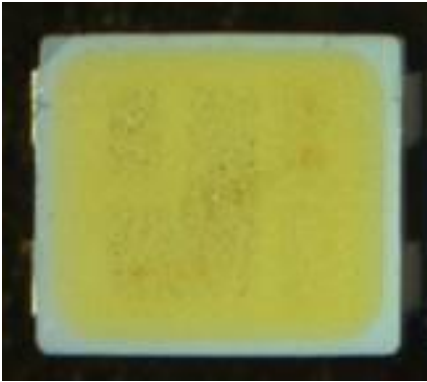


# CLA1B-WKW/MKW: PLCC4 White LEDs



## PRODUCT DESCRIPTION

The CLA1B is packaged in an industry standard footprint. With an improved package to provide high reliability & performance. They are designed to work under a wide range of environmental conditions. This high reliability feature makes them ideally suited to be used under illumination application conditions.

The wide viewing-angle makes these LEDs ideally suited for Linear Lighting, panel lighting and general illumination applications.

## FEATURES

- Size (mm): 3.2 x 2.8
- Color Temperatures (K):  
Cool White CLA1B-WKW : (4700 - 8300)  
Warm White CLA1B-MKW : (2500 - 4700)
- Luminous Flux (lm)  
CLA1B-WKW: (6.3 - 13.9)  
CLA1B-MKW: (6.3 - 13.9)
- CRI  
Typical CRI for Cool White is 75  
Typical CRI for Warm White is 80
- Lead - Free
- RoHS Compliant

## APPLICATIONS

- Linear Lighting
- Channel Letter
- Panel Lighting
- General Illumination

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

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	$I_F$	80	mA
Peak Forward Current <sup>Note 1</sup>	$I_{FP}$	100	mA
Reverse Voltage	$V_R$	5	V
Power Dissipation	$P_D$	304	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	$R_{THJA}$	220	$^\circ\text{C}/\text{W}$
Junction/Solder Point	$R_{THJS}$	120	$^\circ\text{C}/\text{W}$
Electrostatic Discharge Classification (MIL-STD-883E)	ESD	2000V	

**Note:**

1. Pulse width  $\leq 0.1$  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	Cool/Warm	$V_F$	$I_F = 30$ mA	V		3.2	3.8
Reverse Current	Cool/Warm	$I_R$	$V_R = 5$ V	$\mu\text{A}$			10
Luminous Flux	Cool	$\Phi_V$	$I_F = 30$ mA	lm	6.3	9.6	
	Warm	$\Phi_V$	$I_F = 30$ mA	lm	6.3	8.6	
Luminous Intensity	Cool	$I_V$	$I_F = 30$ mA	mcd	2800	3177	
	Warm	$I_V$	$I_F = 30$ mA	mcd	2520	3023	
Chromaticity Coordinates	Cool	x	$I_F = 30$ mA			0.3452	
		y	$I_F = 30$ mA			0.3556	
	Warm	x	$I_F = 30$ mA			0.4343	
		y	$I_F = 30$ mA			0.4043	

- \* Continuous reverse voltage can cause LED damage.

## FLUX BIN LIMIT

Cool White / Warm White (30 mA) - CLA1B-WKW/MKW			
Bin Code	Sub-Bin Code	Min. (lm)	Max. (lm)
D0	-	6.3	8.2
E0	-	8.2	10.7
F0	F1	10.7	12.3
	F2	12.3	13.9

\* Tolerance of measurement of luminous flux is  $\pm 10\%$

## VOLTAGE BIN LIMIT

Cool White / Warm White (30 mA) - CLA1B-WKW/MKW		
Bin Code	Min. (V)	Max. (V)
28	3.0	3.2
29	3.2	3.4
2a	3.4	3.6
2b	3.6	3.8

\* Tolerance of measurement of voltage is  $\pm 0.05V$

COLOR BIN LIMIT

Cool White / Warm White (30 mA) - CLA1B-WKW/MKW

Region	x	y	Region	x	y	Region	x	y	Region	x	y
0A	0.2950	0.2970	0B	0.2920	0.3060	0C	0.2984	0.3133	0D	0.2984	0.3133
	0.2920	0.3060		0.2895	0.3135		0.2962	0.3220		0.3048	0.3207
	0.2984	0.3133		0.2962	0.3220		0.3028	0.3304		0.3068	0.3113
	0.3009	0.3042		0.2984	0.3133		0.3048	0.3207		0.3009	0.3042
0R	0.2980	0.2880	0S	0.2895	0.3135	0T	0.2962	0.3220	0U	0.3037	0.2937
	0.2950	0.2970		0.2870	0.3210		0.2937	0.3312		0.3009	0.3042
	0.3009	0.3042		0.2937	0.3312		0.3005	0.3415		0.3068	0.3113
	0.3037	0.2937		0.2962	0.3220		0.3028	0.3304		0.3093	0.2993
1A	0.3048	0.3207	1B	0.3028	0.3304	1C	0.3115	0.3391	1D	0.3130	0.3290
	0.3130	0.3290		0.3115	0.3391		0.3205	0.3481		0.3213	0.3373
	0.3144	0.3186		0.3130	0.3290		0.3213	0.3373		0.3221	0.3261
	0.3068	0.3113		0.3048	0.3207		0.3130	0.3290		0.3144	0.3186
1R	0.3068	0.3113	1S	0.3005	0.3415	1T	0.3099	0.3509	1U	0.3144	0.3186
	0.3144	0.3186		0.3099	0.3509		0.3196	0.3602		0.3221	0.3261
	0.3161	0.3059		0.3115	0.3391		0.3205	0.3481		0.3231	0.3120
	0.3093	0.2993		0.3028	0.3304		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
4A	0.3530	0.3597	4B	0.3548	0.3736	4C	0.3641	0.3804	4D	0.3615	0.3659
	0.3615	0.3659		0.3641	0.3804		0.3736	0.3874		0.3702	0.3722
	0.3590	0.3521		0.3615	0.3659		0.3702	0.3722		0.3670	0.3578
	0.3512	0.3465		0.3530	0.3597		0.3615	0.3659		0.3590	0.3521

• Tolerance of measurement of the color coordinates is ±0.01

COLOR BIN LIMIT

Cool White / Warm White (30 mA) - CLA1B-WKW/MKW

Region	x	y	Region	x	y	Region	x	y	Region	x	y
4R	0.3512	0.3465	4S	0.3571	0.3907	4T	0.3668	0.3957	4U	0.3590	0.3521
	0.3590	0.3521		0.3668	0.3957		0.3771	0.4034		0.3670	0.3578
	0.3567	0.3389		0.3641	0.3804		0.3736	0.3874		0.3640	0.3440
	0.3495	0.3339		0.3548	0.3736		0.3641	0.3804		0.3567	0.3389
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
6A1	0.3889	0.3690	6A2	0.3915	0.3768	6A3	0.3981	0.3800	6A4	0.3953	0.3720
	0.3915	0.3768		0.3941	0.3848		0.4010	0.3882		0.3981	0.3800
	0.3981	0.3800		0.4010	0.3882		0.4080	0.3916		0.4048	0.3832
	0.3953	0.3720		0.3981	0.3800		0.4048	0.3832		0.4017	0.3751
6B1	0.3941	0.3848	6B2	0.3968	0.3930	6B3	0.4040	0.3966	6B4	0.4010	0.3882
	0.3968	0.3930		0.3996	0.4015		0.4071	0.4052		0.4040	0.3966
	0.4040	0.3966		0.4071	0.4052		0.4146	0.4089		0.4113	0.4001
	0.4010	0.3882		0.4040	0.3966		0.4113	0.4001		0.4080	0.3916
6C1	0.4080	0.3916	6C2	0.4113	0.4001	6C3	0.4186	0.4037	6C4	0.4150	0.3950
	0.4113	0.4001		0.4146	0.4089		0.4222	0.4127		0.4186	0.4037
	0.4186	0.4037		0.4222	0.4127		0.4299	0.4165		0.4259	0.4073
	0.4150	0.3950		0.4186	0.4037		0.4259	0.4073		0.4221	0.3984
6D1	0.4017	0.3751	6D2	0.4048	0.3832	6D3	0.4116	0.3865	6D4	0.4082	0.3782
	0.4048	0.3832		0.4080	0.3916		0.4150	0.3950		0.4116	0.3865
	0.4116	0.3865		0.4150	0.3950		0.4221	0.3984		0.4183	0.3898
	0.4082	0.3782		0.4116	0.3865		0.4183	0.3898		0.4147	0.3814

• Tolerance of measurement of the color coordinates is ±0.01

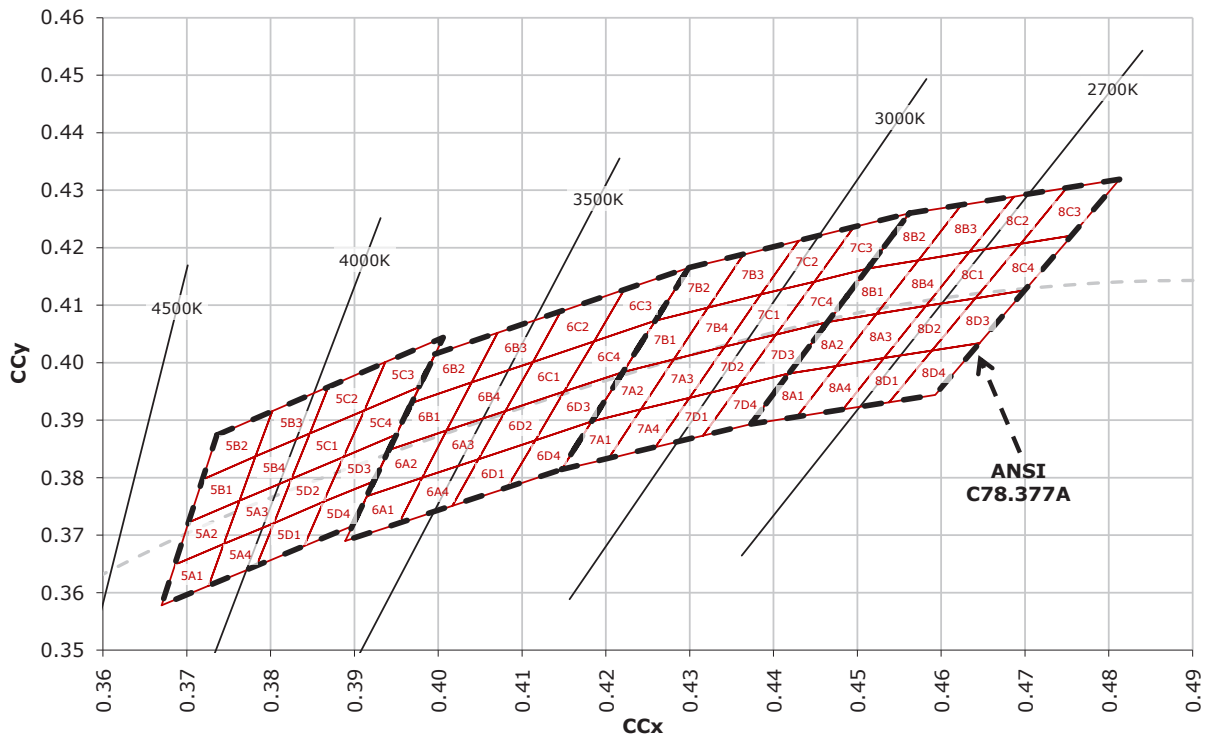
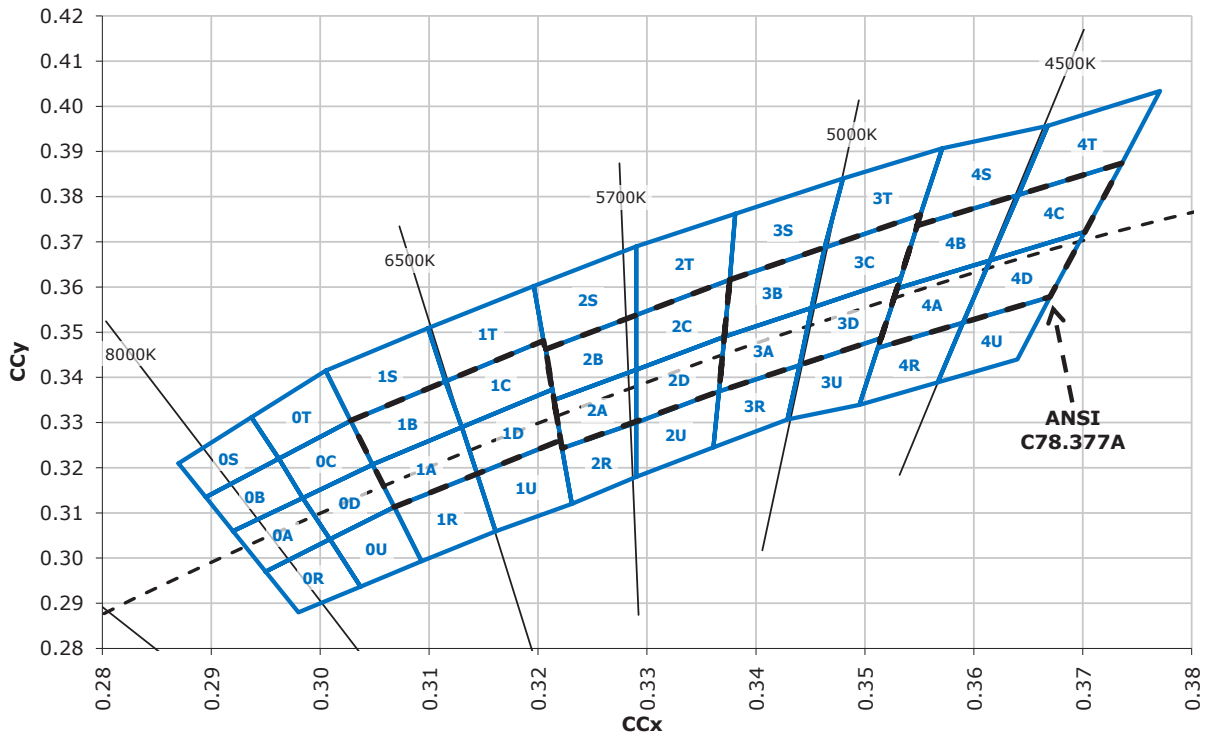
COLOR BIN LIMIT

Cool White / Warm White (30 mA) - CLA1B-WKW/MKW

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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
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

CIE CHROMATICITY DIAGRAM



ORDER CODE TABLE

Color	Kit Number	Luminous Flux (lm)		Color Bin Code
		Min.	Max.	
Cool White	CLA1B-WKW-XD0F0503	6.3	13.9	1A0,1B0,1C0,1D0,2A0,2B0,2C0,2D0
	CLA1B-WKW-XD0F0513			0A0,0B0,0C0,0D0,0R0,0S0,0T0,0U0, 1A0,1B0,1C0,1D0,1S0,1T0,1R0,1U0, 2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3S0,3B0,3A0,3R0
	CLA1B-WKW-XD0F0DT3			0A0,0B0,0C0,0D0,0R0,0S0,0T0,0U0, 1A0,1B0,1C0,1D0,1R0,1S0,1T0,1U0
	CLA1B-WKW-XD0F0DV3			1A0,1B0,1C0,1D0,1R0,1S0,1T0,1U0, 2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0
	CLA1B-WKW-XD0F0DY3			2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0
	CLA1B-WKW-XD0F0DZ3			2C0,2D0, 2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0, 4A0,4B0,4R0,4S0
	CLA1B-WKW-XD0F0E13			1A0,1B0,1C0,1D0
	CLA1B-WKW-XD0F0E23			2A0,2B0,2C0,2D0
	CLA1B-WKW-XD0F0E33			3A0,3B0,3C0,3D0
	CLA1B-WKW-XE0F0503	8.2	13.9	1A0,1B0,1C0,1D0,2A0,2B0,2C0,2D0
	CLA1B-WKW-XE0F0513			0A0,0B0,0C0,0D0,0R0,0S0,0T0,0U0, 1A0,1B0,1C0,1D0,1S0,1T0,1R0,1U0, 2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3S0,3B0,3A0,3R0
	CLA1B-WKW-XE0F0DT3			0A0,0B0,0C0,0D0,0R0,0S0,0T0,0U0, 1A0,1B0,1C0,1D0,1R0,1S0,1T0,1U0
	CLA1B-WKW-XE0F0DV3			1A0,1B0,1C0,1D0,1R0,1S0,1T0,1U0, 2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0
	CLA1B-WKW-XE0F0DY3			2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0
	CLA1B-WKW-XE0F0DZ3			2C0,2D0, 2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0, 4A0,4B0,4R0,4S0
	CLA1B-WKW-XE0F0E13			1A0,1B0,1C0,1D0
	CLA1B-WKW-XE0F0E23			2A0,2B0,2C0,2D0
	CLA1B-WKW-XE0F0E33			3A0,3B0,3C0,3D0

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.



ORDER CODE TABLE

Color	Kit Number	Luminous Flux (lm)		Color Bin Code
		Min.	Max.	
Warm White	CLA1B-MKW-XD0E0F53	6.3	10.7	4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4
	CLA1B-MKW-XD0E0F63			5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4
	CLA1B-MKW-XD0E0F73			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4
	CLA1B-MKW-XD0E0F83			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4
	CLA1B-MKW-XD0E0E53			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
	CLA1B-MKW-XD0E0E63			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4
	CLA1B-MKW-XD0E0E73			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4
	CLA1B-MKW-XD0E0E83			8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4, 8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4
	CLA1B-MKW-XD0E0A33			4A0,4B0,4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4
	CLA1B-MKW-XD0E0A43			4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
	CLA1B-MKW-XD0E0A53			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4
	CLA1B-MKW-XD0E0A63			5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4
	CLA1B-MKW-XD0E0A73			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4
	CLA1B-MKW-XD0E0A83			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4
	CLA1B-MKW-XD0E0A93			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4
	CLA1B-MKW-XD0E0AA3			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4, 8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4

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.

ORDER CODE TABLE

Color	Kit Number	Luminous Flux (lm)		Color Bin Code
		Min.	Max.	
Warm White	CLA1B-MKW-XD0F0F53	6.3	13.9	4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4
	CLA1B-MKW-XD0F0F63			5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4
	CLA1B-MKW-XD0F0F73			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4
	CLA1B-MKW-XD0F0F83			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4
	CLA1B-MKW-XD0F0E53			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
	CLA1B-MKW-XD0F0E63			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4
	CLA1B-MKW-XD0F0E73			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4
	CLA1B-MKW-XD0F0E83			8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4, 8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4
	CLA1B-MKW-XD0F0A33			4A0,4B0,4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4
	CLA1B-MKW-XD0F0A43			4C0,4D0, 5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4
	CLA1B-MKW-XD0F0A53			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4, 5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4
	CLA1B-MKW-XD0F0A63			5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4, 6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4
	CLA1B-MKW-XD0F0A73			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4
	CLA1B-MKW-XD0F0A83			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4, 7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4
	CLA1B-MKW-XD0F0A93			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4
	CLA1B-MKW-XD0F0AA3			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4, 8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4, 8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4

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.

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.

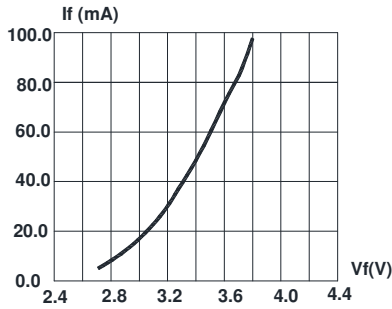


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

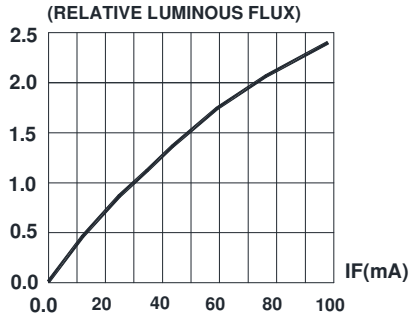


FIG.2 RELATIVE LUMINOUS FLUX VS. FORWARD CURRENT

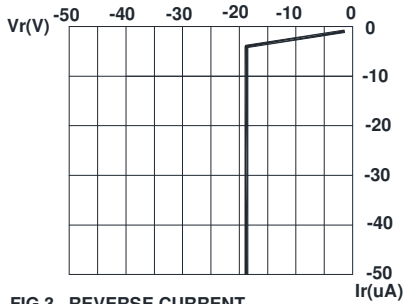


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

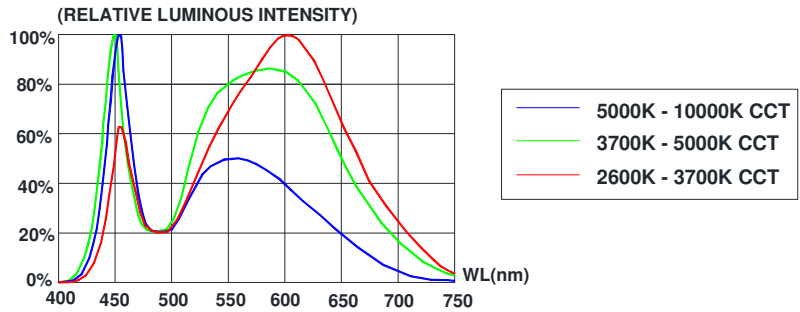


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

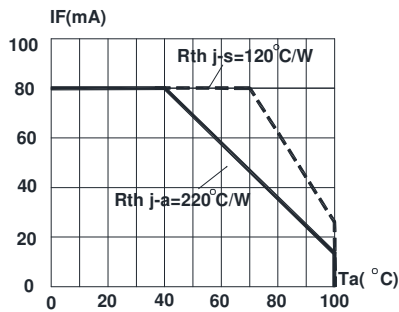


FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE ( $T_{jmax}=110^{\circ}C$ )

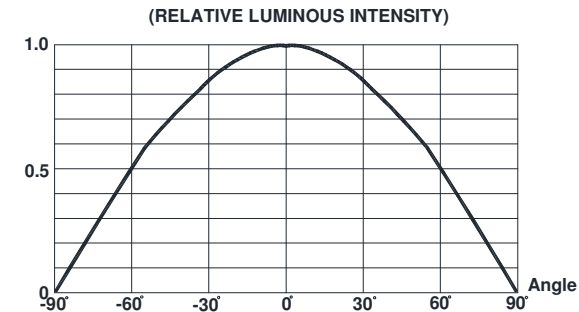
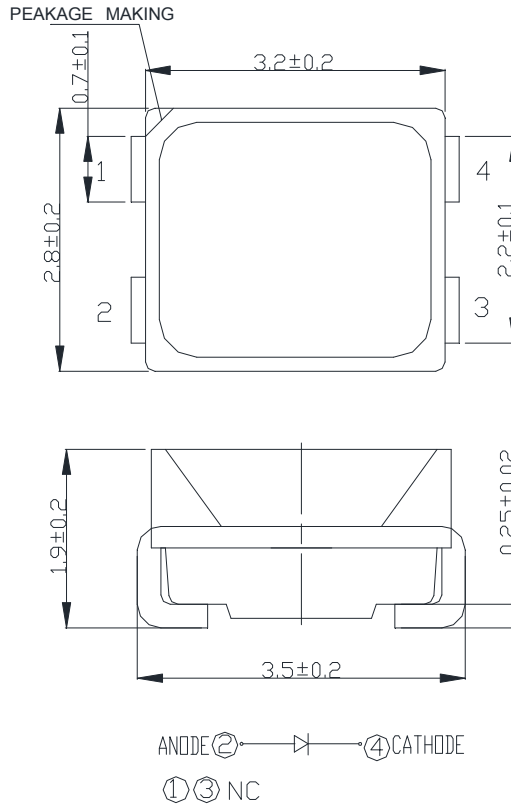


FIG.6 FAR FIELD PATTERN

## MECHANICAL DIMENSIONS

All dimensions are in mm.



## 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.

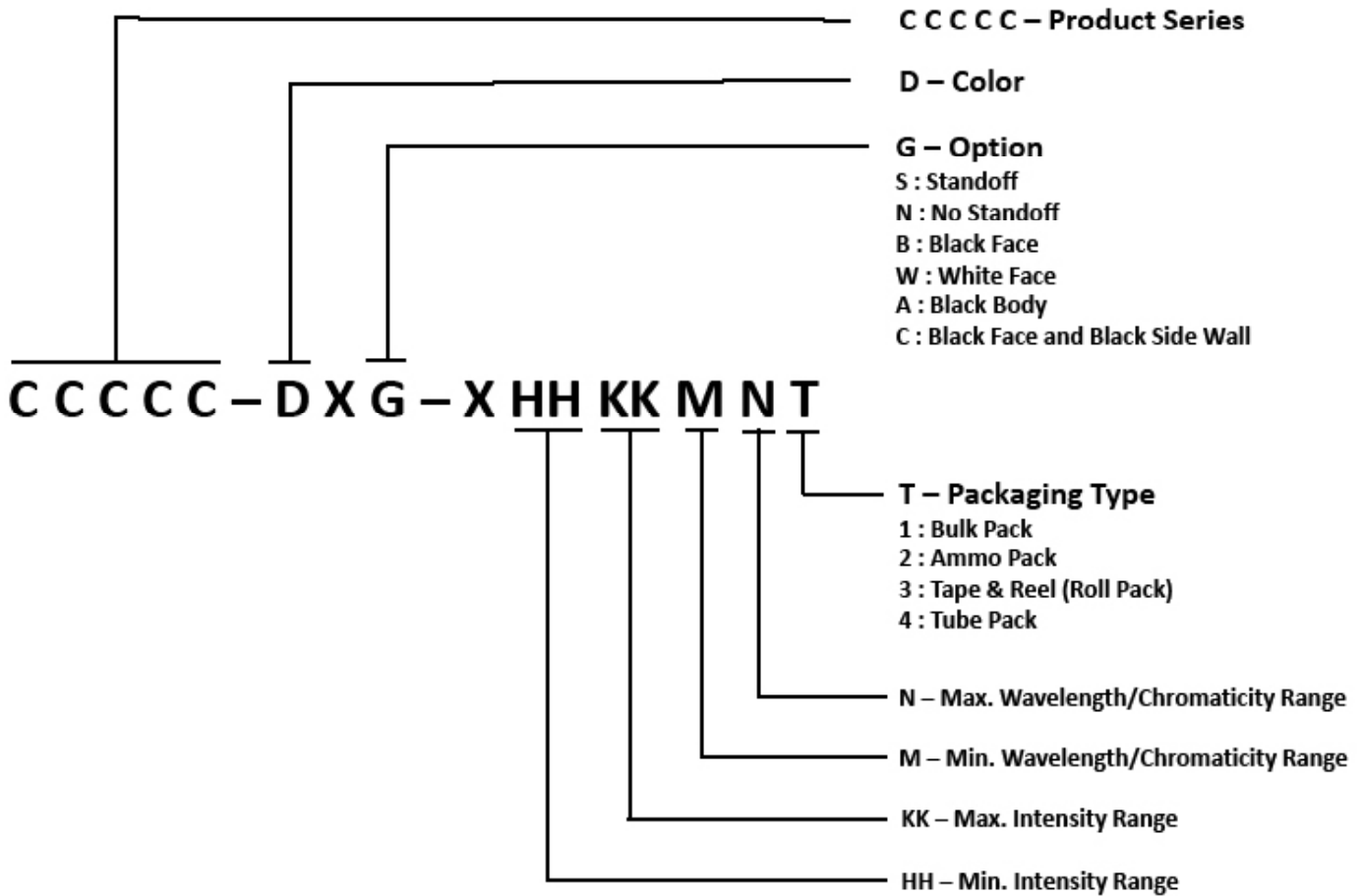
### Vision Advisory

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

## KIT NUMBER SYSTEM

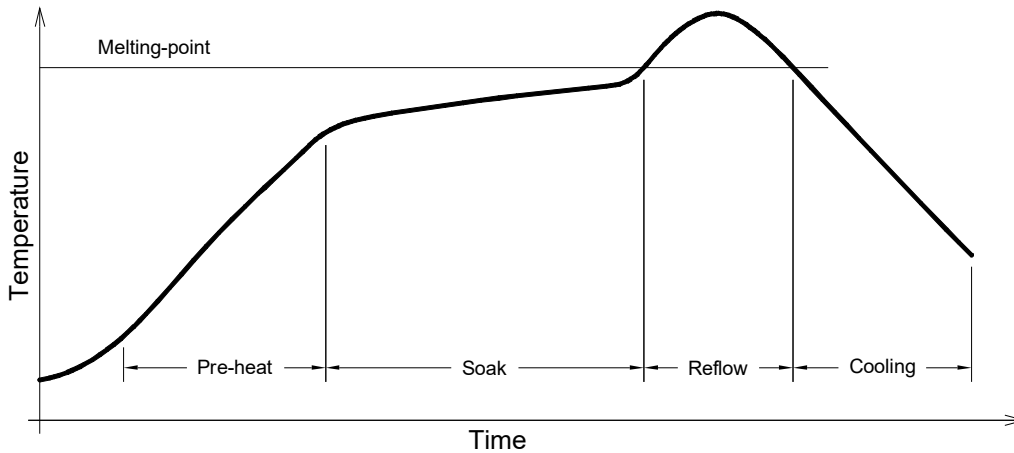
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options.

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



## REFLOW SOLDERING

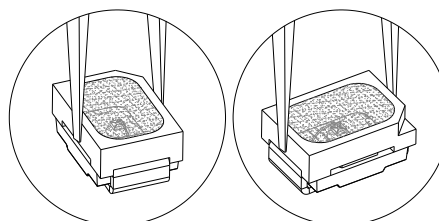
- The CLA1B-WKW/MKW is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.



Use only with CLA1B-WKW MKW

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

- 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:
- Please refer to the [HB LED Lamp Soldering & Handling](#) document for information about how to use this LED product safely.



## PACKAGING

- 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 shock during transportation.
- The boxes are not water resistant, and they must be kept away from water and moisture.
- The reel pack is applied in SMD LED.
- Max 2000 pcs per reel.

