

## U47W1C-W6-3C

Super Flux LED Lamp, Warm White LED

Square(7.6mm x 7.6mm) with 3mm dome 4 leads

LuckyLight

## Technical Data Sheet

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### Features:

- Super flux output.
- Viewing angle =35 degree
- Outstanding material efficiency.
- Reliable and rugged.
- RoHS compliant.

### Descriptions:

- This revolutionary package design allows the light designer to reduce the number of LEDs required and provide a more uniform and unique illuminated appearance than with other LED solutions.
- The low profile package can be easily coupled with reflectors or lenses to efficiently distribute light and provide the desired light appearance.

### Applications:

- Automotive lighting.
- Electronic signs and signals.
- Special lighting application.

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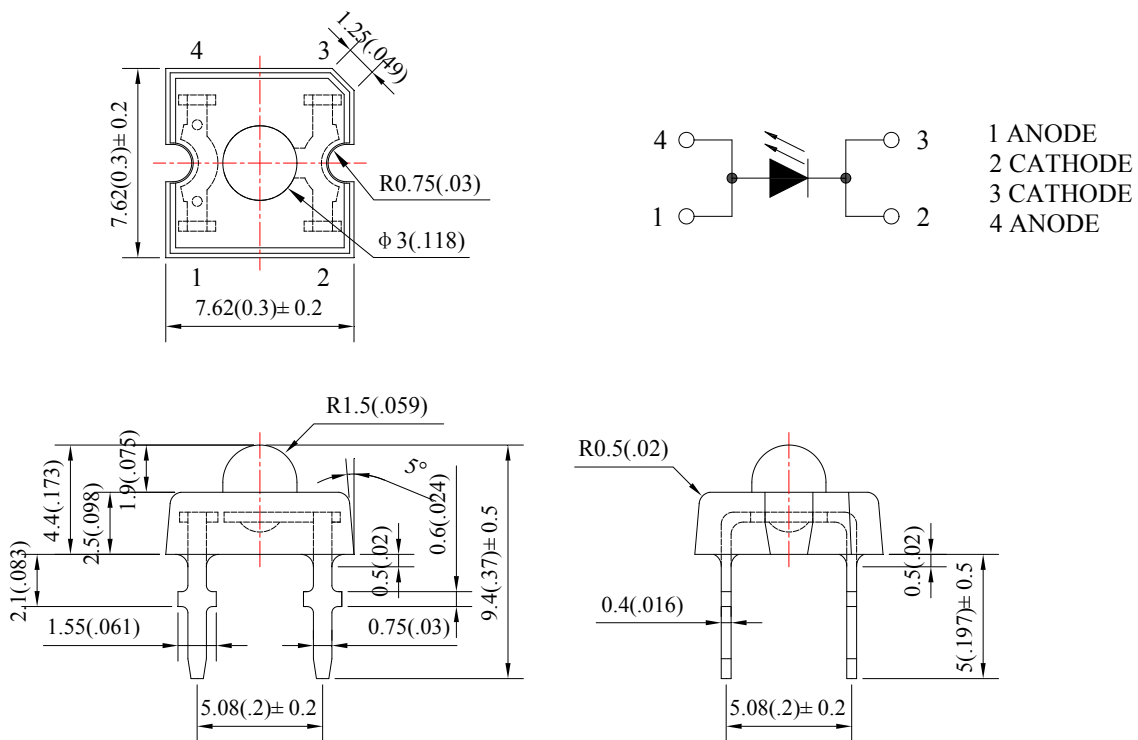
Square(7.6mm x 7.6mm) with 3mm dome 4 leads



## Technical Data Sheet

Part No.	Emitting Color	Lens Color
U47W1C-W6-3C	Warm White	Water Clear

### Package Dimension:



### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$  mm (.010") unless otherwise noted.
3. Protruded resin under flange is 1.00mm (.039") max.

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Issue No.: G-Rev-4

LuckyLight Electronics Co., Ltd

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### Absolute Maximum Ratings at Ta=25°C

Parameters	Symbol	Max.	Unit
Power Dissipation	$P_d$	180	mW
Peak Forward Current <sup>(a)</sup>	$I_{FP}$	100	mA
DC Forward Current <sup>(b)</sup>	$I_F$	50	mA
Reverse Voltage	$V_R$	5	V
Operating Temperature Range	$T_{opr}$	-40°C to +80°C	
Storage Temperature Range	$T_{stg}$	-40°C to +85°C	
Soldering Temperature	$T_{sld}$	260°C for 5 Seconds	

Notes:

a. Derate linearly as shown in derating curve.

b. Duty Factor = 10%, Frequency = 1 kHz.

### Electrical Optical Characteristics at Ta=25°C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity <sup>(a)</sup>	$I_v$	4000	6000	---	mcd	IF=20mA
Viewing Angle <sup>(b)</sup>	$2\theta_{1/2}$	---	35	---	deg.	IF=20mA
Chromaticity Coordinates <sup>(c)</sup>	x	---	0.43	---		IF=20mA
	y	---	0.40	---		IF=20mA
Color Temperature	CCT	---	3000	---	K	IF=20mA
Color Rendering Index	CRI	---	75	---	Ra	IF=20mA
Forward Voltage	VF	2.8	3.2	3.6	V	IF=20mA
Reverse Current	IR	---	---	10	μA	VR=5V

Notes:

a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

b.  $2\theta_{1/2}$  is the o-axis angle where the luminous intensity is 1/2 the peak intensity.

c. The dominant wavelength ( $\lambda_d$ ) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

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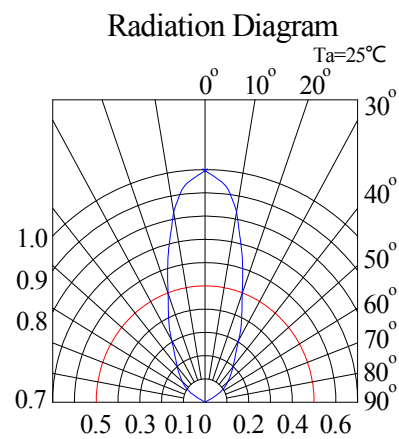
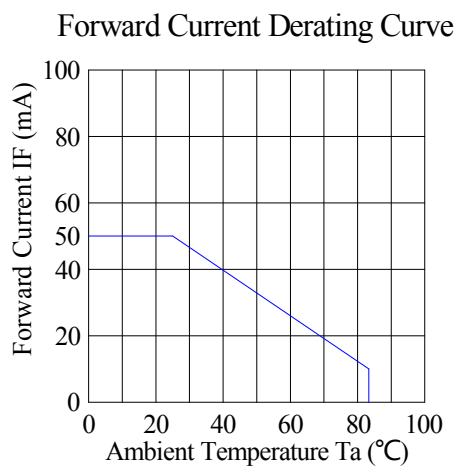
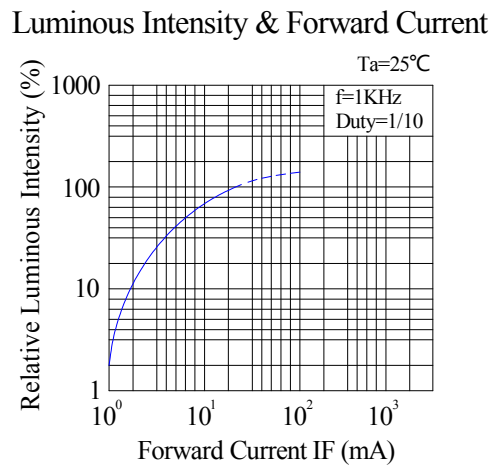
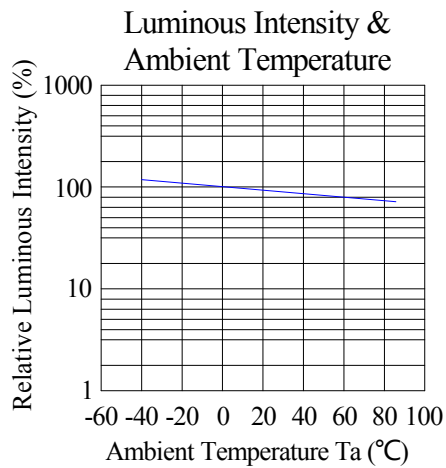
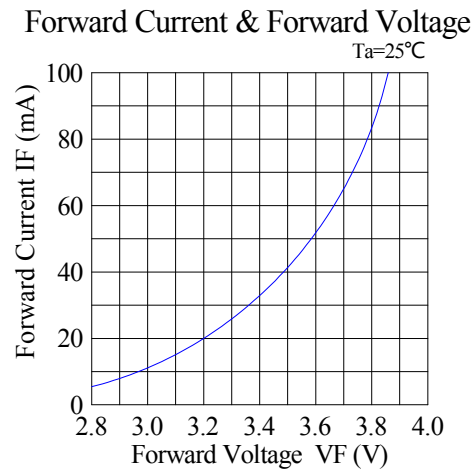
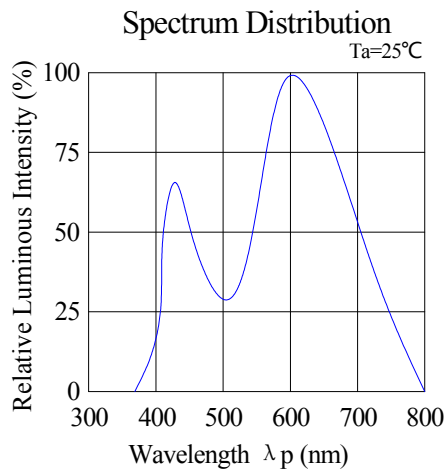
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### Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)



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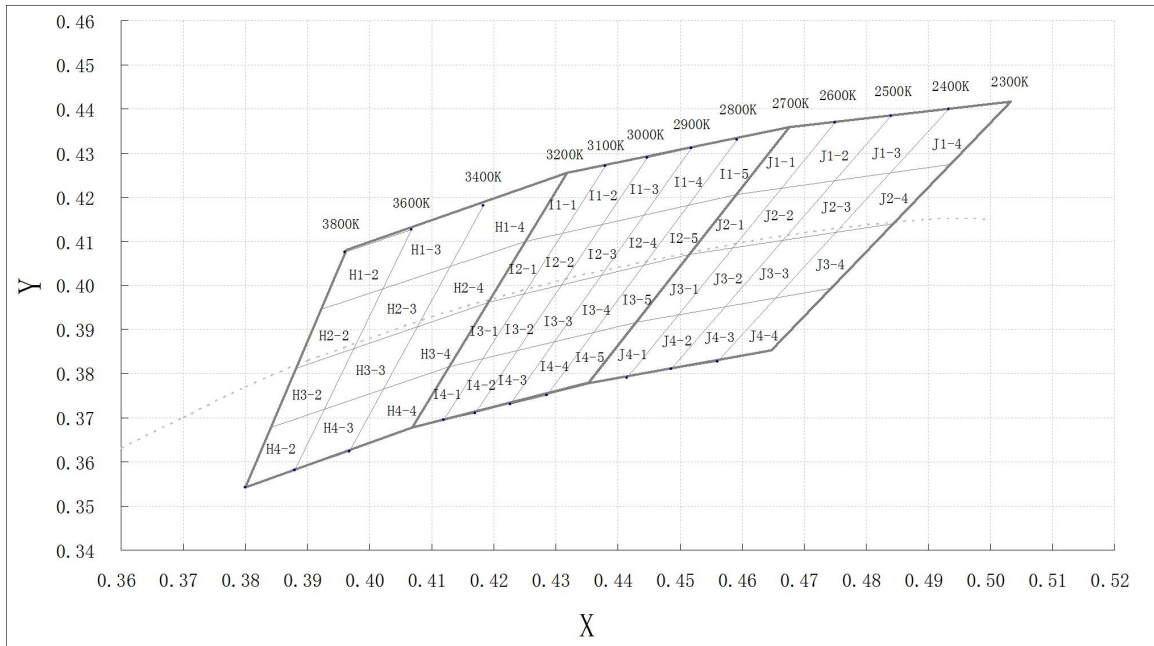
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### CIE Chromaticity Diagram:



### Chromaticity Coordinates Specifications for Bin Rank:

Bin Code	Left x	Left y	Top x	Top y	Right x	Right y	Bottom x	Bottom y
H1-2	0.392	0.394	0.402	0.399	0.407	0.413	0.396	0.408
H2-2	0.388	0.381	0.397	0.386	0.402	0.399	0.392	0.394
H3-2	0.384	0.367	0.393	0.372	0.397	0.386	0.388	0.381
H4-2	0.380	0.354	0.388	0.358	0.393	0.372	0.384	0.367
H1-3	0.402	0.399	0.412	0.403	0.418	0.419	0.407	0.413
H2-3	0.397	0.386	0.407	0.390	0.412	0.403	0.402	0.399
H3-3	0.393	0.372	0.402	0.376	0.407	0.390	0.397	0.386
H4-3	0.388	0.358	0.397	0.362	0.402	0.376	0.393	0.372
H1-4	0.412	0.403	0.425	0.410	0.432	0.426	0.418	0.419
H2-4	0.407	0.390	0.419	0.396	0.425	0.410	0.412	0.403
H3-4	0.402	0.376	0.413	0.382	0.419	0.396	0.407	0.390
H4-4	0.397	0.362	0.407	0.368	0.413	0.382	0.402	0.376
I1-1	0.425	0.410	0.431	0.412	0.438	0.428	0.432	0.426
I2-1	0.419	0.396	0.424	0.398	0.431	0.412	0.425	0.410
I3-1	0.413	0.382	0.418	0.384	0.424	0.398	0.419	0.396
I4-1	0.407	0.368	0.412	0.370	0.418	0.384	0.413	0.382
I1-2	0.431	0.412	0.437	0.414	0.445	0.430	0.438	0.428
I2-2	0.424	0.398	0.430	0.400	0.437	0.414	0.431	0.412
I3-2	0.418	0.384	0.423	0.385	0.430	0.400	0.424	0.398
I4-2	0.412	0.370	0.417	0.372	0.423	0.385	0.418	0.384
I1-3	0.437	0.414	0.444	0.416	0.452	0.432	0.445	0.430

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I2-3	0.430	0.400	0.437	0.402	0.444	0.416	0.437	0.414
I3-3	0.423	0.385	0.430	0.387	0.437	0.402	0.430	0.400
I4-3	0.417	0.372	0.423	0.374	0.430	0.387	0.423	0.385
I1-4	0.444	0.416	0.451	0.418	0.459	0.434	0.452	0.432
I2-4	0.437	0.402	0.444	0.404	0.451	0.418	0.444	0.416
I3-4	0.430	0.387	0.436	0.389	0.444	0.404	0.437	0.402
I4-4	0.423	0.374	0.429	0.376	0.436	0.389	0.430	0.387
I1-5	0.451	0.418	0.460	0.421	0.468	0.436	0.459	0.434
I2-5	0.444	0.404	0.452	0.407	0.460	0.421	0.451	0.418
I3-5	0.436	0.389	0.444	0.392	0.452	0.407	0.444	0.404
I4-5	0.429	0.376	0.436	0.378	0.444	0.392	0.436	0.389
J1-1	0.460	0.421	0.466	0.422	0.475	0.437	0.468	0.436
J2-1	0.452	0.407	0.458	0.408	0.466	0.422	0.460	0.421
J3-1	0.444	0.392	0.449	0.393	0.458	0.408	0.452	0.407
J4-1	0.436	0.378	0.441	0.379	0.449	0.393	0.444	0.392
J1-2	0.466	0.422	0.475	0.424	0.484	0.439	0.475	0.437
J2-2	0.458	0.408	0.467	0.410	0.475	0.424	0.466	0.422
J3-2	0.449	0.393	0.458	0.395	0.467	0.410	0.458	0.408
J4-2	0.441	0.379	0.449	0.381	0.458	0.395	0.449	0.393
J1-3	0.475	0.424	0.483	0.425	0.493	0.440	0.484	0.439
J2-3	0.467	0.410	0.475	0.412	0.483	0.425	0.475	0.424
J3-3	0.458	0.395	0.465	0.397	0.475	0.412	0.467	0.410
J4-3	0.449	0.381	0.456	0.383	0.465	0.397	0.458	0.395
J1-4	0.483	0.425	0.493	0.427	0.503	0.442	0.493	0.440
J2-4	0.475	0.412	0.484	0.414	0.493	0.427	0.483	0.425
J3-4	0.465	0.397	0.474	0.399	0.484	0.414	0.475	0.412
J4-4	0.456	0.383	0.465	0.385	0.474	0.399	0.465	0.397

Note: Color Coordinates Measurement allowance is  $\pm 0.01$ .

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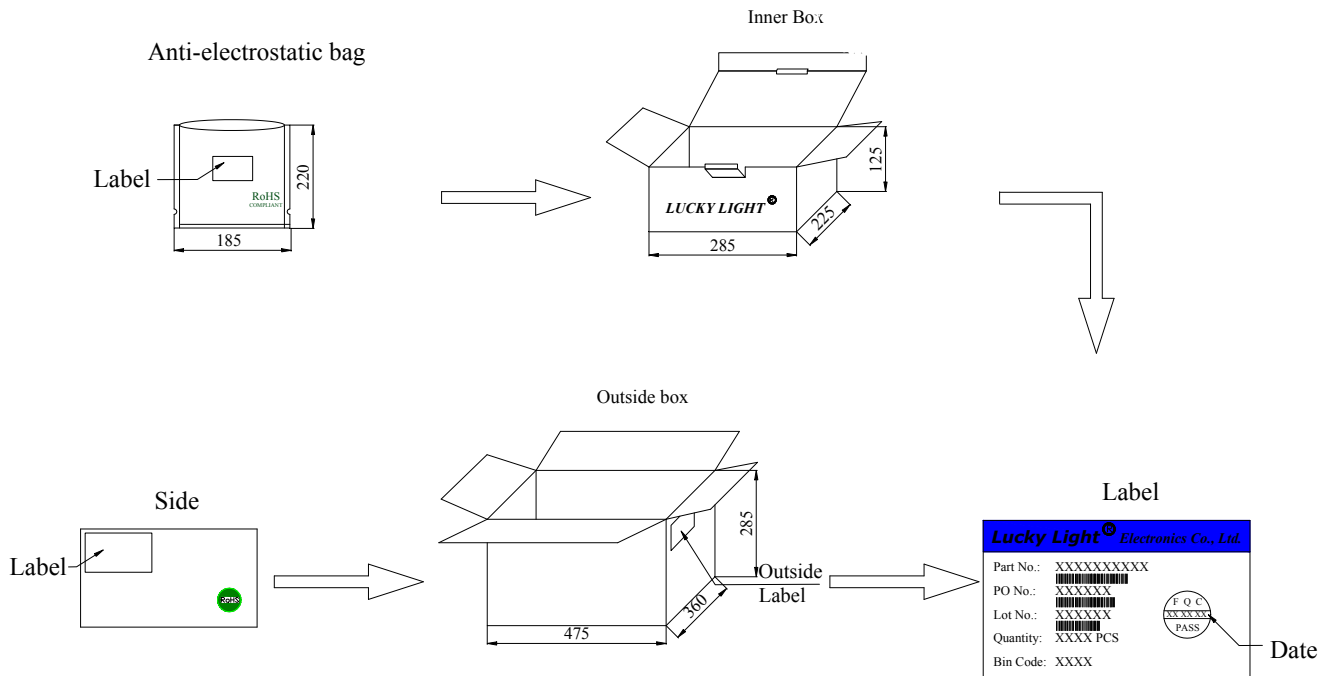
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### Packing & Label Specifications:



### Packing Quantity:

- a. 500 PCS/bag.
- b. 6 Inner Boxes/Outside Box.

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### CAUTIONS

#### 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 The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from LuckyLight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.

2.2 Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

#### 3. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LEDs if necessary.

#### 4. Lead Forming & Assembly

During lead forming, the leads should be bent at a point at least 1.6mm from the base of LED lens. Do not use the base of the lead frame as a fulcrum during forming. Lead forming must be done before soldering, at normal temperature. During assembly on PCB, use minimum clinch force possible to avoid excessive mechanical stress.

#### 5. Soldering

When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point. Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

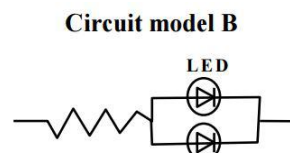
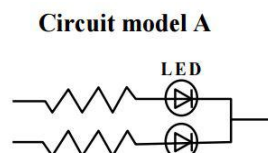
Recommended soldering conditions:

Soldering Iron		Wave Soldering	
Temperature	300°C Max.	Pre-heat	100°C Max.
Soldering Time	3 sec. Max. (one time only)	Pre-heat Time	60 sec. Max.
		Solder Wave	260°C Max.
		Soldering Time	5 sec. Max.

Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

#### 6. Drive Method

An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.





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(A) Recommended circuit

(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

### 7. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

### 8. ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

8.1. Use a conductive wrist band or anti- electrostatic glove when handling these LEDs.

8.2. All devices, equipment, and machinery must be properly grounded.

8.3. Work tables, storage racks, etc. should be properly grounded.

8.4. Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handing.

ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or “no light up” at low currents.

To verify for ESD damage, check for “light up” and VF of the suspect LEDs at low currents.

The VF of “good” LEDs should be  $>2.0V@0.1mA$  for InGaN product and  $>1.4V@0.1mA$  for AlInGaP product.

### 9. Others

9.1 The information included in this document reflects representative usage scenarios and is intended for technical reference only.

9.2 The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.

9.3 When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, LuckyLight will not be responsible for any subsequent issues.

9.4 The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications). Consult LuckyLight's Sales in advance for information on applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health, such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices.