![Chipsmall logo]

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Acrich
Semiconductor EcoLight

SEOUL SEMICONDUCTOR

RoHS

Specification

SSC-STW8T16C

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STW8T16C

Description

This surface-mount LED comes in standard package dimension.
It has a substrate made up of a molded plastic reflector sitting on top of a lead frame.
The die is attached within the reflector cavity and the cavity is encapsulated by silicone.

The package design coupled with careful selection of component materials allow these products to perform with high reliability.

Features

• Lead Frame type LED PKG
size: 5.0*5.0
thickness 1.0mm
• White colored SMT package
• Pb-free Reflow Soldering Application
• RoHS compliant

Applications

• Interior lighting
• General lighting
• Indoor and out door displays
• Architectural / Decorative lighting

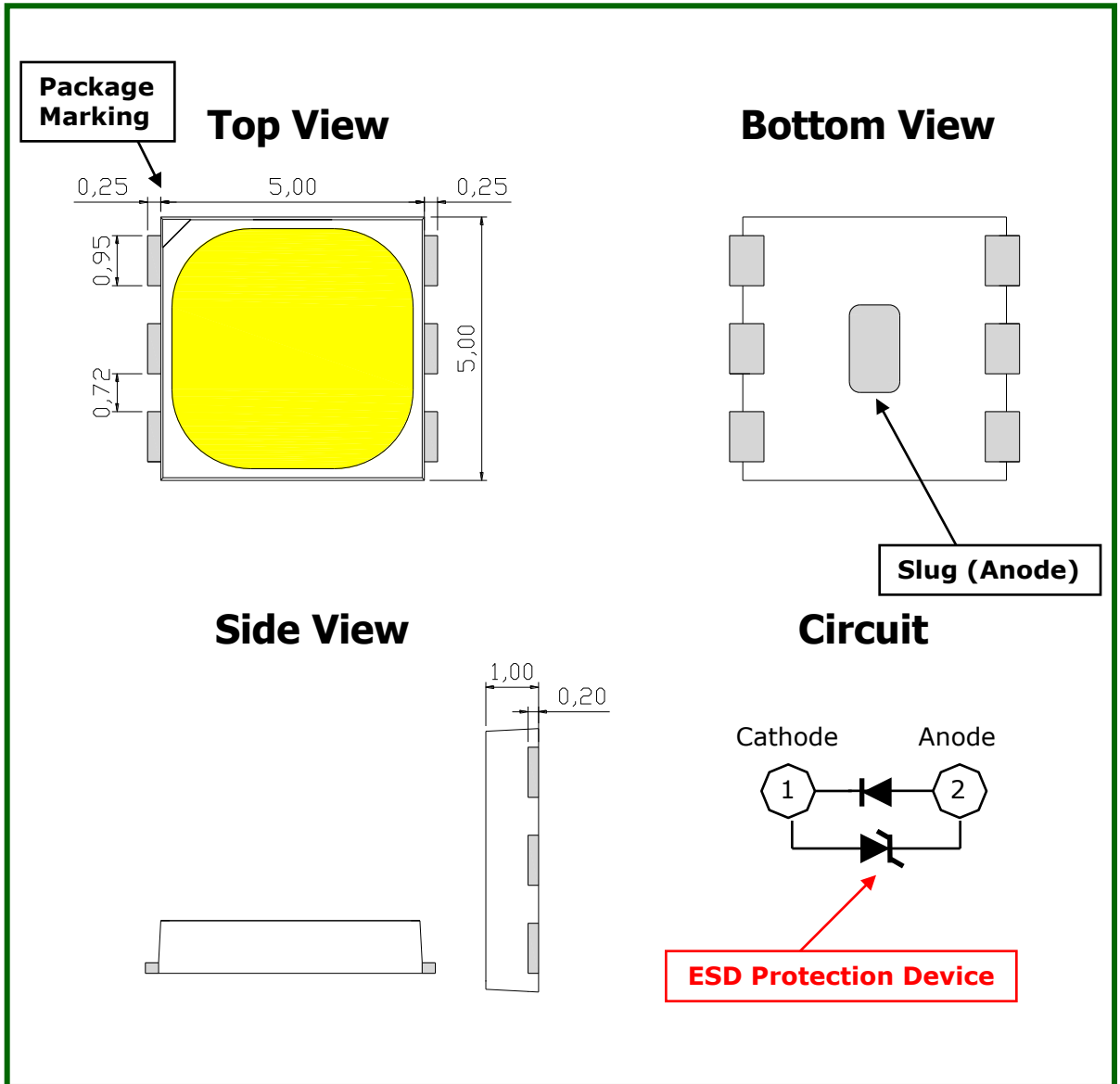# [Contents]

1. Outline dimensions of STW8T16C

Package Marking

Top View

0,25   5,00   0,25

0,95

5,00

0,72

Bottom View

Slug (Anode)

Side View

1,00
0,20

Circuit

Cathode   Anode

① ◄ ②

ESD Protection Device

Notes :

[1] All dimensions are in millimeters.
[2] Scale : none
[3] Undefined tolerance is ±0.1mm

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Material Structure
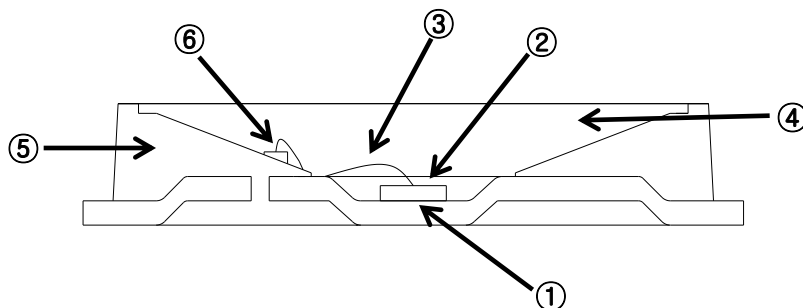
Parts No.	Name	Description	Materials
①	LEAD FRAME	Metal	Copper Alloy (Silver Plated)
②	Chip Source	Blue LED	GaN on Sapphire
③	Wire	Metal	Gold Wire
④	Encapsulation	Silicone	+Phosphor
⑤	Body	Thermo Plastic	Heat-resistant Polymer
⑥	Zener Diode	Si	-

2. Characteristics of STW8T16C

1) Electro-Optical characteristics at 65mA

(Ta=25℃, RH30%)

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Forward Voltage	V_F	2.8	-	3.3	V
Reverse Voltage	V_R	-	0.9	1.2	V
Luminous Intensity*[1] (3,700~8,200 K)	I_v	-	9.0 (27.5)	-	cd (lm)
Luminous Intensity*[1] (2,600~3,700 K)	I_v	-	8.2 (24.6)	-	cd (lm)
Correlated Color Temperature	CCT	2,600	-	8,200	K
Viewing Angle [2]	$2\Theta_{1/2}$	-	120	-	-
Color Rendering Index*	Ra	80	-	90	-
Thermal resistance (J to S)	$R\theta_{J-S}$	-	14	-	K/W

2) Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	100	mA
Power Dissipation*[3]	P_d	315	mW
Junction Temperature	T_j	125	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD (HBM)		±5,000V HBM	V

Notes :

 All measurements were made under the standardized environment of SSC.

LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter range.

[1] The luminous intensity IV was measured at the peak of the spatial pattern which may not be aligned with the mechanical axis of the LED package.

[2] 2Θ1/2 is the off-axis where the luminous intensity is 1/2 of the peak intensity.

[3] Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
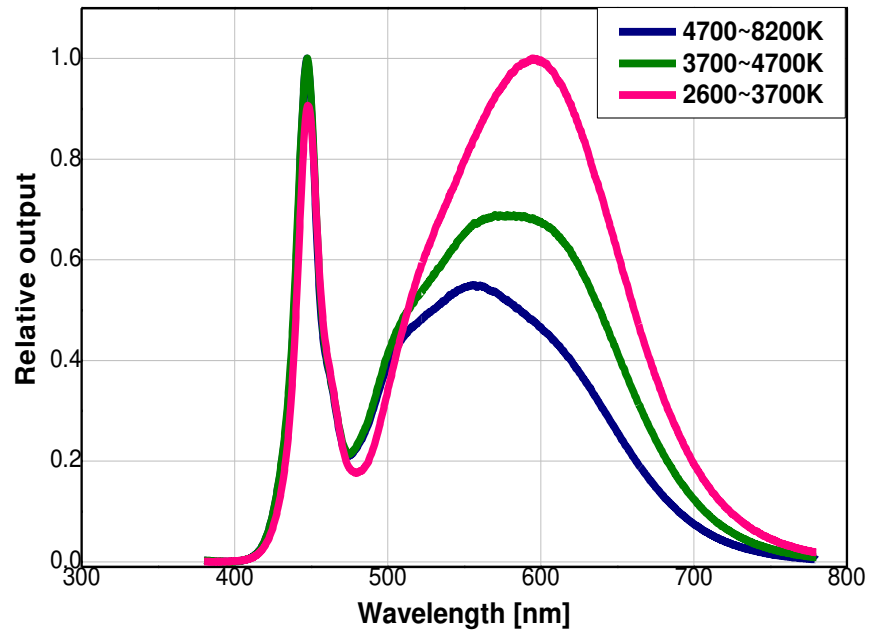
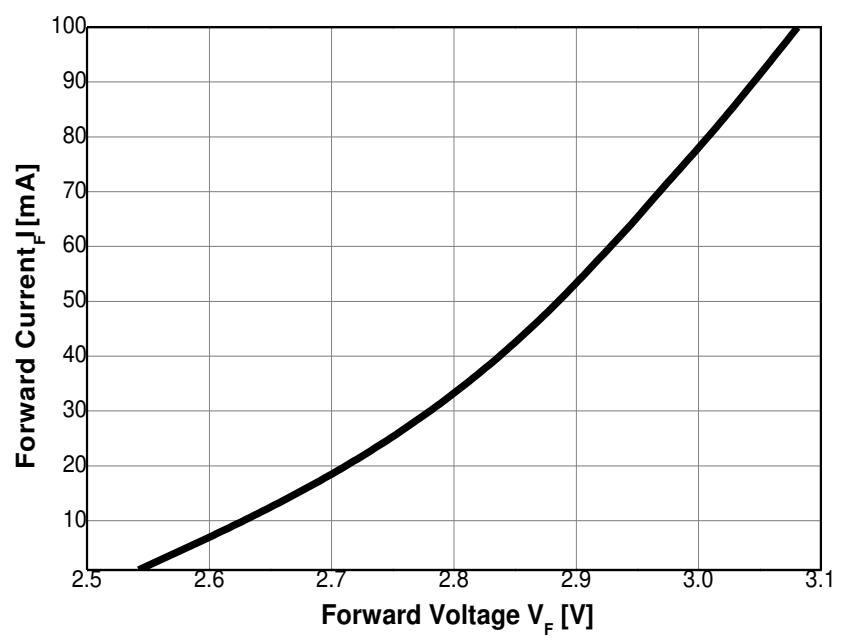* Tolerance : VF :±0.1V, IV :±7%, Ra :±2, x,y :±0.007

3. Characteristic diagrams

1) Spectrum data

(IF=65mA, Ta=25℃, RH30%)

2) Forward Voltage vs. Forward Current, Ta=25℃

3) Forward Current vs. Relative Luminous Intensity, Ta=25℃
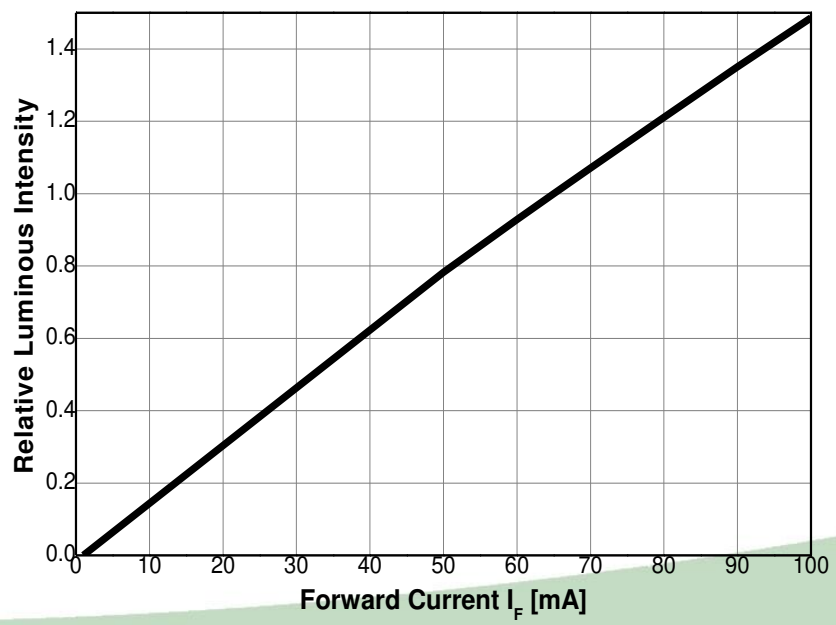
4) Chromaticity Coordinate vs. Forward Current, Ta=25℃
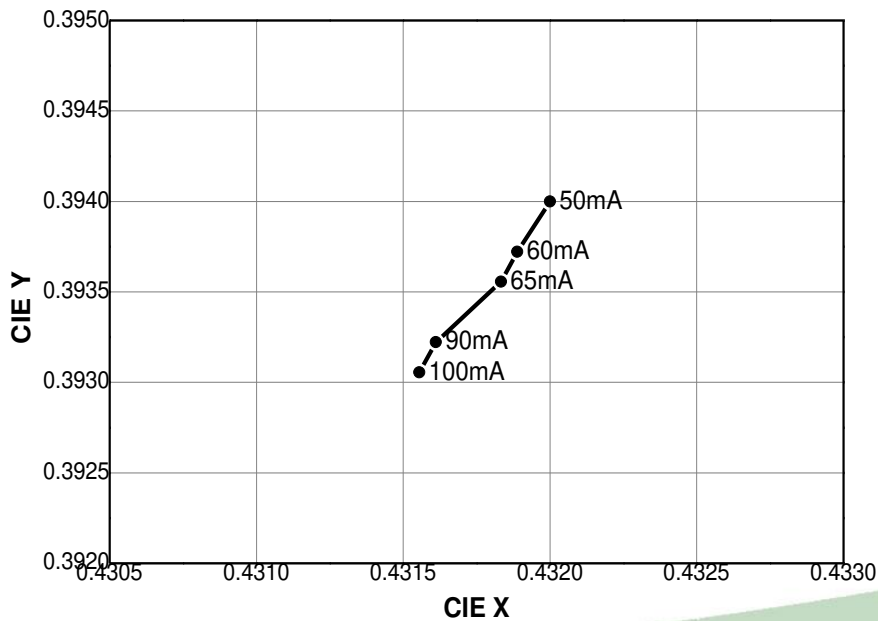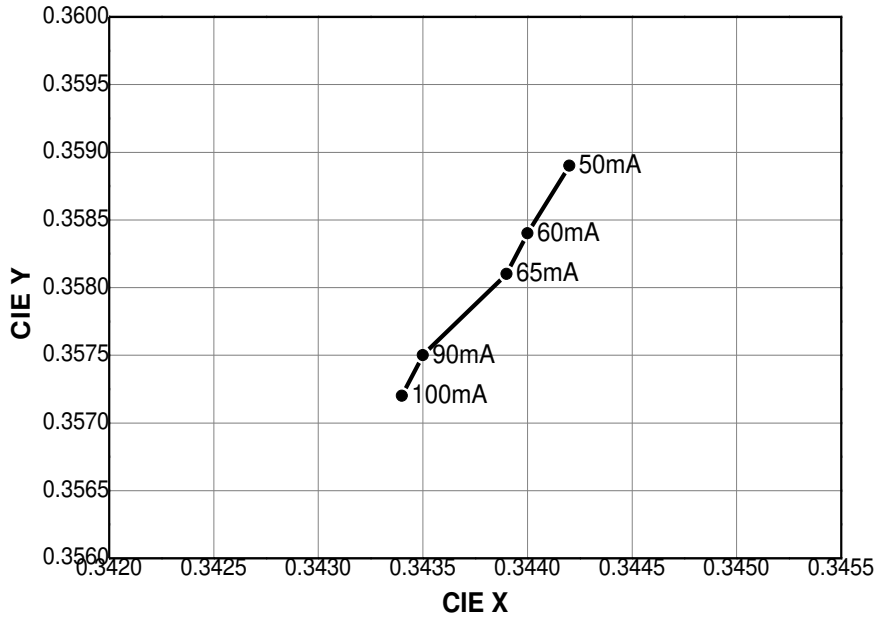
5) Relative Luminous Intensity vs. Junction Temperature, IF=65mA
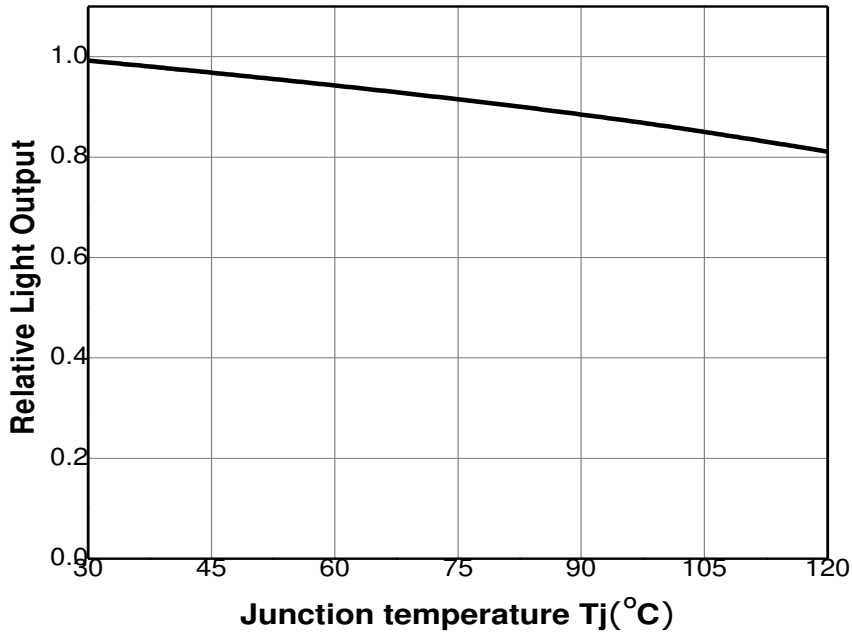
6) Chromaticity Coordinate vs. Junction Temperature, IF=65mA

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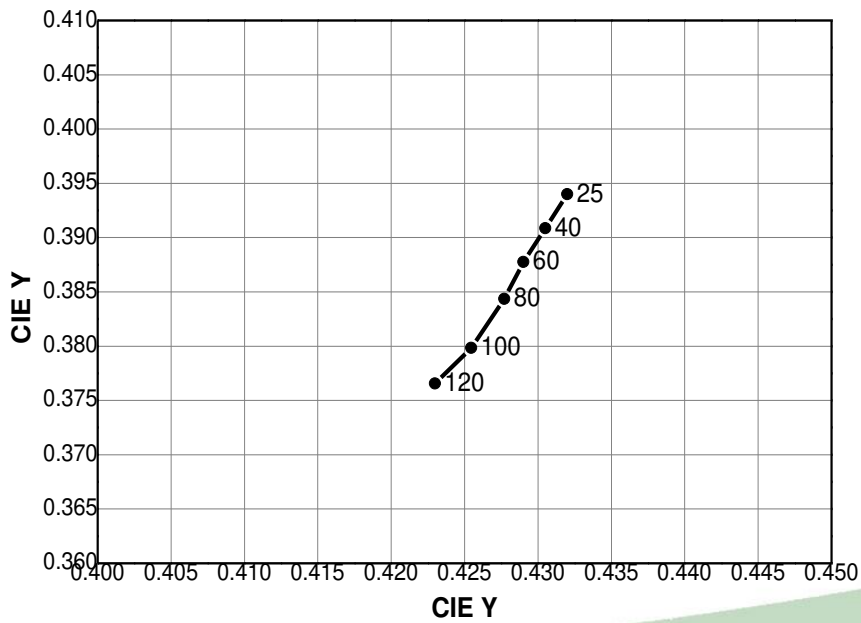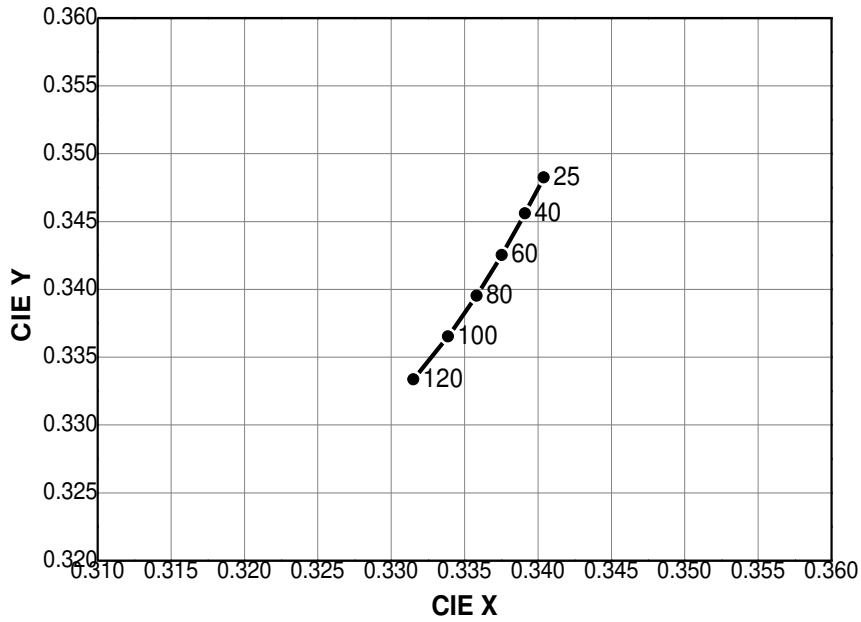
7) Ambient Temperature vs. Allowable Forward Current, IF=65mA
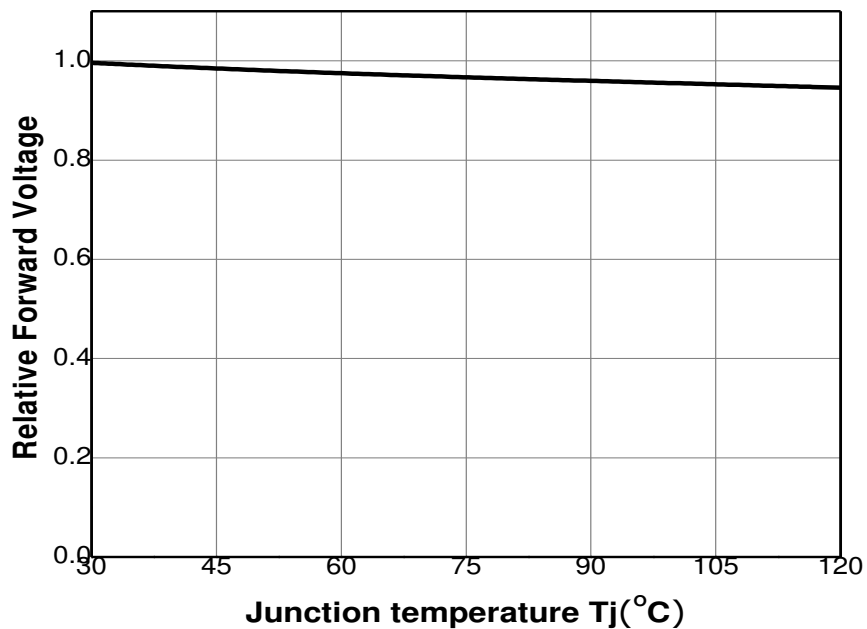
8) Ambient Temperature vs. Maximum Forward Current

RthJ-A : 200℃/W
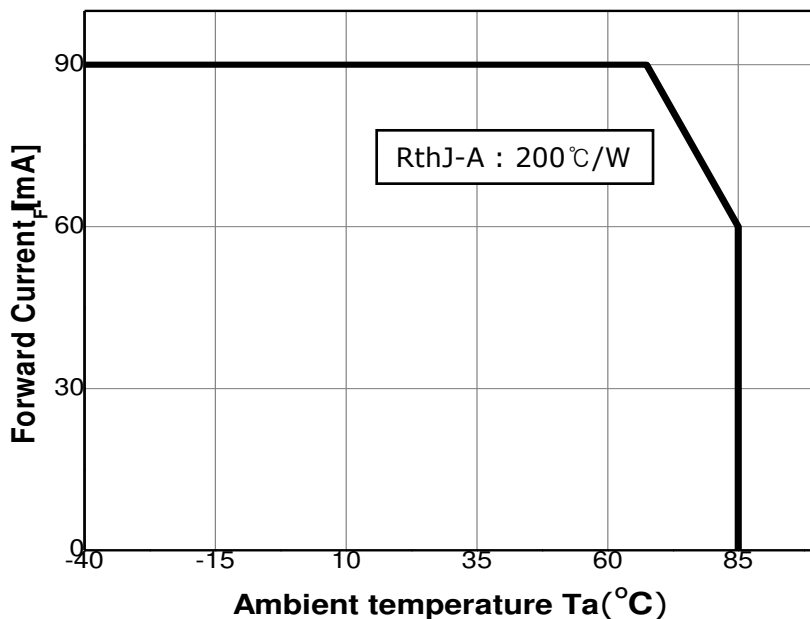
9) Viewing angle, Ta=25℃
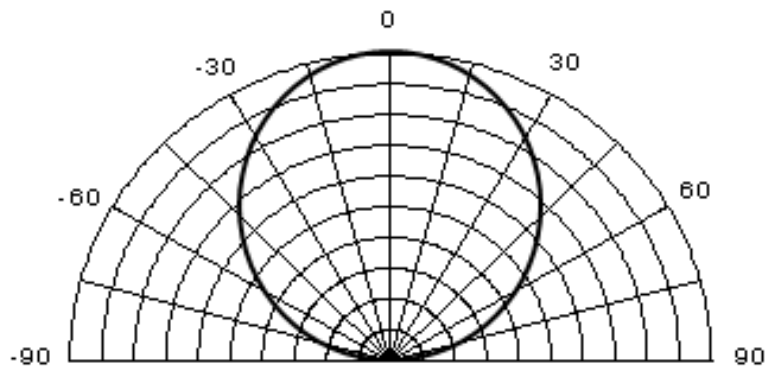
4. Color & Binning
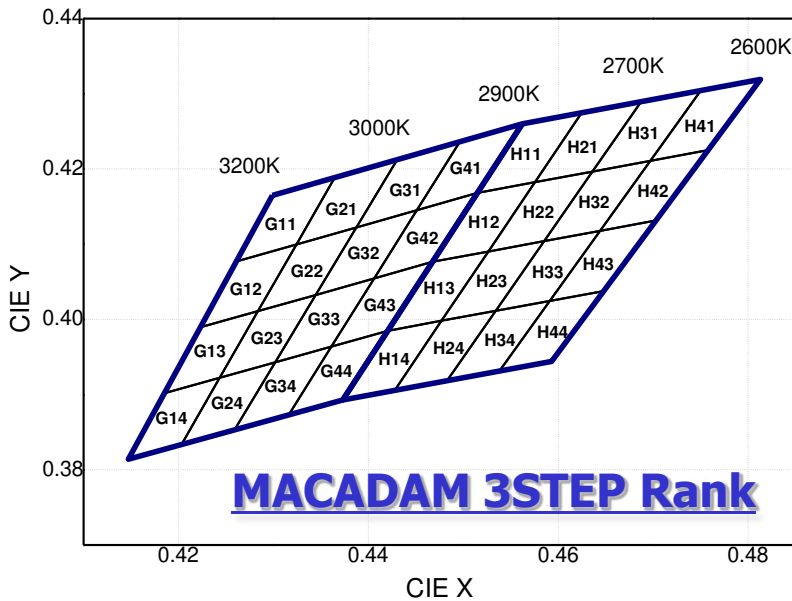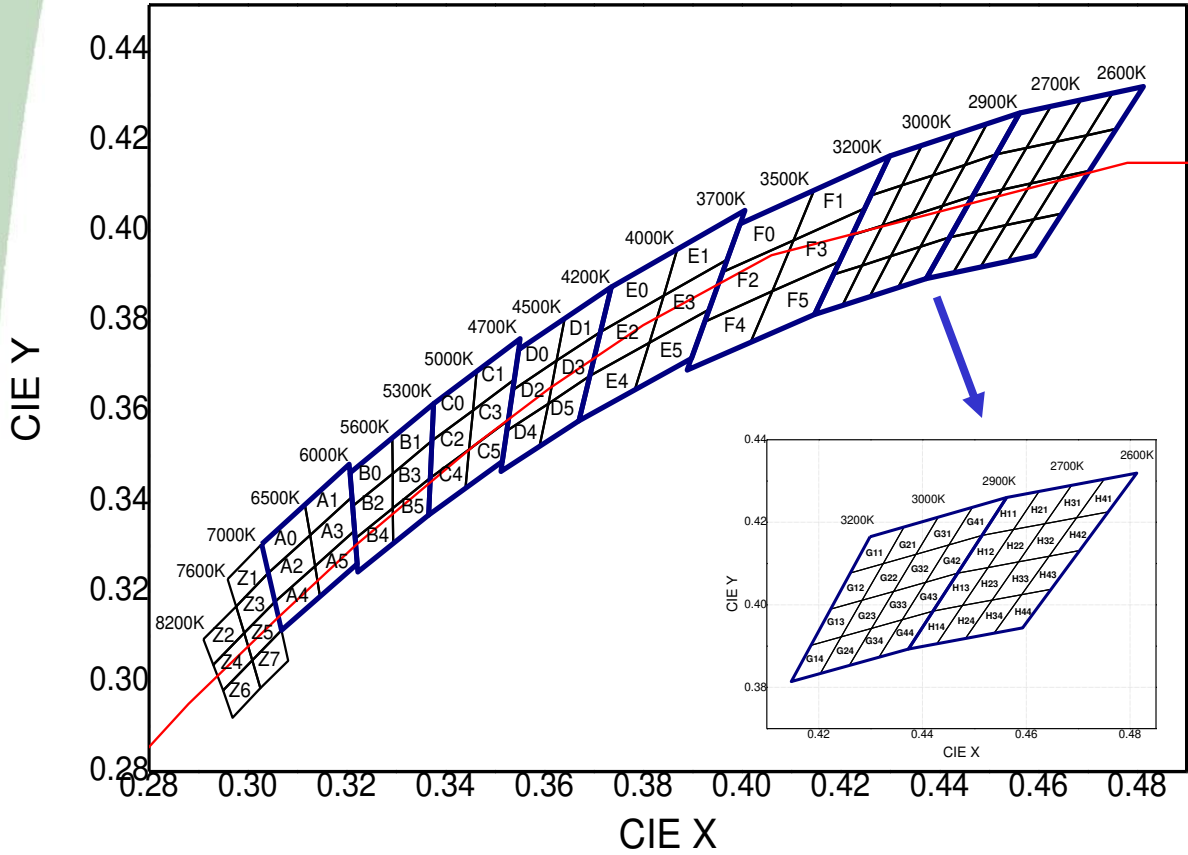
MACADAM 3STEP Rank

* Apply the Energy Star binning(3200~7000K) & MACADAM 3 Step binning (just, 2600~3200K)

* Measurement Uncertainty of the Color Coordinates : ± 0.007

4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

Z1		Z2		Z3	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.2959	0.3227	0.291	0.3093	0.2976	0.3166
0.2976	0.3166	0.293	0.3037	0.2993	0.3107
0.3041	0.324	0.2993	0.3107	0.3055	0.3177
0.3028	0.3304	0.2976	0.3166	0.3041	0.324
Z4		Z5		Z6	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.293	0.3037	0.2993	0.3107	0.295	0.298
0.295	0.298	0.3009	0.3047	0.2969	0.2919
0.3009	0.3047	0.3068	0.3113	0.3025	0.2985
0.2993	0.3107	0.3055	0.3177	0.3009	0.3047
Z7					
CIE X	CIE Y				
0.3009	0.3047				
0.3025	0.2985				
0.3082	0.3046				
0.3068	0.3113				

* Measurement Uncertainty of the Color Coordinates : ± 0.007

4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

A0		A1		A2	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3028	0.3304	0.3115	0.3393	0.3041	0.324
0.3041	0.324	0.3126	0.3324	0.3055	0.3177
0.3126	0.3324	0.321	0.3408	0.3136	0.3256
0.3115	0.3393	0.3205	0.3481	0.3126	0.3324
A3		A4		A5	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3126	0.3324	0.3055	0.3177	0.3136	0.3256
0.3136	0.3256	0.3068	0.3113	0.3146	0.3187
0.3216	0.3334	0.3146	0.3187	0.3221	0.3261
0.321	0.3408	0.3136	0.3256	0.3216	0.3334
B0		B1		B2	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3207	0.3462	0.3292	0.3539	0.3212	0.3389
0.3212	0.3389	0.3293	0.3461	0.3217	0.3316
0.3293	0.3461	0.3373	0.3534	0.3293	0.3384
0.3292	0.3539	0.3376	0.3616	0.3293	0.3461
B3		B4		B5	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3293	0.3461	0.3217	0.3316	0.3293	0.3384
0.3293	0.3384	0.3222	0.3243	0.3294	0.3306
0.3369	0.3451	0.3294	0.3306	0.3366	0.3369
0.3373	0.3534	0.3293	0.3384	0.3369	0.3451

* Measurement Uncertainty of the Color Coordinates : ± 0.007

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4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

C0		C1		C2	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3376	0.3616	0.3463	0.3687	0.3373	0.3534
0.3373	0.3534	0.3456	0.3601	0.3369	0.3451
0.3456	0.3601	0.3539	0.3669	0.3448	0.3514
0.3463	0.3687	0.3552	0.376	0.3456	0.3601
C3		**C4**		**C5**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3456	0.3601	0.3369	0.3451	0.3448	0.3514
0.3448	0.3514	0.3366	0.3369	0.344	0.3428
0.3526	0.3578	0.344	0.3428	0.3514	0.3487
0.3539	0.3669	0.3448	0.3514	0.3526	0.3578
D0		**D1**		**D2**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3548	0.3736	0.3641	0.3804	0.3536	0.3646
0.3536	0.3646	0.3625	0.3711	0.3523	0.3555
0.3625	0.3711	0.3714	0.3775	0.3608	0.3616
0.3641	0.3804	0.3736	0.3874	0.3625	0.3711
D3		**D4**		**D5**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3625	0.3711	0.3523	0.3555	0.3608	0.3616
0.3608	0.3616	0.3511	0.3465	0.359	0.3521
0.3692	0.3677	0.359	0.3521	0.367	0.3578
0.3714	0.3775	0.3608	0.3616	0.3692	0.3677

* Measurement Uncertainty of the Color Coordinates : ± 0.007

4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

E0		E1		E2	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3736	0.3874	0.3869	0.3958	0.3714	0.3775
0.3714	0.3775	0.3842	0.3855	0.3692	0.3677
0.3842	0.3855	0.397	0.3935	0.3813	0.3751
0.3869	0.3958	0.4006	0.4044	0.3842	0.3855
E3		**E4**		**E5**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3842	0.3855	0.3692	0.3677	0.3813	0.3751
0.3813	0.3751	0.367	0.3578	0.3783	0.3646
0.3934	0.3825	0.3783	0.3646	0.3898	0.3716
0.397	0.3935	0.3813	0.3751	0.3934	0.3825
F0		**F1**		**F2**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.3996	0.4015	0.4146	0.4089	0.396	0.3907
0.396	0.3907	0.4104	0.3978	0.3925	0.3798
0.4104	0.3978	0.4248	0.4048	0.4062	0.3865
0.4146	0.4089	0.4299	0.4165	0.4104	0.3978
F3		**F4**		**F5**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4104	0.3978	0.3925	0.3798	0.4062	0.3865
0.4062	0.3865	0.3889	0.369	0.4017	0.3751
0.4198	0.3931	0.4017	0.3751	0.4147	0.3814
0.4248	0.4048	0.4062	0.3865	0.4198	0.3931

* Measurement Uncertainty of the Color Coordinates : ± 0.007

4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

G11		G21		G31		G41	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4365	0.4189	0.4430	0.4212	0.4496	0.4236	0.4562	0.4260
0.4324	0.4100	0.4387	0.4122	0.4451	0.4145	0.4515	0.4168
0.4261	0.4077	0.4324	0.4100	0.4387	0.4122	0.4451	0.4145
0.4299	0.4165	0.4365	0.4189	0.4430	0.4212	0.4496	0.4236
G12		**G22**		**G32**		**G42**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4324	0.4100	0.4387	0.4122	0.4451	0.4145	0.4515	0.4168
0.4284	0.4011	0.4345	0.4033	0.4406	0.4055	0.4468	0.4077
0.4223	0.3990	0.4284	0.4011	0.4345	0.4033	0.4406	0.4055
0.4261	0.4077	0.4324	0.4100	0.4387	0.4122	0.4451	0.4145
G13		**G23**		**G33**		**G43**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4284	0.4011	0.4345	0.4033	0.4406	0.4055	0.4468	0.4077
0.4243	0.3922	0.4302	0.3943	0.4361	0.3964	0.4420	0.3985
0.4185	0.3902	0.4243	0.3922	0.4302	0.3943	0.4361	0.3964
0.4223	0.3990	0.4284	0.4011	0.4345	0.4033	0.4406	0.4055
G14		**G24**		**G34**		**G44**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4243	0.3922	0.4302	0.3943	0.4361	0.3964	0.4316	0.3873
0.4203	0.3834	0.4259	0.3853	0.4259	0.3853	0.4302	0.3943
0.4147	0.3814	0.4203	0.3834	0.4420	0.3985	0.4373	0.3893
0.4185	0.3902	0.4243	0.3922	0.4316	0.3873	0.4361	0.3964

* Measurement Uncertainty of the Color Coordinates : ± 0.007

4. Color & Binning

● COLOR RANK   <IF=65mA, Ta=25℃>

H11		H21		H31		H41	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4625	0.4275	0.4687	0.4289	0.4750	0.4304	0.4810	0.4319
0.4575	0.4182	0.4636	0.4197	0.4697	0.4211	0.4758	0.4225
0.4515	0.4168	0.4575	0.4182	0.4636	0.4197	0.4697	0.4211
0.4562	0.4260	0.4625	0.4275	0.4687	0.4289	0.4750	0.4304
H12		**H22**		**H32**		**H42**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4575	0.4182	0.4636	0.4197	0.4697	0.4211	0.4758	0.4225
0.4526	0.4090	0.4585	0.4104	0.4644	0.4118	0.4703	0.4132
0.4468	0.4077	0.4526	0.4090	0.4585	0.4104	0.4644	0.4118
0.4515	0.4168	0.4575	0.4182	0.4636	0.4197	0.4697	0.4211
H13		**H23**		**H33**		**H43**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4526	0.4090	0.4585	0.4104	0.4644	0.4118	0.4703	0.4132
0.4477	0.3998	0.4534	0.4012	0.4591	0.4025	0.4648	0.4038
0.4420	0.3985	0.4477	0.3998	0.4534	0.4012	0.4591	0.4025
0.4468	0.4077	0.4526	0.4090	0.4585	0.4104	0.4644	0.4118
H14		**H24**		**H34**		**H44**	
CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y	CIE X	CIE Y
0.4477	0.3998	0.4534	0.4012	0.4591	0.4025	0.4648	0.4038
0.4428	0.3906	0.4483	0.3919	0.4538	0.3932	0.4593	0.3944
0.4373	0.3893	0.4428	0.3906	0.4483	0.3919	0.4538	0.3932
0.4420	0.3985	0.4477	0.3998	0.4534	0.4012	0.4591	0.4025

* Measurement Uncertainty of the Color Coordinates : ± 0.007

5. Bin Code Description

Bin Code		
Luminous Intensity [mcd]	Color Rank	Forward Voltage [V]
R0	A1	Z1

2,600K ~ 8,200K
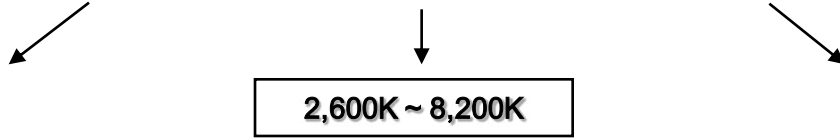
Luminous Intensity [mcd] *[1] @ I_F = 65mA			Flux *[2] [lm]
RANK	Min.	Max.	Typ.
Q0	7000	8000	23
R0	8000	9000	26.8
S0	9000	10000	29.5
T0	10000	11000	31.8

Color Rank @ I_F = 65mA
Z~H

Forward Voltage [V] @ I_F = 65mA		
RANK	Min.	Max.
Y2	2.8	2.9
Y3	2.9	3.0
Z1	3.0	3.1
Z2	3.1	3.2
Z3	3.2	3.3

☐ Available ranks
☐ Not yet available ranks

CCT	CIE	IV Rank			
7000~8200K	Z	Q0	R0	S0	T0
6000~7000K	A	Q0	R0	S0	T0
5300~6000K	B	Q0	R0	S0	T0
4700~5300K	C	Q0	R0	S0	T0
4200~4700K	D	Q0	R0	S0	T0
3700~4200K	E	Q0	R0	S0	T0
3200~3700K	F	Q0	R0	S0	T0
2900~3200K	G	Q0	R0	S0	T0
2600~2900K	H	Q0	R0	S0	T0

*Notes :
 All measurements were made under the standardized environment of SSC.
 In order to ensure availability, single color rank will not be orderable.
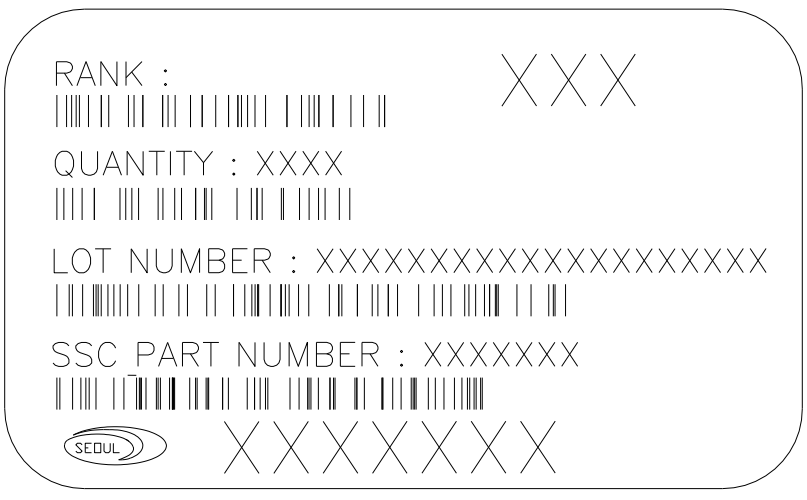 [1] SSC sort the LED package according to the luminous intensity IV.
 [2] The lumen table is only for reference.

6. Labeling

```
RANK :                    XXX
|||||| ||| ||| || | || ||||| | ||| | | ||
QUANTITY : XXXX
||||| ||| || || | ||| | |||||
LOT NUMBER : XXXXXXXXXXXXXXXXXXXX
|||||||||| || || || ||||||| || | |||| | ||| ||||| | | |||
SSC PART NUMBER : XXXXXXX
||||| ||||||| ||| || ||| ||||| || | ||| ||||||
SEOUL    XXXXXXX
```

Full code form :

$$X_1X_2-X_3X_4-X_5-X_6X_7-X_8$$

- X_1 : Company
- X_2 : Kind of LED
- X_3X_4 : CRI Group
- X_5 : Package series
- X_6X_7 : Characteristic code
- X_8 : Version

Rank

$$\#_1\#_2\#_3$$

- #1 : Luminous Intensity : IV

- #2 : Color coordinates : x, y

- #3 : Forward Voltage : V_F

Acrich
Semiconductor EcoLight

SEOUL **SEOUL SEMICONDUCTOR**

7. Packing

Reel

RANK: XXX
|||||||||

QUANTITY : XXXX
|||||||| ||||||| ||||||| ||||||||||

LOT NUMBER : XXXXXXXXXX
|||| ||||| ||||||||||| ||||||||||| |||||||||

PART NUMBER :
|||| ||||| ||||||||||| ||| XXXXXX

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HUMIDITY INDICATOR

DESI PAK

Aluminum Vinyl Bag

RANK: XXX
|||||||||

QUANTITY : XXXX
|||||||| ||||||| ||||||| ||||||||||

LOT NUMBER : XXXXXXXXXX
|||| ||||| ||||||||||| ||||||||||| |||||||||

PART NUMBER :
|||| ||||| ||||||||||| ||| XXXXXX

SEOUL SEMICONDUCTOR CO., LTD.
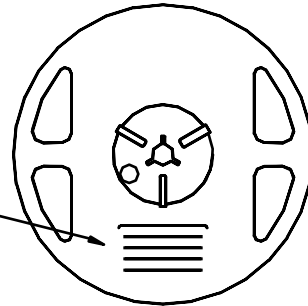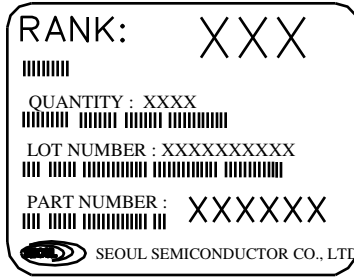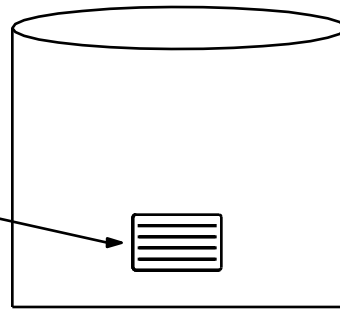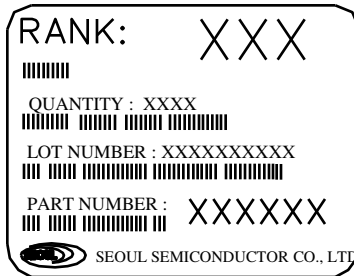
Outer Box Structure

Material : Paper(SW3B(B))

Type	SIZE[mm]		
	ⓐ	ⓑ	ⓒ
7inch	245	220	102
	245	220	142

① SIDE

RANK: XXX
|||||||||

QUANTITY : XXXX
|||||||| ||||||| ||||||| ||||||||||

LOT NUMBER : XXXXXXXXXX
|||| ||||| ||||||||||| ||||||||||| |||||||||

PART NUMBER :
|||| ||||| ||||||||||| ||| XXXXXX

SEOUL SEMICONDUCTOR CO., LTD.

CE   MADE IN KOREA

Acrich
semiconductor eco lighting

RoHS   HCP

TEL:+82∘31∘166∘2707
FAX:+82∘8015∘7776
WWW.ACRICH.COM
SEOUL SEMICONDUCTOR

ⓒ
①
ⓑ
ⓐ
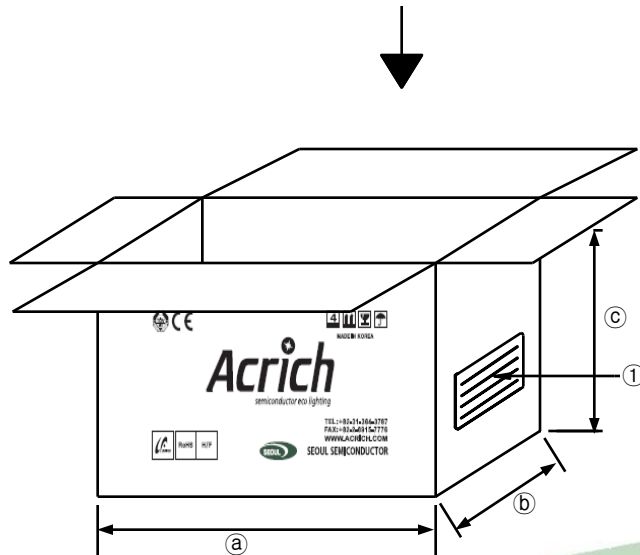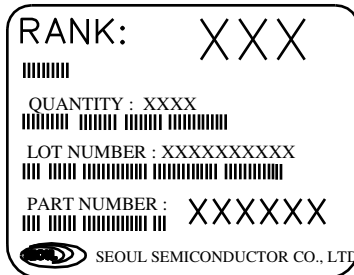
7. Packing
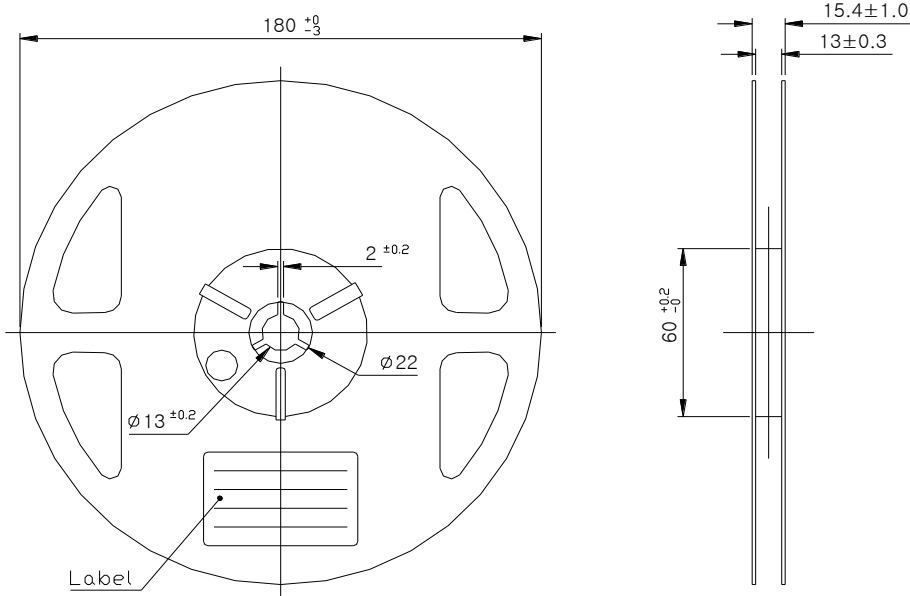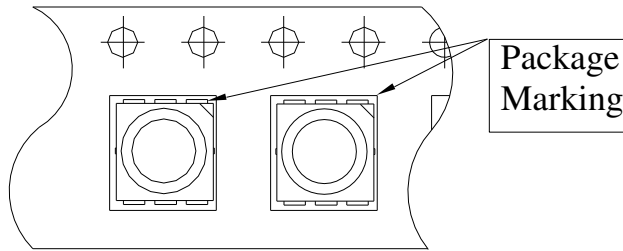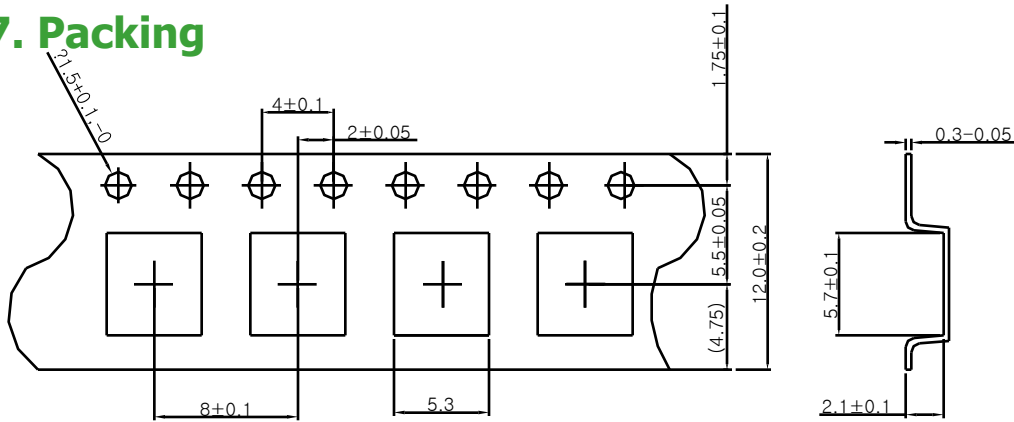
(Tolerance: ±0.2, Unit: mm)

(1) Quantity : 1200pcs/Reel
(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm
(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 the angle of 10° to the carrier tape
(4) Package : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof
Package

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8. Recommended solder pad

6.30

4.10

1.70

2.40

0.67

1.05

1.10
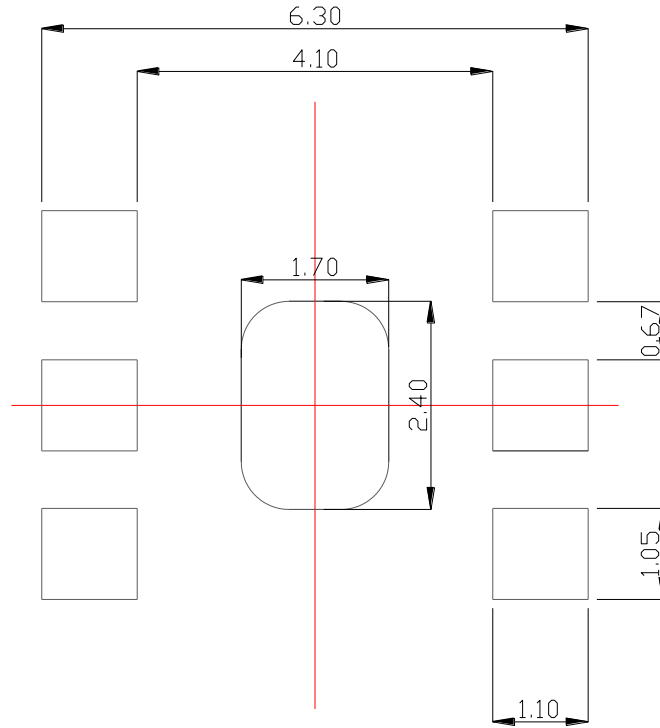
Notes :

[1] All dimensions are in millimeters.
[2] Scale : none
[3] Undefined tolerance is ±0.1mm
    This drawing without tolerances are for reference only