



Data Sheet

Customer:

Part No:

Sample No:

Description:

Item No:

CL-SP157RGB-02

3227 SMD Full Color

Customer			
Check	Inspection	Approval	Date



Features

3.2mmx2.7mm SMT LED, 1.0mm THICKNESS.

_LOW POWER CONSUMPTION.

_WIDE VIEWING ANGLE.

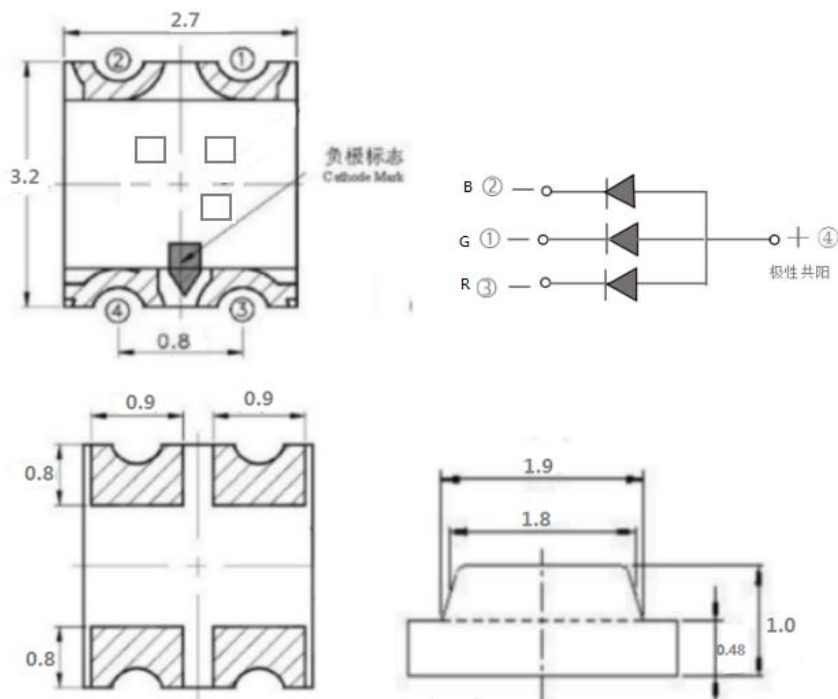
_IDEAL FOR BACKLIGHT AND INDICATOR.

_VARIOUS COLORS AND LENS TYPES AVAILABLE.

_PACKAGE : 3000 PCS / REEL.

_RoHS COMPLIANT.

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.1 (0.004") unless otherwise noted.
3. Specifications are subject to change without notice.

Description

The Blue source color devices are made with GaN on Sapphire Light Emitting Diode.

The Green source color devices are made with InGaN on SiC Light Emitting Diode.

The Hyper Orange source color devices are made with DH InGaAlP on GaAs substrate Light Emitting Diode.

Static electricity and surge damage the LEDs.

It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

All devices, equipment and machinery must be electrically grounded.

Emitting Diode.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) @ 20mA		Viewing Angle
			Min.	Typ.	2 θ 1/2
CL-SP157RGB-02	BLUE (GaN)	WATER CLEAR	100	200	120
	GREEN (InGaN)		400	600	
	RED (InGaAlP)		100	200	

Note:

1. θ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

Electrical / Optical Characteristics at T_A=25°C

Symbol	Parameter	Device	Typ.	Max.	Units	Test Conditions
λ _{peak}	Peak Wavelength	Blue Green Red			nm	IF=20mA
λ _D	Dominant Wavelength	Blue Green Red	463 521 615	472 530 630	nm	IF=20mA
Δλ _{1/2}	Spectral Line Half-width	Blue Green Red	25 38 20		nm	IF=20mA
C	Capacitance	Blue Green Red	100 45 25		pF	VF=0V;f=1MHz
VF	Forward Voltage	Blue Green Red	2.8 2.8 1.8	3.2 3.2 2.2	V	IF=20mA
IR	Reverse Current	Blue Green Red		5 5 5	uA	VR = 5V

Absolute Maximum Ratings at T_A=25°C

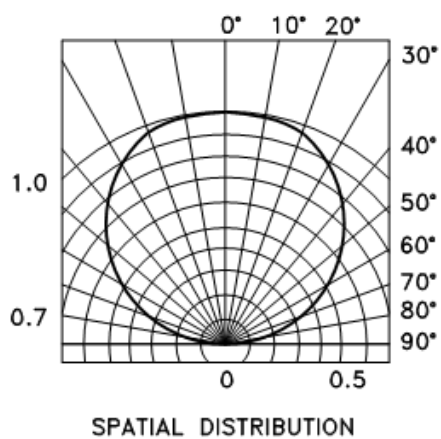
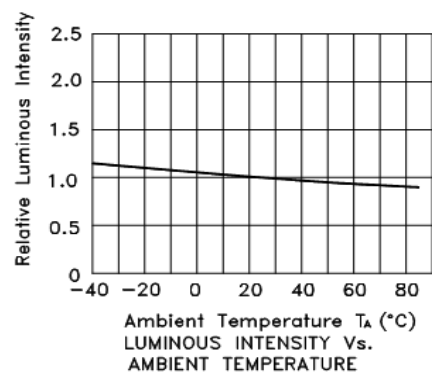
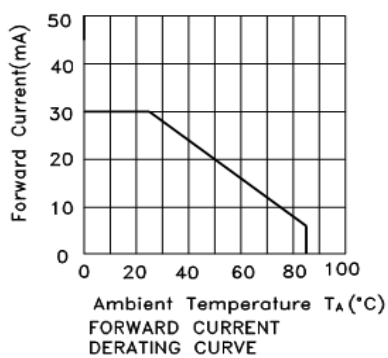
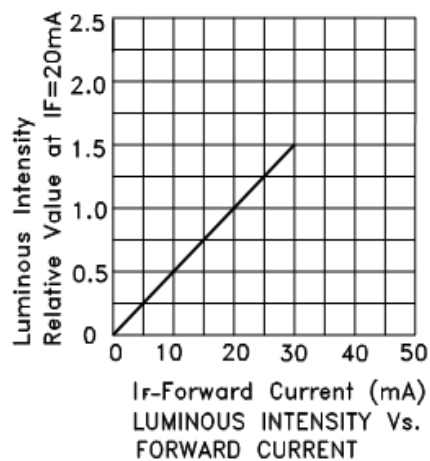
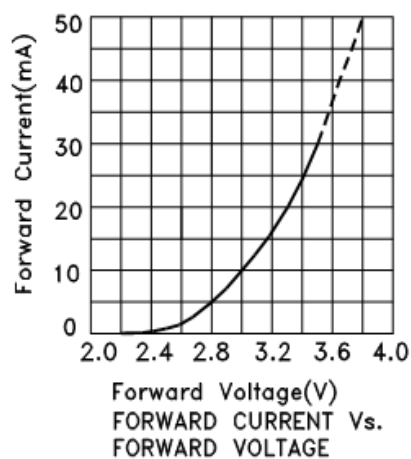
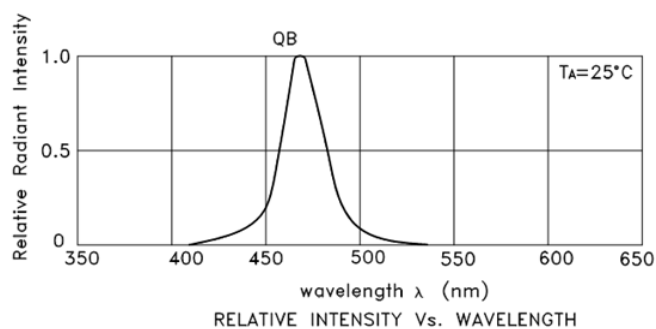
Parameter	Blue	Green	Red	Units
Power dissipation	135	135	75	mW
DC Forward Current	30	30	30	mA
Peak Forward Current [1]	135	135	80	mA
Reverse Voltage	5	5	5	V
Operating/Storage Temperature	-40°C To +85°C			

Note:

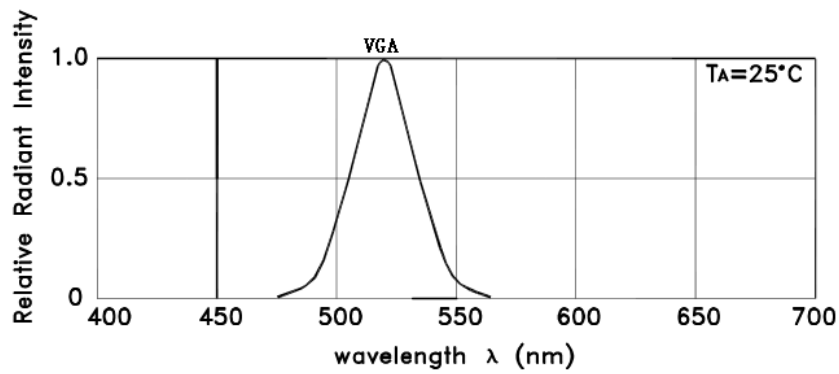
1. 1/10 Duty Cycle, 0.1ms Pulse Width.

BIN Code	Test condition: @20mA	
UHR	V_{Fmin} (v)	V_{Fmax} (v)
1	1.8	2.0
2	2.0	2.2
DLG	V_{Fmin} (v)	V_{Fmax} (v)
1	2.8	3.0
2	3.0	3.2
DNB	V_{Fmin} (v)	V_{Fmax} (v)
1	2.8	3.0
2	3.0	3.2
BIN Code	Test condition: @20mA	
UHR	I_{Vmin} (mcd)	I_{Vmax} (mcd)
R1	100	200
DLG	I_{Vmin} (mcd)	I_{Vmax} (mcd)
G1	400	600
DNB	I_{Vmin} (mcd)	I_{Vmax} (mcd)
B1	100	200
BIN Code	Test condition: @20mA	
UHR	λ_{Dmin} (nm)	λ_{Dmax} (nm)
1	615	620
2	620	625
3	625	630
DLG	λ_{Dmin} (nm)	λ_{Dmax} (nm)
1	521	524
2	524	527
3	527	530
DNB	λ_{Dmin} (nm)	λ_{Dmax} (nm)
1	463	466
2	466	469
3	469	472

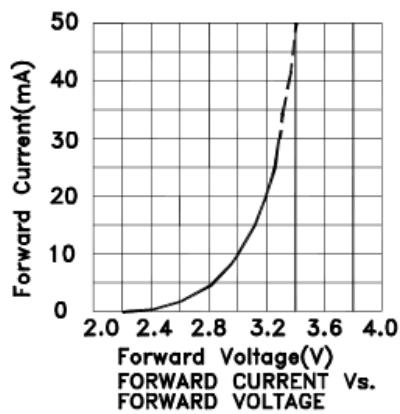
Blue



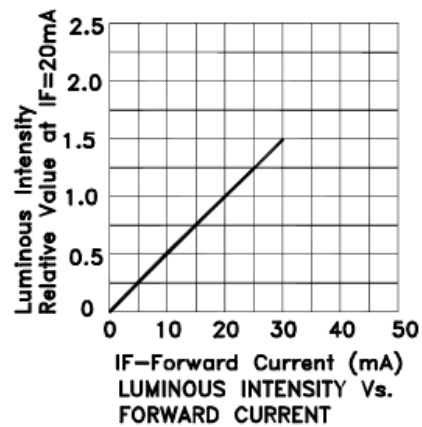
Green



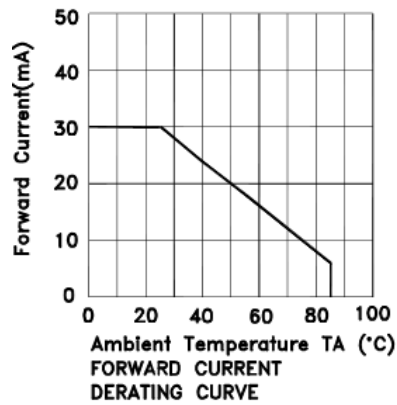
RELATIVE INTENSITY Vs. WAVELENGTH



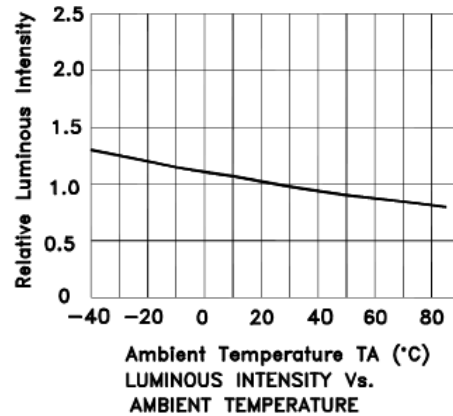
FORWARD CURRENT Vs. FORWARD VOLTAGE



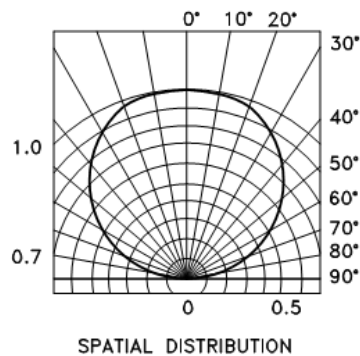
LUMINOUS INTENSITY Vs. FORWARD CURRENT



FORWARD CURRENT DERATING CURVE

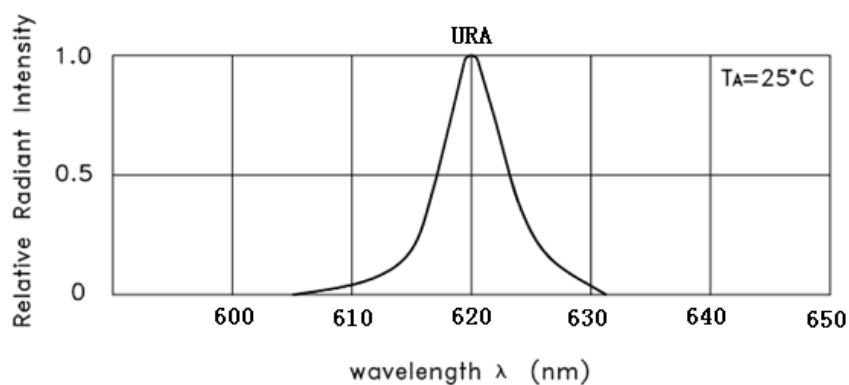


LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE

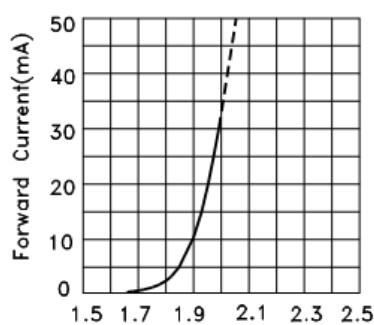


SPATIAL DISTRIBUTION

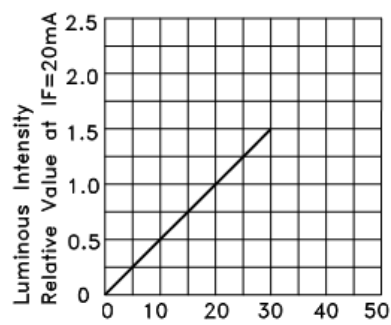
Red



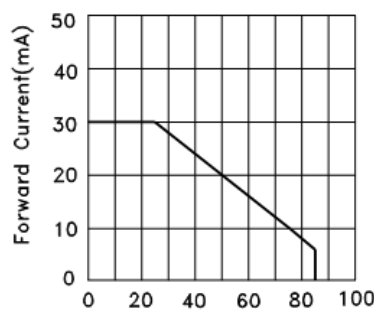
RELATIVE INTENSITY Vs. WAVELENGTH



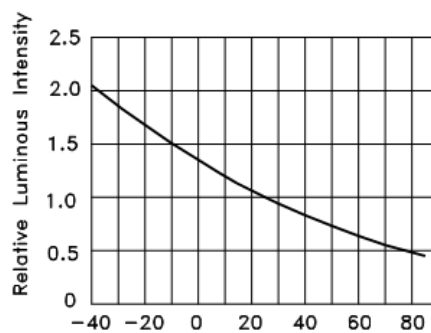
FORWARD CURRENT Vs.
FORWARD VOLTAGE



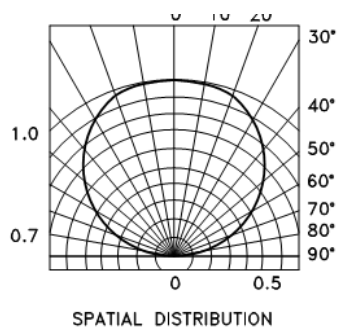
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE



RELIABILITY

Test Items and Results

NO.	Test Item	Reference Standard	Test Condition	(Hours/ Cycles)	Sample	Number of Damaged
1	Temperature Cycle	JEITA ED-4701	-40℃~25℃~100℃~25℃ 30 min 5 min 30 min 5 min	100 Cycles	50	0/50
2	Thermal Shock	MIL-STD-2 02G	-40℃~100℃ 15 min 15 min	500 Cycles	50	0/50
3	High Temperature Storage	JEITA ED-4701 200 201	T _a =100℃	1000 Hours	50	0/50
4	Low Temperature Storage	JEITA ED-4701 200 201	T _a =-40℃	1000 Hours	50	0/50
5	Room Temperature Life Test		T _a =25±5℃ I _F =20mA	1000 Hours	50	0/50
6	High Temperature High Humidity Life Test		T _a =60℃ RH=85% I _F =20mA	1000 Hours	50	0/50
7	Solderability (Reflow Soldering)	JEITA ED-4701 300 303	T _{sol} =235℃±5℃,5 sec (Using Flux, Lead Solder)	1 time, 5 sec	10	0/10
8	Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	T _{sol} =260℃,10 sec Pre Treatment: 35℃ 95%RH 96 Hrs	2 time, 10 sec	10	0/10

The above test items such as differences or special customer specific requirements according to the actual situation in accordance with the requirements of customers to try the requirements with the customer, the customer is not required by our test standard test. Different products using different current test.

5. Cautions

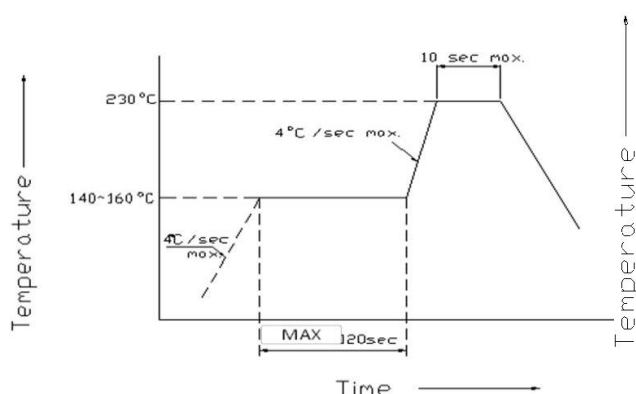
(1) Soldering Conditions

Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and Second soldering process.

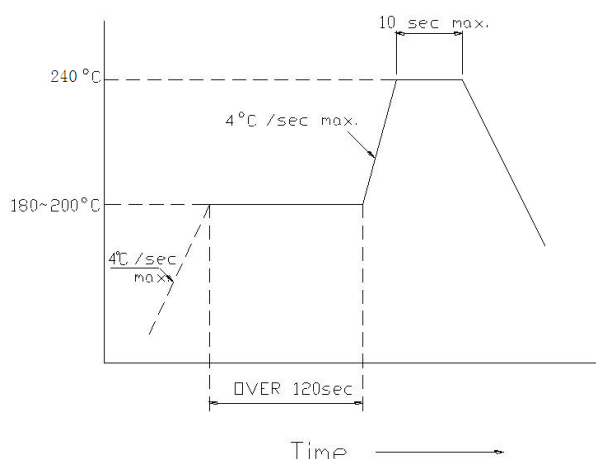
(Recommended soldering conditions)

回流焊接 Reflow Soldering			手工焊接	
预热温度 Pre-heat	有铅 Lead Solder	无铅 Lead-free Solder	温度 Temperature	350° C Max.
预热时间 Pre-heat time	140 ~ 160° C 120 sec. Max.	180 ~ 200° C 120 sec. Max.	焊接时间 Soldering time	3 sec. Max. (one time only)
峰值温度 Peak temperature	230° C Max.	240° C Max.		
焊接时间 Soldering time	10 sec. Max.	10 sec. Max.		
条件 Condition	参考下图	参考下图		

(Lead Solder)

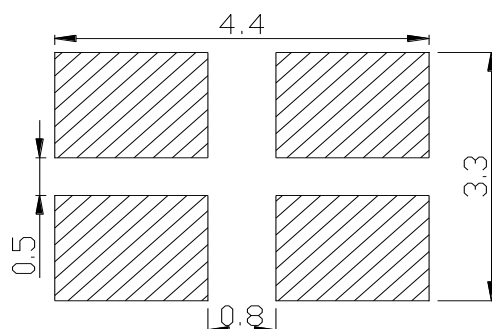


(Lead-Free Solder)



Recommended Soldering Pattern

(Units : mm)



(2) Static Electricity

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.

Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current. Criteria : ($V_F > 2.0V$ at $I_F=0.5mA$)

(3) Moisture Proof Package

It is recommended that moisture proof package be used .

(4) Cautions:

4.1. Please check if there is air leak before opening the package, if so, please return the goods back to take drying process for later using.

4.2 Products can be used within 15days after packaging, after that, they must be:

4.2.1 Soldered within 24 hrs

4.2.2 Used in the condition: $30^{\circ}C$ within and 60%RH below

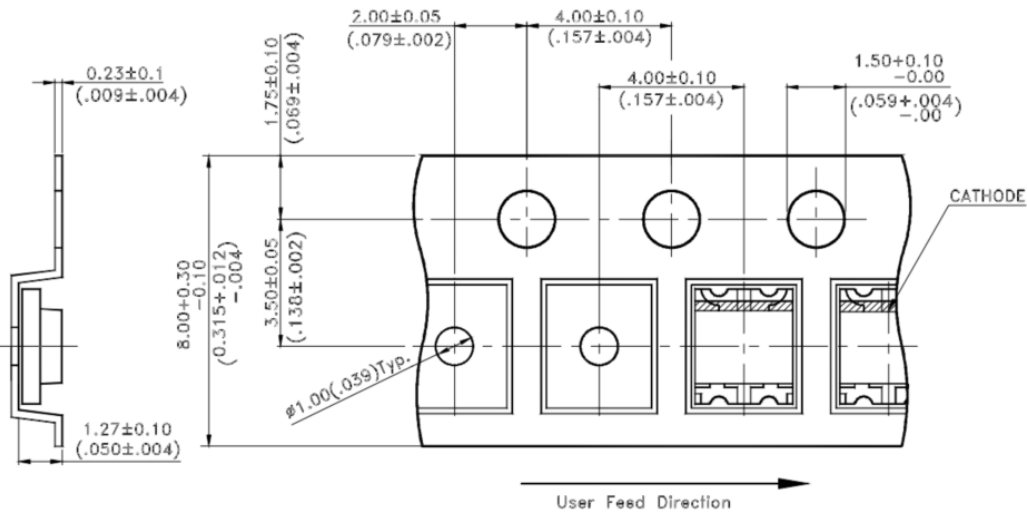
4.2.3 Stored in 30%RH for moisture below.

4.3. Products cannot be used for and over 15days after being packaged unless opening the package and take drying our process in $85^{\circ}C/6H$.

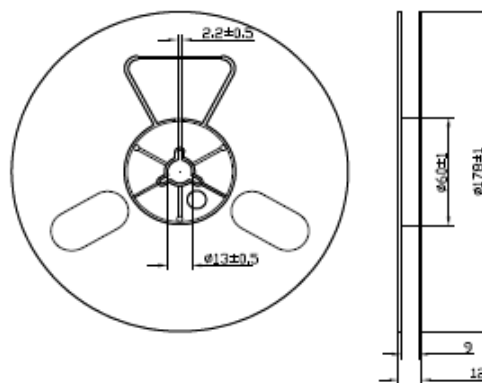
4.4. Products not be used for or over 60days after being packaged please return back to take drying out and packaging process for forward using.

PACKAGING

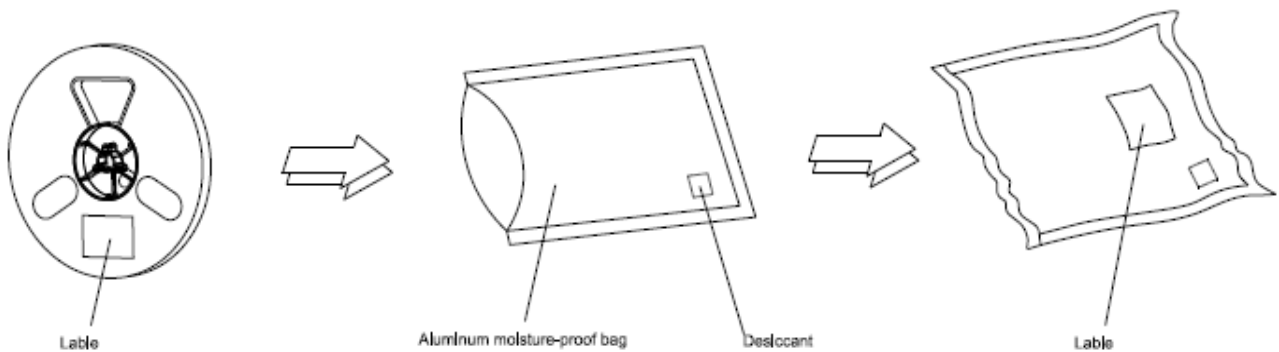
The LEDs are packed in cardboard boxes after taping.



Reel Dimensions



Moisture Resistant Packaging



Note: The tolerances unless mentioned is ±0.1mm, Unit: mm