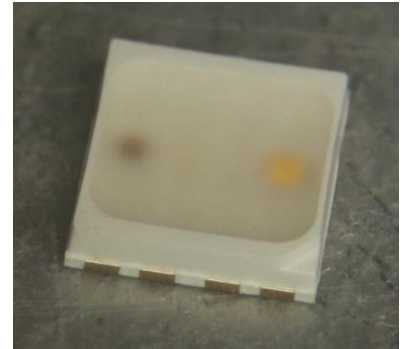


Cree® PLCC8 4 in 1 SMD LED CLQ6A-TKW



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): 5.0 x 5.2 x 1.1
- Dominant Wavelength/CCT
Red (619 - 624nm)
Green (520 - 535nm)
Blue (460 - 475nm)
White (2500-6500k)
- Luminous Intensity (mcd)
Red (3000-5860)
Green (7030-14400)
Blue (1824-4180)
White (5860-12000)
- Moisture Sensitivity Level: 5a
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Architecture Lighting
- Decorative Lighting
- Amusement

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| Items | Symbol | Absolute Maximum Rating | | | | Unit |
|--|-------------------|-------------------------|-----|-----|-----|------|
| | | R | G | B | W | |
| Forward Current ^{Note 1} | I _F | 200 | 180 | 180 | 200 | mA |
| Peak Forward Current ^{Note 2} | I _{FP} | 500 | 400 | 400 | 500 | mA |
| Reverse Voltage | V _R | 5 | 5 | 5 | 5 | V |
| Power Dissipation | P _D | 520 | 684 | 684 | 720 | mW |
| Operation Temperature | T _{opr} | -40 ~ +85 | | | | °C |
| Storage Temperature | T _{stg} | -40 ~ +100 | | | | °C |
| Junction Temperature | T _J | 110 | 110 | 110 | 110 | °C |
| Junction/ambient 1 chip on | R _{THJA} | 60 | 110 | 70 | 80 | °C/W |
| Junction/solder point 1 chip on | R _{THJS} | 20 | 70 | 40 | 40 | °C/W |
| Electrostatic Discharge Classification(MIL-STD-883E) | ESD | 1000 V | | | | |

Note: 1.Single-color light.
2.Pulse width ≤0.1 msec, duty ≤1/10.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T_A = 25°C)

| Characteristics | Condition | Symbol | Values | | | | Unit |
|--|--|---------------------|---------|---------|---------|------|------|
| | | | R | G | B | W | |
| Dominant Wavelength | I _F = 100 mA(R) I _F = 100 mA(G) I _F = 100 mA(B) I _F = 100 mA(W) | λ _{DOM} | 619~624 | 520~535 | 460~475 | NA | nm |
| Spectral bandwidth at 50% I _{REL} max | I _F = 100 mA(R) I _F = 100 mA(G) I _F = 100 mA(B) I _F = 100 mA(W) | Δλ | 24 | 38 | 28 | NA | nm |
| Forward Voltage | I _F = 100 mA(R) I _F = 100 mA(G) I _F = 100 mA(B) I _F = 100 mA(W) | V _{F(avg)} | 2.1 | 3.0 | 3.1 | 2.9 | V |
| | | V _{F(max)} | 2.6 | 3.8 | 3.8 | 3.6 | V |
| Luminous Intensity | I _F = 100 mA(R) I _F = 100 mA(G) I _F = 100 mA(B) I _F = 100 mA(W) | I _{V(min)} | 3000 | 7030 | 1824 | 5860 | mcd |
| | | I _{V(avg)} | 4500 | 10400 | 3000 | 8200 | mcd |
| Luminous Flux(Reference) | I _F = 100 mA(R) I _F = 100 mA(G) I _F = 100 mA(B) I _F = 100 mA(W) | Φ _{V(avg)} | 14 | 30 | 8.2 | 25 | lm |
| Reverse Current (max) | V _R = 5 V | I _R | 10 | 10 | 10 | 10 | μA |

INTENSITY BIN LIMIT (RED $I_F = 100\text{mA}$, GREEN $I_F = 100\text{mA}$, BLUE $I_F = 100\text{mA}$, WHITE $I_F = 100\text{mA}$)

Red

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| 1L | 3000 | 4180 |
| 1M | 3590 | 5020 |
| 1N | 4180 | 5860 |

Green

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| 1R | 7030 | 10100 |
| 1S | 8200 | 12000 |
| 1T | 10100 | 14400 |

Blue

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| 1H | 1824 | 2560 |
| 1J | 2130 | 3000 |
| 1K | 2560 | 3590 |
| 1L | 3000 | 4180 |

White

| Bin Code | Min.(mcd) | Max.(mcd) |
|----------|-----------|-----------|
| 1Q | 5860 | 8200 |
| 1R | 7030 | 10100 |
| 1S | 8200 | 12000 |

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

COLOR BIN LIMIT (RED $I_F = 100\text{mA}$, GREEN $I_F = 100\text{mA}$, BLUE $I_F = 100\text{mA}$, WHITE $I_F = 100\text{mA}$)

Red

| Bin Code | Min.(nm) | Max.(nm) |
|----------|----------|----------|
| RB | 619 | 624 |

Green

| Bin Code | Min.(nm) | Max.(nm) |
|----------|----------|----------|
| G7 | 520 | 525 |
| G23 | 522.5 | 527.5 |
| G8 | 525 | 530 |
| G45 | 527.5 | 532.5 |
| G9 | 530 | 535 |

Blue

| Bin Code | Min.(nm) | Max.(nm) |
|----------|----------|----------|
| B3 | 460 | 465 |
| B23 | 462.5 | 467.5 |
| B4 | 465 | 470 |
| B45 | 467.5 | 472.5 |
| B5 | 470 | 475 |

Tolerance of measurement of dominant wavelength is ± 1 nm.

White

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XA | A11 | 0.3146 | 0.3172 |
| | | 0.3201 | 0.3222 |
| | | 0.3211 | 0.3106 |
| | | 0.3161 | 0.3059 |
| | A12 | 0.3130 | 0.3284 |
| | | 0.3190 | 0.3339 |
| | | 0.3201 | 0.3222 |
| | | 0.3146 | 0.3172 |
| | A13 | 0.3190 | 0.3339 |
| | | 0.3251 | 0.3394 |
| | | 0.3256 | 0.3273 |
| | | 0.3201 | 0.3222 |
| | A14 | 0.3201 | 0.3222 |
| | | 0.3256 | 0.3273 |
| | | 0.3261 | 0.3152 |
| | | 0.3211 | 0.3106 |
| | A21 | 0.3115 | 0.3397 |
| | | 0.3180 | 0.3456 |
| | | 0.3190 | 0.3339 |
| | | 0.3130 | 0.3284 |
| | A22 | 0.3099 | 0.3509 |
| | | 0.3170 | 0.3572 |
| | | 0.3180 | 0.3456 |
| | | 0.3115 | 0.3397 |
| A23 | 0.3170 | 0.3572 | |
| | 0.3240 | 0.3636 | |
| | 0.3245 | 0.3515 | |
| | 0.3180 | 0.3456 | |
| A24 | 0.3180 | 0.3456 | |
| | 0.3245 | 0.3515 | |
| | 0.3251 | 0.3394 | |
| | 0.3190 | 0.3339 | |

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XA | A31 | 0.3245 | 0.3515 |
| | | 0.3311 | 0.3574 |
| | | 0.3311 | 0.3449 |
| | | 0.3251 | 0.3394 |
| | A32 | 0.3240 | 0.3636 |
| | | 0.3311 | 0.3699 |
| | | 0.3311 | 0.3574 |
| | | 0.3245 | 0.3515 |
| | A33 | 0.3311 | 0.3699 |
| | | 0.3381 | 0.3762 |
| | | 0.3376 | 0.3633 |
| | | 0.3311 | 0.3574 |
| | A34 | 0.3311 | 0.3574 |
| | | 0.3376 | 0.3633 |
| | | 0.3371 | 0.3504 |
| | | 0.3311 | 0.3449 |
| | A41 | 0.3256 | 0.3273 |
| | | 0.3311 | 0.3324 |
| | | 0.3311 | 0.3199 |
| | | 0.3261 | 0.3152 |
| | A42 | 0.3251 | 0.3394 |
| | | 0.3311 | 0.3449 |
| | | 0.3311 | 0.3324 |
| | | 0.3256 | 0.3273 |
| A43 | 0.3311 | 0.3449 | |
| | 0.3371 | 0.3504 | |
| | 0.3366 | 0.3374 | |
| | 0.3311 | 0.3324 | |
| A44 | 0.3311 | 0.3324 | |
| | 0.3366 | 0.3374 | |
| | 0.3361 | 0.3245 | |
| | 0.3311 | 0.3199 | |

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XB | B11 | 0.3610 | 0.3630 |
| | | 0.3692 | 0.3683 |
| | | 0.3667 | 0.3570 |
| | | 0.3590 | 0.3521 |
| | B12 | 0.3629 | 0.3739 |
| | | 0.3717 | 0.3796 |
| | | 0.3692 | 0.3683 |
| | | 0.3610 | 0.3630 |
| | B13 | 0.3717 | 0.3796 |
| | | 0.3805 | 0.3854 |
| | | 0.3775 | 0.3736 |
| | | 0.3692 | 0.3683 |
| | B14 | 0.3692 | 0.3683 |
| | | 0.3775 | 0.3736 |
| | | 0.3744 | 0.3619 |
| | | 0.3667 | 0.3570 |
| | B21 | 0.3649 | 0.3848 |
| | | 0.3742 | 0.3910 |
| | | 0.3717 | 0.3796 |
| | | 0.3629 | 0.3739 |
| | B22 | 0.3668 | 0.3957 |
| | | 0.3767 | 0.4023 |
| | | 0.3742 | 0.3910 |
| | | 0.3649 | 0.3848 |
| B23 | 0.3767 | 0.4023 | |
| | 0.3866 | 0.4089 | |
| | 0.3836 | 0.3972 | |
| | 0.3742 | 0.3910 | |
| B24 | 0.3742 | 0.3910 | |
| | 0.3836 | 0.3972 | |
| | 0.3805 | 0.3854 | |
| | 0.3717 | 0.3796 | |

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XB | B31 | 0.3836 | 0.3972 |
| | | 0.3929 | 0.4033 |
| | | 0.3893 | 0.3911 |
| | | 0.3805 | 0.3854 |
| | B32 | 0.3866 | 0.4089 |
| | | 0.3965 | 0.4155 |
| | | 0.3929 | 0.4033 |
| | | 0.3836 | 0.3972 |
| | B33 | 0.3965 | 0.4155 |
| | | 0.4065 | 0.4221 |
| | | 0.4023 | 0.4095 |
| | | 0.3929 | 0.4033 |
| | B34 | 0.3929 | 0.4033 |
| | | 0.4023 | 0.4095 |
| | | 0.3981 | 0.3969 |
| | | 0.3893 | 0.3911 |
| | B41 | 0.3775 | 0.3736 |
| | | 0.3857 | 0.3789 |
| | | 0.3821 | 0.3667 |
| | | 0.3744 | 0.3619 |
| | B42 | 0.3805 | 0.3854 |
| | | 0.3893 | 0.3911 |
| | | 0.3857 | 0.3789 |
| | | 0.3775 | 0.3736 |
| B43 | 0.3893 | 0.3911 | |
| | 0.3981 | 0.3969 | |
| | 0.3940 | 0.3842 | |
| | 0.3857 | 0.3789 | |
| B44 | 0.3857 | 0.3789 | |
| | 0.3940 | 0.3842 | |
| | 0.3898 | 0.3716 | |
| | 0.3821 | 0.3667 | |

- Tolerance of measurement of the color coordinates is ± 0.01 .

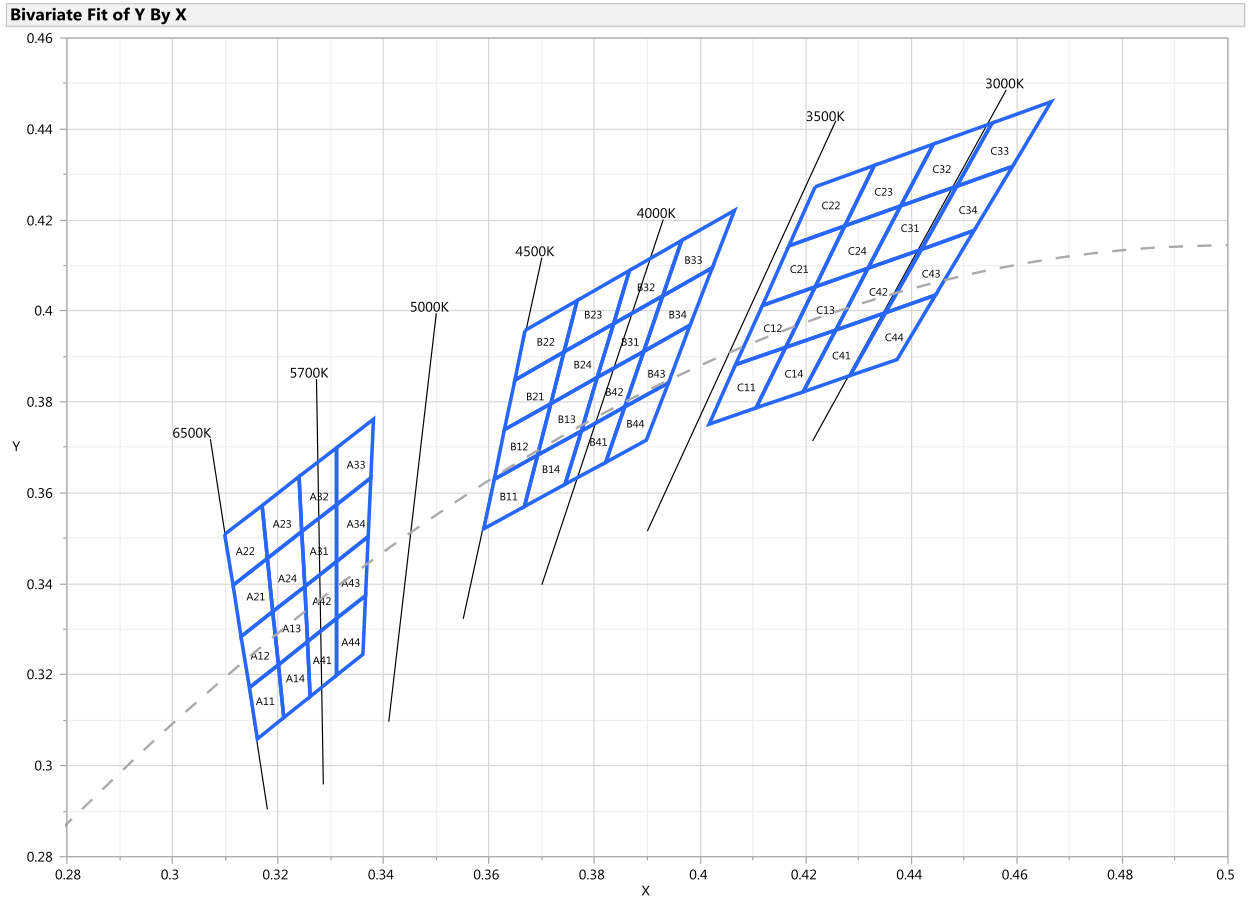
White

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XC | C11 | 0.4067 | 0.3882 |
| | | 0.4162 | 0.3920 |
| | | 0.4106 | 0.3787 |
| | | 0.4017 | 0.3751 |
| | C12 | 0.4118 | 0.4012 |
| | | 0.4218 | 0.4053 |
| | | 0.4162 | 0.3920 |
| | | 0.4067 | 0.3882 |
| | C13 | 0.4218 | 0.4053 |
| | | 0.4318 | 0.4094 |
| | | 0.4257 | 0.3958 |
| | | 0.4162 | 0.3920 |
| | C14 | 0.4162 | 0.3920 |
| | | 0.4257 | 0.3958 |
| | | 0.4195 | 0.3822 |
| | | 0.4106 | 0.3787 |
| | C21 | 0.4168 | 0.4143 |
| | | 0.4274 | 0.4187 |
| | | 0.4218 | 0.4053 |
| | | 0.4118 | 0.4012 |
| | C22 | 0.4218 | 0.4273 |
| | | 0.4330 | 0.4320 |
| | | 0.4274 | 0.4187 |
| | | 0.4168 | 0.4143 |
| C23 | 0.4330 | 0.4320 | |
| | 0.4442 | 0.4367 | |
| | 0.4380 | 0.4231 | |
| | 0.4274 | 0.4187 | |
| C24 | 0.4274 | 0.4187 | |
| | 0.4380 | 0.4231 | |
| | 0.4318 | 0.4094 | |
| | 0.4218 | 0.4053 | |

| Bin Code | Sub-bins | x | y |
|----------|----------|--------|--------|
| XC | C31 | 0.4380 | 0.4231 |
| | | 0.4486 | 0.4274 |
| | | 0.4419 | 0.4135 |
| | | 0.4318 | 0.4094 |
| | C32 | 0.4442 | 0.4367 |
| | | 0.4553 | 0.4413 |
| | | 0.4486 | 0.4274 |
| | | 0.4380 | 0.4231 |
| | C33 | 0.4553 | 0.4413 |
| | | 0.4665 | 0.4460 |
| | | 0.4592 | 0.4318 |
| | | 0.4486 | 0.4274 |
| | C34 | 0.4486 | 0.4274 |
| | | 0.4592 | 0.4318 |
| | | 0.4519 | 0.4177 |
| | | 0.4419 | 0.4135 |
| | C41 | 0.4257 | 0.3958 |
| | | 0.4351 | 0.3996 |
| | | 0.4284 | 0.3858 |
| | | 0.4195 | 0.3822 |
| | C42 | 0.4318 | 0.4094 |
| | | 0.4419 | 0.4135 |
| | | 0.4351 | 0.3996 |
| | | 0.4257 | 0.3958 |
| C43 | 0.4419 | 0.4135 | |
| | 0.4519 | 0.4177 | |
| | 0.4446 | 0.4035 | |
| | 0.4351 | 0.3996 | |
| C44 | 0.4351 | 0.3996 | |
| | 0.4446 | 0.4035 | |
| | 0.4373 | 0.3893 | |
| | 0.4284 | 0.3858 | |

- Tolerance of measurement of the color coordinates is ± 0.01 .

CIE CHROMATICITY DIAGRAM



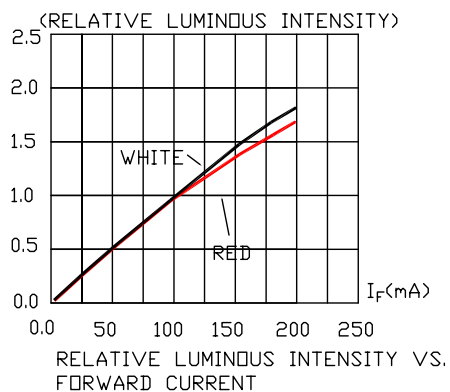
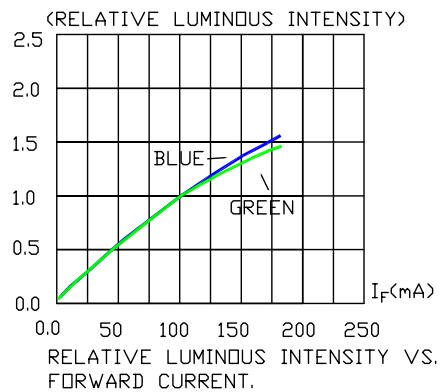
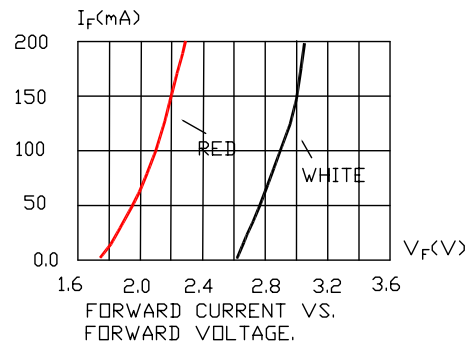
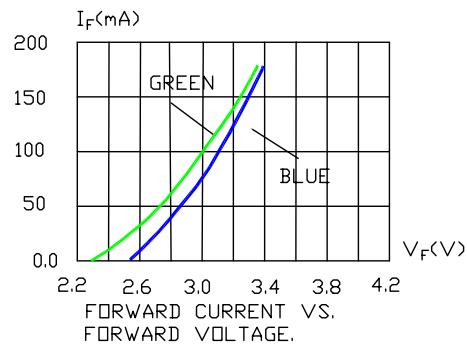
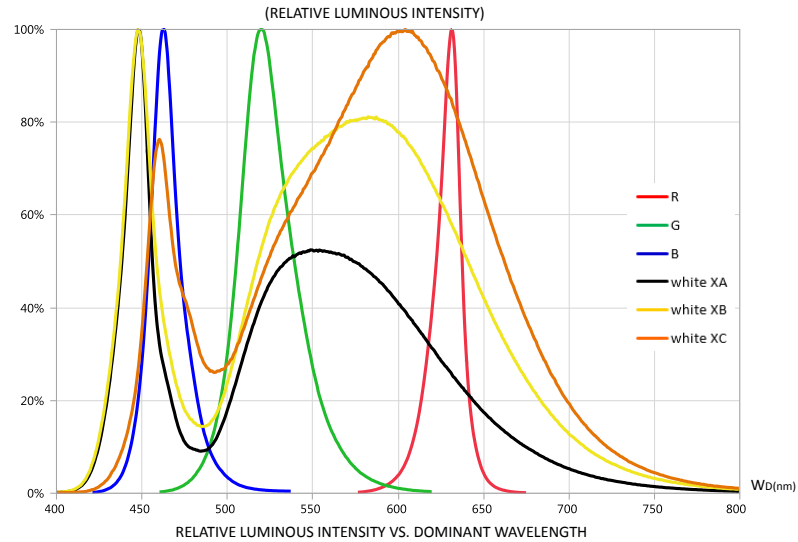
ORDER CODE TABLE*

| Kit Number | Color | Luminous Intensity (mcd) | | Dominant Wavelength (nm) | | | | Pack- age |
|------------------------------|-------|---|------|--------------------------------------|-----------|-----------|-----------|--------------|
| | | Min. | Max. | Color Bin | Min. (nm) | Color Bin | Max. (nm) | |
| CLQ6A-TKW-C1L1R1H1QBB7935AA3 | Red | Any 1 Intensity bin from 1L(3000) - 1N(5860) | | RB | 619 | RB | 624 | Reel |
| | Green | Any 1 Intensity bin from 1R(7030) - 1T(14400) | | Any 1 hue bin from G7(520) - G9(535) | | | | Reel |
| | Blue | Any 1 Intensity bin from 1H(1824) - 1L(4180) | | Any 1 hue bin from B3(460) - B5(475) | | | | Reel |
| | White | Any 1 Intensity bin from 1Q(5860) - 1S(12000) | | XA | | | | Reel |
| CLQ6A-TKW-C1L1R1H1QBB7935BB3 | Red | Any 1 Intensity bin from 1L(3000) - 1N(5860) | | RB | 619 | RB | 624 | Reel |
| | Green | Any 1 Intensity bin from 1R(7030) - 1T(14400) | | Any 1 hue bin from G7(520) - G9(535) | | | | Reel |
| | Blue | Any 1 Intensity bin from 1H(1824) - 1L(4180) | | Any 1 hue bin from B3(460) - B5(475) | | | | Reel |
| | White | Any 1 Intensity bin from 1Q(5860) - 1S(12000) | | XB | | | | Reel |
| CLQ6A-TKW-C1L1R1H1QBB7935CC3 | Red | Any 1 Intensity bin from 1L(3000) - 1N(5860) | | RB | 619 | RB | 624 | Reel |
| | Green | Any 1 Intensity bin from 1R(7030) - 1T(14400) | | Any 1 hue bin from G7(520) - G9(535) | | | | Reel |
| | Blue | Any 1 Intensity bin from 1H(1824) - 1L(4180) | | Any 1 hue bin from B3(460) - B5(475) | | | | Reel |
| | White | Any 1 Intensity bin from 1Q(5860) - 1S(12000) | | XC | | | | Reel |

Notes:

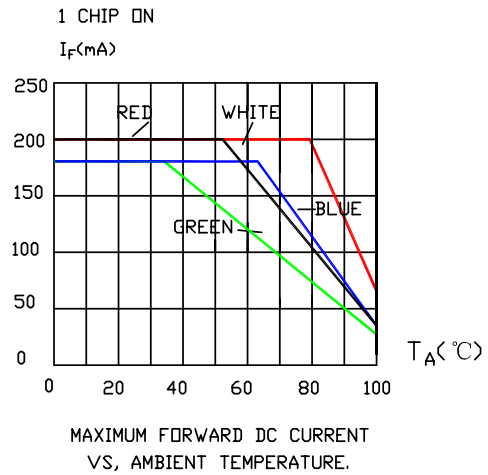
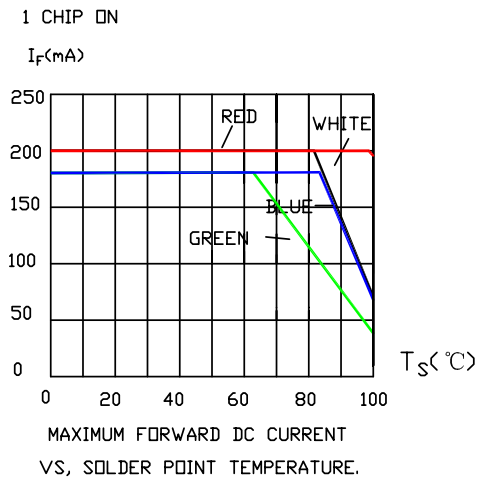
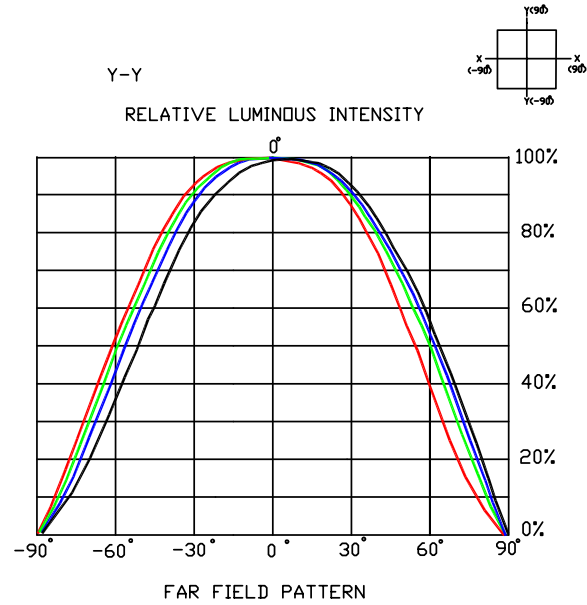
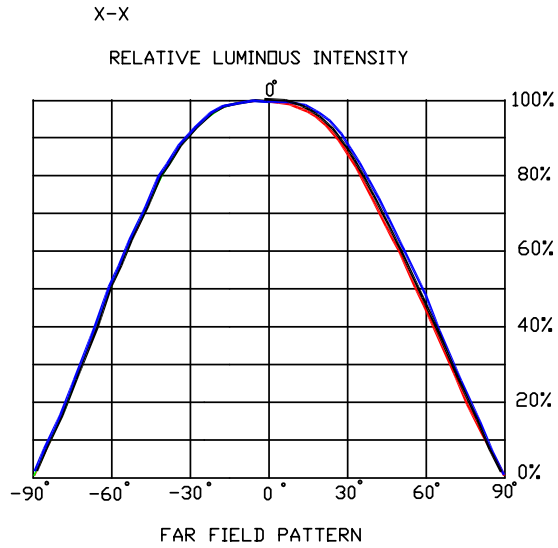
1. The above kit numbers represent the order codes which include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each reel. Single intensity-bin code and single color-bin code will be orderable in certain quantities. For example, any 1 intensity bin from 1R - 1T means only 1 intensity bin(1R or 1S or 1T) will be shipped by Cree. For example, any 1 color bin from G7 - G9 means only 1 color bin (G7 or G23 or G8 or G45 or G9) will be shipped by Cree.
2. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
3. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

GRAPHS



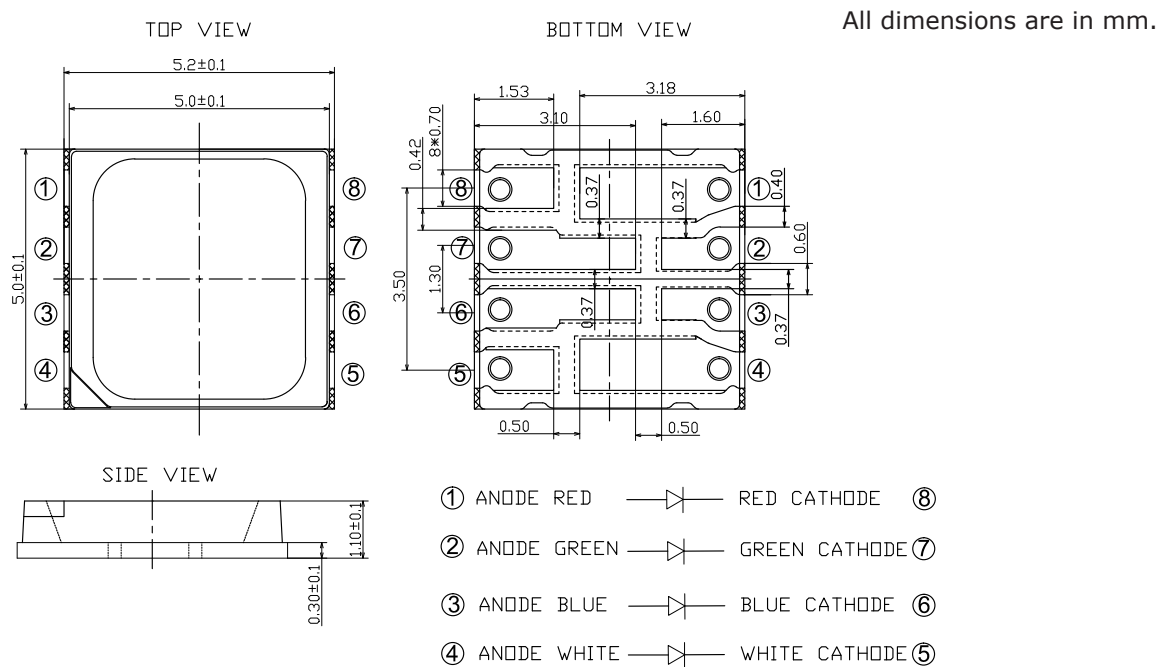
The above data are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

GRAPHS

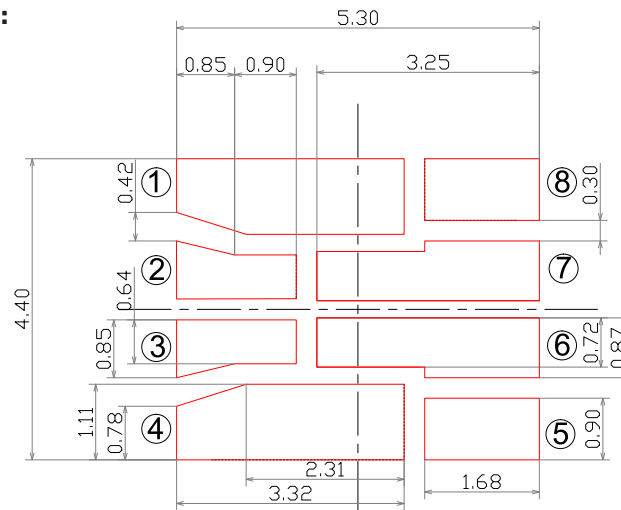


The above data are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

MECHANICAL DIMENSIONS



Solder Pad recommend:



- Tolerance of measurement of the dimension is ± 0.1 .

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.

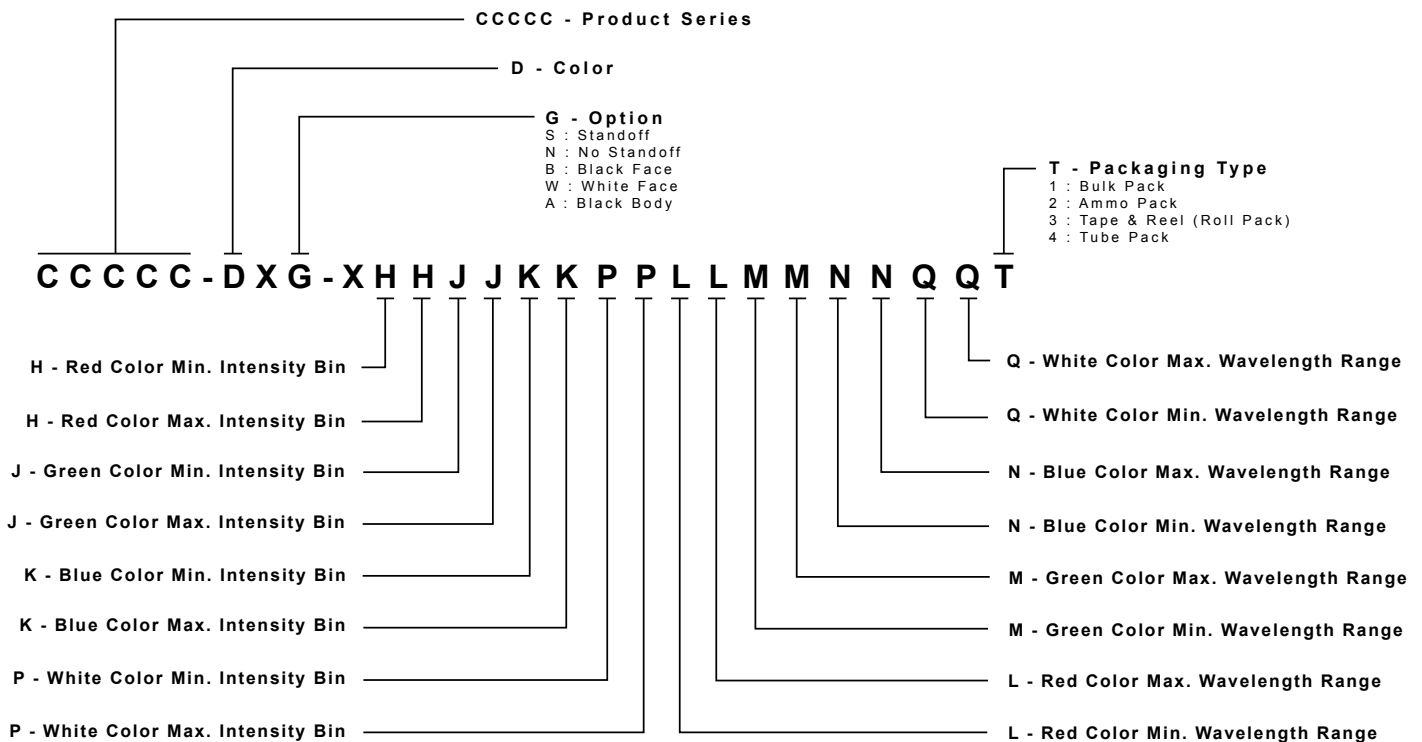
Vision Advisory Claim

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

KIT NUMBER SYSTEM

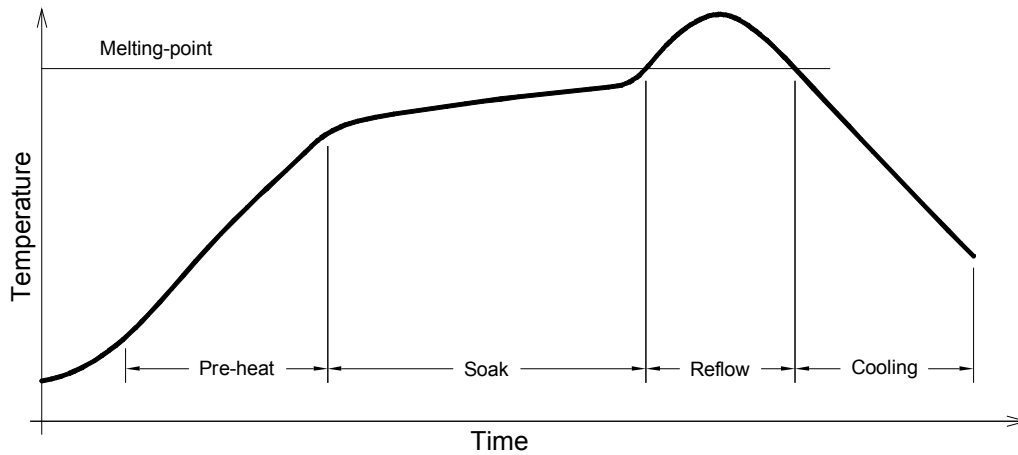
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping 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 CLQ6A-TKW 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 CLQ6A-TKW

| 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 = 250°C max |
| Time within 5°C of actual Peak Temperature = 10s max |
| Duration above 217°C is 60s max |

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 4000 pcs per reel.

