

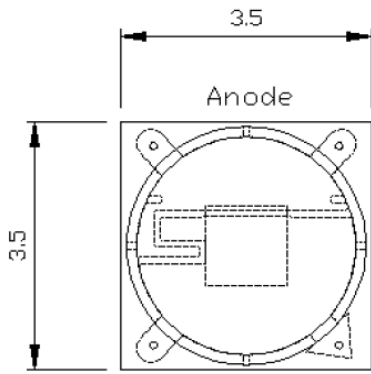


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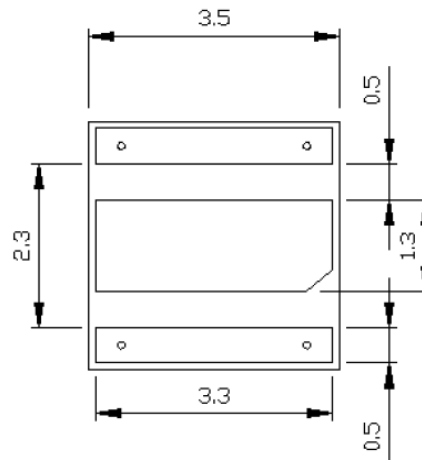
SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

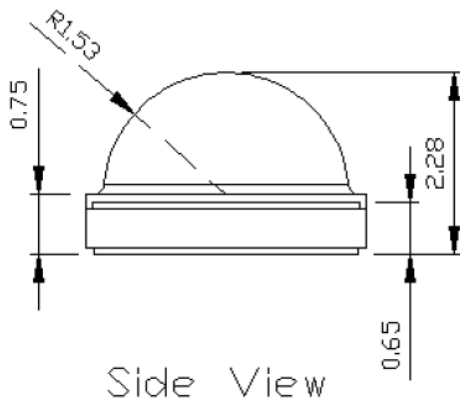
Package Dimensions



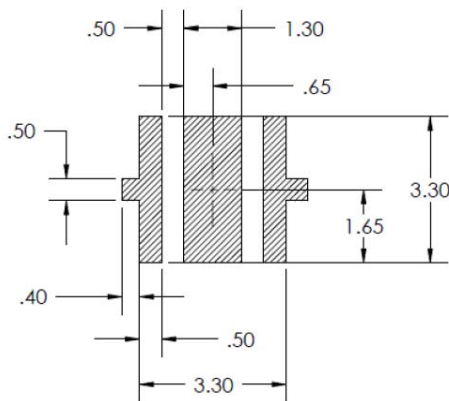
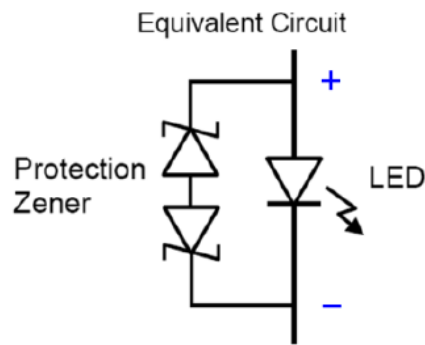
Top View



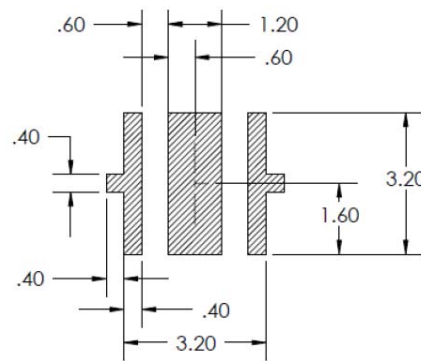
Bottom View



Side View



RECOMMENDED PCB SOLDER PAD



RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)

Tolerance is $\pm 0.20\text{mm}$ unless other specified

Part NO.	Chip Material	Color Temperature Typ	Emission Color	CRI
SLE-3535CW4G-ED	CREE	5700K	Cool White	≥ 70
SLE-3535CS4G-ED	CREE	4000K	Natural White	≥ 70
SLE-3535CY4G-ED	CREE	3000K	Warm White	≥ 70



SHARLIGHT ELECTRONICS CO., LTD.

SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

Characteristics(T= 25°C)

COOL WHITE

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	--	3.1	3.5	V	I _f =350 mA
Reverse Current	I _r	--	--	5	μA	V _r =5 V
Viewing Angle	2θ _{1/2}	--	120	--	Deg	I _f =350 mA
Chromaticity Coordinate	x	--	0.329	--	--	I _f =350 mA
	y	--	0.342	--	--	
Color Temperature	CCT	--	5700	--	K	I _f =350 mA
Luminous Flux	Φ _v	--	120	--	Lm	I _f =350 mA
Color Render Index	CRI	70	--	--	--	I _f =350 mA
Thermal Resistance	R _{th}	--	5	--	°C/W	--
LED Junction Temp	T _j	--	--	150	°C	--

NEUTRAL WHITE 4000K

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	--	3.1	3.5	V	I _f =350 mA
Reverse Current	I _r	--	--	5	μA	V _r =5 V
Viewing Angle	2θ _{1/2}	--	120	--	Deg	I _f =350 mA
Chromaticity Coordinate	x	--	0.382	--	--	I _f =350 mA
	y	--	0.380	--	--	
Color Temperature	CCT	--	4000	--	K	I _f =350 mA
Luminous Flux	Φ _v	--	110	--	Lm	I _f =350 mA
Color Render Index	CRI	70	--	--	--	I _f =350 mA
Thermal Resistance	R _{th}	--	5	--	°C/W	--
LED Junction Temp	T _j	--	--	150	°C	--

WARM WHITE 3000K

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _f	--	3.1	3.5	V	I _f =350 mA
Reverse Current	I _r	--	--	5	μA	V _r =5V
Viewing Angle	2θ _{1/2}	--	120	--	Deg	I _f =350 mA
Chromaticity Coordinate	x	--	0.434	--	--	I _f =350 mA
	y	--	0.403	--	--	
Color Temperature	CCT	--	3000	--	K	I _f =350 mA
Luminous Flux	Φ _v	--	100	--	Lm	I _f =350 mA
Color Render Index	CRI	--	80	--	--	I _f =350 mA
Thermal Resistance	R _{th}	--	5	--	°C/W	--
LED Junction Temp	T _j	--	--	150	°C	--

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EDITOR : 周素華 03-29-13

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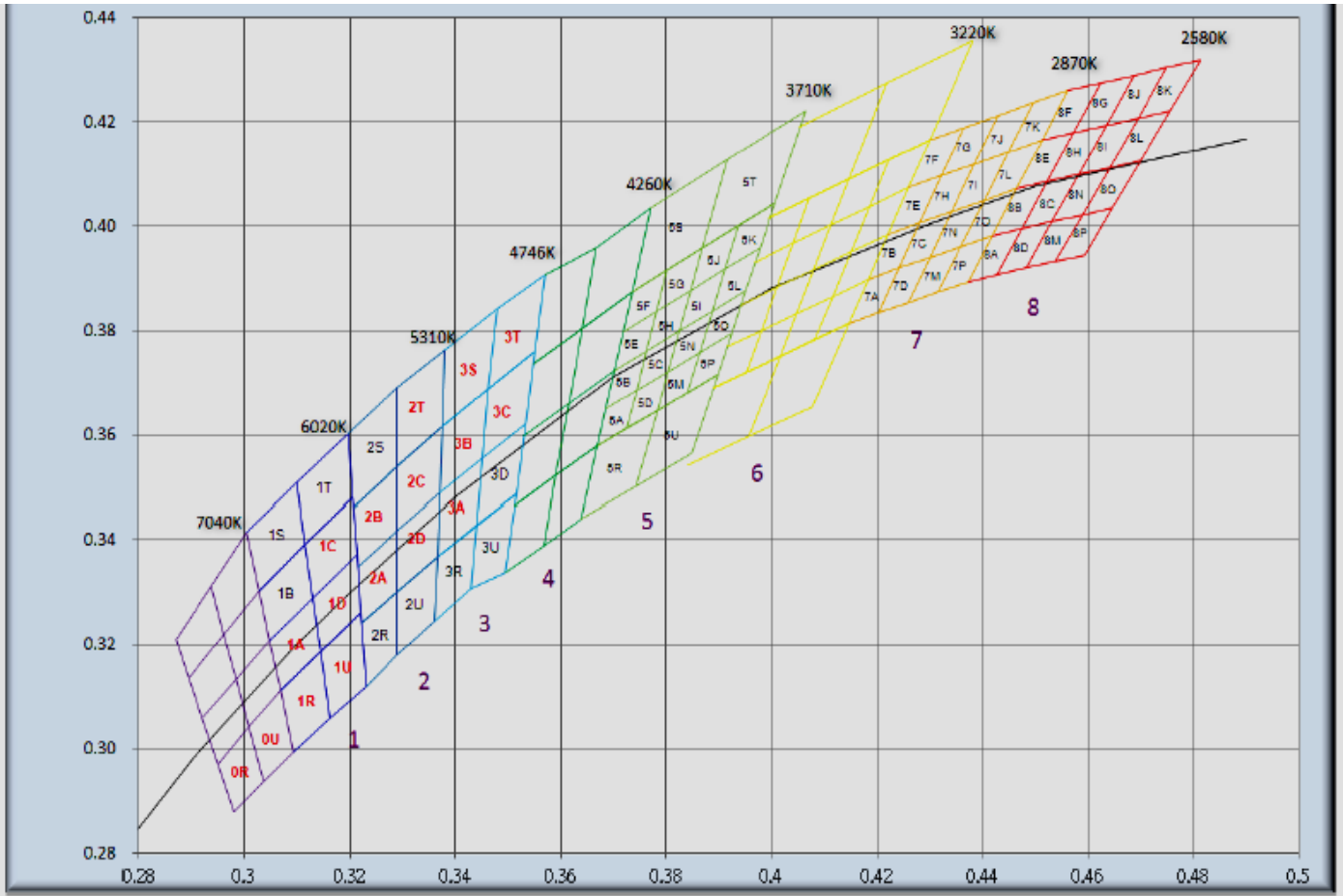
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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED





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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

region	x	y	region	x	y	region	x	y	region	x	y
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

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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

region	x	y	region	x	y	region	x	y	region	x	y
5A	0.3686	0.3649	5B	0.3702	0.3722	5C	0.3763	0.3760	5D	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
	0.3670	0.3578		0.3686	0.3649		0.3744	0.3685		0.3726	0.3612
5E	0.3719	0.3797	5F	0.3736	0.3874	5G	0.3802	0.3916	5H	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
	0.3702	0.3722		0.3719	0.3797		0.3782	0.3837		0.3763	0.3760
5I	0.3847	0.3877	5J	0.3869	0.3958	5K	0.3937	0.4001	5L	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
	0.3825	0.3798		0.3847	0.3877		0.3912	0.3917		0.3887	0.3836
5M	0.3804	0.3721	5N	0.3825	0.3798	5O	0.3887	0.3836	5P	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
	0.3783	0.3646		0.3804	0.3721		0.3863	0.3758		0.3840	0.3681
5R	0.3670	0.3578	5S	0.3771	0.4034	5T	0.3916	0.4127	5U	0.3783	0.3646
	0.3783	0.3646		0.3916	0.4127		0.4064	0.4221		0.3898	0.3716
	0.3743	0.3502		0.3869	0.3958		0.4006	0.4044		0.3848	0.3565
	0.3640	0.3440		0.3736	0.3874		0.3869	0.3958		0.3743	0.3502



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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

region	x	y	region	x	y	region	x	y	region	x	y
7A	0.4183	0.3898	7B	0.4221	0.3984	7C	0.4281	0.4006	7D	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
	0.4147	0.3814		0.4183	0.3898		0.4242	0.3919		0.4203	0.3833
7E	0.4259	0.4073	7F	0.4299	0.4165	7G	0.4364	0.4188	7H	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
	0.4221	0.3984		0.4259	0.4073		0.4322	0.4096		0.4281	0.4006
7I	0.4385	0.4119	7J	0.4430	0.4212	7K	0.4496	0.4236	7L	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
	0.4342	0.4028		0.4385	0.4119		0.4449	0.4141		0.4403	0.4049
7M	0.4300	0.3939	7N	0.4342	0.4028	7O	0.4403	0.4049	7P	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
	0.4259	0.3853		0.4300	0.3939		0.4359	0.3960		0.4316	0.3873
8A	0.4418	0.3981	8B	0.4465	0.4071	8C	0.4523	0.4085	8D	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
	0.4373	0.3893		0.4418	0.3981		0.4475	0.3994		0.4428	0.3906
8E	0.4513	0.4164	8F	0.4562	0.4260	8G	0.4624	0.4274	8H	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
	0.4465	0.4071		0.4513	0.4164		0.4573	0.4178		0.4523	0.4085
8I	0.4634	0.4193	8J	0.4687	0.4289	8K	0.4750	0.4304	8L	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
	0.4582	0.4099		0.4634	0.4193		0.4695	0.4207		0.4641	0.4112
8M	0.4532	0.4008	8N	0.4582	0.4099	8O	0.4641	0.4112	8P	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
	0.4483	0.3919		0.4532	0.4008		0.4589	0.4021		0.4538	0.3931

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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

PERFORMANCE GROUPS – CHROMATICITY

Color Temperature Typ	Bin Code (Region)									
	CW 5700K	0R	1A	1C	1D	2A	2B	2C	3A	3B
	0U	1R	1U		2D	2T		3S	3T	
CS 4000K	5A	5B	5C	5D	5E	5F	5G	5H		
	5I	5J	5K	5L	5M	5N	5O	5P		
CY 3000K	7A	7B	7C	7D	7E	7F	7G	7H		
	7I	7J	7K	7L	7M	7N	7O	7P		
	8A	8B	8C	8D	8E	8F	8G	8H		
	8I	8J	8K	8L	8M	8N	8O	8P		

PERFORMANCE GROUPS – Vf & FLUX

Bin	0F	0G	0H						
Vf(v)	2.75~3.0	3.0~3.25	3.25~3.5						
CW Bin				Q4	Q5	R2	R3	R4	R5
Flux(lm)				100-107	107-114	114-122	122-130	130-139	139-148
CS Bin			Q3	Q4	Q5	R2			
Flux(lm)			93.9-100	100-107	107-114	114-122			
CY Bin	P4	Q2	Q3	Q4	Q5				
Flux(lm)	80.6-87.4	87.4-93.9	93.9-100	100-107	107-114				

CALCULATED FLUX CHARACTERISTICS (T_j = 25°C)

Bin	P4	Q2	Q3	Q4	Q5	R2	R3	R4	R5
Flux(lm) @350mA	80.6	87.4	93.9	100	107	114	122	130	139
Flux(lm) @700mA	143	155	167	178	190	203	217	231	247
Flux(lm) @1000mA	185	201	216	230	246	262	281	299	320

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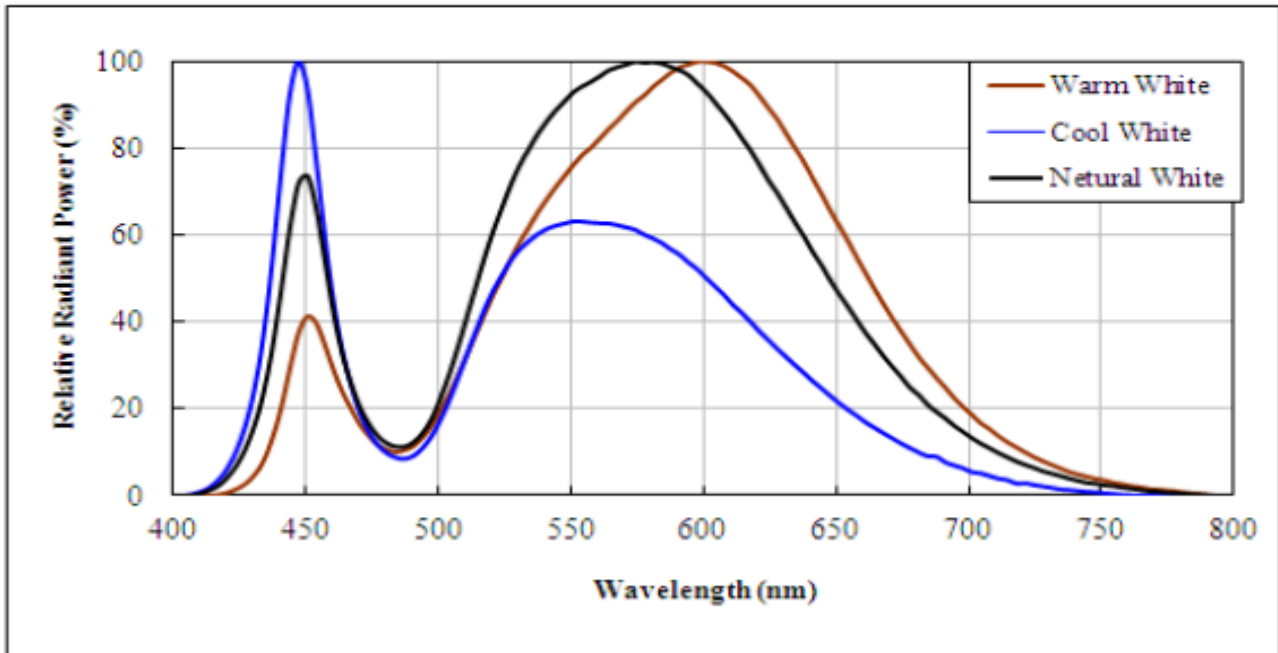


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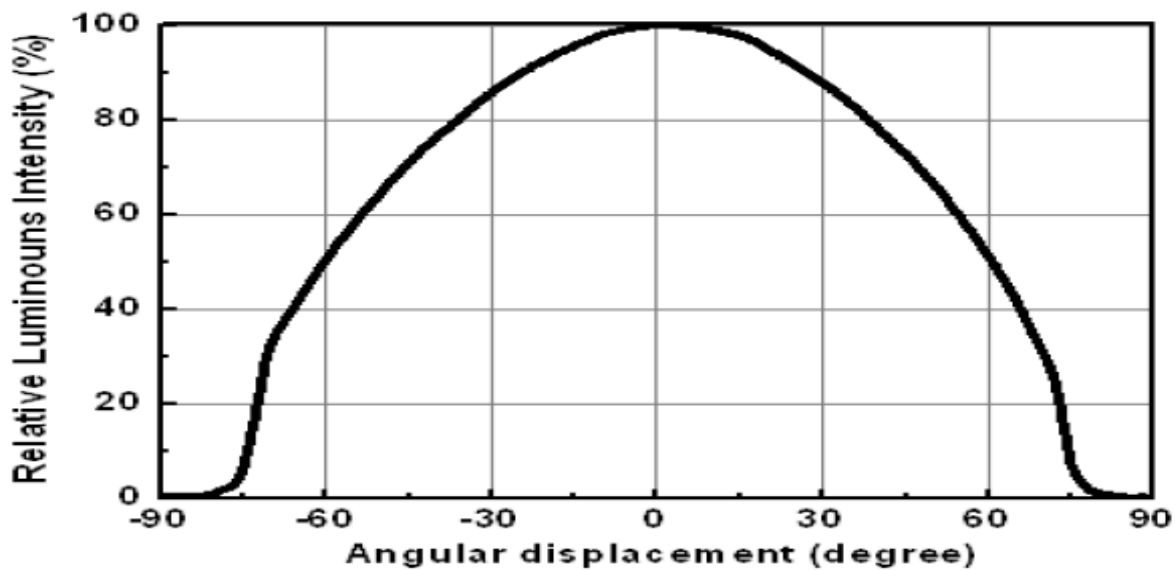
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Part No. : SLE-3535Cx4G-ED

Figure 1. Relative Spectral Power VS Wavelength @ Tc=25°C



Typical Spatial Distribution



Electrical Characteristics (T= 25°C)

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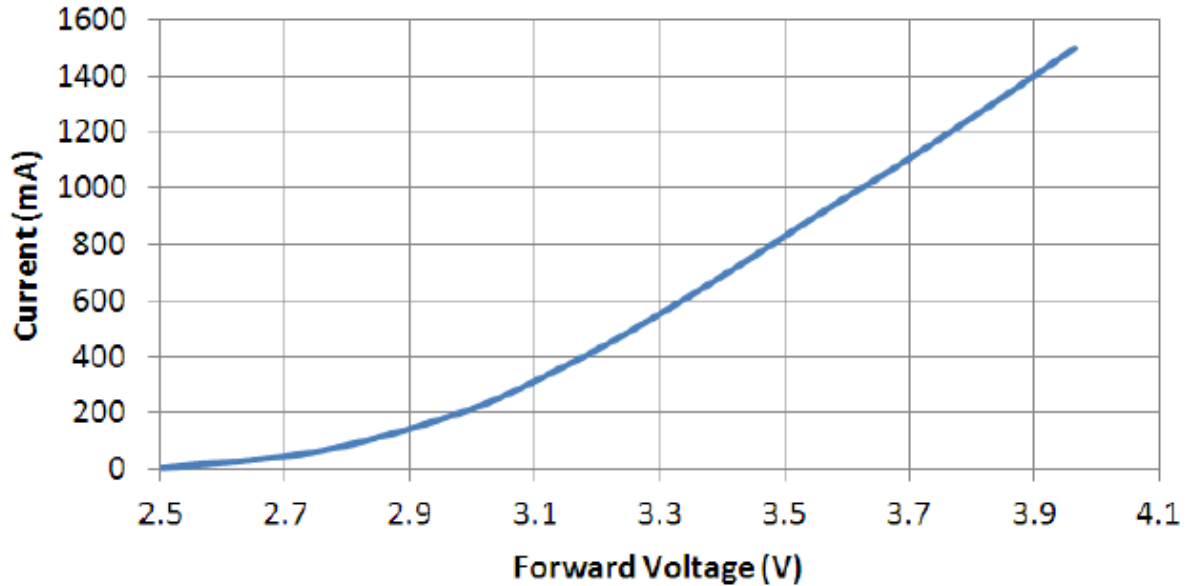
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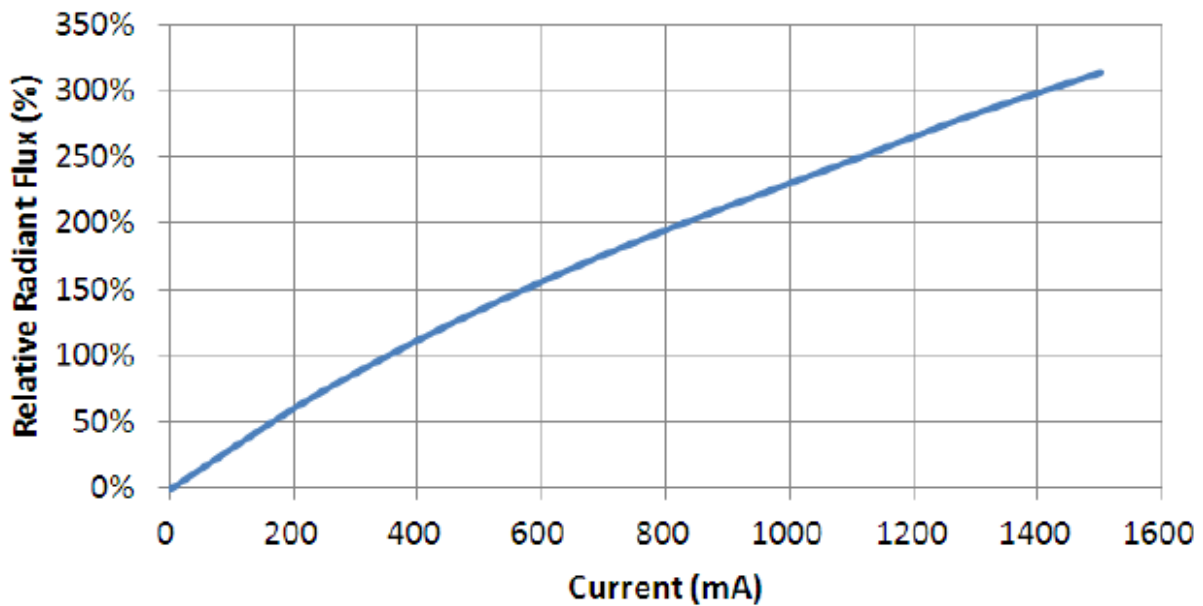


Part No. : SLE-3535Cx4G-ED

Electrical Characteristic



Relative Luminous Flux vs. Current

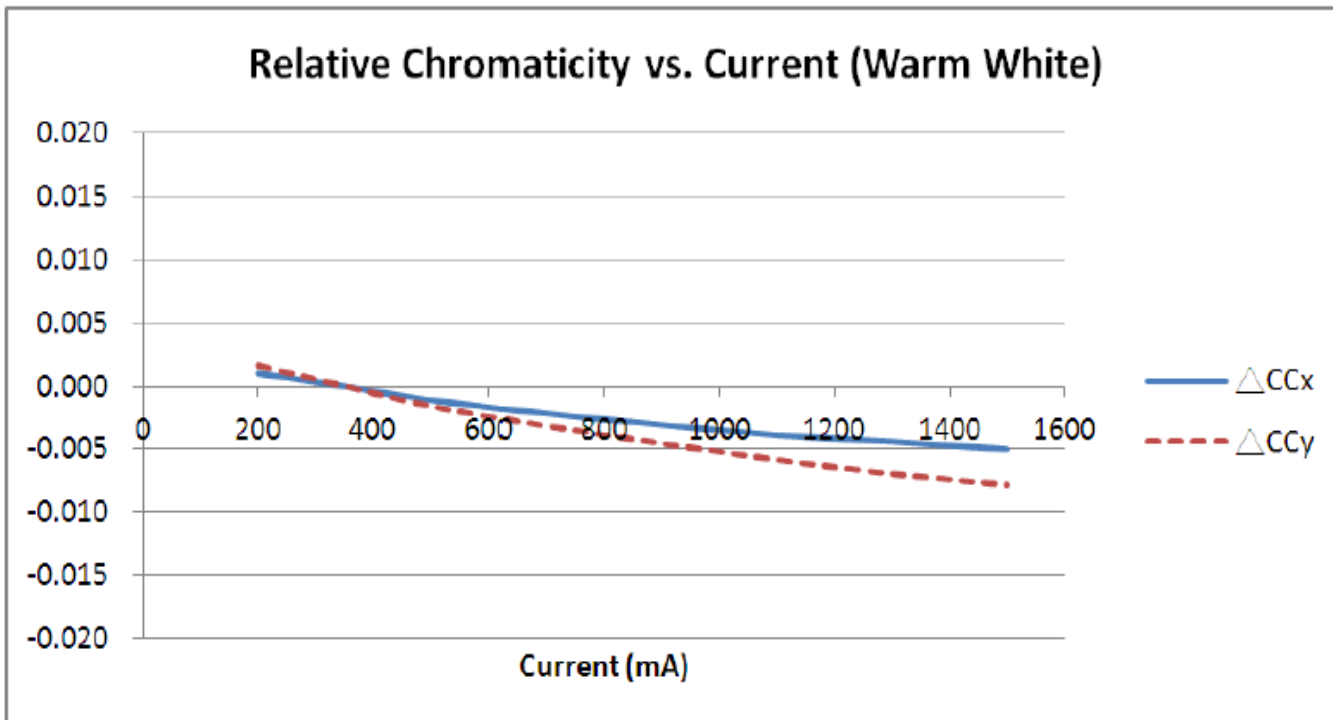
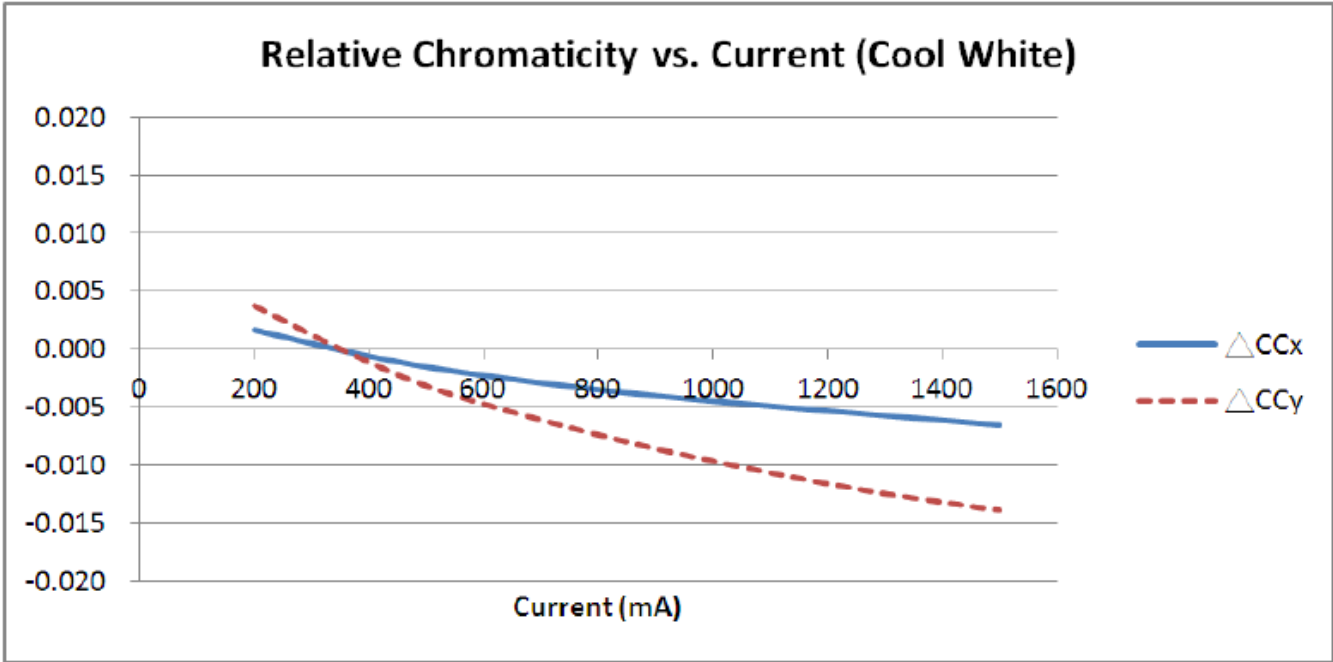




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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED



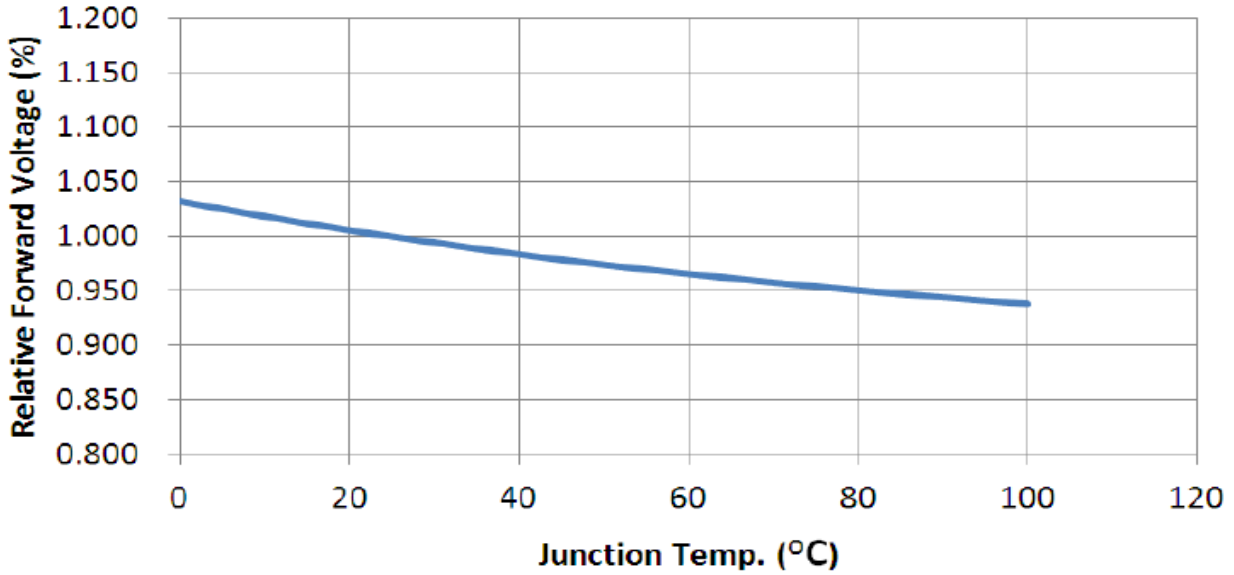


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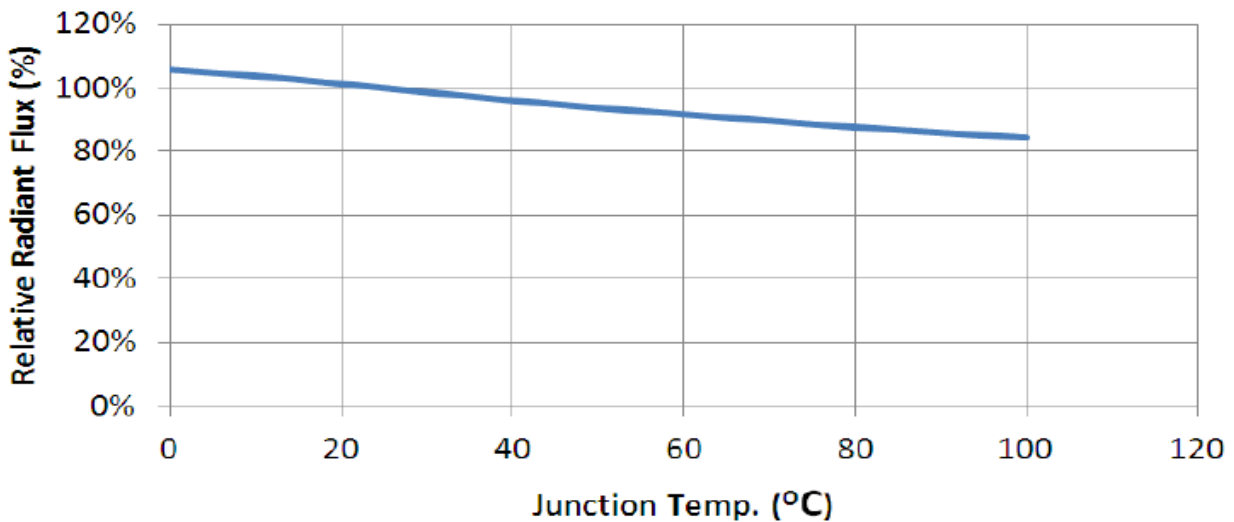
SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

Relative Forward Voltage vs. Junction Temp.



Relative Luminous Flux vs. Junction Temp. (If=350 mA)

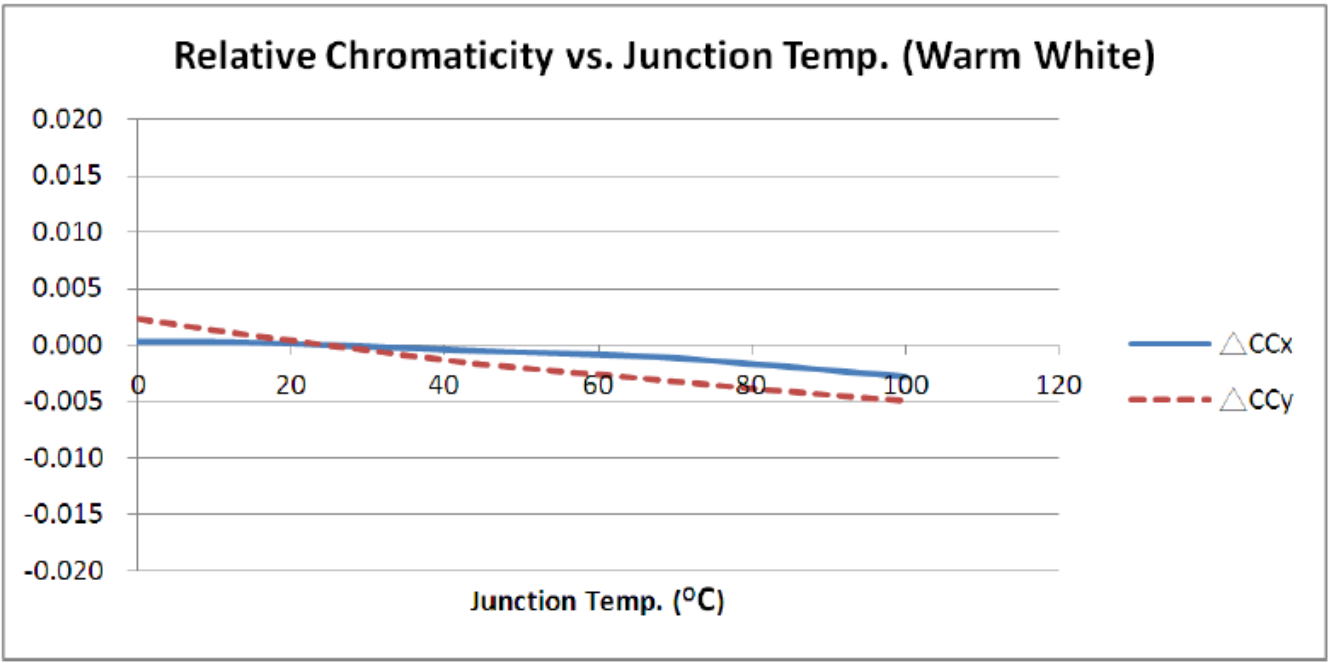
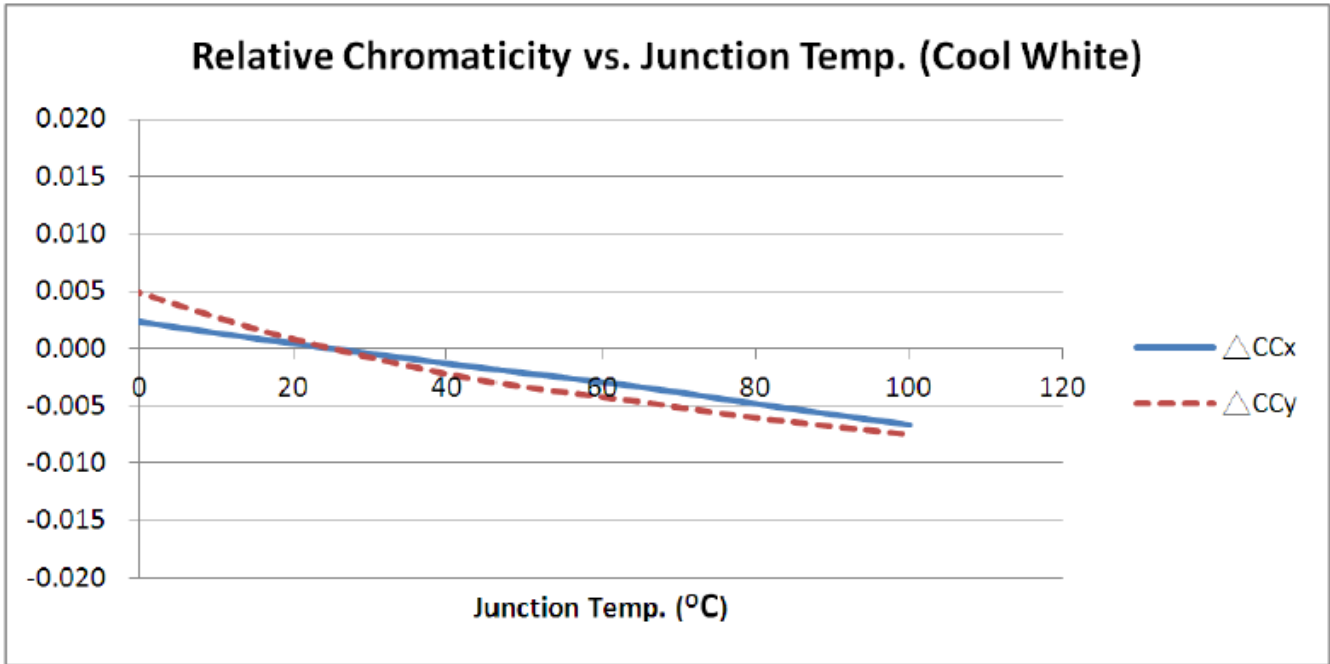




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SPECIFICATION FOR APPROVAL

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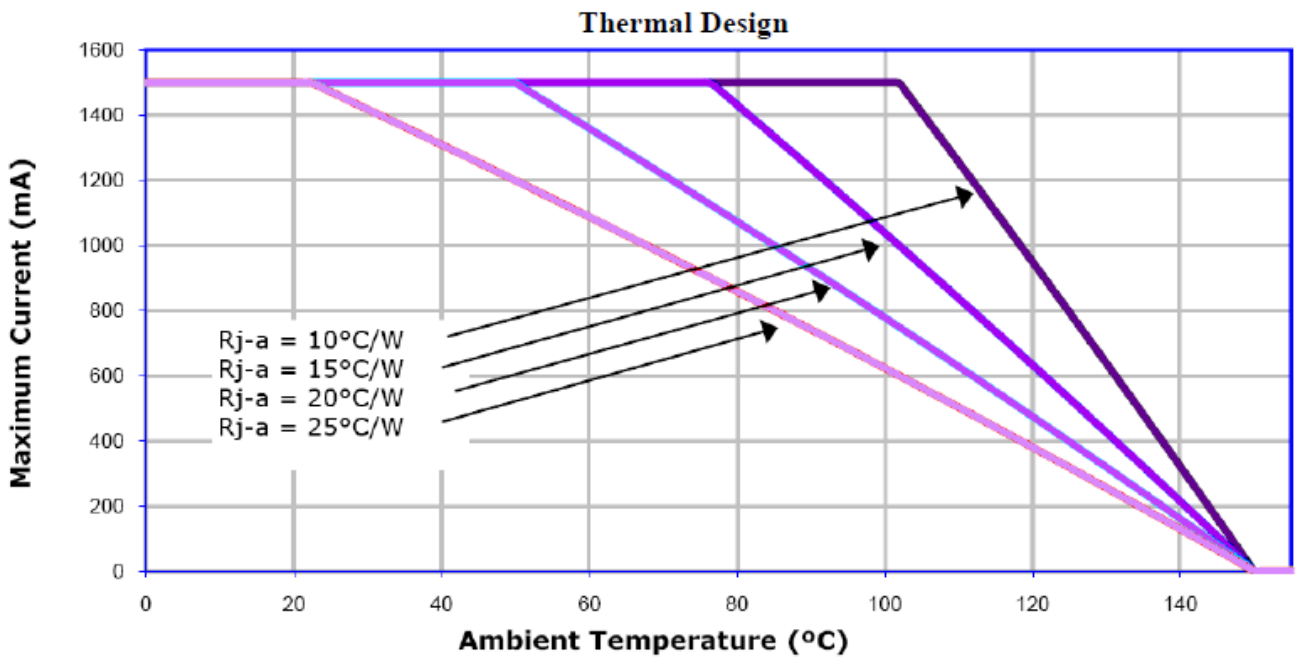


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SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

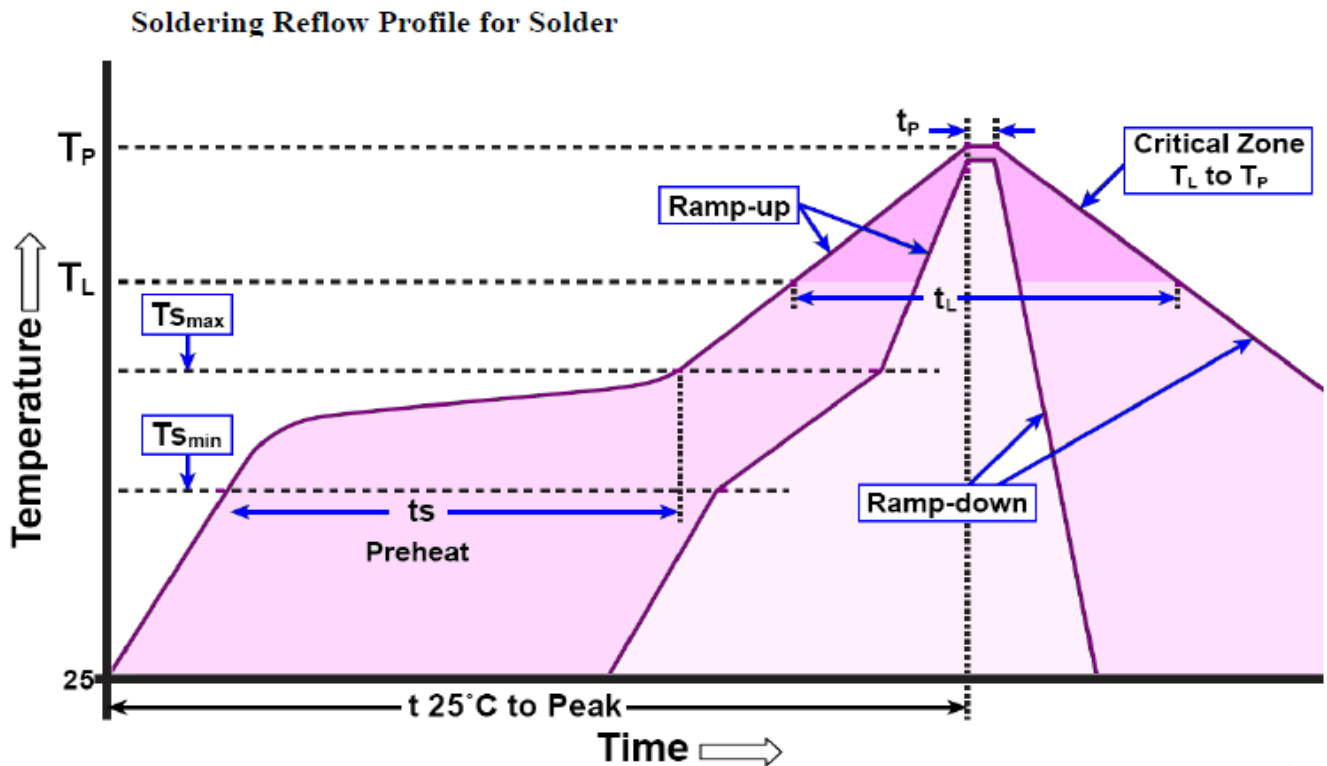
Thermal Design





Part No. : SLE-3535Cx4G-ED

Reflow Soldering Characteristics



Profile Feature	lead-based solder	lead-free solder
Average Ramp-Up Rate ($T_{s_{max}}$ to T_p)	3 °C/second max.	3 °C/second max.
Preheat: Temperature Min ($T_{s_{min}}$)	100 °C	150 °C
Preheat: Temperature Max ($T_{s_{max}}$)	150 °C	200 °C
Preheat: Time ($t_{s_{min}}$ to $t_{s_{max}}$)	60-120 seconds	60-180 seconds
Time Maintained Above: Temperature (T_L)	183 °C	217 °C
Time Maintained Above: Time (t_L)	60-150 seconds	60-150 seconds
Peak/Classification Temperature (T_p)	215 °C	260 °C
Time Within 5 °C of Actual Peak Temperature (t_p)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

NOTES:

1. Don't stress the silicone resin while it is exposed to high temperature.
2. Number of reflow process shall be 1 time.
3. Recommend Solder: Lead Free solder
4. All temperatures refer to the topside of the package, measured on the package body surface.



SHARLIGHT ELECTRONICS CO., LTD.

SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Temperature Cycle	-40°C 30min ↑↓25°C (5 min) 100°C 30min	100 cycles	0/22	JEITA ED-4701 300 303
Thermal Shock	-40°C 30min ↑↓5sec 110°C 30min	100 cycles	0/22	JEITA ED-4701 200 303
High Temperature Storage	T _a =85°C	1000 hrs	0/22	EIAJED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJED-4701 200 202
Life Test	T _a =25°C I _f =350mA	1000 hrs	0/22	Tested with Optotech standard
High Humidity Heat Life Test	60°C RH=90% I _f =350mA	1000 hrs	0/22	Tested with Optotech standard
Low Temperature Life Test	T _a =-40°C I _f =350mA	1000 hrs	0/22	Tested with Optotech standard
ESD(HBM)	1kV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883D

LISTER : 王貴蘭 03-29-13

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REV : A



SHARLIGHT ELECTRONICS CO., LTD.

SPECIFICATION FOR APPROVAL

Part No. : SLE-3535Cx4G-ED

Tape and Reel

