SPECIFICATION

REFOND P/N

RF-A3E27-W60E-B1

、 P$B

" Mass Production

0755-2967-5000
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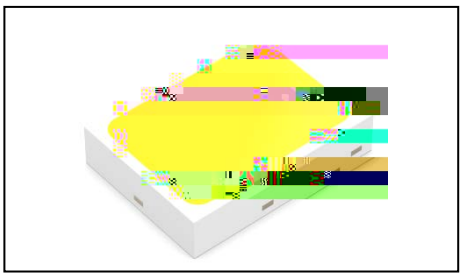
1. Description

1.1General Description



The White LED, which was fabricated by using a blue chip and the phosphor.

Product Package:2.7mmX2.0mmX0.6mm.

JCB 2.7mmX2.0mmX0.6mm

1.2Features

EMC Package.CKA

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. QKR

Available on tape and reel.

Moisture sensitivity level: Level 2. Jctcj0

RoHS compliant. RoHS

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102Stress Test Qualification for Automotive Grade Discrete Semiconductors

?CA+O/.0

1.3Application

Automotive Lighting Interior and Exterior.

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1.4Package Dimension

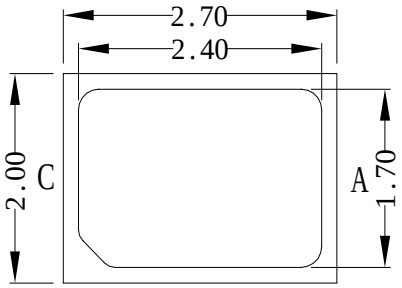

Fig.1-1 Top View

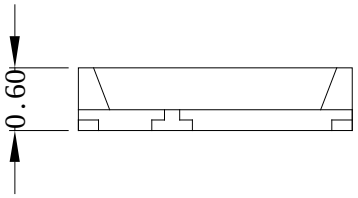

Fig.1-2 Side View

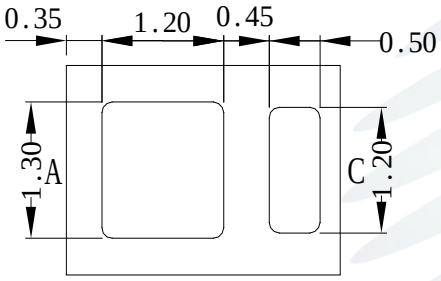

Fig.1-3 Bottom View

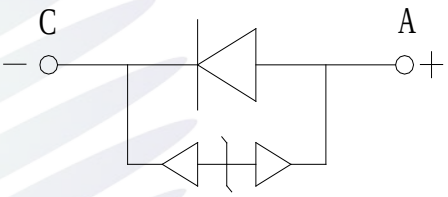

Fig.1-4 Polarity

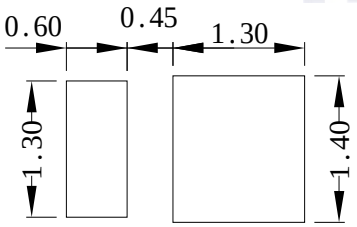

Fig.1-5 Soldering Patterns

Notes

/, All dimensions units are millimeters.

0, All dimensions tolerances are ±0.2mm unless otherwise noted. ®.,0

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1.5Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F=150mA	2.8	---	3.4	V
Reverse Current	I_R	V_R=5V	---	---	10	uA
Luminous Flux		I_F=150mA	50	---	75.3	lm
Viewing Angle		I_F=150mA	---	120	---	deg
Thermal Resistance.	R_{THJ-S}	I_F=150mA	---	17	25	℃/W

Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	850	mW
Forward Current	I_F	250	mA
Peak Forward Current	I_{FP}	300	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	E_{SD}	8000	V
Operating Temperature	T_{OPR}	-40 ~ +125	
Storage Temperature	T_{STG}	-40 ~ +125	
Junction Temperature	T_J	150	

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Notes

1. 1/10 Duty cycle, 10ms pulse width. / . k q* / - / . ,

2. The above forward voltage measurement allowance tolerance is ±0.1V. ® . , / T,

3. The above color coordinates measurement allowance tolerance is ±0.005. ± . , . . 3,

4. The above luminous intensity measurement allowance tolerance ±10%.

® / . # ,

5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.

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6. All measurements were made under the standardized environment of Refond.

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7.When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate, JCB

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8. ESD yield is over 90% at 8000V ESD (HBM). ESD protection during products handing is needed. 7 . # JCB

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1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=150mA)

BIN (IF=150mA)

Table 1-3

V_F(V)	G0	H0	I0	
	2.8-3.0	3.0-3.2	3.2-3.4	
(lm)	OB	PA	PB	QA
	50-55.3	55.3-61.2	61.2-67.8	67.8-75.3

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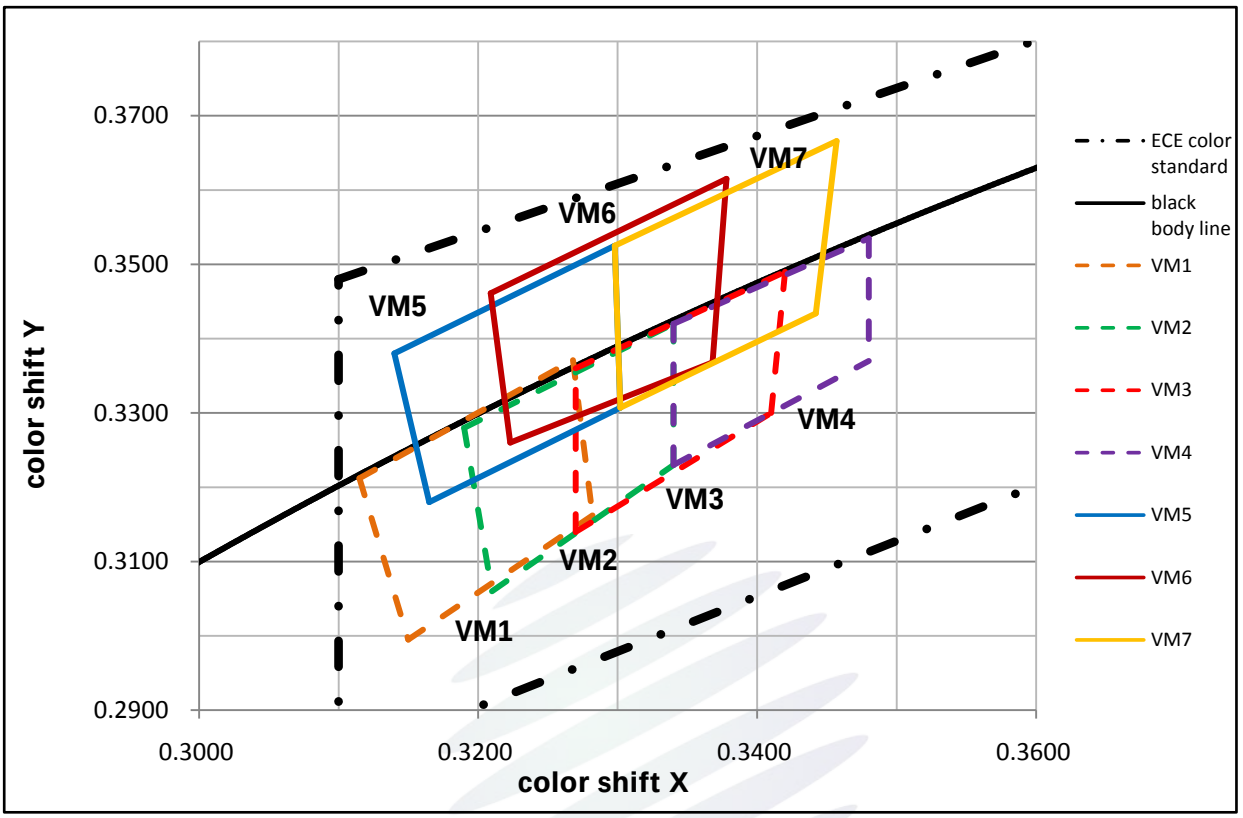

Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
VM1	0.3150	0.2995	0.3115	0.3212	0.3268	0.3371	0.3282	0.3162
VM2	0.3210	0.3060	0.3190	0.3280	0.3340	0.3420	0.3340	0.3230
VM3	0.3270	0.3140	0.3270	0.3360	0.3420	0.3490	0.3410	0.3300
VM4	0.3340	0.3230	0.3340	0.3420	0.3480	0.3535	0.3480	0.3370
VM5	0.3165	0.3180	0.3140	0.3380	0.3298	0.3525	0.3302	0.3307
VM6	0.3223	0.3260	0.3209	0.3461	0.3378	0.3615	0.3368	0.3368
VM7	0.3302	0.3307	0.3298	0.3525	0.3457	0.3666	0.3442	0.3434

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1.7 Typical Optical Characteristics Curves

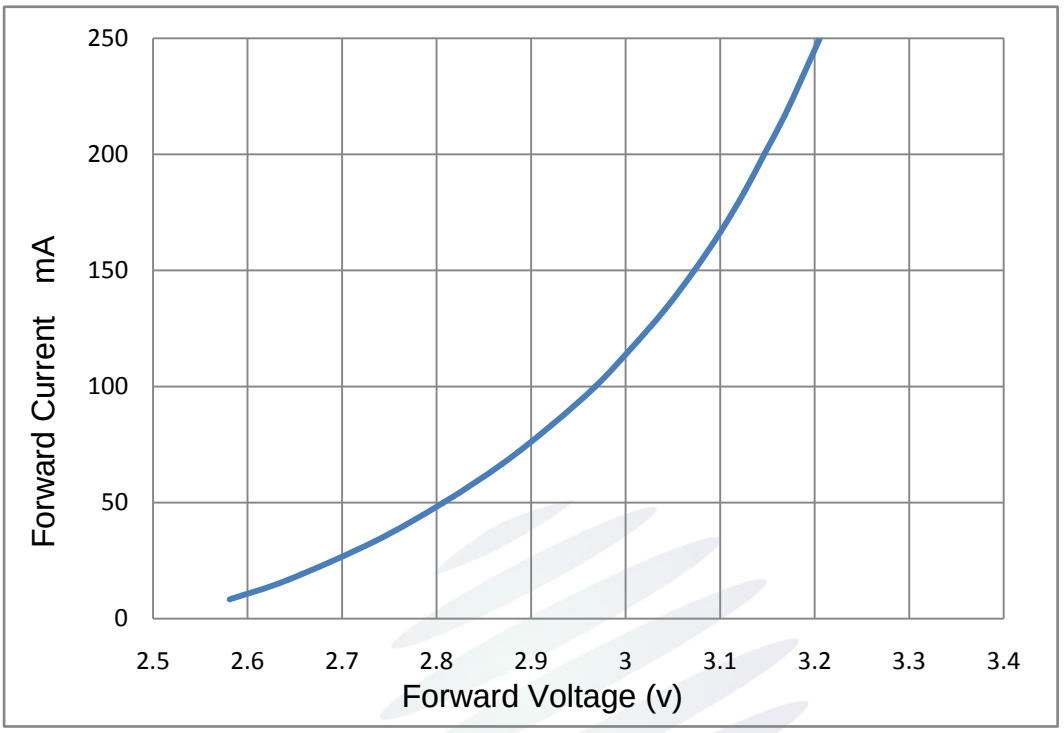

Fig. 1-7 Forward Voltage Vs Forward Current

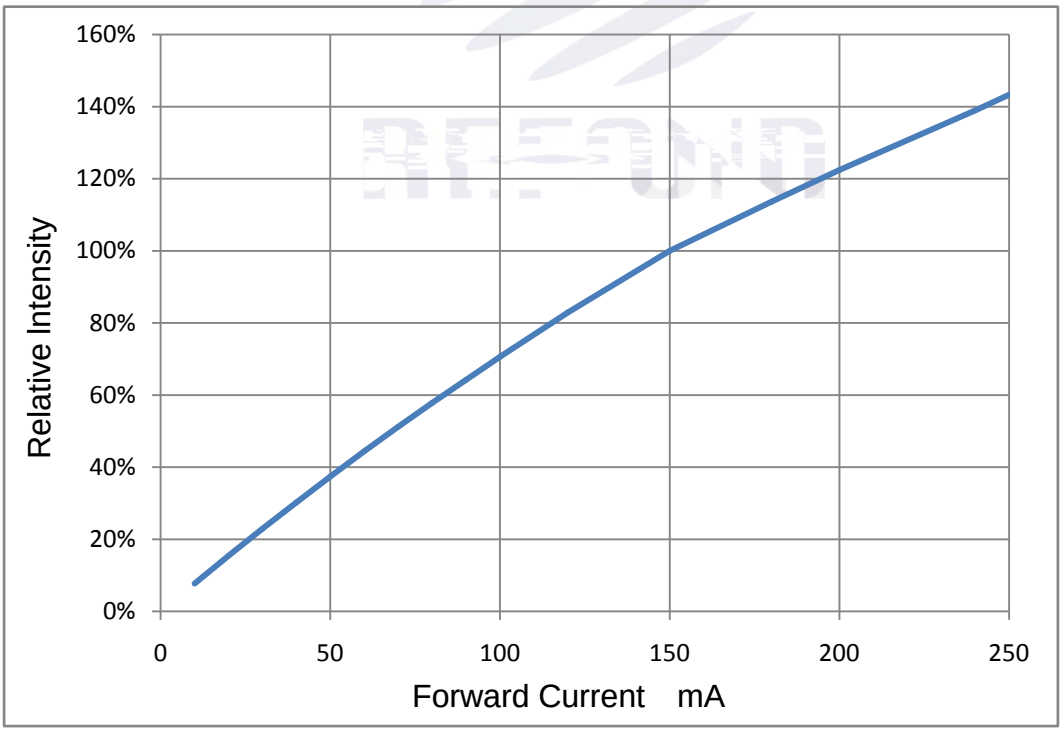

Fig. 1-8 Forward Current Vs Relative Intensity

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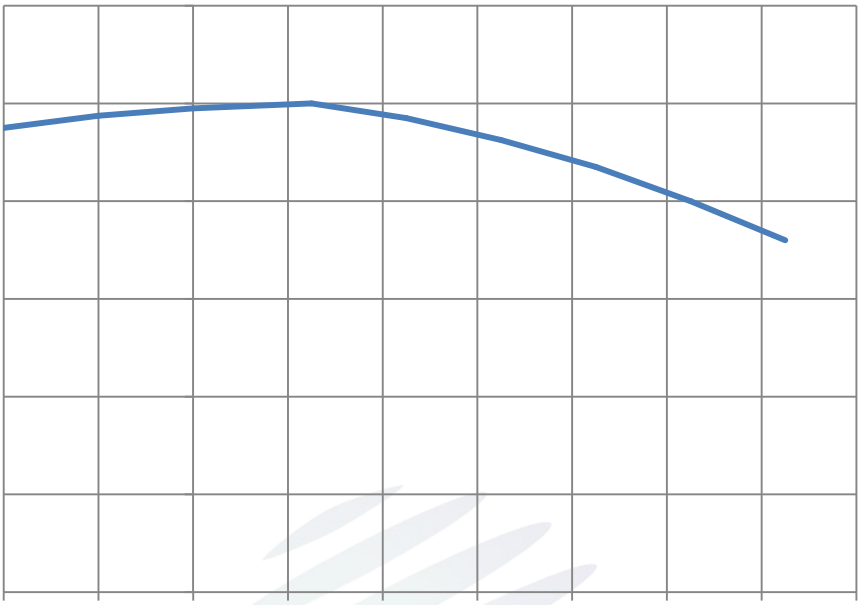

Fig. 1-9 Solder Temperature Vs Relative Intensity

Fig. 1-10 Solder Temperature Vs Forward Current

Tj 150

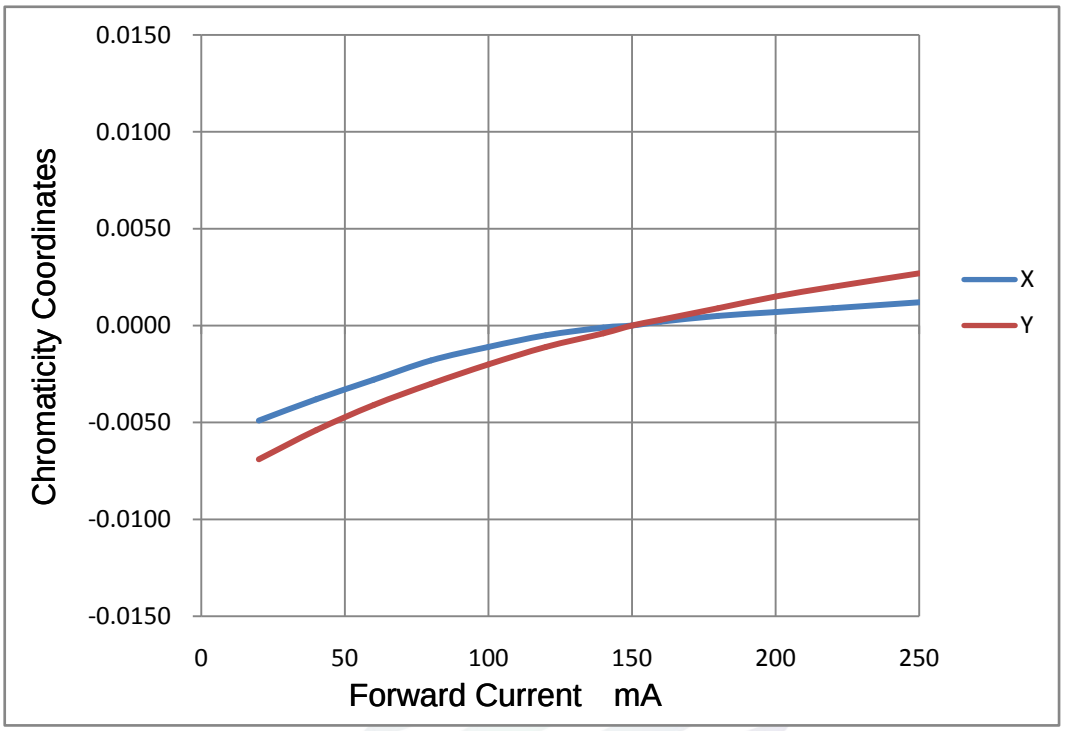

Fig. 1-13 Chromaticity Coordinate Vs Forward Current

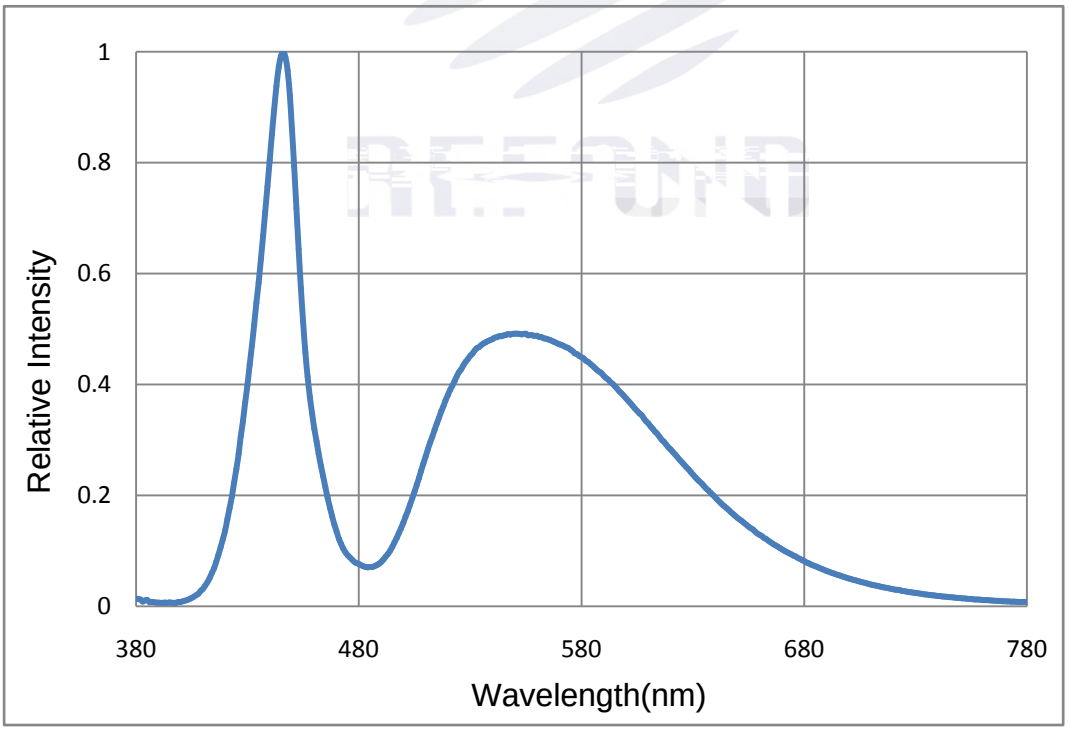

Fig. 1-14 Spectrum Distribution

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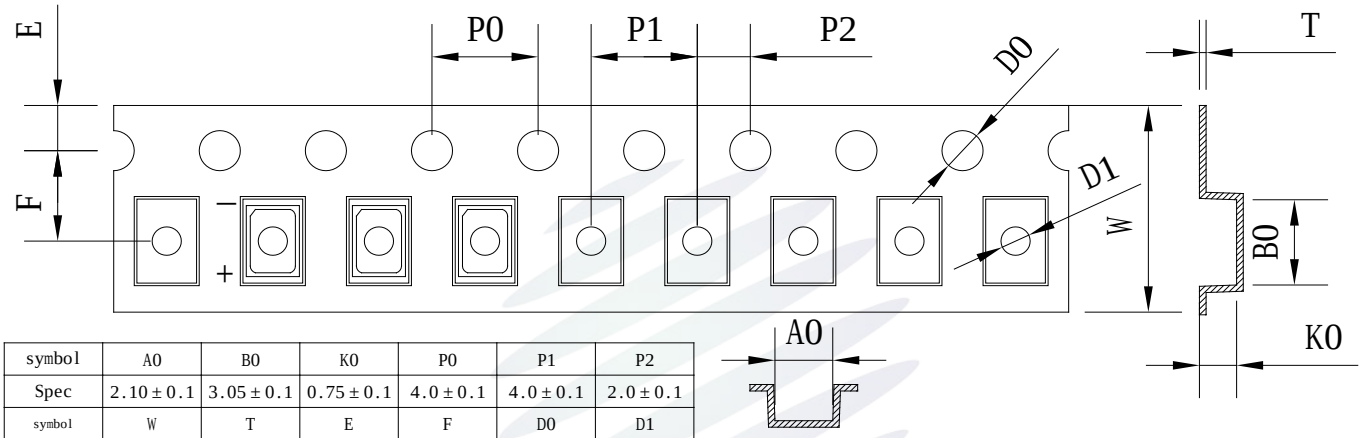
2. Packaging

2.1 Packaging Specification

Package:4000pcs/reel. 4000pcs k

2.1.1Carrier Tape Dimension



symbol	A0	B0	K0	P0	P1	P2
Spec	2.10±0.1	3.05±0.1	0.75±0.1	4.0±0.1	4.0±0.1	2.0±0.1
symbol	W	T	E	F	D0	D1
Spec	8.0±0.2	0.2±0.05	1.75±0.1	3.5±0.1	1.55±0.05	1.0±0.1

Fig.2-1 Carrier Tape Dimension

2.1.2Reel Dimension

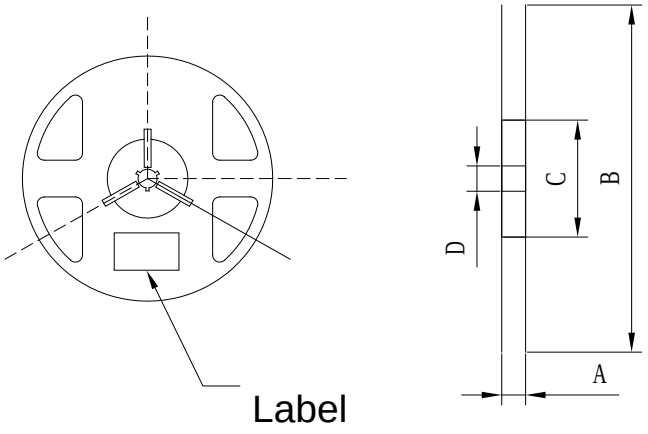


Fig.2-2Reel Dimension

R_`jc 0+/Reel Dimension

A	12®0.1mm
B	180®1mm
C	60®1mm
D	13.0®0.5mm

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm ® . , / k

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2.4Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	Temp:260, max T=10 sec	2times	20pcs.	0/1
MSL2 2	JESD22-A113	85, / 60%R_H	168 hrs.	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40, 15min 10s 125, 15min	1000 cycle	20pcs.	0/1
Life Test	JESD22-A108	Ta=105, I_F=150mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85, / 85%R_H I_F=150mA	1000hrs.	20pcs.	0/1

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2.5 Criteria For Judging Damage

Table 2-4Criteria For Judging Damage

1, SMT Reflow Soldering Instructions SMT

3.1SMT Reflow Soldering Instructions SMT

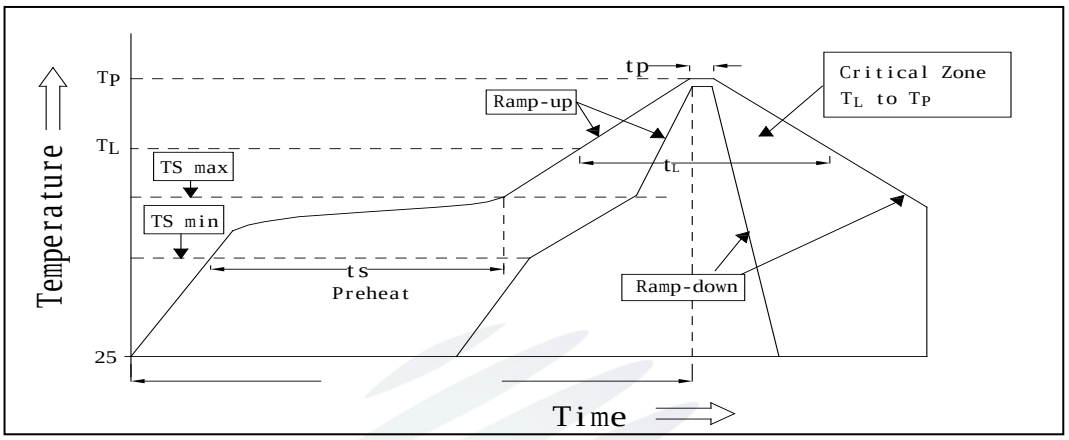

Fig.3-1SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters

Average temperature rise speed Tsmax TP	3 °C/ Max 3 °C/ s
Preheating: minimum temperature (Tsmin)	150 °C
Preheating: Max temperature (Tsmax)	200 °C
Preheating: Time Tsmin Tsmax	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature (TL)	217 °C
Time limited to maintain high temperature: The Time (tL)	60 Max 60s
Peak /Classification of temperature: / (TP)	260 °C
Time limit classification of peak temperature time tp	10 Max 10s
(TP) 5 °C Hold time within 5 -C with the actual peak temperature (TP)	30 Max 30s
Cooling speed	6 °C/ Max 6 °C/ s
25 °C Needed time from 25 °C to Tp	8 Max 8 minutes

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Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings ,LED will be damaged. 02 JCB

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(2)When soldering , do not put stress on the LEDs during heating. k

3.1.1 Repairing

Repairing 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 in advance whether the characteristics of LEDs will or not be damaged by repairing.

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3.1.2 Cautions

(1) The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on

4. Handling Precautions

4.1 Handling Precautions

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement.LED

JCB /..NNK, k

(2) In order to prevent ex-ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine elementis required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. JCB JCB

7..NNK 7..NNK

/3..NNK, k

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor. JCB

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(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

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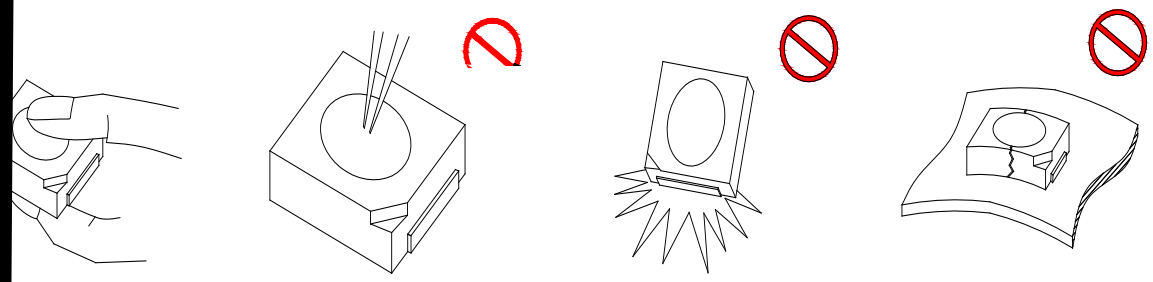

Fig 4-1Cautions

ning a circuit,the current through each LED can not exceed the absolute maximum rating specified
D.In the mean while,resistors for protection should be applied,other wise slight voltage shift will
urrent change,burn out may happen. The driving circuit must be designed to allow forward voltage
t is ON or OFF.If the reverse voltage is applied to LED, migration can be generated resulting in LED

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l Design is paramount importance because heat generation may result in the Characteristics
h as brightness decreased,Color change and so on.Please consider the heat generation of the
making the system design.LED JCB

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ed to standard encapsulants, silicone is generally softer, and the surface is more likely to attract
ng special care during processing. In cases where a minimal level of dirt and dust particles cannot
eed, a suitable cleaning solution must be applied to the surface after the soldering of components.
ggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that
nts do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic
ay cause damage to the LED.

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Table 4-1Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	Recommended for use within 24 hours
				24

Date	Revisor	Version	Verifier	Remarks
2023/10/10	Xian Zhou	E0	Zhu Yiming	New issue

Declare

This specification is written both in English and in Chinese and the latter is formal.

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