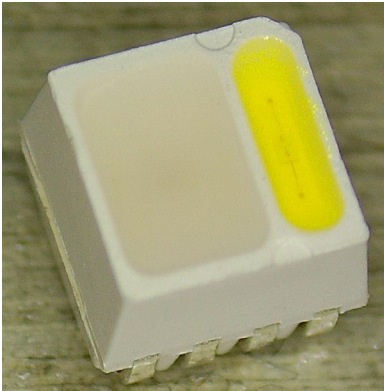


CLW6A-MKW: PLCC8 4 in 1 SMD LED



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)
 - PC Lime (Bin PL3/PL4)
- Luminous Flux (lm)
 - Red (2.2 - 4.8)
 - Green (4.8 - 10.7)
 - Blue (1.0 - 2.2)
 - PC Mint (4.8 - 10.7)
 - PC Lime (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 PC Lime | |
| Forward Current ^{Note 1} | I_F | 30 | 30 | 30 | 30 | mA |
| Peak Forward Current ^{Note 2} | 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 | $^\circ\text{C/W}$ |
| Junction/solder point | R_{THJS} | 232 | 230 | 230 | 330 | $^\circ\text{C/W}$ |
| Electrostatic Discharge Classification(MIL-STD-883K) | ESD | Class 1B | | | | |

Note:

1. Single-color light
2. Pulse width ≤ 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 PC Lime | |
| Dominant Wavelength | $I_F = 20\text{ mA(R)}$ $I_F = 20\text{ mA(G)}$ $I_F = 20\text{ mA(B)}$ $I_F = 20\text{ mA(PC mint)}$ $I_F = 20\text{ mA(PC Lime)}$ | λ_{DOM} | 619~624 | 520~535 | 460~475 | NA | nm |
| Spectral bandwidth at 50% I_{REL} max | $I_F = 20\text{ mA(R)}$ $I_F = 20\text{ mA(G)}$ $I_F = 20\text{ mA(B)}$ $I_F = 20\text{ mA(PC mint)}$ $I_F = 20\text{ mA(PC Lime)}$ | $\Delta\lambda$ | 24 | 38 | 28 | NA | nm |
| Forward Voltage | $I_F = 20\text{ mA(R)}$ $I_F = 20\text{ mA(G)}$ $I_F = 20\text{ mA(B)}$ $I_F = 20\text{ mA(PC mint)}$ $I_F = 20\text{ mA(PC Lime)}$ | $V_{F(avg)}$ | 2.1 | 3.0 | 3.1 | 2.9 | V |
| | | $V_{F(max)}$ | 2.5 | 3.5 | 3.5 | 3.5 | V |
| Luminous Flux | $I_F = 20\text{ mA(R)}$ $I_F = 20\text{ mA(G)}$ $I_F = 20\text{ mA(B)}$ $I_F = 20\text{ mA(PC mint)}$ $I_F = 20\text{ mA(PC Lime)}$ | $\Phi_{V(min)}$ | 2.2 | 4.8 | 1.0 | 4.8 | lm |
| | | $\Phi_{V(avg)}$ | 3.4 | 6.8 | 1.5 | 7.0 | lm |
| Luminous Intensity(Reference) | $I_F = 20\text{ mA(R)}$ $I_F = 20\text{ mA(G)}$ $I_F = 20\text{ mA(B)}$ $I_F = 20\text{ mA(PC mint)}$ $I_F = 20\text{ mA(PC Lime)}$ | $I_{V(avg)}$ | 1110 | 2575 | 510 | 2500 | md |
| Reverse Current (max) | $V_R = 5\text{ V}$ | I_R | 100 | 100 | 100 | 100 | μA |

* Continuous reverse voltage can cause LED damage.

FLUX BIN LIMIT

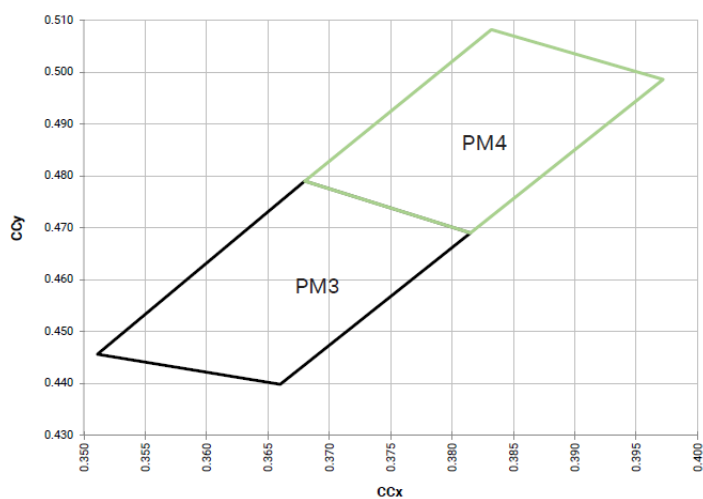
| Red (20 mA) | | | Green (20 mA) | | | Blue (20 mA) | | | PC Mint (20 mA) PC Lime (20 mA) | | |
|-------------|----------|----------|---------------|----------|----------|--------------|----------|----------|------------------------------------|----------|----------|
| Bin Code | Min.(lm) | Max.(lm) | 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 $\pm 10\%$.

COLOR BIN LIMIT

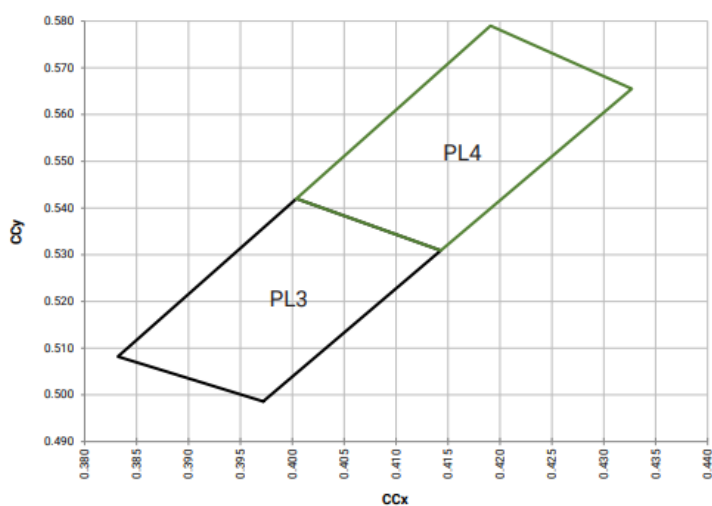
| Red (20 mA) | | | Green (20 mA) | | | Blue (20 mA) | | |
|-------------|----------|----------|---------------|----------|----------|--------------|----------|----------|
| Bin Code | Min.(nm) | Max.(nm) | Bin Code | Min.(nm) | Max.(nm) | Bin Code | Min.(nm) | Max.(nm) |
| RB | 619 | 624 | G7 | 520 | 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 |

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 |

PC Lime



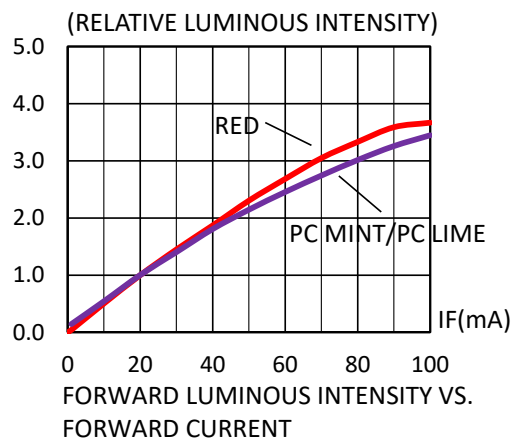
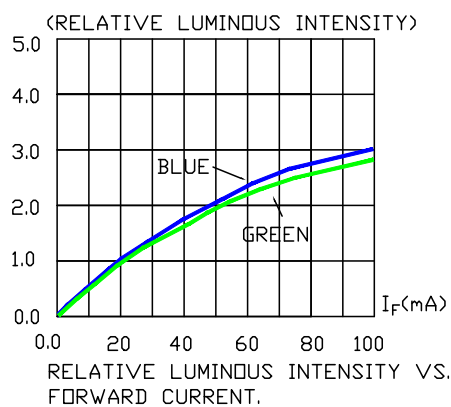
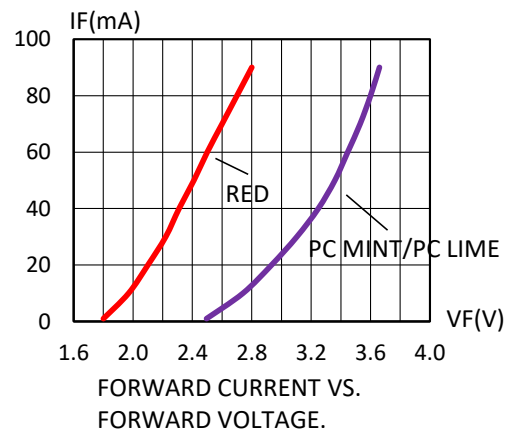
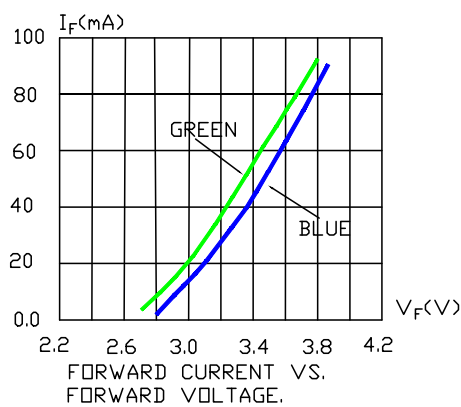
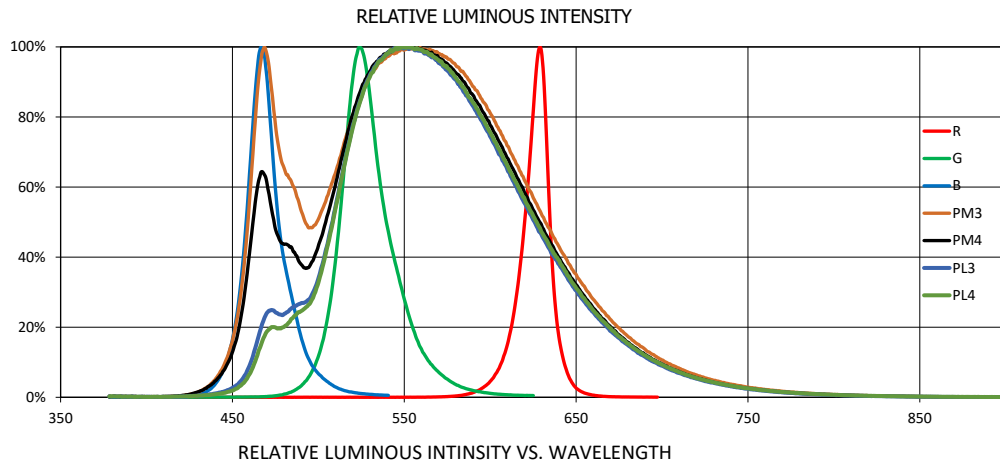
| Chromaticity Bin | x | y |
|------------------|--------|--------|
| PL3 | 0.3972 | 0.4986 |
| | 0.3832 | 0.5082 |
| | 0.4004 | 0.5420 |
| | 0.4143 | 0.5309 |
| PL4 | 0.4004 | 0.5420 |
| | 0.4143 | 0.5309 |
| | 0.4327 | 0.5655 |
| | 0.4191 | 0.5790 |

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 | | | | |
| CLW6A-MKW-C90C060C0BB7C3CPL3 | 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 Lime | Any 1 Intensity bin from C0(4.8) - E0(10.7) | | PL3, PL4 | | | | |

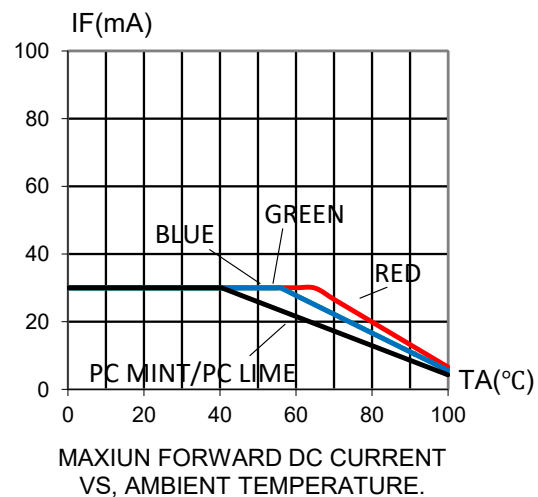
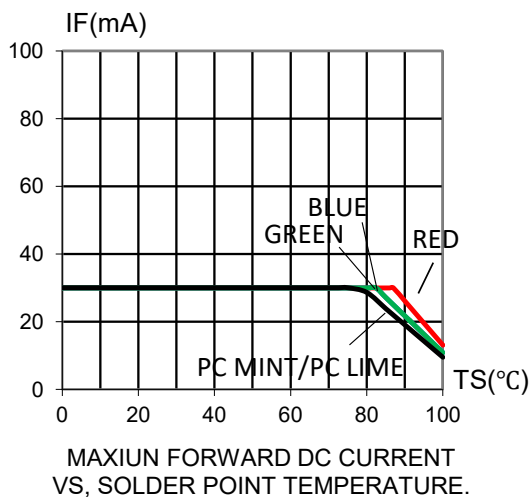
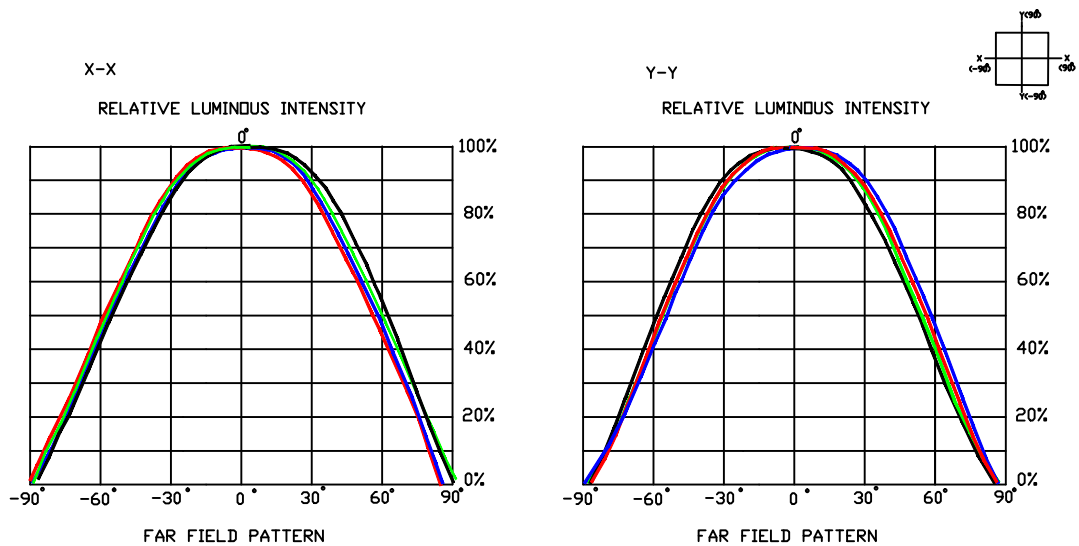
GRAPHS

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

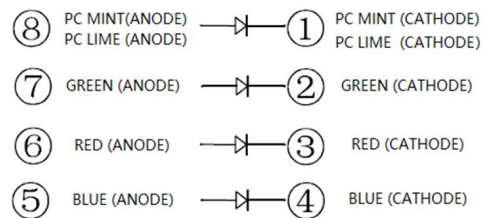
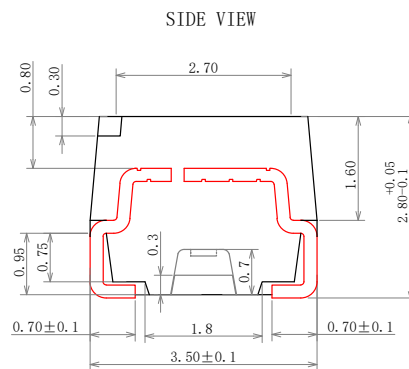
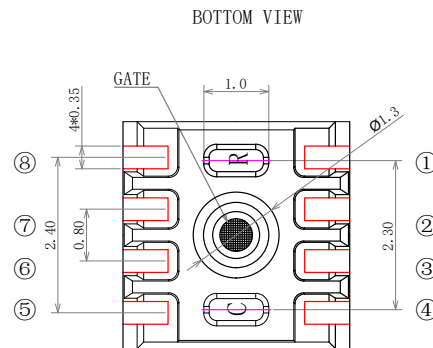
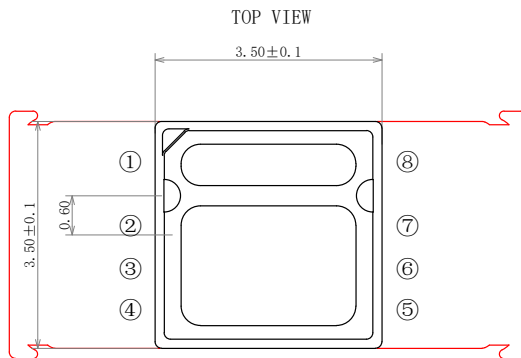
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



MECHANICAL DIMENSIONS

All dimensions are in mm.

Tolerance of measurement of the dimension is ± 0.1 .



NOTES

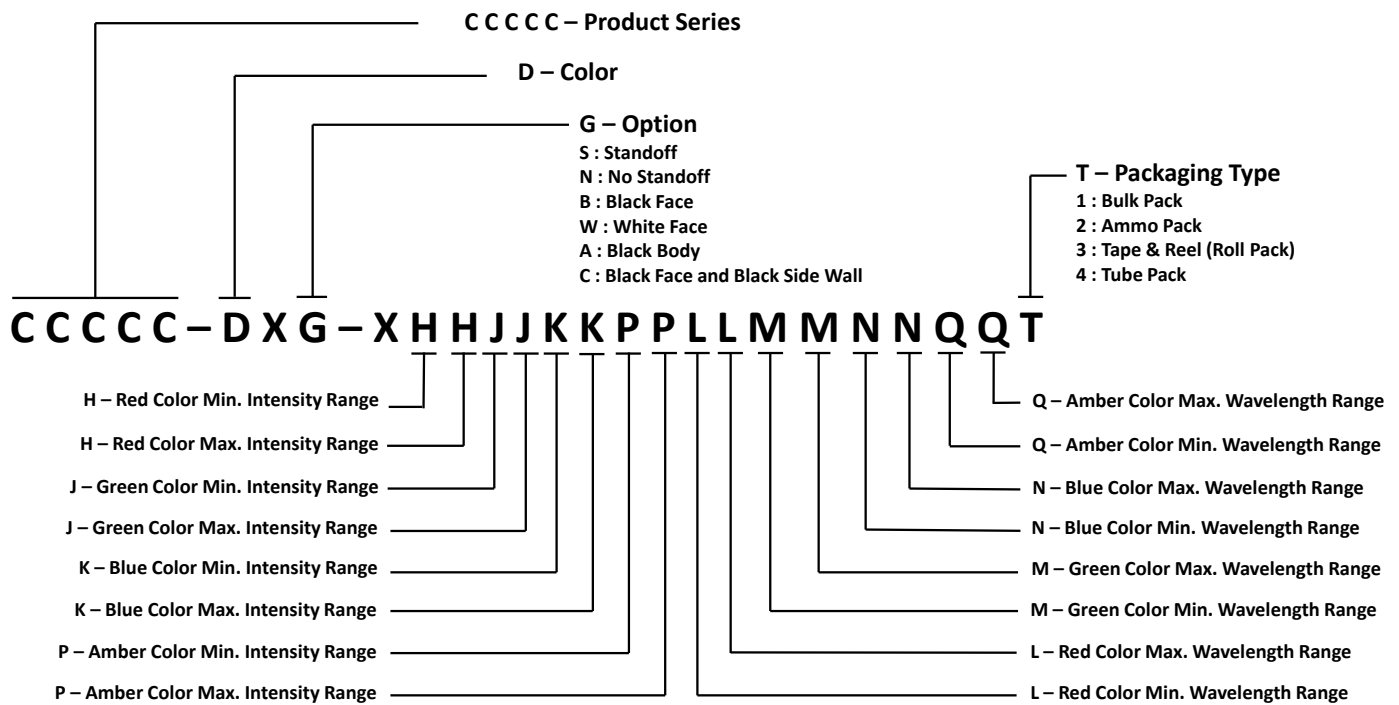
RoHS Compliance

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

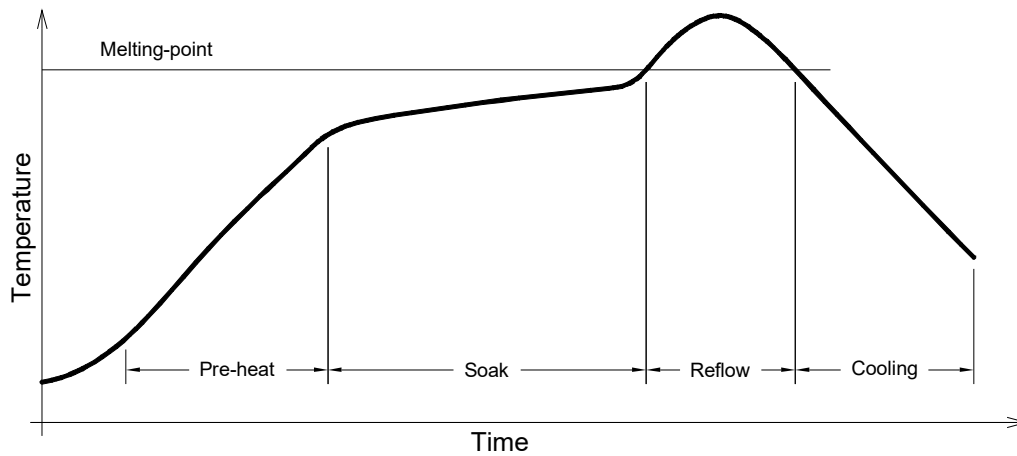
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness.

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.

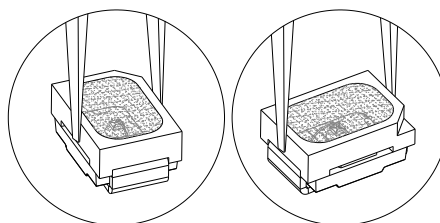


Use only with CLW6A-MKW

| 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.

