DATASHEET

SMD ▪ MID Power LED
67-24ST/KKE-5MXXXXX720U1/2T

Features

- PLCC-2 package
- Top view white LED
- High luminous intensity output
- Wide viewing angle
- Pb-free
- ANSI Binning
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)

Description

The Everlight 67-24ST package has high efficacy, high CRI, low power consumption, wide viewing angle and a compact form factor. These features make this package an ideal LED for all lighting applications.

Applications

- General lighting
- Decorative and Entertainment Lighting
- Indicators
- Illumination
- Switch lights

Product Number Explanation

67-24ST/ K KE – 5M XX XXX XXX Z2 / 2 T

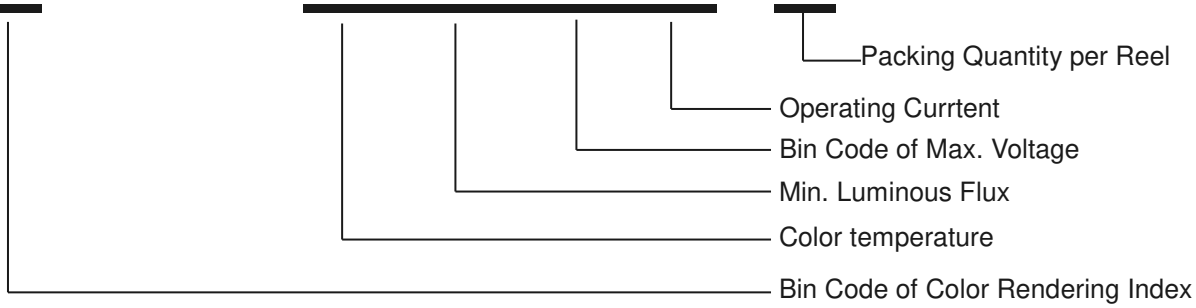


Table of Color Rendering Index

Symbol	Description
M	CRI(Min.) : 60
N	CRI(Min.) : 65
L	CRI(Min.) : 70
Q	CRI(Min.) : 75
K	CRI(Min.) : 80
P	CRI(Min.) : 85
H	CRI(Min.) : 90

Note:
Tolerance of Color Rendering Index: ±2

Table of Forward Current Index

Symbol	Description
U1	I_F:15mA

Table of Forward Voltage Index

Symbol	Description
720	72.0V max

Example:
67-24ST/KKE-5M65175720U1/2T

CRI	80(Min.)
CCT	6500K
Flux	175lm min
V_F	72.0V max
I_F	15mA

Mass Production List

Product	CRI Min.(1)	CCT(K)	Φ(lm) Min. (2)
67-24ST/KKE-5M27160720U1/2T	80	2700K	160
67-24ST/KKE-5M30165720U1/2T	80	3000K	165
67-24ST/KKE-5M35170720U1/2T	80	3500K	170
67-24ST/KKE-5M40175720U1/2T	80	4000K	175
67-24ST/KKE-5M50175720U1/2T	80	5000K	175
67-24ST/KKE-5M57175720U1/2T	80	5700K	175
67-24ST/KKE-5M65175720U1/2T	80	6500K	175

Notes:
1. Tolerance of Color Rendering Index: ±2
2. Tolerance of Luminous flux: ±11%.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
InGaN	Cool White Neutral White Warm White	Water Clear

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

Parameter	Symbol	Rating	Unit
Forward Current	I_F	15	mA
Peak Forward Current (Duty 1/10 @10ms)	I_{FP}	20	mA
Power Dissipation	P_d	1080	mW
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Thermal Resistance (Junction / Soldering point)	$R_{th\ J\text{-}S}$	17	℃/W
Junction Temperature	T_j	115	℃
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

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(1)	Φ	160	-----	-----	lm	I_F=15mA
Forward Voltage(2)	V_F	66	-----	72	V	I_F=15mA
Color Rendering Index(3)	Ra	80	-----	-----		I_F=15mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	I_F=15mA

Notes:
1. Tolerance of Luminous flux: ±11%.
2. Tolerance of Forward Voltage: ±0.1V.
3. Tolerance of Color Rendering Index: ±2

Bin Range of Luminous Flux

Bin Code	Min.	Max.	Unit	Condition
160L5	160	165	Im	I_F=15mA
165L5	165	170		
170L5	170	175		
175L5	175	180		
180L5	180	185		
185L5	185	190		

Note:
Tolerance of Luminous flux: ±11%.

Bin Range of Forward Voltage

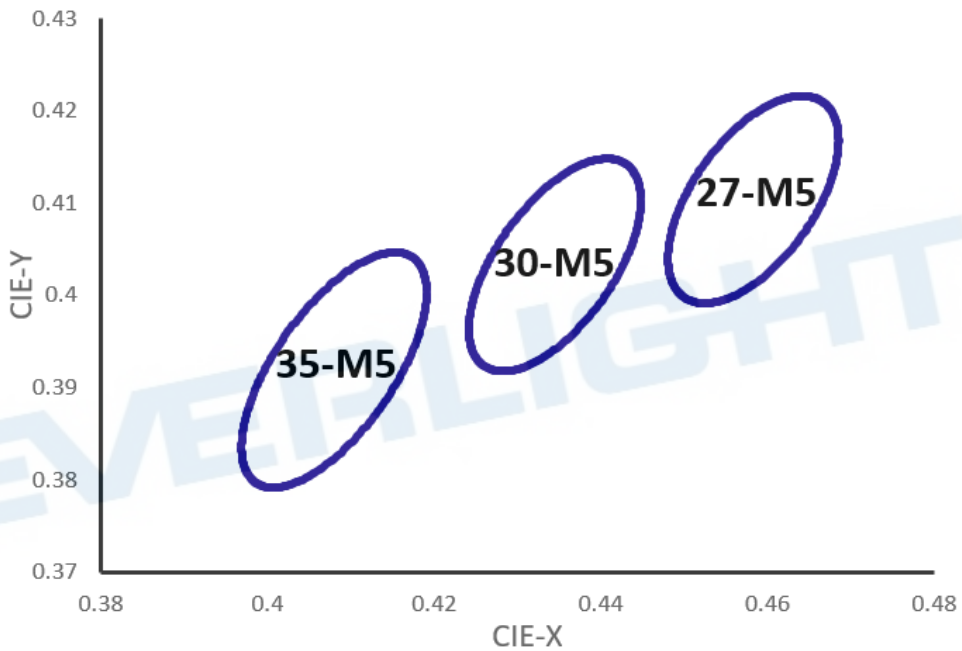
Bin Code	Min.	Max.	Unit	Condition
660T	66	68	V	I_F=15mA
680T	68	70		
700T	70	72		

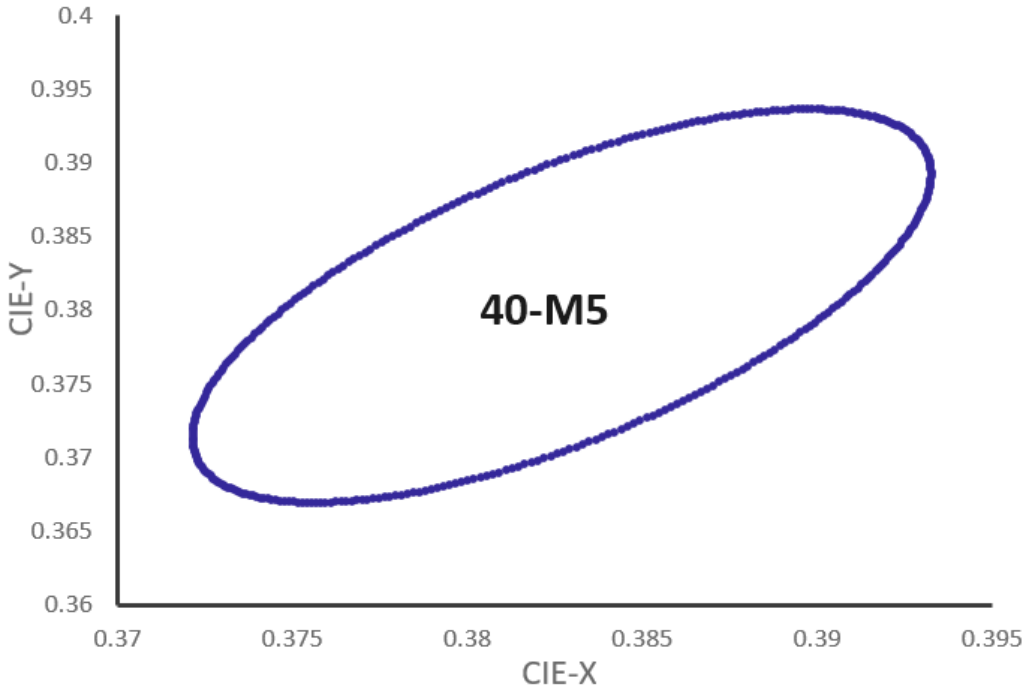
Note:
Tolerance of Forward Voltage : ±0.1V.

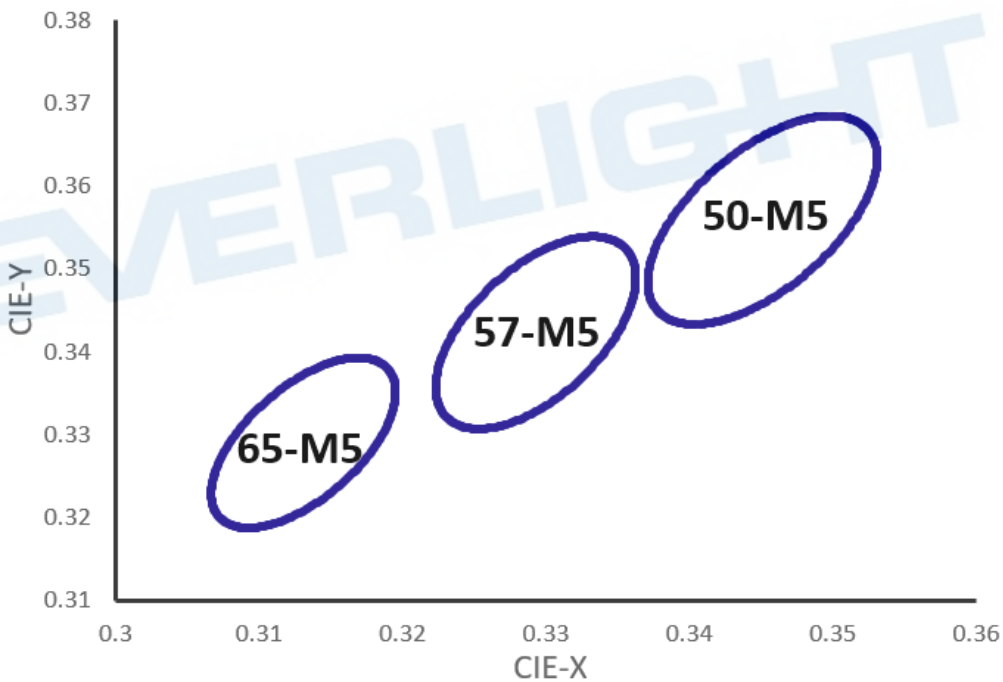
Bin Code of Macadam 5 step

Step	CCT	Bin Code	Cx	Cy	a	b	theta
5	2700K	27-M5	0.4583	0.4104	0.0135	0.007	49.7
	3000K	30-M5	0.4345	0.4033	0.0139	0.0068	50.22
	3500K	35-M5	0.408	0.3919	0.01545	0.0069	51
	4000K	40-M5	0.3827	0.3803	0.01565	0.0067	54.8
	5000K	50-M5	0.3451	0.3559	0.0137	0.0059	64.12
	5700K	57-M5	0.3293	0.3423	0.01245	0.00535	66.51
	6500K	65-M5	0.3131	0.329	0.01115	0.00475	64.57

The C.I.E. 1931 Chromaticity Diagram



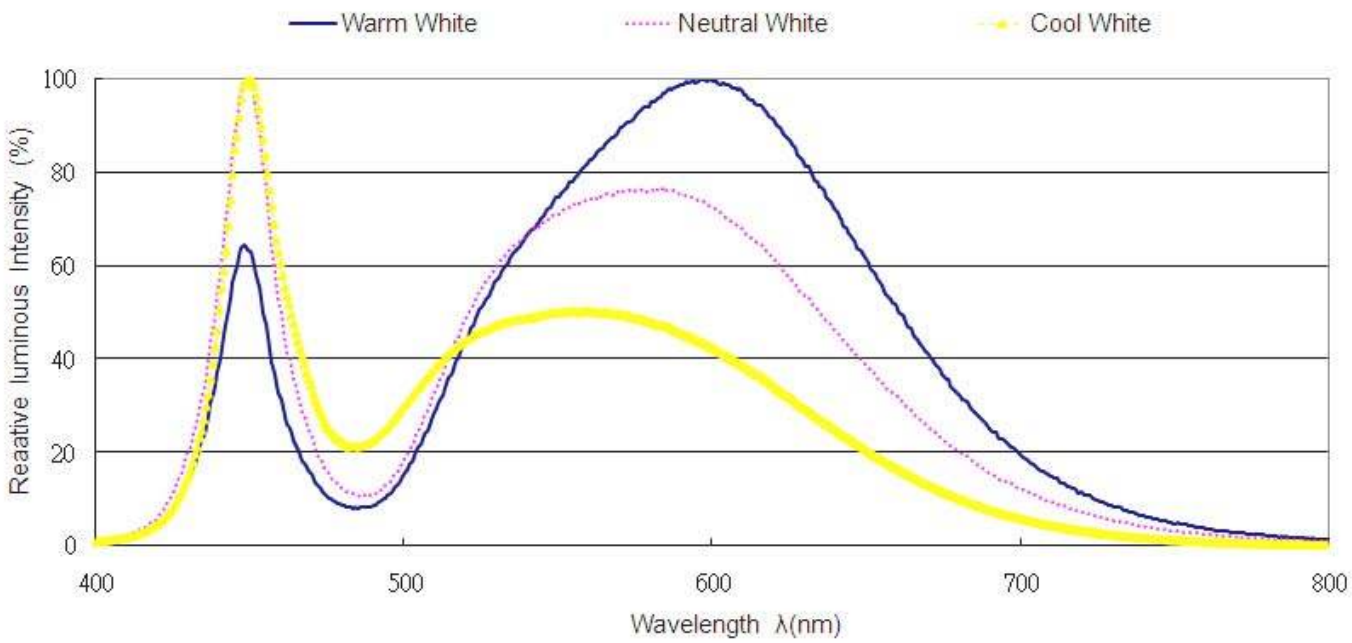




Notes:
1. The value is based on driving current by 15mA.

2. Tolerance of Chromaticity Coordinates: ±0.01.

Spectrum Distribution



Typical Electro-Optical Characteristics Curves

Fig.1 – Forward Voltage Shift vs. Junction Temperature

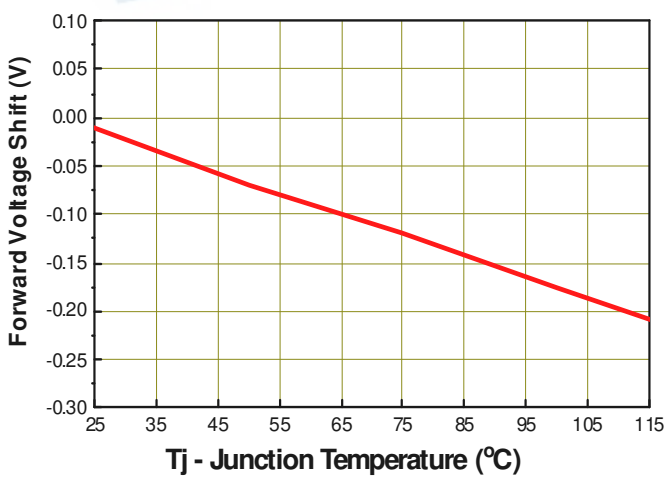
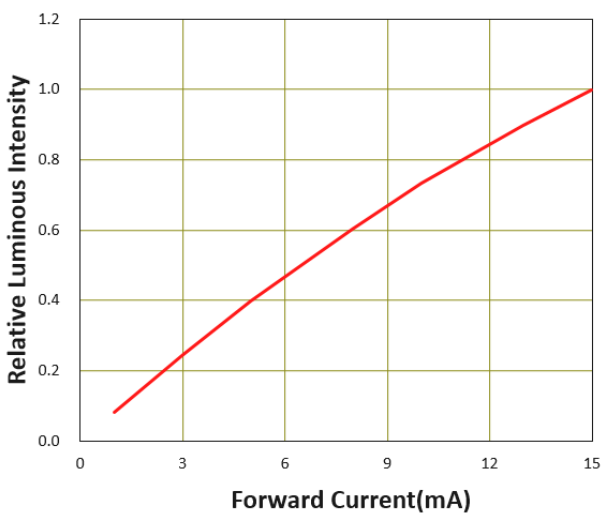


Fig.2 - Relative Luminous Intensity vs. Forward Current



Typical Electro-Optical Characteristics Curves

Fig.3 - Relative Luminous Intensity vs. Junction Temperature

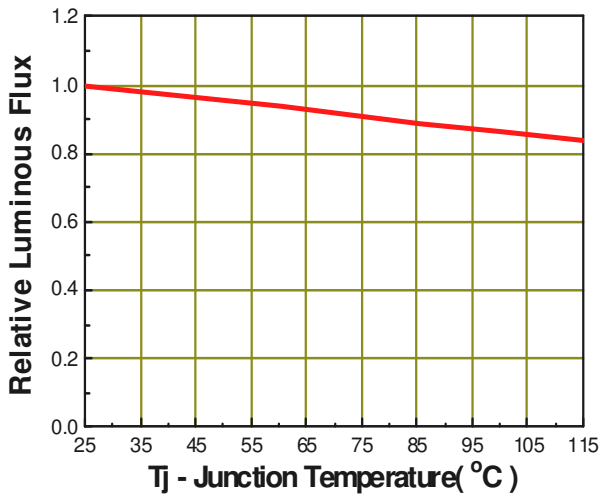


Fig.4 - Forward Current vs. Forward Voltage

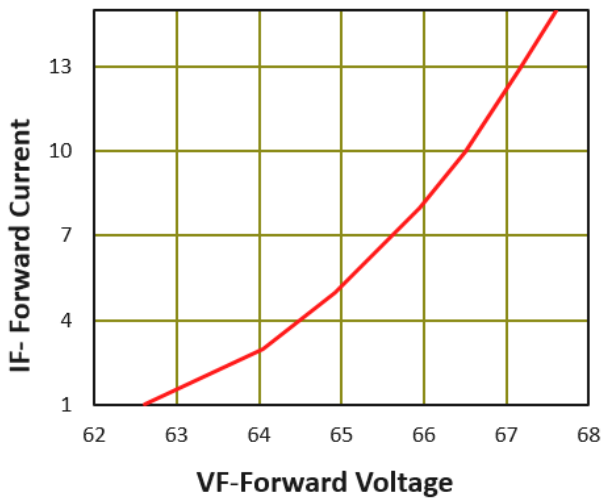


Fig.5 – Max. Driving Forward Current vs. Soldering Temperature

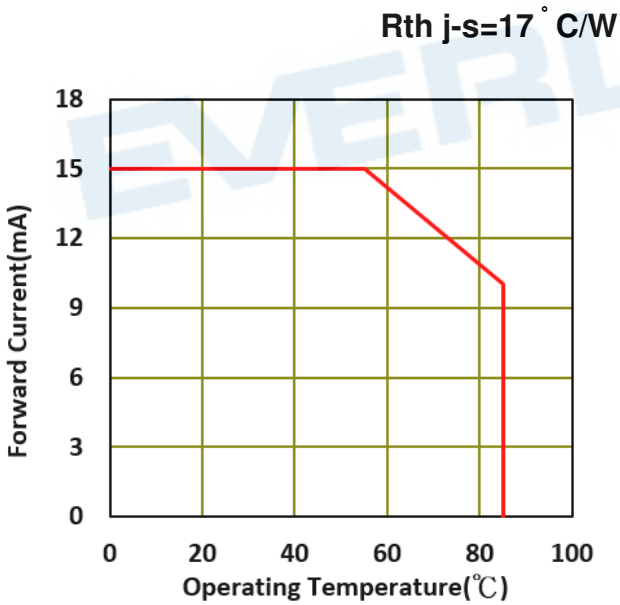
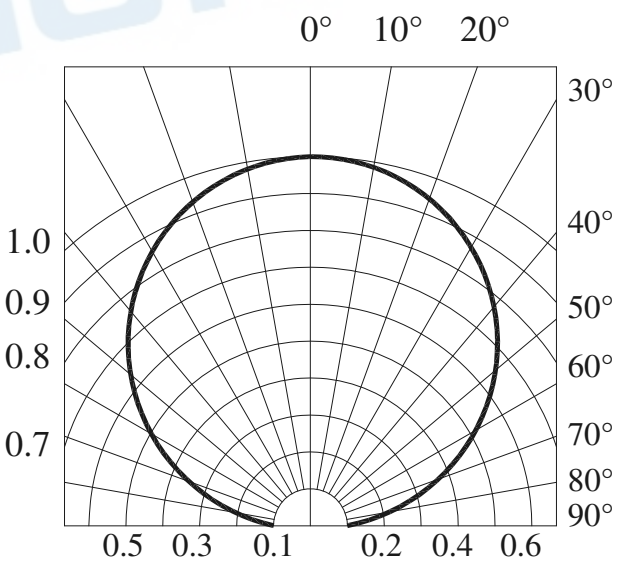
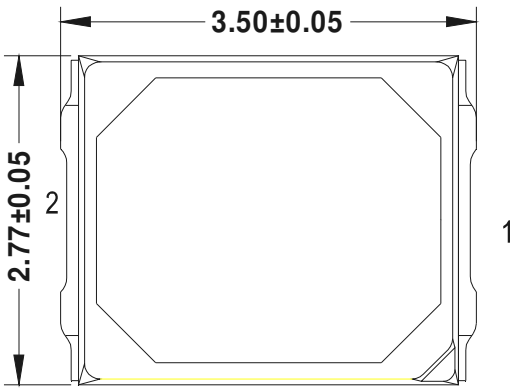


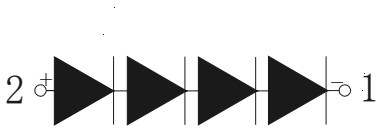
Fig.6 – Radiation Diagram



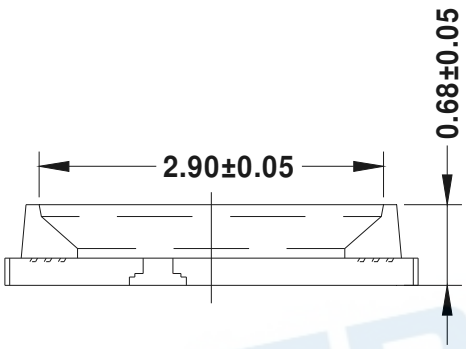
Package Dimension

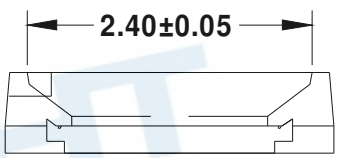
1. Lead frame

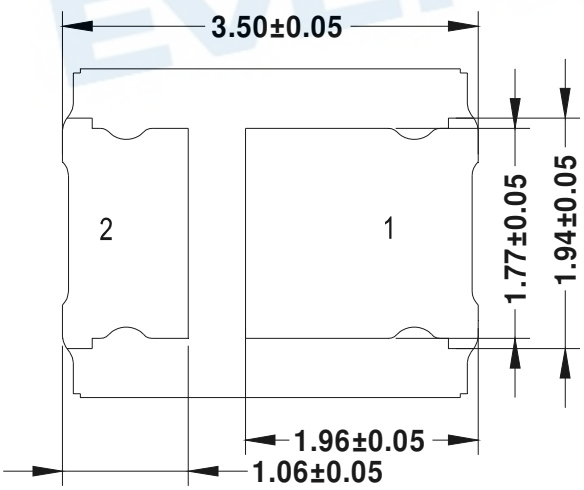


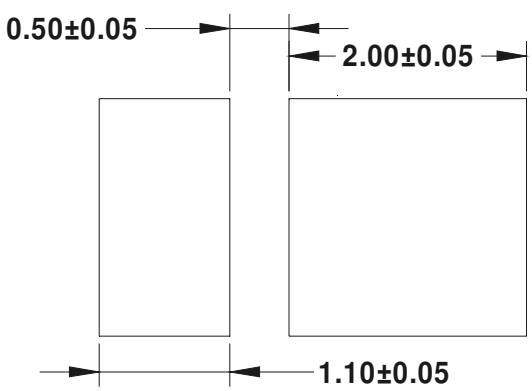


Polarity



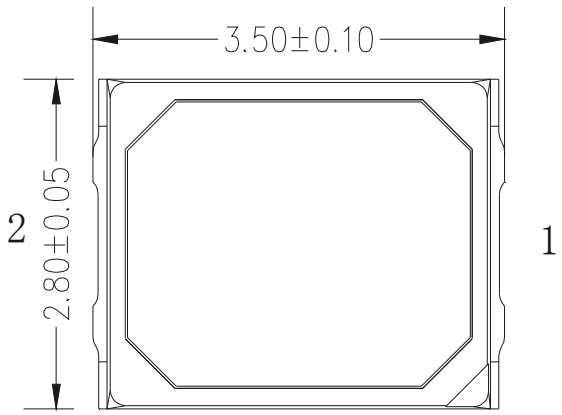


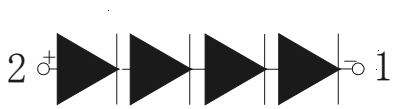




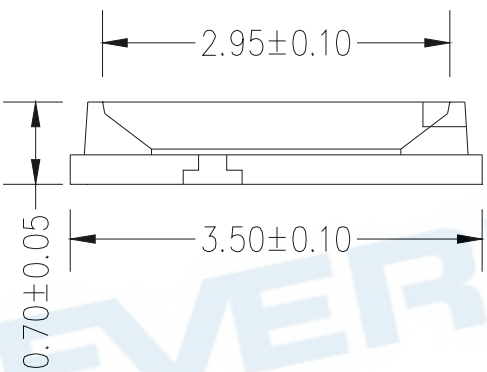
Soldering patterns

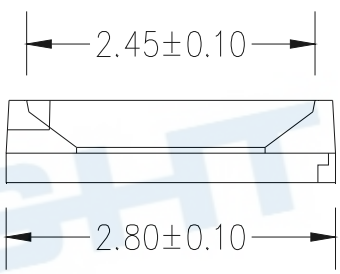
2. Lead frame

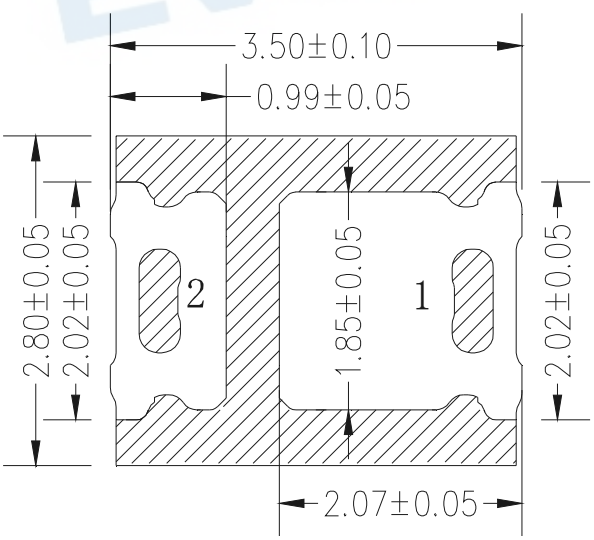


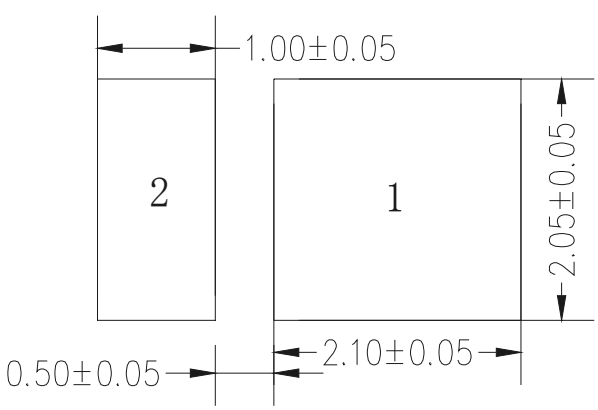


Polarity







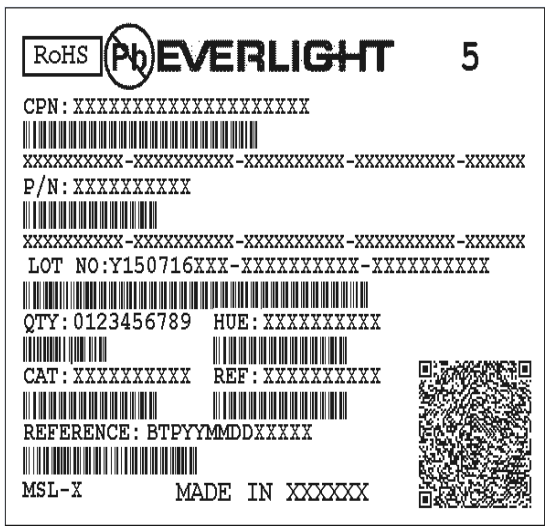


Soldering patterns

Note:
Tolerance unless mentioned is ±0.15 mm; Unit = mm

Moisture Resistant Packing Materials

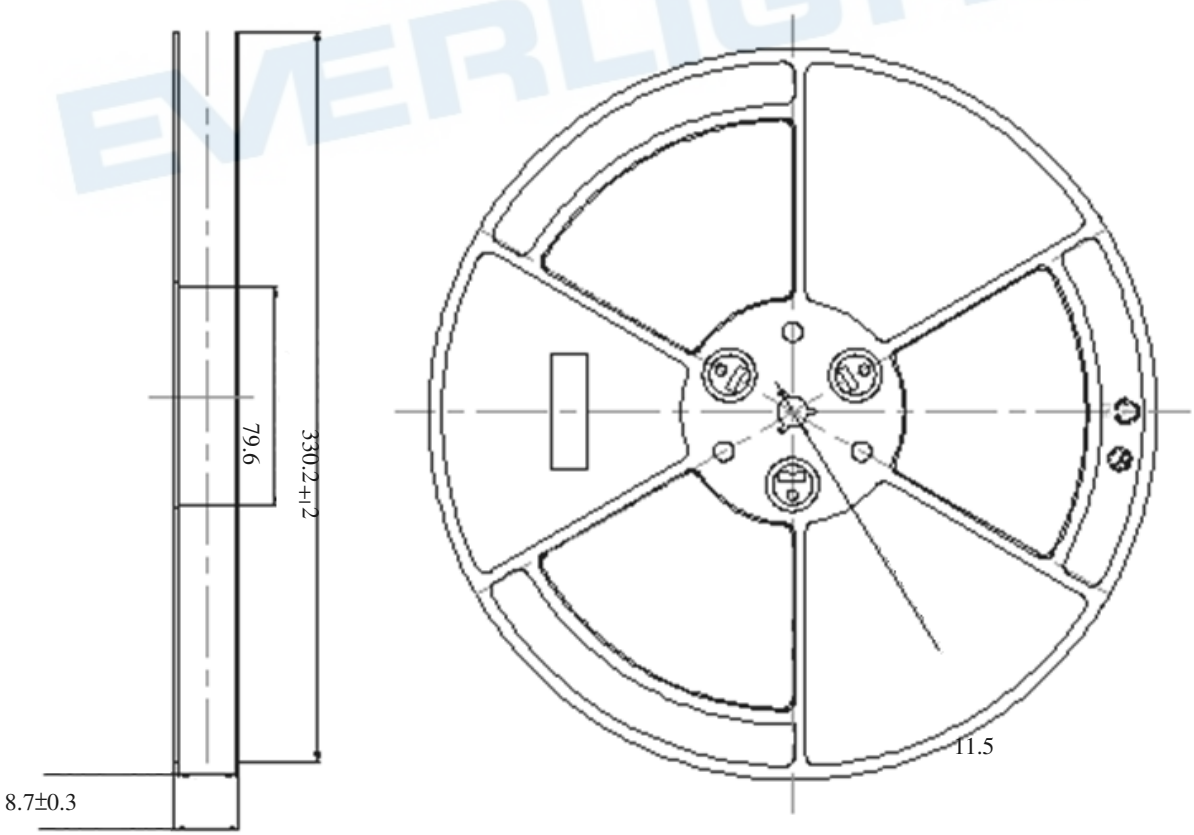
Label Explanation



- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

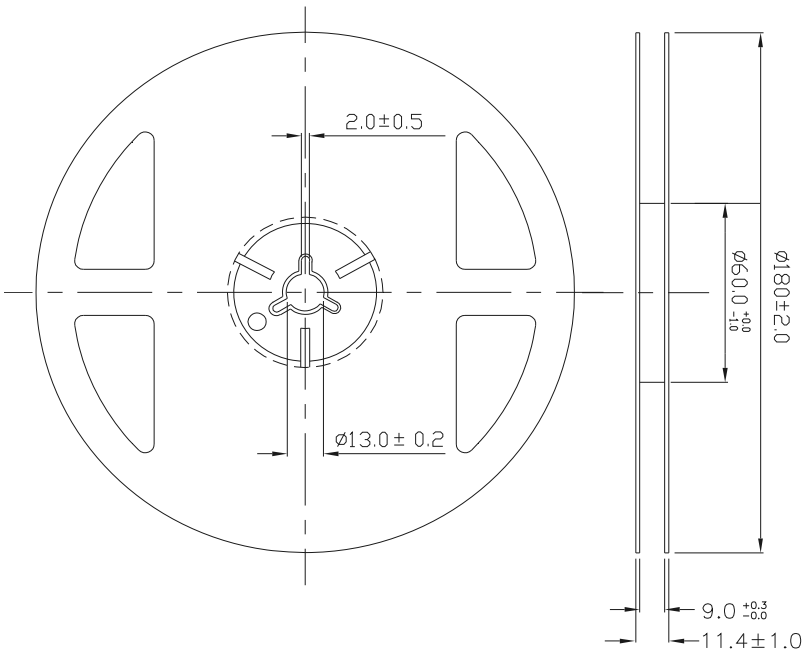
Reel Dimensions

1.Carrier Tape Dimensions:



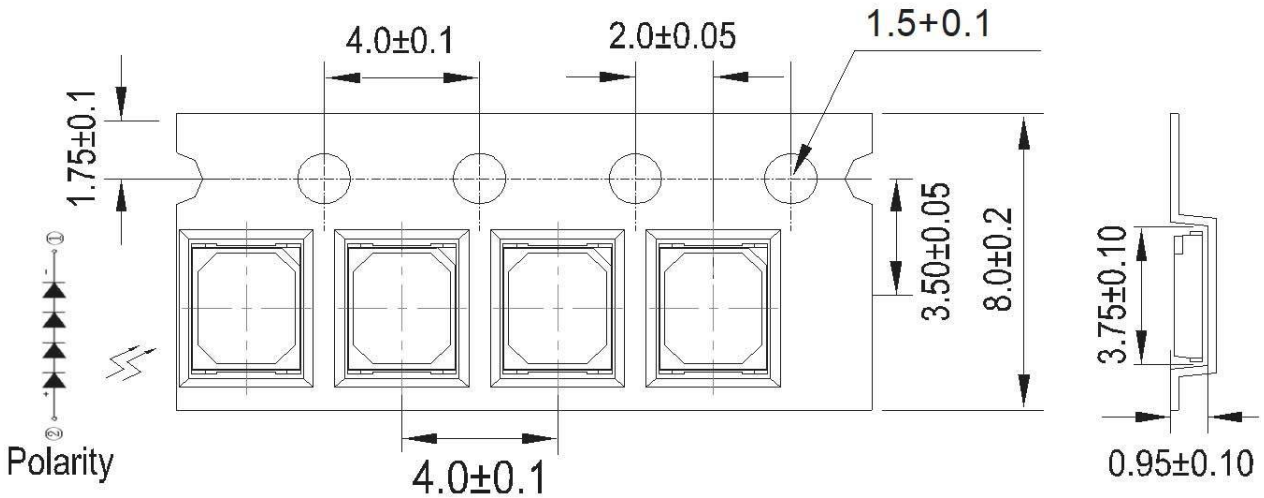
1-1. Loaded Quantity 16000 pcs Per Reel

2.Carrier Tape Dimensions:



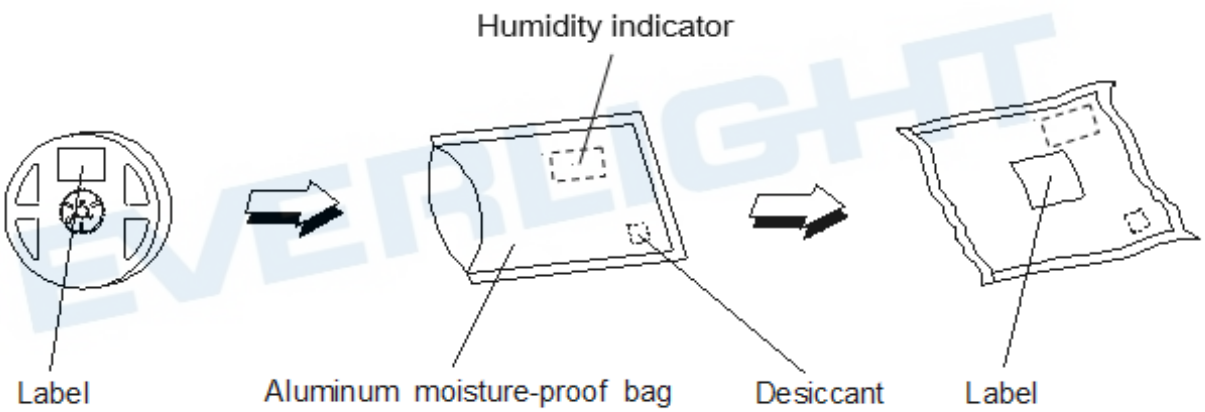
2-1. Loaded Quantity 500/1000/1500/2000/2500/3000/3500/4000 pcs Per Reel

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



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

Moisture Resistant Packing Process



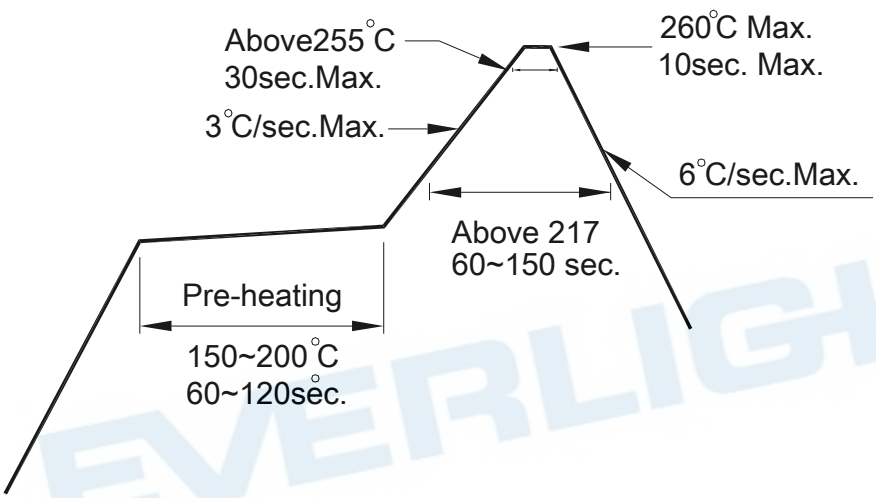
Reliability Test Items and Conditions

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

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Resistance to Solder Heat	Temp. : 260℃/10sec.	3 Times.	8 PCS.	0/1
2	Temperature Cycle	-40°C~100°C / Dwell time 30min	200 Cycles	8 PCS.	0/1
3	High Temperature/Humidity Life	Ta=85℃,85%RH, I_F = 10mA	1000 Hrs.	8 PCS.	0/1
4	Low Temperature Life	Ta=-40℃, I_F = 15 mA	1000 Hrs.	8 PCS.	0/1
5	High Temperature Life	Ta=60℃, I_F =14 mA	3000 Hrs.	8 PCS.	0/1
6	High Temperature Life	Ta=85℃, I_F =10 mA	3000 Hrs.	8 PCS.	0/1
7	Pulse	ON 30ms / OFF 2500ms	30000 CYCLES	8 PCS.	0/1
8	Thermal Shock	H : +100℃ 20min ∫ 10 sec L : -40℃ 20min	200 Cycles	8 PCS.	0/1
9	Power Temperature Cycle	H : +100℃ 15min ∫ 5 min L : -40℃ 15min I_F = 12 mA	200 Cycles	8 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 168 Hrs 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



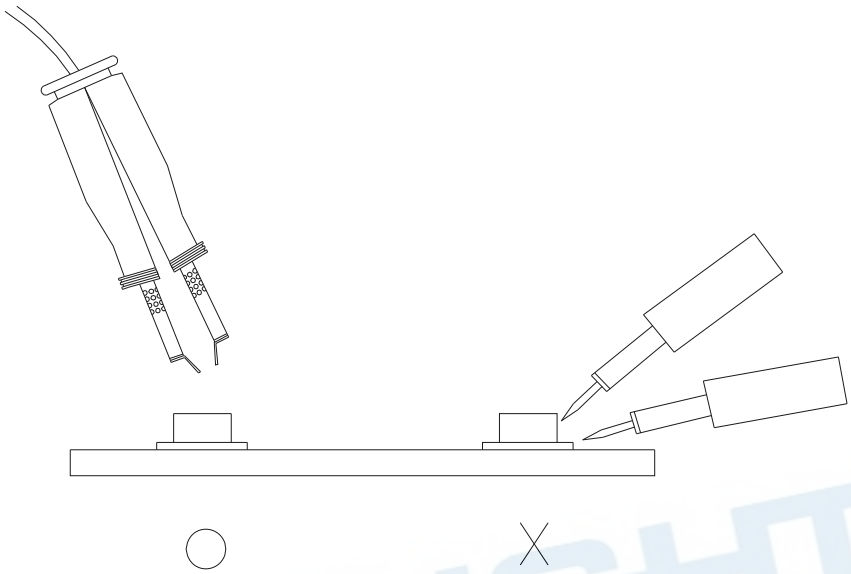
   3.2 Reflow soldering should not be done more than two times.
   3.3 When soldering, do not put stress on the LEDs during heating.
   3.4 After soldering, do not warp the circuit board.

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 repairing.



DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.

2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.

3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.

4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.

5. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without obtaining EVERLIGHT's prior consent.

6. This product is not intended to be used for military, aircraft, automotive, medical,