

ShenZhen JuFei Optoelectronics Co., Ltd.



01.JH.CBEB2ZD-D

Customer:

PN: JH.CBEB2ZD-D

For: IF= 20mA

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Customer confirm	Approved by	Checked by	Issued by

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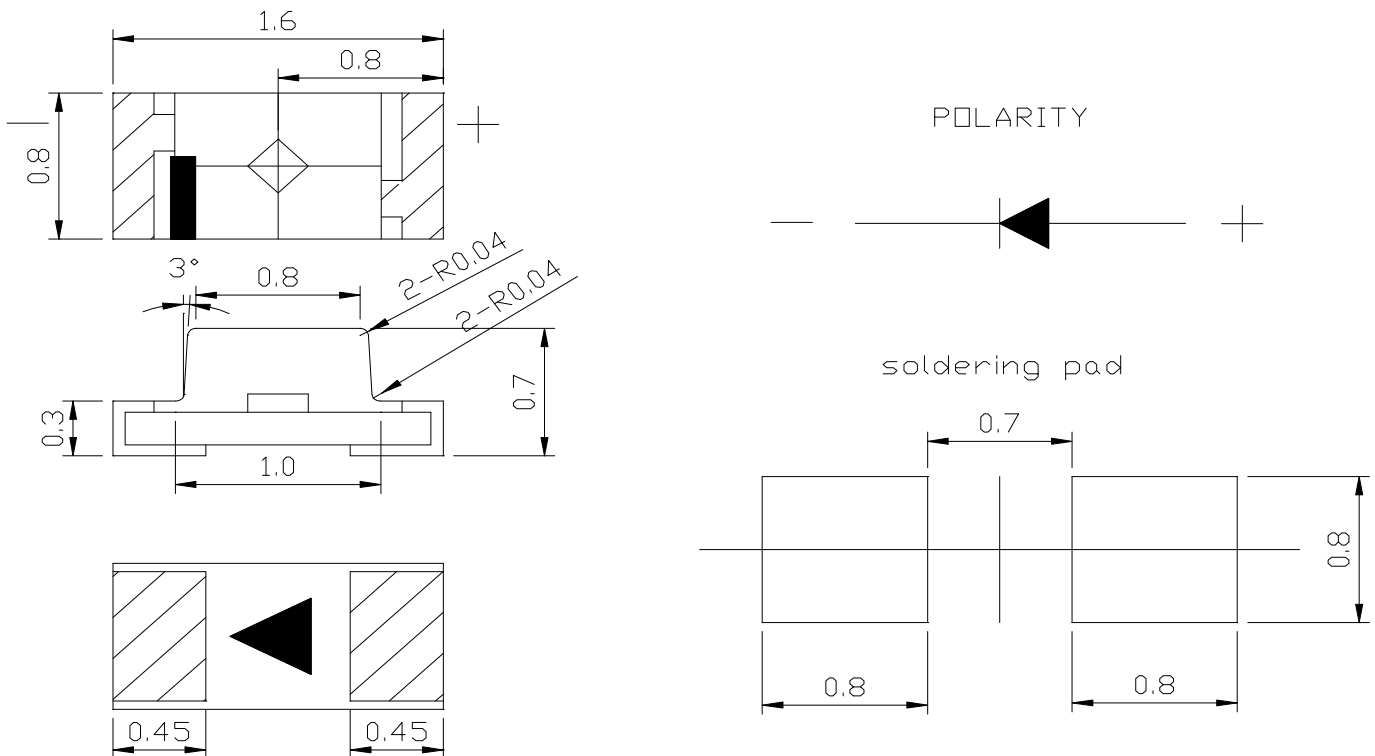
1、Features:

- 1.1 Package: 1.6*0.8*0.7mm
- 1.2 Emitted Color: Super White
- 1.3 Mono-color type
- 1.4 Soldering methods: IR Reflow
- 1.5 Comply RoHS standard

2、Applications:

- 2.1 Automotive: Dashboards, stop lamps, turn signals.
- 2.2 Mobile phones: LCD, Keypad and symbol.
- 2.3 Status indicators: Consumer & industrial electronics.
- 2.4 General use.

3、Package Outline Dimension:



NOTES:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is ± 0.10 mm unless otherwise specified.

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4、Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	100	mW
Forward Current	I _F	30	mA
Peak Forward Current * 1	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
Soldering Temperature	T _{sol}	Reflow soldering: 260°C for 10sec. Hand soldering: 300°C for 3 sec.	
Operating Temperature	T _{opr}	-30°C~+85°C	
Storage Temperature	T _{stg}	-40°C~+85°C	

* I_{FP} condition: pulse width ≤0.1msec, duty cycle ≤1/10.

5、Electrical-optical characteristics(Ta=25°C)

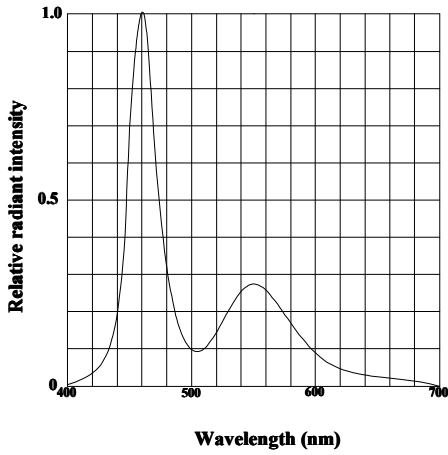
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V _f	-	3.2	3.4	V	IF=20mA
Luminous Intensity	I _v	450	550	-	mcd	
Viewing Angle	2θ1/2	-	120	-	deg	
Reverse Current	I _R	-	-	1	μA	VR=5V
Chromaticity Coordinates	x	0.24	0.275	0.32	/	IF=20mA
	y	0.24	0.29	0.32	/	

Note: 1. Tolerance of luminous intensity is ±5%.

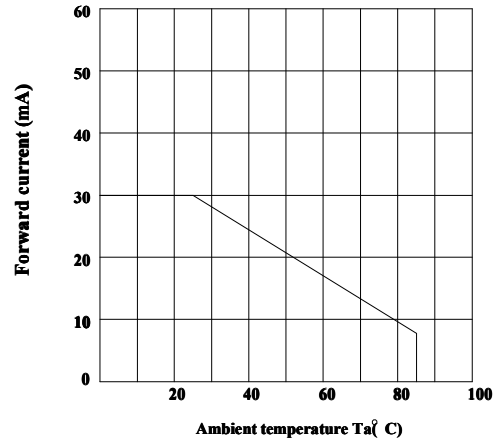
2. Tolerance of forward voltage is ±0.03V.

6、Typical Electro-Optical Characteristics Curves

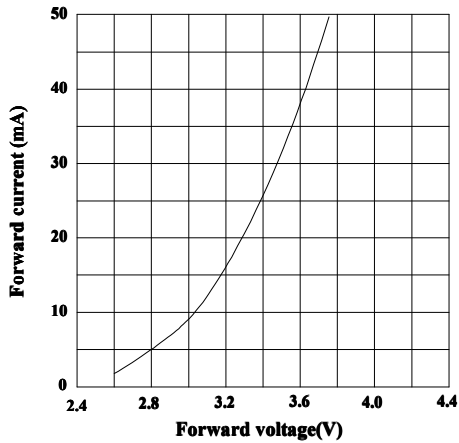
Relative intensity vs. wavelength(Ta=25)



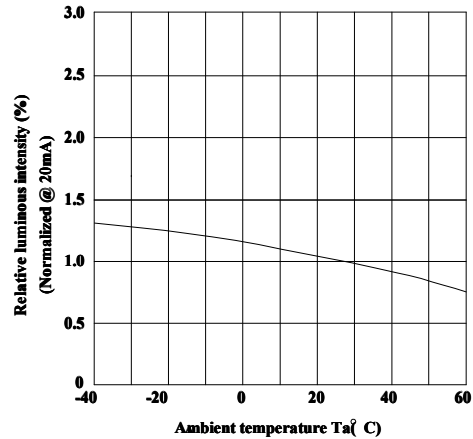
Forward current derating curve vs. ambient temperature



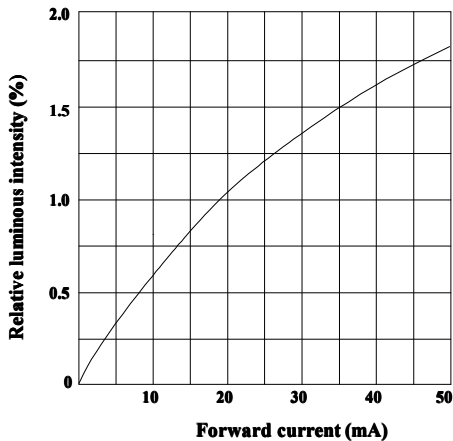
Forward current vs. forward voltage(Ta=25)



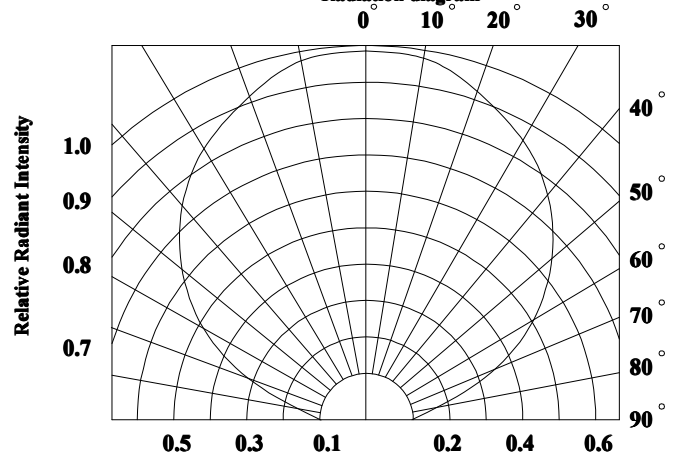
Luminous intensity vs. ambient temperature



Relative luminous intensity vs. forward current



Radiation diagram



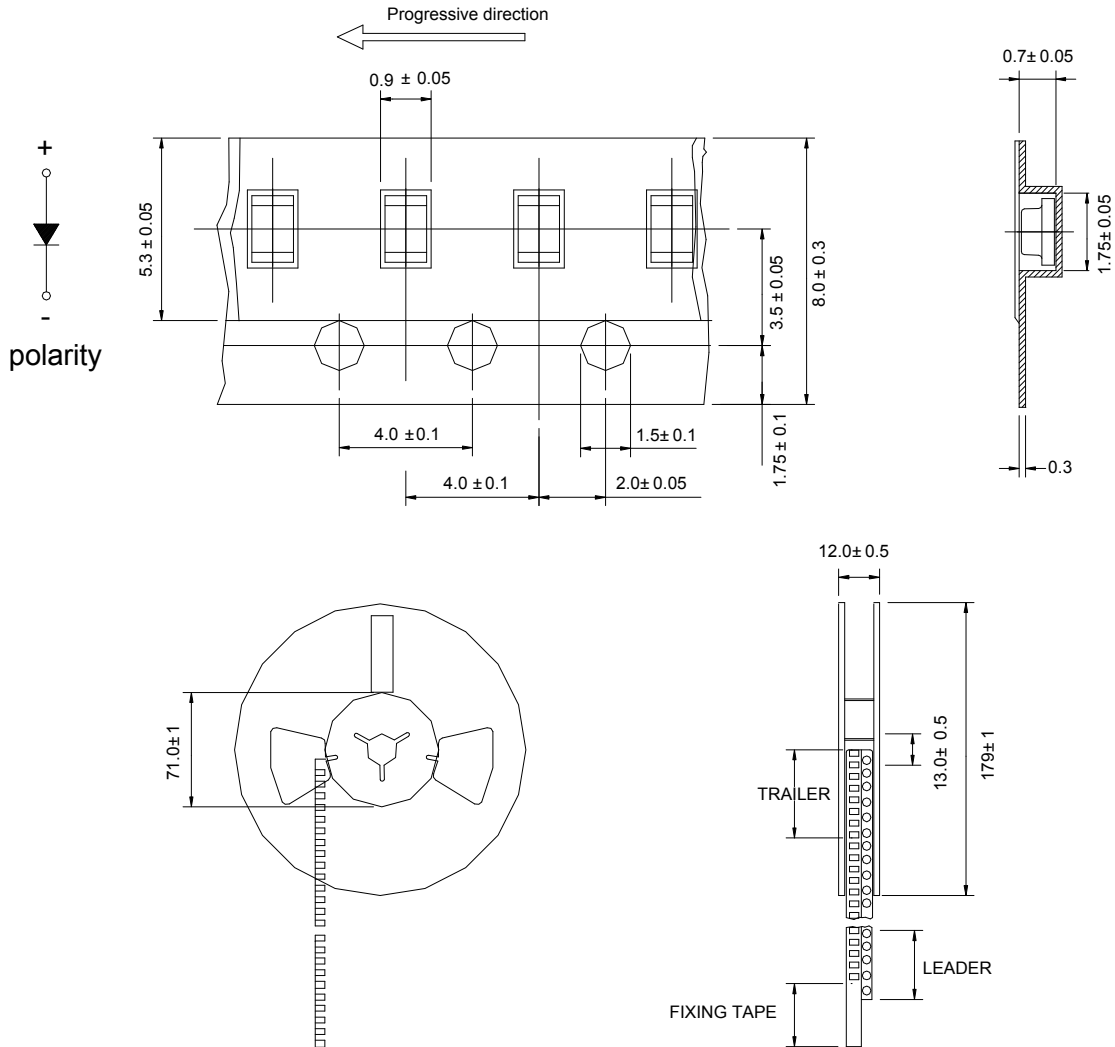
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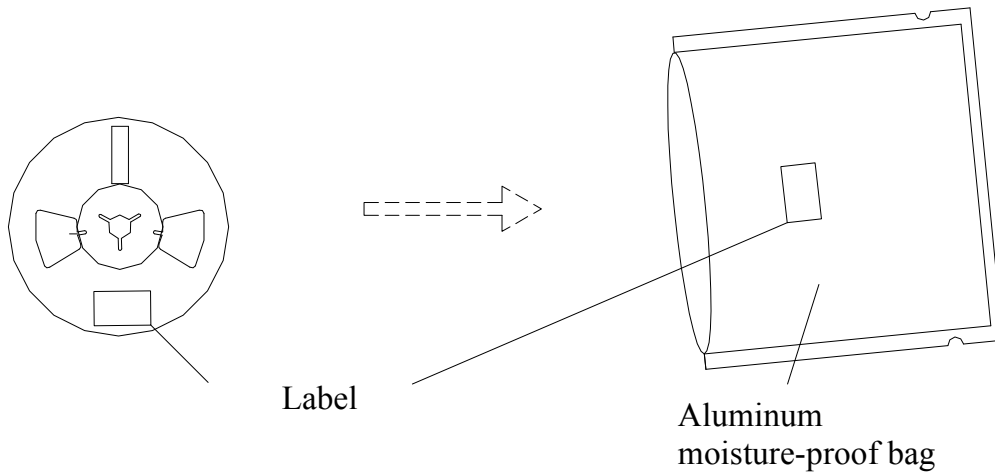
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7、Tapping specifications (Units: mm)

Loaded quantity: 1000-3000 pcs/reel



8、Package Method:(unit:mm)

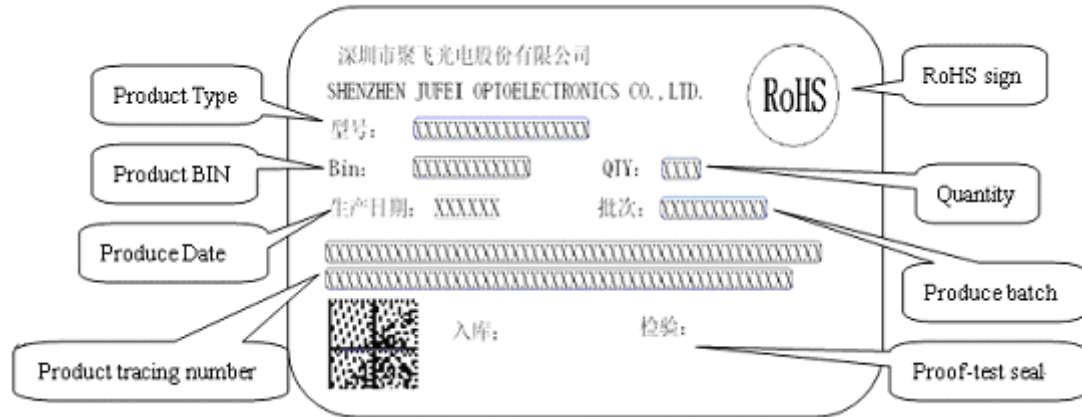


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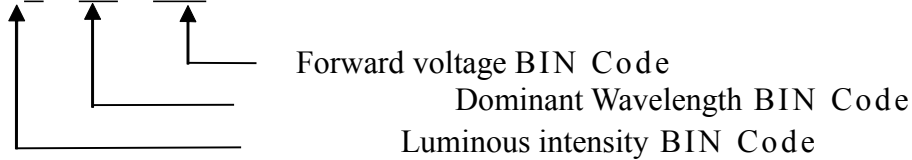


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9、Label description :



BIN description: $\underline{x} / \underline{xx} / \underline{x-x}$



Such as: BIN: 2/R1/6-2

- 2 shows luminous intensity BIN Code.
- R1 shows chromaticity coordinates BIN Code.
- 5-2 shows forward voltage BIN Code.

10、BIN range:

Luminous intensity (tolerance is $\pm 5\%$ @ $I_f=20\text{mA}$):

BIN CODE	Min. (mcd)	Max. (mcd)
a	250	300
b	300	350
c	350	400
d	400	450
1	450	500
2	500	550
3	550	600
4	600	650
5	650	700
6	700	750
7	750	800

Chromaticity coordinates specifications(tolerance is ± 0.005 @ $I_f=20\text{mA}$)

BIN	x	y	x	y	BIN	x	y	x	y	BIN	x	y	x	y
Q1	0.2577	0.2544	0.2513	0.2444	A1	0.2614	0.2525	0.255	0.2425	B1	0.2727	0.2469	0.2663	0.2369
	0.255	0.2425	0.2614	0.2525		0.2587	0.2407	0.2651	0.2507		0.27	0.235	0.2764	0.245
Q2	0.2539	0.2563	0.2475	0.2463	A2	0.2651	0.2507	0.2587	0.2407	B2	0.2689	0.2488	0.2625	0.2388
	0.2513	0.2444	0.2577	0.2544		0.2625	0.2388	0.2689	0.2488		0.2663	0.2369	0.2727	0.2469
R1	0.2641	0.2644	0.2577	0.2544	C1	0.2678	0.2625	0.2614	0.2525	D1	0.2791	0.2569	0.2727	0.2469
	0.2614	0.2525	0.2678	0.2625		0.2651	0.2507	0.2715	0.2607		0.2764	0.245	0.2828	0.255

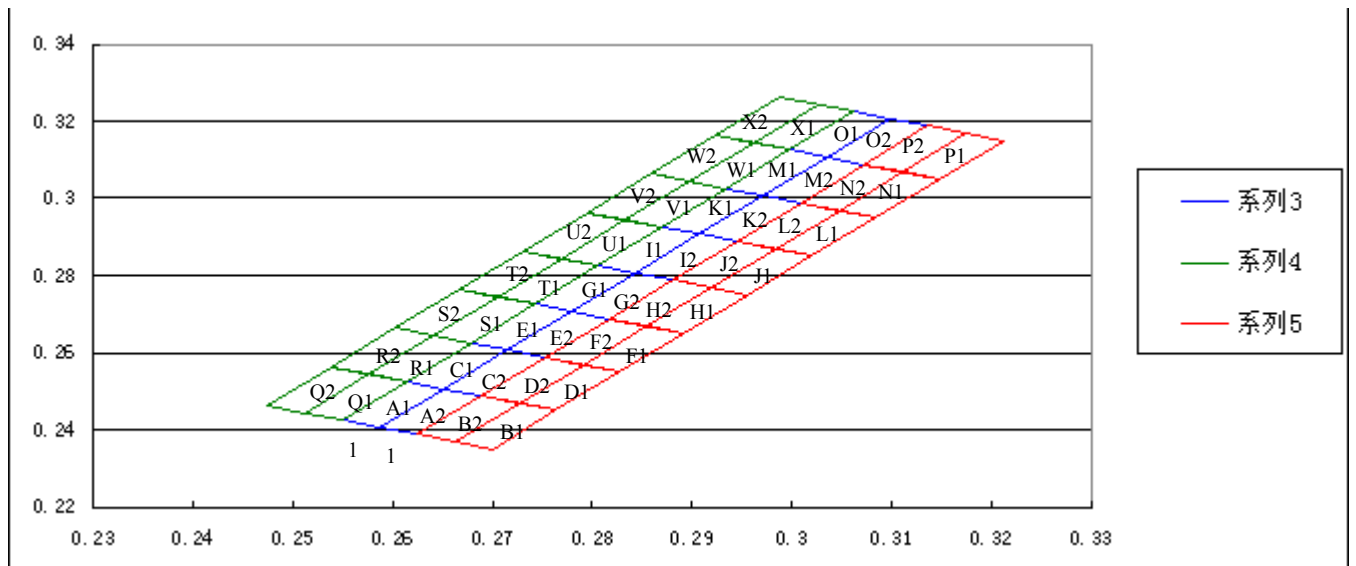
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R2	0.2603	0.2663	0.2539	0.2563	C2	0.2715	0.2607	0.2651	0.2507	D2	0.2753	0.2588	0.2689	0.2488
	0.2577	0.2544	0.2641	0.2644		0.2689	0.2488	0.2753	0.2588		0.2727	0.2469	0.2791	0.2569
S1	0.2705	0.2744	0.2641	0.2644	E1	0.2742	0.2725	0.2678	0.2625	F1	0.2855	0.2669	0.2791	0.2569
	0.2678	0.2625	0.2742	0.2725		0.2715	0.2607	0.2779	0.2707		0.2828	0.255	0.2892	0.265
S2	0.2667	0.2763	0.2603	0.2663	E2	0.2779	0.2707	0.2715	0.2607	F2	0.2817	0.2688	0.2753	0.2588
	0.2641	0.2644	0.2705	0.2744		0.2753	0.2588	0.2817	0.2688		0.2791	0.2569	0.2855	0.2669
T1	0.2769	0.2844	0.2705	0.2744	G1	0.2806	0.2825	0.2742	0.2725	H1	0.2919	0.2769	0.2855	0.2669
	0.2742	0.2725	0.2806	0.2825		0.2779	0.2707	0.2843	0.2807		0.2892	0.265	0.2956	0.275
T2	0.2731	0.2863	0.2667	0.2763	G2	0.2843	0.2807	0.2779	0.2707	H2	0.2881	0.2788	0.2817	0.2688
	0.2705	0.2744	0.2769	0.2844		0.2817	0.2688	0.2881	0.2788		0.2855	0.2669	0.2919	0.2769
U1	0.2833	0.2944	0.2769	0.2844	I1	0.287	0.2925	0.2806	0.2825	J1	0.2983	0.2869	0.2919	0.2769
	0.2806	0.2825	0.287	0.2925		0.2843	0.2807	0.2907	0.2907		0.2956	0.275	0.302	0.285
U2	0.2795	0.2963	0.2731	0.2863	I2	0.2907	0.2907	0.2843	0.2807	J2	0.2945	0.2888	0.2881	0.2788
	0.2769	0.2844	0.2833	0.2944		0.2881	0.2788	0.2945	0.2888		0.2919	0.2769	0.2983	0.2869
V1	0.2897	0.3044	0.2833	0.2944	K1	0.2934	0.3025	0.287	0.2925	L1	0.3047	0.2969	0.2983	0.2869
	0.287	0.2925	0.2934	0.3025		0.2907	0.2907	0.2971	0.3007		0.302	0.285	0.3084	0.295
V2	0.2859	0.3063	0.2795	0.2963	K2	0.2971	0.3007	0.2907	0.2907	L2	0.3009	0.2988	0.2945	0.2888
	0.2833	0.2944	0.2897	0.3044		0.2945	0.2888	0.3009	0.2988		0.2983	0.2869	0.3047	0.2969
W1	0.2961	0.3144	0.2897	0.3044	M1	0.2998	0.3125	0.2934	0.3025	N1	0.3111	0.3069	0.3047	0.2969
	0.2934	0.3025	0.2998	0.3125		0.2971	0.3007	0.3035	0.3107		0.3084	0.295	0.3148	0.305
W2	0.2923	0.3163	0.2859	0.3063	M2	0.3035	0.3107	0.2971	0.3007	N2	0.3073	0.3088	0.3009	0.2988
	0.2897	0.3044	0.2961	0.3144		0.3009	0.2988	0.3073	0.3088		0.3047	0.2969	0.3111	0.3069
X1	0.3025	0.3244	0.2961	0.3144	O1	0.3062	0.3225	0.2998	0.3125	P1	0.3175	0.3169	0.3111	0.3069
	0.2998	0.3125	0.3062	0.3225		0.3035	0.3107	0.3099	0.3207		0.3148	0.305	0.3212	0.315
X2	0.2987	0.3263	0.2923	0.3163	O2	0.3099	0.3207	0.3035	0.3107	P2	0.3137	0.3188	0.3073	0.3088
	0.2961	0.3144	0.3025	0.3244		0.3073	0.3088	0.3137	0.3188		0.3111	0.3069	0.3175	0.3169

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Forward voltage (tolerance is $\pm 0.03V@I_f=20mA$):

BIN CODE	Min.(v)	Max.(v)
5-1	2.8	2.9
5-2	2.9	3.0
6-1	3.0	3.1
6-2	3.1	3.2
7-1	3.2	3.3
7-2	3.3	3.4
8-1	3.4	3.5
8-2	3.5	3.6

11、 Reliability test items and conditions:

No.	Test Item	Test Conditions	Sample size	Ac/Re
1	DC Operation Life	Test $I_f=20mA$ Temp. : Room temperature Test time=1000hrs	20	0/1
2	High Temperature High Humidity	Temp. =+65℃ RH=90% Test time=240hrs	20	0/1
3	Thermal Shock	-40℃ ~ +100℃ 20min 10s 20min Test Time=100 cycles	20	0/1
4	High Temperature Storage	High Temp. =+100℃ Test time=1000hrs	20	0/1
5	Low Temperature Storage	Low $T_a=-40℃$ Test time=1000hrs	20	0/1
6	Temperature Cycle	-40℃ ~ +100℃ 60min 20min 60min Test Time=20cycle	20	0/1
7	Reflow Soldering	Preheating: 160℃-180℃, within 2 minutes. Operation heating: 260℃(Max.), within 10seconds. (Max.)	20	0/1

※Judgment criteria of failure for the reliability

·Iv: Below 70% of initial values

·Vf: Over 20% of upper limit value

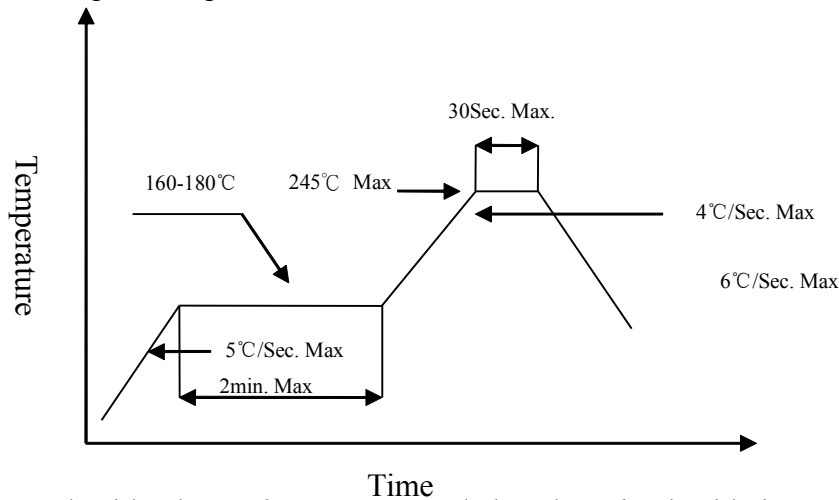
Note: Measurement shall be taken between 2 hours and after the test LED have been returned to normal ambient conditions after completion of each test.

12、Precautions for use :

12.1 Soldering

SMD LED encapsulation is very flexible, outside force easily demolish radiant surface and plastic, As soldering , Please handle with care !

- With No-clean Flux, according to reflow soldering cure condition when soldering, Reflow soldering should not be done more than two times, simultaneity you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- Don't process manual soldering except repair. Recommended to be soldered with 25W Anti-static iron, The temp. of the iron should be lower than 300°C and soldering time should not be done more than three seconds, at the same time iron can't touch radiant surface and plastic.
- Don't twist LED in course of manual soldering and experiment, Otherwise, the lights will not work possibly.
- Please use the same BIN grade in one panel, and don't mix the difference BIN grade in one panel when soldering. Otherwise, it will cause a serious uneven color problem.
- Pb-free solder temp. -time profile as below:



12.2 Cleaning

- Don't be cleaned with ultrasonic. Recommended to be wiped with isopropyl alcohol or pure alcohol, wiping time should not be more than one minute. LED must be placed at room temperature for fifteen minutes before using. after cleaning, you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- LED can not be in contact with isoamyl acetate、trichloroethylene、acetone、sulfid、nitride、acid、alkali、salt. These matter can destroy LED.

12.3 Sealing

- Sealing glue can not contain sodium ion、sulfid , because these matter can affect fluorescence powder poisoning.
- When using normal sealing glue, Recommended to be operated life for 168hrs under normal temperature.

12.4 Storage

- a. Don't open the moisture proof bag before ready to use the LEDs.
- b. The LEDs should be kept at 30°C or less and 60%RH or less before opening the package. The max. storage period before opening the package is 1 year.
- c. After opening the package, the LEDs should be kept at 30-35%RH or less, and it should be used within 7 days.
- d. If the LEDs be kept over the conditions of c., baking is required before mounting. Baking condition as below: 60±5°C for 12 hrs for bulk goods, 105±5°C for 1 hrs for roll goods.
- e. The environment have no acid、alkali、corrosive gas、intensively shake and high magnetic field.

12.5 Static

- a. Static and Peak surge voltage can destroy LED, Avoiding Instantaneous voltage when turn on or turn off the lights.
- b. Please wear Anti-static wrist band、Anti-static glove、Anti-static shoes in the course of operation, and the equipment must be grounded.
- c. After LED is be destroyed, leakage current increase obviously, and it will be forward voltage falling or failure lamp in the case of low current.

12.6 Test

- a. Customer must apply the current limiting resistor in the circuit so as to drive the LEDs within the rated current. Otherwise slight voltage shift maybe will cause big current change and burn out will happen.
- b. Also, caution should be taken not to overload the LEDs with instantaneous high voltage at the turning ON and OFF of the circuit. Otherwise LED will be destroyed, testing methods as follows:

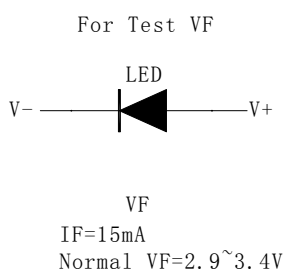


Fig.1

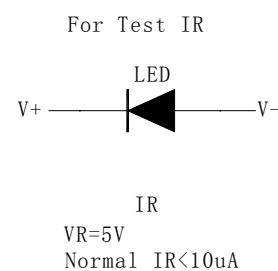


Fig.2

- c. The reverse voltage mustn't exceed 5v when lighting on or testing the LED, otherwise, the leds will be damaged.

12.7 Else

Radiant color of LEDs have a little change with the current, recommended that LED is used in series and resistance, when lighting, please don't see directly radiant surface of LED, otherwise LED will burn eyes.