Data Sheet

Customer:

Part No: CL-SFC7020DBW-10K-02

Sample No:

Description: 7020 SMD White Color

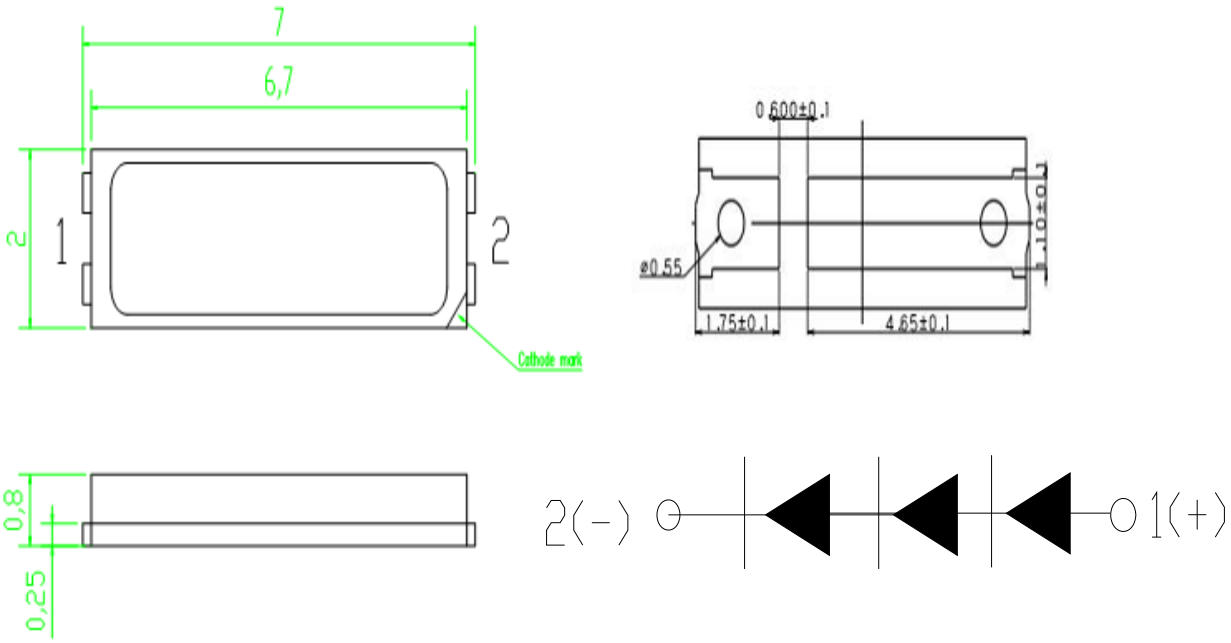
Item No:

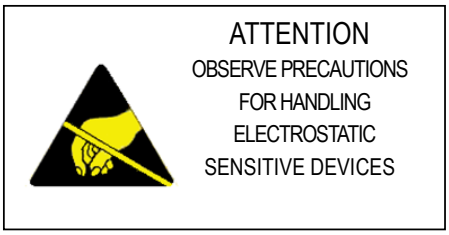
Customer			
Check	Inspection	Approval	Date

Feature

- Δ Viewing angle:120 deg
- Δ The materials of the LED dice is InGaN
- Δ 7.00mm×2.00mm×0.80mm
- Δ Pb-free
- Δ RoHS compliant lead-free soldering compatible
- Δ ESD protection

Package Outline





NOTES:

1. All dimensions are in millimeters ;
2. Tolerances are ±0.2mm unless otherwise noted.

Absolute maximum ratings at Ta=25℃

Parameter	Symbol	Value	Unit
Forward current	If	150	mA
Reverse voltage	Vr	5	V
Operating temperature range	Top	-35 ~+85	℃
Storage temperature range	Tstg	-40~+95	℃
Pulse Forward Current （Pulse Width≦1 msec. and Duty ≦1/10）	Ifp	200	mA
Electrostatic Discharge	ESD	1000(HBM)	V

Electro-optical characteristics at Ta=25℃

Parameter	Test Condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	If=150mA	Vf	8.0	--	10.0	V
Luminous intensity	If=150mA	Φ	134	--	158	lm
Viewing angle at 50% Iv	If=150mA	2 θ 1/2	--	150	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

NOTE: (Tolerance: Φ±10%, Vf ±0.1V, X/ Y ±0.01)

Forward voltage range

Forward Voltage Unit：V @150mA		
Bin Code	MIN	MAX
V301	8.5	9.0
V302	9.0	9.5
V303	9.5	10.0

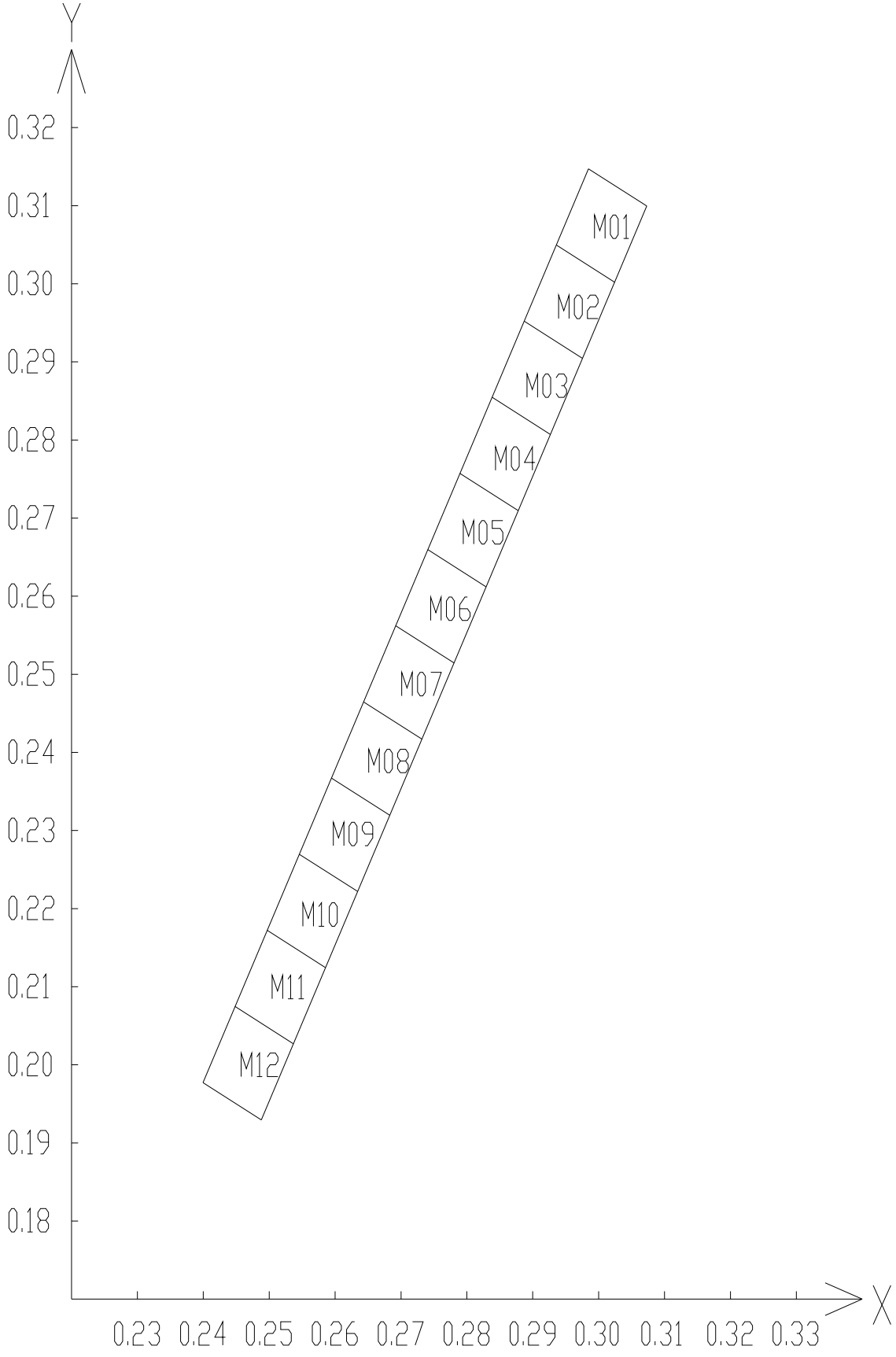
Luminous intensity range

Luminous intensity Unit：lm @150mA		
Bin Code	MIN	MAX
C301	134	138
C302	138	142
C303	142	146
C304	146	150
C305	150	154
C306	154	158

Chromaticity range

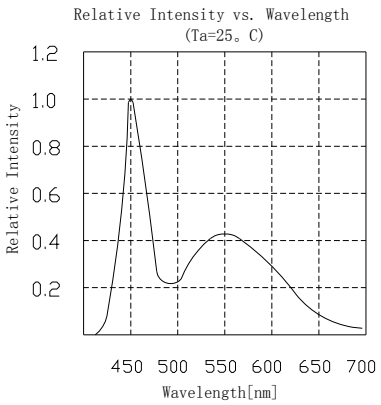
Bin code	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
M01	0.3072	0.3099	0.3024	0.3002	0.2935	0.3049	0.2984	0.3147
M02	0.3024	0.3002	0.2975	0.2904	0.2887	0.2952	0.2935	0.3049
M03	0.2975	0.2904	0.2926	0.2807	0.2838	0.2854	0.2887	0.2952
M04	0.2926	0.2807	0.2877	0.2709	0.2789	0.2757	0.2838	0.2854
M05	0.2877	0.2709	0.2829	0.2612	0.274	0.2659	0.2789	0.2757
M06	0.2829	0.2612	0.278	0.2514	0.2692	0.2562	0.274	0.2659
M07	0.278	0.2514	0.2731	0.2417	0.2643	0.2464	0.2692	0.2562
M08	0.2731	0.2417	0.2682	0.2319	0.2594	0.2367	0.2643	0.2464
M09	0.2682	0.2319	0.2634	0.2222	0.2545	0.2269	0.2594	0.2367
M10	0.2634	0.2222	0.2585	0.2124	0.2497	0.2172	0.2545	0.2269
M11	0.2585	0.2124	0.2536	0.2027	0.2448	0.2074	0.2497	0.2172
M12	0.2536	0.2027	0.2487	0.1929	0.2399	0.1977	0.2448	0.2074

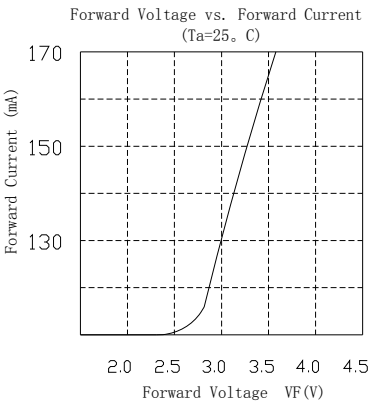
Chromaticity Bin

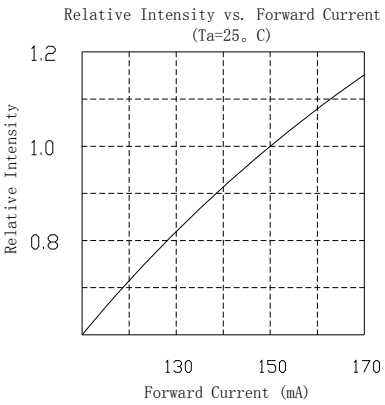


Typical optical characteristics curves

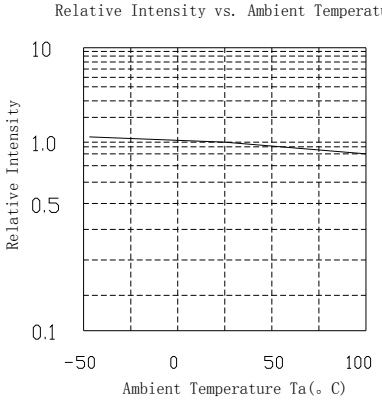
Spectral Distribution

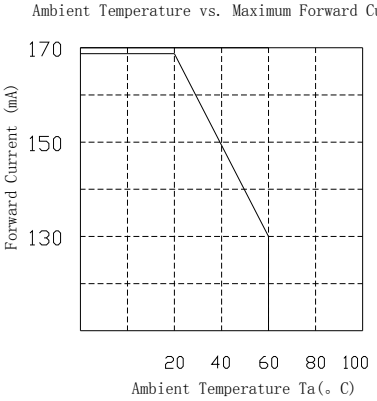






Derating





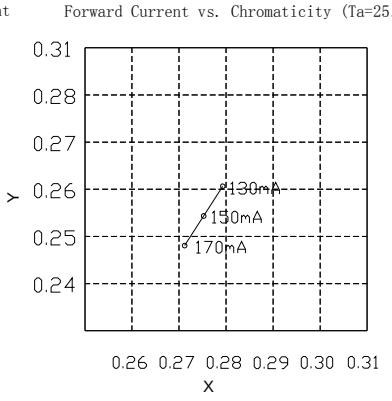
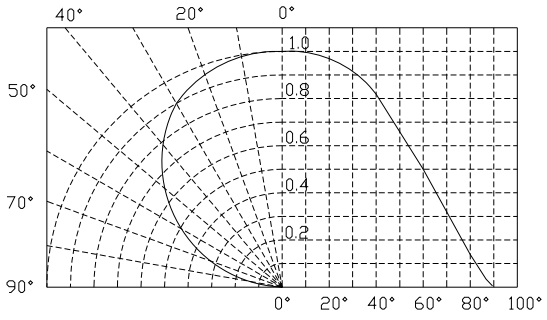


Diagram characteristics of radiation



Reflow profile

■ Soldering condition

• Recommended soldering conditions

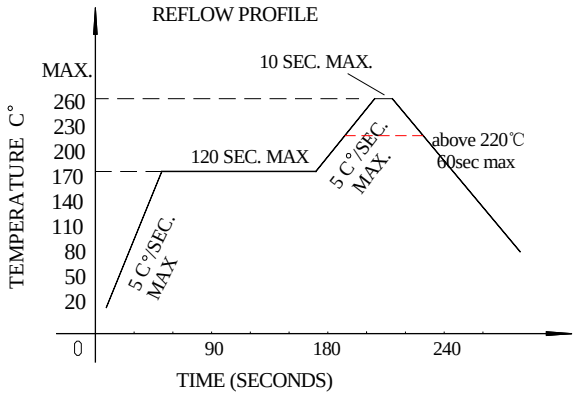
Reflow Soldering		Hand Soldering	
Pre-heat	160～180℃	Temperature	300℃ Max.
Pre-heat time	120 seconds Max.		
Peak temperature	260℃ Max.	Soldering time	3 second Max.
Soldering time	10 seconds Max.		(one time only)
Condition	Refer to Temperature-profile		

• After reflow soldering rapid cooling should be avoided

■ Temperature-profile (Surface of circuit board)

Use the following conditions shown in the figure.

RECOMMEND PAD DESIGN (Units: mm)



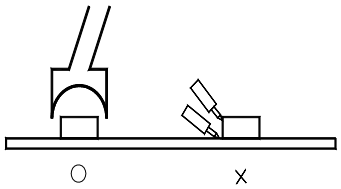
1. Reflow soldering should not be done more than two times
2. When soldering ,do not put stress on the LEDs during heating

■ Soldering iron

1. When hand soldering, keep the temperature of the iron under 300℃, and at that temperature keep the time under 3 sec.
2. The hand soldering should be done only a time
3. The basic spec is ≤5 sec. when the temperature of 260℃, do not contact the resin when hand soldering

■ Rework

1. Customer must finish rework within 5 sec under 260℃
2. The head of iron can not touch the resin
3. Twin-head type is preferred.



■ 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 using the picking up nozzle, the pressure on the silicone resin should be proper.

Reliability

(1)TEST ITEMS AND RESULTS

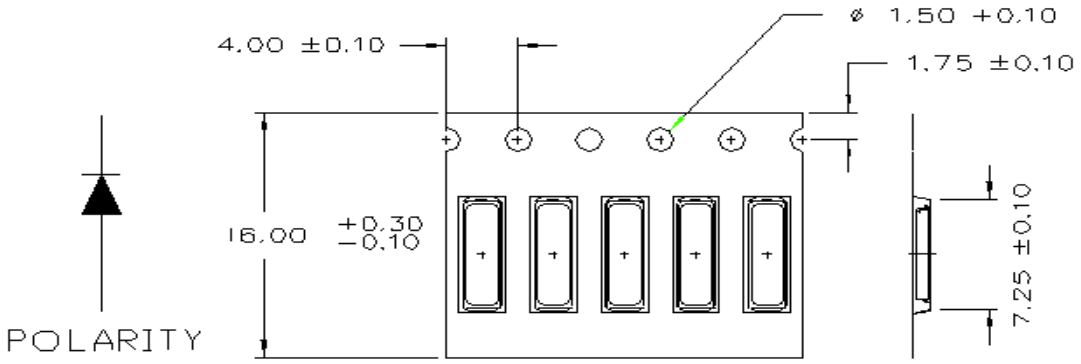
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Resistance to Soldering Heat(Reflow Soldering)	Tsld=260℃,10sec	2 times	0/22
	Temperature Cycle	-40℃ 30min ↑↓5min 100℃ 30min	300 cycle	0/22
	Thermal Shock	-40℃ 15min ↑↓ 100℃ 15min	300 cycle	0/22
	High Temperature Storage	T_a=100℃	1000 hrs	0/22
	Low Temperature Storage	T_a=-40℃	1000 hrs	0/22
Operation Sequence	Life Test	T_a=25℃ I_F=150mA	1000 hrs	0/22
	High Humidity Heat Life Test	60℃ RH=90% I_F=150mA	500 hrs	0/22

(2)CRITERIA FOR JUDGING THE DAMAGE

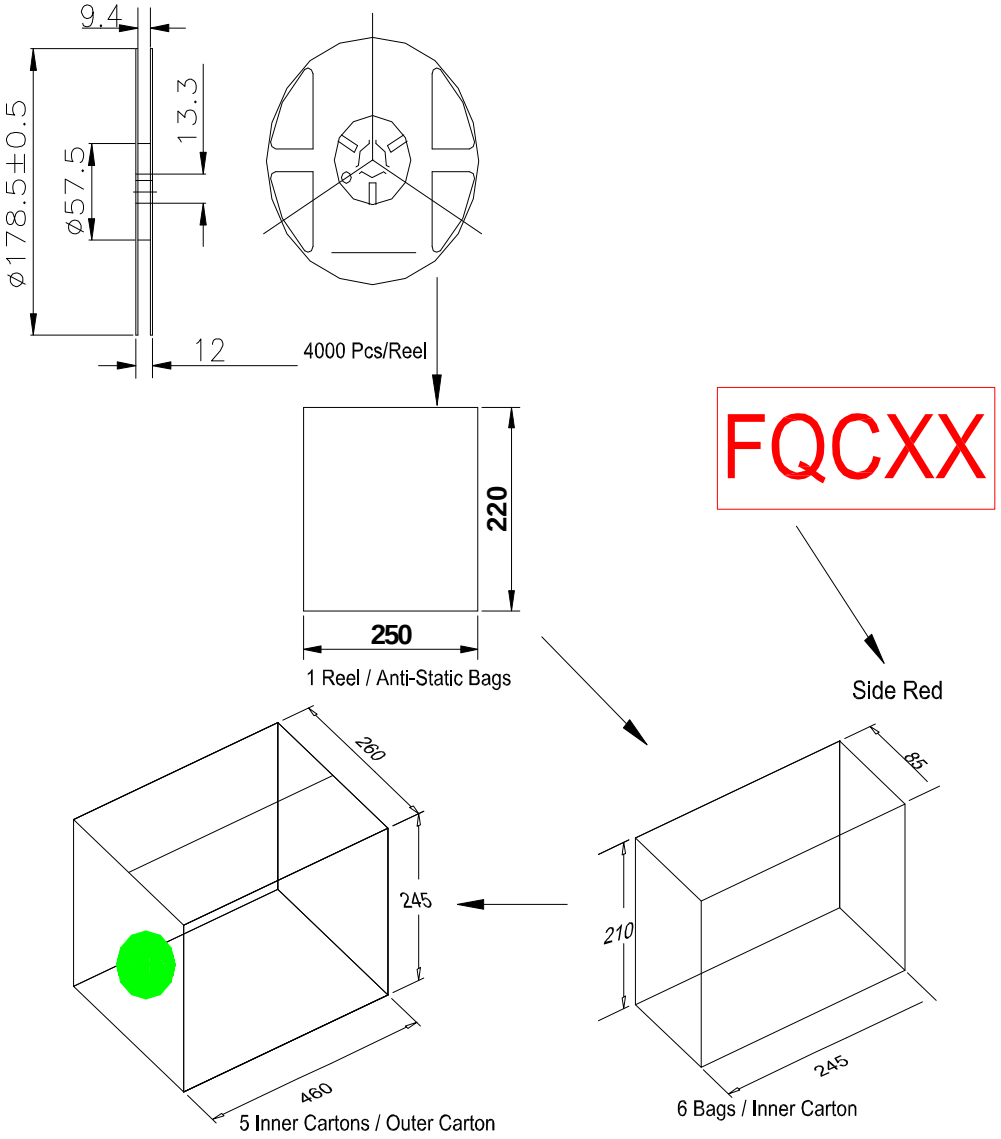
Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF=150mA	_	U.S.L*)×1.1
Reverse Current	IR	VR=5V	_	U.S.L*)×2.0
Luminous Intensity	IV	IF=150mA	L.S.L**)×0.7	_

U.S.L.: Upper Standard Level L.S.L.: Lower Standard Level

Packaging Specifications



Packaging specifications



CAUTIONS

Storage conditions

Before opening the package:

The LEDs should be kept at 30℃ or less and 70%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

After opening the package:

The LEDs should be kept at 30℃ or less and 50%RH or less. The LEDs should be soldered within 24 hours (1days) 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.