

PRELIMINARY SPEC

Part Number : AA1010RWC9

White



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Features

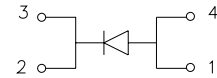
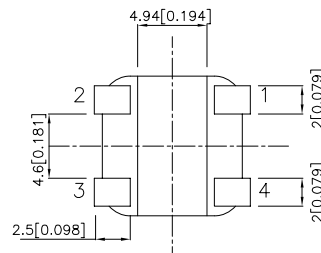
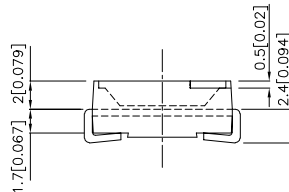
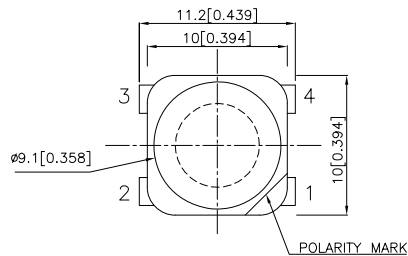
- PLCC-4 PACKAGE.
- SINGLE COLOR.
- HIGH LUMINANCE.
- HIGH POWER, OPERATING CURRENT @350mA.
- SUITABLE FOR ALL SMT ASSEMBLY METHODS.
- PACKAGE : 500PCS / REEL.
- MOISTURE SENSITIVITY LEVEL : LEVEL 6.
- PATENT PENDING.
- ELECTROSTATIC DISCHARGE THRESHOLD (HBM):2000V.
- TYP. COLOR TEMPERATURE:6500K.
- COLOR COORDINATES:X=0.33,Y=0.34 ACC. TO CIE1931(WHITE).
- OPTICAL EFFICIENCY:29.2 lm/W(TYP.)
- COLOR REPRODUCTION INDEX:80.
- RoHS COMPLIANT.



Description

The LED is encapsulated with a soft silicone material.

Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25(0.01)$ unless otherwise noted.
3. Specifications are subject to change without notice.

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Applications

- traffic signaling.
- backlighting (illuminated advertising , general lighting).
- interior and exterior automotive lighting.
- substitution of micro incandescent lamps.
- portable light source (e.g. bicycle flashlight).
- signal and symbol luminaire for orientation.
- marker lights (e.g. steps, exit ways, etc).
- decorative and entertainment lighting.
- indoor and outdoor commercial and residential architectural lighting.

Application Notes

- Pressure or stress can damage the encapsulating material and affect the reliability of the LED. Precaution should be taken to avoid pressure on the LED encapsulating surface.

- 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.

- Handling Indications

Use proper handling techniques to prevent damage to the LED surface. Minimize mechanical stress on the LED surface during processing and handling. Do not touch the emitting surface with sharp objects to avoid scratching or damaging the LED.



Figure 1

In general, LEDs should be handled by the sides of the package. Handling instruments should not touch the emitting surface of the LED package.



Figure 2

For automated pick-and-place machines, the pickup nozzle should be larger than the size of the LED reflector area to avoid placing excess pressure on the LED surface.

Selection Guide

Part No.	Dice	Lens Type	luminous Intensity ^{Note2} Iv(cd) @ 350mA		Φ_v (lm) ^{Note3} @ 350mA	Viewing Angle ^{Note1}
			Min.	Typ.	Typ.	2 θ 1/2
AA1010RWC9	WHITE (InGaN)	WATER CLEAR	8	12	34.7	120°

Absolute Maximum Ratings at TA=25°C

Parameter	Symbol	Value	Unit
Power dissipation	Pt	1.2	W
Reverse Voltage	VR	5	V
Junction temperature	TJ	110	°C
Operating Temperature	Top	-40 To +85	°C
Storage Temperature	Tstg	-40 To +85	°C
DC Forward Current	IF	350	mA
Peak Forward Current ^{Note4}	IFM	500	mA
Thermal resistance Junction/ambient ^{Note5}	Rth JA	60	°C/W
Junction/solder point	Rth JS	10	°C/W

Notes:

- 1.01/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
- 2.Luminous intensity is measured by a current pulse of 10ms at a tolerance of $\pm 15\%$.
- 3.The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data.
For the purpose of product enhancement, the typical data is subject to change without prior notice.
- 4.1/10 Duty Cycle, 0.1ms Pulse Width.
- 5.Rth(J-A) Results from mounting on PC board FR4 (pad size $\geq 100 \text{ mm}^2$ per pad),

Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Value	Unit
Chromaticity coordinate x acc.to CIE1931 IF=350mA [Typ.]	X ^{Note1}	0.33	-
Chromaticity coordinate y acc.to CIE1931 IF=350mA [Typ.]	Y ^{Note1}	0.34	-
Viewing angle at 50% Φ_v [Typ.]	θ	120	°
Forward Voltage IF=350mA [Min.]	VF ^{Note2}	3.0	V
Forward Voltage IF=350mA [Typ.]		3.4	
Forward Voltage IF=350mA [Max.]		3.9	
Reverse Current (VR=5V) [Typ.]	IR	0.01	μA
Reverse Current (VR=5V) [Max.]		10	
Temperature coefficient of x IF=350mA, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	TCx	-0.2	$10^{-3}/^\circ\text{C}$
Temperature coefficient of y IF=350mA, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	TCy	-0.1	$10^{-3}/^\circ\text{C}$
Temperature coefficient of VF IF=350mA, $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ [Typ.]	TCv	-2.2	mV/°C

Notes:

- 1.Chromaticity coordinates are measured by a current pulse of 20ms with a tolerance of ± 0.01 in X and Y color coordinates.
- 2.Forward voltage is measured with a current pulse of 10ms at a tolerance of $\pm 0.1\text{V}$.

Brightness codes

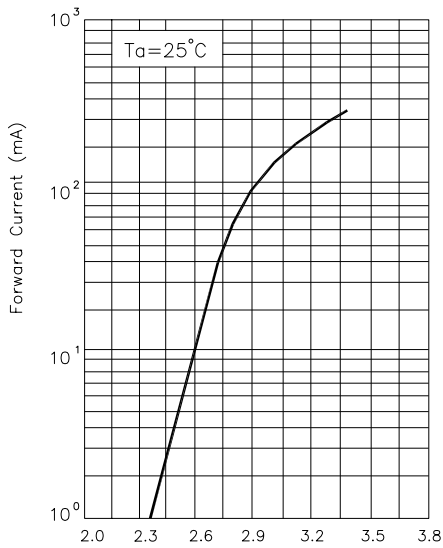
Code.	luminous Intensity ^{Note1} Iv(cd) @ 350mA		Φ_v (lm) ^{Note2} @ 350mA
	Min.	Max.	Typ.
ZH	8	12	28.5
ZM	10	16	34.2
ZN	12	20	39.1

Notes:

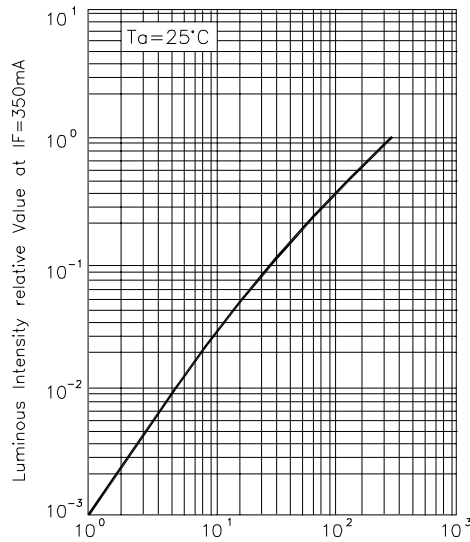
- Luminous intensity is measured by a current pulse of 10ms at a tolerance of $\pm 15\%$.
- The typical data of Luminous Flux can only reflect statistical figures, actual parameters of individual product could differ from the typical data. For the purpose of product enhancement, the typical data is subject to change without prior notice.

White

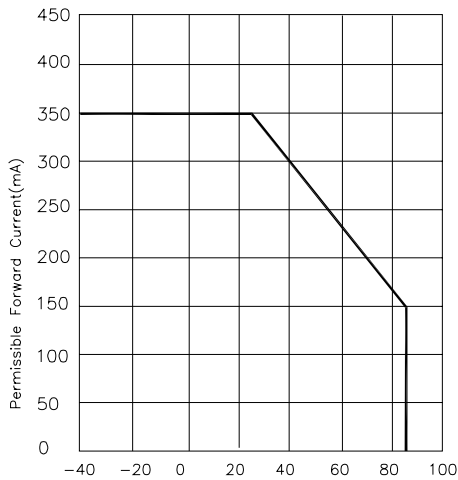
AA1010RWC9



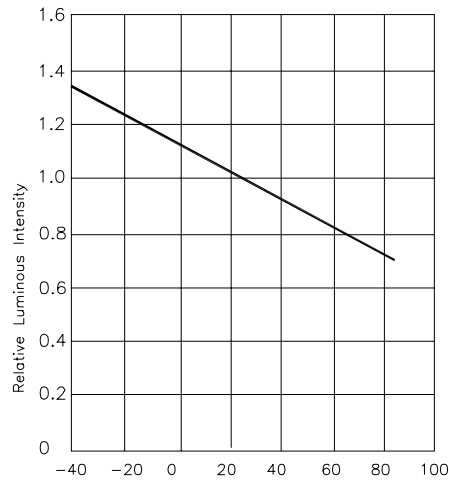
Forward voltage (V)
FORWARD CURRENT Vs.
FORWARD VOLTAGE



Forward current (mA)
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



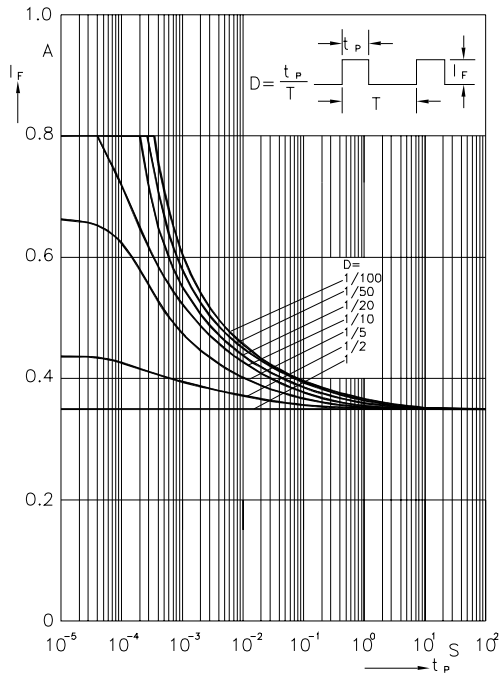
Ambient Temperature $T_a(^{\circ}\text{C})$
FORWARD CURRENT
DERATING CURVE



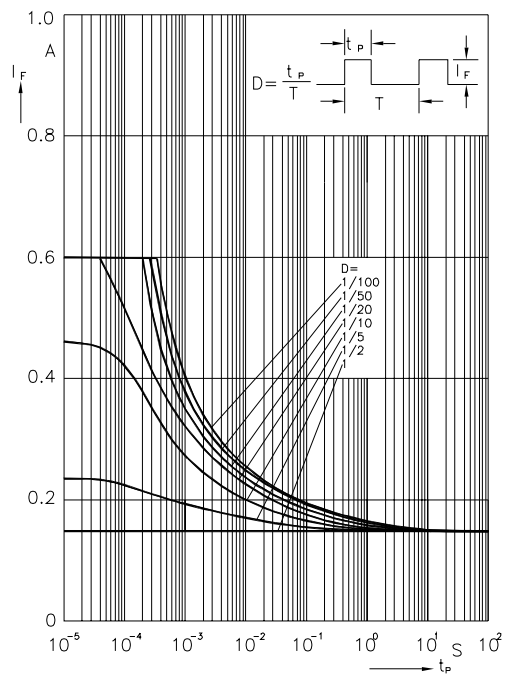
Ambient Temperature $T_a(^{\circ}\text{C})$
LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE

White

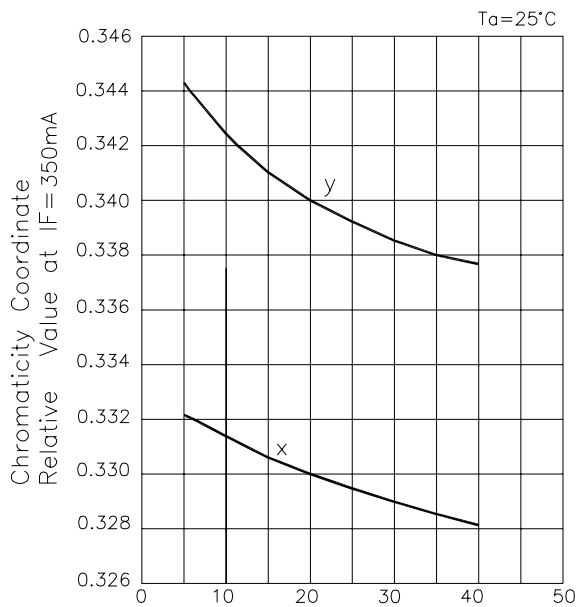
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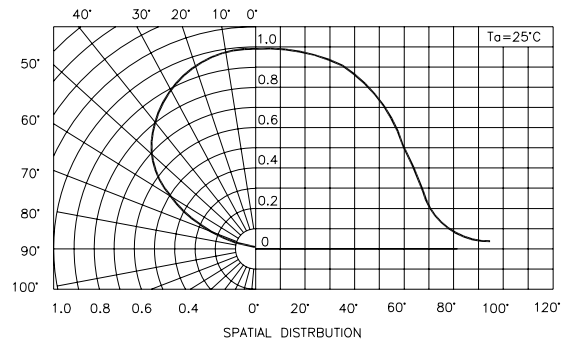
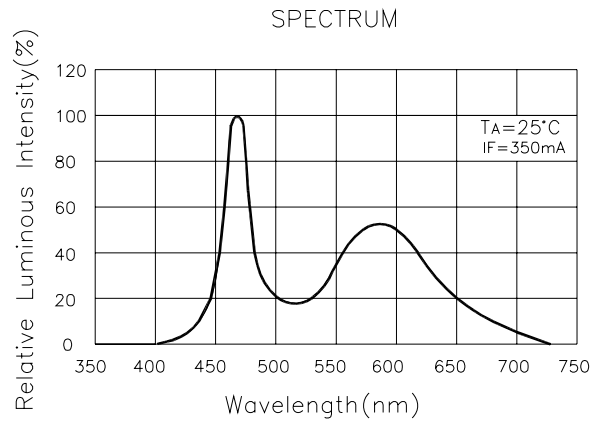
Permissible Pulse Handling Capability
Duty cycle D=parameter, TA=25°C



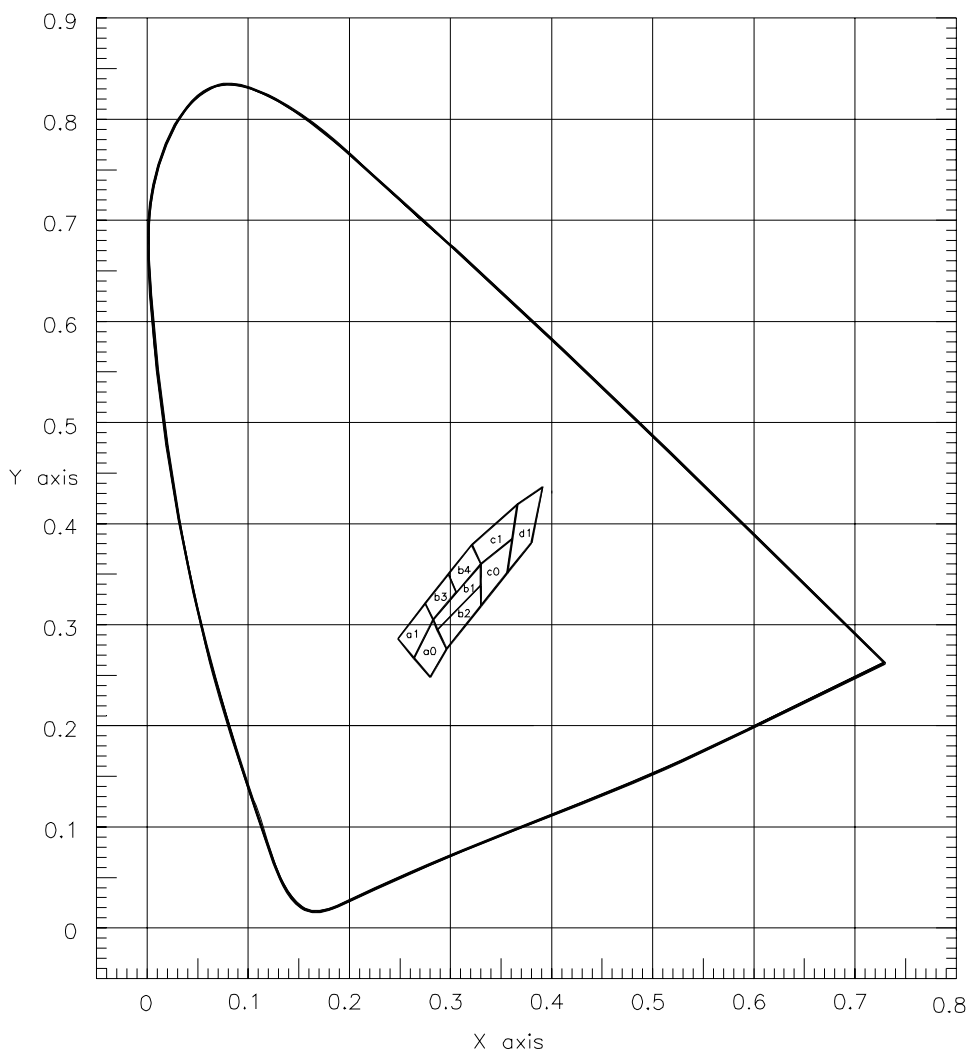
Permissible Pulse Handling Capability
Duty cycle D=parameter, TA=85°C



Forward Current(mA)
Chromaticity Coordinate Shift Vs.
Forward Current



AA1010RWC9



a1				
X	0.248	0.275	0.283	0.264
Y	0.286	0.321	0.305	0.267
b1				
X	0.283	0.330	0.330	0.287
Y	0.305	0.360	0.339	0.295
c1				
X	0.321	0.366	0.361	0.330
Y	0.379	0.419	0.385	0.360

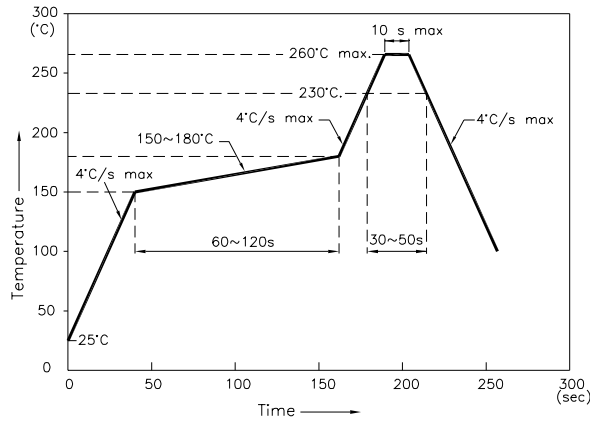
a0				
X	0.264	0.283	0.296	0.280
Y	0.267	0.305	0.276	0.248
b2				
X	0.287	0.330	0.330	0.296
Y	0.295	0.339	0.318	0.276
c0				
X	0.330	0.361	0.356	0.330
Y	0.360	0.385	0.351	0.318

b3				
X	0.275	0.298	0.306	0.283
Y	0.321	0.350	0.332	0.305
b4				
X	0.298	0.321	0.330	0.306
Y	0.350	0.379	0.360	0.332
d1				
X	0.366	0.391	0.380	0.356
Y	0.419	0.436	0.381	0.351

Ta=25°, IF=20mA Measurement Uncertainty of the Color Coordinates: +/-0.01

AA1010RWC9

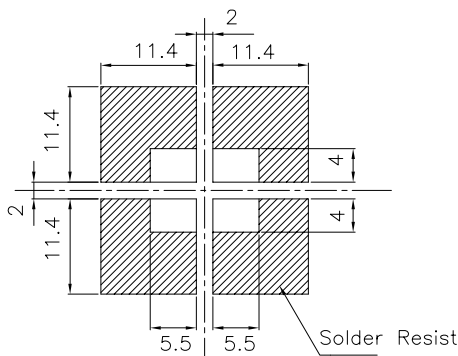
Reflow Soldering Profile For Lead-free SMT Process.



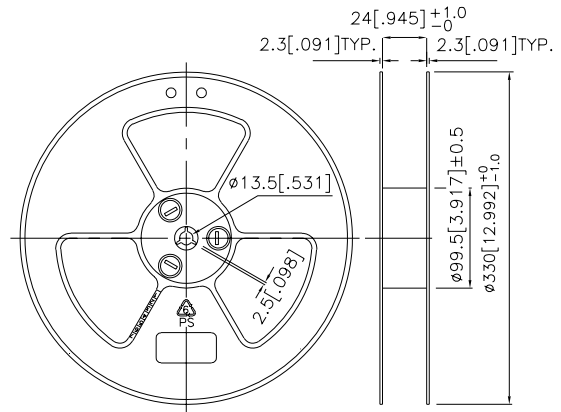
NOTES:

1. We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

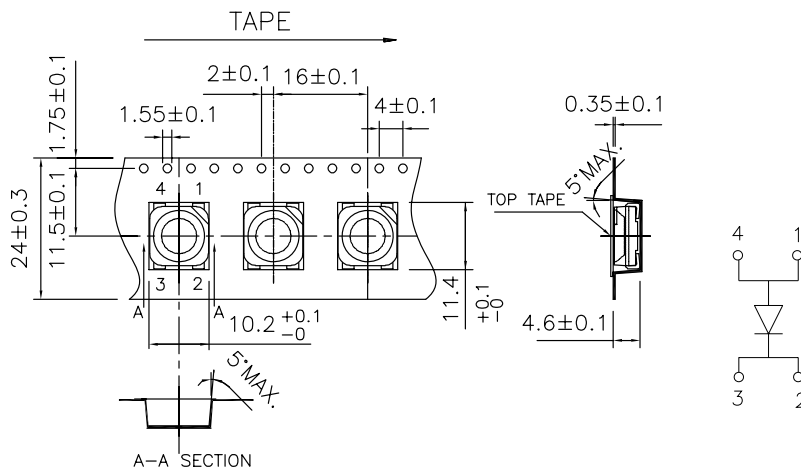
Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)



Reel Dimension

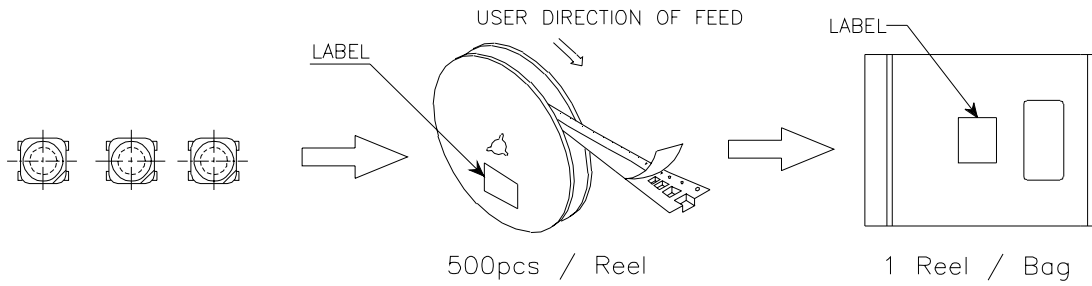


Tape Specifications (Units : mm)



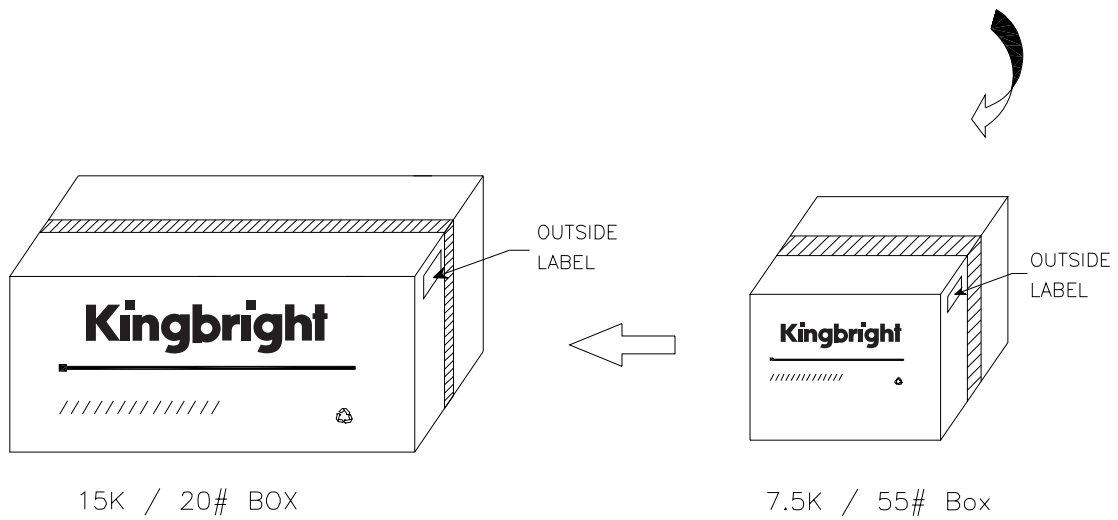
PACKING & LABEL SPECIFICATIONS

AA1010RWC9




500pcs / Reel

1 Reel / Bag



15K / 20# BOX

7.5K / 55# Box

Kingbright	
P/NO: AA1010XXX	
QTY: 500 pcs	Q.C. Q C xx xx xxxx PASSED
S/N: XXXX	Date
CODE: XXX	
LOT NO:	
 xxxxxxxxxxxxxxxxxxxx	
RoHS Compliant	