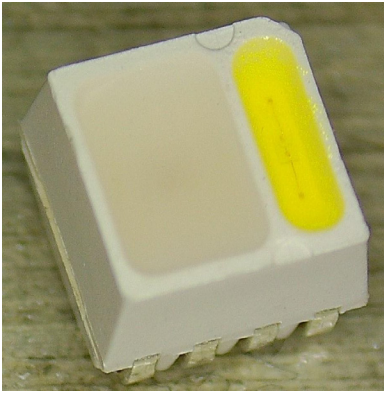


## CLW6A-MKW: PLCC8 4 in 1 SMD LED



### PRODUCT DESCRIPTION

These SMD LEDs are packaged in an industry standard PLCC8 package. These high performance 4 color SMT LEDs are designed to work in a wide range of applications. A wide viewing angle and high brightness make these LEDs suitable for signage applications.

### FEATURES

- Size (mm): 3.5x 3.5 x 2.8
- Dominant Wavelength/CCT
  - Red (619 - 624nm)
  - Green (520 - 535nm)
  - Blue (460 - 475nm)
  - PC Mint (Bin PM3/PM4)
- Luminous Flux (lm)
  - Red (2.2 - 4.8)
  - Green (4.8 - 10.7)
  - Blue (1.0 - 2.2)
  - PC Mint (4.8 - 10.7)
- Moisture Sensitivity Level: 5a
- Lead-Free
- RoHS Compliant

### APPLICATIONS

- Architecture Lighting
- Decorative Lighting
- Amusement

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )**

Items	Symbol	Absolute Maximum Rating				Unit
		R	G	B	PC Mint	
Forward Current <sup>Note 1</sup>	$I_F$	30	30	30	30	mA
Peak Forward Current <sup>Note 2</sup>	$I_{FP}$	50	50	50	50	mA
Reverse Voltage	$V_R$	5	5	5	5	V
Power Dissipation	$P_D$	75	105	105	105	mW
Operation Temperature	$T_{opr}$	-40 ~ +85				$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +100				$^\circ\text{C}$
Junction Temperature	$T_J$	110	110	110	110	$^\circ\text{C}$
Junction/ambient	$R_{THJA}$	456	450	450	600	$^\circ\text{C}/\text{W}$
Junction/solder point	$R_{THJS}$	232	230	230	330	$^\circ\text{C}/\text{W}$
Electrostatic Discharge Classification(MIL-STD-883K)	ESD	Class 1B				

**Note:**

1. Single-color light
2. Pulse width  $\leq 0.1$  msec, duty  $\leq 1/10$ .

**TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )**

Characteristics	Condition	Symbol	Values				Unit
			R	G	B	PC Mint	
Dominant Wavelength	$I_F = 20$ mA(R) $I_F = 20$ mA(G) $I_F = 20$ mA(B) $I_F = 20$ mA(PC mint)	$\lambda_{DOM}$	619~624	520~535	460~475	NA	nm
Spectral bandwidth at 50% $I_{REL}$ max	$I_F = 20$ mA(R) $I_F = 20$ mA(G) $I_F = 20$ mA(B) $I_F = 20$ mA(PC mint)	$\Delta \lambda$	24	38	28	NA	nm
Forward Voltage	$I_F = 20$ mA(R) $I_F = 20$ mA(G) $I_F = 20$ mA(B) $I_F = 20$ mA(PC mint)	$V_{F(avg)}$	2.1	3.0	3.1	2.9	V
		$V_{F(max)}$	2.5	3.5	3.5	3.5	V
Luminous Flux	$I_F = 20$ mA(R) $I_F = 20$ mA(G) $I_F = 20$ mA(B) $I_F = 20$ mA(PC mint)	$\Phi_{V(min)}$	2.2	4.8	1.0	4.8	lm
		$\Phi_{V(avg)}$	3.4	6.8	1.5	7.0	lm
Luminous Intensity(Reference)	$I_F = 20$ mA(R) $I_F = 20$ mA(G) $I_F = 20$ mA(B) $I_F = 20$ mA(PC mint)	$I_{V(avg)}$	1110	2575	510	2500	mcd
Reverse Current (max)	$V_R = 5$ V	$I_R$	100	100	100	100	$\mu\text{A}$

\* Continuous reverse voltage can cause LED damage.

### FLUX BIN LIMIT

Red (20 mA)			Green (20 mA)			Blue (20 mA)			PC Mint (20 mA)		
Bin Code	Min.(lm)	Max.(lm)	Bin Code	Min.(lm)	Max.(lm)	Bin Code	Min.(lm)	Max.(lm)	Bin Code	Min.(lm)	Max.(lm)
90	2.2	2.9	C0	4.8	6.3	60	1.0	1.3	C0	4.8	6.3
A0	2.9	3.7	D0	6.3	8.2	70	1.3	1.7	D0	6.3	8.2
B0	3.7	4.8	E0	8.2	10.7	80	1.7	2.2	E0	8.2	10.7

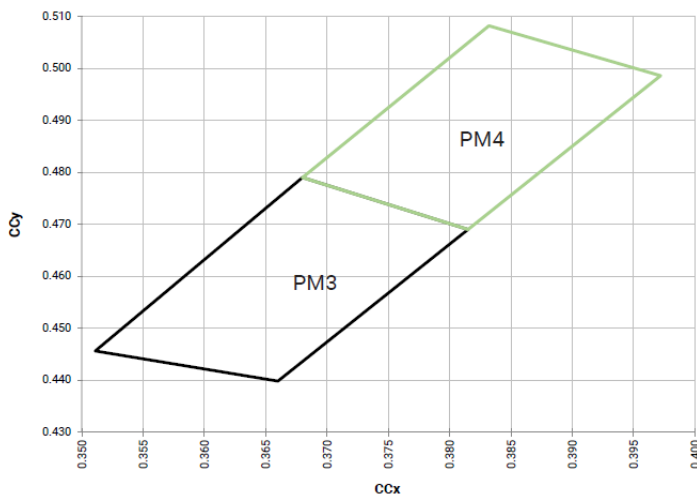
\* Tolerance of measurement of luminous flux is ±10%.

### COLOR BIN LIMIT

Red (20 mA)			Green (20 mA)			Blue (20 mA)		
Bin Code	Min.(nm)	Max.(nm)	Bin Code	Min.(nm)	Max.(nm)	Bin Code	Min.(nm)	Max.(nm)
RB	619	624	G7	520	525	B3	460	465
			G23	522.5	527.5	B23	462.5	467.5
			G8	525	530	B4	465	470
			G45	527.5	532.5	B45	467.5	472.5
			G9	530	535	B5	470	475

\* Tolerance of measurement of dominant wavelength is ±1 nm.

### PC Mint



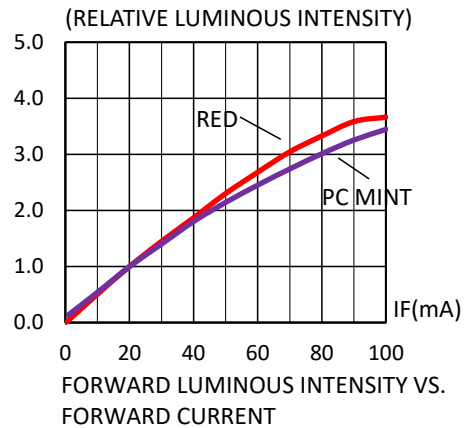
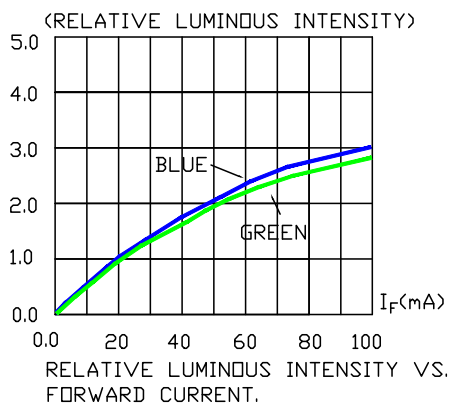
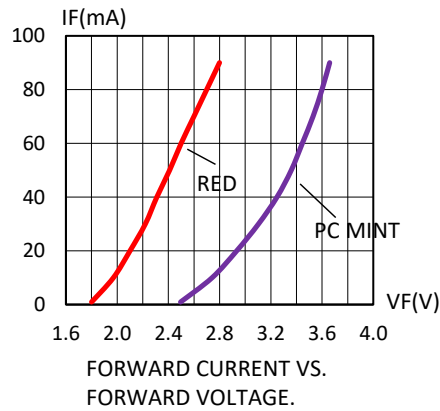
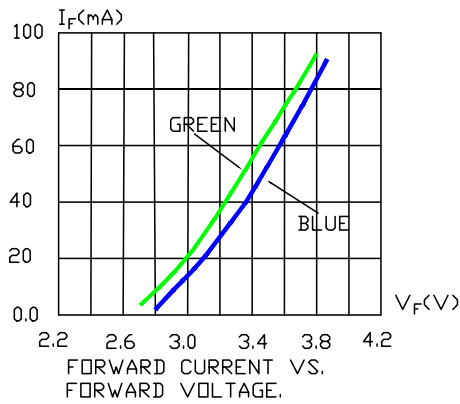
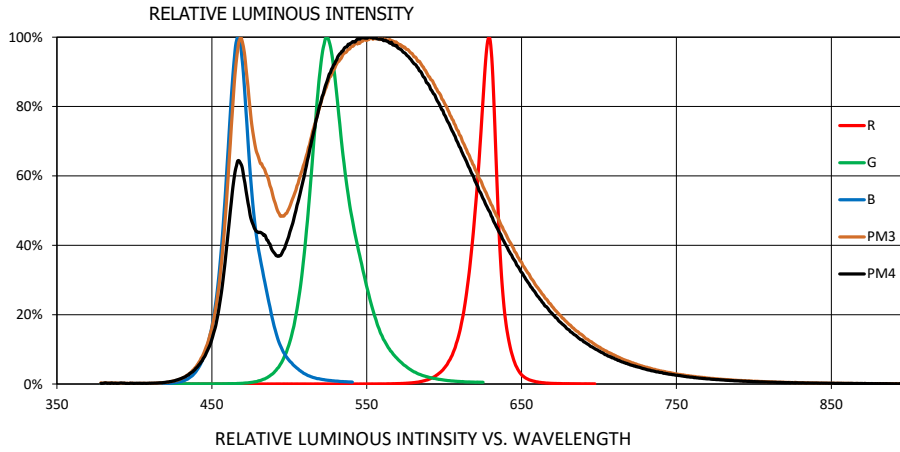
Chromaticity Bin	x	y
PM3	0.3815	0.4690
	0.3680	0.4790
	0.3511	0.4456
	0.3660	0.4398
PM4	0.3832	0.5082
	0.3972	0.4986
	0.3815	0.4690
	0.3680	0.4790

## ORDER CODE TABLE

Kit Number	Color	Luminous Intensity (lm)		Dominant Wavelength (nm)				Package
		Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max.(nm)	
CLW6A-MKW-C90C060C0BB7C3CPM3	Red	Any 1 Intensity bin from 90(2.2) - B0(4.8)		RB	619	RB	624	Reel
	Green	Any 1 Intensity bin from C0(4.8) - E0(10.7)		Any 1 hue bin from G7(520)-G9(535)				
	Blue	Any 1 Intensity bin from 60(1.0) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				
	PC Mint	Any 1 Intensity bin from C0(4.8) - E0(10.7)		PM3, PM4				

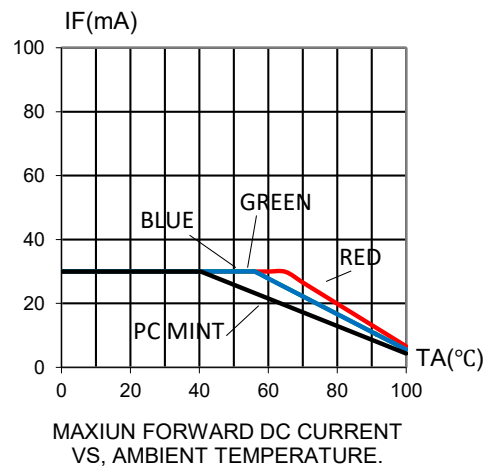
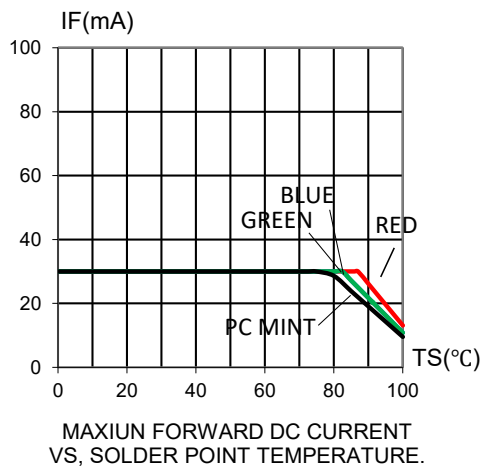
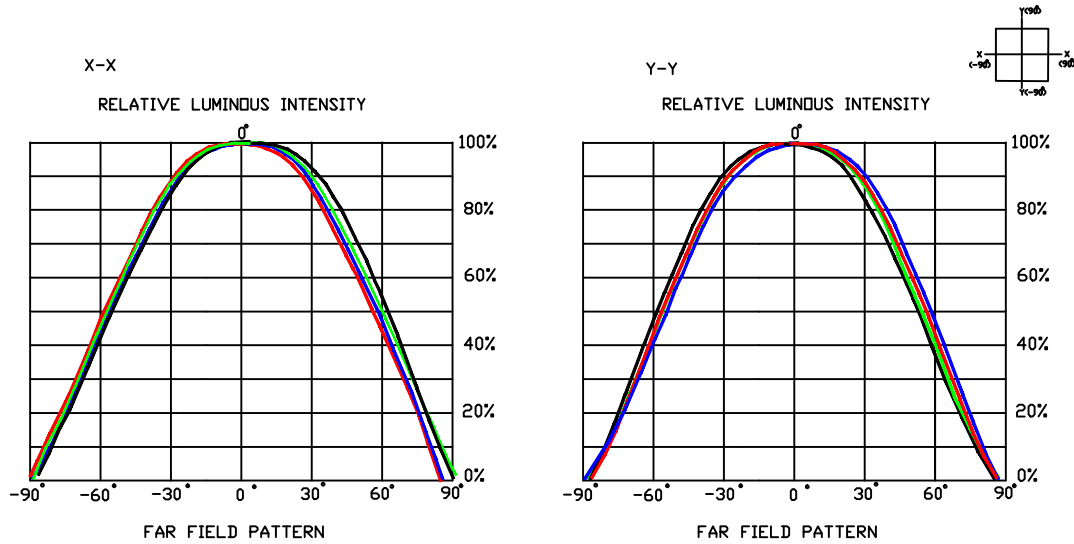
GRAPHS

The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



## GRAPHS

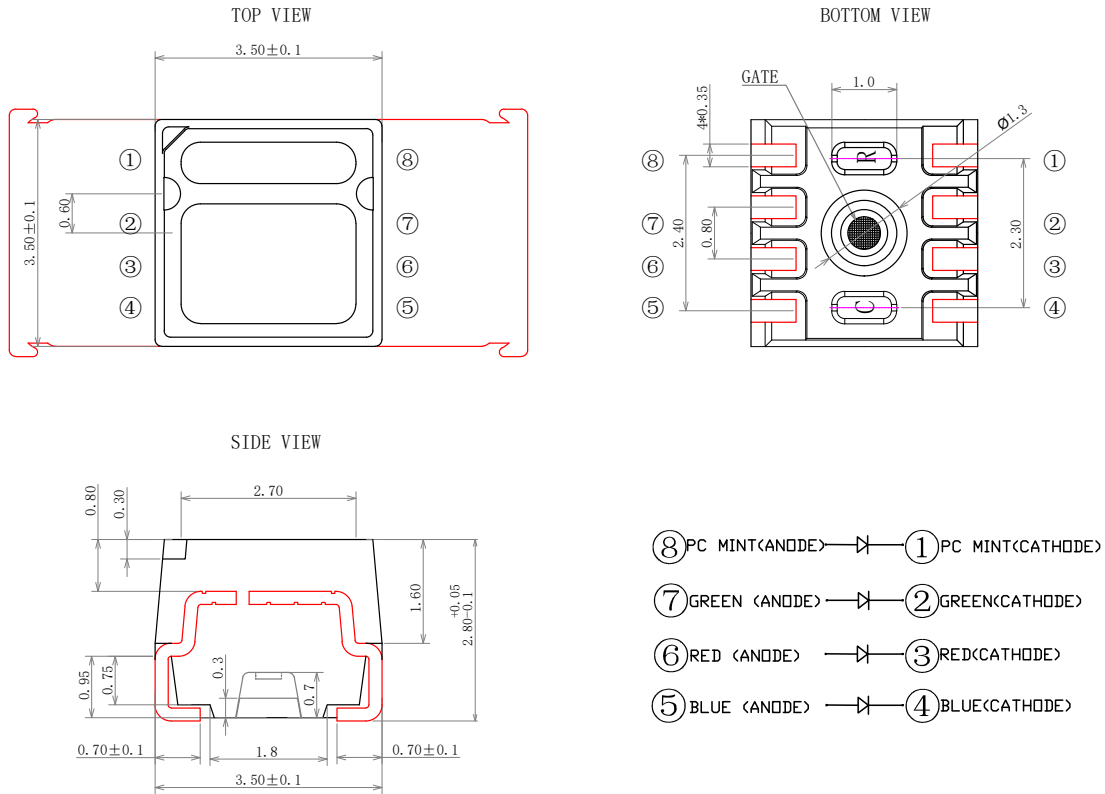
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



## MECHANICAL DIMENSIONS

All dimensions are in mm.

Tolerance of measurement of the dimension is  $\pm 0.1$ .



## NOTES

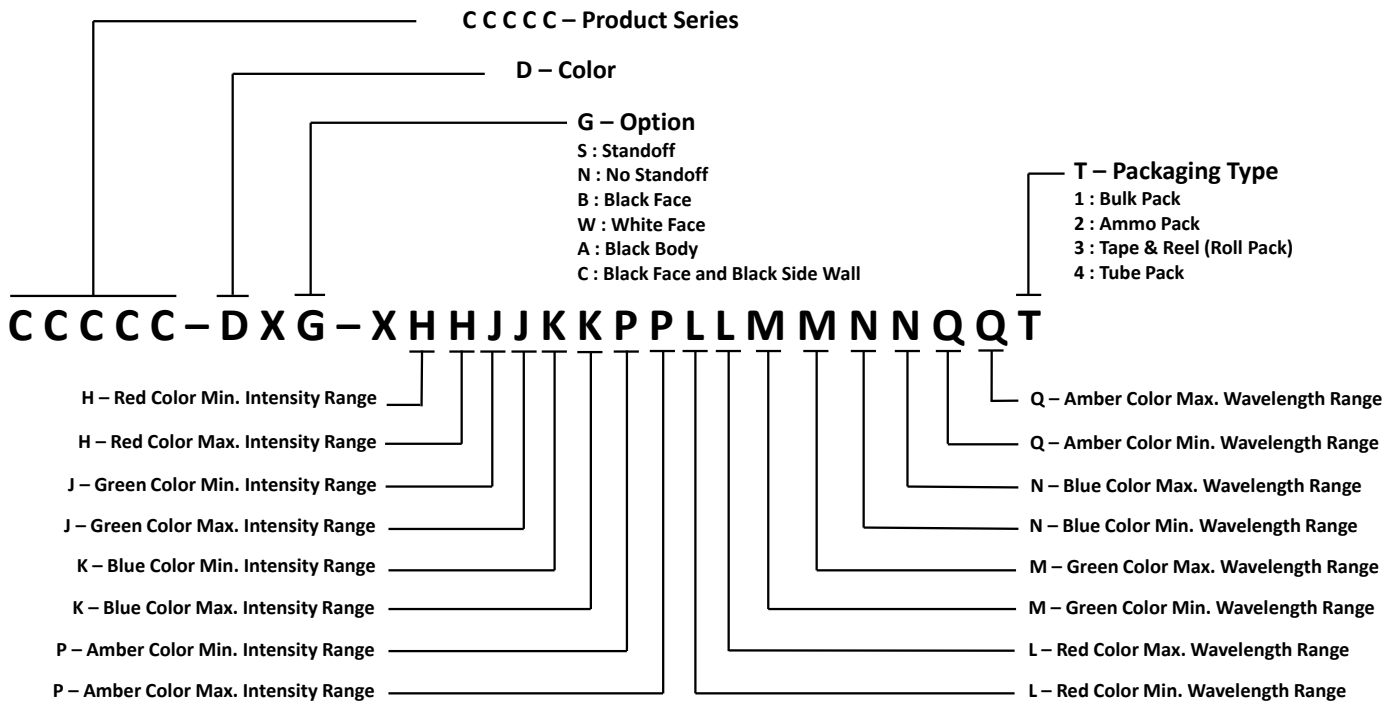
### RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree LED representative or from the [Product Ecology](#) section of the Cree LED website.

KIT NUMBER SYSTEM

Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness.

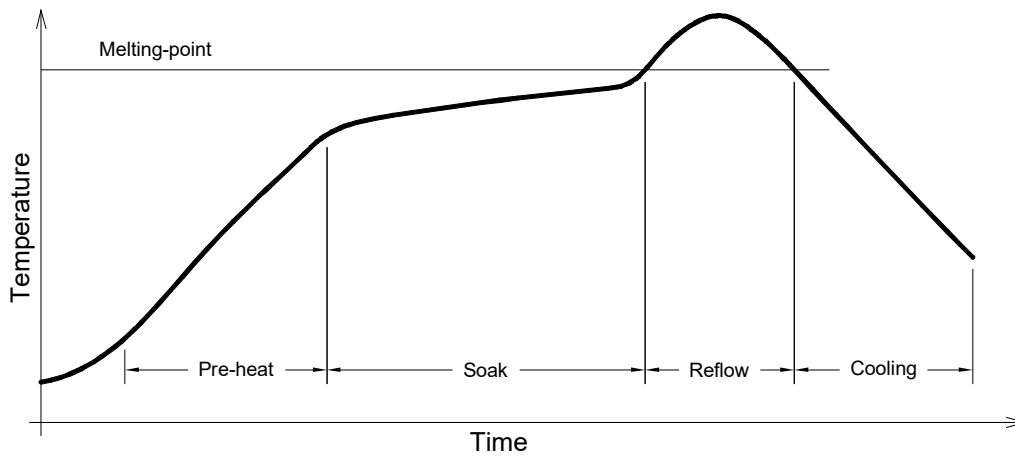
Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:





## REFLOW SOLDERING

- The CLW6A-MKW is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.

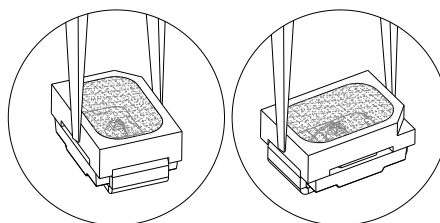


Use only with CLW6A-MKW

Solder
Average ramp-up rate = 4 °C/second max.
Soak temperature = 150°C-200°C
Soak time = 120 seconds max.
Duration above 217 °C = 60 seconds max.
Peak temperature = 250°C max
Time within 5 °C of peak temperature = 10 seconds max.
Ramp-down rate = 6 °C/second max.

## NOTES

- The packaging sizes of these SMD products are very small and the resin is still soft after solidification. Users are required to handle with care. Never touch the resin surface of SMD products.
- To avoid damaging the product's surface and interior device, it is recommended to choose a special nozzle to pick up the SMD products during the process of SMT production. If handling is necessary, take special care when picking up these products. The following method is necessary:



## PACKAGING

- The boxes are not water resistant and they must be kept away from water and moisture.
- The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags.
- Cardboard boxes will be used to protect the LEDs from mechanical shocks during transportation.
- The reel pack is applied in SMD LED.
- Max 2800 pcs per reel.

