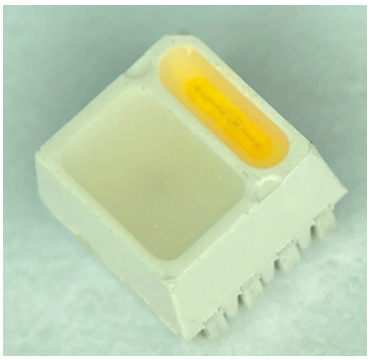
CLW6A-TKW: PLCC8 4 in 1 SMD LED



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)
  White (2700K/3000K/4000K/5000K/5700K)
- Luminous Flux (lm)
  Red (2.2 - 4.8)
  Green (4.8 - 10.7)
  Blue (1.3 - 2.2)
  White (3.7 - 8.2)
- Moisture Sensitivity Level: 5a
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Architecture Lighting
- Decorative Lighting
- Amusement

Cree LED / 4400 Silicon Drive / Durham, NC 27703 USA / +1.919.313.5330 / www.cree-led.com

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Items	Symbol	Absolute Maximum Rating				Unit
		R	G	B	W	
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	100	120	120	120	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	R_{THJA}	456	450	450	580	°C/W
Junction/solder point	R_{THJS}	232	230	230	262	°C/W
Electrostatic Discharge Classification(MIL-STD-883K)	ESD	Class 1B				

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 = 20 mA(R) I_F = 20 mA(G) I_F = 20 mA(B) I_F = 20 mA(W)	λ_{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(W)	Δ λ	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(W)	$V_{F(avg)}$	2.1	3.0	3.1	2.9	V
		$V_{F(max)}$	3.3	4.0	4.0	4.0	V
Luminous Flux	I_F = 20 mA(R) I_F = 20 mA(G) I_F = 20 mA(B) I_F = 20 mA(W)	$\Phi_{V(min)}$	2.2	4.8	1.3	3.7	lm
		$\Phi_{V(avg)}$	3.4	6.8	1.5	5.9	lm
Luminous Intensity(Reference)	I_F = 20 mA(R) I_F = 20 mA(G) I_F = 20 mA(B) I_F = 20 mA(W)	$I_{V(avg)}$	1110	2575	510	2070	mcd
Reverse Current (max)	V_R = 5 V	I_R	100	100	100	100	μA

* Continuous reverse voltage can cause LED damage.

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FLUX BIN LIMIT

Red (20 mA)			Green (20 mA)			Blue (20 mA)			White (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	70	1.3	1.7	B0	3.7	4.8
A0	2.9	3.7	D0	6.3	8.2	80	1.7	2.2	C0	4.8	6.3
B0	3.7	4.8	E0	8.2	10.7				D0	6.3	8.2

* 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.

CRI BIN LIMIT

White (20 mA)		
Bin Code	CRI Min.	CRI Max.
H	80	85
J	85	90

* Tolerance of measurement of CRI is ±2.

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PERFORMANCE GROUPS - CHROMATICITY

Region	x	y	Region	x	y	Region	x	y	Region	x	y
1C	0.3115	0.3391	1D	0.3130	0.3290	1T	0.3099	0.3509	1U	0.3144	0.3186
	0.3205	0.3481		0.3213	0.3373		0.3196	0.3602		0.3221	0.3261
	0.3213	0.3373		0.3221	0.3261		0.3205	0.3481		0.3231	0.3120
	0.3130	0.3290		0.3144	0.3186		0.3115	0.3391		0.3161	0.3059
2A	0.3215	0.3350	2B	0.3207	0.3462	2C	0.3290	0.3538	2D	0.3290	0.3417
	0.3290	0.3417		0.3290	0.3538		0.3376	0.3616		0.3371	0.3490
	0.3290	0.3300		0.3290	0.3417		0.3371	0.3490		0.3366	0.3369
	0.3222	0.3243		0.3215	0.3350		0.3290	0.3417		0.3290	0.3300
2R	0.3222	0.3243	2S	0.3196	0.3602	2T	0.3290	0.3690	2U	0.3290	0.3300
	0.3290	0.3300		0.3290	0.3690		0.3381	0.3762		0.3366	0.3369
	0.3290	0.3180		0.3290	0.3538		0.3376	0.3616		0.3361	0.3245
	0.3231	0.3120		0.3207	0.3462		0.3290	0.3538		0.3290	0.3180
3A	0.3371	0.3490	3B	0.3376	0.3616	3C	0.3463	0.3687	3D	0.3451	0.3554
	0.3451	0.3554		0.3463	0.3687		0.3551	0.3760		0.3533	0.3620
	0.3440	0.3427		0.3451	0.3554		0.3533	0.3620		0.3515	0.3487
	0.3366	0.3369		0.3371	0.3490		0.3451	0.3554		0.3440	0.3427
3R	0.3366	0.3369	3S	0.3381	0.3762	3T	0.3480	0.3840	3U	0.3440	0.3428
	0.3440	0.3428		0.3480	0.3840		0.3571	0.3907		0.3515	0.3487
	0.3429	0.3307		0.3463	0.3687		0.3551	0.3760		0.3495	0.3339
	0.3361	0.3245		0.3376	0.3616		0.3463	0.3687		0.3429	0.3307
5S	0.3736	0.3874	5T	0.3871	0.3959						
	0.3772	0.4035		0.3918	0.4129						
	0.3918	0.4129		0.4065	0.4221						
	0.3871	0.3959		0.4006	0.4044						

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PERFORMANCE GROUPS - CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
5A1	0.3670	0.3578	5A2	0.3686	0.3649	5A3	0.3744	0.3685	5A4	0.3726	0.3612
	0.3686	0.3649		0.3702	0.3722		0.3763	0.3760		0.3744	0.3685
	0.3744	0.3685		0.3763	0.3760		0.3825	0.3798		0.3804	0.3721
	0.3726	0.3612		0.3744	0.3685		0.3804	0.3721		0.3783	0.3646
5B1	0.3702	0.3722	5B2	0.3719	0.3797	5B3	0.3782	0.3837	5B4	0.3763	0.3760
	0.3719	0.3797		0.3736	0.3874		0.3802	0.3916		0.3782	0.3837
	0.3782	0.3837		0.3802	0.3916		0.3869	0.3958		0.3847	0.3877
	0.3763	0.3760		0.3782	0.3837		0.3847	0.3877		0.3825	0.3798
5C1	0.3825	0.3798	5C2	0.3847	0.3877	5C3	0.3912	0.3917	5C4	0.3887	0.3836
	0.3847	0.3877		0.3869	0.3958		0.3937	0.4001		0.3912	0.3917
	0.3912	0.3917		0.3937	0.4001		0.4006	0.4044		0.3978	0.3958
	0.3887	0.3836		0.3912	0.3917		0.3978	0.3958		0.3950	0.3875
5D1	0.3783	0.3646	5D2	0.3804	0.3721	5D3	0.3863	0.3758	5D4	0.3840	0.3681
	0.3804	0.3721		0.3825	0.3798		0.3887	0.3836		0.3863	0.3758
	0.3863	0.3758		0.3887	0.3836		0.3950	0.3875		0.3924	0.3794
	0.3840	0.3681		0.3863	0.3758		0.3924	0.3794		0.3898	0.3716
7A1	0.4147	0.3814	7A2	0.4183	0.3898	7A3	0.4242	0.3919	7A4	0.4203	0.3833
	0.4183	0.3898		0.4221	0.3984		0.4281	0.4006		0.4242	0.3919
	0.4242	0.3919		0.4281	0.4006		0.4342	0.4028		0.4300	0.3939
	0.4203	0.3833		0.4242	0.3919		0.4300	0.3939		0.4259	0.3853
7B1	0.4221	0.3984	7B2	0.4259	0.4073	7B3	0.4322	0.4096	7B4	0.4281	0.4006
	0.4259	0.4073		0.4299	0.4165		0.4364	0.4188		0.4322	0.4096
	0.4322	0.4096		0.4364	0.4188		0.4430	0.4212		0.4385	0.4119
	0.4281	0.4006		0.4322	0.4096		0.4385	0.4119		0.4342	0.4028
7C1	0.4342	0.4028	7C2	0.4385	0.4119	7C3	0.4449	0.4141	7C4	0.4403	0.4049
	0.4385	0.4119		0.4430	0.4212		0.4496	0.4236		0.4449	0.4141
	0.4449	0.4141		0.4496	0.4236		0.4562	0.4260		0.4513	0.4164
	0.4403	0.4049		0.4449	0.4141		0.4513	0.4164		0.4465	0.4071
7D1	0.4259	0.3853	7D2	0.4300	0.3939	7D3	0.4359	0.3960	7D4	0.4316	0.3873
	0.4300	0.3939		0.4342	0.4028		0.4403	0.4049		0.4359	0.3960
	0.4359	0.3960		0.4403	0.4049		0.4465	0.4071		0.4418	0.3981
	0.4316	0.3873		0.4359	0.3960		0.4418	0.3981		0.4373	0.3893

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PERFORMANCE GROUPS - CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
8A1	0.4373	0.3893	8A2	0.4418	0.3981	8A3	0.4475	0.3994	8A4	0.4428	0.3906
	0.4418	0.3981		0.4465	0.4071		0.4523	0.4085		0.4475	0.3994
	0.4475	0.3994		0.4523	0.4085		0.4582	0.4099		0.4532	0.4008
	0.4428	0.3906		0.4475	0.3994		0.4532	0.4008		0.4483	0.3919
8B1	0.4465	0.4071	8B2	0.4513	0.4164	8B3	0.4573	0.4178	8B4	0.4523	0.4085
	0.4513	0.4164		0.4562	0.4260		0.4624	0.4274		0.4573	0.4178
	0.4573	0.4178		0.4624	0.4274		0.4687	0.4289		0.4634	0.4193
	0.4523	0.4085		0.4573	0.4178		0.4634	0.4193		0.4582	0.4099
8C1	0.4582	0.4099	8C2	0.4634	0.4193	8C3	0.4695	0.4207	8C4	0.4641	0.4112
	0.4634	0.4193		0.4687	0.4289		0.4750	0.4304		0.4695	0.4207
	0.4695	0.4207		0.4750	0.4304		0.4813	0.4319		0.4756	0.4221
	0.4641	0.4112		0.4695	0.4207		0.4756	0.4221		0.4700	0.4126
8D1	0.4483	0.3919	8D2	0.4532	0.4008	8D3	0.4589	0.4021	8D4	0.4538	0.3931
	0.4532	0.4008		0.4582	0.4099		0.4641	0.4112		0.4589	0.4021
	0.4589	0.4021		0.4641	0.4112		0.4700	0.4126		0.4646	0.4034
	0.4538	0.3931		0.4589	0.4021		0.4646	0.4034		0.4593	0.3944

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

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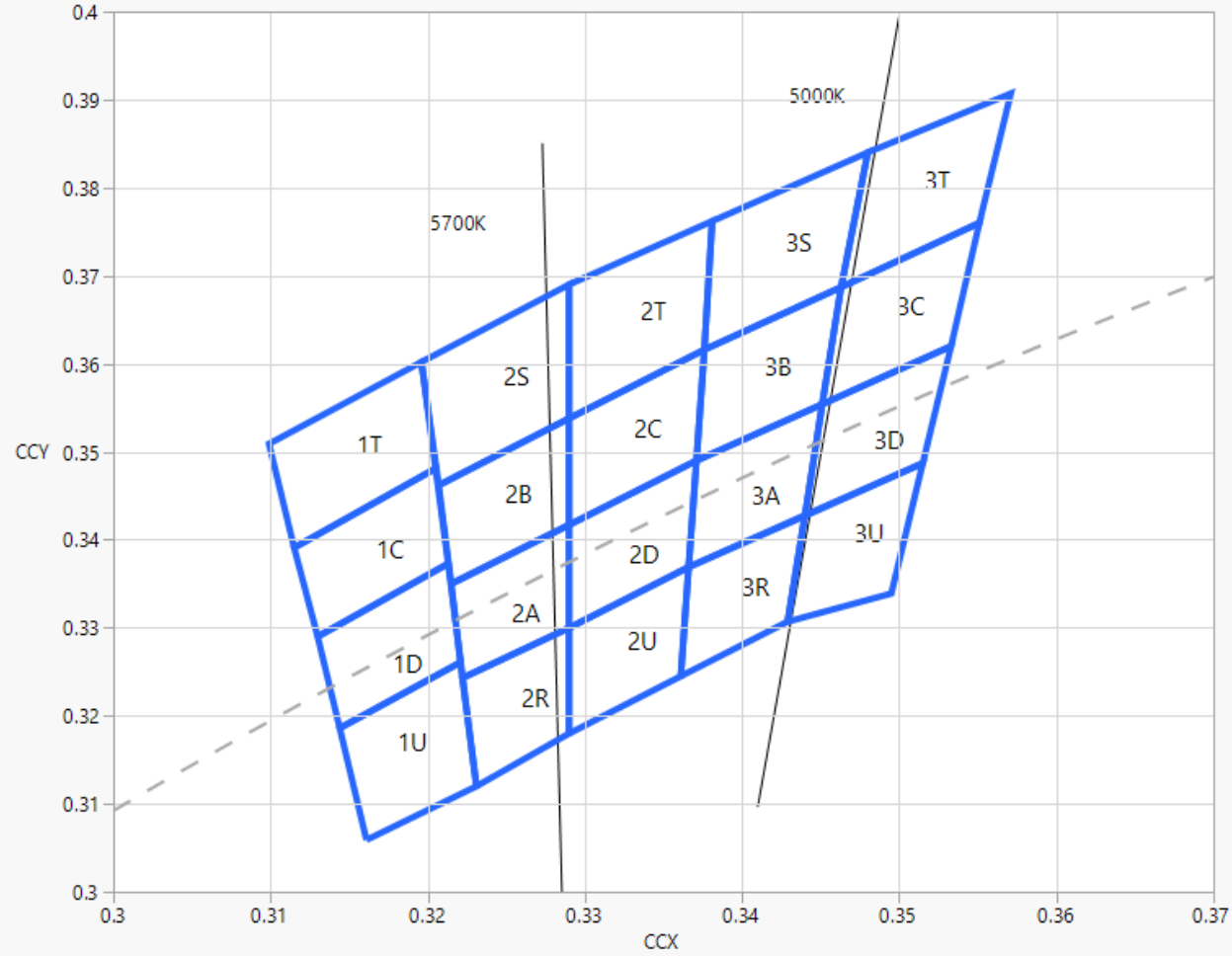
CIE CHROMATICITY DIAGRAM



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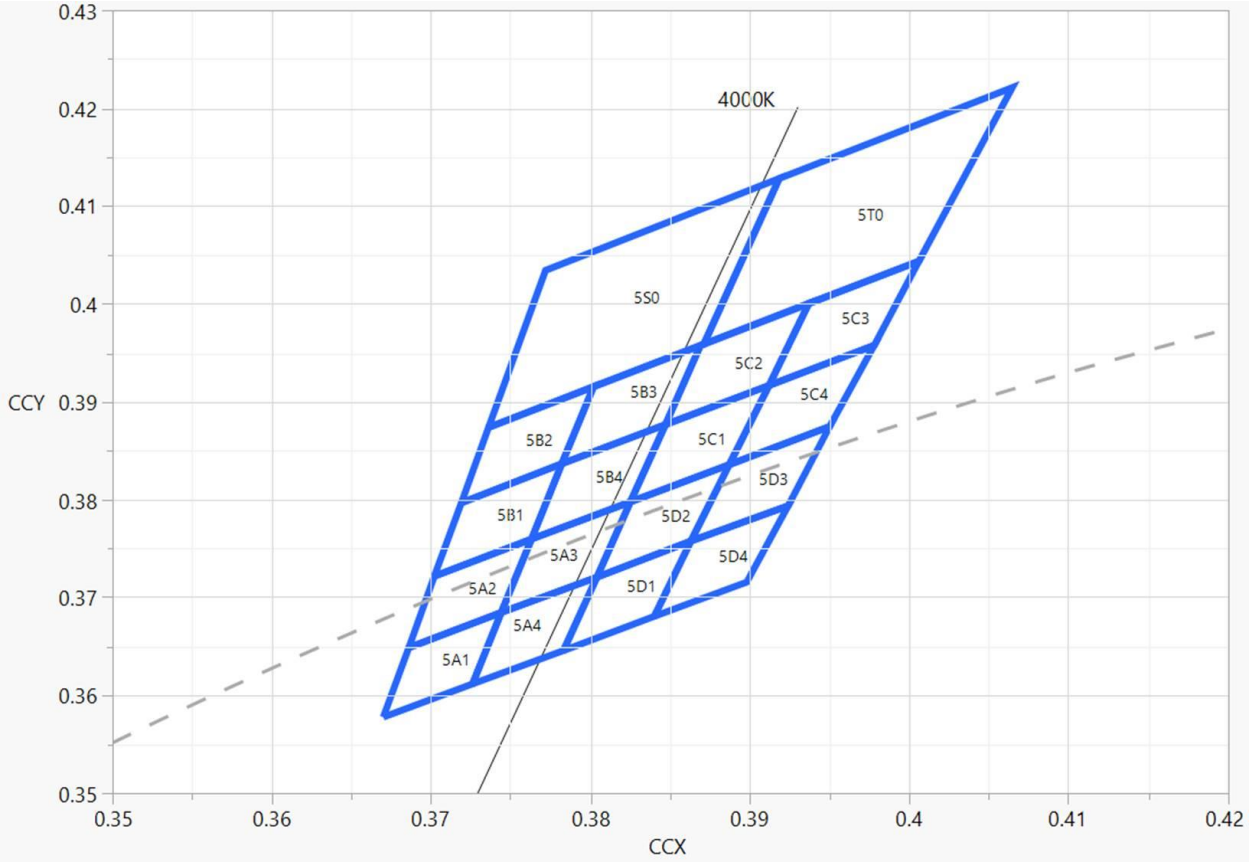
CIE CHROMATICITY DIAGRAM



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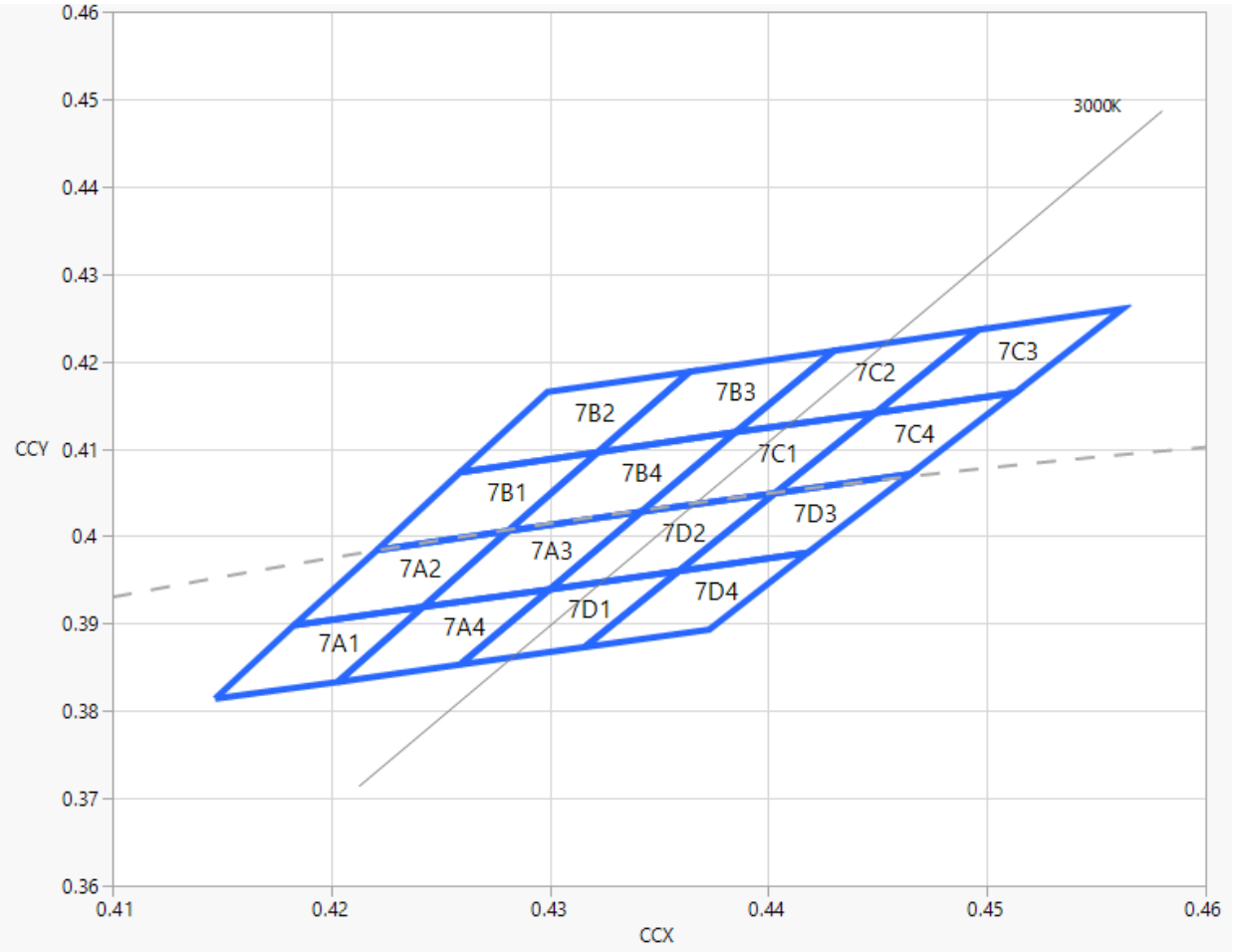
CIE CHROMATICITY DIAGRAM



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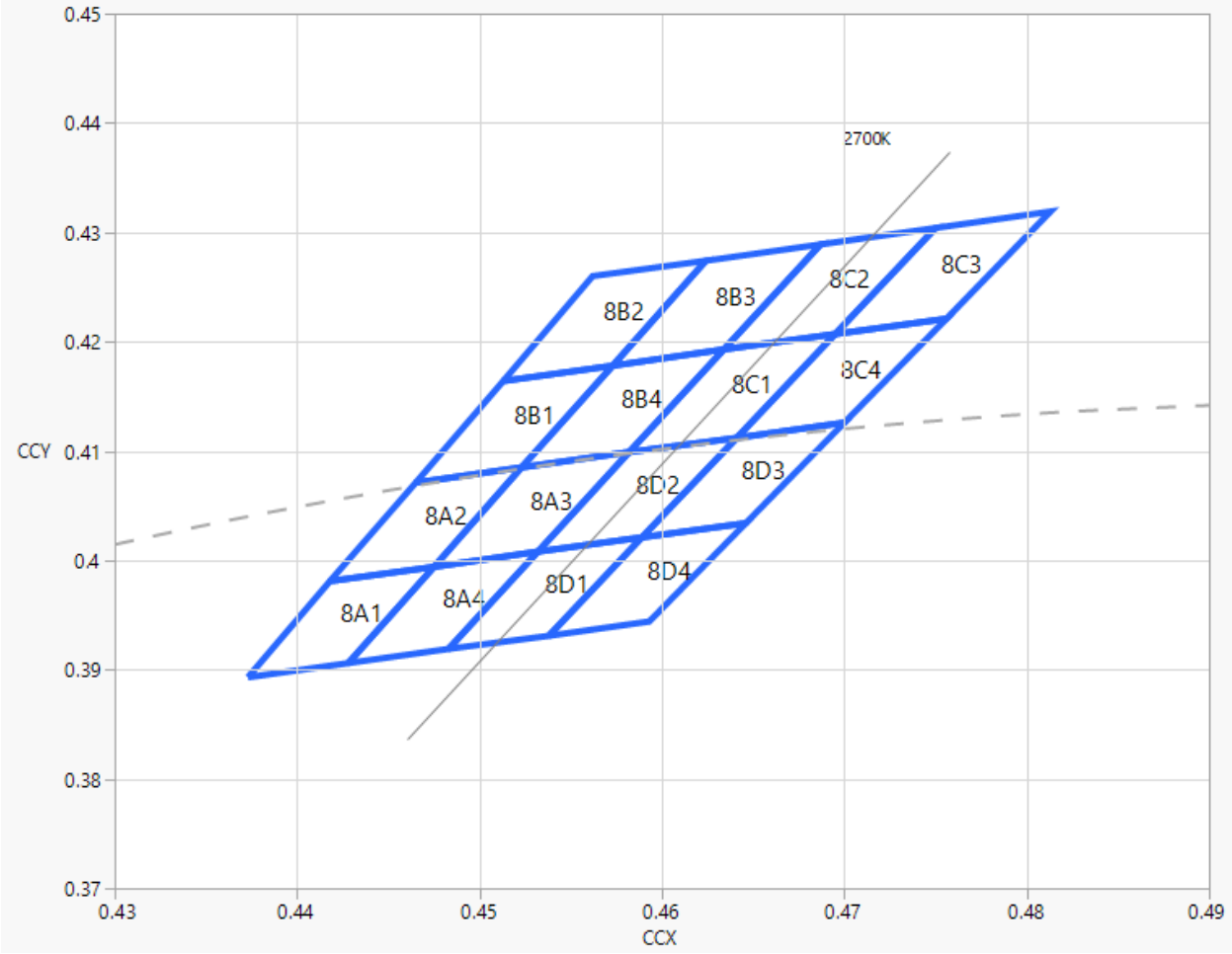
CIE CHROMATICITY DIAGRAM



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ORDER CODE TABLE

Chromaticity		Kit Number	Color	Luminous Intensity (lm)		Dominant Wavelength (nm)				Package
Kit	CCT			Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max. (nm)	
52	5700K	CLW6A-TKW-C90C070B0BB7C3C523	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		1C,1D,1T,1U,2A,2B,2C,2D,2R,2S,2T,2U				Reel
P3	5000K	CLW6A-TKW-C90C070B0BB7C3CP33	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		3A,3B,3C,3D,3R,3S,3T,3U				Reel
E5	4000K	CLW6A-TKW-C90C070B0BB7C3CE53	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4. 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4				Reel
P5	4000K	CLW6A-TKW-C90C070B0BB7C3CP53	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4. 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 5S0,5T0				Reel

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ORDER CODE TABLE (CONTINUED)

Chromaticity		Kit Number	Color	Luminous Intensity (lm)		Dominant Wavelength (nm)				Package
Kit	CCT			Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max. (nm)	
E7	3000K	CLW6A-TKW-C90C070B0BB7C3CE73	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4. 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4				Reel
E8	2700K	CLW6A-TKW-C90C070B0BB7C3CE83	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)				Reel
			Blue	Any 1 Intensity bin from 70(1.3) - 80(2.2)		Any 1 hue bin from B3(460)-B5(475)				Reel
			White	Any 1 Intensity bin from B0(3.7) - D0(8.2)		8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4. 8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4				Reel

Notes:

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

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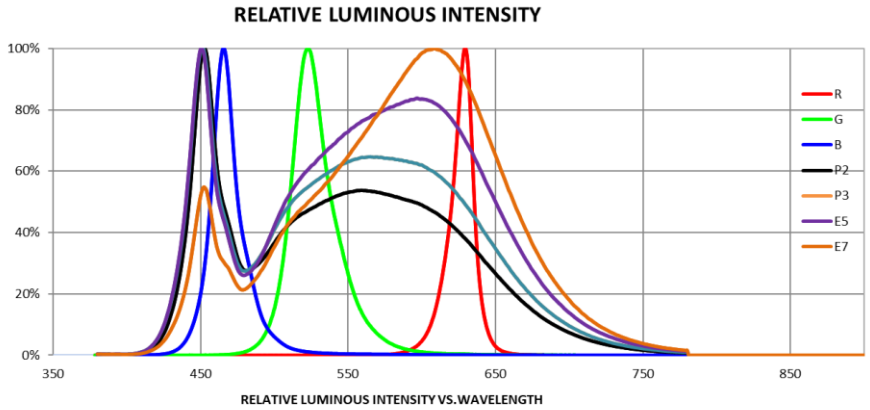
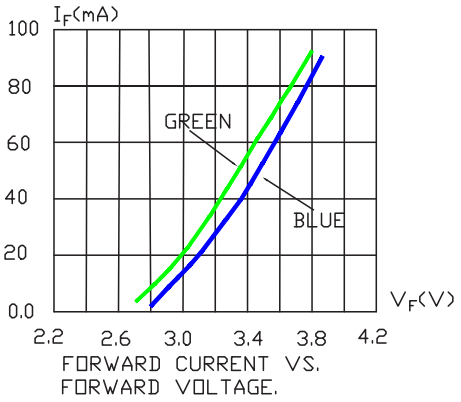
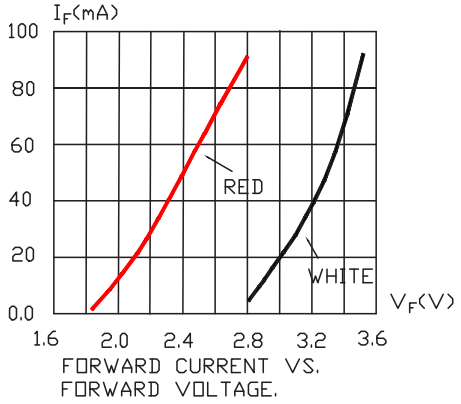
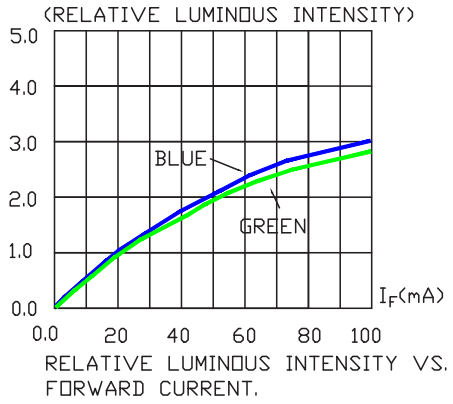
GRAPHS

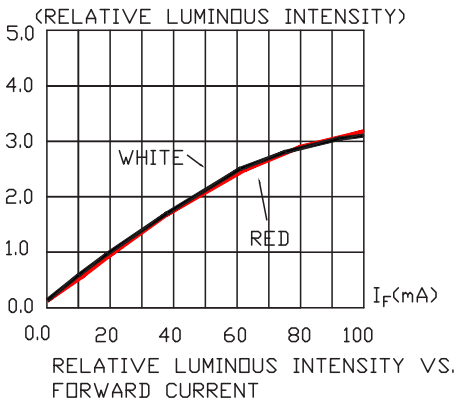
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.











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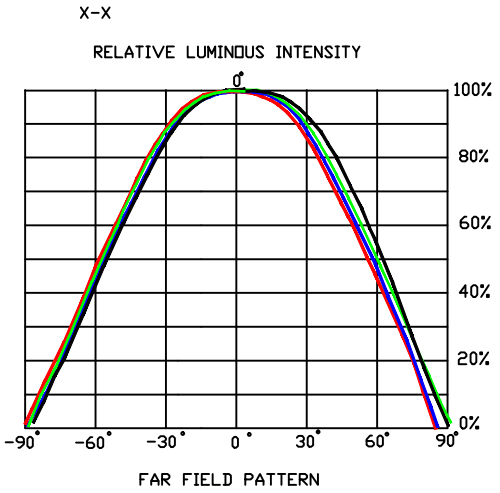
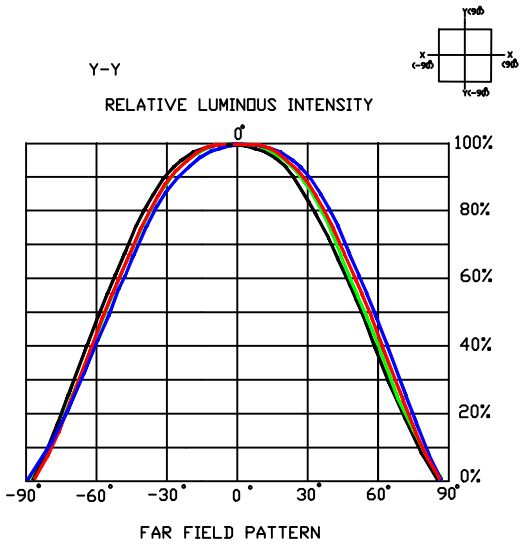
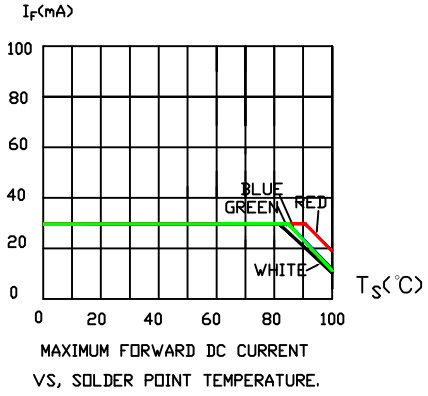
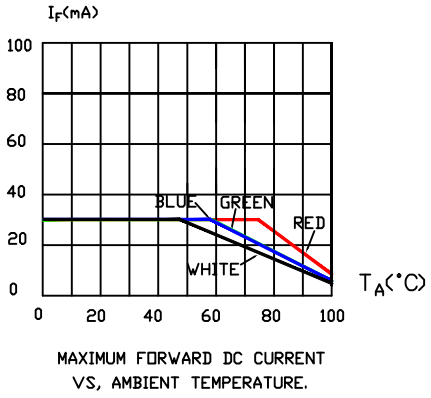
GRAPHS

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.









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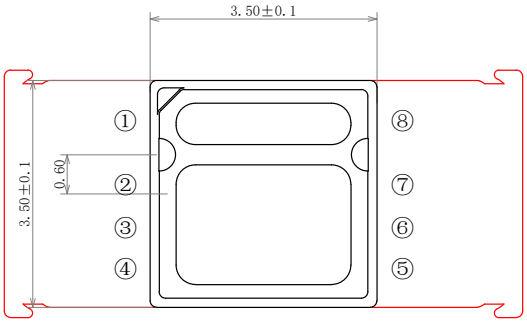
MECHANICAL DIMENSIONS

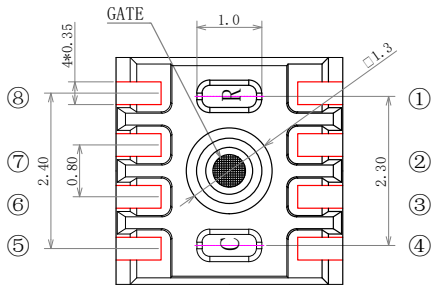
All dimensions are in mm.

Tolerance of measurement of the dimension is ±0.1.

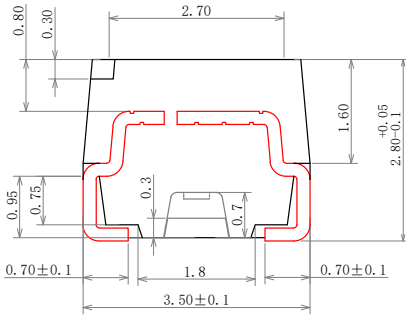
TOP VIEW

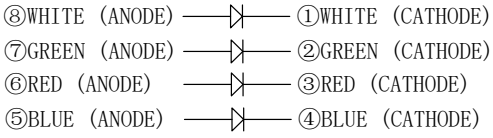


BOTTOM VIEW



SIDE VIEW





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.

Vision Advisory

WARNING: Do not look at an exposed lamp in operation. Eye injury can result.

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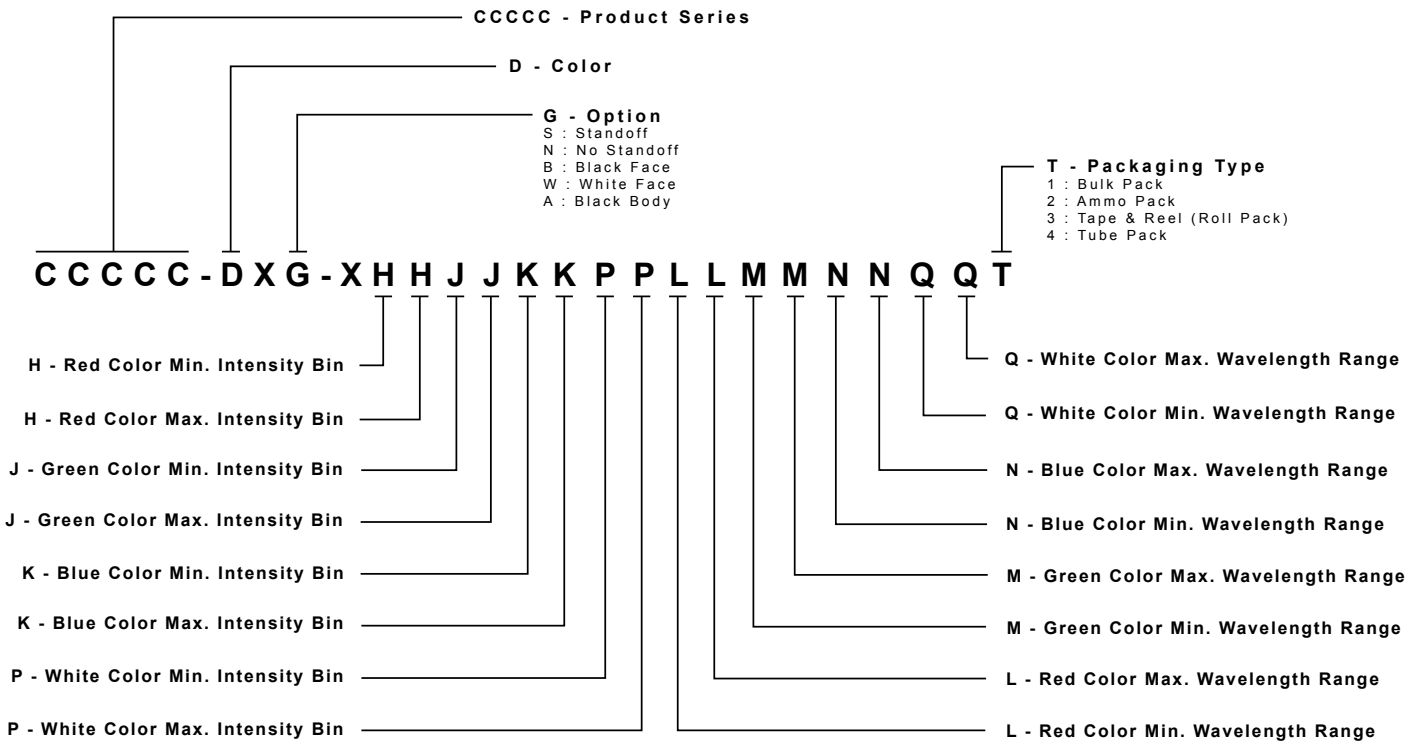
KIT NUMBER SYSTEM

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:



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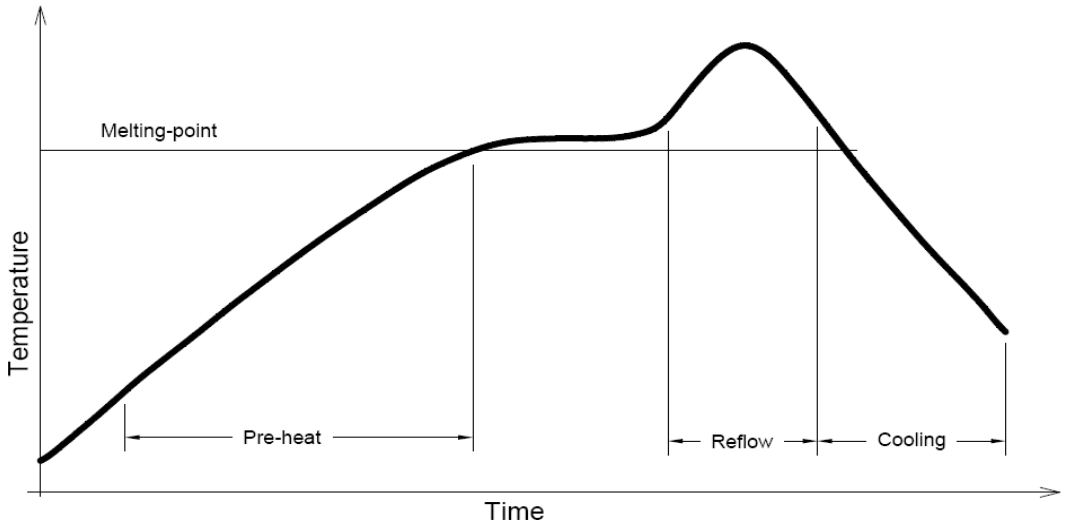
REFLOW SOLDERING

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

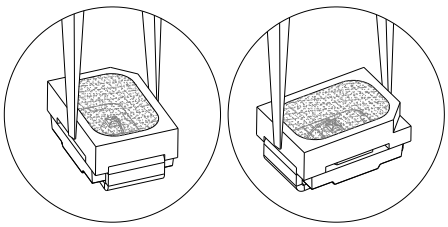


Use only with CLW6A-TKW

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

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:



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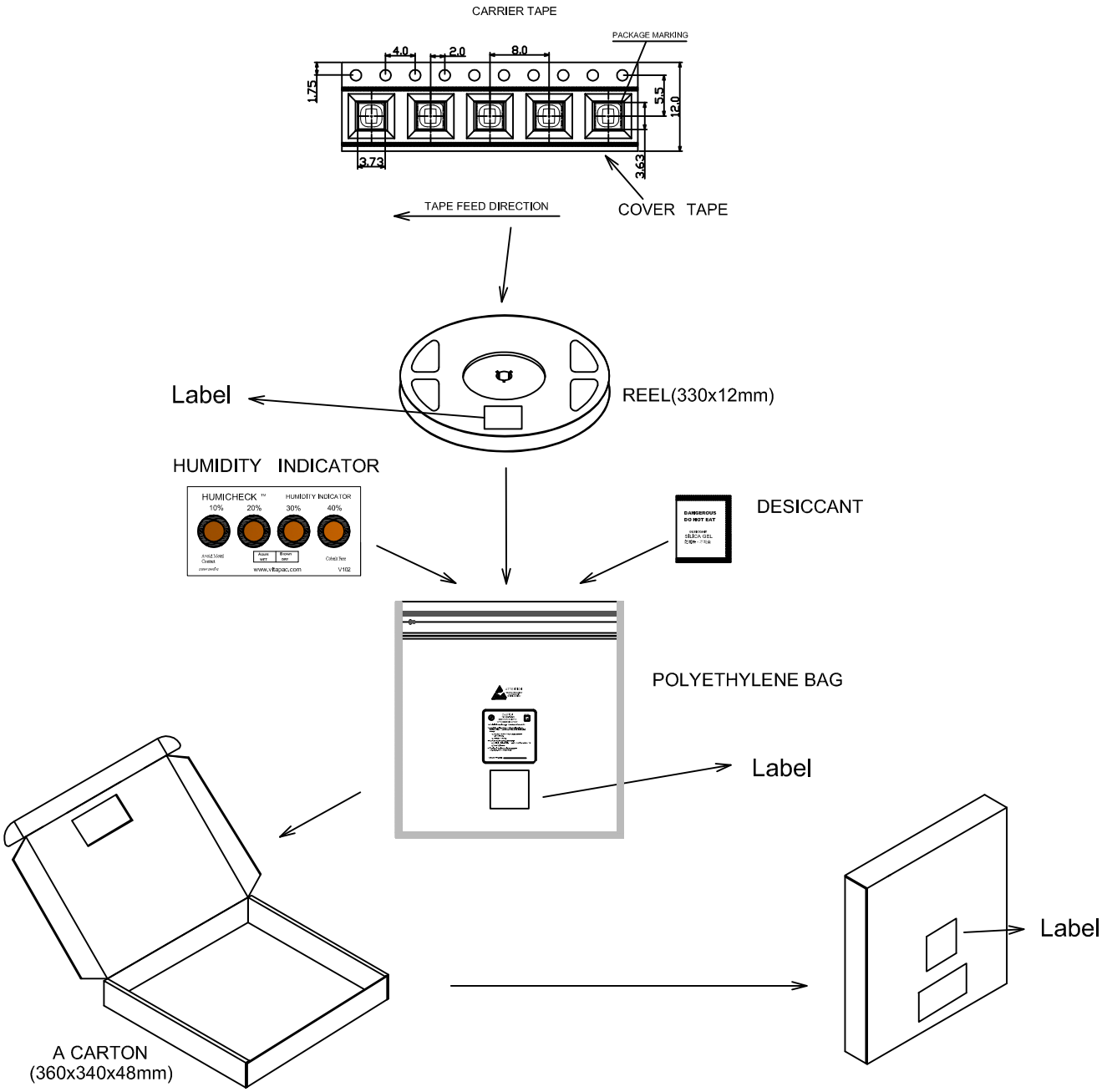
PACKAGING

- 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.



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Other Similar products are found below :

11-22/R8G6C-A30/2T LL-HP60NUYC OSB5XZE1E1E OSG5XDE5E1E OSR5XAE1E1E OSR5XME1E1E OSY5XDE5E1E PC8N-5LTS-C PK2N-3LAE-SD PK2N-3LGE-SD PK2N-3LRE-SD PM2B-3LGS-SD PQ2A-4FGE PQ2A-4FPE-YGFC OSTCXBEAC1E PM2E-1LAE PM2E-1LAS PM2E-1LGS PM2E-1LRS PM2E-3LAS-SD PM2E-3LBS-SD PM2E-3LGS-SD PM2E-3LRE-SD PM2E-3LRS-SD PP6N-TFFE-D60 PP6N-3LFE PP6N-1LFE-P PK2N-3LLE-L OSG5XME1E1E OSR5XAT1C1E OSR5XAT3C1E OSR5XDE5E1E OSR5XME3E1E OSY5XAE3E1E OSY5XAT3C1E OSY5XME3E1E PC8N-5L4E-C PK2N-3LBE-SD PM2B-1LPE-M PM2B-1LPS-M PQ2A-4FBE PQ2A-4FRE CLQ6B-TKW-S1L1R1H1TBB7935CC3 CLQ6B-TKW-S1L1R1H1TBB7935DD3 CLQ6B-TKW-S1L1R1H1TBB7935BB3 CLW6A-TKW-C90C070B0BB7C3CE73 CLW6A-TKW-C90C070B0BB7C3CE53 CLW6A-TKW-C90C070B0BB7C3CP53 CLW6A-TKW-C90C070B0BB7C3C523 CLW6A-TKW-C90C070B0BB7C3CP33