Chipsmall

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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Product Family Data Sheet

LM561B – 5630 Middle Power LED

Introduction

Features

- Beam Angle: 120˚
- Precondition : JEDEC Level 2a
- Dimension : 5.6 x 3.0 x 0.8 mm
- ESD withstand Voltage : up to ± 5KV [HBM]

Applications

- INDOOR LIGHTING : Ambient Light, LED tube, Down light, LED bulb and Ceiling Light

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SAMSUNG ELECTRONICS

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Yongin-City, Gyeonggi-Do 446-711, KOREA

Contents

1. Product Code Information

1) Luminous Flux Bins (T$_s$ = 25℃)

| Nominal CCT	Product Code	Flux Rank	Sorting Condition lm @65mA Flux Range (Φ$_v$, lm)
2700K	SPMWHT541MD5WAW0S1	S1	24.0 ~ 26.0
	SPMWHT541MD5WAW0S2	S2	26.0 ~ 28.0
	SPMWHT541MD5WAW0S3	S3	28.0 ~ 30.0
3000K	SPMWHT541MD5WAV0S1	S1	24.5 ~ 26.5
	SPMWHT541MD5WAV0S2	S2	26.5 ~ 28.5
	SPMWHT541MD5WAV0S3	S3	28.5 ~ 30.5
3500K	SPMWHT541MD5WAU0S1	S1	25.0 ~ 27.0
	SPMWHT541MD5WAU0S2	S2	27.0 ~ 29.0
	SPMWHT541MD5WAU0S3	S3	29.0 ~ 31.0
4000K	SPMWHT541MD5WAT0S1	S1	26.0 ~ 28.0
	SPMWHT541MD5WAT0S2	S2	28.0 ~30.0
	SPMWHT541MD5WAT0S3	S3	30.0 ~32.0
5000K	SPMWHT541MD5WAR0S1	S1	27.0 ~ 29.0
	SPMWHT541MD5WAR0S2	S2	29.0 ~ 31.0
	SPMWHT541MD5WAR0S3	S3	31.0 ~ 33.0
5700K	SPMWHT541MD5WAQ0S1	S1	26.5 ~ 28.5
	SPMWHT541MD5WAQ0S2	S2	28.5 ~ 30.5
	SPMWHT541MD5WAQ0S3	S3	30.5 ~ 32.5
6500K	SPMWHT541MD5WAP0S1	S1	26.0 ~ 28.0
	SPMWHT541MD5WAP0S2	S2	28.0 ~ 30.0
	SPMWHT541MD5WAP0S3	S3	30.0 ~ 32.0

Notes: SAMSUNG ELECTRONICS maintains a tolerance of ±5% on Luminous Flux measurements

2) Color Bins (T$_s$ = 25℃)

1) Color Binning

Nominal CCT	Product Code	Color Rank	Chromaticity Bins
2700K	SPMWHT541MD5WAW0S1 SPMWHT541MD5WAW0S2 SPMWHT541MD5WAW0S3	W0(Whole bin)	W1, W2, W3, W4, W5, W6, W7, W8, W9, WA, WB, WC, WD, WE, WF, WG
3000K	SPMWHT541MD5WAV0S1 SPMWHT541MD5WAV0S2 SPMWHT541MD5WAV0S3	V0(Whole bin)	V1, V2, V3, V4, V5, V6, V7, V8, V9, VA, VB, VC, VD, VE, VF, VG
3500K	SPMWHT541MD5WAU0S1 SPMWHT541MD5WAU0S2 SPMWHT541MD5WAU0S3	U0(Whole bin)	U1, U2, U3, U4, U5, U6, U7, U8, U9, UA, UB, UC, UD, UE, UF, UG
4000K	SPMWHT541MD5WAT0S1 SPMWHT541MD5WAT0S2 SPMWHT541MD5WAT0S3	T0(Whole bin)	T1, T2, T3, T4, T5, T6, T7, T8, T9, TA, TB, TC, TD, TE, TF, TG
5000K	SPMWHT541MD5WAR0S1 SPMWHT541MD5WAR0S2 SPMWHT541MD5WAR0S3	R0(Whole bin)	R1, R2, R3, R4, R5 R6, R7, R8, R9 ,RA
5700K	SPMWHT541MD5WAQ0S1 SPMWHT541MD5WAQ0S2 SPMWHT541MD5WAQ0S3	Q0(Whole bin)	Q1, Q2, Q3, Q4, Q5 Q6, Q7, Q8, Q9, QA
6500K	SPMWHT541MD5WAP0S1 SPMWHT541MD5WAP0S2 SPMWHT541MD5WAP0S3	P0(Whole bin)	P1, P2, P3, P4, P5 P6, P7, P8, P9, PA

2) Chromaticity Region & Coordinates

2) Chromaticity Region & Coordinates (Continued)
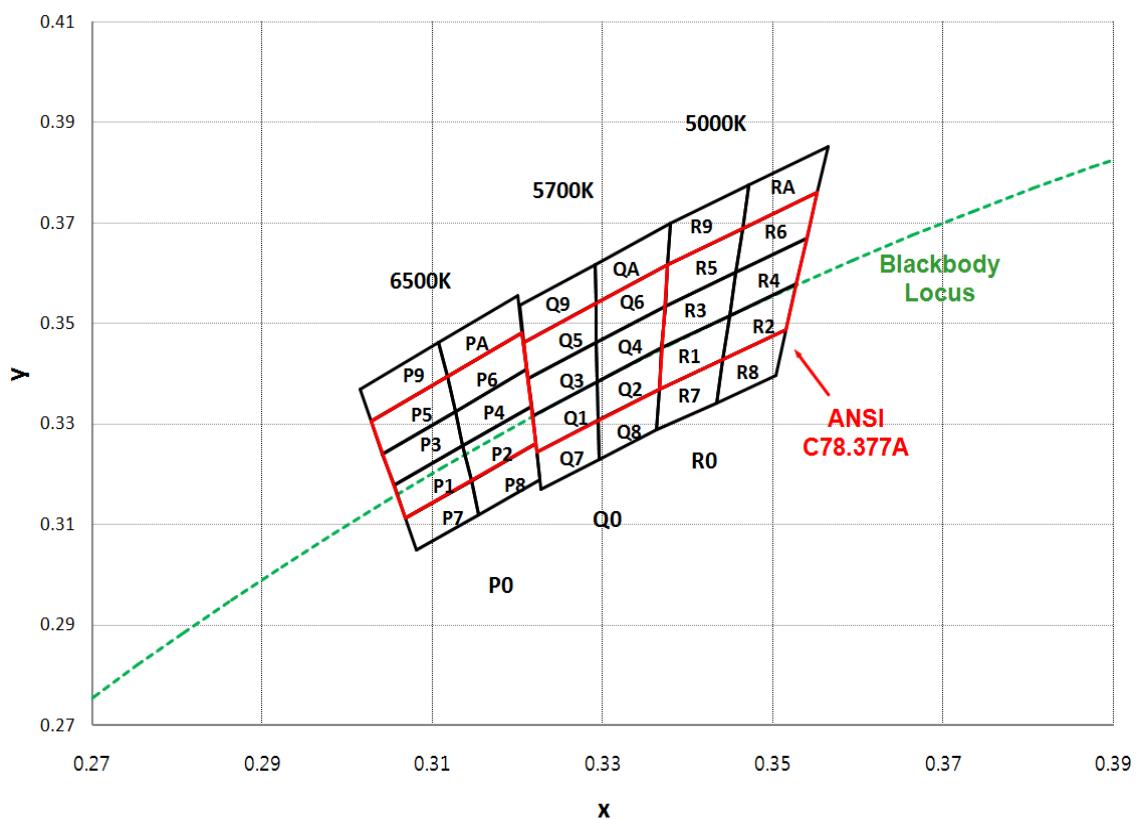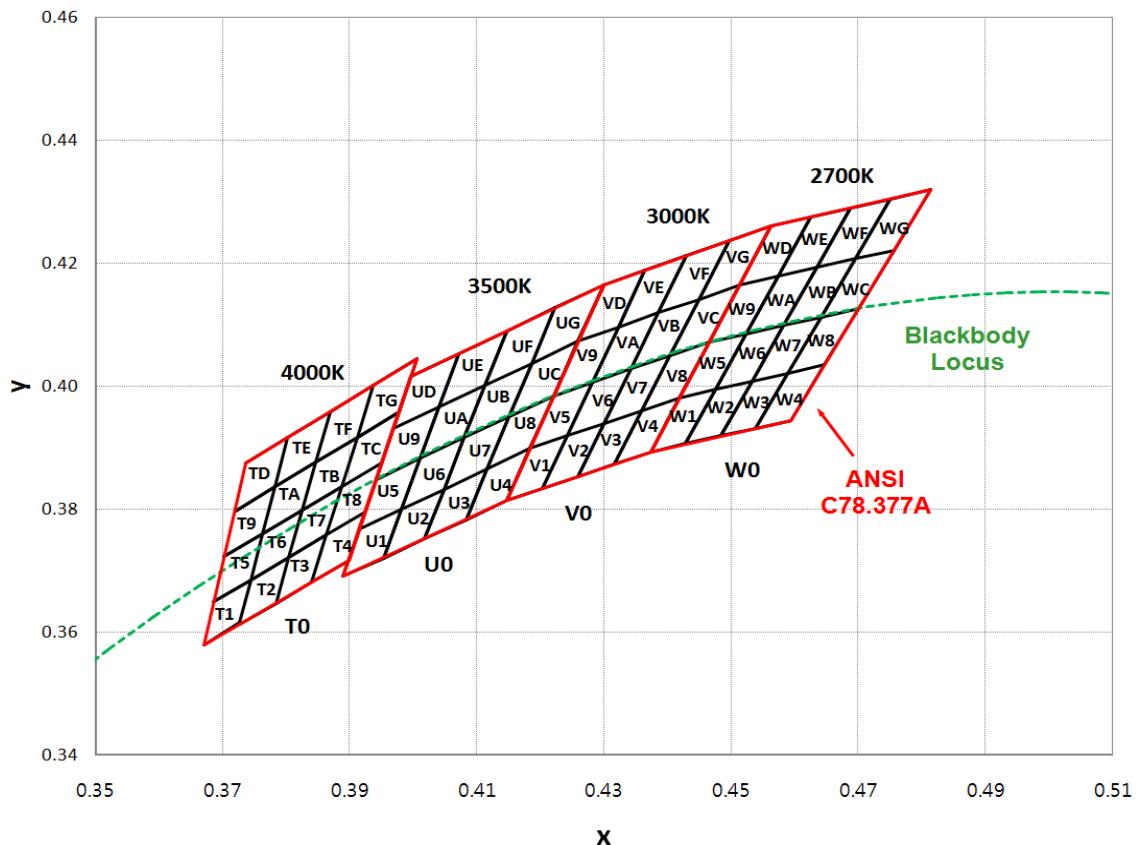
Region	CIE X	CIE Y	Region	CIE X	CIE Y	Region	CIE X	CIE Y	Region	CIE X	CIE Y
W rank (2700K)						V rank (3000K)					
W1	0.4373	0.3893	W9	0.4465	0.4071	V1	0.4147	0.3814	V9	0.4221	0.3984
	0.4418	0.3981		0.4513	0.4164		0.4183	0.3898		0.4259	0.4073
	0.4475	0.3994		0.4573	0.4178		0.4242	0.3919		0.4322	0.4096
	0.4428	0.3906		0.4523	0.4085		0.4203	0.3833		0.4281	0.4006
W2	0.4428	0.3906	WA	0.4523	0.4085	V2	0.4203	0.3833	VA	0.4281	0.4006
	0.4475	0.3994		0.4573	0.4178		0.4242	0.3919		0.4322	0.4096
	0.4532	0.4008		0.4634	0.4193		0.4300	0.3939		0.4385	0.4119
	0.4483	0.3919		0.4582	0.4099		0.4259	0.3853		0.4342	0.4028
W3	0.4483	0.3919	WB	0.4582	0.4099	V3	0.4259	0.3853	VB	0.4342	0.4028
	0.4532	0.4008		0.4634	0.4193		0.4300	0.3939		0.4385	0.4119
	0.4589	0.4021		0.4695	0.4207		0.4359	0.3960		0.4449	0.4141
	0.4538	0.3931		0.4641	0.4112		0.4316	0.3873		0.4403	0.4049
W4	0.4538	0.3931	WC	0.4641	0.4112	V4	0.4316	0.3873	VC	0.4403	0.4049
	0.4589	0.4021		0.4695	0.4207		0.4359	0.3960		0.4449	0.4141
	0.4646	0.4034		0.4756	0.4221		0.4418	0.3981		0.4513	0.4164
	0.4593	0.3944		0.4700	0.4126		0.4373	0.3893		0.4465	0.4071
W5	0.4418	0.3981	WD	0.4513	0.4164	V5	0.4183	0.3898	VD	0.4259	0.4073
	0.4465	0.4071		0.4562	0.4260		0.4221	0.3984		0.4299	0.4165
	0.4523	0.4085		0.4624	0.4274		0.4281	0.4006		0.4364	0.4188
	0.4475	0.3994		0.4573	0.4178		0.4242	0.3919		0.4322	0.4096
W6	0.4475	0.3994	WE	0.4573	0.4178	V6	0.4242	0.3919	VE	0.4322	0.4096
	0.4523	0.4085		0.4624	0.4274		0.4281	0.4006		0.4364	0.4188
	0.4582	0.4099		0.4687	0.4289		0.4342	0.4028		0.4430	0.4212
	0.4532	0.4008		0.4634	0.4193		0.4300	0.3939		0.4385	0.4119
W7	0.4532	0.4008	WF	0.4634	0.4193	V7	0.4300	0.3939	VF	0.4385	0.4119
	0.4582	0.4099		0.4687	0.4289		0.4342	0.4028		0.4430	0.4212
	0.4641	0.4112		0.4750	0.4304		0.4403	0.4049		0.4496	0.4236
	0.4589	0.4021		0.4695	0.4207		0.4359	0.3960		0.4449	0.4141
W8	0.4589	0.4021	WG	0.4695	0.4207	V8	0.4359	0.3960	VG	0.4449	0.4141
	0.4641	0.4112		0.4750	0.4304		0.4403	0.4049		0.4496	0.4236
	0.4700	0.4126		0.4813	0.4319		0.4465	0.4071		0.4562	0.4260
	0.4646	0.4034		0.4756	0.4221		0.4418	0.3981		0.4513	0.4164

2) Chromaticity Region & Coordinates (Continued)

Region	CIE X	CIE Y	Region	CIE X	CIE Y
U rank (3500K)					
U1	0.3889	0.3690	U9	0.3941	0.3848
	0.3915	0.3768		0.3968	0.3930
	0.3981	0.3800		0.4040	0.3966
	0.3953	0.3720		0.4010	0.3882
U2	0.3953	0.3720	UA	0.4010	0.3882
	0.3981	0.3800		0.4040	0.3966
	0.4048	0.3832		0.4113	0.4001
	0.4017	0.3751		0.4080	0.3916
U3	0.4017	0.3751	UB	0.4080	0.3916
	0.4048	0.3832		0.4113	0.4001
	0.4116	0.3865		0.4186	0.4037
	0.4082	0.3782		0.4150	0.3950
U4	0.4082	0.3782	UC	0.4150	0.3950
	0.4116	0.3865		0.4186	0.4037
	0.4183	0.3898		0.4259	0.4073
	0.4147	0.3814		0.4221	0.3984
U5	0.3915	0.3768	UD	0.3968	0.3930
	0.3941	0.3848		0.3996	0.4015
	0.4010	0.3882		0.4071	0.4052
	0.3981	0.3800		0.4040	0.3966
U6	0.3981	0.3800	UE	0.4040	0.3966
	0.4010	0.3882		0.4071	0.4052
	0.4080	0.3916		0.4146	0.4089
	0.4048	0.3832		0.4113	0.4001
U7	0.4048	0.3832	UF	0.4113	0.4001
	0.4080	0.3916		0.4146	0.4089
	0.4150	0.3950		0.4222	0.4127
	0.4116	0.3865		0.4186	0.4037
U8	0.4116	0.3865	UG	0.4186	0.4037
	0.4150	0.3950		0.4222	0.4127
	0.4221	0.3984		0.4299	0.4165
	0.4183	0.3898		0.4259	0.4073

Region	CIE X	CIE Y	Region	CIE X	CIE Y
T rank (4000K)					
T1	0.367	0.3578	T9	0.3702	0.3722
	0.3726	0.3612		0.3763	0.376
	0.3744	0.3685		0.3782	0.3837
	0.3686	0.3649		0.3719	0.3797
T2	0.3726	0.3612	TA	0.3763	0.3760
	0.3783	0.3646		0.3825	0.3798
	0.3804	0.3721		0.3847	0.3877
	0.3744	0.3685		0.3782	0.3837
T3	0.3783	0.3646	TB	0.3825	0.3798
	0.3840	0.3681		0.3887	0.3836
	0.3863	0.3758		0.3912	0.3917
	0.3804	0.3721		0.3847	0.3877
T4	0.384	0.3681	TC	0.3887	0.3837
	0.3898	0.3716		0.395	0.3875
	0.3924	0.3794		0.3978	0.3958
	0.3863	0.3758		0.3912	0.3917
T5	0.3686	0.3649	TD	0.3719	0.3797
	0.3744	0.3685		0.3782	0.3837
	0.3763	0.376		0.3802	0.3916
	0.3702	0.3722		0.3736	0.3874
T6	0.3744	0.3685	TE	0.3782	0.3837
	0.3804	0.3721		0.3847	0.3877
	0.3825	0.3798		0.3869	0.3958
	0.3763	0.376		0.3802	0.3916
T7	0.3804	0.3721	TF	0.3847	0.3877
	0.3863	0.3758		0.3912	0.3917
	0.3887	0.3836		0.3937	0.4001
	0.3825	0.3798		0.3869	0.3958
T8	0.3863	0.3758	TG	0.3912	0.3917
	0.3924	0.3794		0.3978	0.3958
	0.395	0.3875		0.4006	0.4044
	0.3887	0.3836		0.3937	0.4001

2) Chromaticity Region & Coordinates (Continued)

Region	CIE X	CIE Y	Region	CIE X	CIE Y
R rank (5000K)					
R1	0.3366	0.3369	R6	0.3456	0.3601
	0.3441	0.3428		0.3539	0.3669
	0.3449	0.3515		0.3551	0.3760
	0.3369	0.3451		0.3464	0.3688
R2	0.3441	0.3428	R7	0.3363	0.3287
	0.3515	0.3487		0.3433	0.3341
	0.3527	0.3578		0.3441	0.3428
	0.3449	0.3515		0.3366	0.3369
R3	0.3369	0.3451	R8	0.3433	0.3341
	0.3449	0.3515		0.3503	0.3396
	0.3456	0.3601		0.3515	0.3487
	0.3373	0.3534		0.3441	0.3428
R4	0.3449	0.3515	R9	0.3376	0.3616
	0.3527	0.3578		0.3464	0.3688
	0.3539	0.3669		0.3471	0.3775
	0.3456	0.3601		0.3379	0.3698
R5	0.3373	0.3534	RA	0.3464	0.3688
	0.3456	0.3601		0.3551	0.3760
	0.3464	0.3688		0.3564	0.3851
	0.3376	0.3616		0.3471	0.3775
Q rank (5700K)					
Q1	0.3222	0.3243	Q6	0.3292	0.3461
	0.3294	0.3306		0.3373	0.3534
	0.3293	0.3384		0.3376	0.3616
	0.3217	0.3316		0.3292	0.3539
Q2	0.3294	0.3306	Q7	0.3227	0.3170
	0.3366	0.3369		0.3295	0.3228
	0.3369	0.3451		0.3294	0.3306
	0.3293	0.3384		0.3222	0.3243
Q3	0.3217	0.3316	Q8	0.3295	0.3228
	0.3293	0.3384		0.3363	0.3287
	0.3292	0.3461		0.3366	0.3369
	0.3212	0.3389		0.3294	0.3306
Q4	0.3293	0.3384	Q9	0.3207	0.3462
	0.3369	0.3451		0.3292	0.3539
	0.3373	0.3534		0.3291	0.3617
	0.3292	0.3461		0.3202	0.3535
Q5	0.3212	0.3389	QA	0.3292	0.3539
	0.3292	0.3461		0.3376	0.3616
	0.3292	0.3539		0.3379	0.3698
	0.3207	0.3462		0.3291	0.3617

Region	CIE X	CIE Y	Region	CIE X	CIE Y
P rank (6500K)					
P1	0.3068	0.3113	P6	0.3126	0.3324
	0.3145	0.3187		0.3210	0.3408
	0.3135	0.3256		0.3205	0.3481
	0.3055	0.3177		0.3117	0.3393
P2	0.3145	0.3187	P7	0.3081	0.3049
	0.3221	0.3261		0.3154	0.3119
	0.3216	0.3334		0.3145	0.3187
	0.3135	0.3256		0.3068	0.3113
P3	0.3055	0.3177	P8	0.3154	0.3119
	0.3135	0.3256		0.3226	0.3188
	0.3126	0.3324		0.3221	0.3261
	0.3041	0.3240		0.3145	0.3187
P4	0.3135	0.3256	P9	0.3028	0.3304
	0.3216	0.3334		0.3117	0.3393
	0.3210	0.3408		0.3107	0.3461
	0.3126	0.3324		0.3015	0.3368
P5	0.3041	0.3240	PA	0.3117	0.3393
	0.3126	0.3324		0.3205	0.3481
	0.3117	0.3393		0.3200	0.3554
	0.3028	0.3304		0.3107	0.3461

Notes: SAMSUNG ELECTRONICS maintains ±0.007 tolerance of Cx, Cy

2. Characteristics

1) Absolute Maximum Rating

Item	Symbol	Rating	Condition
Operating temperature range	T_{op}	-40℃ ~ +85℃	–
Storage temperature range	T_{stg}	-40℃ ~ +120℃	–
LED junction temperature	T_J	110℃	–
Forward Current	I_F	150 mA	–
Peak Pulsed Forward Current	I_{FP}	300 mA	Duty 1/10 pulse width 10ms
Thermal resistance	$R_{th,\ j-s}$	16℃/W	Junction to solder point
Assembly Process Temperature	–	260℃, < 10sec	–
ESD	–	5kV	HBM

2) Electro−optical Characteristics

Item	Unit	Nominal CCT	Product Code	Rank		Min	Typ	Max
Forward Voltage[1] (V_F) (@65 mA, Ts = 25℃)	V	–	–	WA	AZ	2.70	–	2.80
					A1	2.80	–	2.90
					A2	2.90	–	3.00
					A3	3.00	–	3.10
					A4	3.10	–	3.20
Luminous Flux[2] (Φ_v) (@65 mA, Ts = 25℃)	lm	2700K (W0)	*WAW0S1	S1		24.0	–	26.0
			*WAW0S2	S2		26.0	–	28.0
			*WAW0S3	S3		28.0	–	30.0
		3000K (V0)	*WAV0S1	S1		24.5	–	26.5
			*WAV0S2	S2		26.5	–	28.5
			*WAV0S3	S3		28.5	–	30.5
		3500K (U0)	*WAU0S1	S1		25.0	–	27.0
			*WAU0S2	S2		27.0	–	29.0
			*WAU0S3	S3		29.0	–	31.0
		4000K (T0)	*WAT0S1	S1		26.0	–	28.0
			*WAT0S2	S2		28.0	–	30.0
			*WAT0S3	S3		30.0	–	32.0
		5000K (R0)	*WAR0S1	S1		27.0	–	29.0
			*WAR0S2	S2		29.0	–	31.0
			*WAR0S3	S3		31.0	–	33.0
		5700K (Q0)	*WAQ0S1	S1		26.5	–	28.5
			*WAQ0S2	S2		28.5	–	30.5
			*WAQ0S3	S3		30.5	–	32.5
		6500K (P0)	*WAP0S1	S1		26.0	–	28.0
			*WAP0S2	S2		28.0	–	30.0
			*WAP0S3	S3		30.0	–	32.0
Reverse Voltage (@5 mA, Ts = 25℃)	V	–	–	–		0.7	–	1.2
Color Rendering Index[3] (R_a)	–	–	–	5		80	–	–
Special CRI[4] (R9)	–	–	–	–		0	–	–

Notes:

1)~4) SAMSUNG ELECTRONICS maintains a tolerance of V_F:±0.1 V, Φ_v:±5 %, R_a :±3.0, R9 :±6.5 on measurements

5) " * " is Product Code of "SPMWHT541MD5"

3. Typical Characteristics Graph (Ts = 25℃)

1) Spectrum Distribution

**[CCT : 2700K & 3000K]**
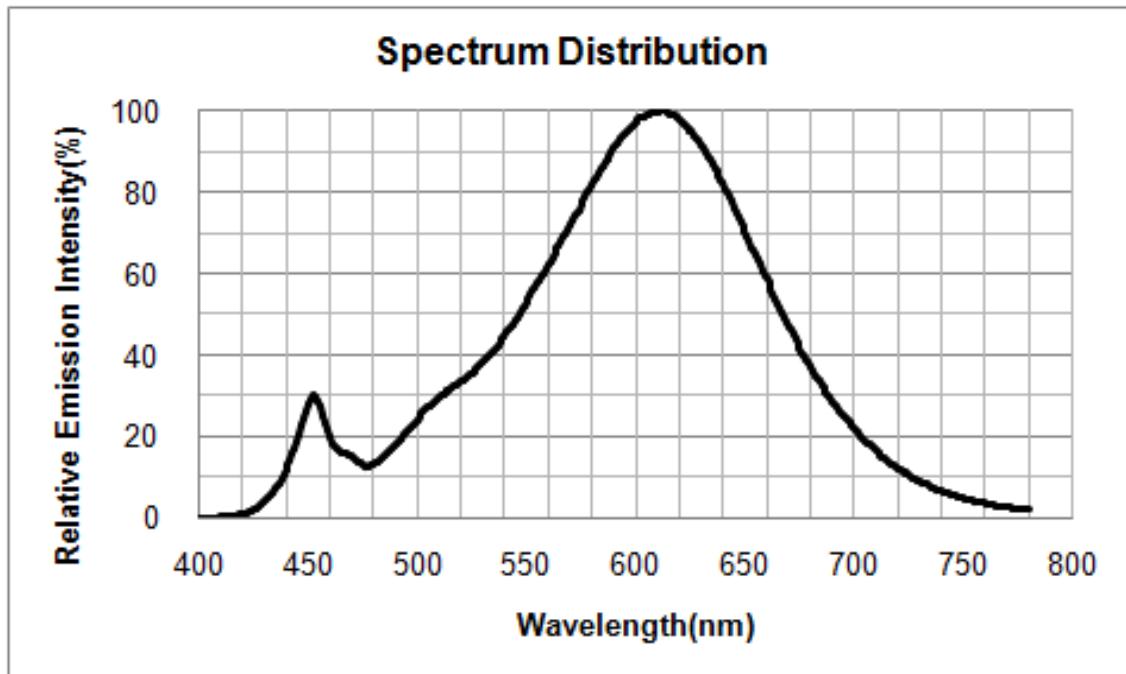
**[CCT : 3500K & 4000K]**
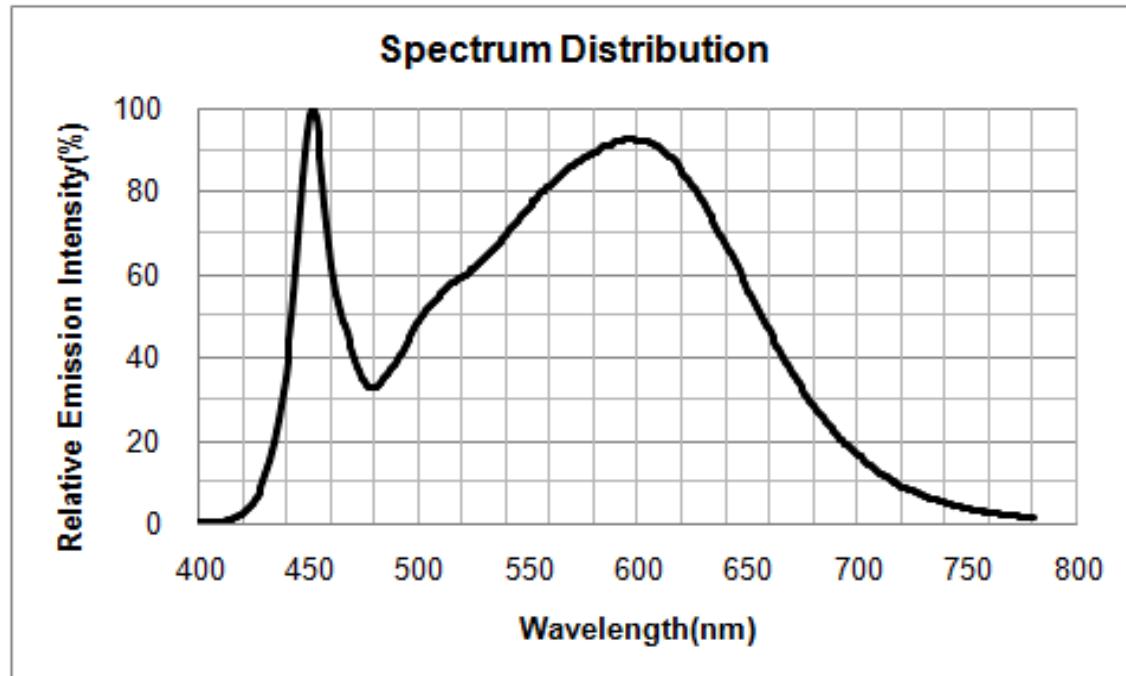
[CCT : 5000K & 5700K]
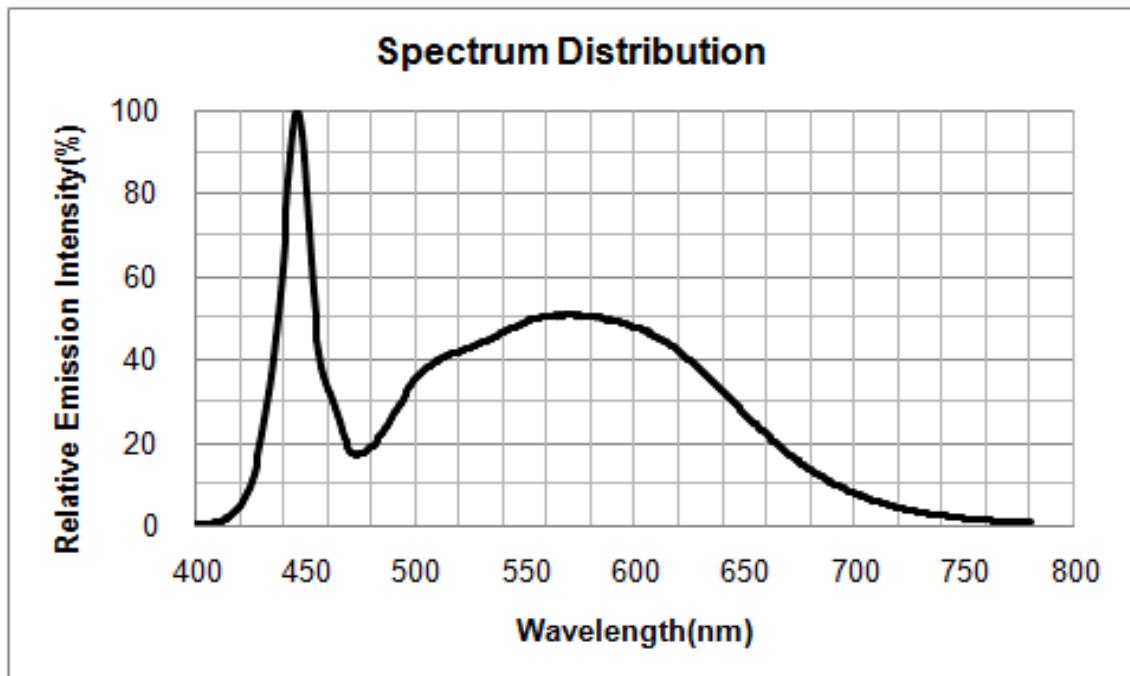
[CCT : 6500K]
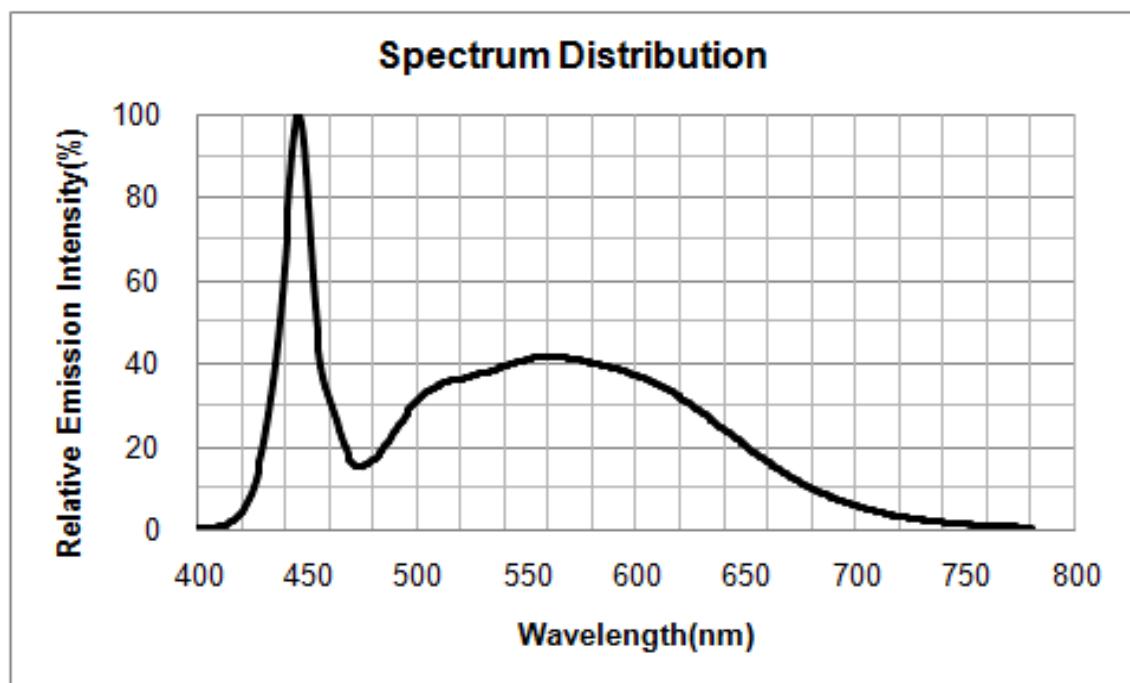
2) Forward Current Characteristics

[Relative Luminous Flux vs. Forward Current]

$(T_s = 25℃)$
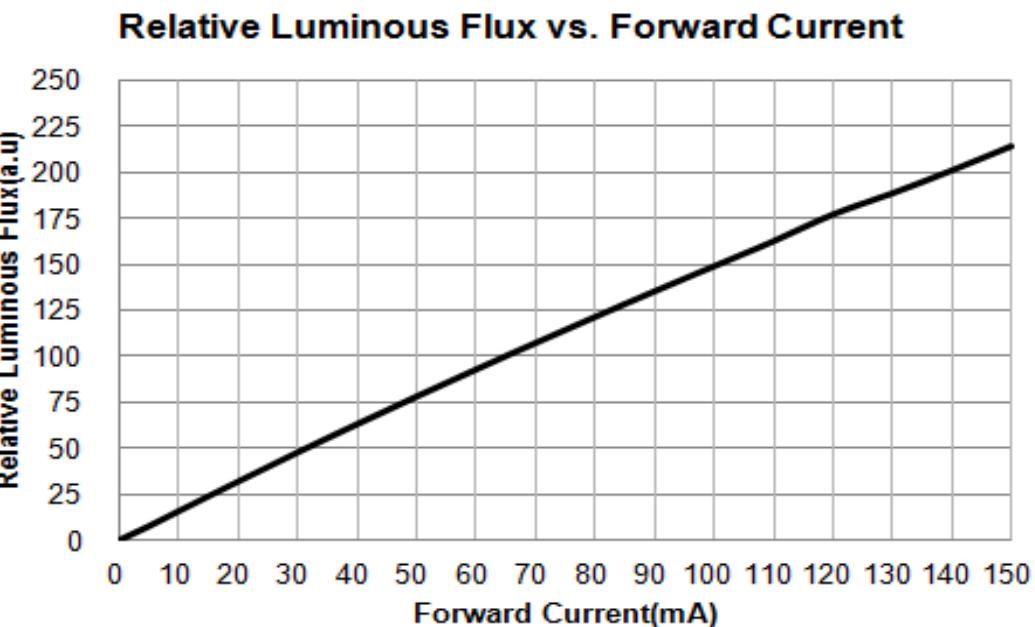
[Forward Current vs. Forward Voltage]

$(T_s = 25℃)$
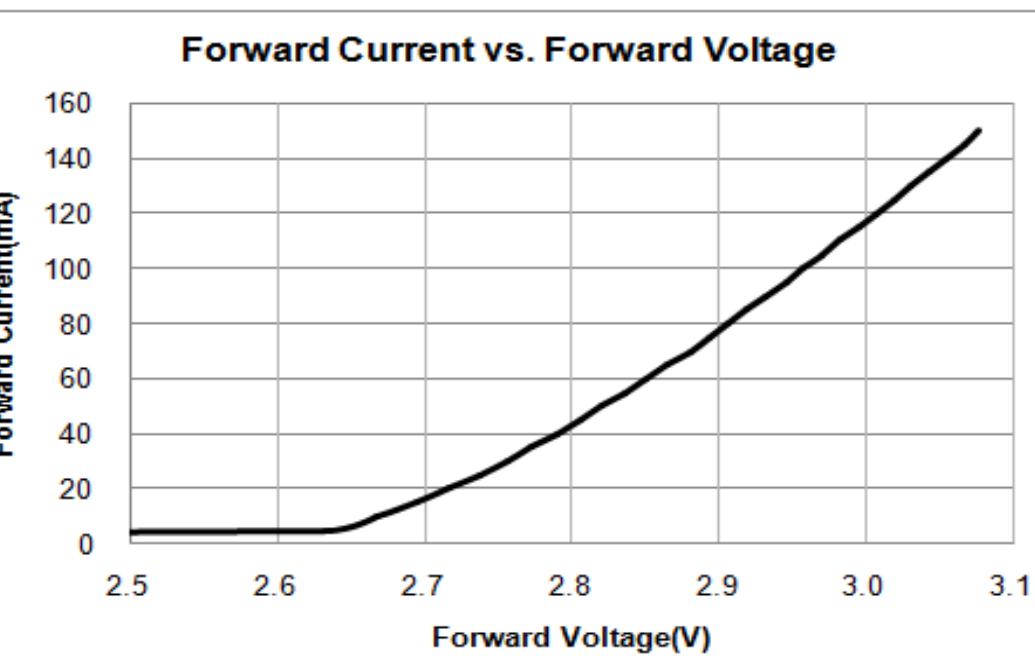
3) Temperature Characteristics

[Relative Luminous Flux vs. Ts]

(I_F = 65mA)
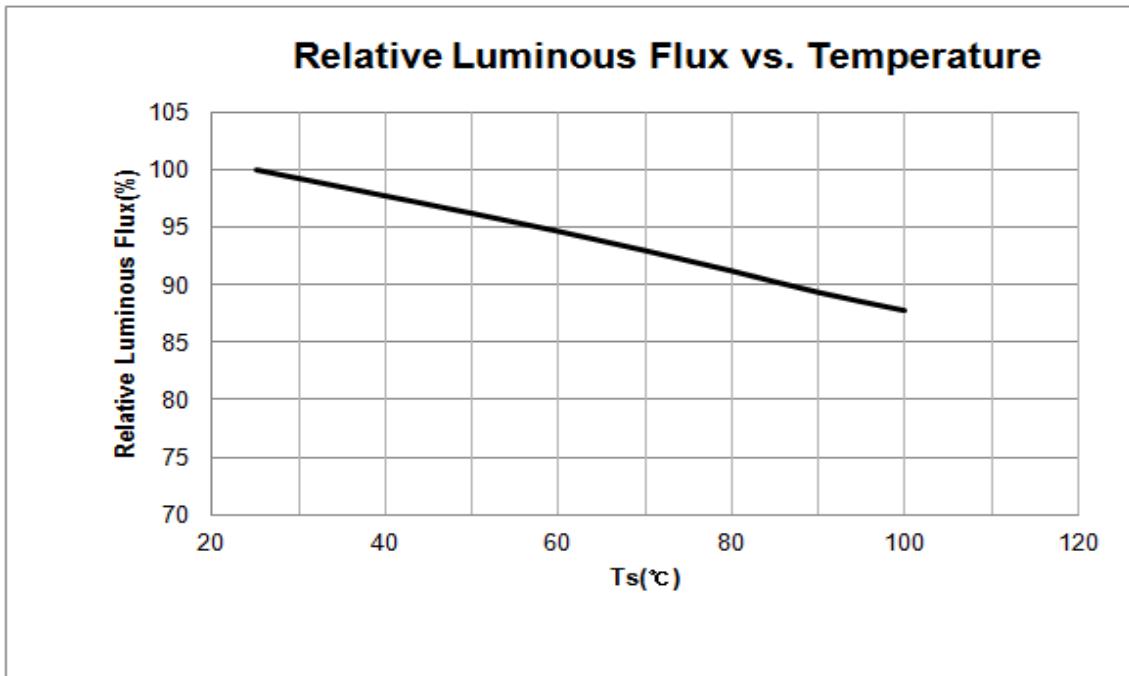
[Forward Voltage vs. Ts]

(I_F = 65mA)
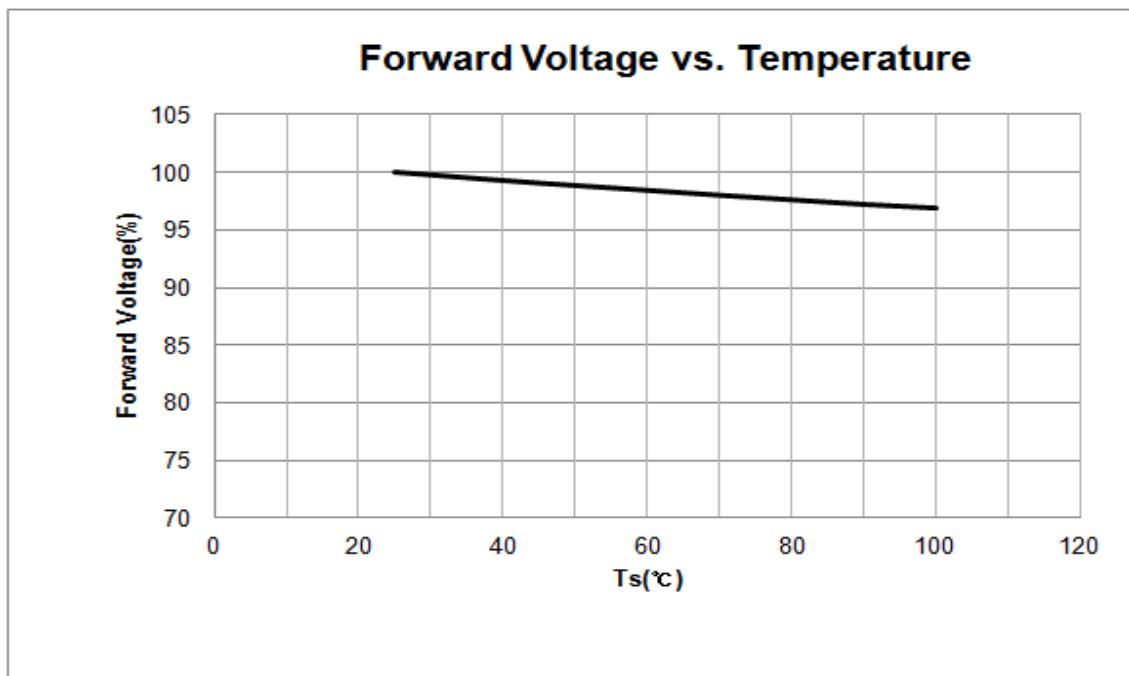
4) Color shift Characteristics

[Forward Current vs. Color △x, △y]   **(T$_s$ = 25℃)**
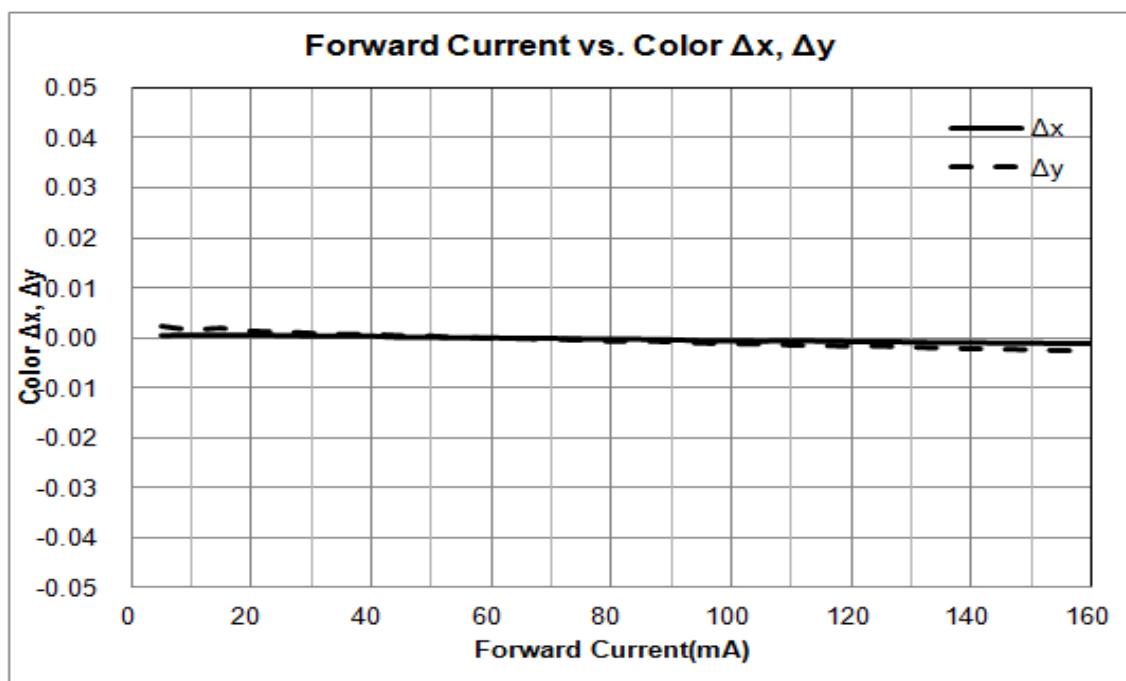
5) Derating Curve
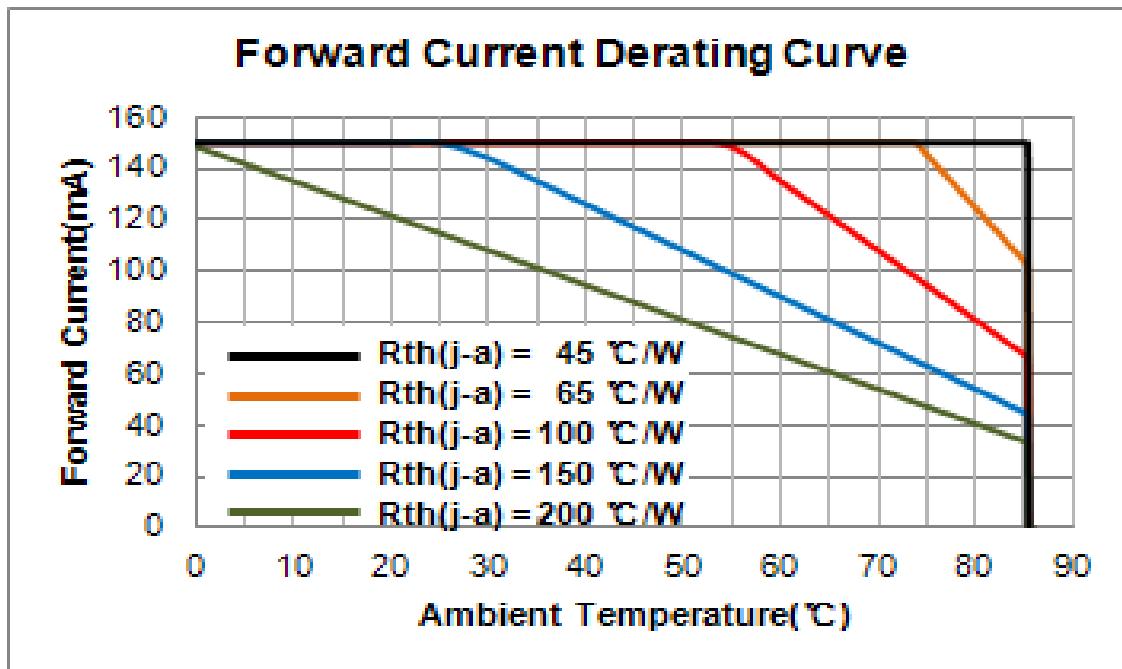
6) Beam Angle Characteristics
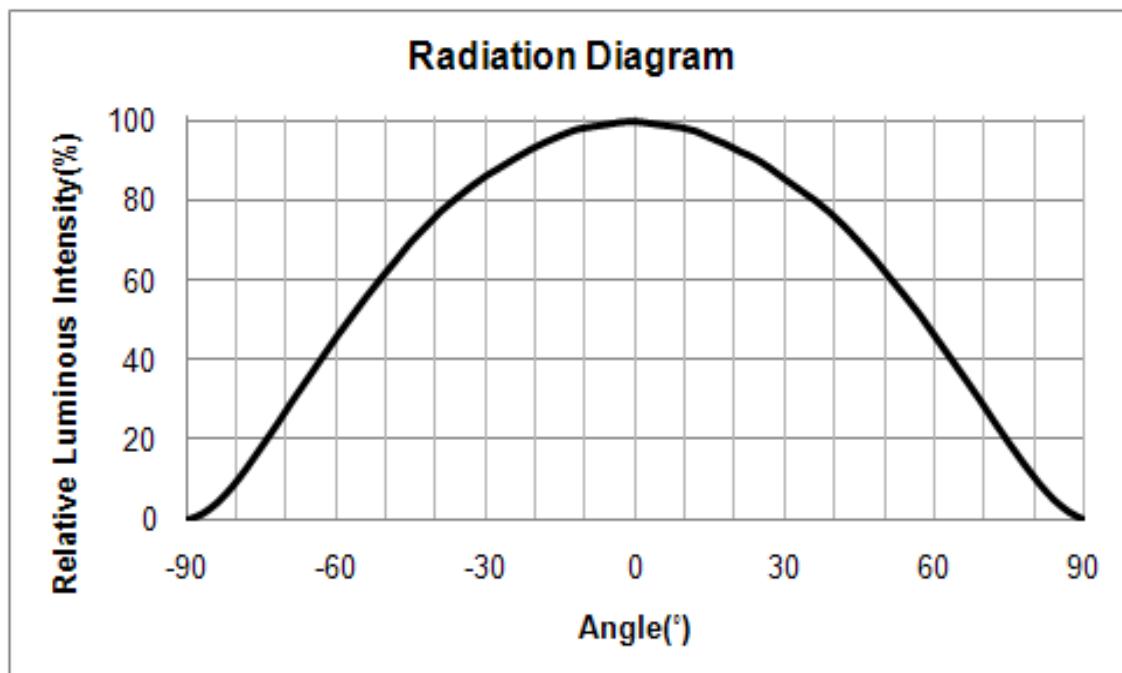
4. Outline Drawing & Dimension

1. Tolerance is ±0.10 mm
2. The maximum compressing force is 15N on the body ⓐ
3. Do not place pressure on the encapsulation resin ⓑ

**Left Side View**　　**Top View**　　　　　　　　**Bottom View**

Anode Mark　　ⓐ　　ⓑ　　　　　　Cathode

5.00
0.30　　　　　0.30
0.70　　　　0.70
3.00　　4.0　0.4　4.0
2.30
4.60
0.70　　　　0.70
0.30　　　　0.30

Anode

0.32　　2.34　0.98　0.32
0.70　　0.82　　　　0.70
0.40 4.0　0.97　0.49　4.0 0.40
0.70　　R0.20　1.01　　0.70
0.32　　　　　　0.32

Front View

0.80
5.60
0.25

2.38　　2.38
0.52　　2.54　0.76　0.52
0.90　　0.92　　0.90
0.30　0.30　0.59　0.30 0.30
0.90　1.17　　　0.90
0.91
0.52　　　　0.52
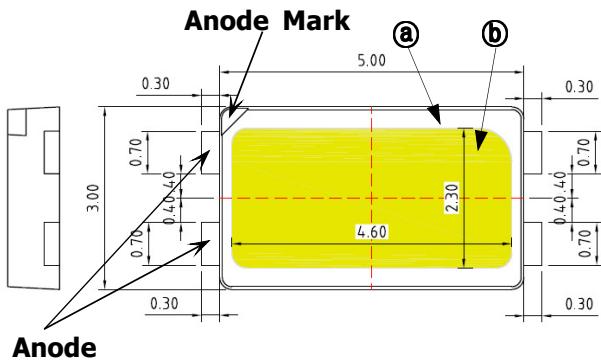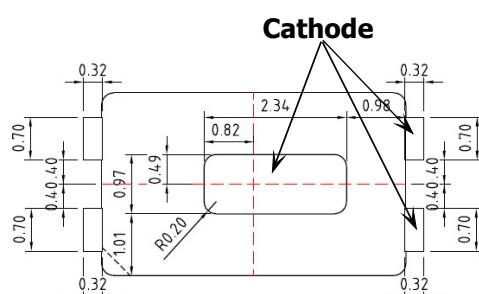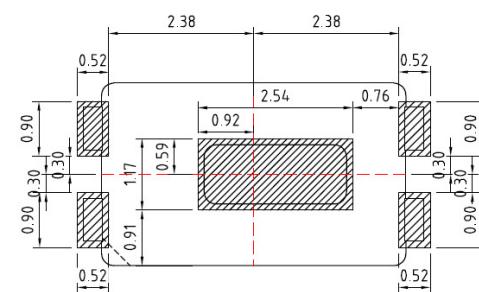
Recommended Land Pattern

Notes:

1) This LED has built-in ESD protection device(s) connected in parallel to LED Chip(s).

2) Ts point & measurement method

　① Measure the nearest point to the thermal pad. If necessary, remove PSR of PCB to reach Ts point.

　② Thermal pad must be soldered to the PCB to dissipate heat properly. Otherwise, LED can be damaged.

3) Precautions

　① The pressure on the LEDs will influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the LEDs. Do not put stress on the LEDs during heating.

　② Re-soldering should not be done after the LEDs have been soldered. If re-soldering is unavoidable, LED`s characteristics should be carefully checked before and after such repair.

　③ Do not stack assembled PCBs together. Since materials of LEDs is soft, abrasion between two PCB assembled with LED might cause catastrophic failure of the LEDs.

5. Reliability Test Items and Conditions

1) Test Items

Test Item	Test Conditions	Test Hours/Cycles	Sample No
MSL Test	125 ℃ 24hrs drying → 60 ℃, 60 %RH 120hrs → 260 ℃ 10sec 3 cycles	1 cycle	11
Room Temperature life test	25 ℃±3 ℃, DC150 ㎃	1,000 hrs	22
High Temperature life test	85 ℃±3 ℃, DC150 ㎃	1,000 hrs	22
High Temperature humidity life test	85 ℃±3 ℃, 85 %±2 %RH, DC150 ㎃	1,000 hrs	22
Low Temperature life test	-40 ℃±3 ℃, DC150 ㎃	1,000 hrs	22
Powered Temperature Cycle test	-45℃/20 min ↔ 85℃/20 min, Sweep 100min cycle on/off: each 5 min, DC 150mA	100 cycle	22
Thermal Shock	-45 ℃/15 min ↔ 125 ℃/15 min → Hot plate 180 ℃	500 cycle	100
High Temperature Storage	Ta=120 ℃±3 ℃	1000 hrs	11
Low Temperature Storage	Ta=-40 ℃±3 ℃	1000 hrs	11
ESD(HBM)	R1:10 ㏁, R2:1.5 ㏀, C:100 ㎊, V = ±5 kV	5 times	5
ESD(MM)	R1:10 ㏁, R2: 0, C:200 ㎊, V = ±0.5 kV	5 times	5
Vibration Test	20~2000~20 Hz 200 m/s^2, Sweep 4 min X, Y, Z 3 direction, each 1 cycle	4 cycles	11
Mechanical Shock Test	1500G, 0.5 ms, 3 shocks each X-Y-Z axis	5 cycles	11

2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	I_F = 65 ㎃	Init. Value*0.9	Init. Value*1.1
Luminous Flux	$Φ_v$	I_F = 65 ㎃	Init. Value*0.7	Init. Value*1.2

6. Solder Conditions

1) Reflow Conditions (Pb Free)

Reflow Frequency : 2 times max.
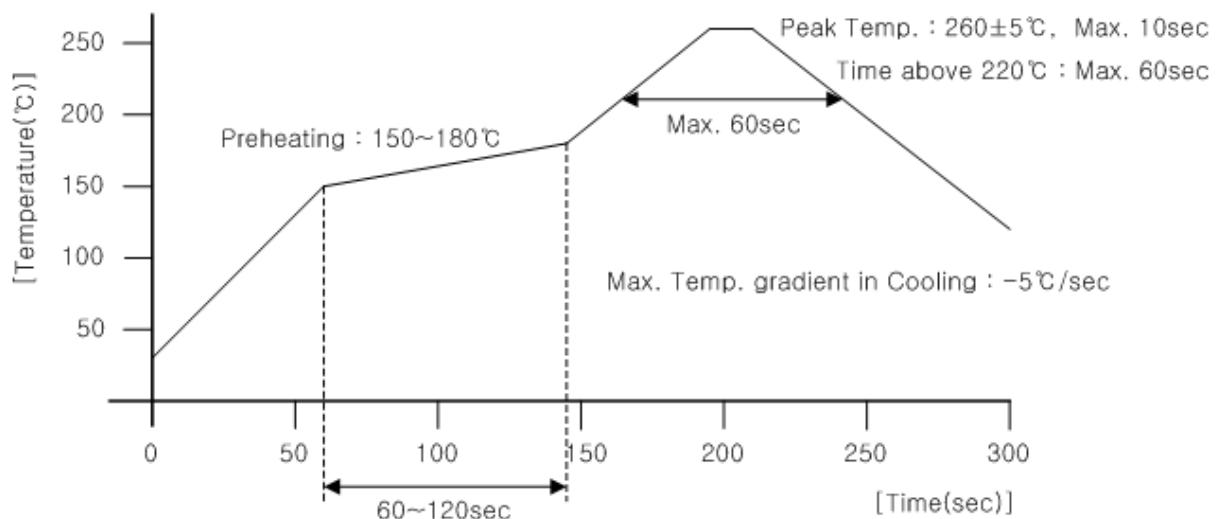
2) For Manual Soldering

Not more than 5 seconds @Max. 300℃, under soldering iron.

7. Tape & Reel

unit:mm

PKG *direction* in carrier tape pocket
Anode Mark (Cutting)

End   Start

| More than 500㎜ Unloaded tape | Mounted with Flash LED | More than 100~200㎜ Unloaded tape | Leading part more than 500㎜ |

Tolerance ±0.2 , Unit:mm
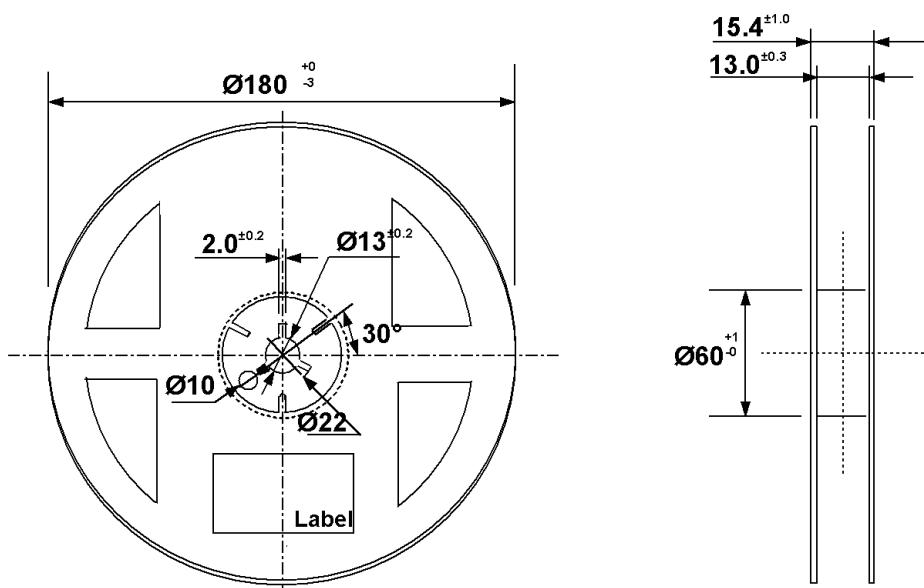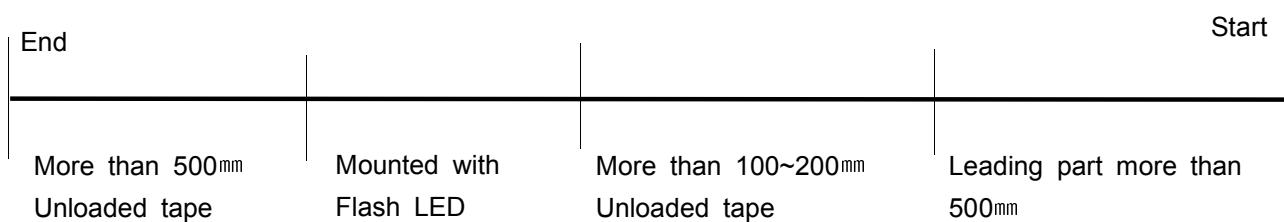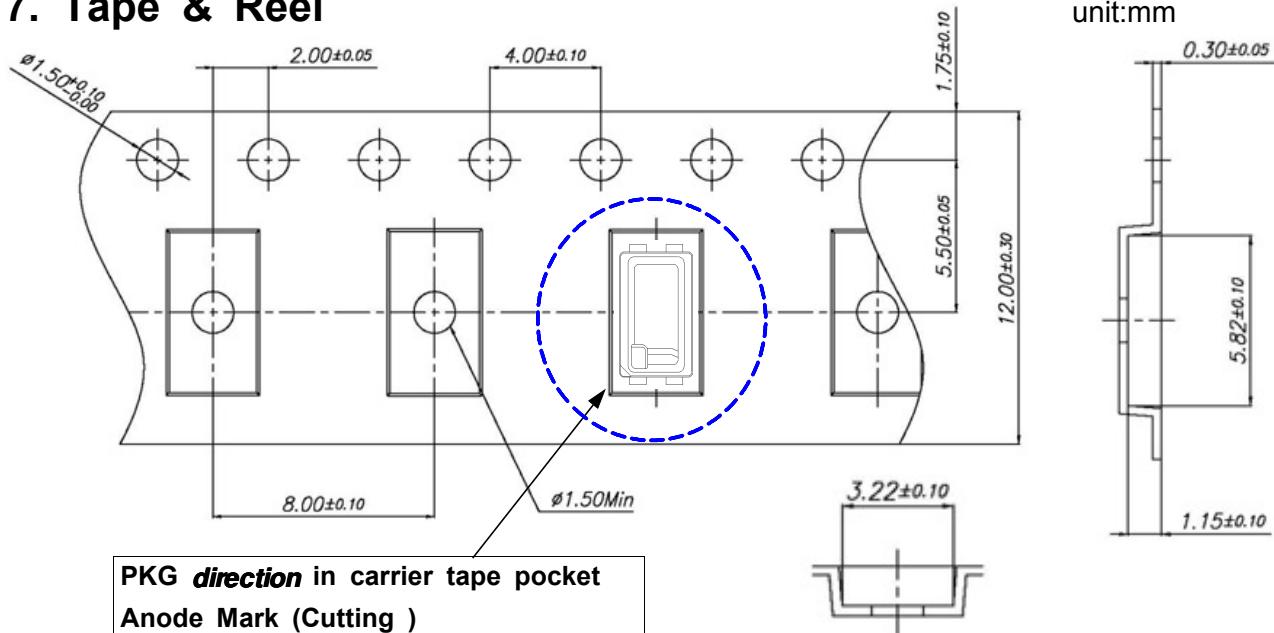
(1) Quantity : The quantity/Reel to be Max. 2,000 pcs, .
(2) Cumulative Tolerance : Cumulative tolerance/10 pitches to be ±0.2 ㎜
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the
cover tape is turned off from the carrier tape at 10℃ angle to be the carrier tape.
(4) Packaging : P/N, Manufacturing data code no. and quantity to be indicated on a
damp proof Package.

8. Label Structure

1) Label Structure

ⓐⓑⓒⓓⓔⓕ
AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01
||||||||||||||||||||||||||||||||||||||
GLAW94001 / 1001 / 2,000 pcs
||||||||||||||||||||||||||||||||||||||
SAMSUNG
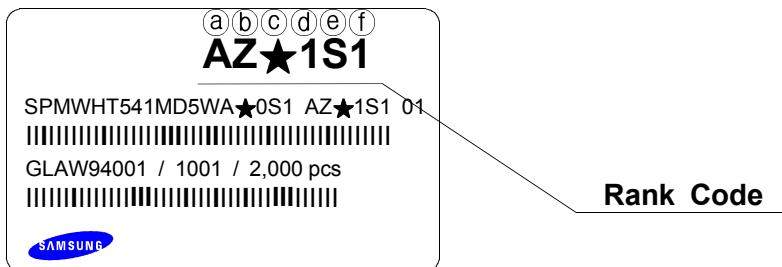
Rank Code

N.B) Denoted rank is the only example.
'★' means All kind of Chromaticity Coordinate Rank.

Rank Code

ⓐⓑ : Forward Voltage(V_F) Rank (refer to page. 9)

ⓒⓓ : Chromaticity Coordinate Rank (refer to page. 5~8)

ⓔⓕ : Luminous Flux(Φ_v, lm) Rank (refer to page. 3)

2) LOT Number

The Lot number is composed of the following characters

AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01
||||||||||||||||||||||||||||||||||||||
GLAW94001 / 1001 / 2,000 pcs
||||||||||||||||||||||||||||||||||||||
SAMSUNG
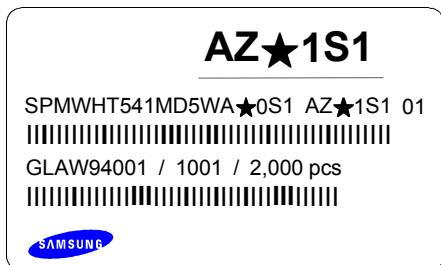
①②③④⑤⑥⑦⑧⑨ / 1ⓐⓑⓒ / 2,000 PCS

①   : Production Site (S:SAMSUNG ELECTRONICS, G:GOSIN CHINA)

②   : L (LED)

③   : Product State (A:Normality, B:Bulk, C:First Production, R:Reproduction, S:Sample)

④   : Year (V:2011, W:2012, X:2013...)

⑤   : Month (1 ~ 9, A, B)

⑥   : Day (1 ~ 9, A, B ~ V)

⑦⑧⑨ : SAMSUNG ELECTRONICS LED Product number (1 ~ 999)

ⓐⓑⓒ : Reel Number (1 ~ 999)

9. Packing Structure

1) Packing Process

Reel

AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01

|||||||||||||||||||||||||||||||||||||||||||||||

GLAW94001 / 1001 / 2,000 pcs

|||||||||||||||||||||||||||||||||||||||

SAMSUNG

Aluminum Vinyl Bag

AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01

|||||||||||||||||||||||||||||||||||||||||||||||

GLAW94001 / 1001 / 2,000 pcs

|||||||||||||||||||||||||||||||||||||||
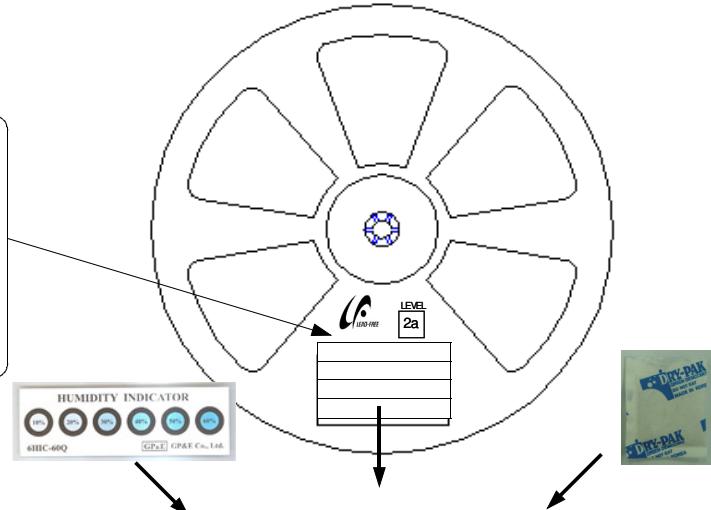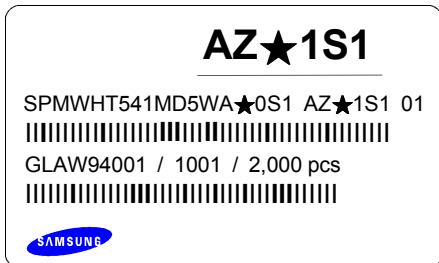
SAMSUNG
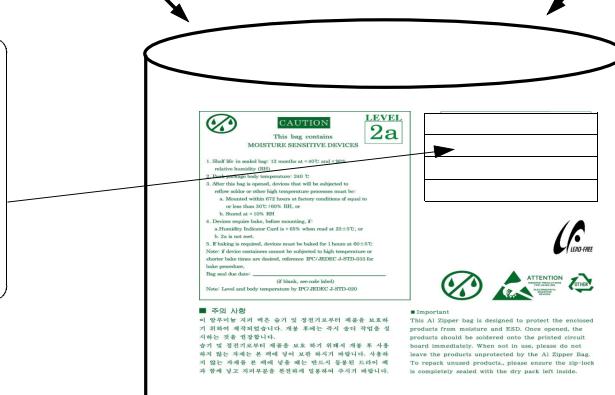
Material : Paper(SW3B(B))

TYPE	SIZE(mm)		
	L	W	H
7inch	245	220	182

① SIDE

AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01

|||||||||||||||||||||||||||||||||||||||||||||||

GLAW94001 / 1001 / 2,000 pcs

|||||||||||||||||||||||||||||||||||||||

SAMSUNG

CHIP LED

2) Aluminum Packing Bag

CAUTION

LEVEL
2a

This bag contains
MOISTURE SENSITIVE DEVICES

1. Shelf life in sealed bag: 12 months at <40℃ and <90% relative humidity (RH)
2. Peak package body temperature: 240 ℃
3. After this bag is opened, devices that will be subjected to reflow soldor or other high temperature processes must be:
   a. Mounted within 672 hours at factory conditions of equal to or less than 30℃ /60% RH, or
   b. Stored at <10% RH
4. Devices require bake, before mounting, if:
   a. Humidity Indicator Card is >65% when read at 23±5℃, or
   b. 2a is not met.
5. If baking is required, devices must be baked for 1 hours at 60±5℃
Note: if device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure,
Bag seal due date: _____
(if blank, see code label)
Note: Level and body temperature by IPC/JEDEC J-STD-020

AZ★1S1

SPMWHT541MD5WA★0S1 AZ★1S1 01

GLAW94001 / 1001 / 2,000 pcs

SAMSUNG

LEAD-FREE

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES

OTHER

■ 주의 사항

이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.
습기 및 정전기로부터 제품을 보호 하기 위해서 개봉 후 사용 하지 않는 자재는 본 팩에 넣어 보관 하시기 바랍니다. 사용하지 않는 자재를 본 팩에 넣을 때는 반드시 동봉된 드라이 팩과 함께 넣고 지퍼부분을 완전하게 밀봉하여 주시기 바랍니다.

■ Important

This Al Zipper bag is designed to protect the enclosed products from moisture and ESD. Once opened, the products should be soldered onto the printed circuit board immediately. When not in use, please do not leave the products unprotected by the Al Zipper Bag. To repack unused products., please ensure the zip-lock is completely sealed with the dry pack left inside.

Silica gel & Humidity Indicator Card in Aluminum Vinyl Bag

10% 20% 30% 40% 50% 60%

SCC Sanford, NC

Danger if pink - Change Desiccant.
6HIC200   Read at lavender between pink and blue.

HUMIDITY INDICATOR
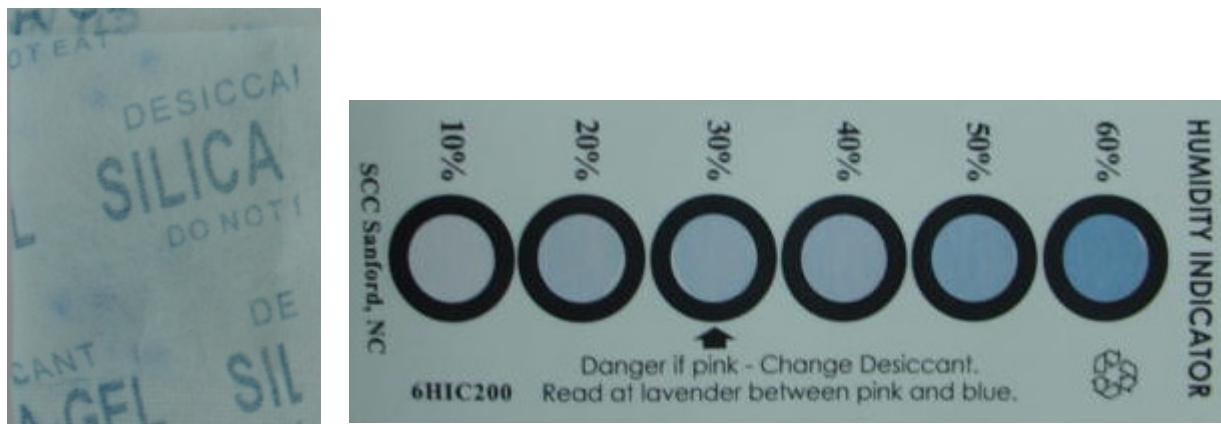
10. Precaution for use

1) For over-current-proof function, customers are recommended to apply resistors to prevent sudden change of the current caused by slight shift of the voltage.
과전류 방지를 위해 전압의 미세한 이동에 의해 야기되는 전류의 순간 변화를 방지하기 위해 저항 등의 설치를 권장함.

2) This device should not be used in any type of fluid such as water, oil, organic solvent, etc. When washing is required, IPA is recommended to use.
제품은 물, 오일, 유기물과 같은 액체 타입에서의 사용은 제한되며,
세정이 필요할 시에는 IPA 사용을 권장함.

3) When the LEDs illuminate, operating current should be decided after considering the ambient maximum temperature.
LED의 발광 시, 동작 전류는 주변 최고온도를 고려하여 결정되어야 함.

4) LEDs must be stored in a clean environment.
If the LEDs are to be stored for 3 months or more after being shipped from Samsung Electronics, they should be packed by a sealed container with nitrogen gas injected.(Shelf life of sealed bags: 12 months, temp. ~40℃, ~90%RH)
LED의 보관은 청정한 환경에서 보존되어져야 하며, 만약 삼성전자로부터 공급받는 후 3개월 또는 그 이상 보관이 필요하다면 질소 가스를 동봉한 보존용기에 보관되어야 함.
(보존 bag의 수명 : 12 개월, 보존 온도 ~40℃, 습도 ~90%RH)

5) After storage bag is open, device subjected to soldering, solder reflow, or other high temperature processes must be:
보존 Bag이 개봉된 후에, 납땜이나 reflow등의 높은 온도에 노출되는 제품은 다음의 사항에 부합되어야 함.

  a. Mounted within 672 hours(28 days) at an assembly line with a condition of no more than 30℃/60%RH,
  a. 제품은 30℃/60%RH보다 같거나 낮은 조립조건에서 672시간(28일)이내에 조립해야 함.
  b. Stored at <10%RH.
  b. 10% 이하의 상대습도에서 보관되어야 함.

6) Repack unused Products with anti-moisture packing, fold to close any opening and then store in a dry place.
사용하지 않은 제품은 방습팩에 넣어 개봉 부위를 닫아서 다시 포장한 후,
건조한 장소에서 보관할 것을 권장함.

7) Devices require baking before mounting, if humidity card reading is >60% at 23±5℃.
만약 습도표시카드의 수치가 23±5℃에서 60% 이상이라면, 제품 실장 전 **baking**해야 함.

8) Devices must be baked for 1 hour at 65±5℃, if baking is required.
만약 **baking**이 필요하다면, 제품은 65±5℃에서 1시간 정도 **baking** 되어야 함.

9) The LEDs are sensitive to the static electricity and surge. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
LED는 정전기 및 서지에 민감한 제품이므로, LED 제품을 다룰 시에는 정전기 방지장갑이나 손목밴드를 사용하기를 권장함.

If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.
만약 절대 허용치를 초과하는 전압이 LED에 가해지면, LED 소자는 파괴되거나 손상될 수 있음.

Damaged LEDs may show some unusual characteristics such as increase in leak current, lowered turn-on voltage, or abnormal lighting of LEDs at low current.
손상된 제품은 누설전류의 증가, Turn on 전압의 저하, 저 전류에서의 점등불량 등의 이상 거동을 보일 수 있음.

10) VOCs (volatile organic compounds) may be occurred by adhesives, flux, hardener or organic additives which is used in luminaires (fixture) and LED silicone bags are permeable to it. It may lead a discoloration when LED expose to heat or light.
VOCs(휘발성 유기 화합물)는 등기구에 사용되는 접착제, Flux, 경화제, 유기물 첨가제에서 발생하여 LED 실리콘 봉지제를 투과하고, 빛 또는 열에 노출되었을 때 변색이 발생 할 수 있음.

This phenomenon can give a significant loss of light emitted(output) from the luminaires(fixtures).
이러한 현상은 등기구로부터 나오는 빛의 중대한 손실을 줄 수 있음.

In order to prevent these problems, we recommend you to know the physical properties for the materials used in luminaires, It requires to select carefully.
이러한 문제 발생 방지를 위해서, 등기구에 사용되는 자재에 대한 물성을 알고 주의하여 선택 되어야함.

11) Risk of Sulfurization (or Tarnishing)

The lead frame from Samsung Electronics is a plated package and it may change to black(or dark colored) when it is exposed to Ag (a), Sulfur (S), Cchlorine (Cl) or other halogen compound. It requires attention.

삼성전자의 리드 프레임은 Ag(은)을 도금한 Package 제품으로 황(S), 염소(Cl),
또는 다른 할로겐 화합물들에 노출시 Ag(은)은 검정(또는 어두운색)으로 바뀔 수 있으니
주의가 필요함.

Sulfide (Sulfurization) of the lead frame may cause a change of degradation intensity, chromaticity coordinates and it may cause open circuit in extreme cases. It requires attention.

리드 프레임의 황화(Sulfurization)는 광량 저하, 색좌표 변화 및 심한 경우 회로내의
LED 무등(Open) 불량을 일으킬 수도 있으니 주의가 필요함.

Sulfide (Sulfurization) of the lead frame may cause of storage and using with oxidizing substances together. Therefore, LED is not recommend to use and store with the below list.

: Rubber, Plain paper, lead solder cream etc.

리드 프레임 황화(Sulfurization)의 근원이 될 수 있으니 LED는 아래의 목록으로
만들어진 산화성 물질들과 함께 저장, 사용이 불가함 : 고무, 일반 종이, 남땜 크림 등