LIGHTING PHOTOELECTRIC TECHNOLOGY CO., LTD

Customer Approved
Date:

Part No.:

LL810W1D-Q01T4

DATA SHEET

Issue Date: 2018.07.11
Issue No.: LTD-810-001
REVISION: V2

Designer	Checker	Approver
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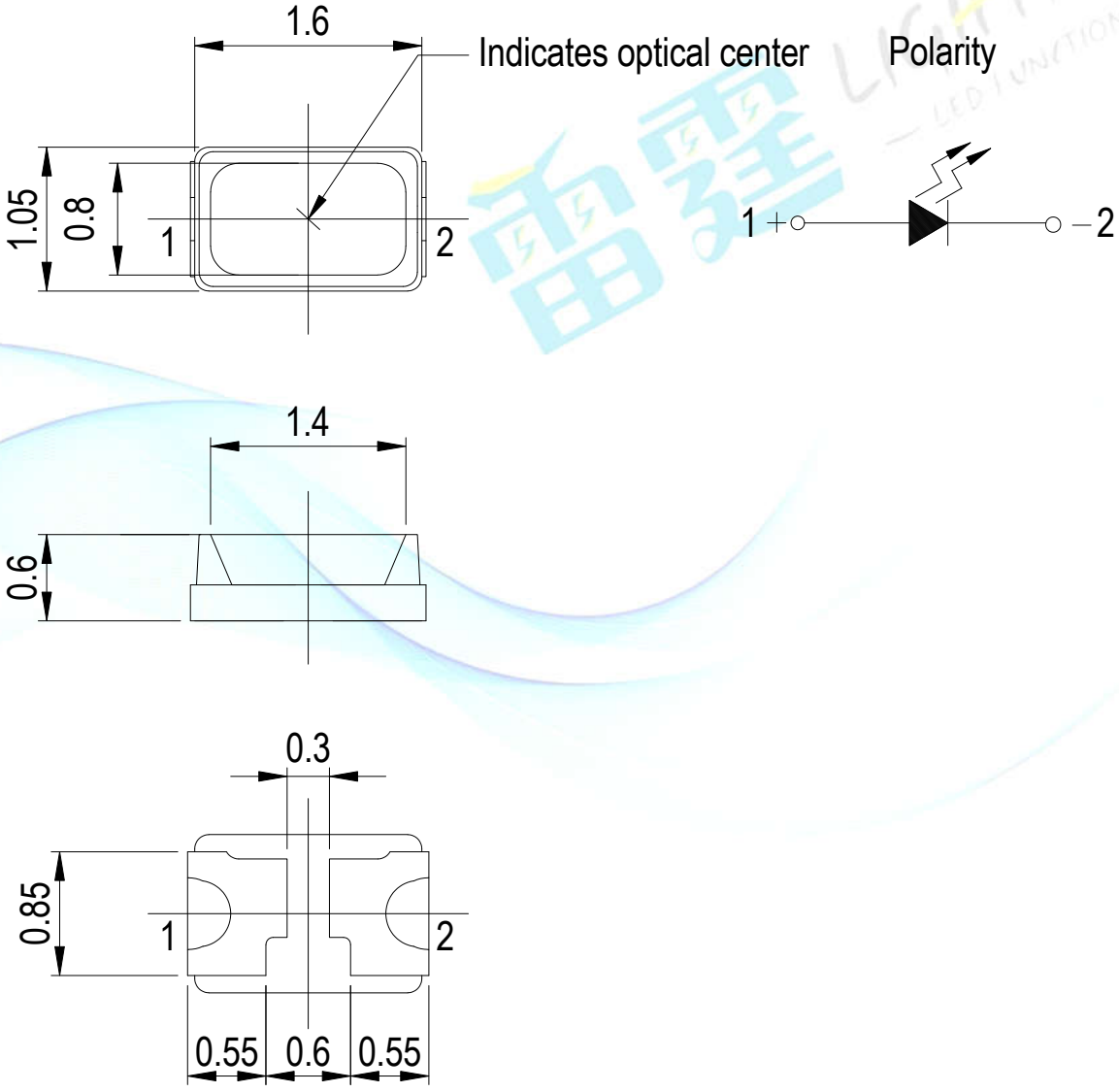
Flash LED Type ▪ Top view 1016 Package
LL810W1D-Q01T4

Features

- ■1016 package
- ■Top view LED
- ■High luminous flux output
- ■Compatible with infrared and vapor phase reflow solder process
- ■Pb-free
- ■RoHS compliant

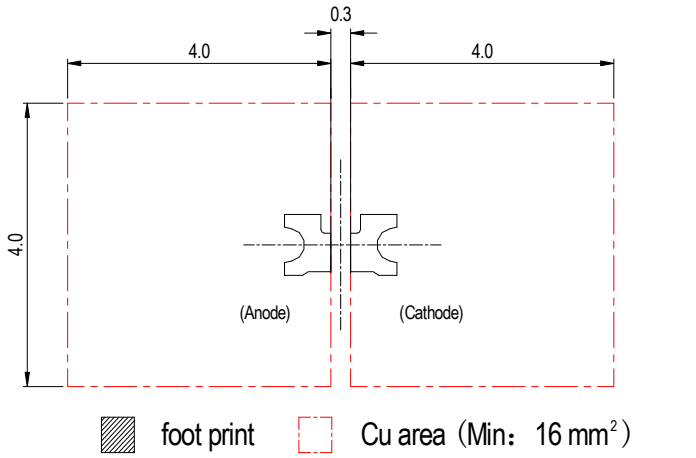
Package Dimensions



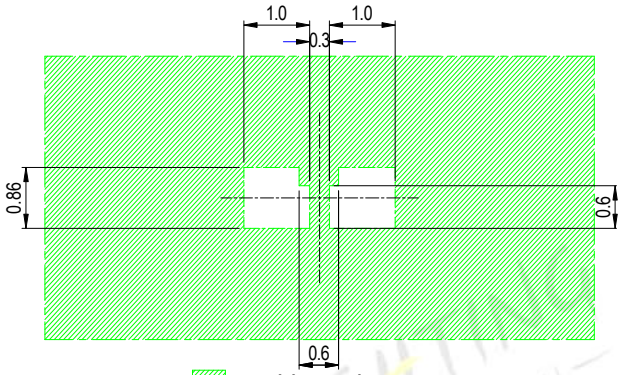
Note:
Tolerance unless mentioned is ±0.1mm,Unit = mm.

Recommended Solder Pad

Compatible Design

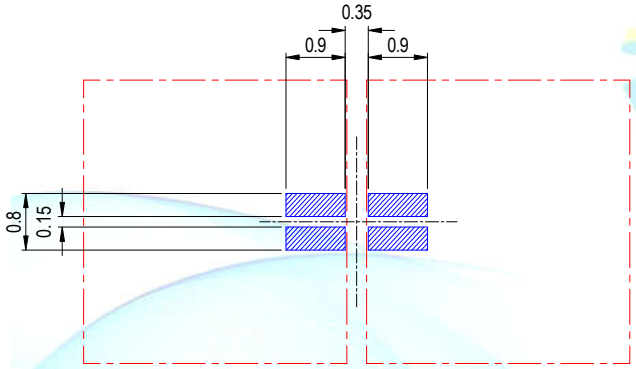


foot print Cu area（Min：16 mm²）
（Cu plating layer Min：15 um）

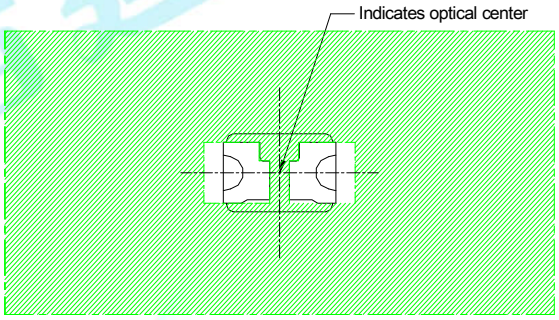


solder resist

Component Location on pad



solder stencil



Note:
Tolerance unless mentioned is ±0.05mm,Unit = mm.

Applications

■Flash lights
■General lighting
■Decorative and Entertainment Lighting
■Indicators
■Illumination
■Automotive Telecommunication
■Switch lights

Device Selection Guide

Emitted Color	Resin Color
White	Yellow Diffused

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

Parameter	Symbol	Rating	Unit
Forward Current	I_F	400	mA
Peak Forward Current (T=4.0s, tp=0.4s)	I_{FP}	1100	mA
Power Dissipation	P_d	5	W
Electrostatic Discharge (HBM)	ESD	4000	V
Thermal Resistance (junction to case)	Rs	12	℃/W
Junction Temperature	T_j	135	℃
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Soldering Temperature	T_{sol}	Reflow Soldering : 260℃ for 10 sec. Hand Soldering : 350℃ for 3 sec.	
Reverse Voltage	V_R	5	V

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

Electro-Optical Characteristics ($T_{Soldering}$=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Φ	100	130	170	lm	I_{FP}=400mA
Luminous Flux*3	Φ	190	230	300	lm	I_{FP}=1000mA
Luminous Flux*3	Φ	200	240	-----	lm	I_{FP}=1100mA
Luminance*3 (At 1 meter of center)	E	60	80	-----	lux	I_{FP}=1000mA
Luminance*3*4 (At 1 meter of center)	E	64	85	-----	lux	I_{FP}=1100mA
Forward Voltage	V_F	2.85	3.20	3.75	V	I_{FP}=400mA
Forward Voltage*3	V_F	3.05	3.40	3.95	V	I_{FP}=1000mA
Forward Voltage*3*4	V_F	3.15	3.50	-----	V	I_{FP}=1100mA
CRI	----	-----	75	-----		I_{FP}=1000mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	I_{FP}=400mA
Reverse Current	I_R	-----	-----	10	μA	V_R =5V

Bin Code Description

Bin Range of Luminous Flux

Bin Code	Min.	Max.	Unit	Condition
C	190	240	lm	I_F=1000mA
D	240	300		

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
6	3.05	3.35	V	I_F=1000mA
7	3.35	3.65		
8	3.65	3.95		

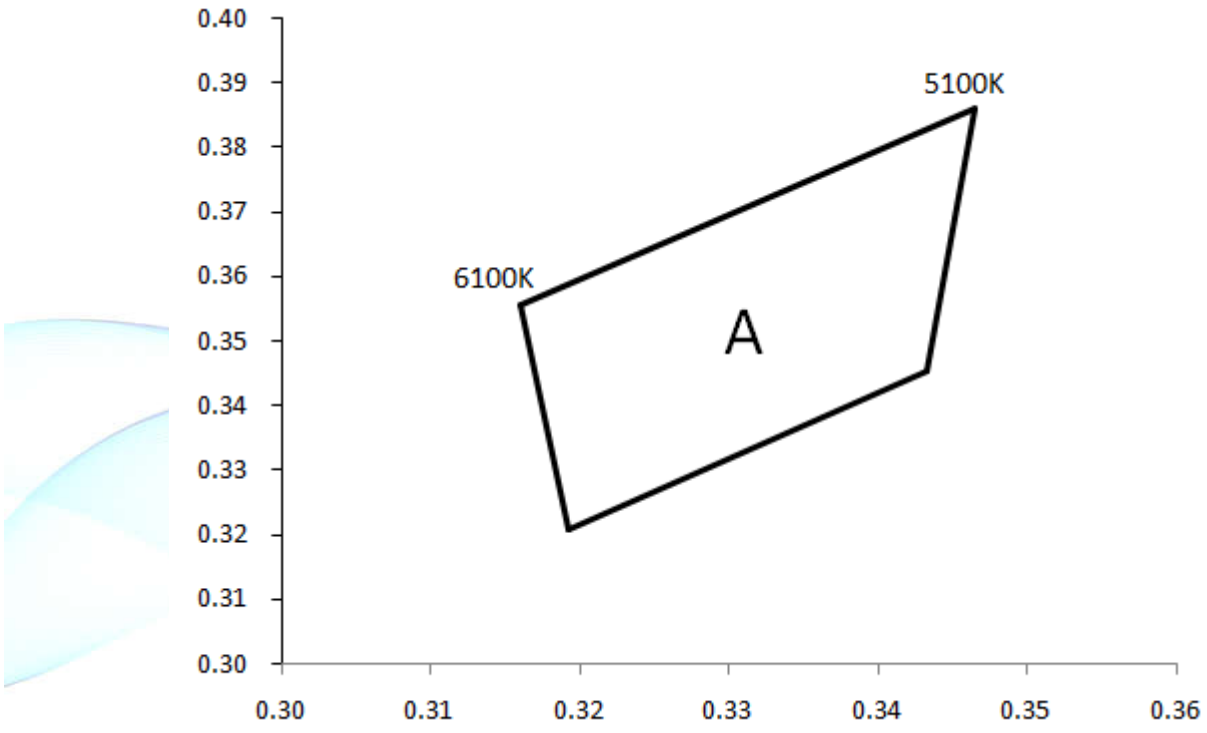
Notes:
1. Tolerance of Luminous Flux: ±10%.
2. Tolerance of Forward Voltage : ±0.1V.
3. Peak Forward Current (T=4.0s, tp=0.4s)
4. In the I_{FP}=1100mA, the voltage will be higher than the I_F=400mA, it is approximately 0.5V.

Bin Range of Chromaticity Coordinates

Bin Code	CIE_x	CIE_y
A	0.3160	0.3556
	0.3465	0.3860
	0.3432	0.3454
	0.3193	0.3208

Notes:
1. The value is based on driving current by 1000mA.
2. Tolerance of Chromaticity Coordinates: ±0.01.

The C.I.E. 1931 Chromaticity Diagram



Typical Electro-Optical Characteristics Curves

Fig.1-Forword Current(V) vs. Forward Voltage

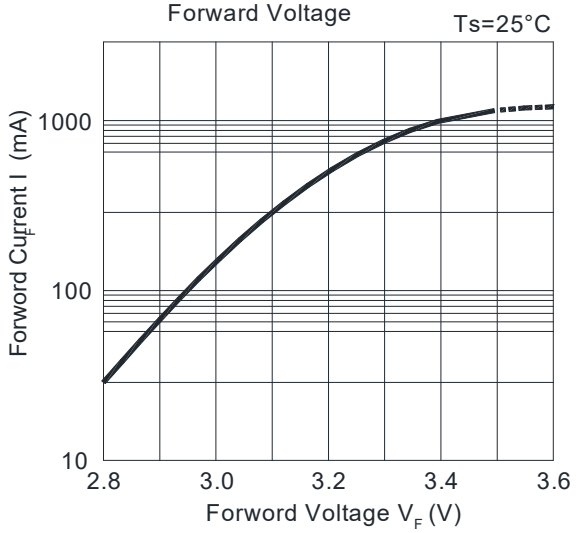


Fig.2-Relative Luminous Flux vs. Forword Current

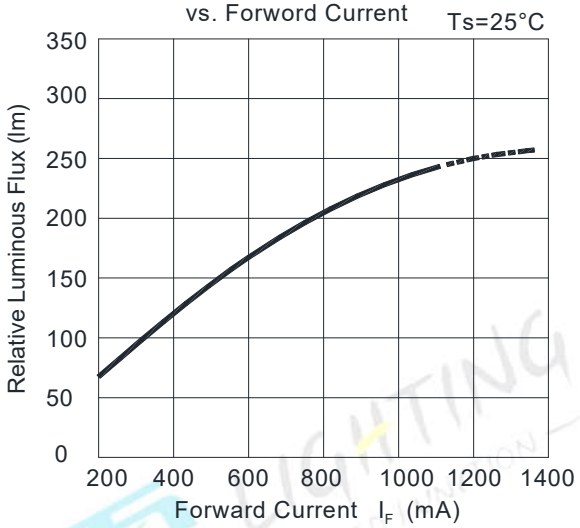


Fig.3-Max.Driving Forward Current vs.Soldering Temperture

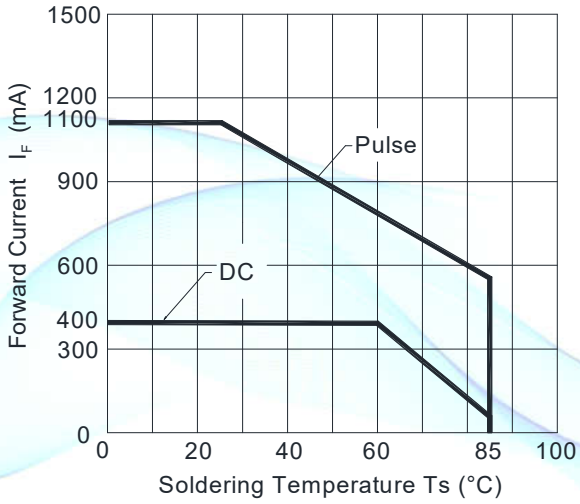
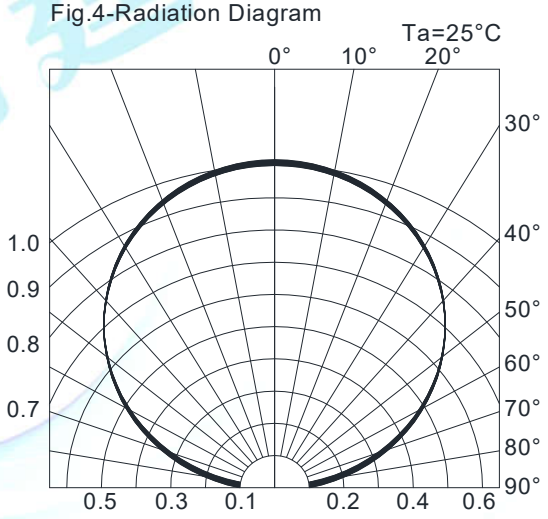


Fig.4-Radiation Diagram



Typical Electro-Optical Characteristics Curves

Fig.5-Forword Voltage Shift vs. Juntion Temperature

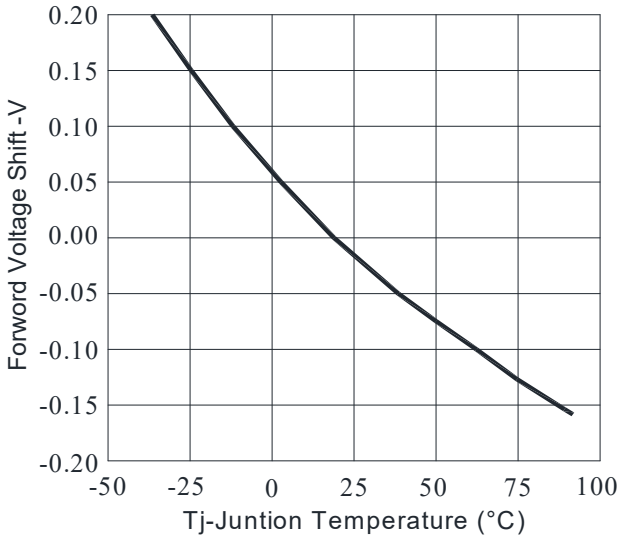
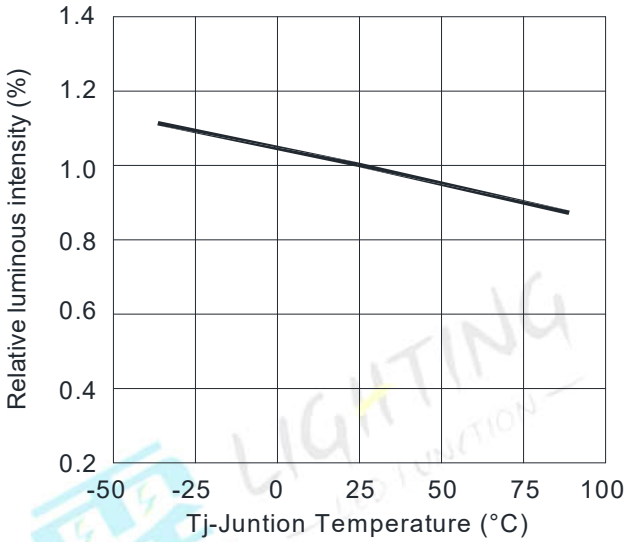
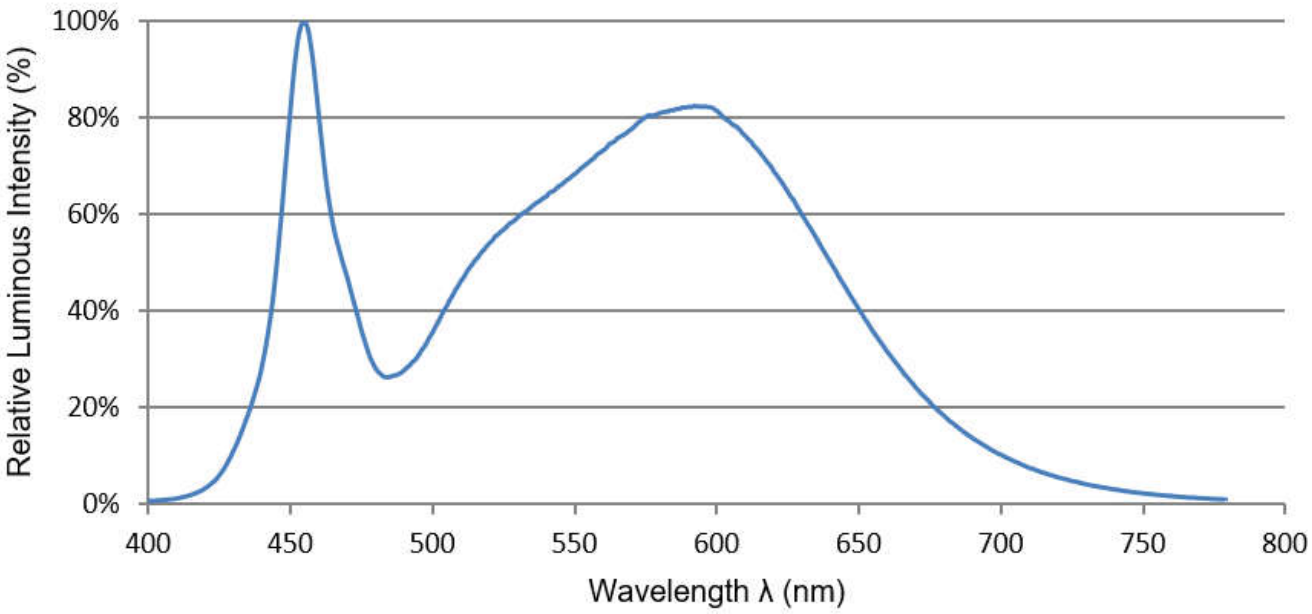


Fig.6-Relative Luminous Intensity vs.Juntion Temperature



Spectrum Distribution

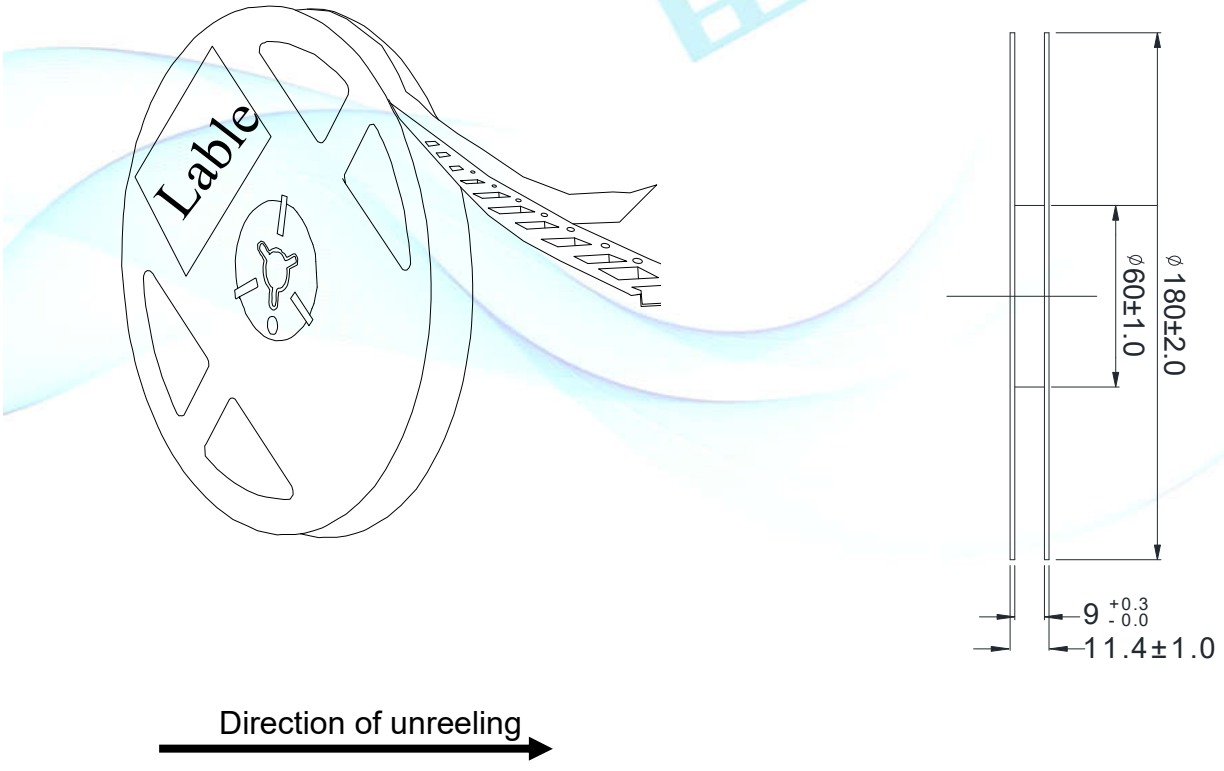


Moisture Resistant Packing Materials

Label Explanation

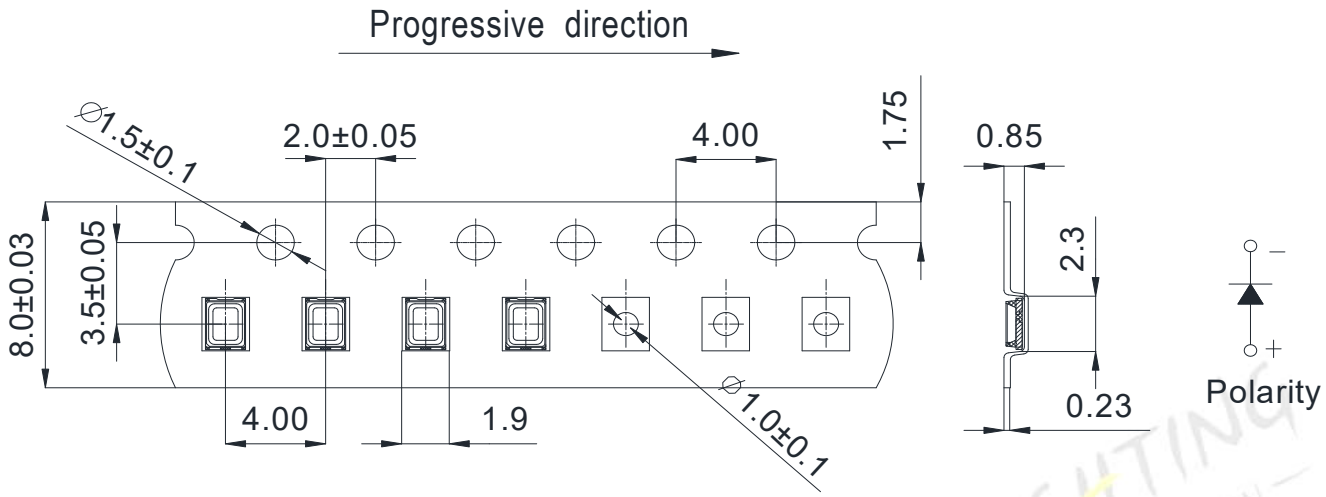
- QR code:
  Contains all of the following information
- P/N: Product Number
- TYPE :Part NO.
- IV: Luminous Flux Rank
- HUE: Chromaticity Coordinates Rank
- VF: Forward Voltage Rank
- QTY: Packing Quantity
- LOT NO.: Lot Number

Taping method: Loaded Quantity 4,000 pcs Per Reel



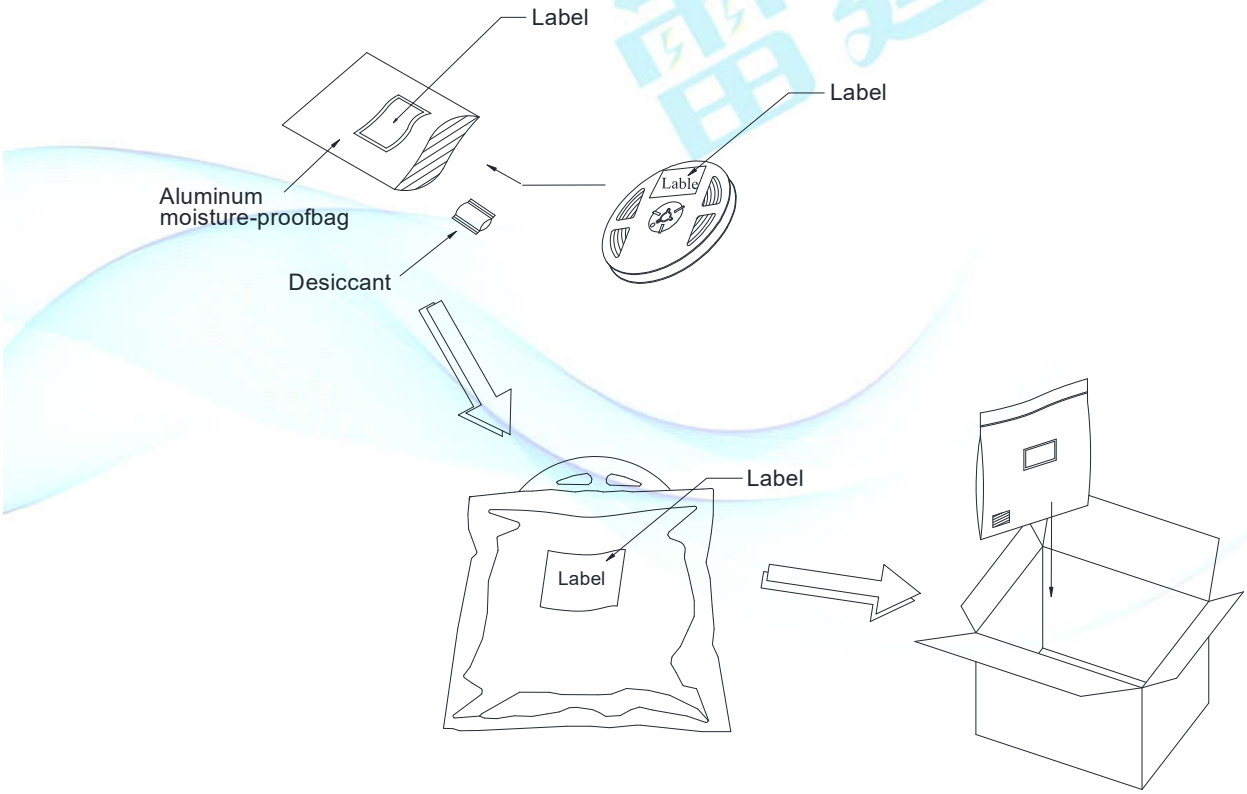
Notes:
1.Tolerance unless mentioned is ±0.1mm,Unit = mm.
2.Minimum packing amount is 1000 pcs per reel.

Carrier Tape Dimensions:



Note:
Tolerance unless mentioned is ±0.1mm,Unit = mm.

Moisture Resistant Packing Process



Moisture/Reflow sensitivity classification

IPC / JEDEC J-STD-020C: Level 3

Reliability Test Items and Conditions

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

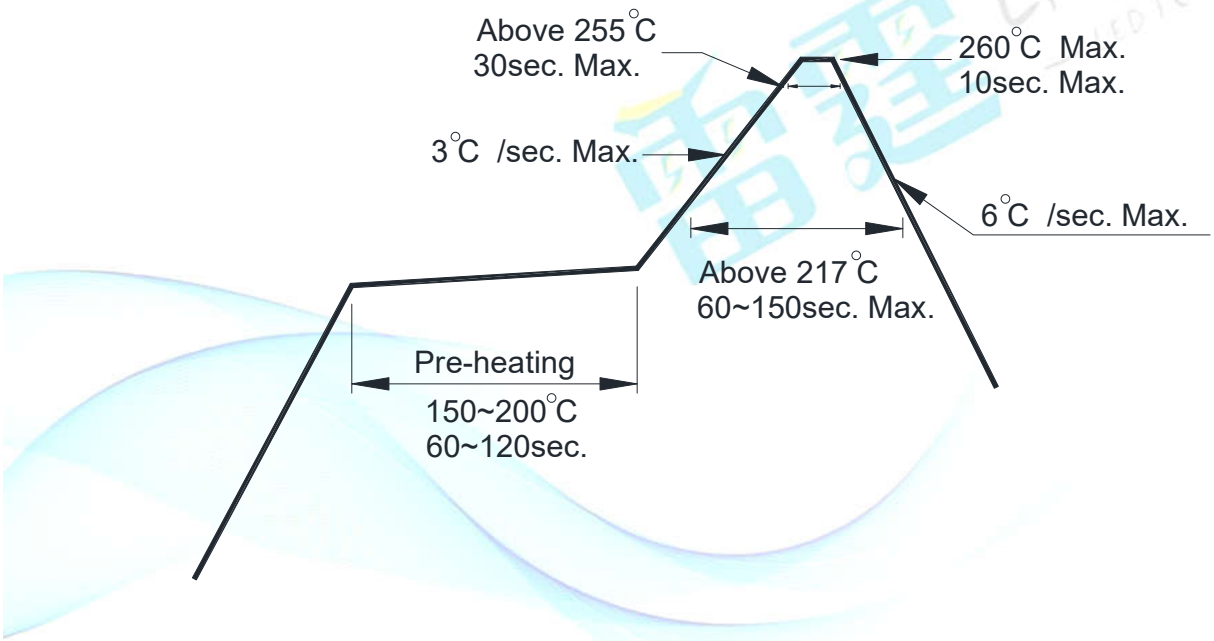
No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp.: 260℃/10sec.	6 Min.	22 PCS.	0/1
2	Thermal Shock	H : +100℃/5min ∫ 10 sec L : -10℃/5min	300 Cycles	22 PCS.	0/1
3	Temperature Cycle	H : +100℃/15min ∫ 5 min L : -40℃/15min	300 Cycles	22 PCS.	0/1
4	High Temperature/Humidity Storage	Ta=85℃,85%RH	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Ta=-40℃	1000 Hrs.	22 PCS.	0/1
6	High Temperature Storage	Ta=100℃	1000 Hrs.	22 PCS.	0/1
7	DC Operation Life	Ta=25℃, I_F = 400 mA	1000 Hrs.	22 PCS.	0/1
8	Peak Forward Current Operation Life (T=4.0s, tp=0.4s)	Ta=25℃, I_{FP} = 1100 mA	100000 cycles	5 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℃ or less and 90%RH or less.
   2.3 After opening the package: The LED's floor life is 1 year 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.

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 repa