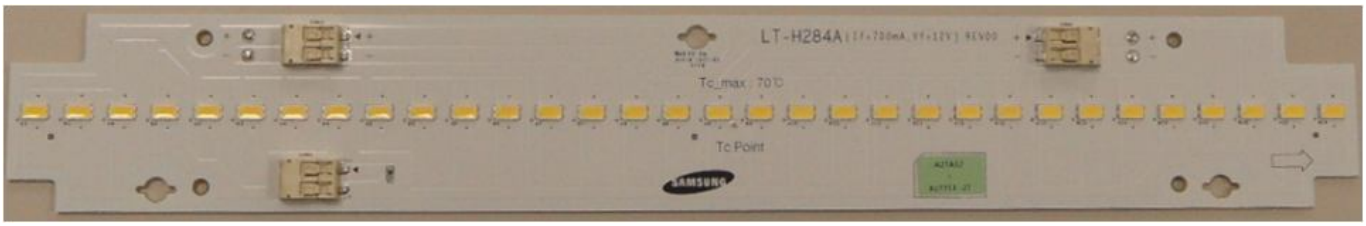
SPECIFICATION



Linear Module Gen2, H-series (Zhaga Compliant)	
Model Name	**LT-H284A**
Type	**280x40x5.95[mm], 700 mA (11.6V)**
Parts No.	**SI-B8V081280WW (3000K)** **SI-B8U081280WW (3500K)** **SI-B8T081280WW (4000K)** **SI-B8R081280WW (5000K)**

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Revision History

Rev.No	Data	Page	Revision	Remark
1.0	June 3, 2013	-	The first preliminary specification is established. Total 12 pages	-
1.1	June 12, 2013	-	Update LED orientation in all drawings	-
		5, 6, 10	Update "Operating Current, Operating Voltage, Power consumption" Add min. and max value for "Operating Voltage" Revise operating condition in Remark because of change of module circuit.	-
1.2	August 15, 2013	1	Add parts no.	-
		5	Update Luminous Flux & Vf spec	-
		6	Add color coordinate spec for all CCTs	-
		7	Update drawing including 3 way views	-
		8	Update connection guide for parallel and serial Update connector information	-
		10	Add circuit schematic	
		11	Update CE status completed	-
		-	Total 13 pages	

Contents

1. Products and Application

This specification defines general specification and performance for LED Linear module. Samsung Linear Modules target to replace conventional fluorescent lamps as T5, T8 and so on with LED solutions. Due to transferring LED, new luminaire transferred to LED can take more energy saving and longer life-time.

In special, Samsung has competitiveness in middle-power solutions. This module uses LM561B. Middle power solutions provide more homogeneous and higher efficient lights. Linear module has been designed to expand length simply and adopt easy connection way.

2. Specification

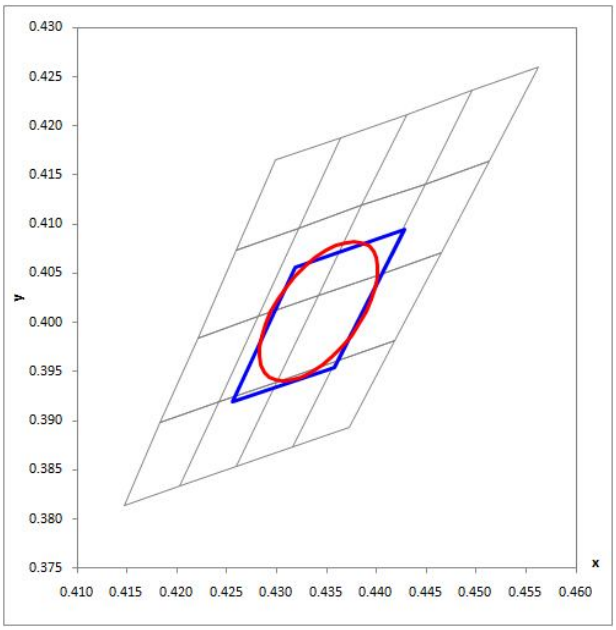
No.	Item	Specifications	Unit	Remark
2-1	Dimension	280.0(L) × 40.0(W) × 5.95(h) mm	mm	Tolerance:±0.5mm
2-2	Weight	28	g	Tolerance:±2.8g
2-3	Rated lifetime	50,000 Hr	hour	L70B50 @Tc = 65℃
2-4	Ingress Protection	N/A	-	-
2-5	Operating Temperature	Tc = - 20 ~ 70	℃	-
2-6	Storage Temperatue	Ta = - 35 ~ 85	℃	-

No.	Item	Specifications					Unit	Remark
		Sym.	Model	Min.	Nom.	Max.		
2-7	Luminous flux	Φ_v	3000K	1000	1070	1200	lm	@700mA, 11.6V Tc = 45℃
			3500K	1020	1100	1220		
			4000K	1050	**1140**	1250		
			5000K	1080	1160	1300		
2-8	Efficiency	LPW	3000K	-	132	-	lm/W	@700mA, 11.6V Tc = 45℃
			3500K	-	135	-		
			4000K	-	**141**	-		
			5000K	-	143	-		
2-9	Color consistency	-	-	-	3	-	step	MacAdam @ initial time
			-	-	5	-		@10K hrs
2-10	Color Rendering Index	CRI	-	80	-	-	Ra	-
2-11	CCT	-	3000K	2946	3022	3099	K	@700mA, 11.6V Tc = 45℃
			3500K	3340	3446	3553		
			4000K	3859	3984	4109		
			5000K	4800	5025	5251		
2-12	Operating Current	Iop	-	-	700	1200	mA	-
2-13	Operating Voltage	Vdc	-	10.5	11.6	12.9	V	@700mA, Tc = 45℃
2-14	Power Consumption	-	-	7.4	8.1	9.0	W	@700mA, Tc = 45℃

※ Measurement tolerance of luminous flux becomes ± 7% in the value, measurement tolerance of Vf becomes ± 0.3V in the value and the measurement tolerance of the color coordinates is ± 0.005.

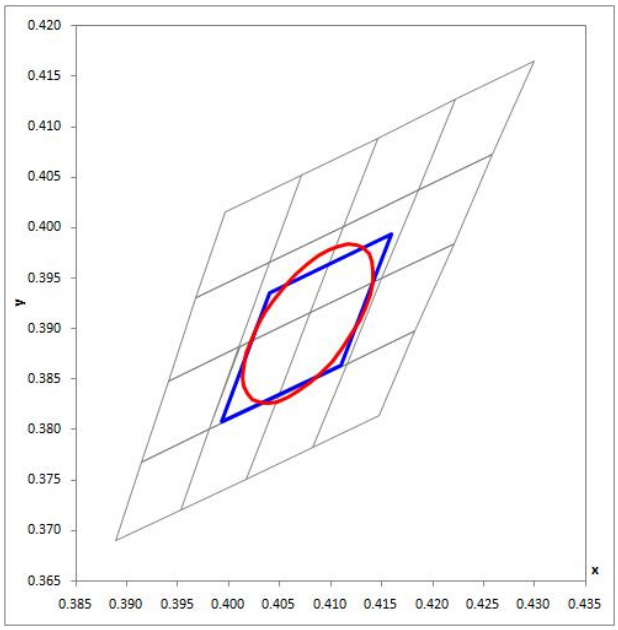
[2-15] Color Coordinates

3000 K



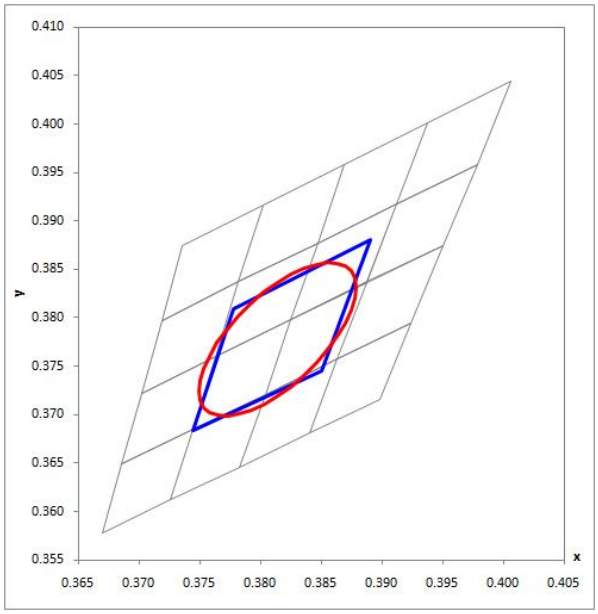
0.4256	0.4358	0.4428	0.4319
0.3919	0.3954	0.4094	0.4056

3500 K



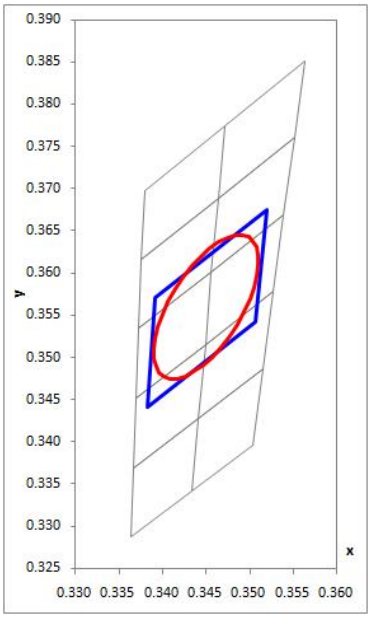
0.3993	0.4110	0.4160	0.4040
0.3807	0.3863	0.3993	0.3935

4000 K



0.3744	0.3850	0.3890	0.3777
0.3684	0.3745	0.3881	0.3809

5000 K



0.3383	0.3507	0.3520	0.3392
0.3442	0.3543	0.3675	0.3571

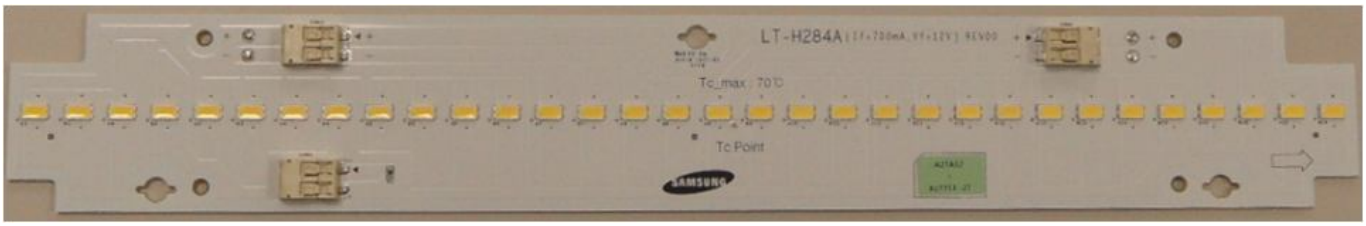
@700mA, 11.6, Tc = 45℃

Grey : DOE
Red : MacAdam 3-step ellipse
Blue : Module Spec

※ Measurement tolerance of luminous flux becomes ± 7% in the value, measurement tolerance of Vf becomes ± 0.3V in the value and the measurement tolerance of the color coordinates is ± 0.005.

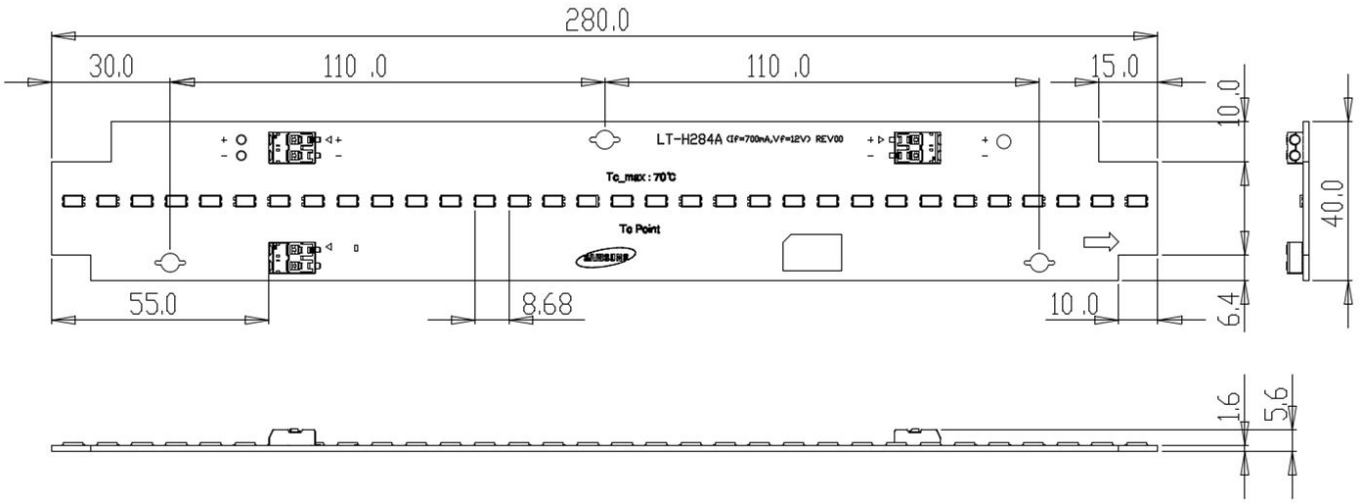
3. Structure and Assembly

3-1. Appearance



<Top View>

3-2. Drawing & Dimension

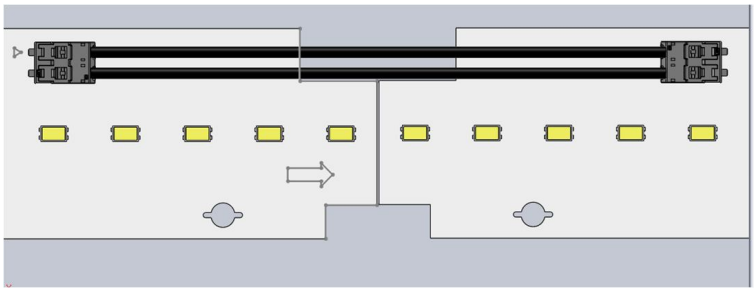


Item		Specifications
L	Length of PCB	280.0 ± 0.5 mm
W	Width of PCB	40.0 ± 0.3 mm
H1	Thickness of PCB	1.6 ± 0.1 mm
H2	Height of PCBA	5.95 ± 0.2 mm

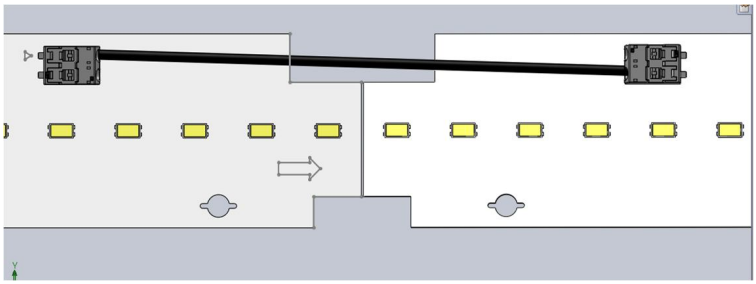
3-3. Assembly

This module adapts terminal strip connection method to connect between LED modules like as below.

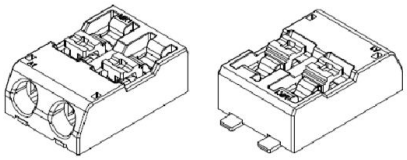
- Parallel Connection



- Serial Connection



- Connector : Terminal strip type

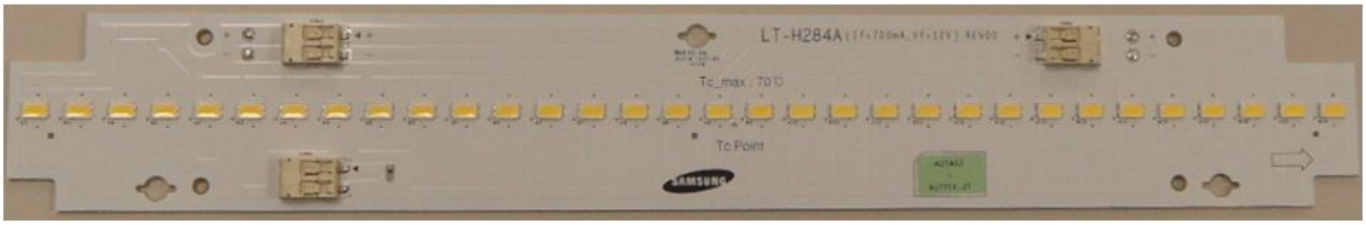


AWG 24-18

(1) Insert solid conductors via push-in termination.

(2) Insert or remove fine-standard conductors by lightly pressing on push-button.

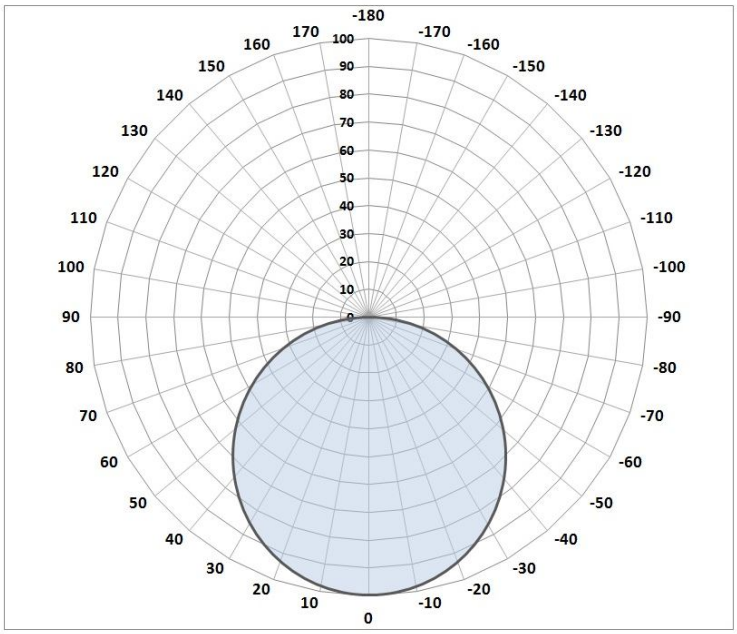
3-4. Structure



No.		Item	Specifications
Module Assembly	3-1	LED	LM561B : Middle Power LED 32 ea
	3-2	PCB	Material : Copper, Solder mask and Epoxy
	3-3	Connector	AWG 24-18 Strip Length 6-7 mm
	3-4	Resistor (NTC)	15 KΩ Nominal B-value : B (25/50) - 4110 Kelvin

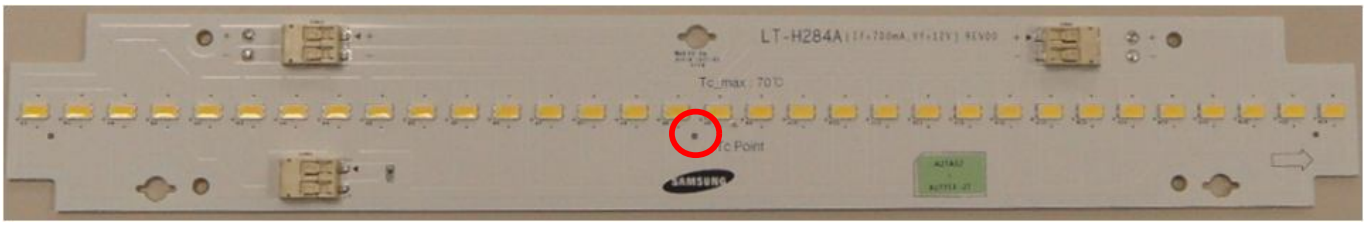
3-5. Light Distribution

(1) Polar Intensity Diagram : Beam Angle 115 ± 5 [°]



3-6. Thermal Management

(1) Tc Point : See the below red mark.



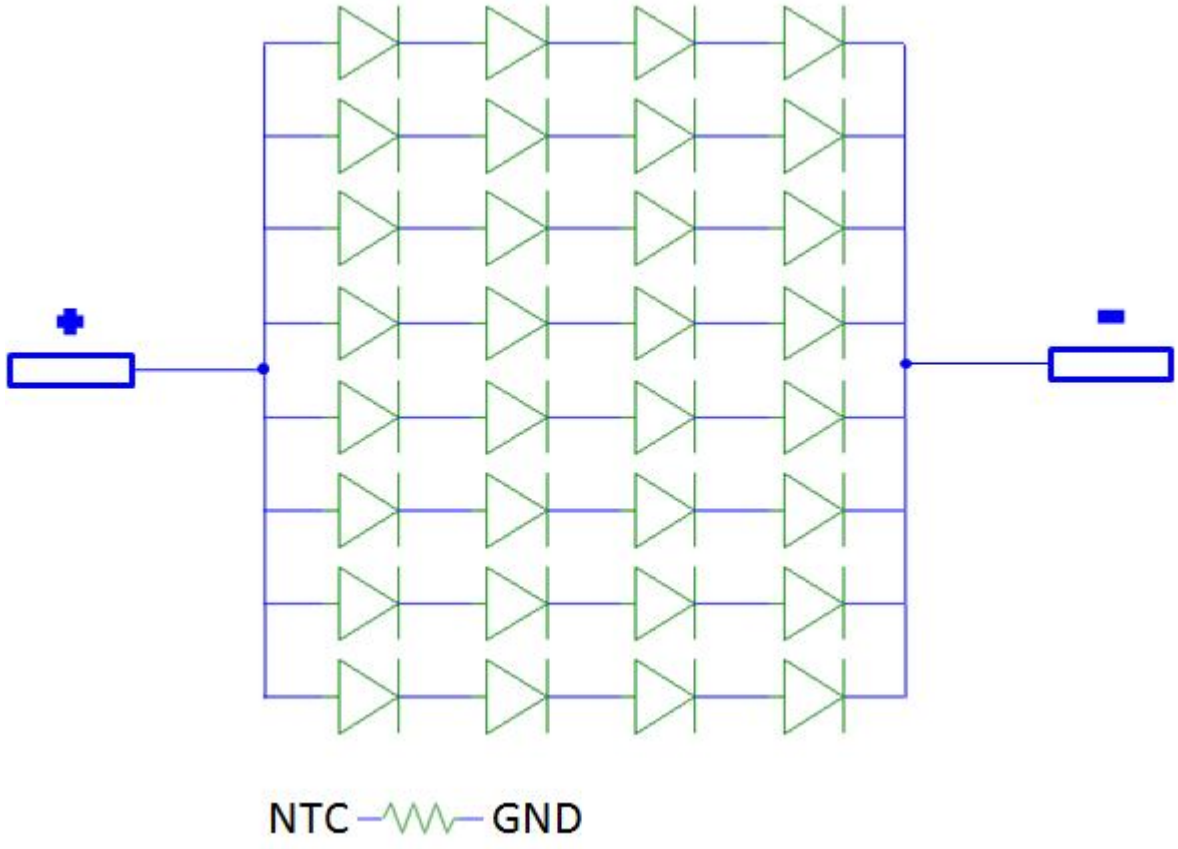
(2) Tc_life : Max temperature to reach 50,000 hours

- Tc=65℃ for 50,000 @ 700mA (L70B50)

(3) Tc_max : Max temperature to operate

- Tc_max = 70℃

3-7. Circuit Schematic



4. Approbation

Item	Compliant to	Result / Remark
General	Eye safety : IEC62471	LM561B LED
Hazardous Substance & Materials	ROHS	-
	REACH	-
Certification	CE	IEC 62031:2008 IEC 62471:2008
	ENEC	TBD
	UL/cUL	TBD

5. Packing

5-1 Dimension & Module Q'ty

(1) Box : 375 (L) x 355 (W) x 200 (h) mm (Tolerance : ±1.5mm)

(2) Q'ty

-	1 Tray	1 Box	1 Pallet
Num. of modules	36	144	3456 (24 boxes)

(3) Pallet : 800 (L) x 1200 (W) x 145 (h) mm

6. Precautions In Handling

1) LED Lighting for white light are devices which are materialized by combining white LEDs. The color of white light can differ a little unusually to diffuser plate(sign-board panel).

2) Handling
- Don't drop the unit and don't give the unit any shocks.
- Don't storage the Module in a dusty place or room.
- Don't take the unit to pieces.

3) Cleaning
- This LED Module should not be used in any type of fluid such as oil, organic solvent, etc.
- It is recommended that IPA(Isopropyl Alcohol) be used as a solvent for cleaning the LED Module.
- When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations. Do not clean the LED Module by the ultrasonic.
- Before cleaning, a pre-test should be done to confirm whether any damage to the LED Lighting will occur.

4) Static Electricity
- Static electricity or surge voltage damages the LED Lighting.

5) Discoloration
- 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.
- This phenomenon can give a significant loss of light emitted(output) from the luminaires(fixtures).
- 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.

6) 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.
- 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.
- 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.

7) Others

- If over voltage which exceeds the absolute maximum rating is applied to LED Lighting, it will cause damage Circuits(that LED is included) and result in destruction.
- Do not directly look into lighted LED with naked eyes for long time.

Samsung-Electronics may make changes to specifications and product descriptions at any time, without notice.

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