DATASHEET

SMD ▪ High Power LED
XI5050EE/LKE-HXXXXX60Z18/2N

Features

- Top view white LED
- High luminous intensity output
- Typical Viewing Angle:120°
- Pb-free
- 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 5050 package is a lighting grade high power LED. It is a compact package with high lumens and efficiency and is suitable for many lighting applications.

Applications

- Decorative and Entertainment Lighting
- Agriculture Lighting
- General use
- Illumination
- public lighting: street lights, high bay lights, stadium lights

Product Number Explanation

XI5050EE/LKE - HXXXXXXXZ18/2N

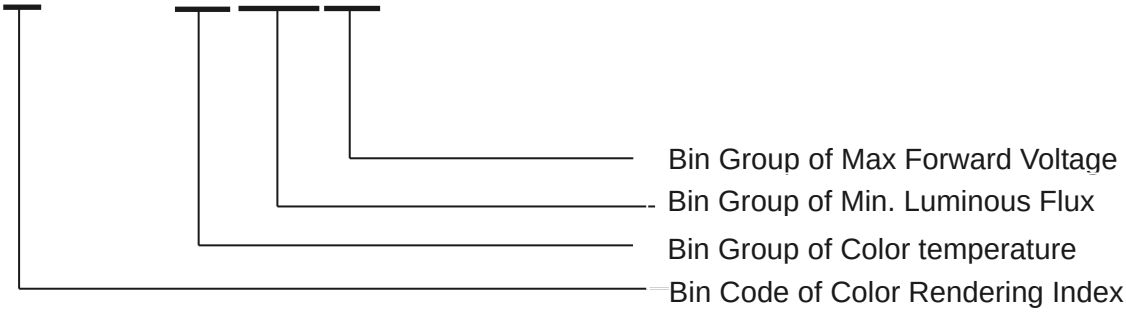


Table of Color Rendering Index

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
R	CRI(Min.) : 90，R9(Min.) : 50

Note:
Tolerance of Color Rendering Index: ±2

Table of Forward Current Index

Symbol	Description
Z18	I_F:180mA

Table of Forward Voltage Index

Symbol	Description
60	6.0V max

Example:
XI5050EE/LKE-H5023060Z18/2N

CRI	70(Min.)
CCT	5000K
Flux	230lm(Min)
V_F	6.0V(Max)
I_F	180mA

Mass Production List

CCT(K)	Product	CRI Min.(1)	Φ(lm) Min. (2)	Φ(lm) Max. (2)	Φ(lm) Typ. (2) (4)	
					640mA	750mA
1800	XI5050EE/LKE-H1816060Z18/2N	70	160	190	525	645
2200	XI5050EE/LKE-H2217560Z18/2N	70	175	205	570	650
2700	XI5050EE/LKE-H2720560Z18/2N	70	205	225	660	760
3000	XI5050EE/LKE-H3021560Z18/2N	70	215	235	690	795
3500	XI5050EE/LKE-H3522060Z18/2N	70	220	240	700	805
4000	XI5050EE/LKE-H4023060Z18/2N	70	230	255	735	840
5000	XI5050EE/LKE-H5023060Z18/2N	70	230	255	735	835
5700	XI5050EE/LKE-H5722560Z18/2N	70	225	255	720	820
6000	XI5050EE/LKE-H6022560Z18/2N	70	225	255	720	820
6500	XI5050EE/LKE-H6522560Z18/2N	70	225	255	720	820

Notes:
1. Tolerance of Color Rendering Index: ±2
2. Tolerance of Luminous flux: ±11%.
3. Tolerance of Forward Voltage: ±0.1V
4. 640mA and 750mA Luminous flux reference value

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	1050	mA
Power Dissipation	P_d	6300	mW
Pulse Forward Current	IPF	2000	mA
Operating Temperature	T_{opr}	-35 ~ + 105	℃
Storage Temperature	T_{stg}	-35 ~ + 105	℃
Thermal Resistance (Junction / Soldering point)	$R_{th\ J\text{-}S}$	2.5	℃/W
Junction Temperature	T_j	125	℃
ESD Sensitivity	ESD	2000	V
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	-----	255	lm	I_F=180mA
Forward Voltage(2)	V_F	---	-----	6.0	V	I_F=180mA
Color Rendering Index(3)	Ra	70	----	----		I_F=180mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	I_F=180mA
Reverse Current	IR	-----	-----	10	μA	V_R =5V

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
160L15	160	175	lm	I_F=180mA
175L15	175	190		
190L15	190	205		
205L15	205	220		
215L15	215	230		
220L15	220	235		
225L15	225	240		
230L15	230	245		
245L10	245	255		

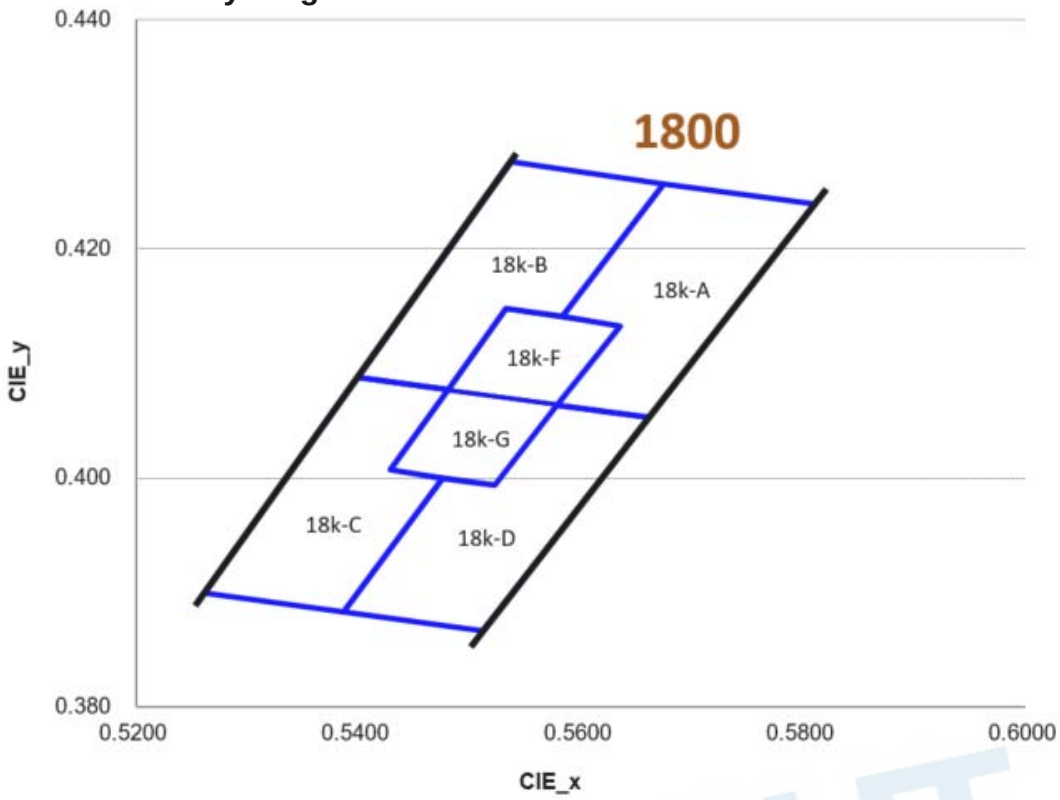
Note:
Tolerance of Luminous flux: ±11%.

Bin Range of Forward Voltage

Group	Bin Code	Min.	Max.	Unit	Condition
5260	52B	5.2	5.4	V	I_F=180mA
	54B	5.4	5.6		
	56B	5.6	5.8		
	58B	5.8	6.0		

Note:
Tolerance of Forward Voltage: ±0.1V.

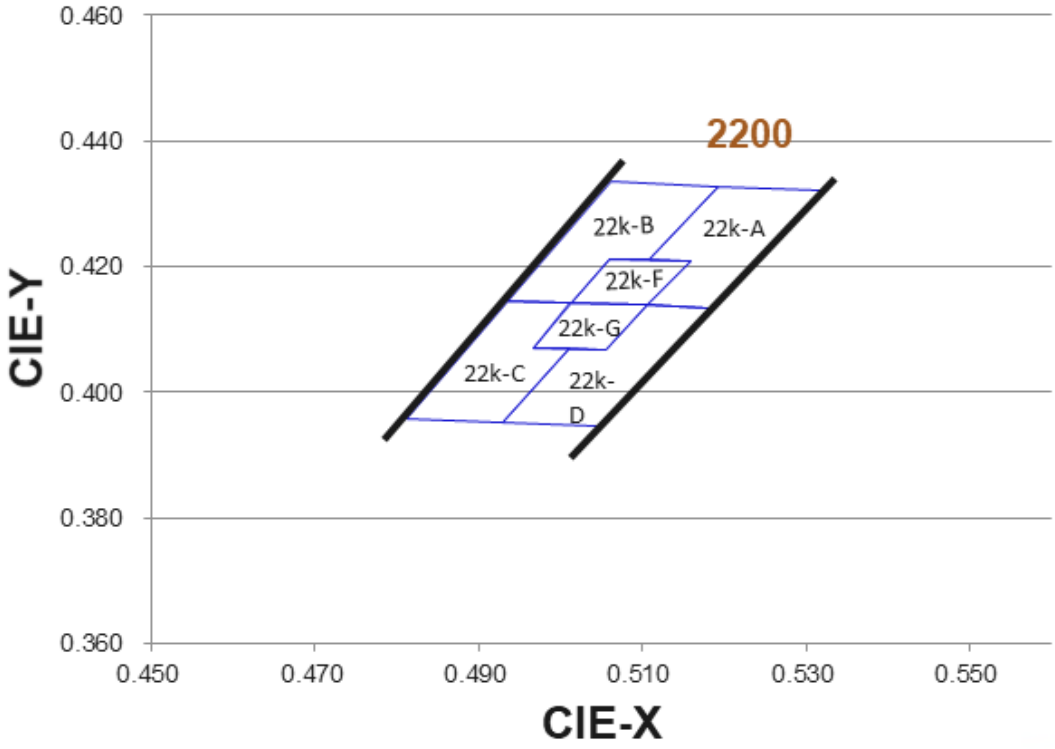
The C.I.E. 1931 Chromaticity Diagram



Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
1800K	18K-A	0.5810	0.4239	18K-D	0.5661	0.4053
		0.5674	0.4257		0.5579	0.4064
		0.5584	0.4141		0.5523	0.3994
		0.5635	0.4133		0.5476	0.4000
		0.5579	0.4064		0.5387	0.3883
		0.5661	0.4053		0.5512	0.3867
	Reference Range:1765K~1885K					
	18K-B	0.5674	0.4257	18K-C	0.5481	0.4077
		0.5538	0.4276		0.5400	0.4088
		0.5400	0.4088		0.5262	0.3900
		0.5481	0.4077		0.5387	0.3883
		0.5533	0.4148		0.5476	0.4000
		0.5584	0.4141		0.5429	0.4007
	Reference Range:1810K~1960K					
	18K-F	0.5635	0.4133	18K-G	0.5579	0.4064
		0.5533	0.4148		0.5481	0.4077
		0.5481	0.4077		0.5429	0.4007
		0.5579	0.4064		0.5523	0.3994
	Reference Range: 1805K~1900K					

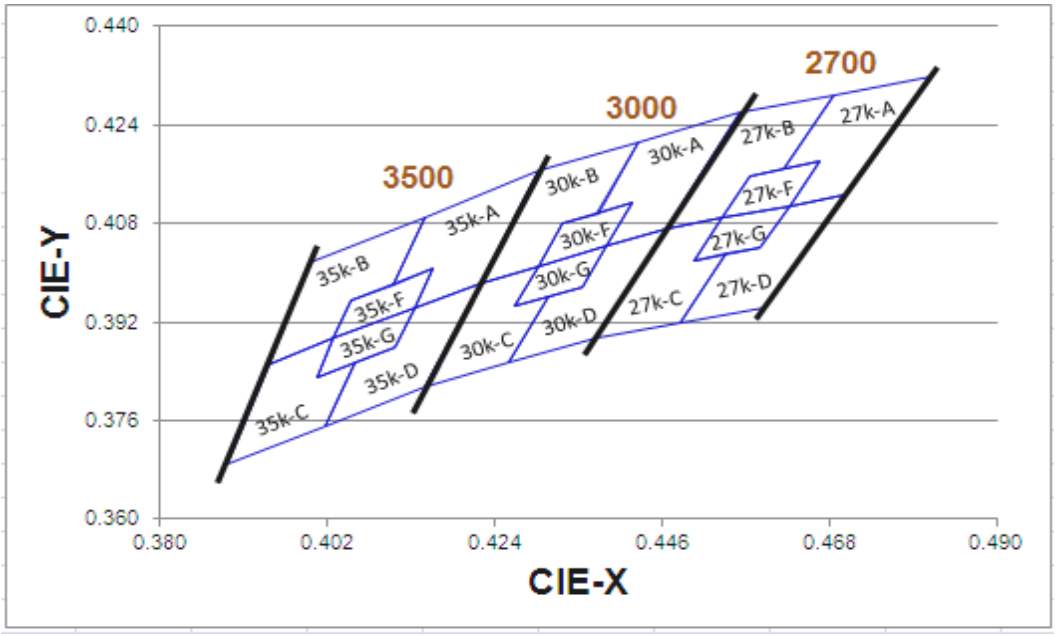
The C.I.E. 1931 Chromaticity Diagram



Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
2200K	22K-A	0.5322	0.4322	22K-D	0.5184	0.4134
		0.5191	0.4328		0.5106	0.4138
		0.5109	0.4210		0.5055	0.4067
		0.5158	0.4208		0.5011	0.4069
		0.5106	0.4138		0.4928	0.3951
		0.5184	0.4134		0.5046	0.3946
	Reference Range:2080K~2218K					
	22K-B	0.5191	0.4328	22K-C	0.5011	0.4142
		0.5061	0.4334		0.4936	0.4145
		0.4936	0.4145		0.4811	0.3957
		0.5014	0.4142		0.4928	0.3951
		0.5060	0.4212		0.5011	0.4069
		0.5109	0.4210		0.4967	0.4071
	Reference Range:2190K~2340K					
	22K-F	0.5158	0.4208	22K-G	0.5106	0.4138
		0.5060	0.4212		0.5014	0.4142
		0.5014	0.4142		0.4967	0.4071
		0.5106	0.4138		0.5055	0.4067
	Reference Range: 2160K~2260K					

The C.I.E. 1931 Chromaticity Diagram



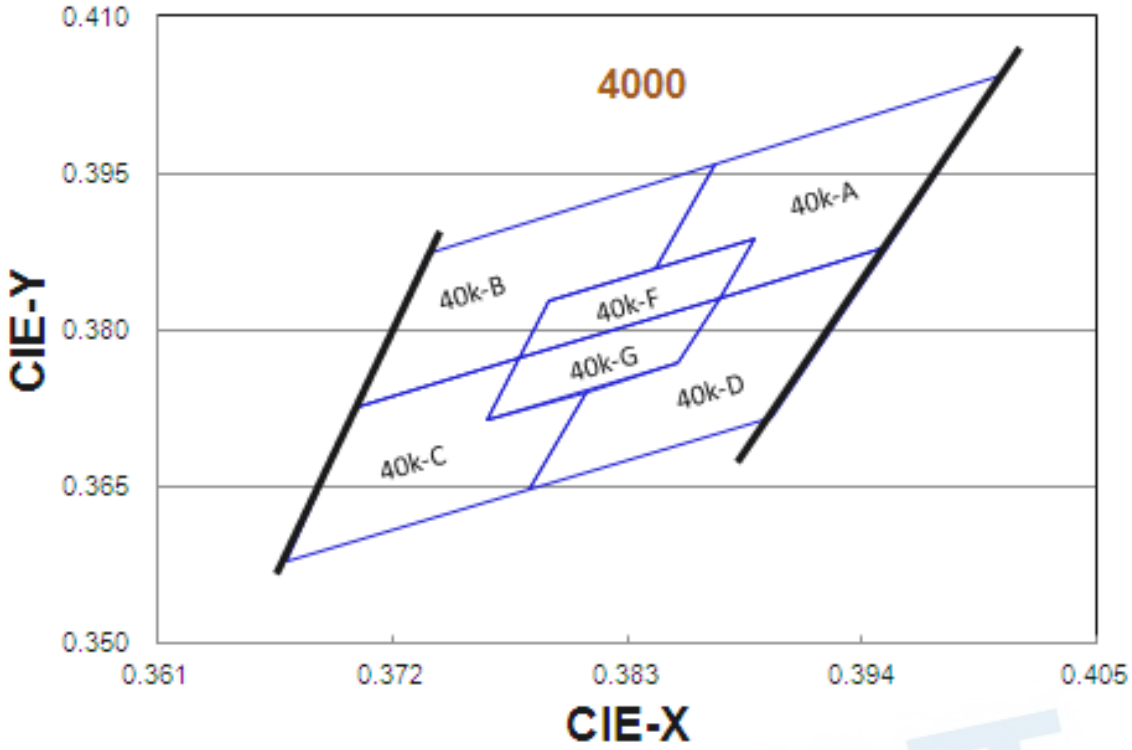
Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
2700K	27K-A	0.4813	0.4319	27K-D	0.4700	0.4126
		0.4687	0.4289		0.4627	0.4109
		0.4621	0.4169		0.4588	0.4041
		0.4667	0.4180		0.4544	0.4030
		0.4627	0.4109		0.4483	0.3919
		0.4700	0.4126		0.4593	0.3944
	Reference Range:2580K~2700K					
	27K-B	0.4687	0.4289	27K-C	0.4465	0.4071
		0.4562	0.4260		0.4373	0.3893
		0.4465	0.4071		0.4483	0.3919
		0.4539	0.4088		0.4544	0.4030
		0.4576	0.4158		0.4502	0.4020
		0.4621	0.4169		0.4539	0.4088
	Reference Range:2700K~2870K					
	27K-F	0.4667	0.4180	27K-G	0.4627	0.4109
		0.4576	0.4158		0.4539	0.4088
		0.4539	0.4088		0.4502	0.4020
		0.4627	0.4109		0.4588	0.4041
	Reference Range: 2665K~2770K					

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
3000K	30K-A	0.4562	0.4260	30K-D	0.4465	0.4071
		0.4430	0.4212		0.4388	0.4043
		0.4375	0.4096		0.4355	0.3977
		0.4422	0.4113		0.4311	0.3962
		0.4388	0.4043		0.4259	0.3853
		0.4465	0.4071		0.4373	0.3893
	Reference Range:2870K~3000K					
	30K-B	0.4430	0.4212	30K-C	0.4221	0.3984
		0.4299	0.4165		0.4147	0.3814
		0.4221	0.3984		0.4259	0.3853
		0.4297	0.4011		0.4311	0.3962
		0.4328	0.4079		0.4267	0.3946
		0.4375	0.4096		0.4297	0.4011
	Reference Range:3000K~3220K					
	30K-F	0.4422	0.4113	30K-G	0.4388	0.4043
		0.4328	0.4079		0.4297	0.4011
		0.4297	0.4011		0.4267	0.3946
		0.4388	0.4043		0.4355	0.3977
	Reference Range:2960K~3080K					

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
3500K	35K-A	0.4299	0.4165	35K-D	0.4221	0.3984
		0.4148	0.4090		0.4134	0.3943
		0.4106	0.3981		0.4108	0.3878
		0.4159	0.4007		0.4057	0.3853
		0.4134	0.3943		0.4018	0.3752
		0.4221	0.3984		0.4147	0.3814
	Reference Range:3220K~3500K					
	35K-B	0.4148	0.4090	35K-C	0.3943	0.3853
		0.3996	0.4015		0.3889	0.3690
		0.3943	0.3853		0.4018	0.3752
		0.4029	0.3893		0.4057	0.3853
		0.4051	0.3954		0.4006	0.3829
		0.4106	0.3981		0.4029	0.3893
	Reference Range:3500K~3710K					
	35K-F	0.4159	0.4007	35K-G	0.4134	0.3943
		0.4051	0.3954		0.4029	0.3893
		0.4029	0.3893		0.4006	0.3829
		0.4134	0.3943		0.4108	0.3878
	Reference Range:3360K~3540K					

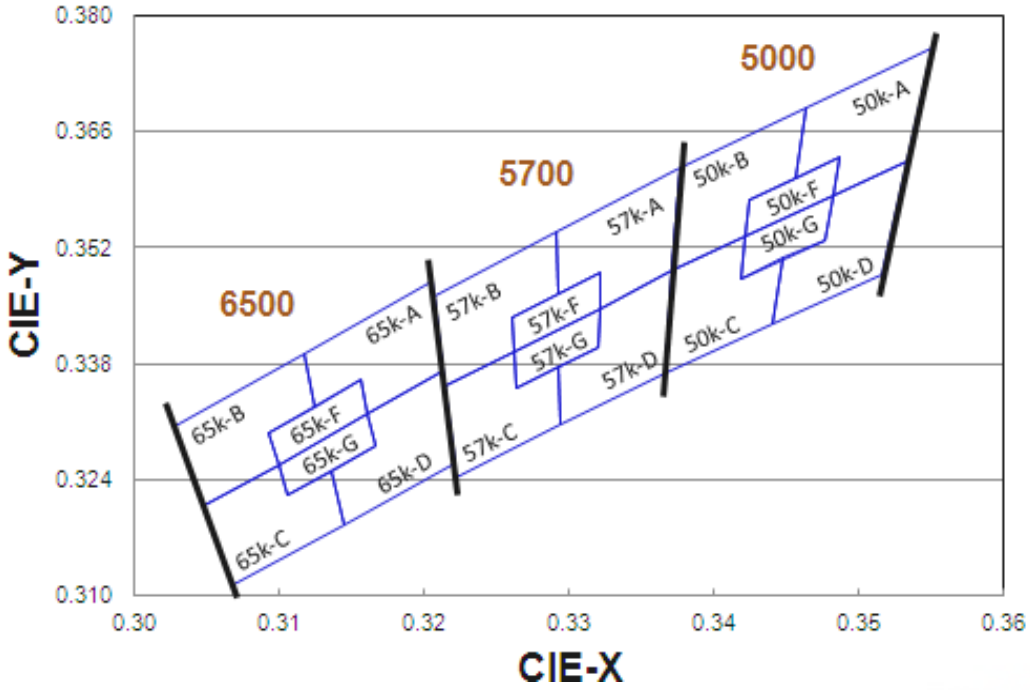
The C.I.E. 1931 Chromaticity Diagram



Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
4000K	40K-A	0.4006	0.4044	40K-D	0.3952	0.3880
		0.3871	0.3959		0.3873	0.3831
		0.3843	0.3858		0.3854	0.3768
		0.3890	0.3887		0.3810	0.3741
		0.3873	0.3831		0.3784	0.3647
		0.3952	0.3880		0.3898	0.3716
	Reference Range:3700K~3970K					
	40K-B	0.3871	0.3959	40K-C	0.3703	0.3726
		0.3736	0.3874		0.3670	0.3578
		0.3703	0.3726		0.3784	0.3647
		0.3779	0.3773		0.3810	0.3741
		0.3793	0.3828		0.3764	0.3713
		0.3843	0.3858		0.3779	0.3773
	Reference Range:3970K~4270K					
	40K-F	0.3890	0.3887	40K-G	0.3873	0.3831
		0.3793	0.3828		0.3779	0.3773
		0.3779	0.3773		0.3764	0.3713
		0.3873	0.3831		0.3854	0.3768
	Reference Range:3870K~4080K					

The C.I.E. 1931 Chromaticity Diagram



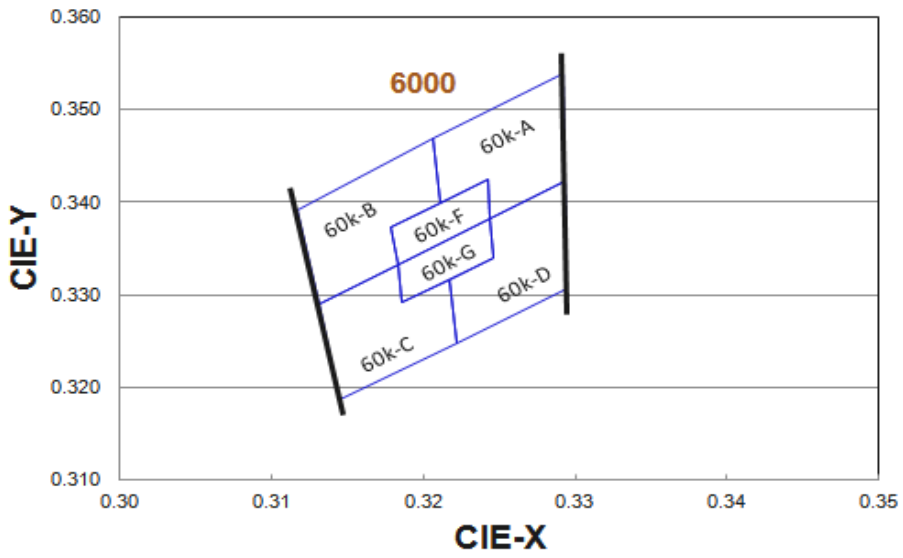
Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
5000K	50K-A	0.3551	0.3760	50K-D	0.3533	0.3624
		0.3464	0.3688		0.3482	0.3583
		0.3456	0.3604		0.3477	0.3530
		0.3487	0.3629		0.3448	0.3507
		0.3482	0.3583		0.3441	0.3428
		0.3533	0.3624		0.3515	0.3487
	Reference Range:4745K~5000K					
	50K-B	0.3464	0.3688	50K-C	0.3371	0.3493
		0.3376	0.3616		0.3366	0.3369
		0.3371	0.3493		0.3441	0.3428
		0.3422	0.3533		0.3448	0.3507
		0.3425	0.3579		0.3418	0.3483
		0.3456	0.3604		0.3422	0.3533
	Reference Range:5000K~5310K					
	50K-F	0.3487	0.3629	50K-G	0.3482	0.3583
		0.3425	0.3579		0.3422	0.3533
		0.3422	0.3533		0.3418	0.3483
		0.3482	0.3583		0.3477	0.3530
	Reference Range:4910K~5120K					

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
5700K	57K-A	0.3376	0.3616	57K-D	0.3371	0.3493
		0.3292	0.3539		0.3321	0.3447
		0.3292	0.3464		0.3320	0.3401
		0.3321	0.3490		0.3293	0.3377
		0.3321	0.3447		0.3294	0.3306
		0.3371	0.3493		0.3366	0.3369
	Reference Range:5310K~5700K					
	57K-B	0.3292	0.3539	57K-C	0.3215	0.3353
		0.3207	0.3462		0.3222	0.3243
		0.3215	0.3353		0.3294	0.3306
		0.3262	0.3395		0.3293	0.3377
		0.3261	0.3436		0.3263	0.3350
		0.3292	0.3464		0.3262	0.3395
	Reference Range:5700K~6020K					
	57K-F	0.3321	0.3490	57K-G	0.3321	0.3447
		0.3261	0.3436		0.3262	0.3395
		0.3262	0.3395		0.3263	0.3350
		0.3321	0.3447		0.3320	0.3401
	Reference Range:5520K~5780K					

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
6500K	65K-A	0.3205	0.3481	65K-D	0.3213	0.3371
		0.3117	0.3393		0.3161	0.3320
		0.3125	0.3328		0.3166	0.3281
		0.3157	0.3360		0.3136	0.3251
		0.3161	0.3320		0.3145	0.3187
		0.3213	0.3371		0.3221	0.3261
	Reference Range:6020K~6500K					
	65K-B	0.3117	0.3393	65K-C	0.3048	0.3209
		0.3028	0.3304		0.3068	0.3113
		0.3048	0.3209		0.3145	0.3187
		0.3100	0.3259		0.3136	0.3251
		0.3093	0.3297		0.3106	0.3222
		0.3125	0.3328		0.31	0.3259
	Reference Range:6500K~7050K					
	65K-F	0.3157	0.3360	65K-G	0.3161	0.3320
		0.3093	0.3297		0.3100	0.3259
		0.3100	0.3259		0.3106	0.3222
		0.3161	0.3320		0.3166	0.3281
	Reference Range:6300K~6690K					

The C.I.E. 1931 Chromaticity Diagram

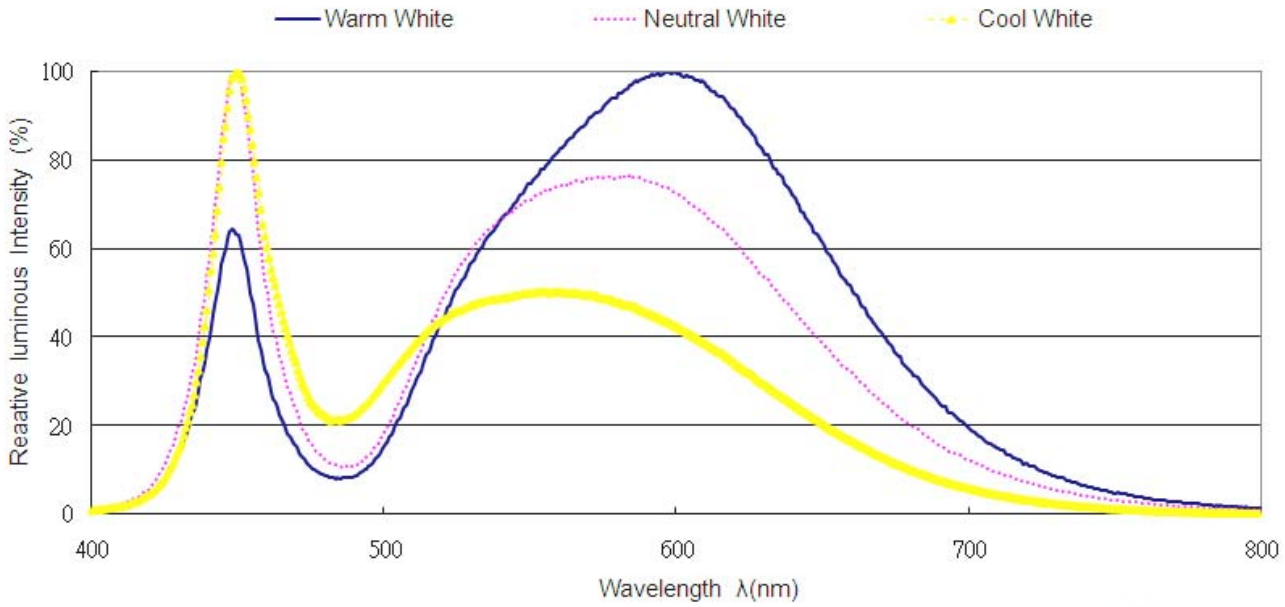


Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
6000K	60K-A	0.3292	0.3539	60K-D	0.3293	0.3423
		0.3206	0.3468		0.3244	0.3382
		0.3211	0.3399		0.3246	0.3340
		0.3242	0.3424		0.3217	0.3317
		0.3244	0.3382		0.3222	0.3248
		0.3293	0.3423		0.3294	0.3306
	Reference Range:5700K~6020K					
	60K-B	0.3206	0.3468	60K-C	0.3131	0.3290
		0.3117	0.3392		0.3145	0.3187
		0.3131	0.3290		0.3222	0.3248
		0.3183	0.3332		0.3217	0.3317
		0.3179	0.3373		0.3186	0.3292
		0.3211	0.3399		0.3183	0.3332
	Reference Range:6020K~6500K					
	60K-F	0.3242	0.3424	60K-G	0.3244	0.3382
		0.3179	0.3373		0.3183	0.3332
		0.3183	0.3332		0.3186	0.3292
		0.3244	0.3382		0.3246	0.3340
	Reference Range: 5870K~6190K					

Note:
1. The value is based on driving current by 180mA.
2. Tolerance of Chromaticity Coordinates: ±0.01.

Spectrum Distribution



Typical Electro-Optical Characteristics Curves

Fig.1 – Forward Voltage Shift vs. Junction Temperature

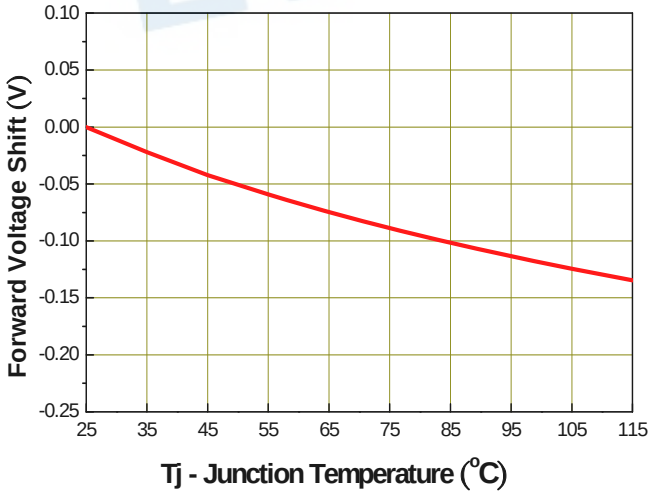
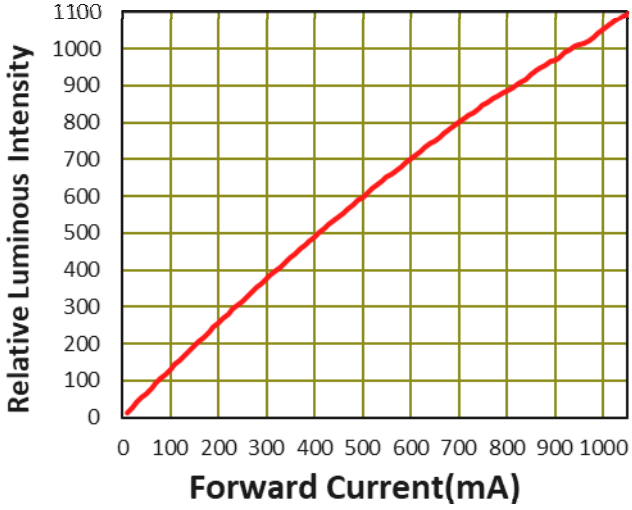


Fig.2 - Relative Luminous Intensity vs. Forward Current



Typical Electro-Optical Characteristics Curves

Fig.3 - Relative Luminous Intensity vs. Junction Temperature

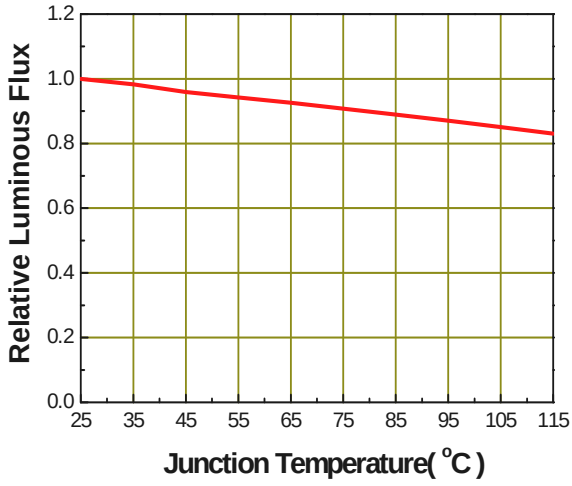


Fig.4 - Forward Current vs. Forward Voltage

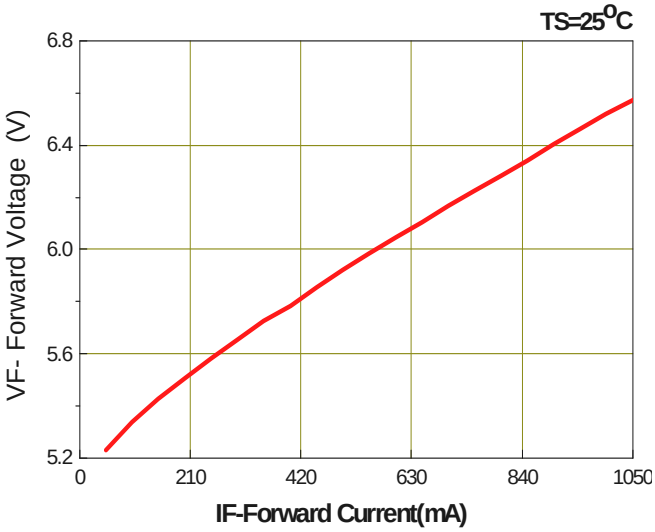


Fig.5 – Max. Driving Forward Current vs. Soldering Temperature

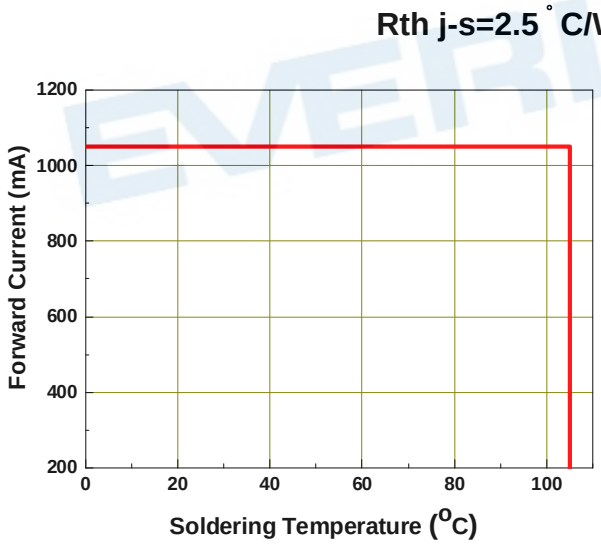
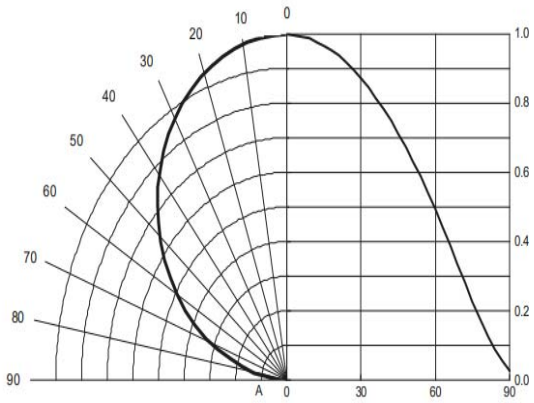


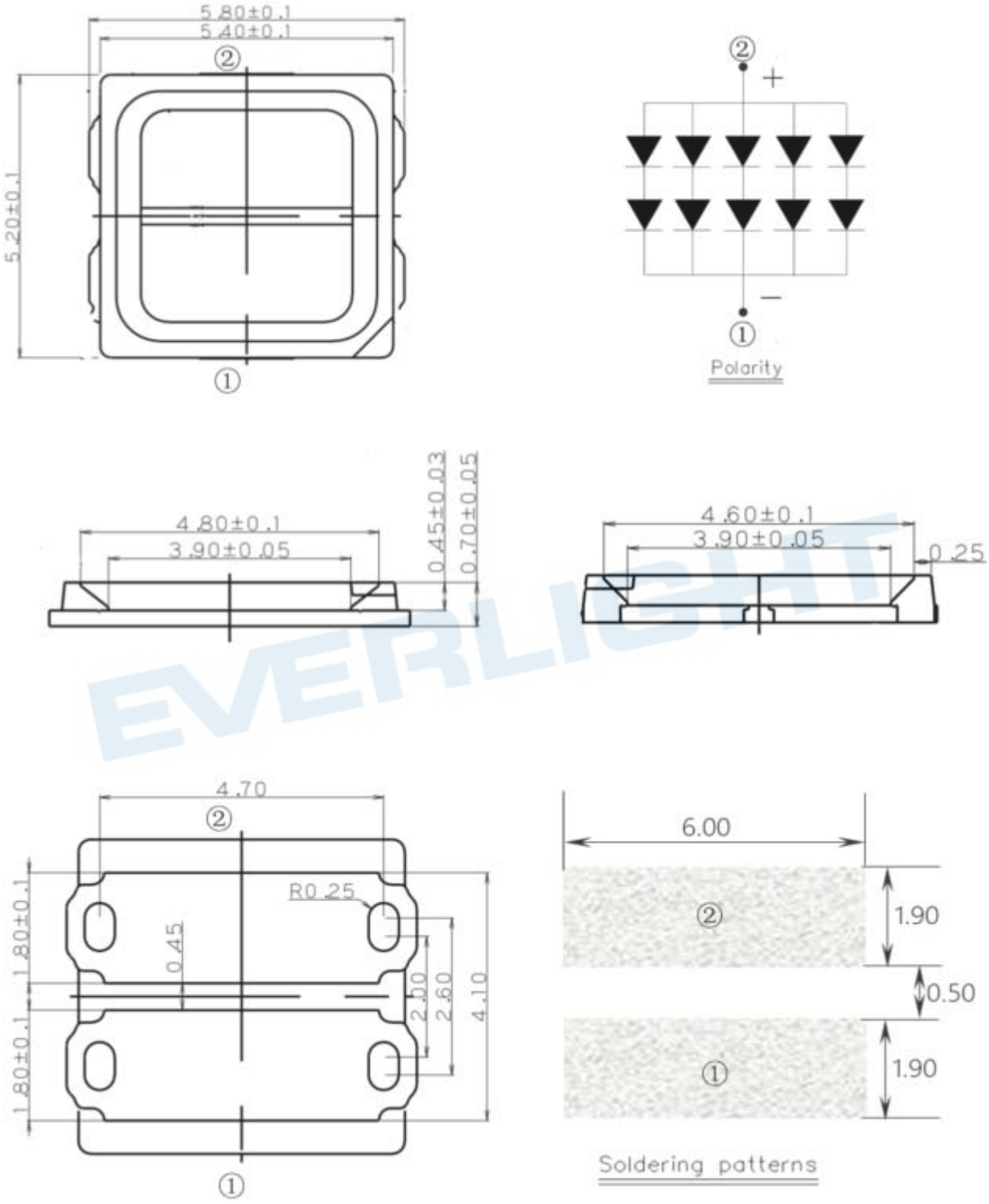
Fig.6 – Radiation Diagram



Notes:

1. $2\theta_{1/2}$ is the off XIs angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is ± 5°

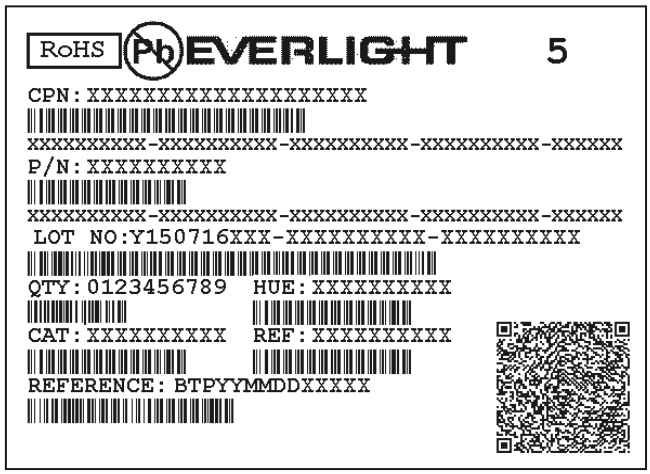
Package Dimension



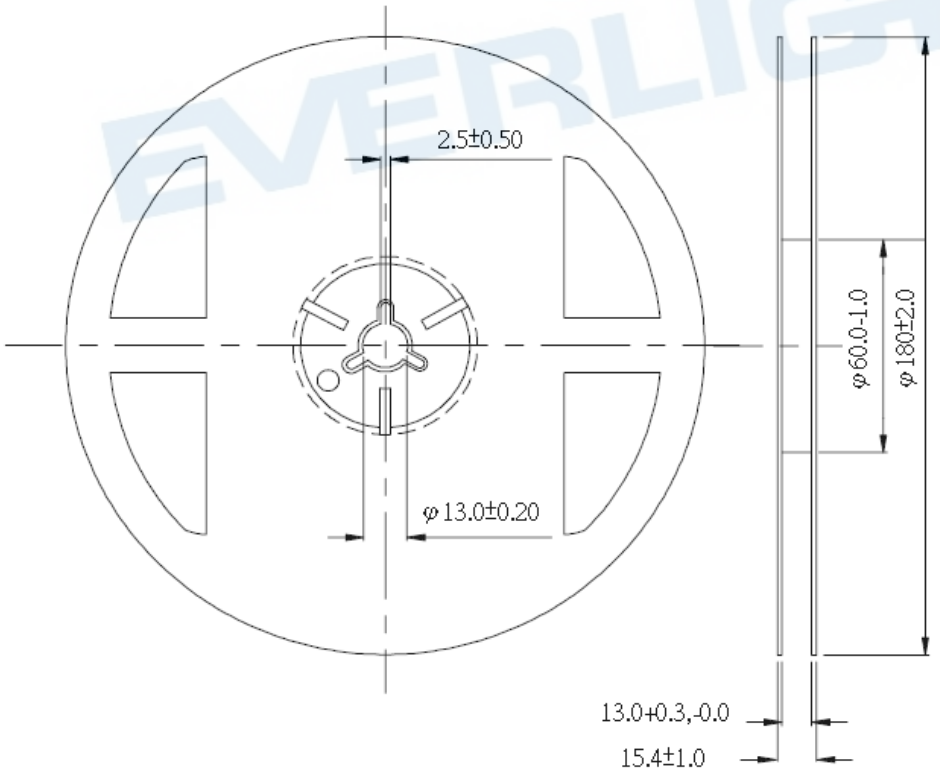
Notes:
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.2mm.

Moisture Resistant Packing Materials

1. CPN: Customer Specification (when required)
2. P/N : Everlight Production Number
3. QTY: Packing Quantity
4. CAT: Luminous Flux (Brightness) Bin
5. HUE: Color Bin
6. REF: Forward Voltage Bin
7. LOT No: Lot Number



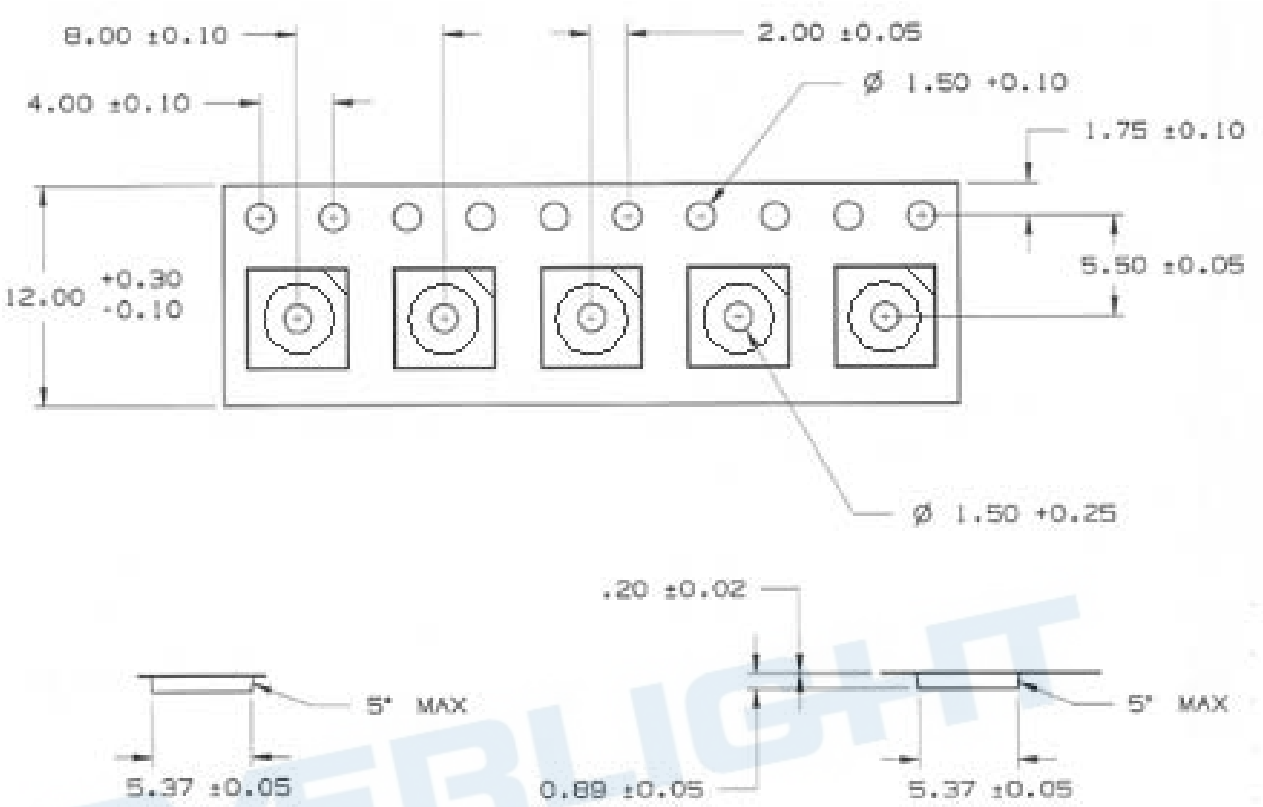
Reel Dimensions



Notes:

1. Tolerances unless mentioned are ±0.1mm.

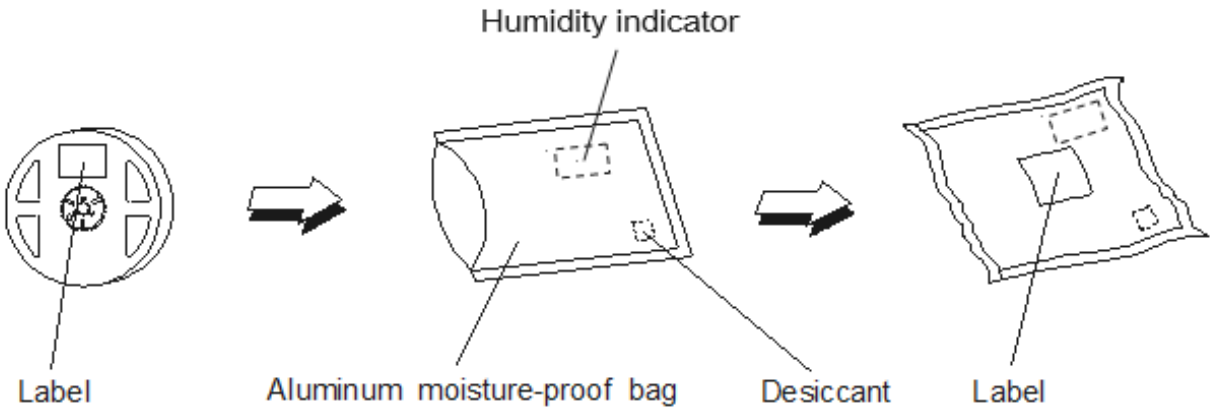
Carrier Tape Dimensions:
Loaded Quantity 1500/1000/500 pcs Per Reel



Notes:

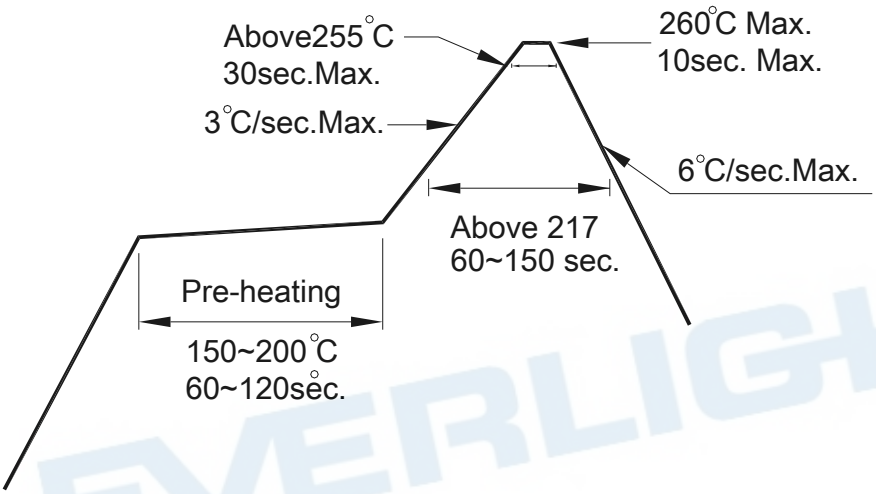
1.Tolerance unless mentioned is ±0.1mm; Unit = mm

Moisture Resistant Packing Process

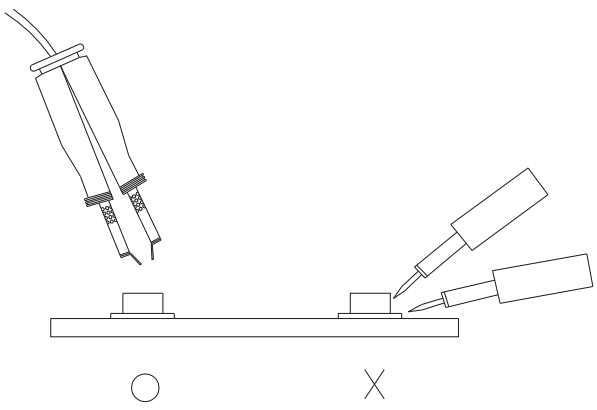


Precautions for Use

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,