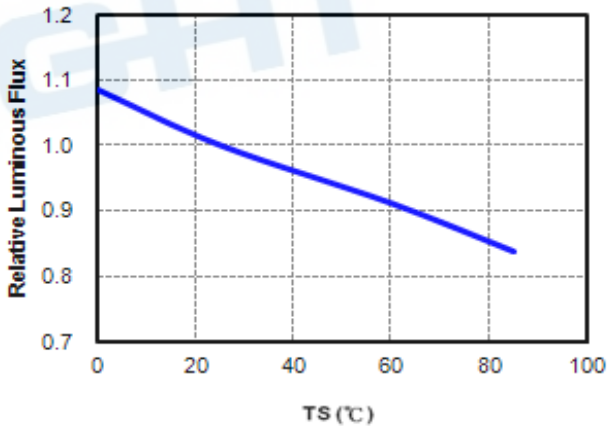
4. Radiation Diagrarm

(T_A=25℃, I_F=150mA)



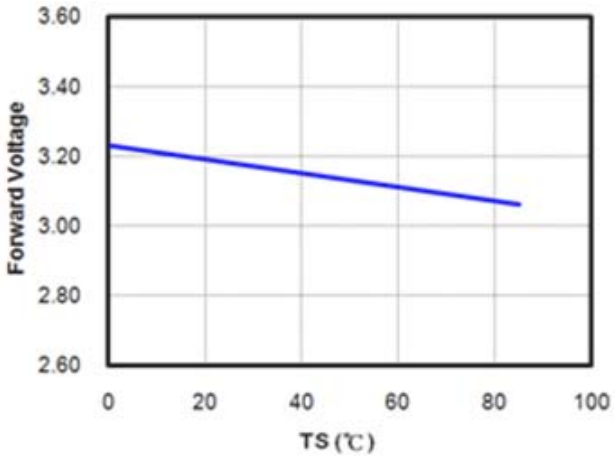
5. Relative Luminous Flux vs. Ambient Temperature

(I_F=150mA)



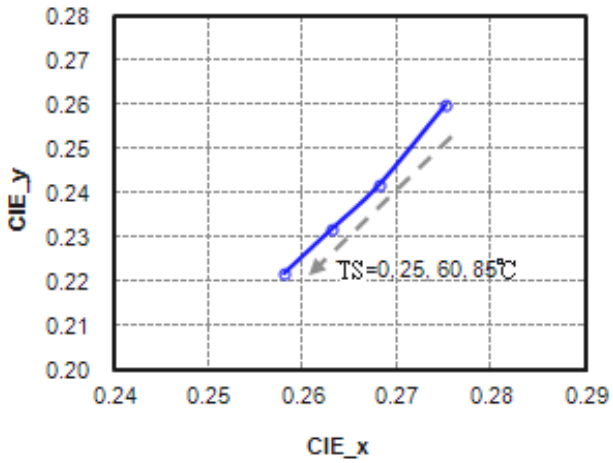
6. Forward Voltage vs. Ambient Temperature

(I_F=150mA)

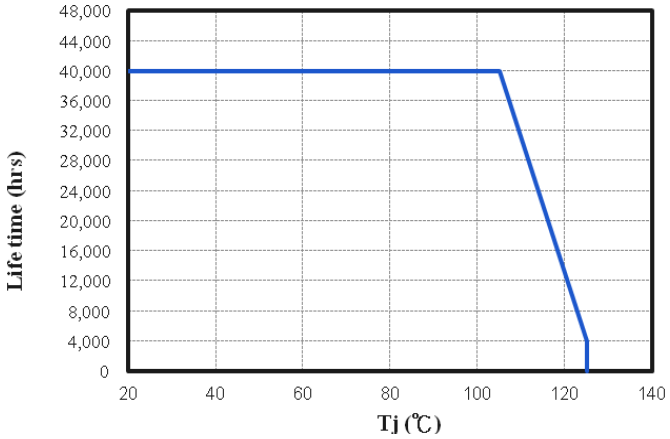


Typical Electro-Optical Characteristics Curve

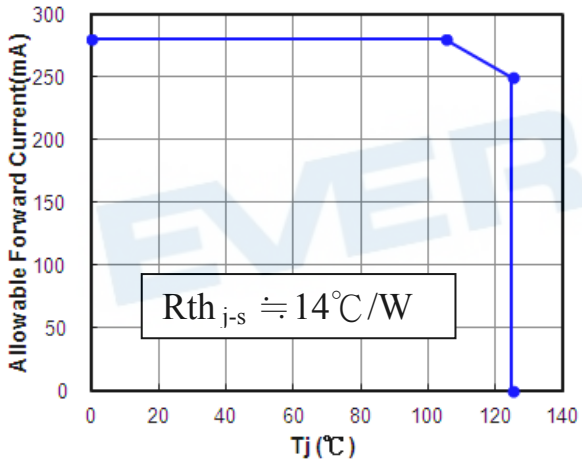
7. Chromaticity Coordinates vs. Ambient Temperature (I_F=150mA)



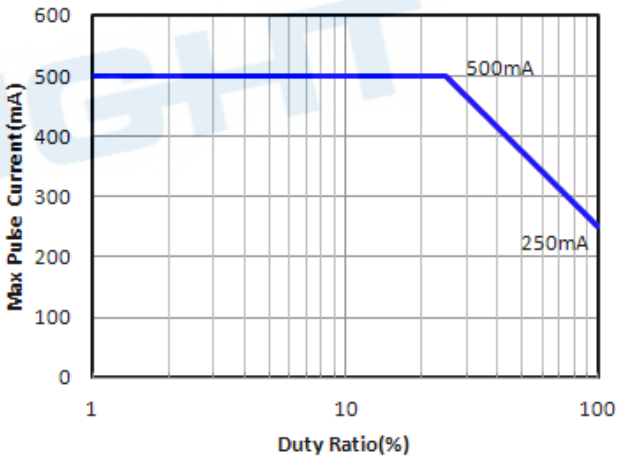
9. Life time(hrs) vs Junction Temperature



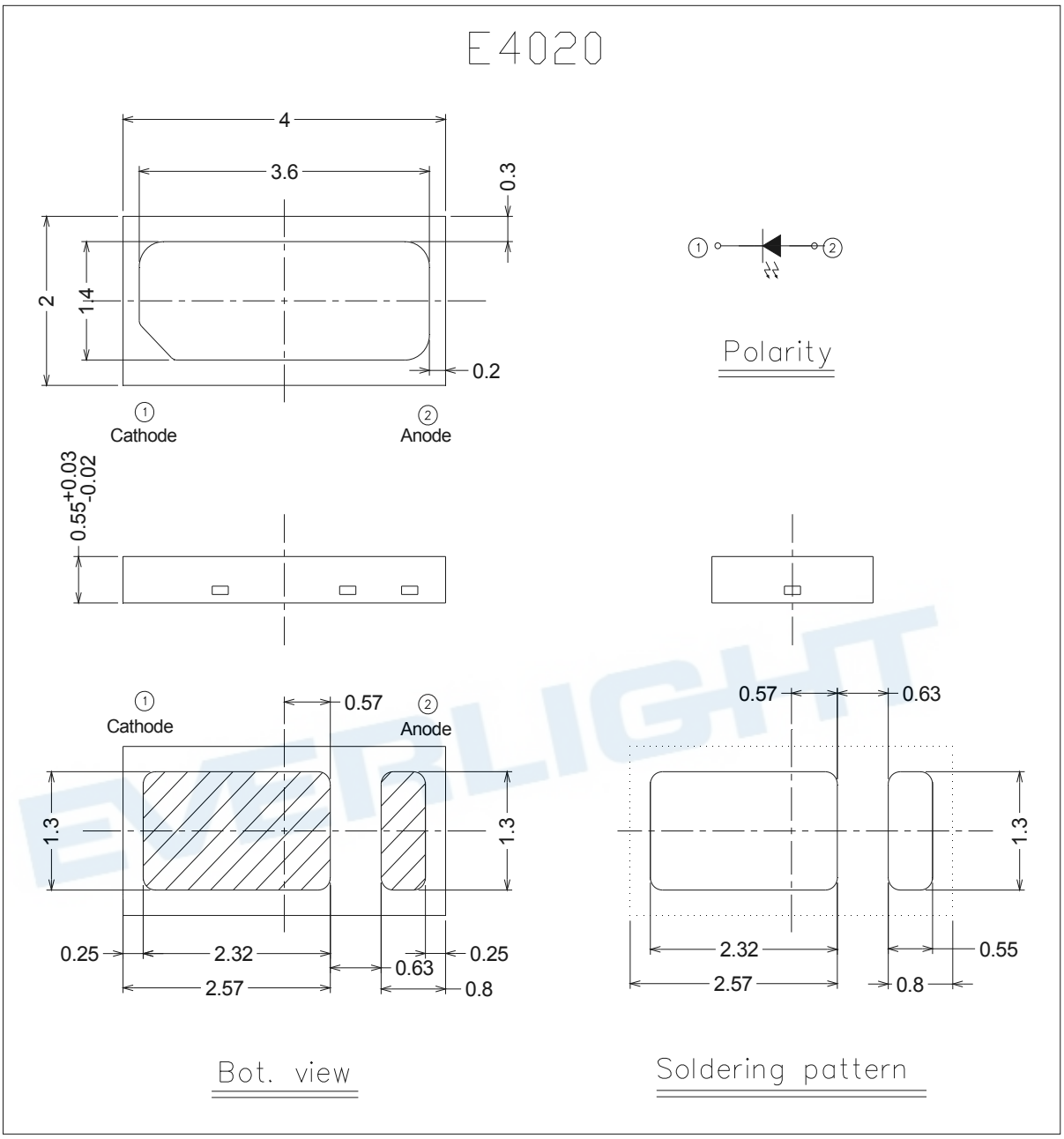
8. Forward Current De-rating Curve



10. Duty Ratio vs Peak Forward Current



Package Dimension



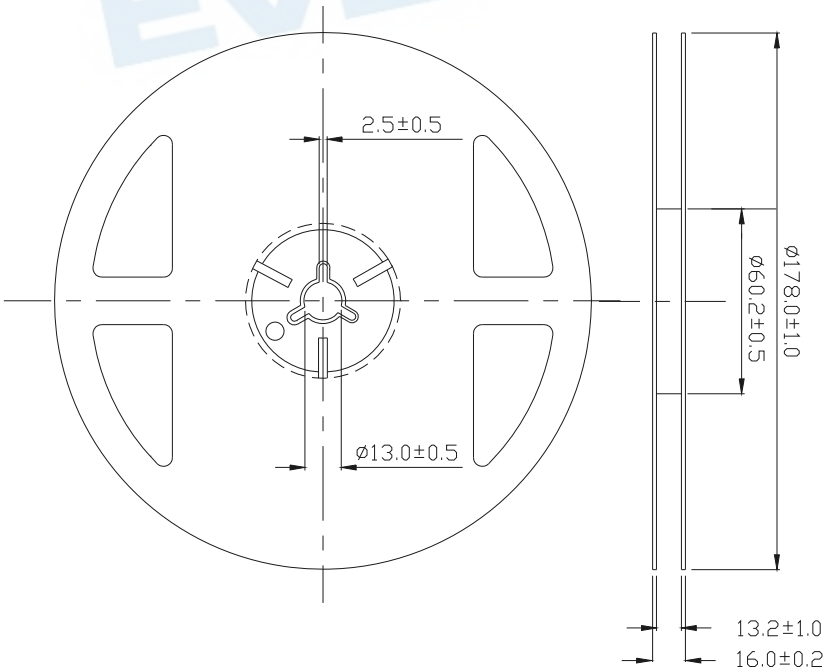
Note:
The tolerance unless mentioned is ±0.1mm, unit = mm

Reliability Test Items and Conditions

Label Explanation

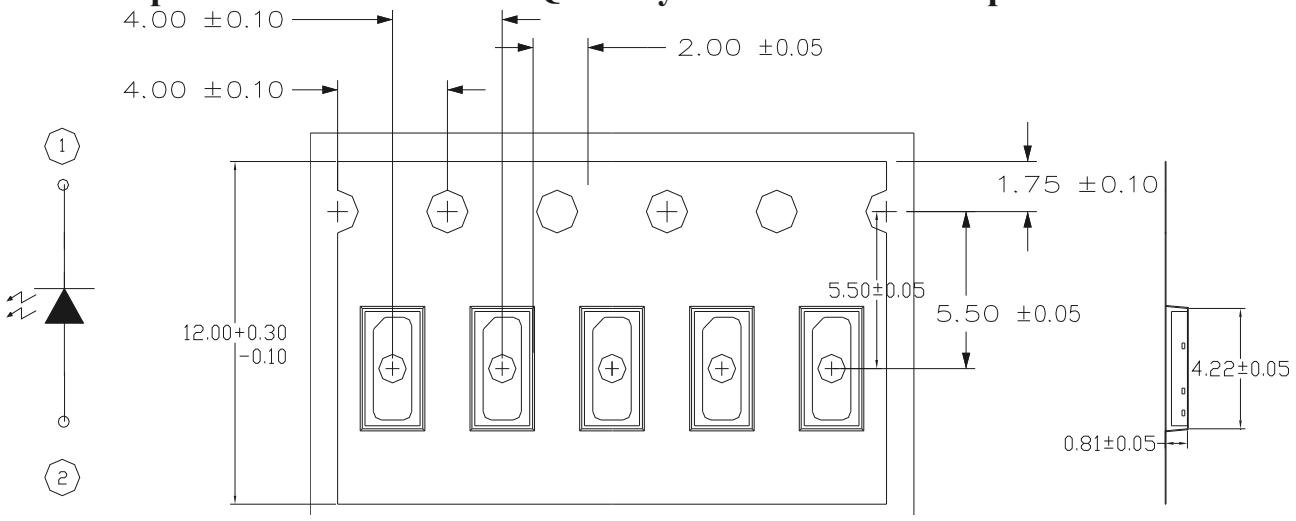
- QTY: Packing Quantity
- CAT: Luminous Flux Rank
- HUE: Chromaticity Coordinates
- REF: Forward Voltage Rank

Reel Dimensions



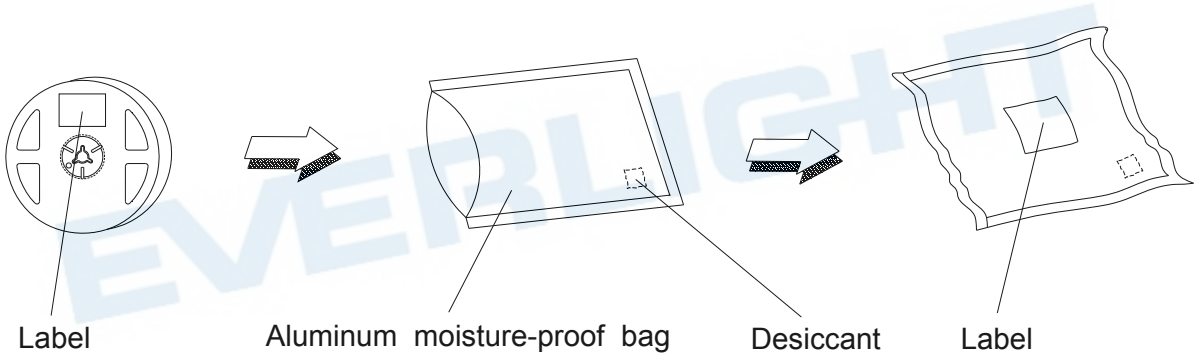
Note：The tolerances unless mentioned is ±0.1mm,Unit = mm

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



Note：The tolerances 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.	Items	Test Condition		Test Hours/Cycles	Criteria (at std. IF)
		Temp./ Humidity	IF (mA)		
1	Reflow Soldering	Temp. : 260℃/10sec.	N/A	3 times	△Iv < ±10% △VF < ±10%
2	Thermal Shock	-40℃ ~ 100℃ 20min. (<15sec.)	N/A	200 cycles	Iv > 70%, VF ± 10%,
3	Temperature Cycle	-40℃ ~ 100℃ 30min. (5min.) 30min.	N/A	200 cycles	
4	Low Temp. Storage	TA=-40℃	N/A	1000 hrs	
5	High Temp. Storage	TA=100℃	N/A	1000 hrs	
6	Temp. Humidity Storage	TA=60℃/ 90%RH	N/A	1000 hrs	
7	Steady State Operating Life of Low Temp.	TA=-40℃	150	1000 hrs	
8	Steady State Operating Life Condition 1	TA=25℃/ Room Hum.	150	1000 hrs	
9	Steady State Operating Life Condition 2	TA=60℃	150	1000 hrs	
10	Steady State Operating Life of High Temp.	TA=85℃	150	1000 hrs	
11	Steady State Operating Life of High Humidity Heat	TA=60℃/90%RH	150	1000 hrs	
12	ESD(HBM)	±2kV at 1.5KΩ.100pF		3 times (1 Sec)	1. VF variation (befort&after Zap) @10uA>=±3% 2. IR<5uA 3. 0/22(pcs)

Notes:
1. Sampling for each test item: 22 (pcs.)
2. Test board: MCPCB board thickness=1.6mm, copper layer thickness=0.07mm, $Rth_{j-a} \fallingdotseq 50℃/W$.
3. Measurements are performed after allowing the LEDs to return to room temperature.

Thermal Test Condition

Light Bar Thermal Test Condition				
PKG Model	PCB Temperature	Test Current	Test Time	Judgment
4020TUN2C/S3579	PCB temp = 120 ±10 ℃	150mA ±5mA	10 sec	NO LED OFF

Notes:
1. SMT must be done Thermal Test Condition
2. PCB Temperature must reach 110℃ for 5 sec.

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

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

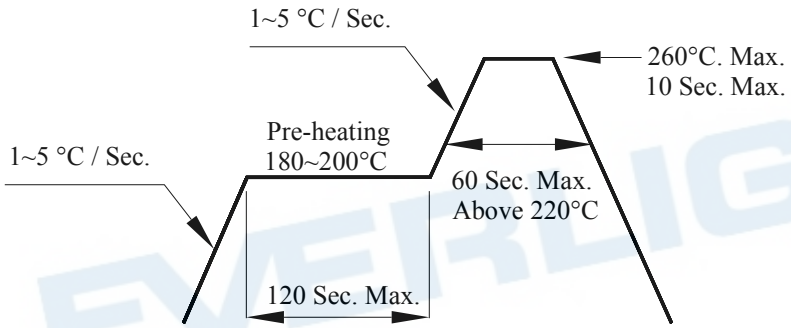
3.2 Before opening the package: The LEDs should be used within one year and kept at 30℃ or less and 70%RH or less.

3.3 After opening the package: We recommend that the LED should be soldered quickly (within 3 days). The soldering condition is 30℃ or less and 60%RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

3.4 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. (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.

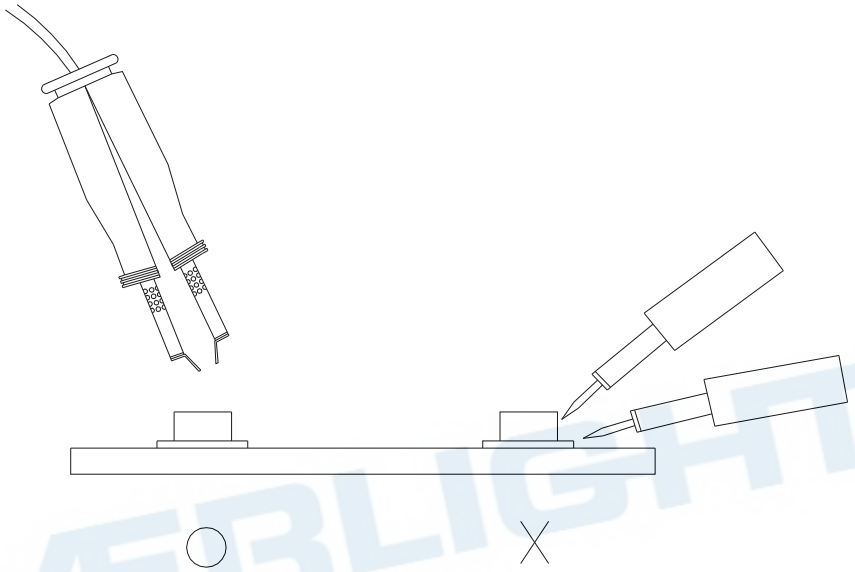
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

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