Data Sheet

Customer: _____

Part No: CL-SP1616RGB-02

Sample No: _____

Description: _____

Item No: _____

Customer			
Check	Inspection	Approval	Date

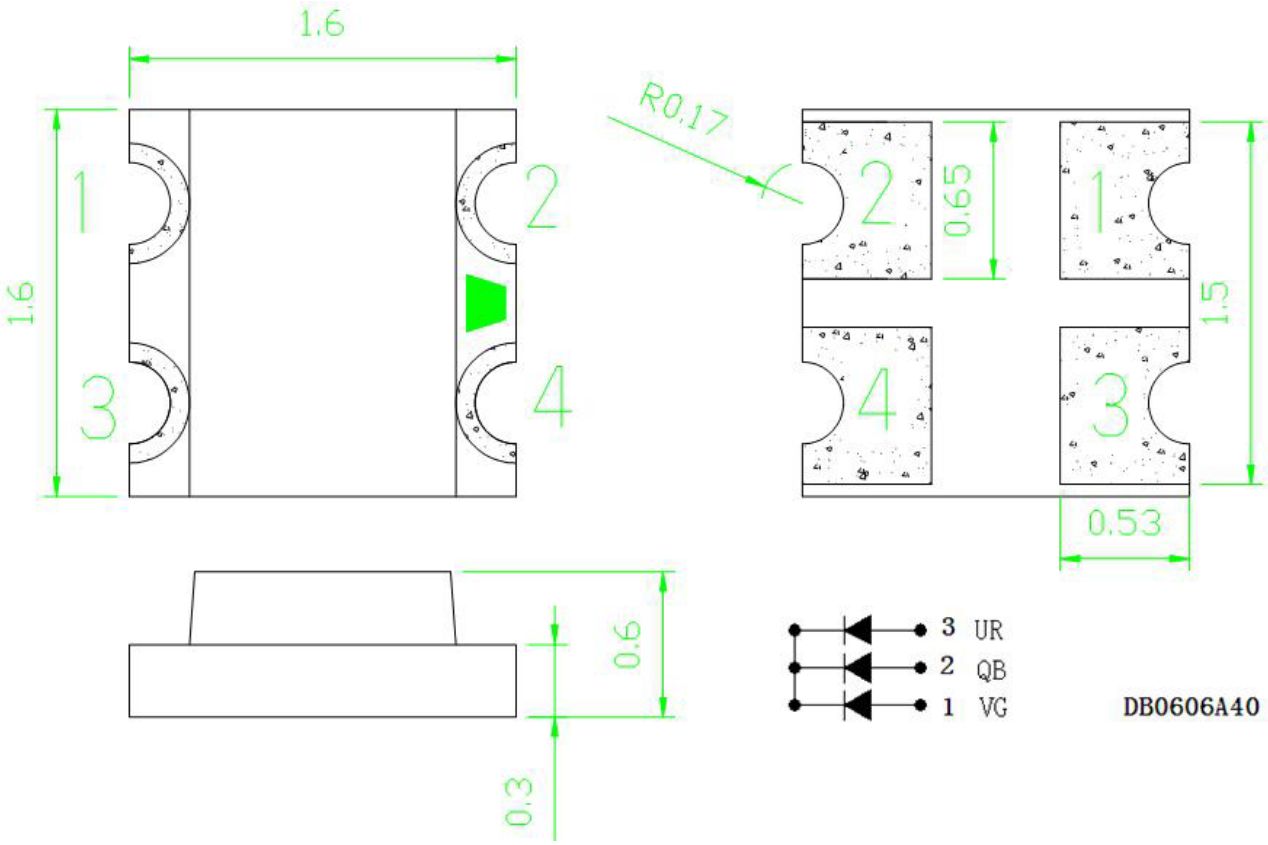
Features

1.6mmx1.6mm SMT LED,0.60 mm THICKNESS.
_LOW POWER CONSUMPTION.
_WIDE VIEWING ANGLE.
_IDEAL FOR BACKLIGHT AND INDICATOR.
_VARIOUS COLORS AND LENS TYPES AVAILABLE.
_PACKAGE : 4000PCS / REEL.
_RoHS COMPLIANT.

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.

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.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) @ 20mA		Viewing Angle
			Min.	Typ.	2 θ 1/2
CL-SP1616 RGB-02	BLUE (GaN)	WATER CLEAR	100	200	120
	GREEN (InGaN)		400	700	
	RED (InGaAlP)		250	450	

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
λpeak	Peak Wavelength	Blue Green Red			nm	IF=20mA
λD	Dominant Wavelength	Blue Green Red	466 518 617	472 526 625	nm	IF=20mA
Δλ1/2	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	3.0 3.0 1.9	3.4 3.4 2.2	V	IF=20mA
IR	Reverse Curren	Blue Green Red		5 5 5	uA	VR = 5V

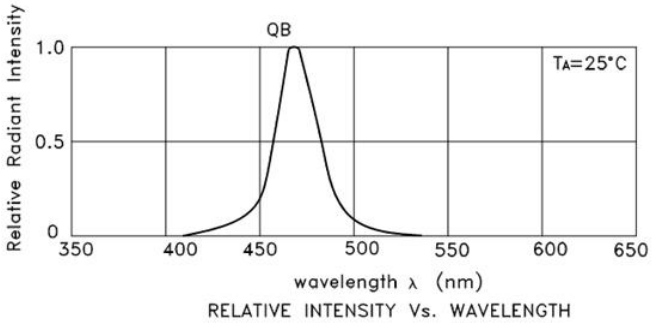
Absolute Maximum Ratings at T_A=25°C

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			

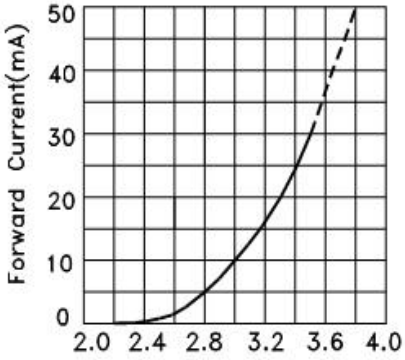
Note:

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

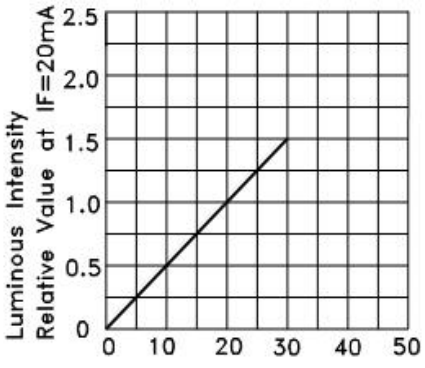
Blue



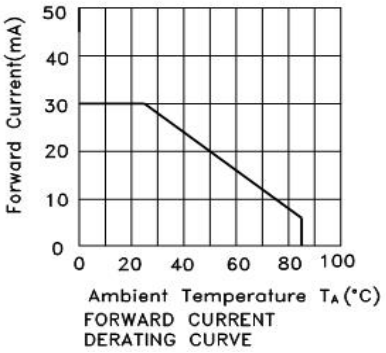
RELATIVE INTENSITY Vs. WAVELENGTH



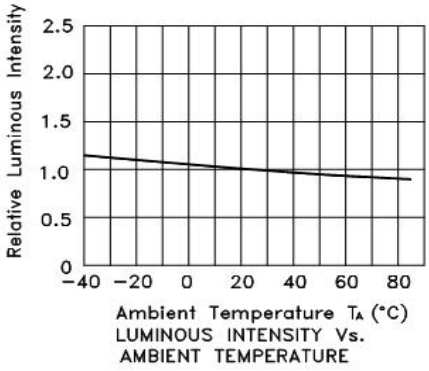
FORWARD CURRENT Vs.
FORWARD VOLTAGE



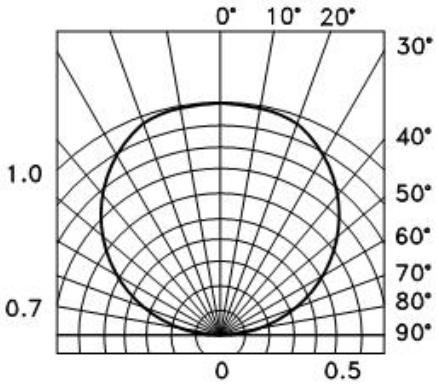
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

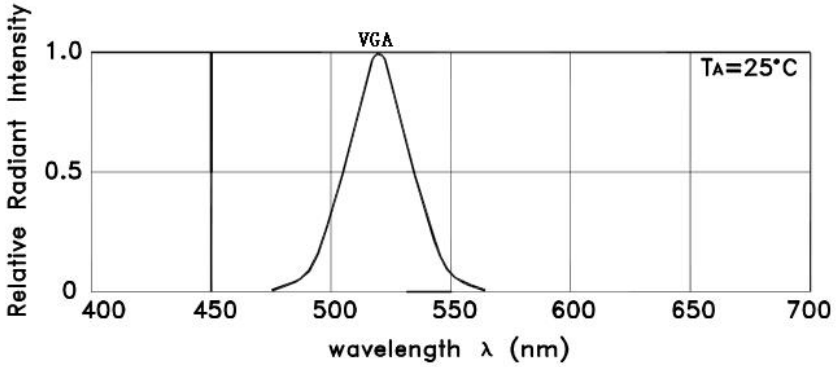


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

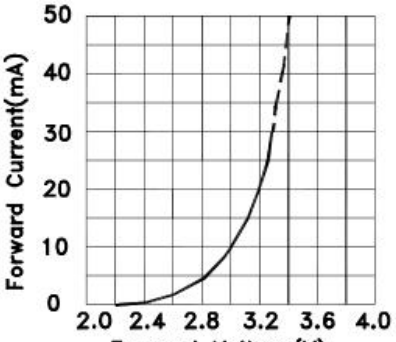


SPATIAL DISTRIBUTION

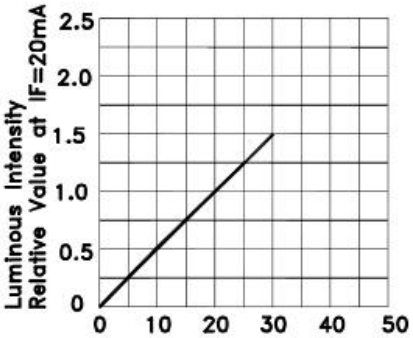
Green



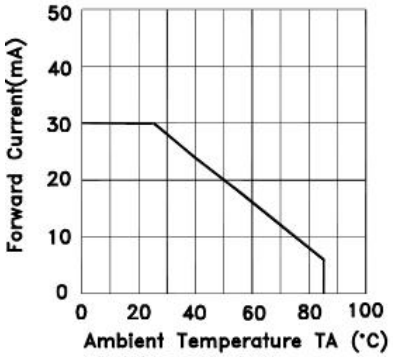
RELATIVE INTENSITY Vs. WAVELENGTH



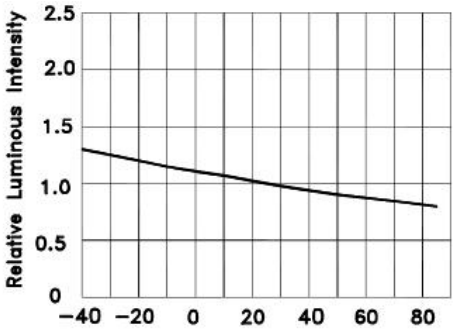
FORWARD CURRENT Vs.
FORWARD VOLTAGE



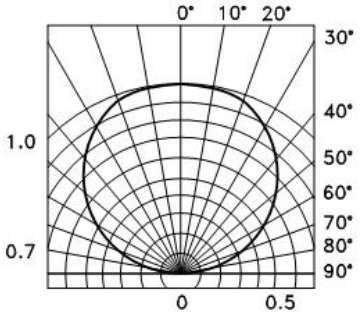
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

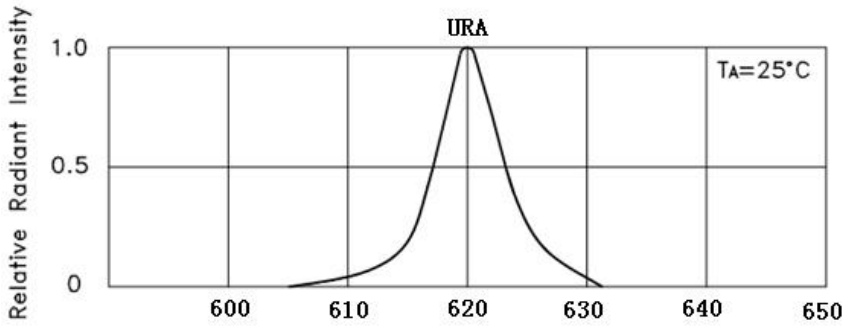


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

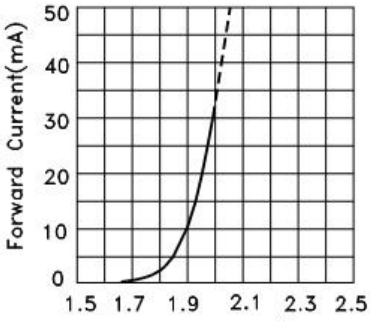


SPATIAL DISTRIBUTION

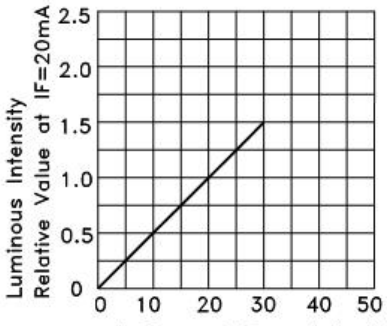
Red



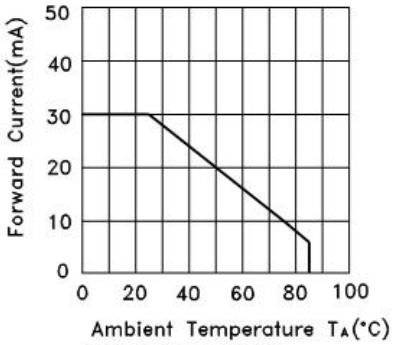
RELATIVE INTENSITY Vs. WAVELENGTH



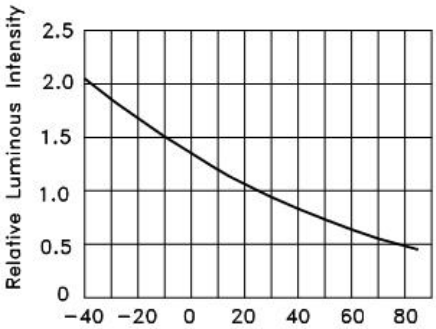
FORWARD CURRENT Vs.
FORWARD VOLTAGE



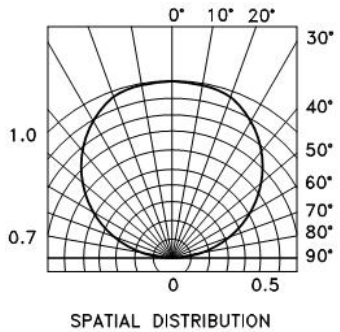
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE



SPATIAL DISTRIBUTION

RELIABILITY

Test Items and Results

NO.	Test Item	Reference Standard	Test Conditions	Note (Hours/Cycles)	Sample	Number of Damaged
1	Temperature Cycle	JEITA ED-4701	-40℃ ~ 25℃ ~ 100℃ ~ 25℃ 30min 5min 30min 5min	100 Cycles	50	0/50
2	Thermal shock	MIL-STD-202G	-40℃～100℃ 15min 15min	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℃,5sec (Using Flux, Lead Solder)	1 time, 5sec	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	1 time, 10sec	10	0/10

5.Cautions

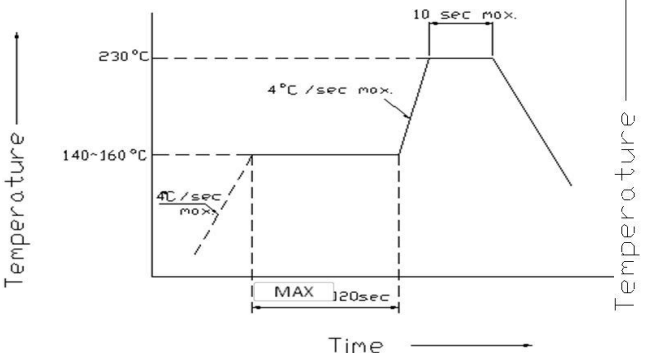
(1)SolderingConditions

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

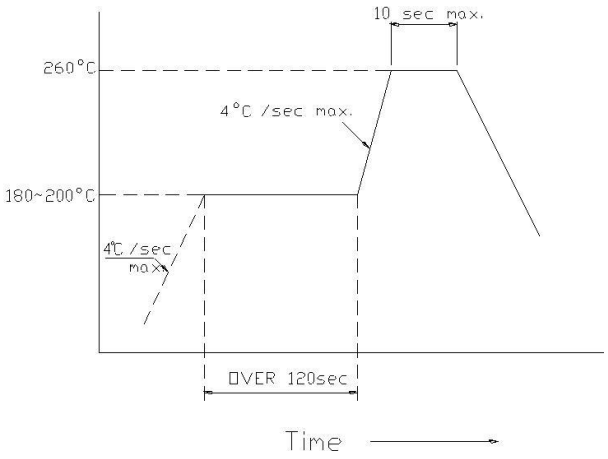
(Recommendedsolderingconditions)

Reflow Soldering			Hand Soldering	
Pre-heat Pre-heat time Peak temperature Soldering time Condition	Lead Solder	Lead-free Solder	Temperature Soldering time	350 ° C 3 sec. Max. (one time only)
	140~160 ° C 120 sec. Max. 230 ° C Max. 10 sec. Max	180~200 ° C 120 sec. Max. 260 ° C Max. 10 sec. Max		

（LeadSolder）

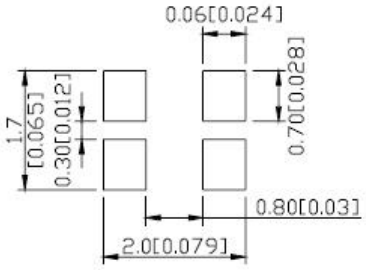


(Lead-FreeSolder)



Recommended Soldering Pattern

(Units : mm)



(2)StaticElectricity

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.

2.0V 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 : (VF > 2.0V at IF=0.5mA)

(3)MoistureProofPackage

It is recommended that moisture proof package be used.

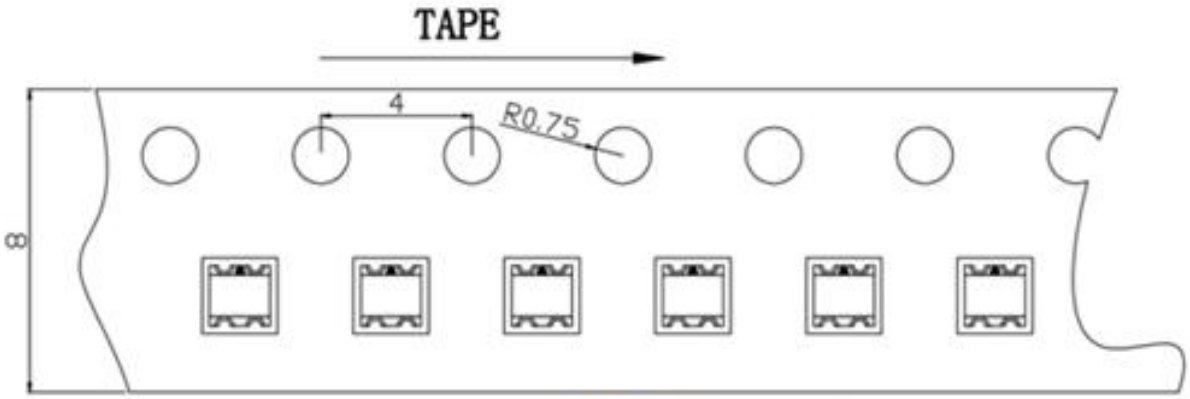
(4)Cautions:

Used in the condition: 30℃ within and 60%RH below

Stored in 30%RH for moisture below.

PACKAGING

The LEDs are packed in cardboardboxes after taping.



Package: 4000pcs/reel

R ee l D ime ns ion s

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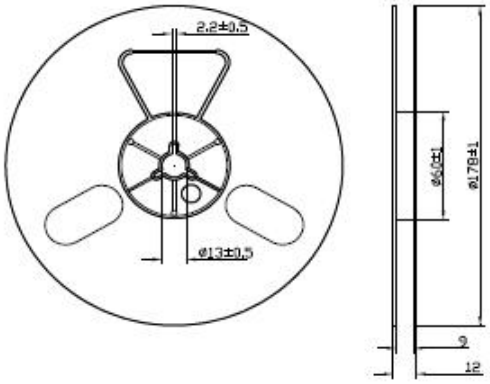
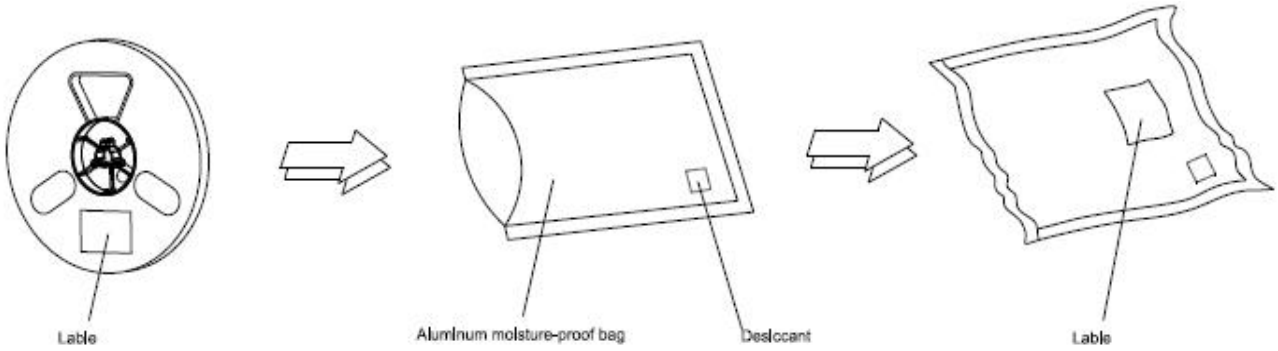


MoistureResistantPackaging



Note:Thetolerancesunlessmentioned is±0.1mm,Unit:mm