SPECIFICATION

REFOND P/N

RF-A3H10-WYSP-E5

Mass Production

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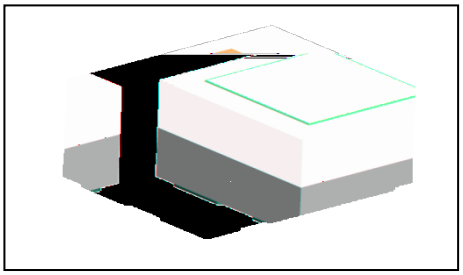
1. Description

1.1 General Description



This product uses the ceramics package, it has a high reliability. it also be widely application for Automotive Exterior Lighting. Size(mm): 2.00X1.60X0.80mm.

. . 2.00X1.60X0.80mm

1.2 Features

► Ceramic Package.
►High Power Output and High Luminance.
►Pb-free reflow soldering application.
►Moisture sensitive level:Level2. Level 2
►RoHS compliant. RoHS

1.3 Application

►Automotive Exterior Lighting, Cornering Light.

1.5 Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ	Max.	
Forward Voltage	VF	IF=1000mA	2.8	---	3.6	V
Reverse Current	IR	VR=5V	Not designed for reverse operation			uA
Luminous Flux ( )	Φ	IF=1000mA	144	---	196	lm
Viewing Angle	2θ1/2	IF=1000mA	---	120	---	deg
Thermal Resistance.	RTHJ-S	IF=1000mA	---	---	4.5	℃/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	3.4	W
Forward Current	I_F	1500	mA
Peak Forward Current	IFP	2000	mA
Reverse Voltage	V_R	Not designed for reverse operation	V
Electrostatic Discharge (HBM)	E_{SD}	8000	V
Operating Temperature	T_{OPR}	-40 ~ +125	℃
Storage Temperature	T_{OPR}	-40 ~ +125	℃
Junction Temperature	T_J	150	℃

Notes

1. 1/10 Duty cycle, 0.1ms pulse width. 0.1ms, 1/10.

2. The above forward voltage measurement allowance tolerance is ±0.1V. ±0.1V.

3. The above color coordinates measurement allowance tolerance is 0.003. 0.003.

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

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

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

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

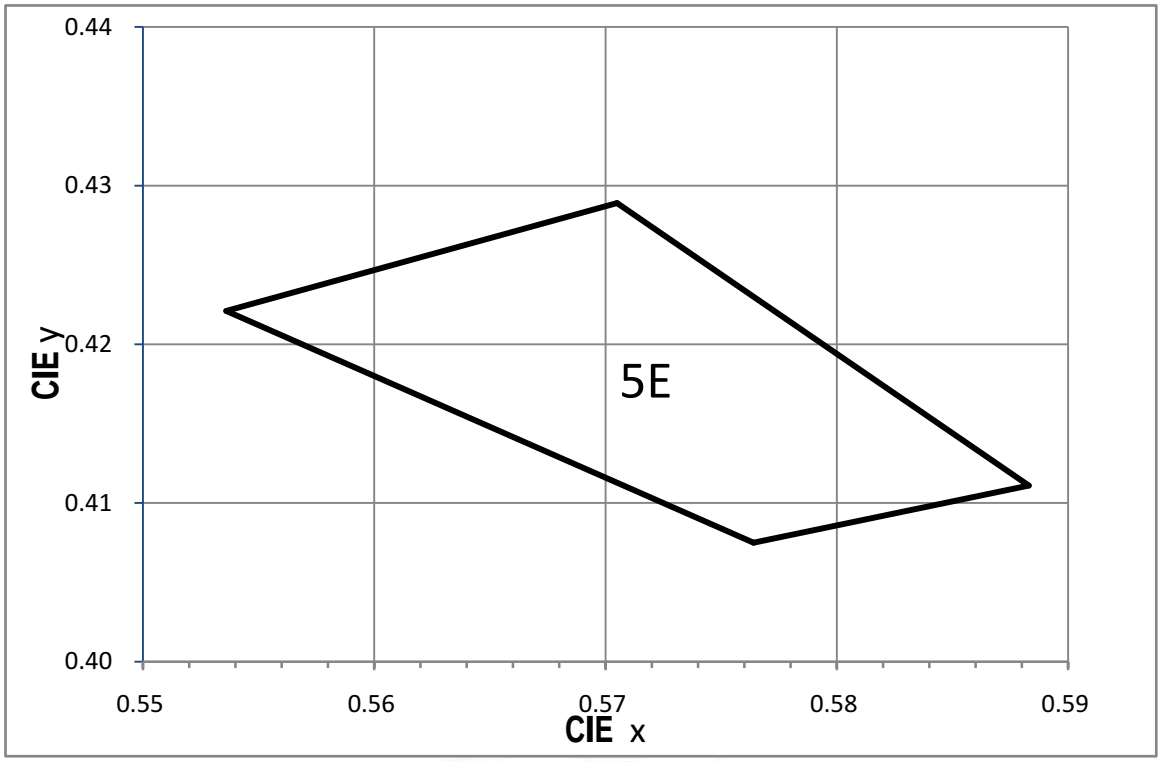
1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=1000mA)

BIN (IF=1000mA)

Table 1-3

V_F(V)	G0	H0	I0	J0	/	/
	2.8-3.0	3.0-3.2	3.2-3.4	3.4-3.6	/	/
Φ(lm)	TB	UA	UB	/	/	/
	144-160	160-177	177-196	/	/	/

The Chromaticity Diagram



Bin data:

BIN CODE	X1	Y1	X2	Y2	X3	Y3	X4	Y4
5E	0.5536	0.4221	0.5764	0.4075	0.5883	0.4111	0.5705	0.4289

1.7 Typical optical characteristics curves

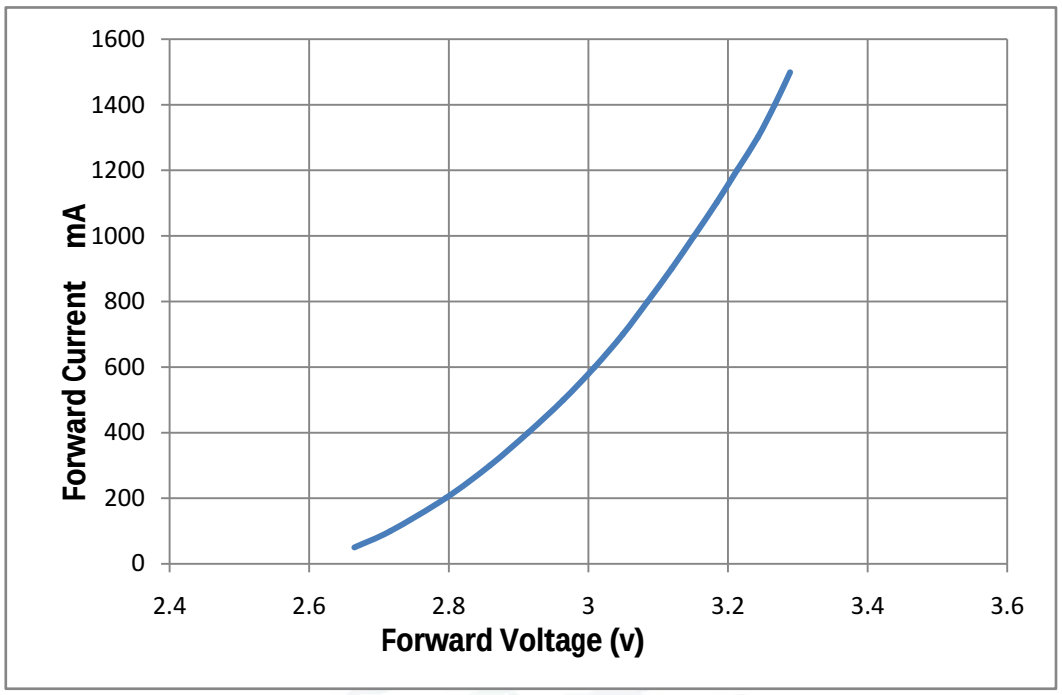


Fig 1-6 Forward Voltage Vs. Forward Current

Fig 1-7 Forward Current Vs. Relative Intensity

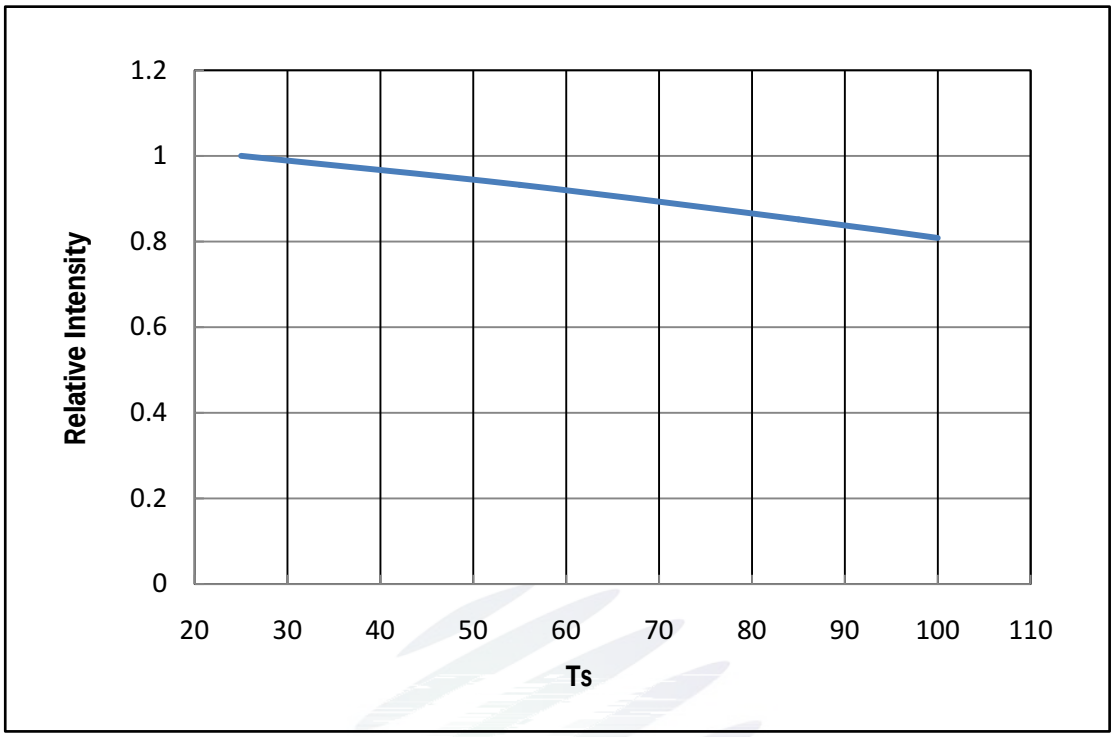


Fig 1-8 Ts Temperature Vs Relative Intensity

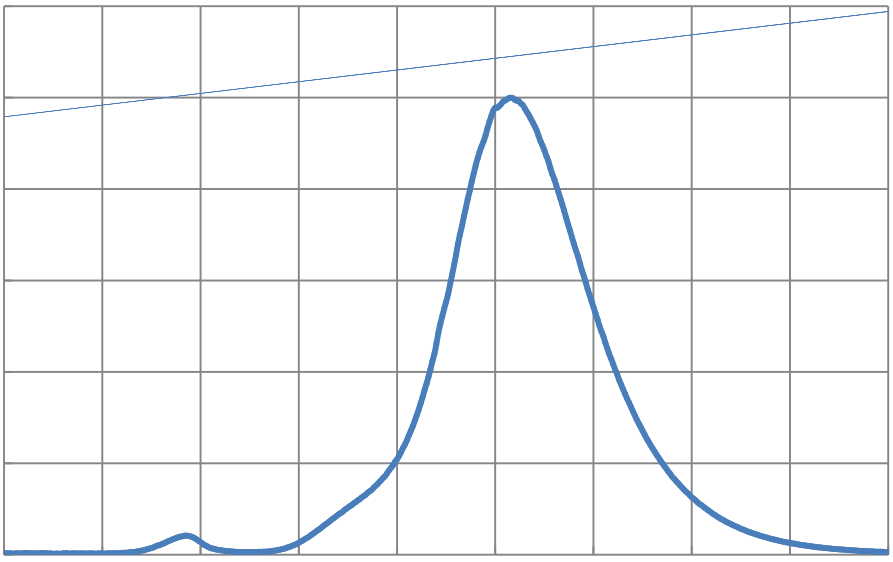


Fig 1-9 Spectrum Distribution

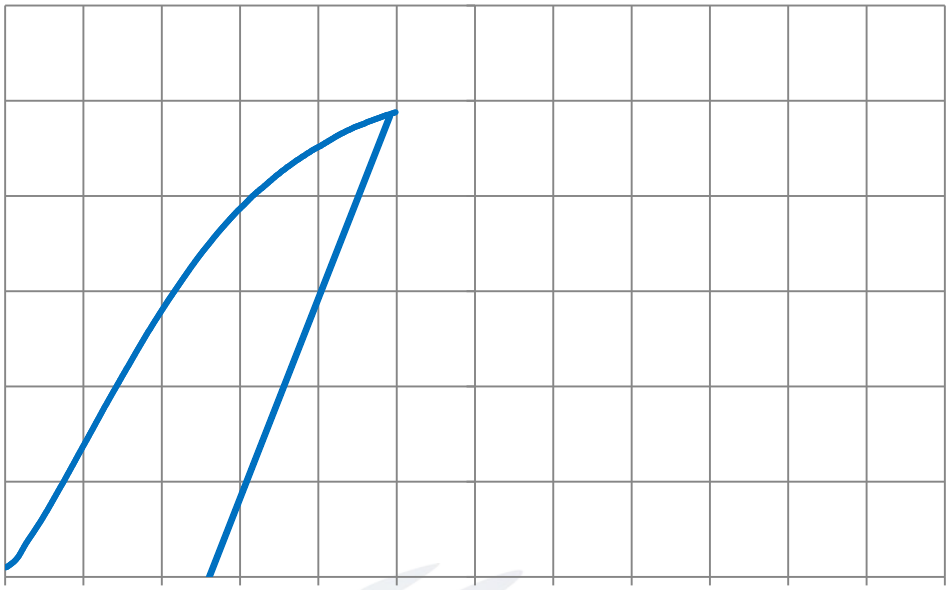


Fig 1-10 Radiation diagram

Fig 1-11 Ts Temperature Vs Forward Current

2.1.3 Label Form Specification

Table 2-2 Label Form Specification

Fig 2-3 Label Form Specification

2.2 Moisture Resistant Packing

Fig.2- Moisture Resistant Pac.503Fig.

2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow Soldering	JEITA ED-4701 300 301	Temp:260℃max T=10 sec Precondition:85℃ 85%RH 168Hrs	3times.	10Pcs.	0/1
Temperature Cycle	JESD22-A104	125℃ 30 min. ↑↓5 min -40℃ 30 min.	1000Cycles	10Pcs.	0/1
Thermal Shock	JESD22-A106	-40℃ 15min ↑↓10sec 125℃ 15min	1000Cycles	10Pcs.	0/1
High Temperature Storage	JESD22-A103	Temp.:125℃	1000Hrs.	10Pcs.	0/1
Low Temperature Storage	JESD22-A119	Temp.:-40℃	1000Hrs.	10Pcs.	0/1
Life Test	JESD22-A108	Ta=25℃ IF=1000mA	1000Hrs.	10Pcs.	0/1
High Temperature Life Test	JESD22-A108	Ta=105℃ IF=1000mA	1000Hrs.	10Pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85℃/ 85%RH IF=1000mA	1000Hrs.	10Pcs.	0/1
Low Temperature Life Test	JESD22-A108	Ta=-40℃ IF=1000mA	1000Hrs.	10Pcs.	0/1

2.5 Criteria For Judging Damage

Table Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F=1000mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R = 5V	-	U.S.L*)x2.0
Luminous Flux 光通量	Φ	I_F=1000mA	L.S.L*)x0.7	-

Notes

1.U.S.L: Upper standard level L.S.L: Lower standard level

2. The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform, the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others. /

3.The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

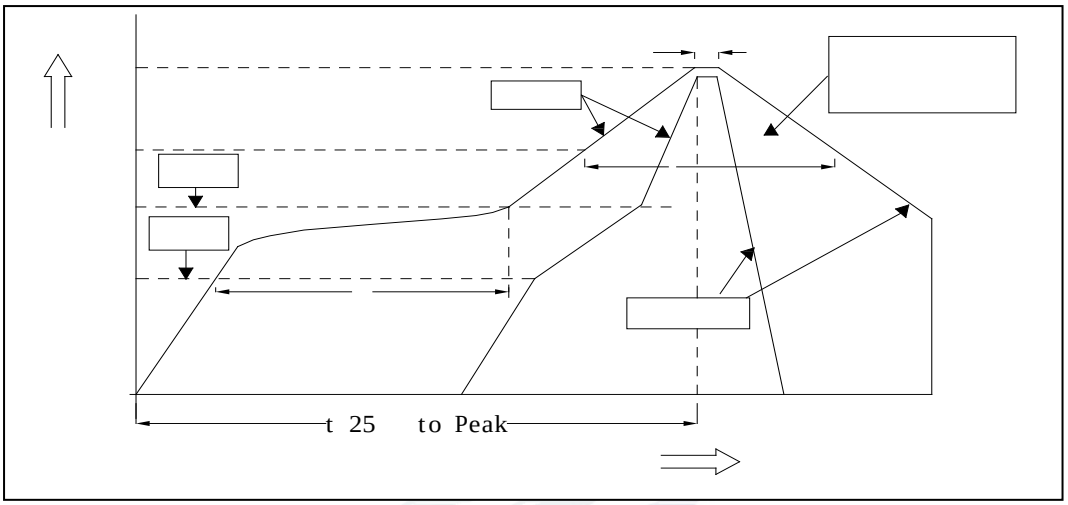


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 SMT Reflow Soldering Instructions SMT

Average temperature rise speed Tsmax T_P	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 (T_L)	217 °C
Time limited to maintain high temperature: The Time (t_L	60 Max 60s
Peak /Classification of temperature / (T_P)	260 °C
Time limit classification of peak temperature time	10 Max 10s
Hold time within 5 ° C with the actual peak temperature (TP) (T_P) 5 °C	30 Max 30s
Cooling speed	6 °C/ Max 6 °C/ s
Needed time from 25 °C to Tp 25 °C	8 Max 8 minutes

Notes

(1) Reflow soldering should not be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged. 24

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

3.1.1 Soldering Iron

(1) When hand soldering, keep the temperature of iron below less 300 less than 3 seconds

300 3

The hand solder should be done only one time.

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

LED

3.1.3 Cautions

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 influence to 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 the silicone resin should be proper. LED

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.LED PCB

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

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4. 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

100PPM.

(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 element is 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.

900PPM

900PPM 1500PPM

(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.

(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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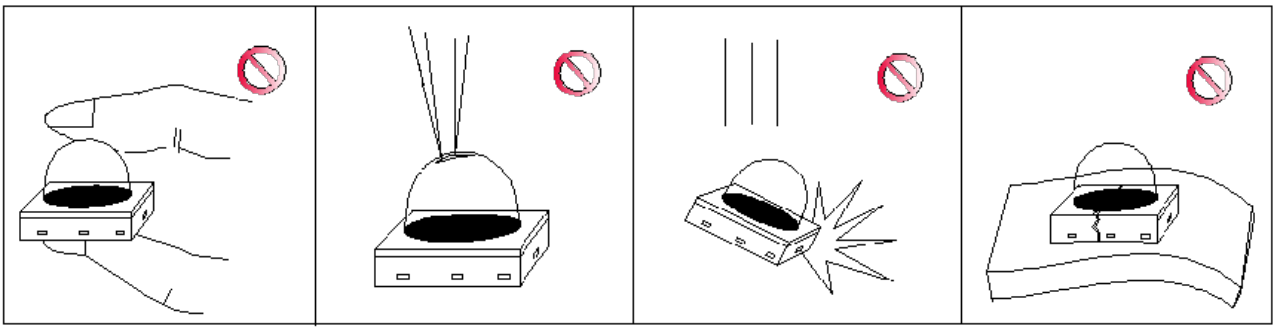

Fig 4-1

(5) In designing a circuit,the current through each LED must be exceed the absolute maximum rating specified

Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	168hours 168
Baking		60 5	-	24hours 24

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time baking treatment should be performed after unpacking and based on the following condition 60 5 for above 24 hours. 60 5 24

If the package is flatulence or damaged,please notify the sales staff to assist.

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS).

(10) Other points for attention, please refer to our relevant information.

Version History/

Date	Revisor	Version	Verifier	Remarks
2020.04.08		E0		

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Declare

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