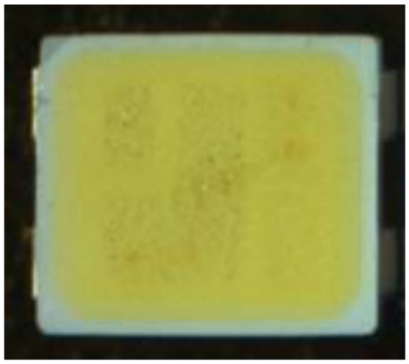
CLD-CT1231.000

Cree® PLCC4 SMD LED SP301-WKW/MKW



PRODUCT DESCRIPTION

The SP301 is packaged in an industry-standard footprint with an improved package to provide high reliability and 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 SP301-WKW: 4700 - 8300
  - Warm White SP301-MKW: 2500 - 4700
- Luminous flux (lm)
  - SP301-WKW: (6.3 - 13.9)
  - SP301-MKW: (6.3 - 10.7)
- CRI
  - Typical CRI for Cool White is 75
  - Typical CRI for Warm White is 80
- Viewing angle: 120 degrees
- Lead-free
- RoHS-compliant

APPLICATIONS

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

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	35	mA
Peak Forward Current Note	I_{FP}	50	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	133	mW
Operation Temperature	T_{opr}	-40 ~ +100	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Junction Temperature	T_J	110	°C
Junction/Ambient	R_{THJA}	220	°C/W
Junction/Solder Point	R_{THJS}	200	°C/W

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

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T_A = 25°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	μA			10
Luminous Flux	Cool	Φ_V	I_F = 30 mA	lm	6.3	10.8	
	Warm	Φ_V	I_F = 30 mA	lm	6.3	9.7	
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	
50% Power Angle	Cool/Warm	2θ½	I_F = 30 mA	deg		120	

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INTENSITY BIN LIMIT (I_F = 30 MA)

Cool White (SP301-WKW)

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

Warm White (SP301-MKW)

Bin Code	Min. (lm)	Max. (lm)
D0	6.3	8.2
E0	8.2	10.7

Tolerance of measurement of luminous flux is ±10%.

VF BIN LIMIT (I_F = 30 MA)

Cool White (SP301-WKW)

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

Warm White (SP301-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 VF is ±0.05V.

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COLOR BIN LIMIT (I_F = 30 MA)

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
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

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

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COLOR BIN LIMIT (CONTINUED) (I_F = 30 MA)

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
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
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

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

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COLOR BIN LIMIT (CONTINUED) (I_F = 30 MA)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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.

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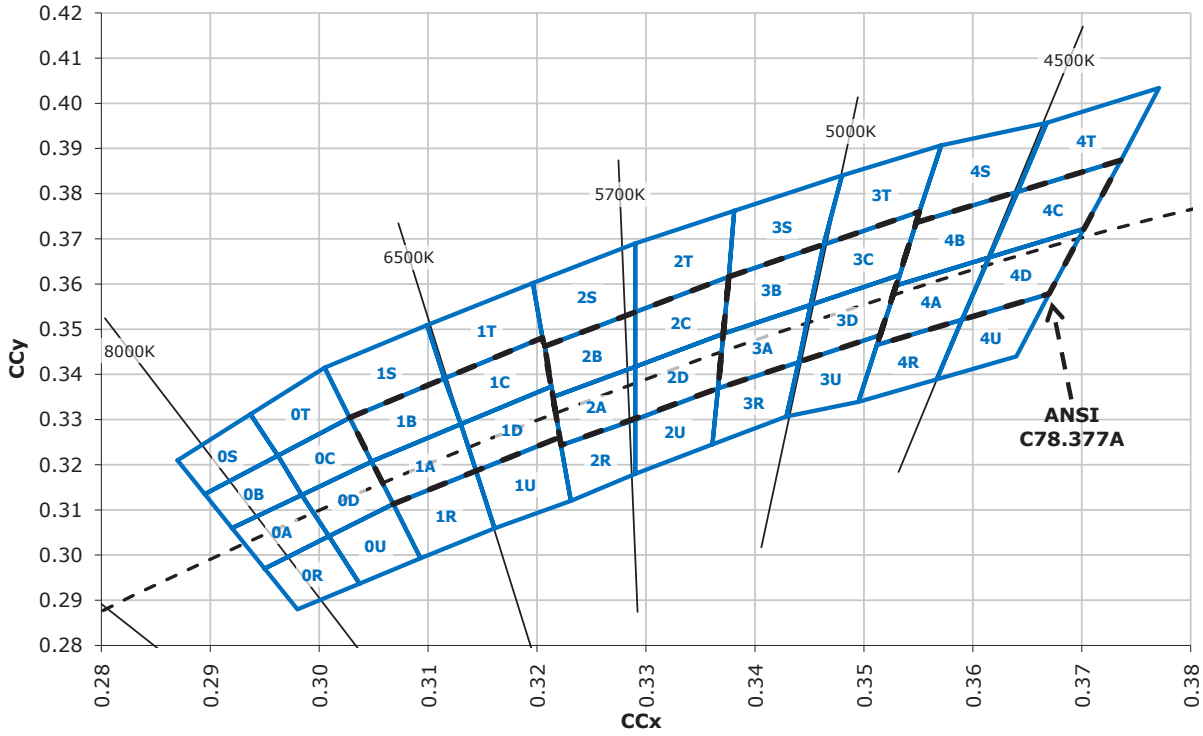
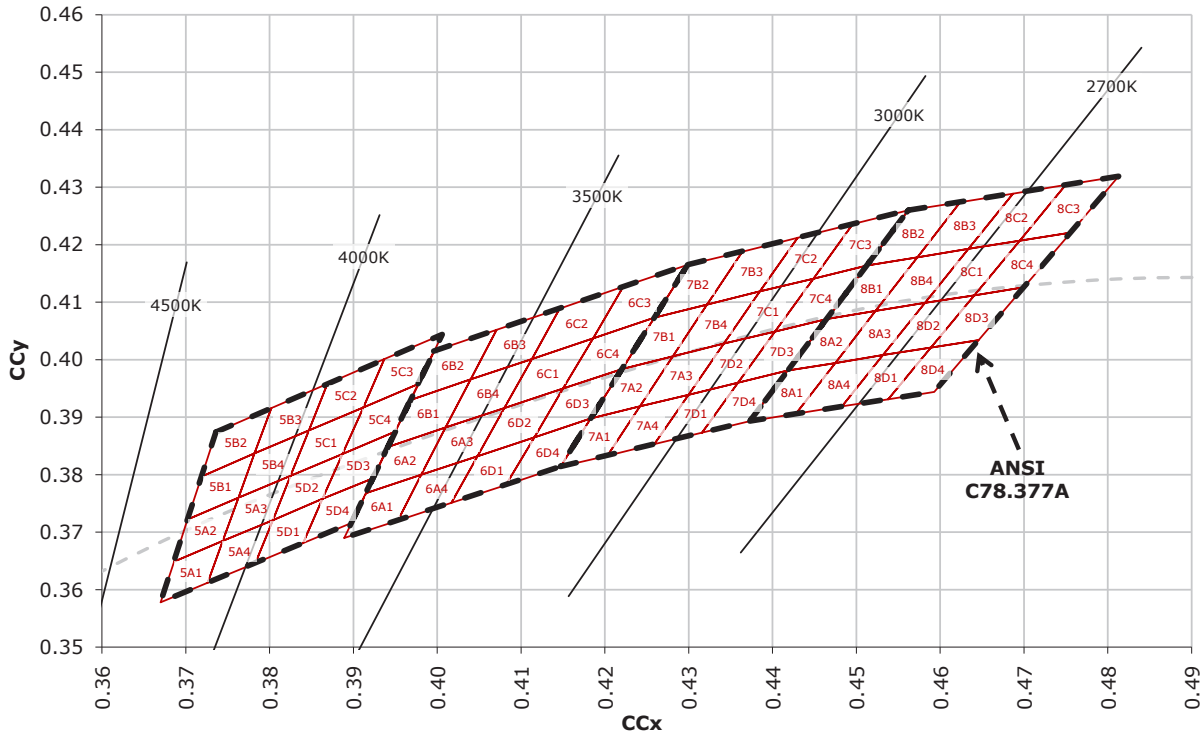
CIE CHROMATICITY DIAGRAM





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ORDER CODE TABLE*

Color	Kit Number	Viewing Angle	Luminous Flux (lm)		Color Bin Code
			Min.	Max.	
Cool White	SP301-WKW-XD0F0503	120	6.3	13.9	1A0,1B0,1C0,1D0,2A0,2B0,2C0,2D0
Cool White	SP301-WKW-XD0F0513	120	6.3	13.9	0S0,0T0,0U0,1A0,1B0,1C0,1D0,2A0 ,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3S0,3B0,3A0,3R0
Cool White	SP301-WKW-XD0F0DT3	120	6.3	13.9	0A0,0B0,0C0,0D0,0R0,0S0,0T0, 0U0,1A0,1B0,1C0,1D0,1R0,1S0, 1T0,1U0
Cool White	SP301-WKW-XD0F0DV3	120	6.3	13.9	1A0,1B0,1C0,1D0,1R0,1S0,1T0, 1U0,2A0,2B0,2C0,2D0,2R0,2S0, 2T0,2U0
Cool White	SP301-WKW-XD0F0DY3	120	6.3	13.9	2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0
Cool White	SP301-WKW-XD0F0DZ3	120	6.3	13.9	2C0,2D0, 2T0,2U0,3A0,3B0,3C0, 3D0,3R0,3S0,3T0,3U0,4A0,4B0, 4R0,4S0
Cool White	SP301-WKW-XD0F0E13	120	6.3	13.9	1A0,1B0,1C0,1D0
Cool White	SP301-WKW-XD0F0E23	120	6.3	13.9	2A0,2B0,2C0,2D0
Cool White	SP301-WKW-XD0F0E33	120	6.3	13.9	3A0,3B0,3C0,3D0
Cool White	SP301-WKW-XE0F0503	120	8.2	13.9	1A0,1B0,1C0,1D0,2A0,2B0,2C0,2D0
Cool White	SP301-WKW-XE0F0513	120	8.2	13.9	0S0,0T0,0U0,1A0,1B0,1C0,1D0,2A0 ,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3S0,3B0,3A0,3R0
Cool White	SP301-WKW-XE0F0DT3	120	8.2	13.9	0A0,0B0,0C0,0D0,0R0,0S0,0T0, 0U0,1A0,1B0,1C0,1D0,1R0,1S0, 1T0,1U0
Cool White	SP301-WKW-XE0F0DV3	120	8.2	13.9	1A0,1B0,1C0,1D0,1R0,1S0,1T0, 1U0,2A0,2B0,2C0,2D0,2R0,2S0, 2T0,2U0
Cool White	SP301-WKW-XE0F0DY3	120	8.2	13.9	2A0,2B0,2C0,2D0,2R0,2S0,2T0,2U0, 3A0,3B0,3C0,3D0,3R0,3S0,3T0,3U0
Cool White	SP301-WKW-XE0F0DZ3	120	8.2	13.9	2C0,2D0, 2T0,2U0,3A0,3B0,3C0, 3D0,3R0,3S0,3T0,3U0,4A0,4B0, 4R0,4S0
Cool White	SP301-WKW-XE0F0E13	120	8.2	13.9	1A0,1B0,1C0,1D0
Cool White	SP301-WKW-XE0F0E23	120	8.2	13.9	2A0,2B0,2C0,2D0
Cool White	SP301-WKW-XE0F0E33	120	8.2	13.9	3A0,3B0,3C0,3D0

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 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.

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ORDER CODE TABLE

Color	Kit Number	Viewing Angle	Luminous Flux (lm)		Color Bin Code
			Min.	Max.	
Warm White	SP301-MKW-XD0F0F53	120	6.3	13.9	4C0,4D0,5A1,5A2,5A3,5A4,5B1, 5B2,5B3,5B4
Warm White	SP301-MKW-XD0F0F63	120	6.3	13.9	5C1,5C2,5C3,5C4,5D1,5D2,5D3, 5D4,6A1,6A2,6A3,6A4,6B1,6B2, 6B3,6B4
Warm White	SP301-MKW-XD0F0F73	120	6.3	13.9	6C1,6C2,6C3,6C4,6D1,6D2,6D3, 6D4,7A1,7A2,7A3,7A4,7B1,7B2, 7B3,7B4
Warm White	SP301-MKW-XD0F0F83	120	6.3	13.9	7C1,7C2,7C3,7C4,7D1,7D2,7D3, 7D4,8A1,8A2,8A3,8A4,8B1,8B2, 8B3,8B4
Warm White	SP301-MKW-XD0F0E53	120	6.3	13.9	5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4 ,5C1,5C2,5C3,5C4,5D1,5D2,5D3, 5D4
Warm White	SP301-MKW-XD0F0E63	120	6.3	13.9	6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4, 6C1,6C2,6C3,6C4,6D1,6D2,6D3, 6D4
Warm White	SP301-MKW-XD0F0E73	120	6.3	13.9	7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4, 7C1,7C2,7C3,7C4,7D1,7D2,7D3, 7D4
Warm White	SP301-MKW-XD0F0E83	120	6.3	13.9	8A1,8A2,8A3,8A4,8B1,8B2,8B3, 8B4,8C1,8C2,8C3,8C4,8D1,8D2, 8D3,8D4
Warm White	SP301-MKW-XD0F0A33	120	6.3	13.9	4A0,4B0,4C0,4D0,5A1,5A2,5A3, 5A4,5B1,5B2,5B3,5B4
Warm White	SP301-MKW-XD0F0A43	120	6.3	13.9	4C0,4D0,5A1,5A2,5A3,5A4,5B1, 5B2,5B3,5B4,5C1,5C2,5C3,5C4, 5D1,5D2,5D3,5D4
Warm White	SP301-MKW-XD0F0A53	120	6.3	13.9	5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4 ,5C1,5C2,5C3,5C4,5D1,5D2,5D3, 5D4,6A1,6A2,6A3,6A4,6B1,6B2, 6B3,6B4
Warm White	SP301-MKW-XD0F0A63	120	6.3	13.9	,5C1,5C2,5C3,5C4,5D1,5D2,5D3, 5D4,6A1,6A2,6A3,6A4,6B1,6B2, 6B3,6B4,6C1,6C2,6C3,6C4,6D1, 6D2,6D3,6D4
Warm White	SP301-MKW-XD0F0A73	120	6.3	13.9	6A1,6A2,6A3,6A4,6B1,6B2, 6B3,6B4,6C1,6C2,6C3,6C4,6D1, 6D2,6D3,6D4,7A1,7A2,7A3,7A4,7B1 ,7B2,7B3,7B4
Warm White	SP301-MKW-XD0F0A83	120	6.3	13.9	6C1,6C2,6C3,6C4,6D1, 6D2,6D3,6D4,7A1,7A2,7A3,7A4,7B1 ,7B2,7B3,7B4,7C1,7C2,7C3,7C4, 7D1,7D2,7D3,7D4
Warm White	SP301-MKW-XD0F0A93	120	6.3	13.9	7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4 ,7C1,7C2,7C3,7C4,7D1,7D2,7D3, 7D4,8A1,8A2,8A3,8A4,8B1,8B2, 8B3,8B4
Warm White	SP301-MKW-XD0F0AA3	120	6.3	13.9	7C1,7C2,7C3,7C4,7D1,7D2,7D3, 7D4,8A1,8A2,8A3,8A4,8B1,8B2, 8B3,8B4,8C1,8C2,8C3,8C4,8D1, 8D2,8D3,8D4

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GRAPHS

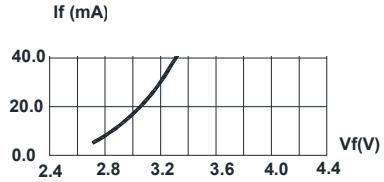

FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

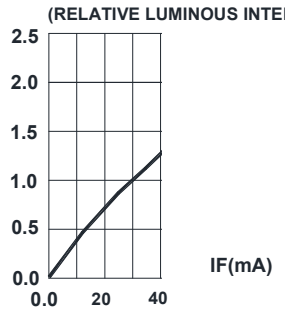

FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

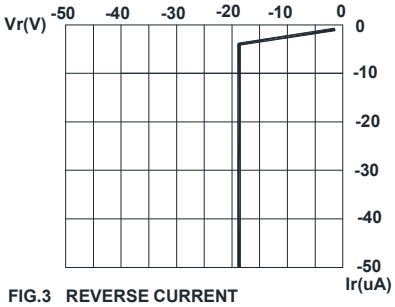

FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

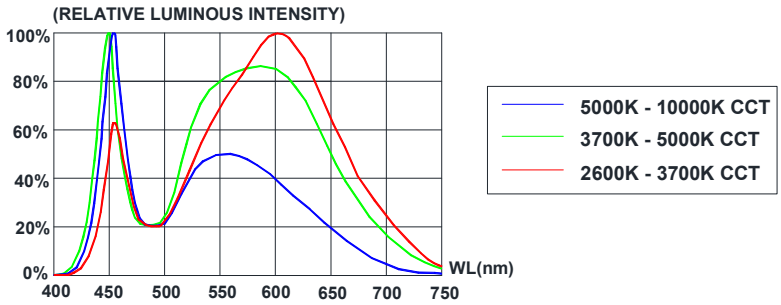

FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

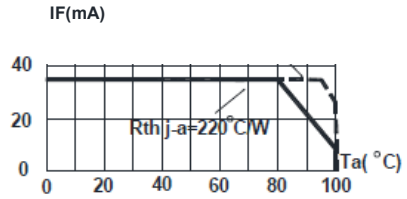

FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE (Tjmax=110°C)

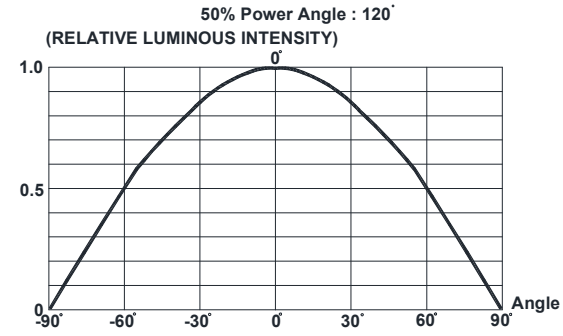

FIG.6 FAR FIELD PATTERN

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.

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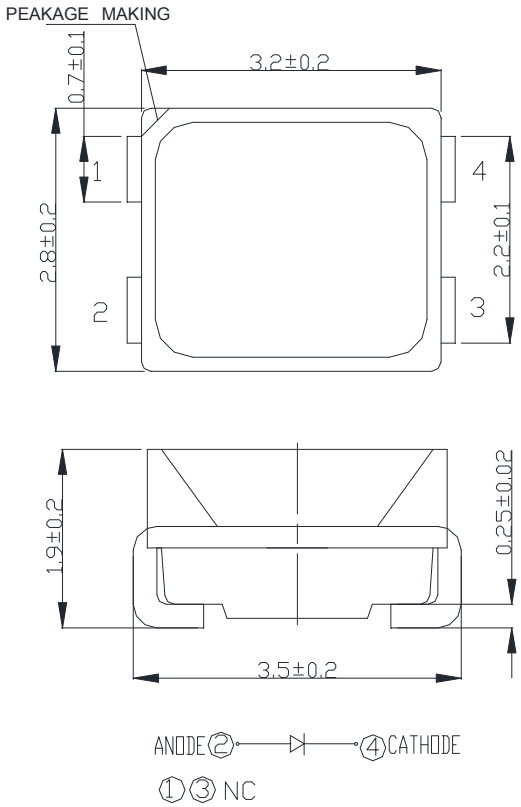
MECHANICAL DIMENSIONS

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.

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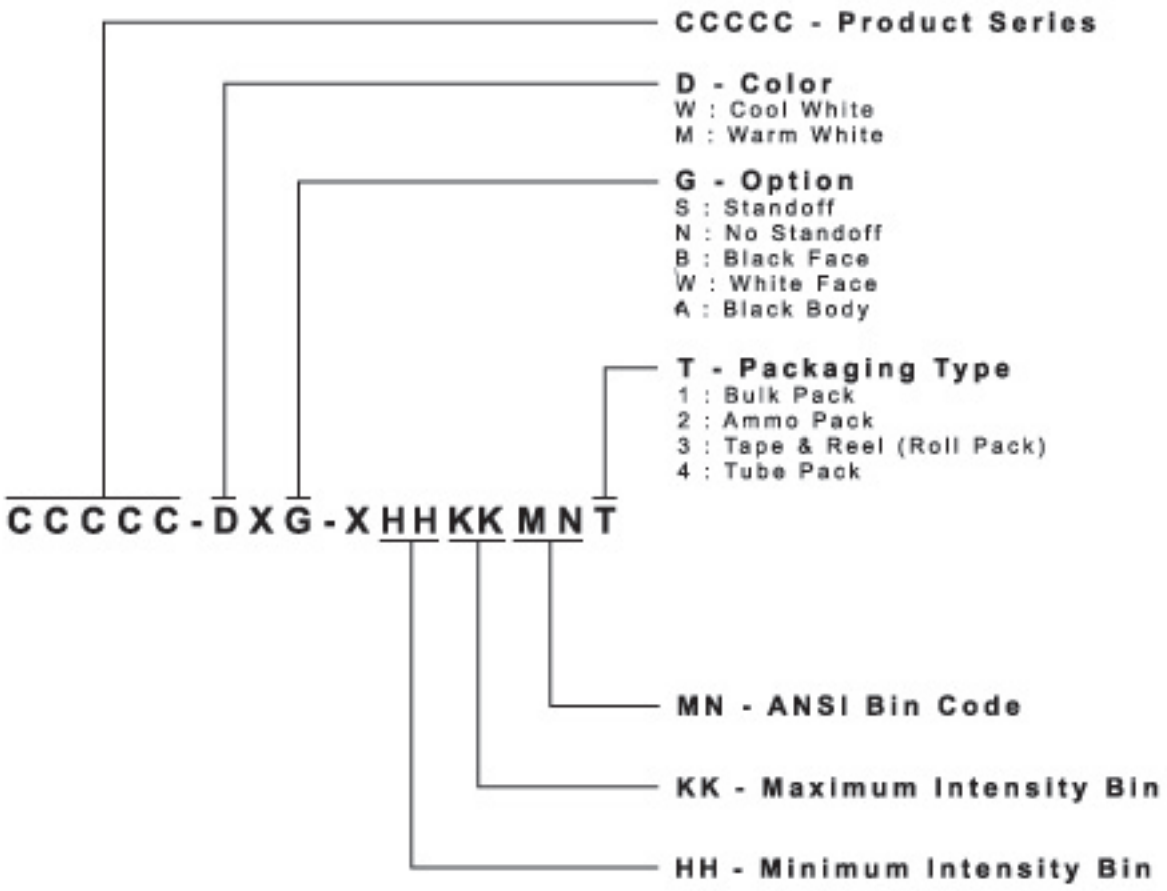
KIT NUMBER SYSTEM

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



* Please contact our sales representative for ordering information.

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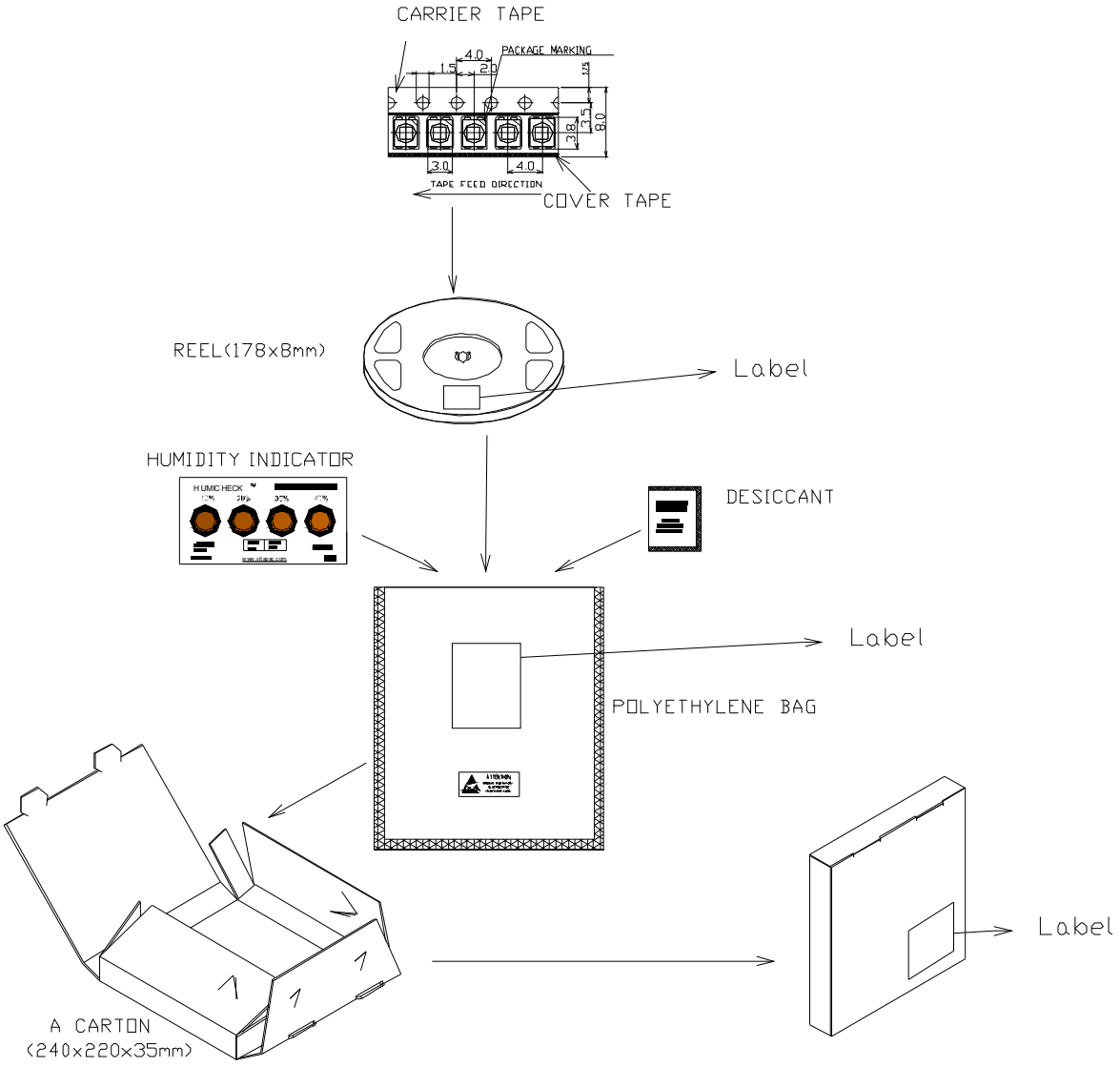
PACKAGING

- 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 2000 pcs per reel.



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