Ciel Light

RoHS

Surface Mounted Chip LED　　Model No.：CL-SP115UHRUYG(4PIN)

■ Features:

- ●Compatible with automatic placement equipment
- ●Compatible with reflow solder process

■ Applications:

- ●Automotive Telecommunication
- ●Indicators
- ●LCD Back-lights
- ●Illuminations

■ Absolute Maximum Ratings　　（Ta=25℃）

Item	Symbol	Maximum	Unit
Peak Forward Current (1/10 Duty Cycle 0.1ms Pulse Width)	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Derating Linear From 25℃		0.4	mA/℃
Operating Temperature Range	Topr	-40 to +85	℃
Storage Temperature Range	Tstg	-40 to +85	℃

■ Electrical / Optical Characteristics　　（Ta=25℃）

Chip			Lens Appearance	Absolute Maximun Rating				Electro-optical Data (At 20mA)				Viewing Angle 2θ1/2 (deg)
Emitted Color	λP (nm)	λD (nm)		Ir (μA)	△λ (nm)	Pd (mW)	If (mA)	Vf(V)		Iv(mcd)		
								Typ.	Max.	Min.	Typ.	
Ultra High Red	645	631	Water Clear	10	15	78	30	2.1	2.6	72	115	110°
Ultra Yellow Green	575	574		10	15	78	30	2.1	2.6	22.5	36	

ISSUE	DIMENSION NO：	VERSION： A	DATE： 2021/05/08
	APPROVAL：	CHECK：	EDIT：

■ Packing coding principle

Bin code：K1-1-G2-1

Bin code	Stands For
K1	Luminous Intensity Grade
1	Dominant Wavelength Grade
G2	Luminous Intensity Grade
1	Dominant Wavelength Grade

■ The Luminous Intensity Grade of Red Chip-LED Products

Test Condition：I_f=20mA,T_a=25℃

Range,mcd	Bin code
72/90	K1
90/115	K2
115/145	L1

*** Luminous Intensity Tolerance: ±10%**

■ Dominant Wavelength Grade of Red Chip-LED Products

Test Condition：If=20mA,Ta=25℃

BIN	Range
1	623/640

*** Dominant Wavelength Tolerance: ±1nm**

■ The Luminous Intensity Grade of Ultra Yellow Green Chip-LED Products

● **Test Condition：@ 20mA**

Range,mcd	Bin code
22.5/28.5	G2
28.5/36	H1
36/45	H2
45/57	J1
57/72	J2

*** Luminous Intensity Tolerance: ±10%**

■ Dominant Wavelength Grade of Ultra Yellow Green Chip-LED Products

●type **@ 20mA**

BIN	Range
0	568/570
1	570/572
2	572/574
3	574/576

*** Dominant Wavelength Tolerance: ±1nm**

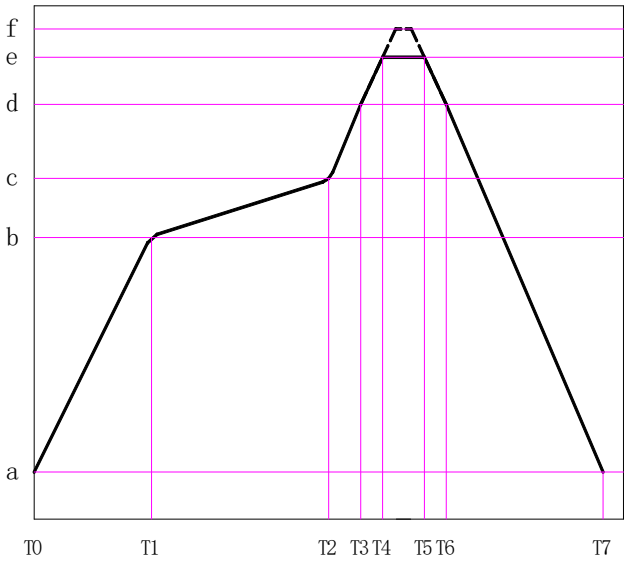
■ Reliability Test Items And Conditions

NO.	Item	Test Conditions	Test Hours / Cycle	Sample Q'ty	Ac / Re
1	Solder Heat	TEMP：260℃±5℃	5 sec	36 pcs	0 / 1
2	Temperature Cycle	H：+100℃ 30min. ∫ 5min. L：-40℃ 30min.	50 cycle	36 pcs	0 / 1
3	Thermal Shock	H：+100℃ 15min. ∫ 10sec L：-40℃ 15min.	100 cycle	36 pcs	0 / 1
4	High Temperature Storage	TEMP：100℃	1000 hrs	36 pcs	0 / 1
5	Low Temperature Storage	TEMP：-40℃	1000 hrs	36 pcs	0 / 1
6	DC Operating Life	I_F＝20mA	1000 hrs	36 pcs	0 / 1
7	High Temperature / High Humidity	85℃ / 90∽95%R.H.	1000 hrs	36 pcs	0 / 1

■ Reflow Temp. / Time

Please refer to the following figure：

Temp.(℃)		Time(Sec)	
a	**25**	**T0~T1**	**Max. 3℃/sec**
b	**150**	**T1~T2**	**90~130 sec**
c	**200**	**T2~T4**	**Max. 3℃/sec**
d	**220**	**T3~T6**	**Max. 50sec**
e	**245**		
f	**Max. 260**		**Max. 10sec**
		T5~T7	**Max. -3℃/sec**
Blet Speed		**70~90 cm/min**	

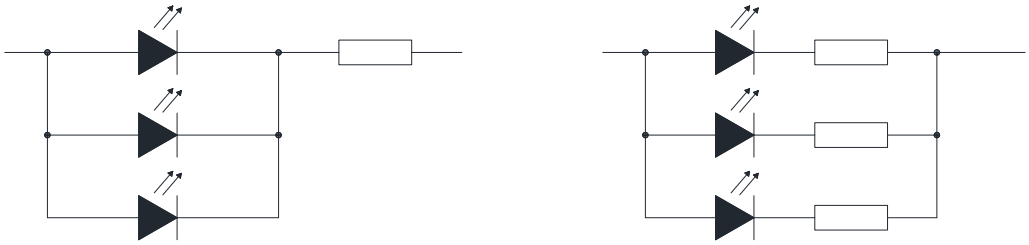


Soldering Iron：
Temperature at tip of iron：300℃ Max.（25W Max.）
Soldering time：5 ±1sec.

■ Precautions For Use

◆ Circuit design

1. Customer must apply resistors for protection and stabile, Circuit B is recommended, If using Circuit A, the current through the LEDs may vary due to the variation in Forward Voltage characteristics of the LEDs(burn out will happen).

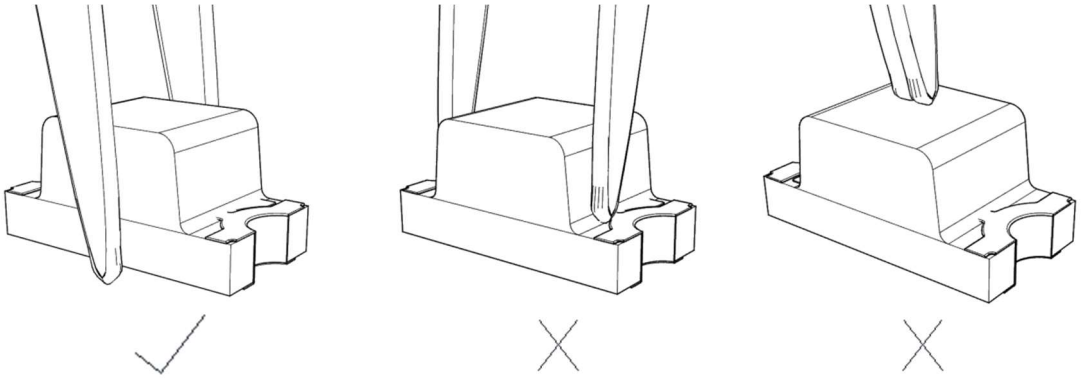


A (✗)　　B (✓)

2. Current change may lead to LED color change. If there is a big difference among spectral color separation current and actual service current, color difference may happen.
3. This product should be operated using forward current. Subjecting it to continuous reverse voltage may cause migration, which may cause damage to the LED die.

◆ Handling Precautions

1. When handling the product with tweezers, be careful not to apply excessive force to the resin. Otherwise, the resin can be cut, chipped, delaminate or deformed, causing wire-bond breaks.



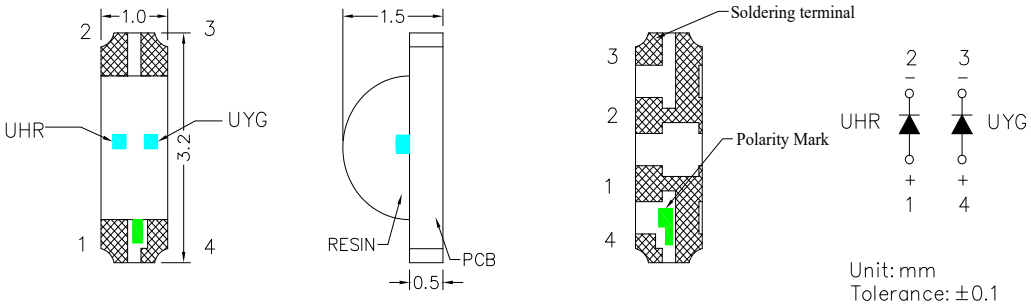
2. Reflow soldering must not be performed more than twice. Hand soldering must not be performed more than once.
3. When soldering, do not put stress on the LEDs during heating.
4. The product are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability.
5. Do not stack assembled PCBs together. Failure to comply can cause the resin portion of the product to be cut, chipped, delaminated and/or deformed. It may leading to catastrophic failures.

■ Storage

1. The operation of temperature and R.H. are：5℃∽30℃, R.H.60％ Max..
2. Once the package is opened, the products should be used within 24 hrs. Otherwise, they should be kept in a dampproof box with desiccating regent. Considering the tape life, we suggest our customers to use our products within 1 year（from production date）.
3. It’s recommended to bake before soldering when the package is unsealed after 24 hrs. The condition is : 70℃±5℃ for 24hrs.

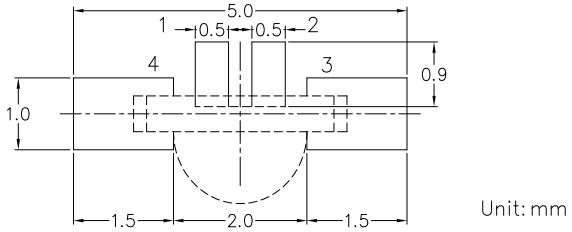
■ Package Dimensions

◆ Package Dimensions of Device (CL-SP115UHRUYG(4PIN))



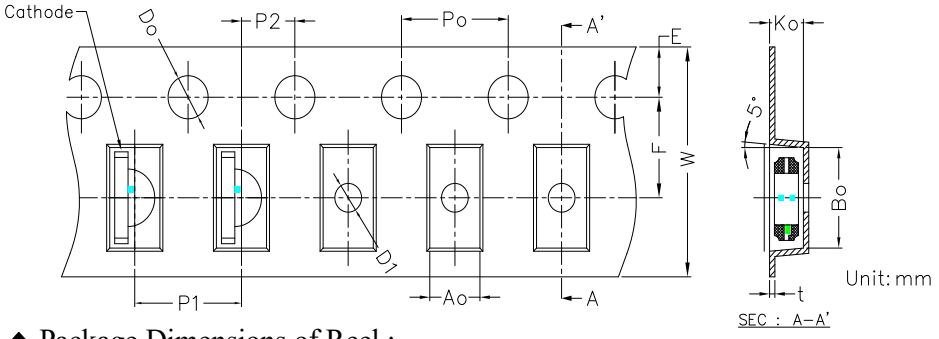
1. Soldering terminal may shift in x, y direction.

◆ Recommended Soldering Pad Dimensions

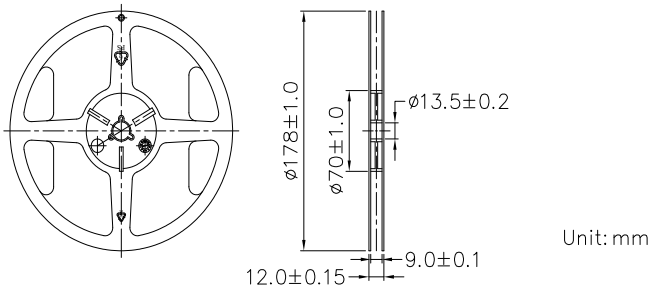


◆ Tape Specification : 3000pcs Per Reel

Packing Size													
Item	W	P1	E	F	Do	D1	Po	10Po	P2	Ao	Bo	Ko	t
Spec.	8.00	4.00	1.75	3.50	1.50	1.00	4.00	40.00	2.00	1.60	3.35	1.15	0.22
Tolerance	±0.20	±0.10	±0.10	±0.05	+0.10 −0.00	±0.05	±0.05	±0.20	±0.05	±0.10	±0.10	±0.10	±0.05



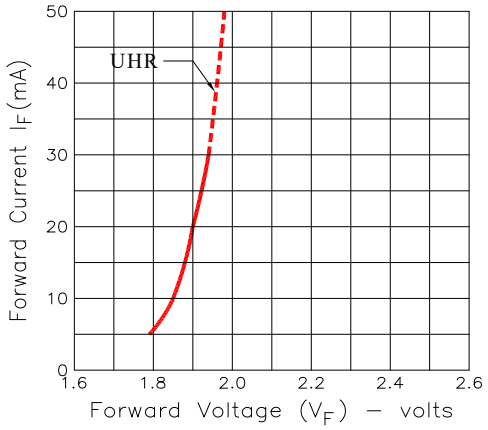
◆ Package Dimensions of Reel :



■ Typical optical characteristics curves

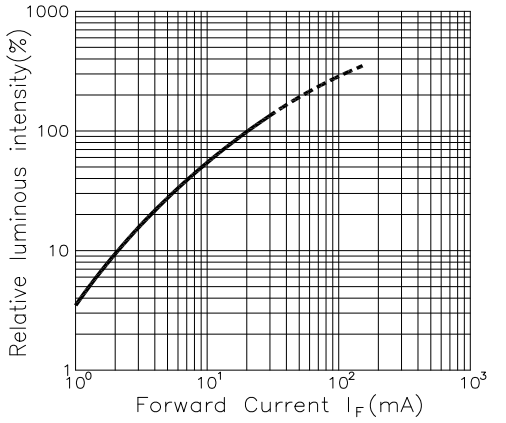
Forward Current Vs. Forward Voltage

Ta=25° C

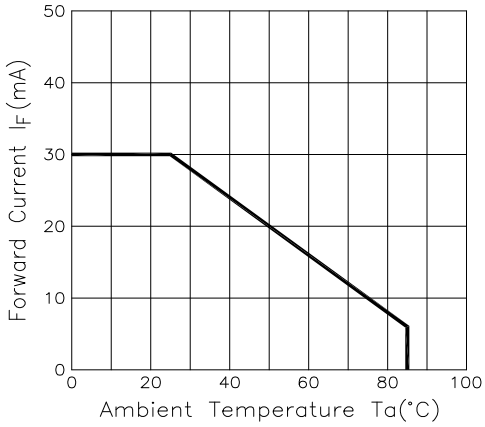


Luminous Intensity Vs. Forward Current

Ta=25° C

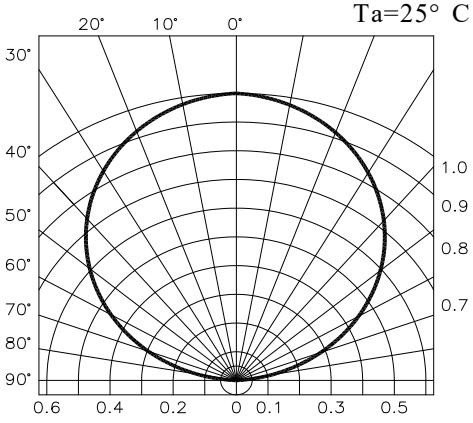


Forward Current Derating Curve

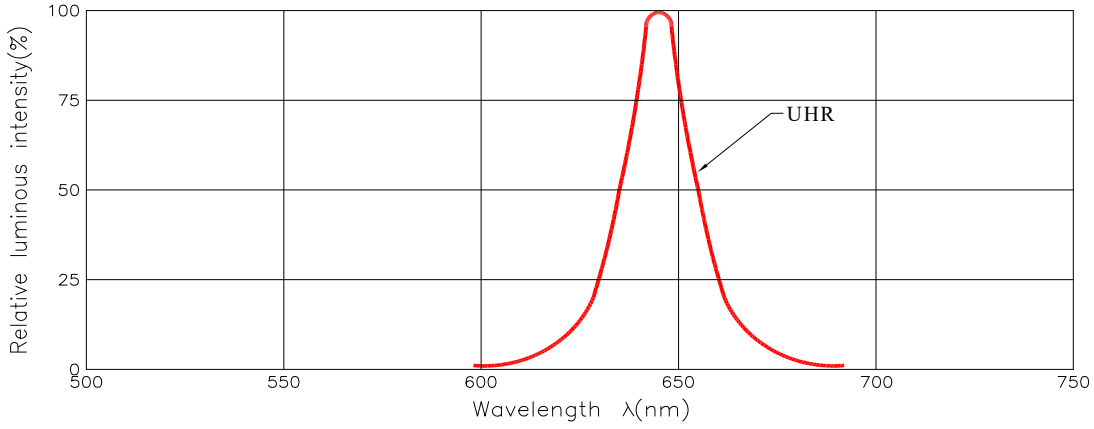


Radiation Diagram

Ta=25° C

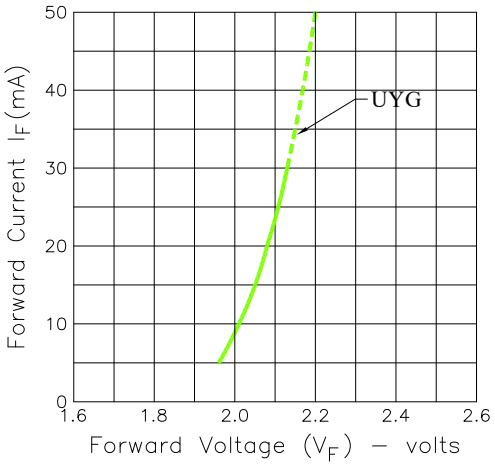


Spectrum Distribution



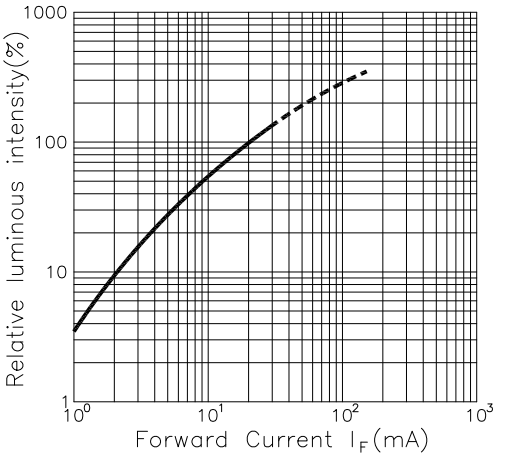
Forward Current Vs. Forward Voltage

Ta=25° C

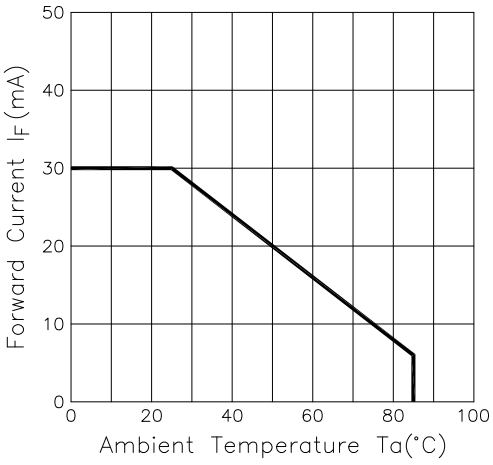


Luminous Intensity Vs. Forward Current

Ta=25° C



Forward Current Derating Curve



Radiation Diagram

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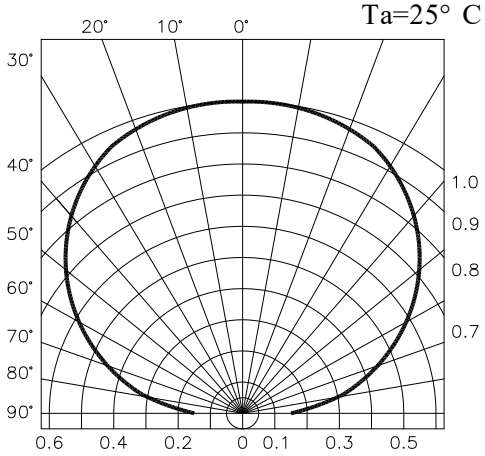
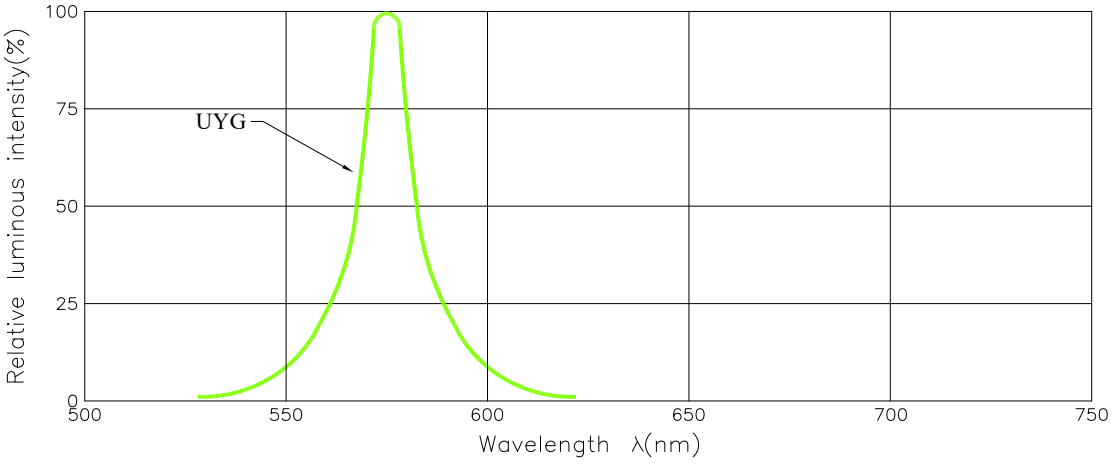
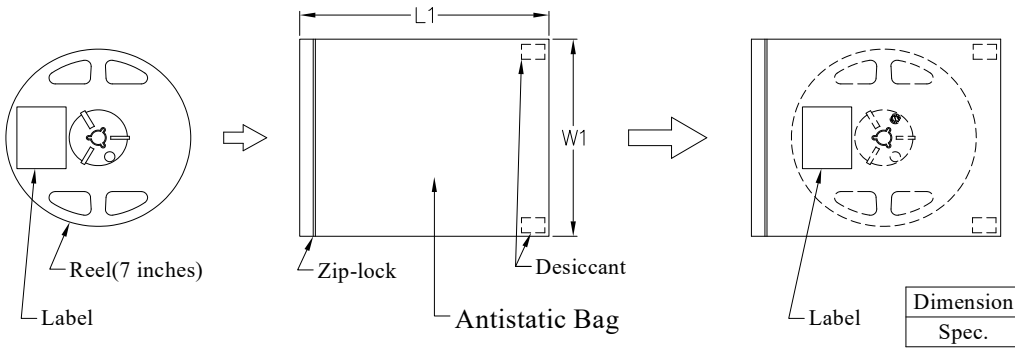


Spectrum Distribution

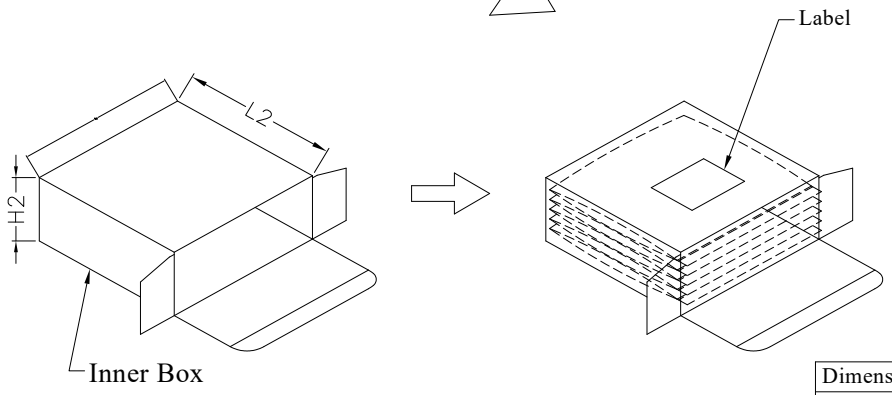


■ Moisture Resistant Packing Process



Dimension	L1	W1
Spec.	203.0	198.0

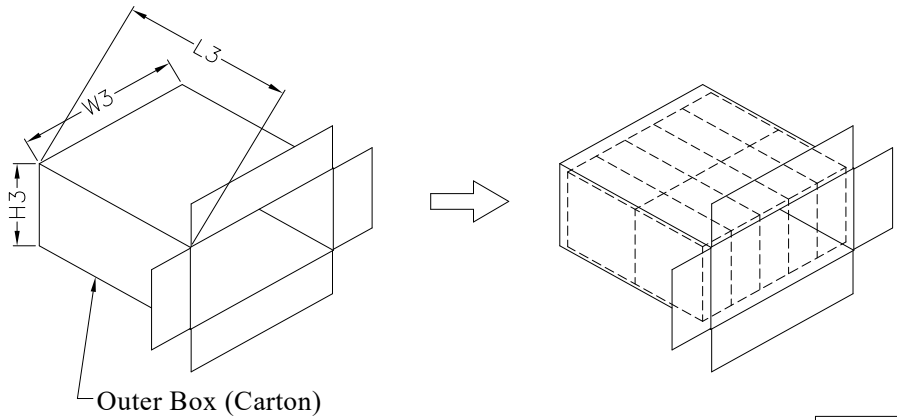
Unit : mm



5 Reels per Box

Dimension	L2	W2	H2
Outside	200.0	205.0	85.0
Inside	193.7	198.7	78.7

Unit : mm



10 Boxes per Carton

Dimension	L3	W3	H3
Outside	448.0	424.0	220.0
Inside	433.4	409.4	205.4

Unit : mm