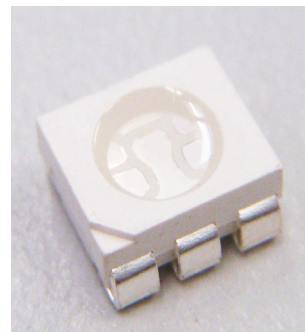


Cree® PLCC6 3 in 1 SMD LED CLP6C-RKW/AKW



PRODUCT DESCRIPTION

These SMD LEDs are packaged in the industry standard CLPP6 package. These high-reliability and high-brightness LEDs are designed to work in a wide range of environmental conditions and are ideally suited for use in illumination applications.

Their wide viewing angle makes these LEDs ideally suited for channel letter, or general backlighting and illumination applications. The flat top emitting surface makes it easy for these LEDs to mate with light pipes.

FEATURES

- Size (mm): 6.0 x 5.0
- Color and Typical Dominant Wavelength:
Red (618-630nm)
Amber (584-596nm)
- Luminous Intensity (mcd)
CLP6C-RKW: (3550 - 7100)
CLP6C-AKW: (3550-9000)
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Channel Letter
- Backlight

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

| Items | Symbol | Absolute Maximum Rating | Unit |
|---|------------|-------------------------|-----------------------------|
| | | Red/Amber | |
| Forward Current | I_F | 3 x 80 | mA |
| Peak Forward Current ^{Note} | I_{FP} | 3 x 200 | mA |
| Reverse Voltage | V_R | 5 | V |
| Power Dissipation | P_D | 3 x 240 | mW |
| Operation Temperature | T_{opr} | -40 ~ +100 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{stg} | -40 ~ +100 | $^{\circ}\text{C}$ |
| Junction Temperature | T_J | 110 | $^{\circ}\text{C}$ |
| Junction/Ambient | R_{THJA} | 3 x 250 | $^{\circ}\text{C}/\text{W}$ |
| Junction/Solder Point | R_{THJS} | 3 x 150 | $^{\circ}\text{C}/\text{W}$ |
| Electrostatic Discharge Classification(MIL-STD-883E) | ESD | Class 2 | |

Note: Pulse width ≤ 0.1 msec, duty $\leq 1/10$.

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

| Characteristics | Color | Symbol | Condition | Unit | Minimum | Typical | Maximum |
|---------------------|-----------|-------------|------------------------|---------------|---------|---------|---------|
| Forward Voltage | Red/Amber | V_F | $I_F = 50$ mA | V | | 2.4 | 3.0 |
| Reverse Current | Red/Amber | I_R | $V_R = 5$ V | μA | | | 10 |
| Dominant Wavelength | Red | λ_D | $I_F = 3 \times 50$ mA | nm | 618 | 624 | 630 |
| | Amber | λ_D | $I_F = 3 \times 50$ mA | nm | 584 | 591 | 596 |
| Luminous Intensity | Red | I_v | $I_F = 3 \times 50$ mA | mcd | 3550 | 4800 | |
| | Amber | I_v | $I_F = 3 \times 50$ mA | mcd | 3550 | 5000 | |

Note: Continuous reverse voltage can cause LED damage.

INTENSITY BIN LIMIT ($I_F = 3 \times 50 \text{ mA}$)

Red (CLP6C-RKW)

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| Yb | 3550 | 4500 |
| Z0 | 4500 | 5600 |
| A0 | 5600 | 7100 |

Amber (CLP6C-AKW)

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| Yb | 3550 | 4500 |
| Z0 | 4500 | 5600 |
| A0 | 5600 | 7100 |
| B0 | 7100 | 9000 |

Tolerance of measurement of luminous intensity is $\pm 10\%$.

COLOR BIN LIMIT ($I_F = 3 \times 50 \text{ mA}$)

Red (CLP6C-RKW)

| Bin Code | Min.(nm) | Max.(nm) |
|----------|----------|----------|
| RA | 618 | 630 |

Amber (CLP6C-AKW)

| Bin Code | Min.(nm) | Max.(nm) |
|----------|----------|----------|
| AA | 584 | 596 |

Tolerance of measurement of dominant wavelength is $\pm 1 \text{ nm}$.

ORDER CODE TABLE*

| Color | Kit Number | Luminous Intensity (mcd) | | Dominant Wavelength | | | |
|-------|--------------------|--------------------------|------|---------------------|----------|-----------|----------|
| | | Min. | Max. | Color Bin | Min.(nm) | Color Bin | Max.(nm) |
| Red | CLP6C-RKW-CYbA0AA3 | 3550 | 7100 | RA | 618 | RA | 630 |
| Red | CLP6C-RKW-CZ0A0AA3 | 4500 | 7100 | RA | 618 | RA | 630 |

| Color | Kit Number | Luminous Intensity (mcd) | | Dominant Wavelength | | | |
|-------|--------------------|--------------------------|------|---------------------|----------|-----------|----------|
| | | Min. | Max. | Color Bin | Min.(nm) | Color Bin | Max.(nm) |
| Amber | CLP6C-AKW-CYbB0AA3 | 3550 | 9000 | AA | 584 | AA | 596 |
| Amber | CLP6C-AKW-CZ0B0AA3 | 4500 | 9000 | AA | 584 | AA | 596 |

Notes:

1. The above kit numbers represent order codes that include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each bulk. Single intensity-bin code and single color-bin codes will not be orderable.
2. Please refer to the "Cree LED Lamp Reliability Test Standards" document ^{#1} for reliability test conditions.
3. Please refer to the "Cree LED Lamp Soldering & Handling" document ^{#2} for information about how to use this LED product safely.

#1: Refer to http://www.cree.com/led-components/media/documents/LED_Lamp_Reliability_Test_Standard.pdf

#2: Refer to <http://www.cree.com/led-components/media/documents/sh-HB.pdf>

GRAPHS

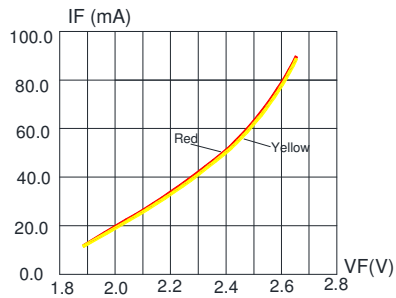


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

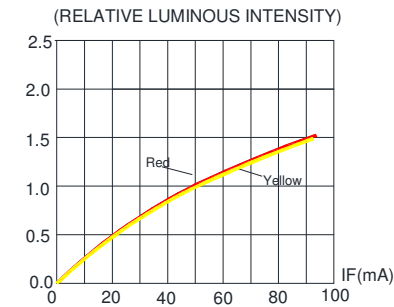


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

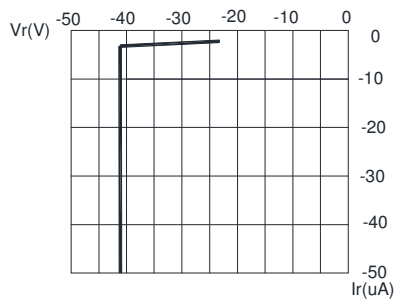


FIG.3 RED & YELLOW REVERSE CURRENT VS. REVERSE VOLTAGE.

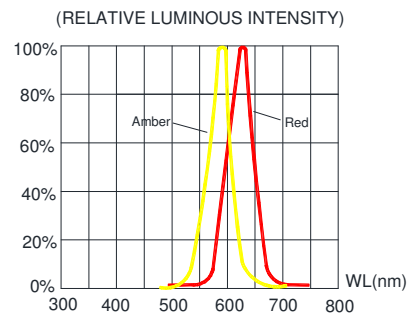


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

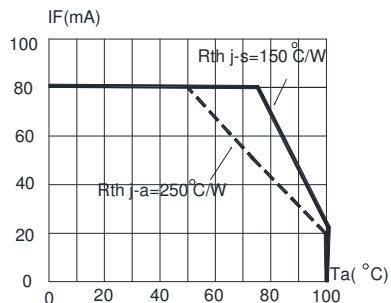


FIG.5 RED & YELLOW MAXIMUM FORWARD DCCURRENT VS AMBIENT TEMPERATURE ($T_{jmax}=110^{\circ}\text{C}$)

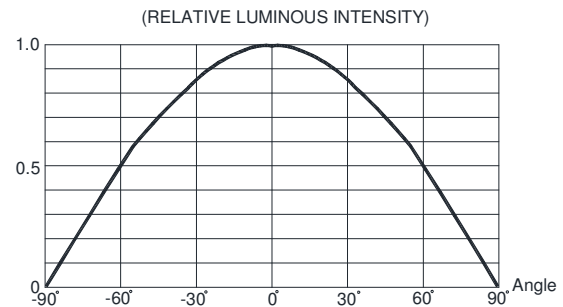
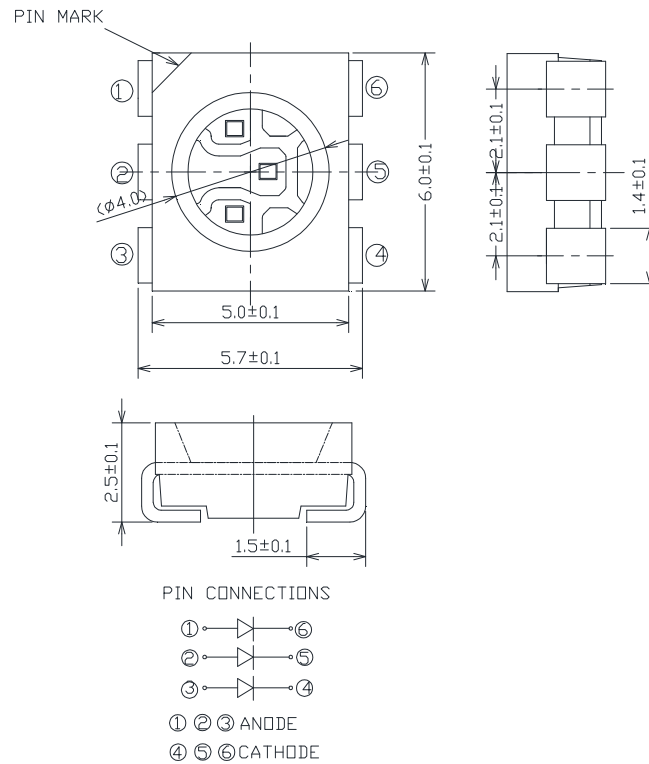


FIG.6 FAR FIELD PATTERN

The above data 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.



NOTES

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise 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 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

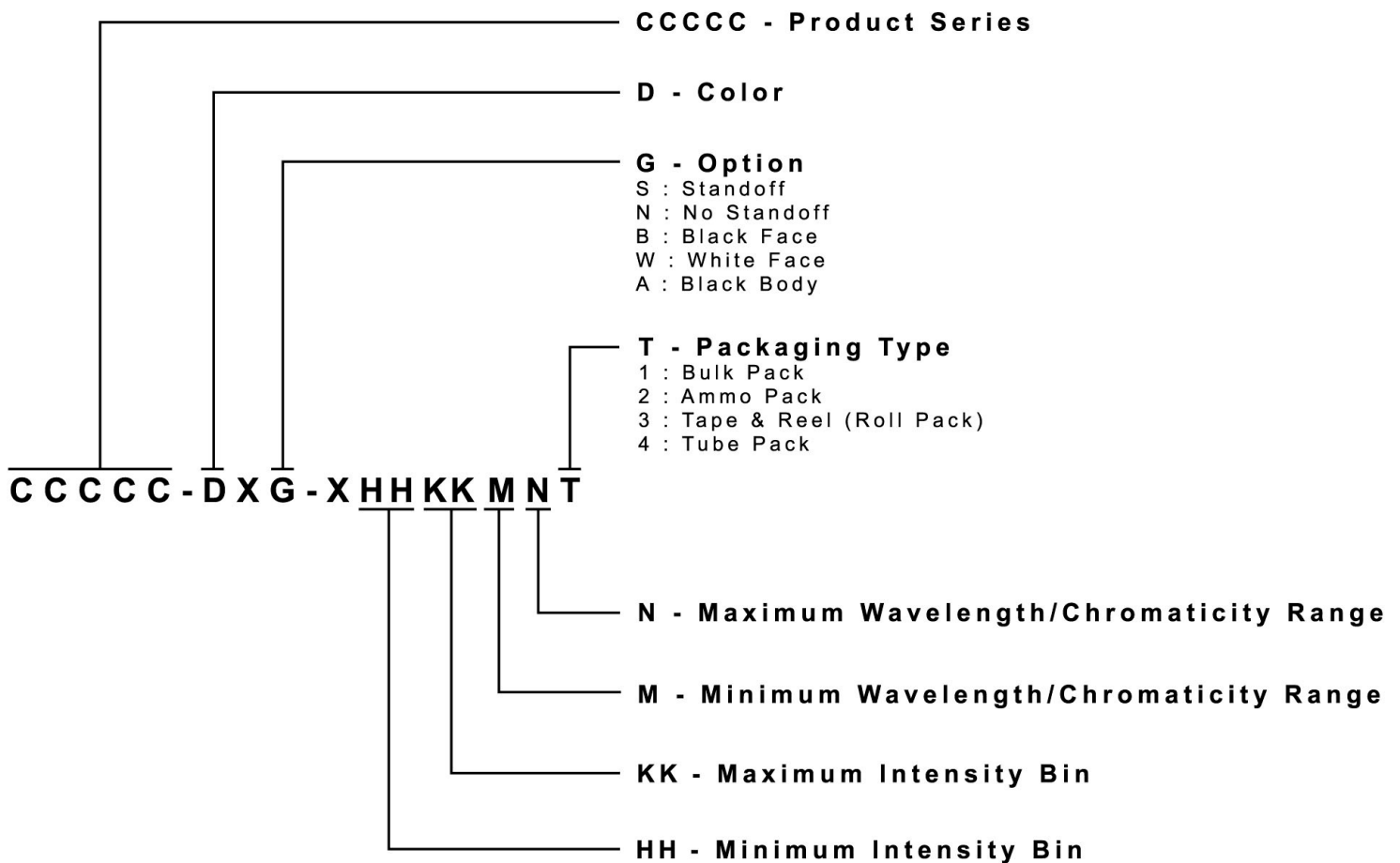
Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

KIT NUMBER SYSTEM

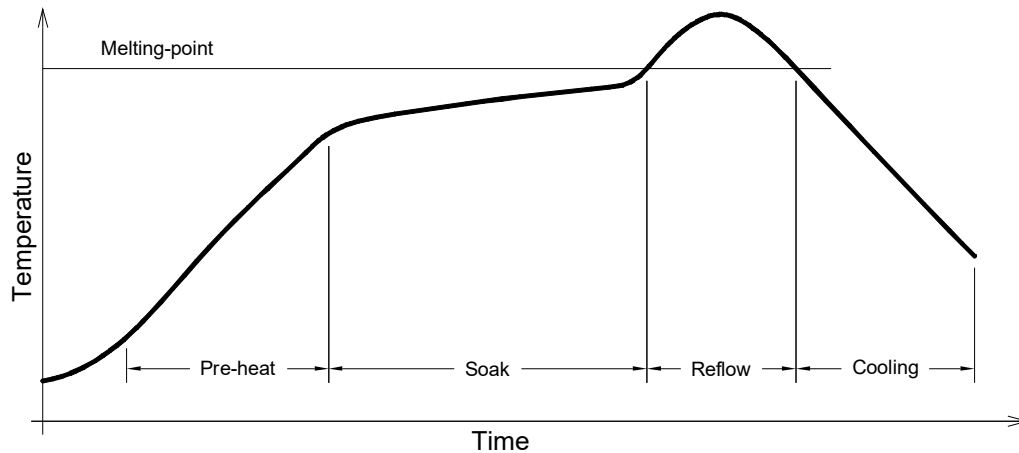
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

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



REFLOW SOLDERING

- The CLP6C-RKW AKW is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.



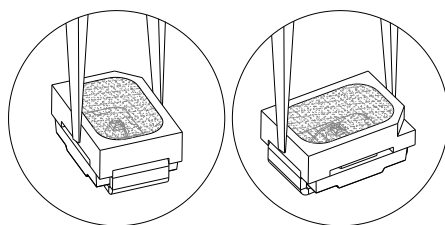
Use only with CLP6C-RKW AKW

| Solder |
|--|
| Average ramp-up rate = 4°C/s max |
| Preheat temperature = 150°C ~200°C |
| Preheat time = 120s max |
| Ramp-down rate = 6°C/s max |
| Peak temperature = 235°C max |
| Time within 5°C of actual Peak Temperature = 10s max |
| Duration above 217°C is 45s max |

Refer to "<http://www.cree.com/led-components/media/documents/sh-HB.pdf>" for soldering & handling details.

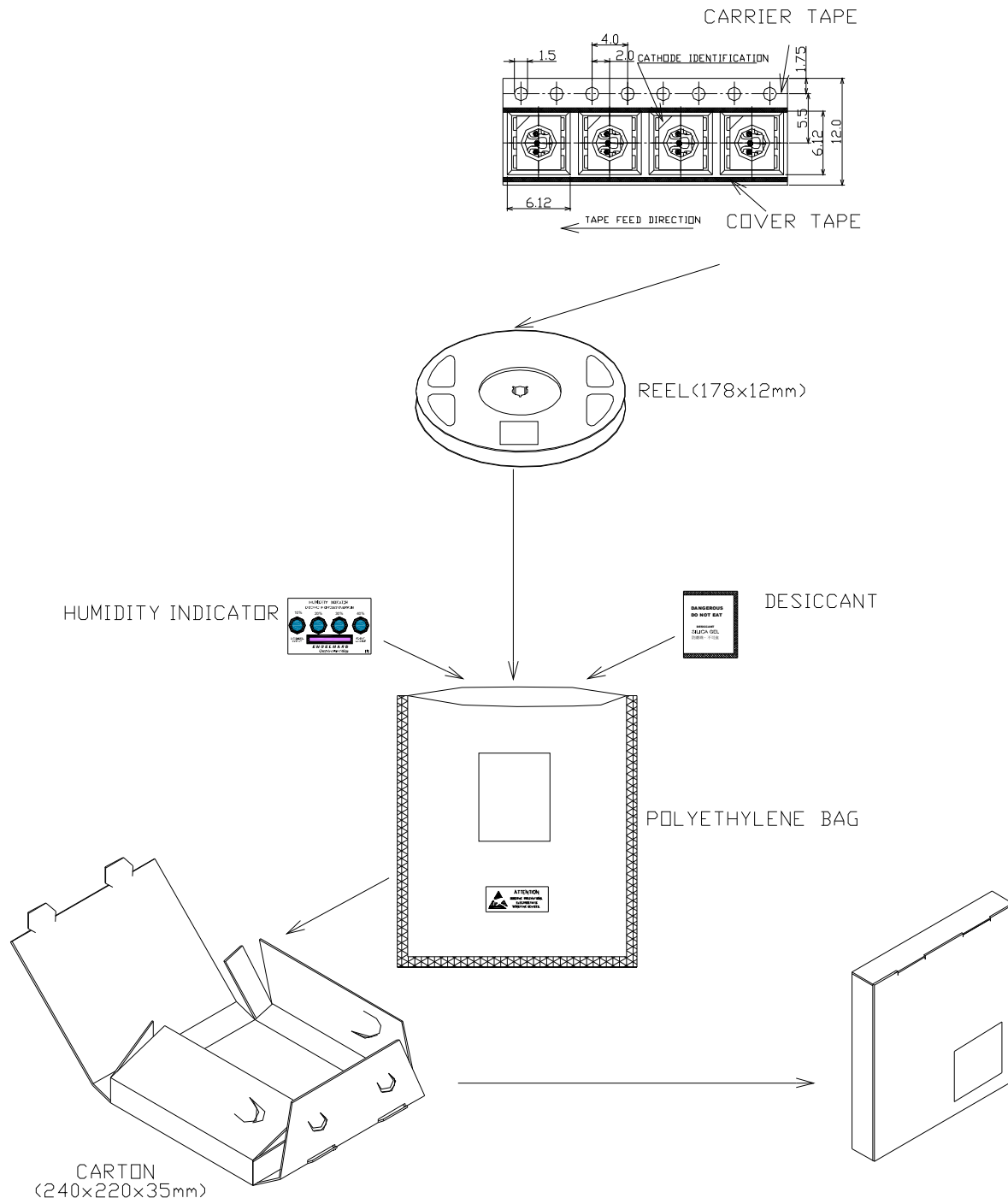
NOTES

- 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 900 pcs per reel.



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Cree, Inc.:

[CLP6C-AKW-CZ0B0AA3](#) [CLP6C-RKW-CZ0A0AA3](#) [CLP6C-AKW-CYbB0AA3](#) [CLP6C-RKW-CYbA0AA3](#)