

Specification for AB-3535CQ-KKFRA Series

AB-3535CQ-KKFRA

3535 Ceramic 1.0W 3V White LED



Features:

- White,70-CRI, 80-CRI, 90-CRI, 95-CRI
- High luminous flux output
- High current capability
- Maximum drive current: 1.5 A
- Low thermal resistance: as low as 5°C/W
- Viewing angle:120±5°
- Pb-free Reflow Soldering Application
- The product itself will remain within RoHS compliant version

Applications:

- Indoor lighting
- Outdoor lighting
- General lighting
- Architectural lighting
- Automotive
- Portable torch
- Industrial lighting (High/Low Bay)



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Electro Optical Characteristics

CCT	CRI	Luminous Flux (lm)							
		T _j =25°C @350mA		T _j =85°C @350mA		T _j =25°C @700mA		T _j =85°C @700mA	
		Min.	Typ.	Typ.	Typ.	Typ.	Typ.		
2700K	80	139	156	140	289	257			
	90	122	137	123	255	226			
3000K	70	156	175	158	326	288			
	80	148	162	145	300	266			
	90	130	142	128	265	235			
3500K	95	100	118	106	219	193			
	70	156	181	163	337	299			
	80	148	168	151	313	277			
	90	130	149	135	278	247			
4000K	95	100	118	106	219	193			
	70	164	188	169	350	310			
	80	148	174	157	324	287			
	90	130	152	138	284	252			
5000K	95	107	125	113	233	205			
	70	164	188	169	350	310			
	80	156	178	160	331	294			
	90	130	156	140	289	257			
5700K	95	107	125	113	233	205			
	70	164	186	167	346	307			
	80	156	176	159	328	291			
	90	130	153	138	285	253			
6500K	95	107	125	113	233	205			
	70	164	186	167	346	307			
	80	156	176	159	328	291			
	90	130	153	138	285	253			

* Tolerance of measurements of the Luminous Flux is ±7%.

* Ra measurement tolerance is ±2.

* Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.

* The lumen table at 85°C is only for reference.



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Absolute Maximum Ratings (T_j=25C)

Item	Symbol	Absolute Max. Rating	Unit
Forward Current	I _F	1500	mA
Power Dissipation	P _D	5.1	W
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-40~ +85	°C
Storage Temperature	T _{stg}	-40~ +85	°C
Junction Temperature	T _j	150	°C
Soldering Temperature	T _{sld}	Reflow soldering: 230°C or 260°C for 10 sec	

* I_{FP} condition with Pulse: Width≤100μs, Duty cycle≤1/10

* Proper current derating must maintain the junction temperature below the maximum junction temperature

* LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter ranges. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product

* All measurements were made under the standardized environment of American Bright LED

Electrical/Optical Characteristics (T_j=25C)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V _F	2.6	3.0	3.4	V	I _f = 350mA
Reverse Current	I _R	-	-	10	μA	V _R = 5V
Viewing Angle	2θ _{1/2}	-	120	-	°	I _f = 350mA
Thermal Resistance	R _{th j-sp}	-	5.0	-	°C/W	I _f = 350mA
Electrostatic Discharge	ESD	-	-	8000	V	HBM

* Tolerance of measurements of the Forward Voltage is ±0.1V

* 2θ_{1/2} is the off-axis where the luminous intensity is 1/2 of the peak intensity

* Ra measurements tolerance is ±2

* R_{th j-sp} is the thermal resistance from LED junction to solder point on MCPCB with electrical power

Naming System:

AB-3535CQ-KKFRA-xx

KK: color temperature (27: 2700K, 30: 3000K, 35: 3500K, 40: 4000K, 50: 5000K, 57: 5700K, 65: 6500K)

RA: CRI (70: RA>70, 80: RA>80, 90: RA>90: RA>95)

xx: Bin code



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BIN Structure

Luminous Flux Ranks ($I_f = 350\text{mA}$, $T_j = 25^\circ\text{C}$)

CCT	Color Rendering		Luminous Flux (lm)		
	Min.	Typ.	code	Min.	Max.
2700K	80	82	2G	139	148
			2H	148	156
			2J	156	164
			2K	164	172
			2L	172	182
	90	92	2E	122	130
			2F	130	139
			2G	139	148
			2H	148	156
			2J	156	164
3000K	70	72	2J	156	164
			2K	164	172
			2L	172	182
			2M	182	200
			2N	200	220
	80	82	2H	148	156
			2J	156	164
			2K	164	172
			2L	172	182
			2M	182	200
3500K	90	92	2F	130	139
			2G	139	148
			2H	148	156
			2J	156	164
			2K	164	172
	95	96.5	2B	100	107
			2C	107	114
			2D	114	122
			2E	122	130
			2F	130	139
4000K 5000K 5700K 6500K	70	72	2K	164	172
			2L	172	182
			2M	182	200
			2N	200	220
			2P	220	240



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4000K 5000K 5700K 6500K	80	82	2H	148	156
			2J	156	164
			2K	164	172
			2L	172	182
			2M	182	200
	90	92	2F	130	139
			2G	139	148
			2H	148	156
			2J	156	164
			2K	164	172
	95	96.5	2C	107	114
			2D	114	122
			2E	122	130
			2F	130	139
			2G	139	148

* Tolerance of measurements of the Luminous Flux is $\pm 7\%$

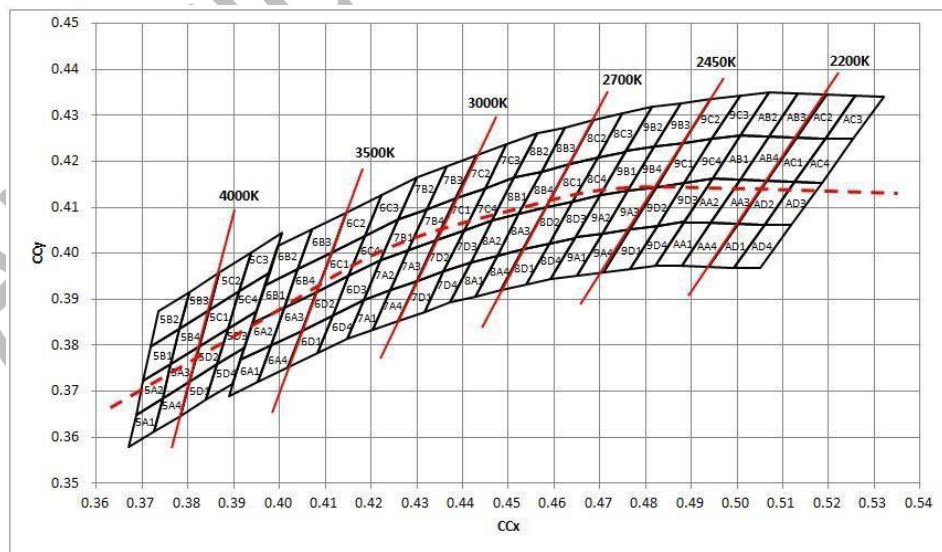
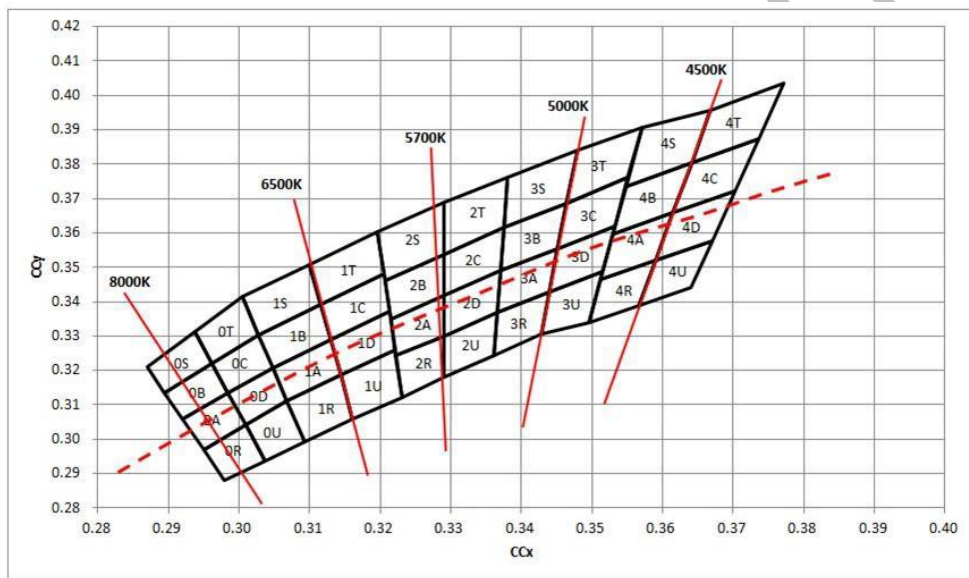
* Ra measurement tolerance is ± 2

Forward Voltage Ranks ($I_f = 350\text{mA}$, $T_j = 25^\circ\text{C}$)

BIN Code	Min.	Max.	Unit
G3	2.6	2.8	V
H3	2.8	3.0	V
J3	3.0	3.2	V
K3	3.2	3.4	V

* Tolerance of measurements of the Forward Voltage is $\pm 0.1\text{V}$

CIE Chromaticity Diagram, $I_f = 350\text{mA}$, $T_j = 25^\circ\text{C}$





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BIN code description

Bin Code	X	Y	Bin Code	X	Y	Bin Code	X	Y	Bin Code	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
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



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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
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



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	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
9A1	0.4647	0.4035	9A2	0.4700	0.4126	9A3	0.4762	0.4135	9A4	0.4706	0.4043
	0.4706	0.4043		0.4761	0.4135		0.4823	0.4144		0.4765	0.4051
	0.4650	0.3951		0.4706	0.4043		0.4765	0.4051		0.4708	0.3959
	0.4593	0.3944		0.4647	0.4035		0.4706	0.4043		0.4650	0.3951
9B1	0.4757	0.4222	9B2	0.4813	0.4319	9B3	0.4877	0.4327	9B4	0.4819	0.4231
	0.4819	0.4231		0.4877	0.4327		0.4942	0.4335		0.4882	0.4239
	0.4762	0.4135		0.4819	0.4231		0.4882	0.4239		0.4823	0.4144
	0.4700	0.4126		0.4757	0.4223		0.4819	0.4231		0.4762	0.4135
9C1	0.4882	0.4239	9C2	0.4942	0.4335	9C3	0.5006	0.4342	9C4	0.4945	0.4248
	0.4945	0.4248		0.5006	0.4342		0.5070	0.4350		0.5008	0.4256
	0.4885	0.4153		0.4945	0.4248		0.5008	0.4256		0.4946	0.4162
	0.4823	0.4144		0.4882	0.4239		0.4945	0.4248		0.4885	0.4153
9D1	0.4765	0.4051	9D2	0.4823	0.4144	9D3	0.4885	0.4153	9D4	0.4825	0.4059
	0.4825	0.4059		0.4885	0.4153		0.4946	0.4162		0.4884	0.4068
	0.4765	0.3966		0.4825	0.4059		0.4884	0.4068		0.4822	0.3973
	0.4708	0.3959		0.4765	0.4051		0.4825	0.4059		0.4765	0.3966
AA1	0.4822	0.3973	AA2	0.4884	0.4067	AA3	0.4942	0.4066	AA4	0.4879	0.3972
	0.4884	0.4067		0.4946	0.4162		0.5006	0.4160		0.4942	0.4066
	0.4942	0.4066		0.5006	0.4160		0.5066	0.4158		0.5001	0.4064
	0.4879	0.3972		0.4942	0.4066		0.5001	0.4064		0.4936	0.3970
AB1	0.4946	0.4162	AB2	0.5008	0.4256	AB3	0.5069	0.4254	AB4	0.5006	0.4160
	0.5008	0.4256		0.5070	0.4350		0.5133	0.4348		0.5069	0.4254
	0.5069	0.4254		0.5133	0.4348		0.5196	0.4346		0.5131	0.4252
	0.5006	0.4160		0.5069	0.4254		0.5131	0.4252		0.5066	0.4158
AC1	0.5131	0.4252	AC2	0.5131	0.4252	AC3	0.5192	0.4250	AC4	0.5126	0.4156
	0.5192	0.4250		0.5196	0.4346		0.5258	0.4343		0.5192	0.4250
	0.5126	0.4156		0.5258	0.4343		0.5321	0.4341		0.5253	0.4248
	0.5066	0.4158		0.5192	0.4250		0.5253	0.4248		0.5186	0.4154
AD1	0.4936	0.3970	AD2	0.5001	0.4064	AD3	0.5059	0.4062	AD4	0.4993	0.3969
	0.5001	0.4064		0.5066	0.4158		0.5126	0.4156		0.5059	0.4062
	0.5059	0.4062		0.5126	0.4156		0.5186	0.4154		0.5118	0.4061
	0.4993	0.3969		0.5059	0.4062		0.5118	0.4061		0.5050	0.3967

*Energy Star binning applied to all 2700~6500K

*Tolerance of measurements of the chromaticity Coordinate is ± 0.005

Typical Characteristics Curves

Fig 1. Color Spectrum ($T_j=25^{\circ}\text{C}$)

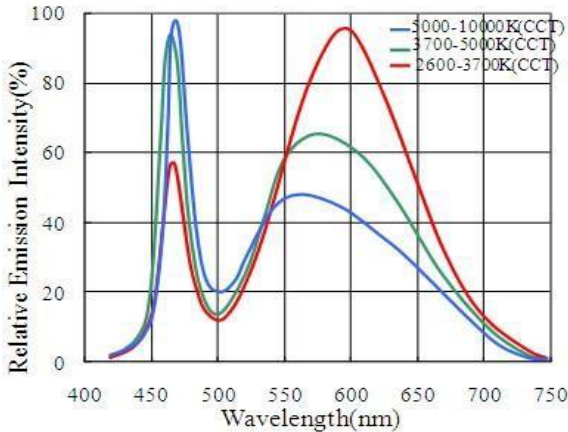


Fig 2. Viewing angle distribution, $T_j = 25^{\circ}\text{C}$

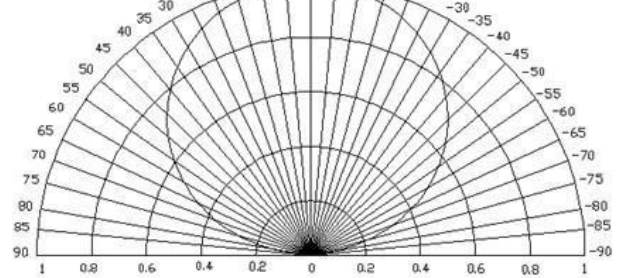


Fig 3. Forward Current vs. Relative Intensity, $T_j = 25^{\circ}\text{C}$

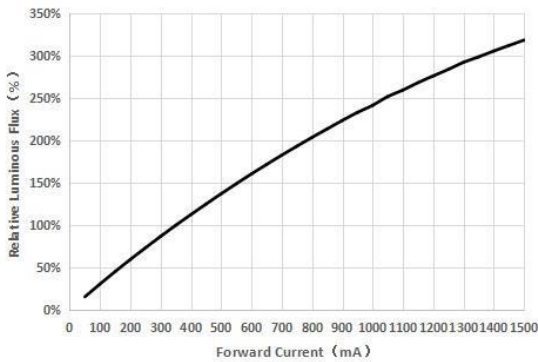


Fig 4. Forward Current vs. Forward Voltage, $T_j = 25^{\circ}\text{C}$

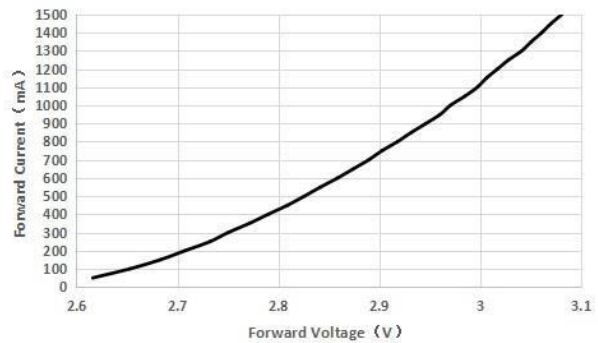


Fig 5. Junction Temperature vs. Relative Luminous flux ($I_f=350\text{mA}$)

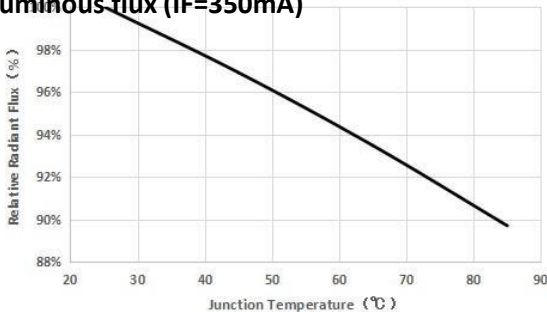
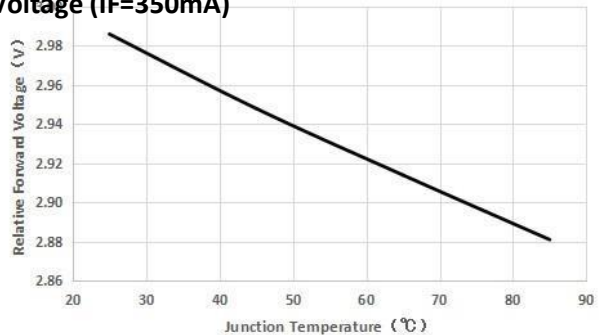
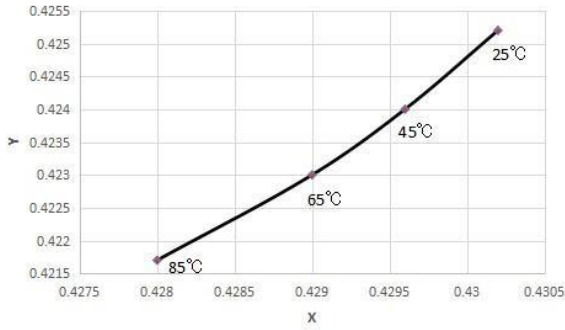


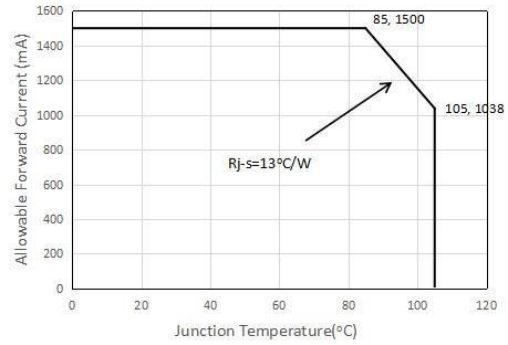
Fig 6. Junction Temperature vs. Relative Forward Voltage ($I_f=350\text{mA}$)



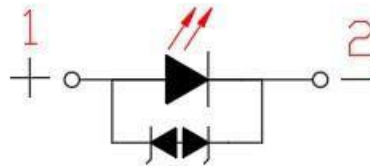
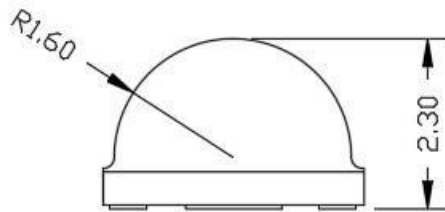
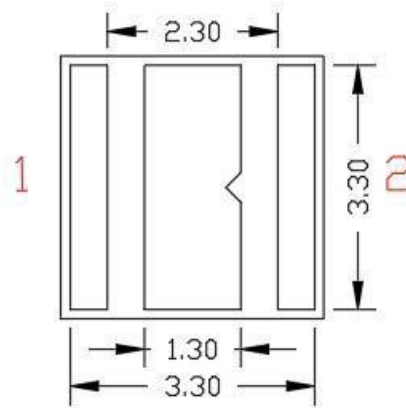
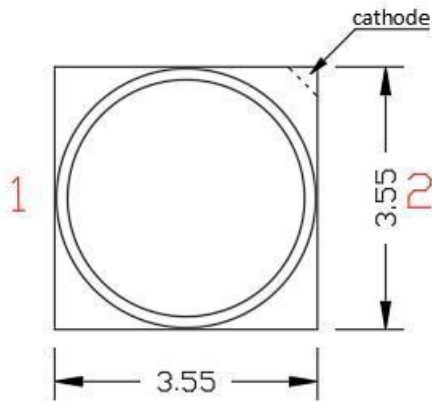
**Fig 7. Junction Temperature vs. CIE(x,y),
 $I_F=350\text{mA}$**



**Fig 8. Junction Temperature vs. Maximum
Forward Current**

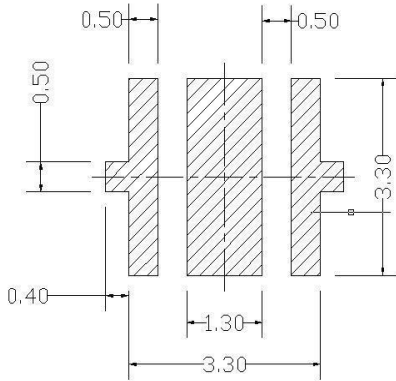


Package Dimensions

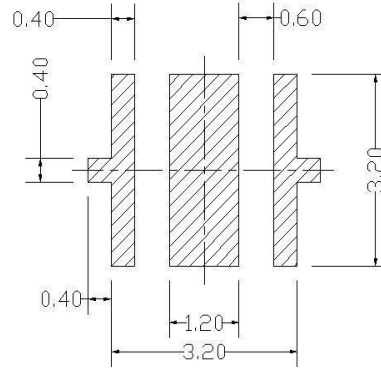


* The tolerance unless mentioned is $\pm 0.2\text{mm}$, unit = mm

Recommended Solder Pad



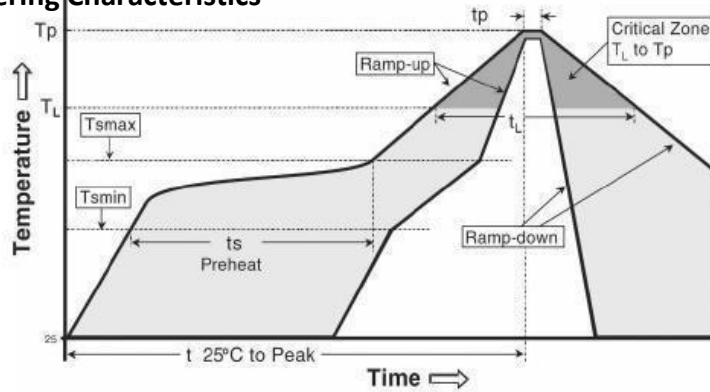
Recommended PCB Solder Pad



Recommended Stencil Pattern

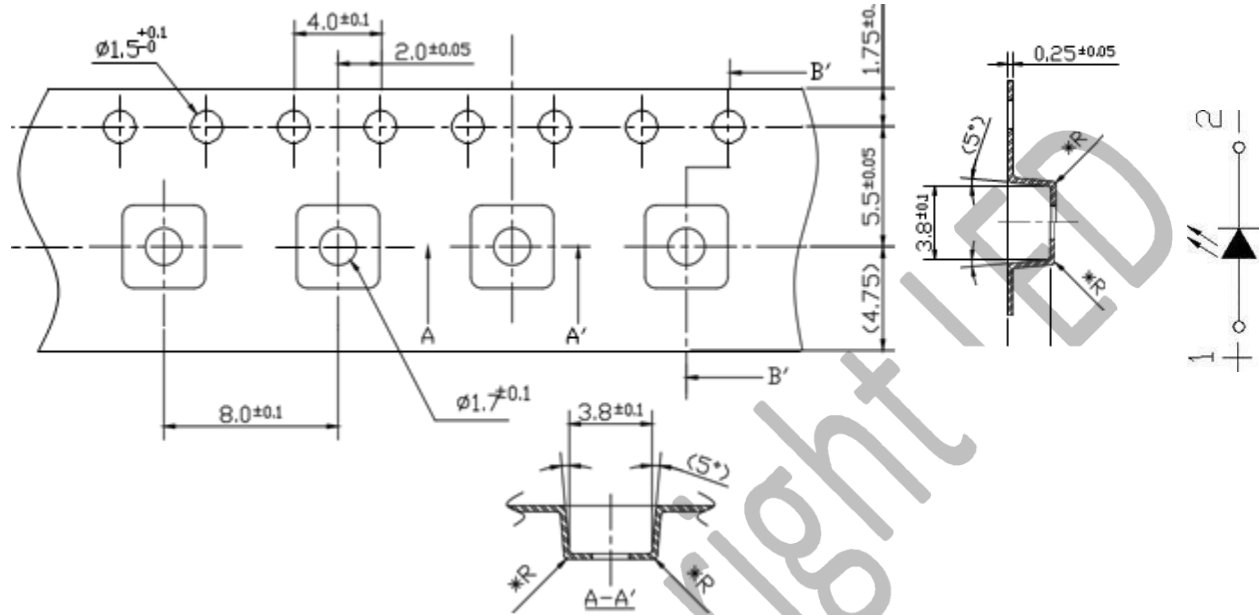
* The tolerance unless mentioned is $\pm 0.1\text{mm}$, unit = mm

Reflow Soldering Characteristics



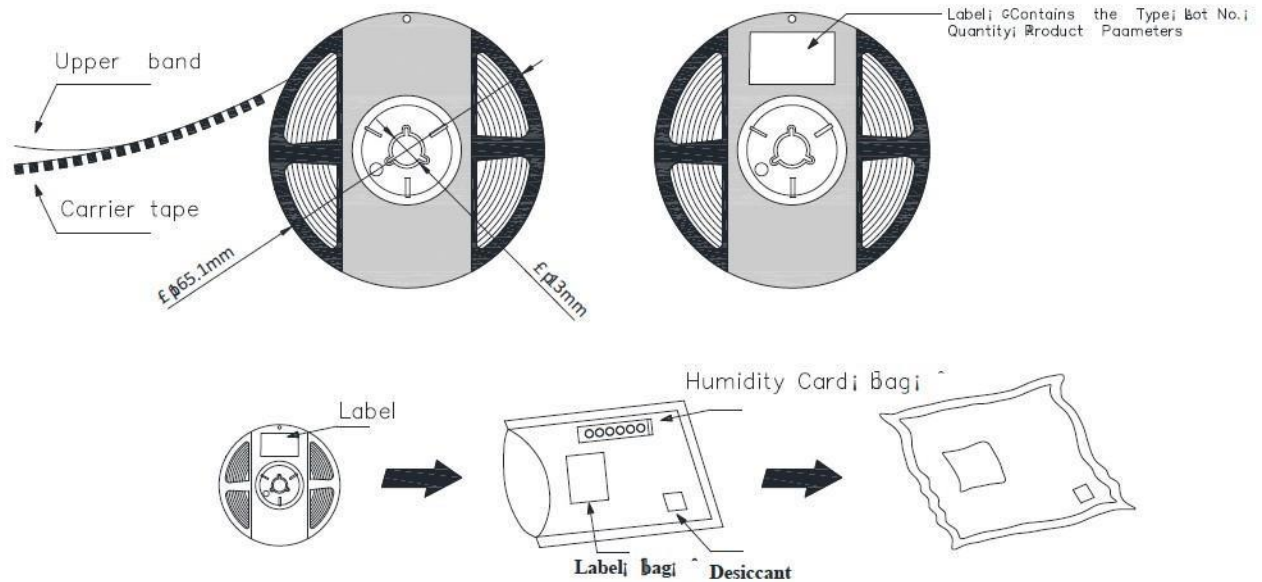
Reflow Soldering	
Temperature min ($T_{s, \text{min}}$)	150°C
Temperature Max ($T_{s, \text{Max}}$)	200°C
Time (t_s) from ($T_{s, \text{min}}$ to $T_{s, \text{Max}}$)	60-120 s
Ramp-up rate (T_L to T_p)	3°C/s Max
Liquidous temperature (T_L)	217°C
Time (T_L) maintained above T_L	60-150 s
Peak package body temperature	260°C Max
Time (T_p) within 5°C of the specified classification temperature (T_c)	30 s Max
Ramp-down rate (T_p to T_L)	6°C/s Max
Time 25°C to peak temperature	8 min. Max

Package Dimensions of Tape



- * Quantity: Max 900pcs/Reel
- * Cumulative Tolerance: Cumulative Tolerance/10 pitches to be $\pm 0.25\text{mm}$
- * Package: P/N, Manufacturing data Code No. and Quantity to be indicated on a waterproof Package.
- * unit = mm

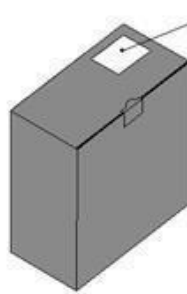
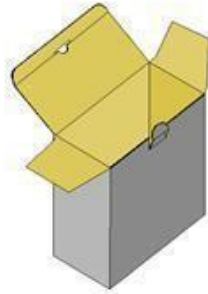
Package Dimensions of Reel





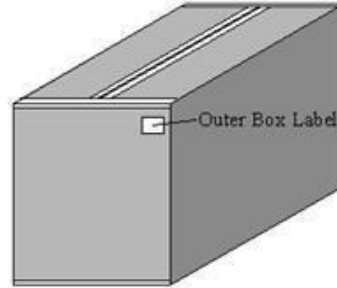
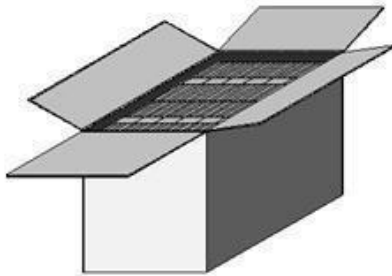
AMERICAN BRIGHT OPTOELECTRONICS CORP.

Packaging



Label Contains Type,
Lot NO, Quantity, Product
Parameters.

* Capacity 4 or 8 reels per box.



Outer Box Label

* Capacity 48 or 64 reels per box.

America

Caution

1. Reflow soldering is recommended not to be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.

Notes on American Bright AB-3535CJ Series soldering:

1. Recommend to use reflow machine.
2. Recommend to use heating plate soldering.
3. Manual soldering is not recommended.

Notes on reflow process:

1. To confirm whether the actual temperature curve in the reflow soldering conditions comply with recommended conditions. LEDs are guaranteed for one time reflow.
2. During reflow process do not apply force on LED active area.
3. After reflow process, PCB board should be cooled down before packing or storage.

Precaution for use

Storage

1. Before opening the package: The LED should be kept at 30°C or less and 90%RH or less.
2. After opening the package: The LED's lifetime is 168Hrs @30°C or less and 60%RH or less. If unused LED remain, it should be stored in moisture proof packages JEDEC (**MSL 3**).
3. If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions: baking treatment: 60±5°C for 24 hours.