PRODUCT SPECIFICATION

Model No：CSSC-UPCYOG4XX-YSX

Descriptions:
・ Product Type **:** Chip LED
・ Package Size **:** **1.6 × 0.8 × 0.5 mm**
・ Emitting Color **:** Orange

CUSTOMER APPROVED SIGNATURES	APPROVED BY	CHECKED BY	PREPARED BY
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■ **Features**

1. 0603 package

2. Top view LED

3. Compatible with infrared and vapor phase reflow solder process.

4. Pb-free

5. RoHS compliant

■ **Device Selection Guide**

Part No.	Chip Material	Color	
		Emitted	**Resin**
CSSC-UPCYOG4XX-YSX	AlGaInP	Orange	Water Clear

■ **Applications**

1. Telecommunication : indicator and back-lighting in telephone and fax

2. Decorative and Entertainment Lighting

3. Indicators

4. Automotive Telecommunication

■ Absolute Maximum Ratings–

（**Ta=25℃**）

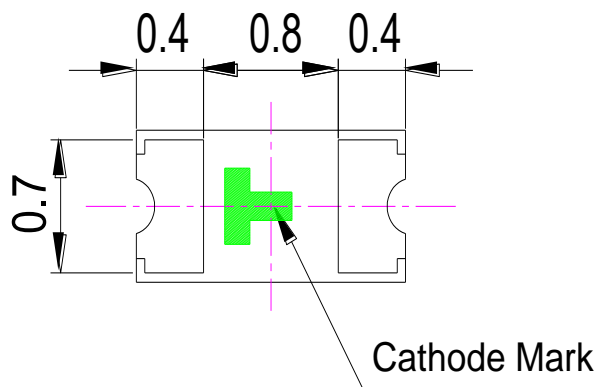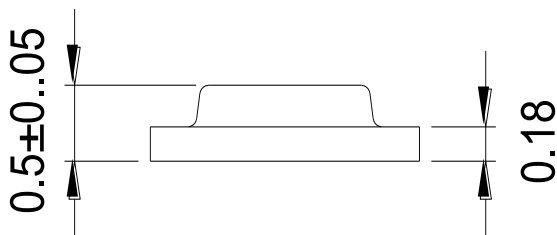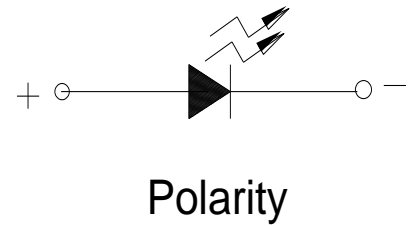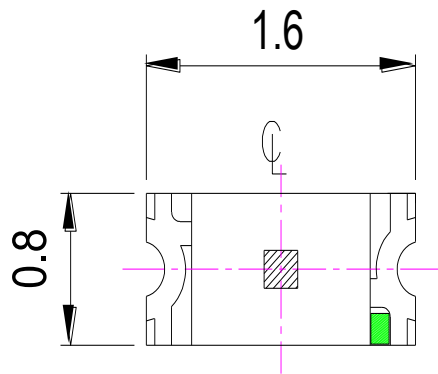| Parameter	Symbol	Value		Unit
Forward current	I_F	25		mA
Pulse Forward Current	I_{FP}	60		mA
Reverse voltage	V_R	5		V
Power Dissipation	PD	50		mW
Operating temperature range	T_{op}	-40~ +85		℃
Storage temperature range	T_{stg}	-40 ~ +100		℃
Soldering Temperature	T_{sld}	Reflow Soldering: 260º C		for 10sec.
		Hand Soldering:350 ° C		for 3sec.

1. **IFP Conditions : 1/10 Duty Cycle, 0.1 msec Pulse Width**
2. **The device can not operated under continuous reverse voltage.**
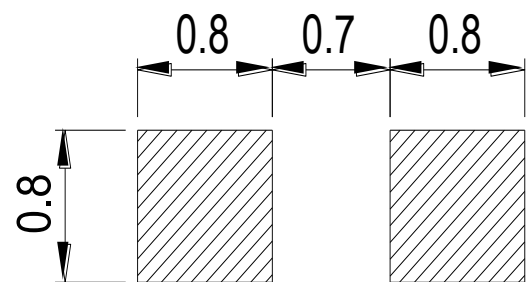
■ Electrical / Optical Characteristics –

（**Ta=25℃**）

Parameter	Symbol	Value			Unit	Test Condition
		Min	Typ	Max		
Forward voltage	Vf	1.8	--	2.3	V	IF=20mA
Luminous Intensity	IV	72	--	225	mcd	
DominateWavelength	Λd	597.5	--	610	nm	
Viewing angle at 50% Iv	$2\theta 1/2$	--	120	--	Deg	
Reverse current	Ir	--	--	10	μA	VR=5V

■ **Product size (Unit: mm) –**

1.6

0.8

0.5±0.05

0.18

Polarity

Recommended Solder Pad

0.4 0.8 0.4

0.7

Cathode Mark

0.8 0.7 0.8

0.8

Note: Tolerance unless mentioned is ±0.1mm,Unit = mm.

■ **Luminous Flux Rank Limits (I_f = 20mA)**

Bin Code	ST4	ST5	ST6	ST7	ST8
mcd	72-90	90-112	112-140	140-180	180-225
CSSC-UPCYOG4XX-YSX	●	●	●	●	●

Notice: Tolerance of measurement of Luminous Intensity：±12％

■ **Forward Voltage Rank Limits (I_f = 20mA)**

V_f Rank				
Bin Code	Min	Max	Unit	Condition
18	1.8	1.9	V	I_f = 20mA
19	1.9	2.0		
20	2.0	2.1		
21	2.1	2.2		
22	2.2	2.3		

Notice: Tolerance of measurement of Forward Voltage: ±0.1V

■ **Dominant Wavelength Rank Limits (I_F = 20mA)**

unit：nm

Peak wavelength / Part No.	S1	S2	S3	S4	S5
CSSC-UPCYOG4XX-YSX	597.5-600	600-602.5	602.5-605	605-607.5	607.5-610

Notice: Tolerance of measurement of dominant wavelength:±2nm;
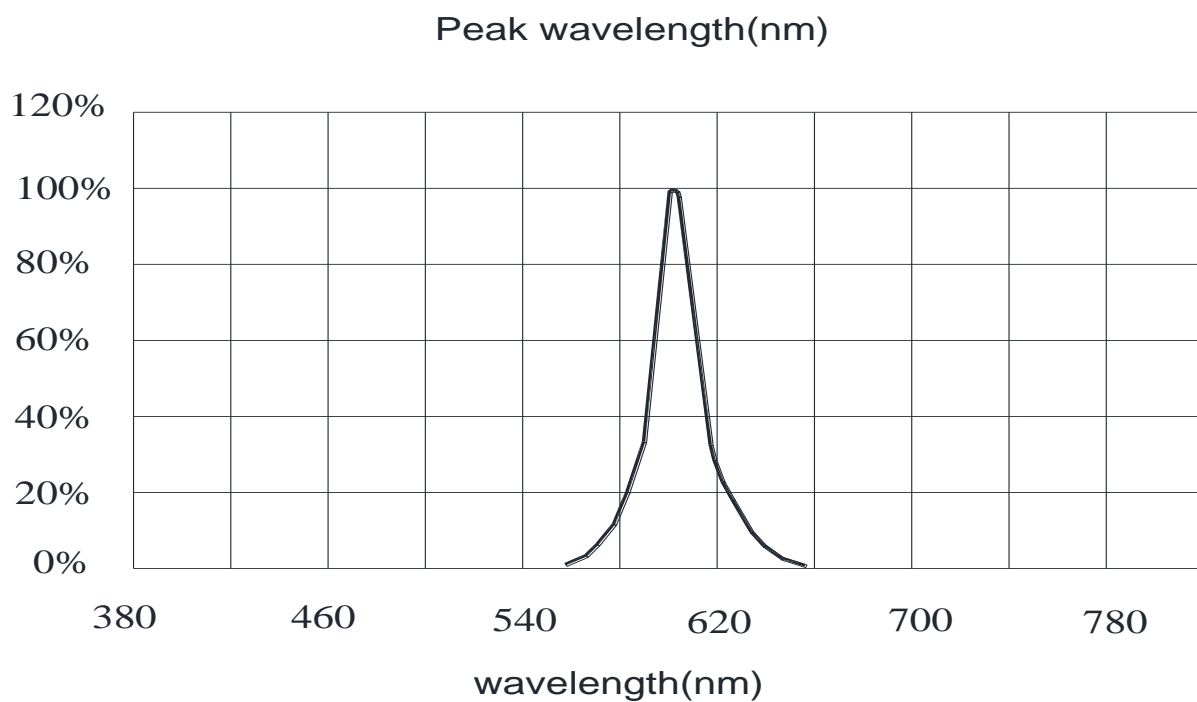
■ Optical Characteristic Curves

Peak wavelength(nm)

wavelength(nm)

Fig.1-Forword Current(V) vs. Forward Voltage
Ta=25°C

Forword Voltage V_F (V)
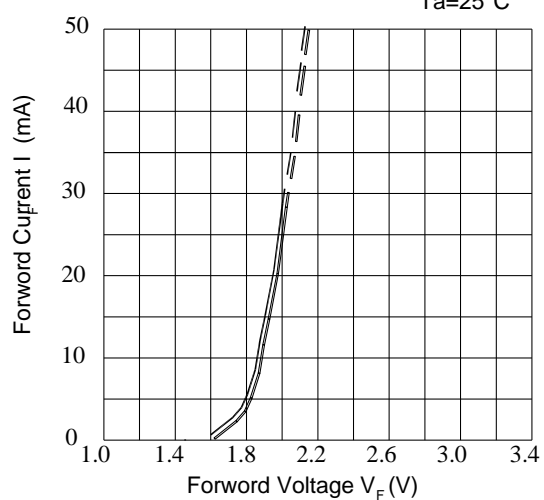
Fig.2-Relative Luminous Intensity vs. Forword Current
Ts=25°C

Forward Current I_F (mA)
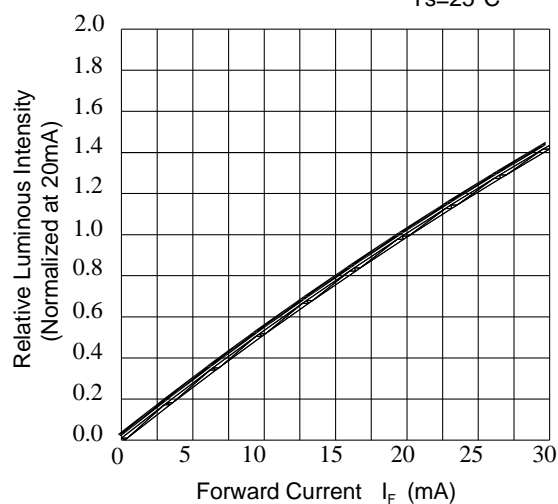
Fig.3-Relative Luminous Intensity vs.Juntion Temperature

Tj-Juntion Temperature (°C)
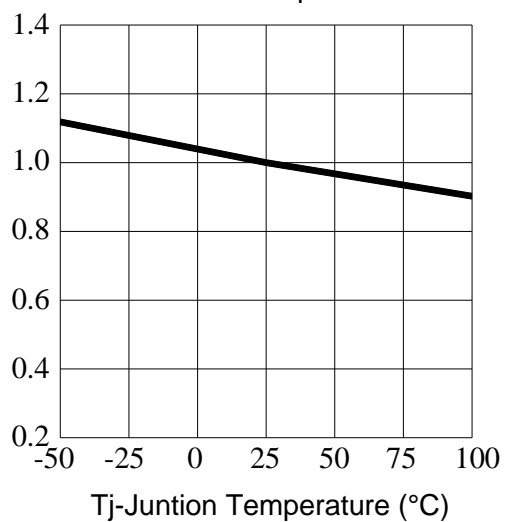
Fig.4-Max.Driving Forward Current vs.Soldering Temperture
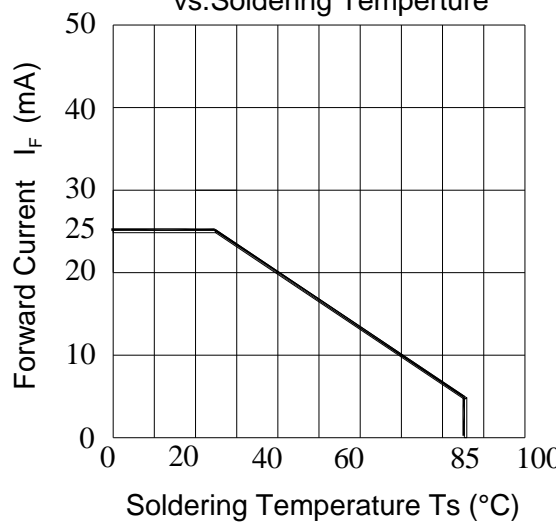
Forward Current I_F (mA)

Soldering Temperature Ts (°C)

Fig.5-Forword Voltage Shift vs. Juntion Temperature

Forword Voltage Shift -V

Tj-Juntion Temperature (°C)
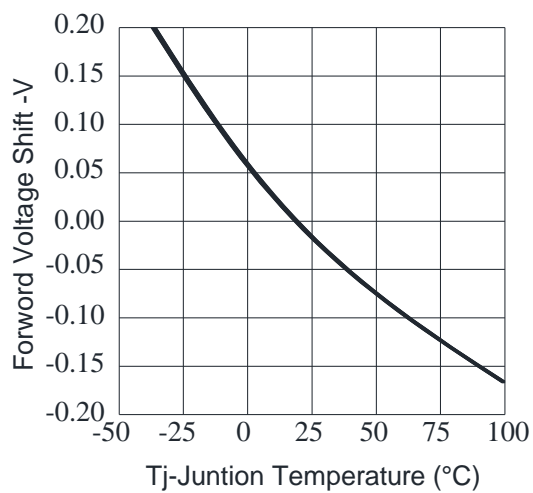
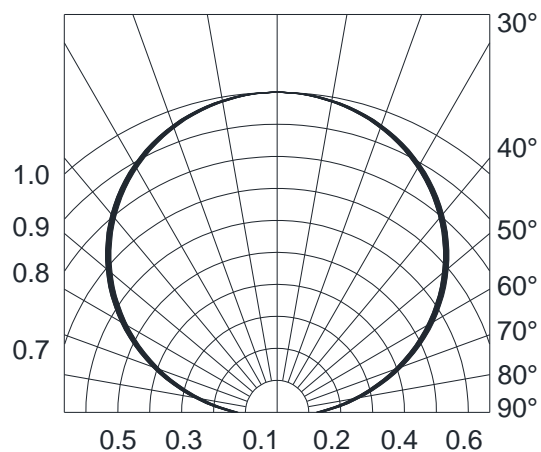Fig.6-Radiation Diagram   Ta=25°C

■ **Packaging**

Progressive direction

PACKAGE: 4 000Pcs/Reel

Label

Label

Desiccant

Aluminum moisture-proof bag
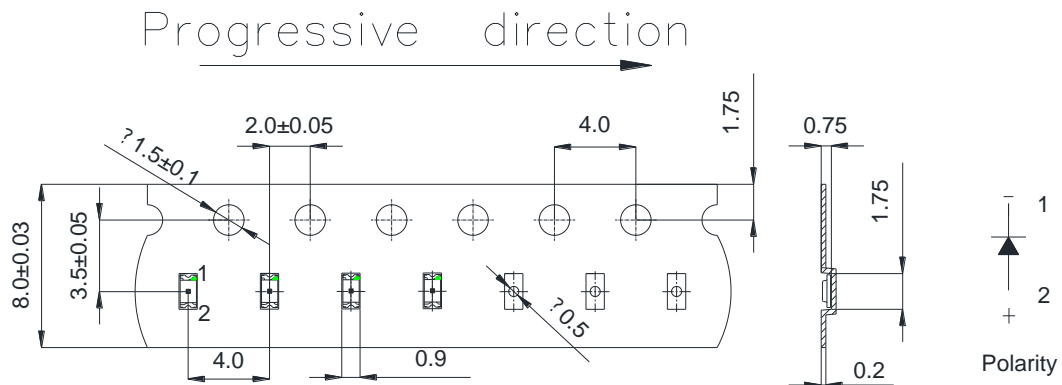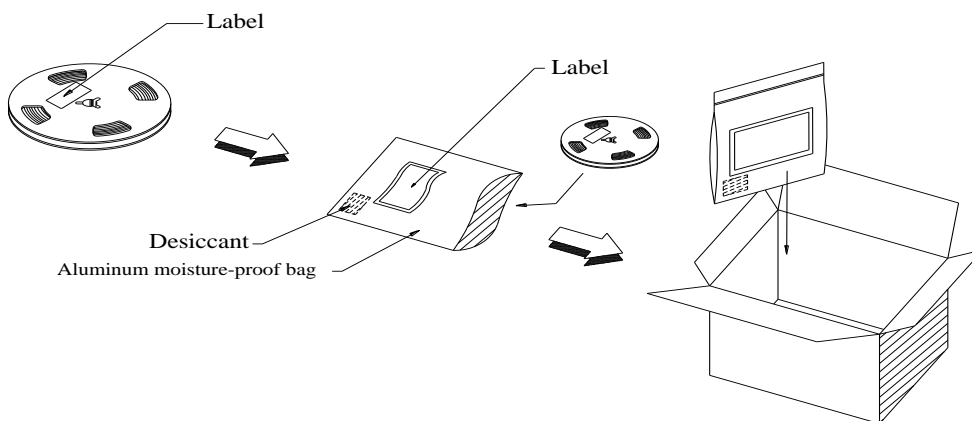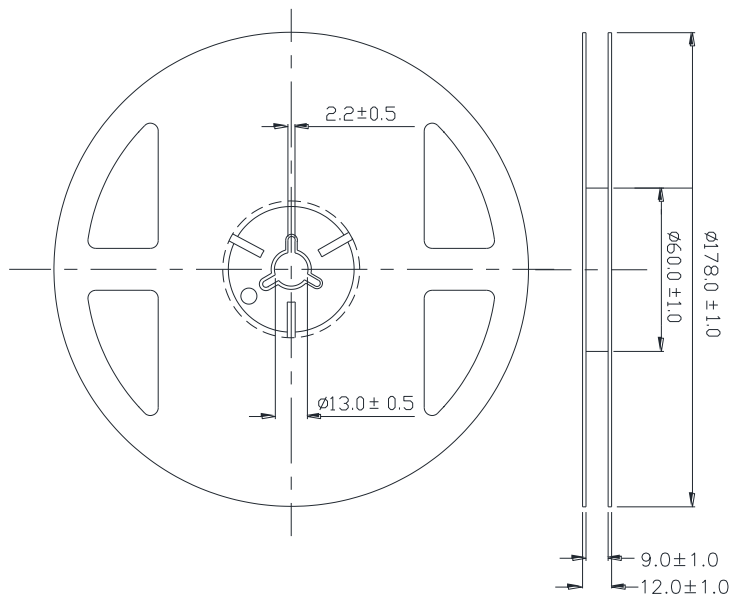
■ **Soldering Characteristics**

IR-reflow Condition (Pb free)

Area	Title	Symbol	Min	Max	Unit
(1)Preheat	Ramp-up rate	Vp	1	5	℃/sec
	temperature	Tp	150	–	℃
	time	tp	–	–	sec
(2)Equilibrium	Ramp-up rate	Ve	–	–	℃/sec
	temperature	Te	150	200	℃
	Time	te	60	120	sec
(3)Reflow	Ramp-up rate	Vr	1	5	℃/sec
	temperature	Tr	220	–	℃
	Time	tr	–	60	sec
	Peak temperature	Trp	–	260	℃
	Peak time	trp	–	10	sec
(4)Cooling	Ramp-down rate	Vc	3	6	℃/sec

Temp.(°C)

Trp

Tr
Te

Tp

25   Preheat

Vp

Equilibrium

Vr

Reflow

Cooling

Vc

tp   te   trp   Time(sec)

tr
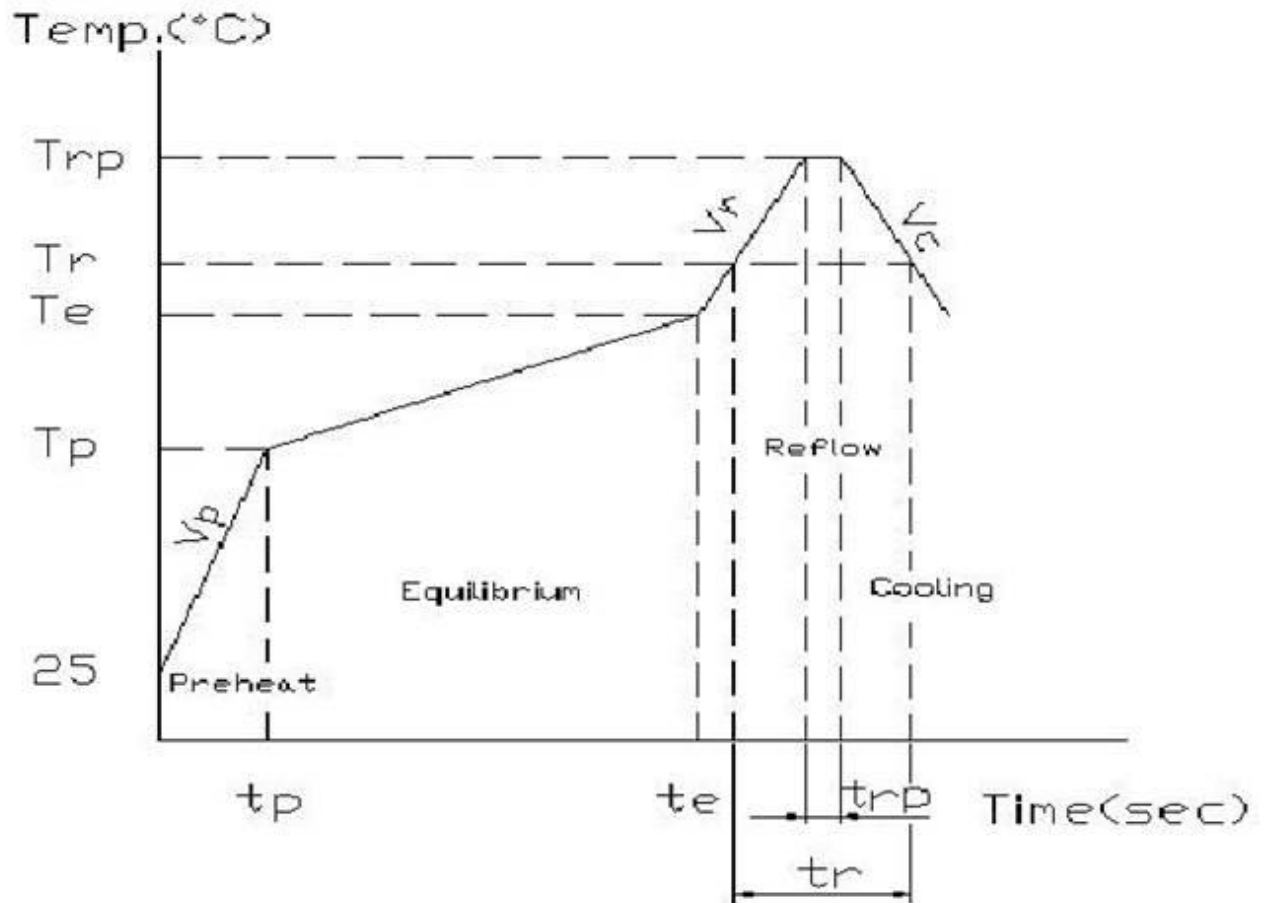
Hand Soldering (Iron Condition)

Soldering Iron:30W Max

Temperature 350°C Max（iron tip 260°C Max）

Soldering Time:3 Seconds Max(Once)

■ **Handling of Silicone Resin LEDs-**

● **Handling Indications**

i. When handling the product, do not touch it directly with bare hands as it may contaminate the surface and affect on optical characteristics. In the worst cases, excessive force to the product might result in catastrophic failure due to package damage and/or wire breakage.

ii. When handling the product with tweezers, LEDs should only be handled from the side and make sure that excessive force is not applied to the resin portion of the product. Failure to comply can cause the resin portion of the product to be cut, chipped, delaminated and/or deformed, and wire to be broken, and thus resulting in catastrophic failure.

■ **Storage –**

● Storage Conditions

A．Before opening the package:

The LEDs should be kept at ≦40°C and ≦90%RH. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

B．After opening the package:

The LEDs should be kept at ≦30°C and ≦60%RH. The LEDs should be soldered within 672 hours (4 weeks) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to

return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.

- If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

   Baking treatment: more than 24 hours at 60 ± 5°C

- This product has silver plated metal parts that are inside and/or outside the package body. The silver plating becomes tarnished when being exposed to an environment which contains corrosive gases. Any LED with tarnished leads may lead to poor solderability and deterioration of optical characteristics. Please do not expose the LEDs to corrosive atmosphere during storage.

- After assembly and during use, silver plating can be affected by the corrosive gases emitted by components and materials in close proximity of the LEDs within an end product, and the gases entering into the product from the external atmosphere. The above should be taken into consideration when designing.

■ **Moisture Proof Package –**

- When moisture is absorbed into the SMT package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture proof package is used to keep moisture to a minimum in the package.

- The moisture proof package is made of an aluminum moisture proof bag. A package of a moisture absorbent material (silica gel) is inserted into the aluminum moisture proof bag. The silica gel changes its color from blue to red as it absorbs moisture.

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

■ **Recommended circuit –**

- In designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED. It is recommended to use Circuit B which regulates the current flowing through each LED. In the meanwhile, when driving LEDs with a constant voltage in Circuit A, the current through the LEDs may vary due to the variation in forward voltage (VF) of the LEDs. In the worst case, some LED may be subjected to stresses in excess of the absolute maximum rating.
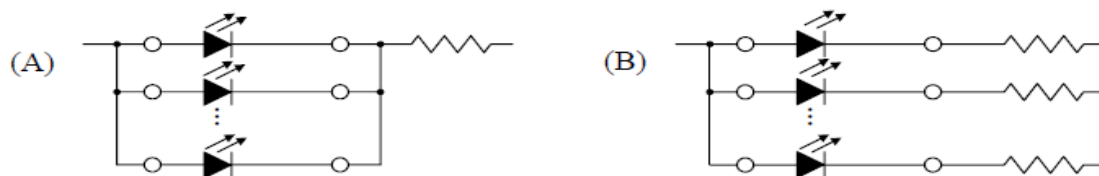
- This product should be operated in forward bias. A driving circuit must be designed so that the product is not subjected to either forward or reverse voltage while it is off. In particular, if a reverse voltage is continuously applied to the product; such operation can cause migration resulting in LED damage.

■ Heat Generation –
- Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.
- The operating current should be decided after considering the ambient maximum temperature of LEDs.

■ **Static Electricity –**
- Static electricity or surge voltage damages the LEDs. It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- All devices, equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment that mounts the LEDs.
- When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find static-damaged LEDs by a light-on test or a VF test at a lower current (below 1mA is recommended).
- Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LEDs do not light at the low current.
- Criteria: (VF > 2.0V at IF=0.5mA)

■ **Cleaning –**

- It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations.

- Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs will occur.

Notice: The specifications are subject to change without notice. Please contact us for updated information