



深圳匡通电子有限公司
SHENZHEN KENTO ELECTRONICCO.,LTD

SPECIFICATION FOR APPROVAL

Product Name: SMD 3528 Red / Emerald Green color led

Product Number: KT-3528-RG

Customer Name: _____

Version number: A.2

Release Date: 2015-10-23

SHENZHEN KENTO ELECTRONICCO .,LTD		
Insitituted by	Checked by	Approved by

Client Approve		
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Product specification for approval

Part No. : **KT-3528-RG**

Version

A.1

Issue date

2013.05.21

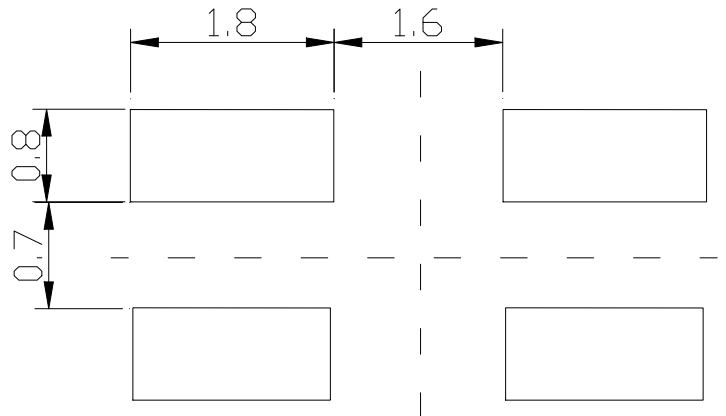
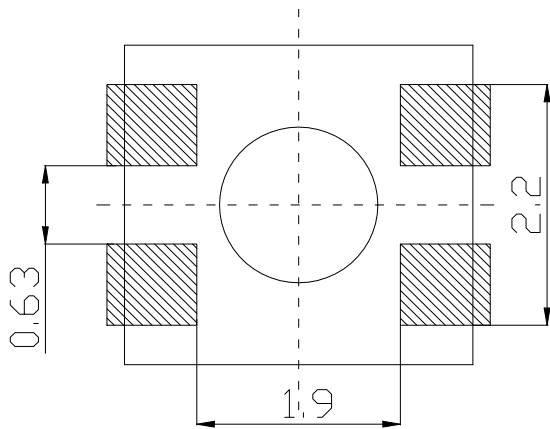
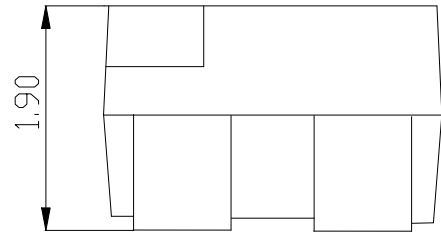
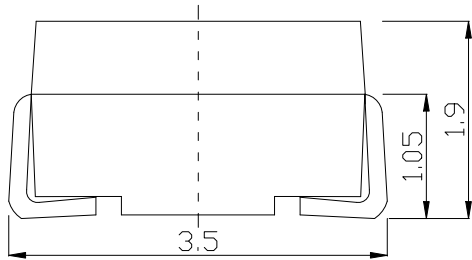
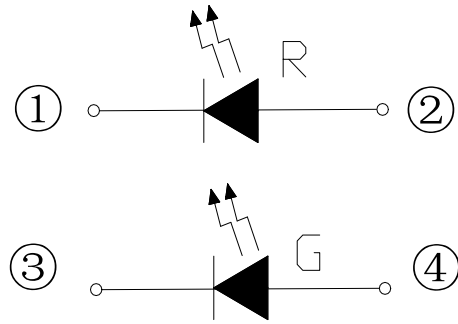
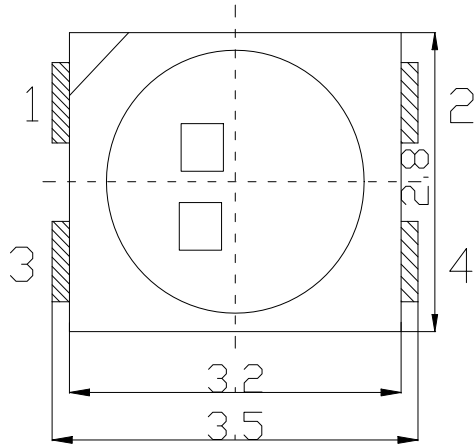
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一、 Product Description:

- appearance dimension (l/w/h): 3.5 × two point eight × 1.9 mm
- color: Red / Emerald Green
- colloid: transparent plane colloid
- EIA specification standard packaging
- Environmental protection products, complying with ROHS regulations
- Applicable to automatic mounter
- Applicable to infrared reflow soldering process

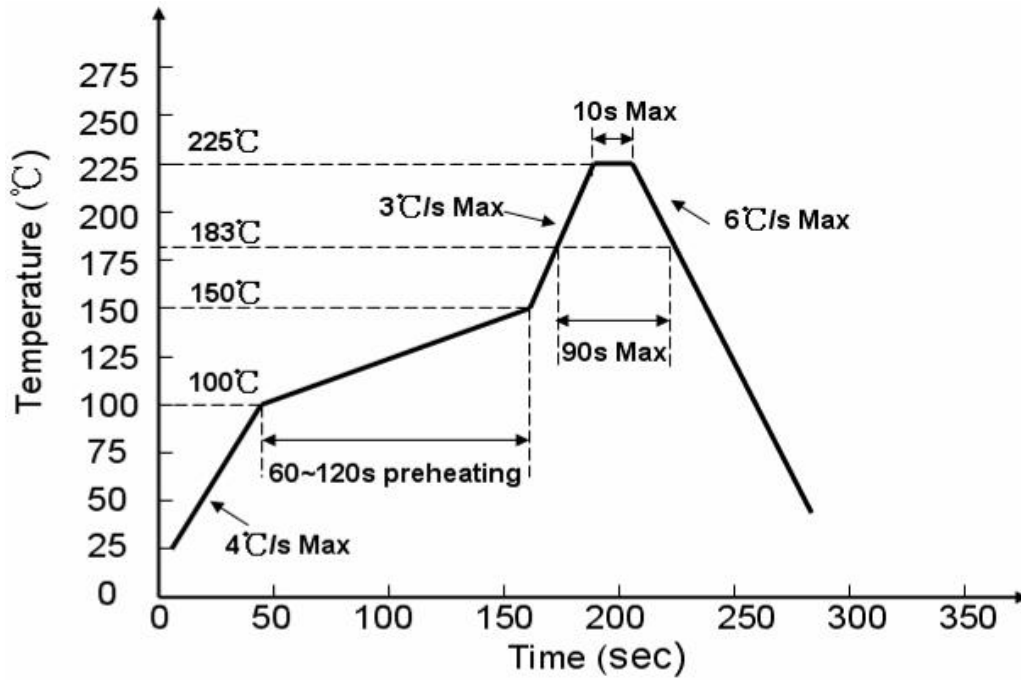
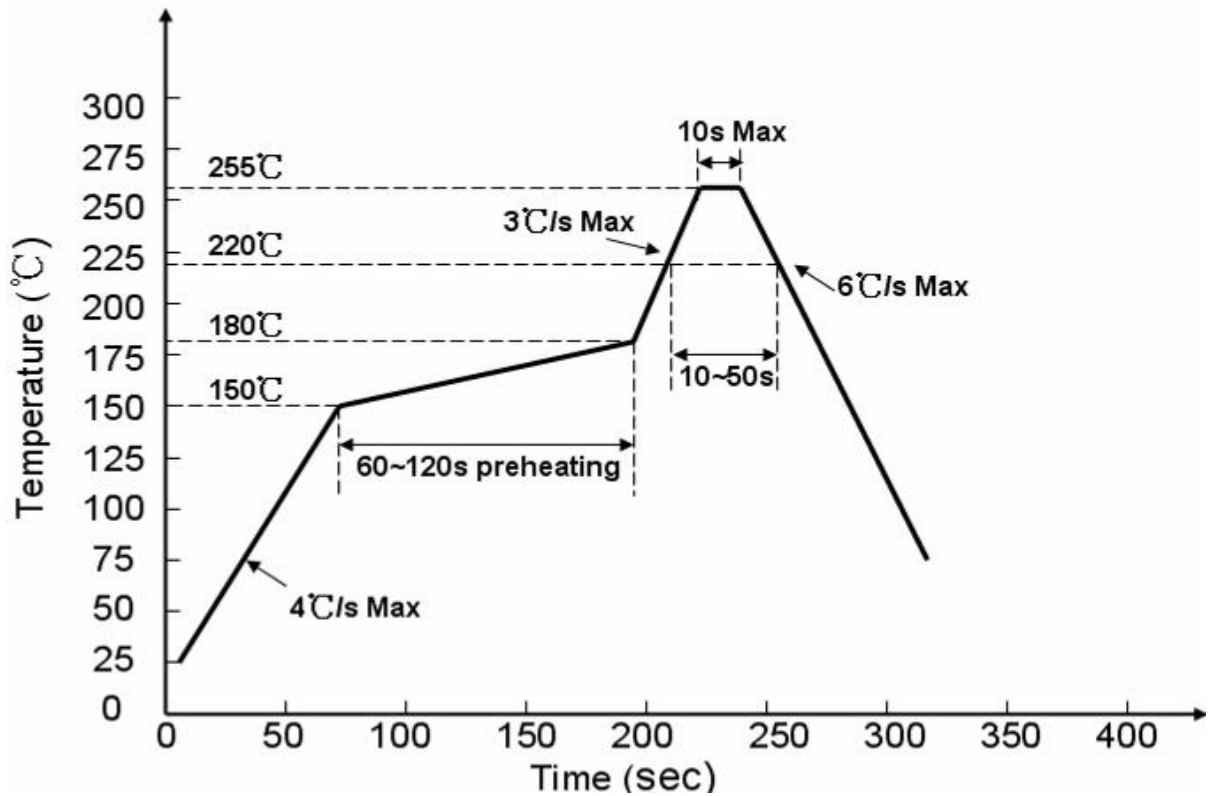
二、 Dimensions and Recommended Pad Size:



Note: 1. Unit: millimeter (mm).

2. Tolerance: ± 0.10 mm if there is no special label.

三、Recommended Welding Temperature Curve:

3.1、Lead solder:

3.2、Lead-free soldering:

四、Photoelectric parameters (Ta=25°C)



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Parameter	Symbol	Maximum rating		Unit
Power consumption	Pd	R	90	mW
		G	90	
Peak pulsing current (1/10 duty cycle, 0.1ms pulse width)	IFP	R	70	mA
		G	100	
Forward DC working current	IF	R	30	mA
		G	30	
Reverse voltage	VR	R	5	V
		G	5	
Operating temperature range	Topr	-30°C ~ +85°C		
Storage temperature range	Tstg	-40°C ~ +90°C		
Welding Conditions	Tsol	Reflow soldering : 260°C , 10s Manual soldering : 300°C , 3s		
Antistatic ability	ESD	2000		V

五、 Photoelectric parameters (Ta=25°C):

Parameter	Symbol	color	Min	Typ	Max	Unit	Test Condition
Forward Voltage	VF	Red	1.8		2.6	V	IF = 20mA
		Green	2.8		3.6		
Reverse current	IR	Red	--	--	5	μA	VR = 5V
		Green	--	--	5		
Peak wavelength	λP	Red	--	630	--	nm	IF = 20mA (Fig.1)
		Green	--	530	--		
Half wave width	Δλ	Red	--	20	--	nm	IF = 20mA
		Green	--	30	--		
Dominant wavelength	λd	Red	-615-		-630-	nm	IF = 20mA
		Green	-515-		-530-		
Light Intensity	IV	Red	--	450	--	mcd	IF = 20mA
		Green	--	720	--		
Half light angle	2θ1/2	--	--	120	--	deg	IF = 20mA



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BIN specifications

1、Red light brightness divided into BIN specifications

Bin	Min	Max	Unit	Condition
N1	285	350	MCD	IF=20mA
N2	350	450		
P1	450	560		

Green brightness divided into BIN specifications

Bin	Min	Max	Unit	Condition
P1	450	560	CD	IF=20mA
P2	560	720		
Q1	720	900		
Q2	900	1150		

2、Red light voltage is divided into BIN specification

Bin	Min	Max	Unit	Condition
1	1.8	2.0	V	IF=20mA
2	2.0	2.2		
3	2.2	2.4		
4	2.4	2.6		

Green light voltage by BIN specification

Bin	Min	Max	Unit	Condition
6	2.8	3.0	V	IF=20mA
7	3.0	3.2		
8	3.2	3.4		
9	3.4	3.6		

3、Red light wavelength is divided into BIN specification

Bin	Min	Max	Unit	Condition
A	615	620	nm	IF=20mA
B	620	625		
C	625	630		

Green light wavelength division BIN specification

Bin	Min	Max	Unit	Condition
B	515	518	nm	IF=20mA
C	518	521		
D	51	524		
E	524	527		
F	527	530		

六、 Characteristic curve of photoelectric parameter representative value:

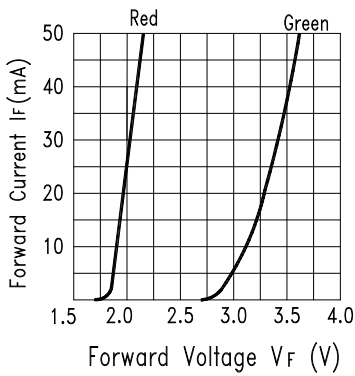
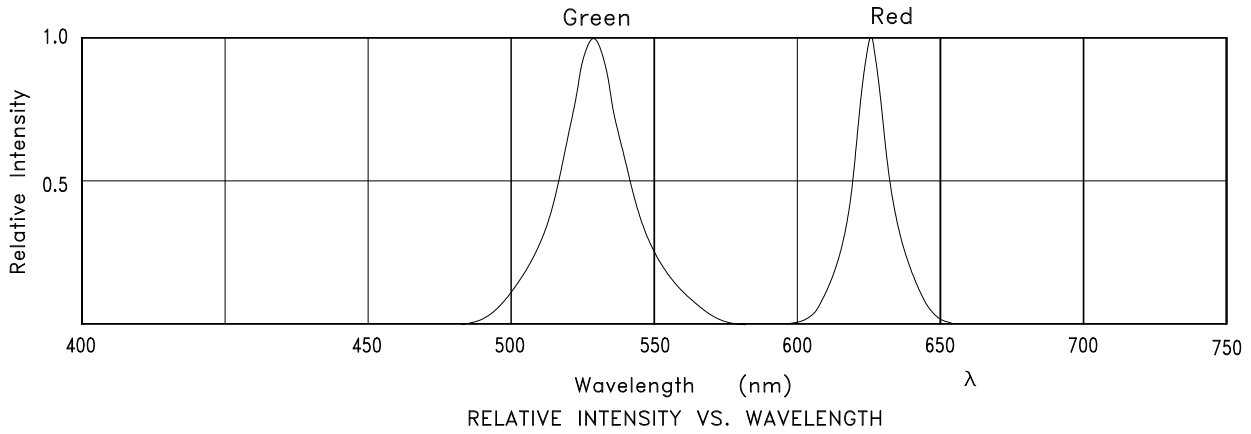


Fig.2 Forward Current vs. Forward Voltage

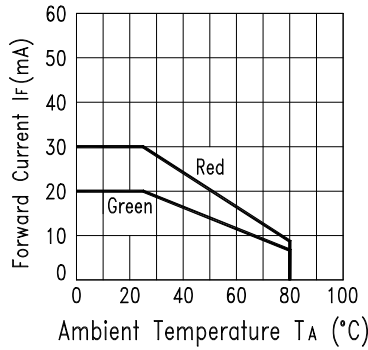


Fig.3 Forward Current Derating Curve

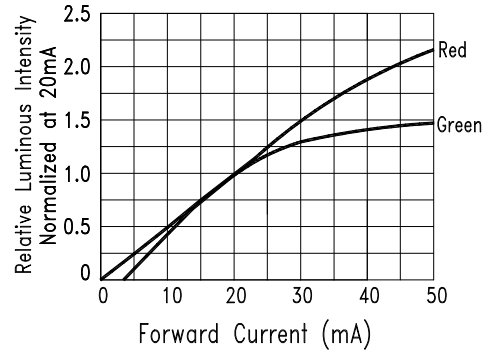


Fig.4 Relative Luminous Intensity vs. Forward Current

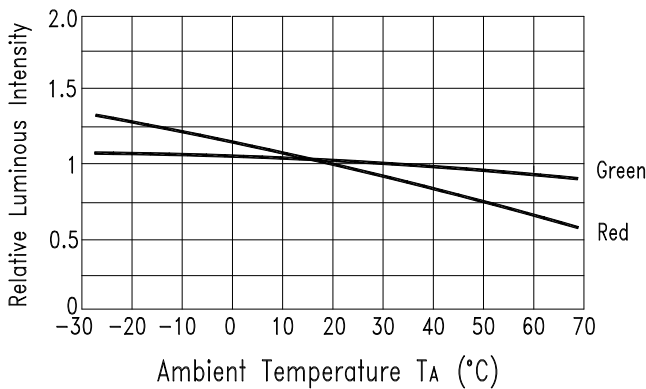


Fig.5 Luminous Intensity vs. Ambient Temperature

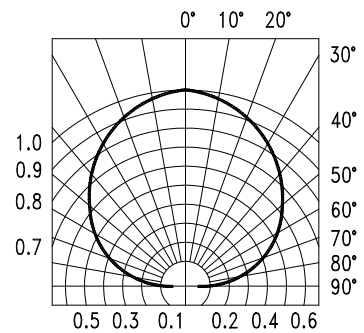
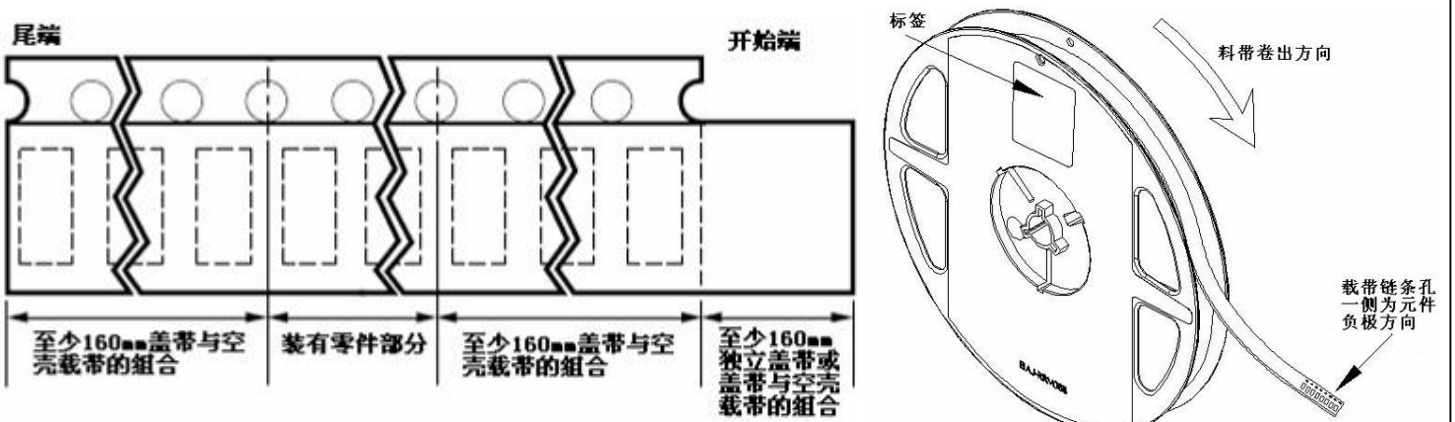


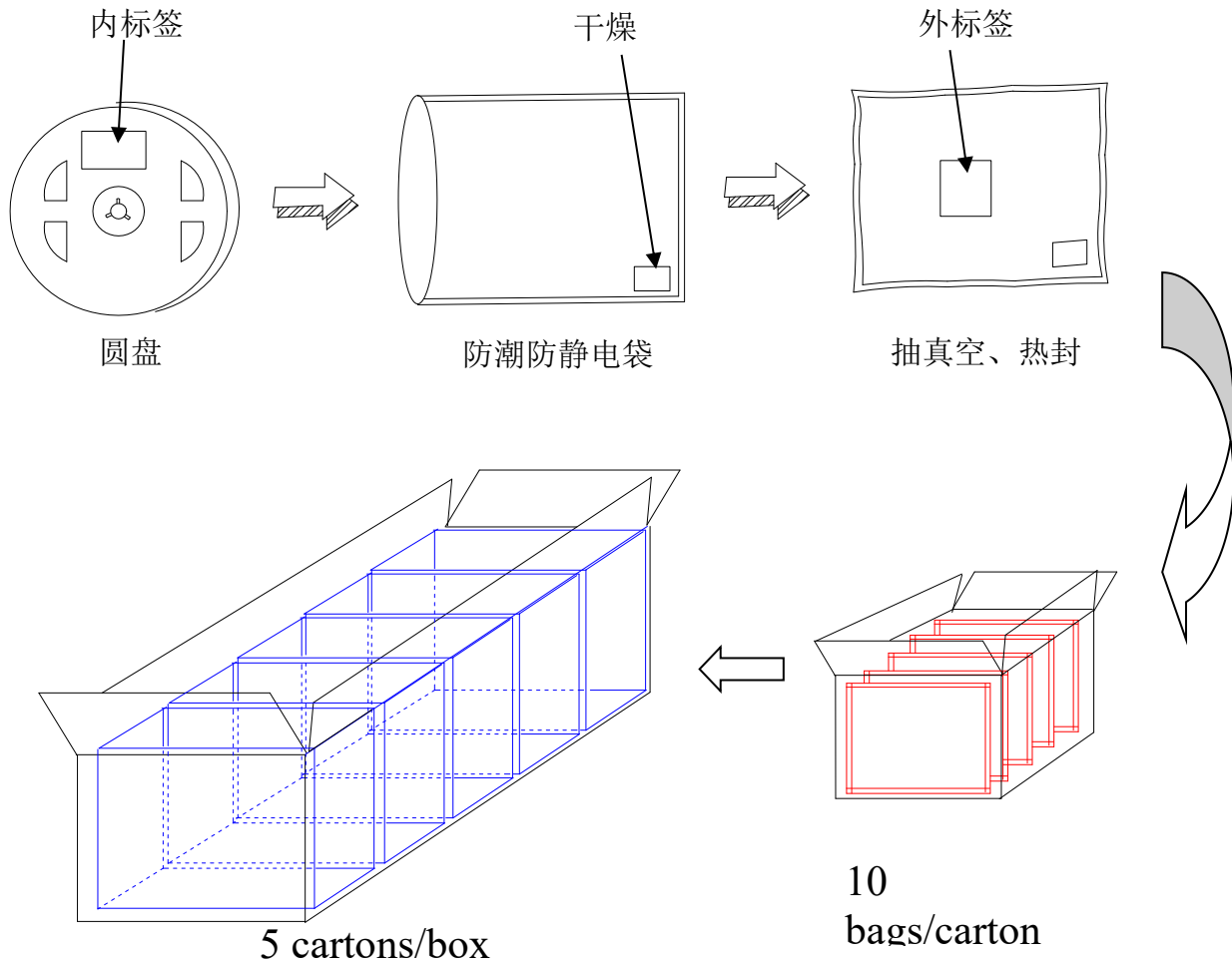
Fig.6 Spatial Distribution

Note: Unless otherwise specified, the test ambient temperature is 25 + 3 °C

九、Disk and carrier tape take-out direction and cavity specifications



十、Inner and outer packaging





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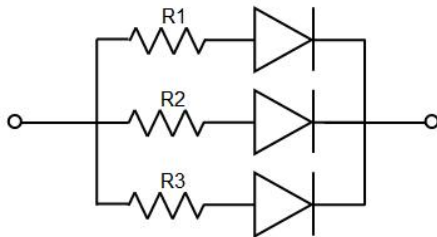
十一、Reliability Test:

Project	TEST ITEM	TEST ENVIRONMENT	TEST TIMES	Failure LED sums (PCS)
Durability test	Life span	Continuous lighting with maximum rated current at room temperature; Test at 20mA.	1000 hours (- 24 hours, + 72 hours)	MIL-STD-750 D:1026 MIL-STD-883 D:1005
	High temperature and humidity storage	IR-Reflow In-Board, 2 Times Ambient temperature Ta= 65±5°C, relative humidity RH= 90~95%	240 hours (+ 2 hours)	JESD22-A101
	Hig temperature storage	Ambient temperature Ta= 105±5°C	1000 hours (-24 hours, +72 hours)	MIL-STD-883 D:1008 JIS C 7021:B-10
	Low temperature storage	Ambient temperature Ta= -55±5°C	1000 hours (-24 hours, +72 hours)	JIS C 7021:B-12
Environmental testing	Tperature cycle	105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins 5mins	10 cycles	MIL-STD-202 F:107D MIL-STD-750 D:1051 MIL-STD-883 D:1010
	Thermal Shock	IR-Reflow In-Board, 2 Times 85 ± 5°C ~ -40°C ± 5°C 10mins 10mins	10 cycles	MIL-STD-202 F:107D MIL-STD-750 D:1051 MIL-STD-883 D:1010
	Tin resistance test	Solder temperature T.sol= 260 ± 5°C	10 ± 1secs 2times	MIL-STD-202 F:210A MIL-STD-750 D:2031 JIS C
	Infrared reflow soldering	Heating rate (183°C to the highest value): maximum 3°C/sec Maintain the temperature at 125(±25)°C: no more than 120 seconds Maintain the temperature above 183°C: 60-150 seconds Maximum temperature limit range: 235°C+5/-0°C	-----	MIL-STD-750 D:2031.2 J-STD-020C
	Lead process	Maintain at 235°C+5/-0°C Time: 10-30 seconds Cooling speed: Max 6°C/sec		
	Low temperature storage	Heating rate (217°C to the highest value): maximum 3°C/sec Maintain the temperature at 175(±25)°C: no more than 180 seconds Maintain the temperature above 217°C: 60-150 seconds Maximum temperature limit range: 260°C+0/-5°C Maintain at 260°C+0/-5°C Time: 20-40 seconds Cooling speed: Max 6°C/sec	-----	MIL-STD-750 D:2031.2 J-STD-020C
Temperature cycle	Soldering temperature T.sol = 235 ± 5°C Immersion speed: 25±2.5 mm/sec Soldering rate ≧95% pad area	Immersion time: 2±0.5 秒	MIL-STD-202 F:208D MIL-STD-750 D:2026 MIL-STD-883 D:2003	

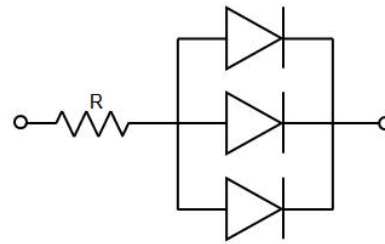
十二、Attention:

During using:

1. LED is a current driving element, and the slight change of voltage will produce a large current fluctuation, which will cause the element to be damaged. The customer should use resistance series connection as current limiting protection
2. In order to ensure the light color consistency of multiple LEDs in parallel, it is recommended to use a separate resistor for each branch, as shown in mode a below; As shown in mode B below, LED light color may differ due to different volt ampere characteristics of each LED



Circuit mode A



Circuit mode B

3. Too high ambient temperature will affect the brightness and other performance of LED, so in order to make LED have better performance, it should be far away from the heat source.

4. Photoelectric parameter tolerance:

Forward voltage REF / VF: $\pm 0.02V$

Brightness CAT / IV: $\pm 11\%$

Wavelength HUE / WLD: $\pm 1nm$

Storage:

1. Without opening the original packaging, the recommended storage environment is: Temperature: 5°C~30°C; Humidity: 85%RH or less. When the stock is more than 2 months, it should be dehumidified before use. The condition is 60°C/ 8 hours.
2. After opening the original packaging, the recommended storage environment is: temperature 5~30°C; humidity below 60%.
3. LED is a humidity sensitive element. To avoid moisture absorption, it is recommended to store it in a closed container with desiccant or in a nitrogen moisture-proof cabinet after opening the package.
4. After opening the package, the components should be used within 48 hours (2 days); and soldering should be done as soon as possible after mounting.
5. If the desiccant fails or the component is exposed to the air for more than 48 hours (2 days), it should be dehumidified.

Baking conditions: 60°C, 24 hours.

ESD electrostatic protection

LEDs (especially blue, emerald, purple, white, and pink LEDs with InGaN structure) are electrostatic sensitive components, and static electricity or current overload will destroy the LED structure. LED damage by static electricity or current overload may cause abnormal performance, such as excessive leakage current, low VF, or failure to light up, etc. So please note the following:

1. Wear an anti-static wrist strap or anti-static gloves when touching LEDs.
2. All machinery and equipment, tools, work tables, material racks, etc., should be properly grounded (the grounding impedance value is within 10Ω).
3. Use anti-static bags, anti-static boxes, and anti-static turnover boxes to store or transport LEDs. It is strictly forbidden to use ordinary plastic products.
4. It is recommended to use ion fans to suppress the generation of static electricity during operation.
5. The electrostatic field voltage is less than 100V within an environmental range of 1 foot away from the LED element.

Cleaning

It is recommended to use alcohol solutions such as isopropanol to clean the LED, and it is strictly prohibited to use corrosive solutions.

Welding

1. For reflow soldering conditions, refer to the temperature curve on the first page.
2. The number of reflow soldering should not exceed twice.
3. It is only recommended to use manual welding in the case of repair and heavy work; the maximum welding temperature should not exceed 300 degrees and must be completed within 3 seconds. The maximum power of the soldering iron should not exceed 30W.
4. During the welding process, it is strictly forbidden to touch the colloid at high temperature.
5. After soldering, it is forbidden to apply external force to the colloid, and it is forbidden to bend the PCB to avoid impact on the components.