Data Sheet

Linear Module Gen2, E-series		
Model Name	LT-E284A	
Type	12.1V, 700mA	
Parts No.	3000K	SI-B8V08228001
	3500K	SI-B8U08228001
	4000K	SI-B8T08228001
	5000K	SI-B8R08228001

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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	5	Update min / max value of "Operating Voltage and Power Consumption"	-
1.2	August 15, 2013	1	Add parts no.	-
		5	Revise color consistency spec 4-step to 3-step Add CCT spec Update Vf spec (Min/Max)	-
		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	-
		11	Add packing information	-
		-	Total 13 pages	
2.0	May, 2014	5	Higher flux version is added in the product list Total 14 pages	
3.0	June, 2014	5	Flux specification is updated for higher flux version.	

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
1	Dimension	280.0(L) × 40.0(W) × 5.95(h) mm	mm	Tolerance:±0.5mm
2	Weight	28	g	Tolerance:±2.8g
3	Rated lifetime	50,000 Hr	hour	L70B50 @Tc = 65℃
4	Ingress Protection	N/A	-	-
5	Operating Temperature	Tc = - 20 ~ 70	℃	-
6	Storage Temperatue	Ta = - 35 ~ 85	℃	-

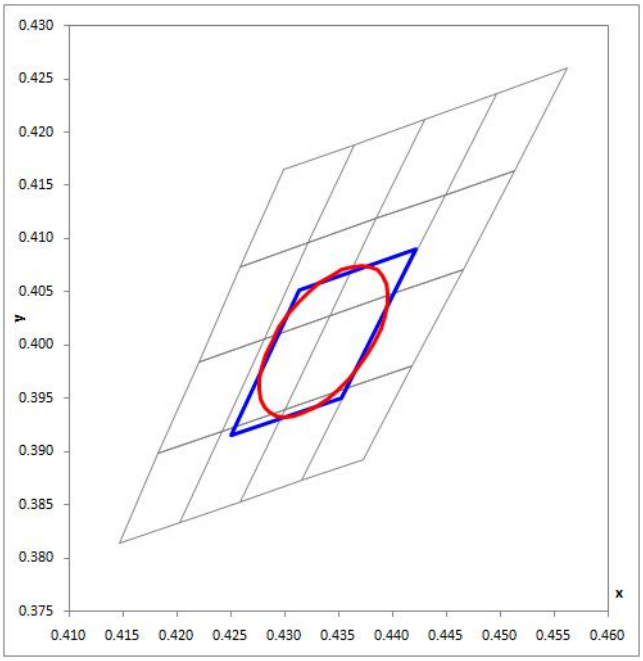
No.	Item	Specifications					Unit	Remark
		Sym.	Model	Min.	Nom.	Max.		
7	Luminous flux	Φ_v	3000K	984	1100	1229	lm	@700mA, 12.1V Tc = 45℃
			3500K	1000	1120	1249		
			4000K	1032	**1150**	1289		
			5000K	1064	1190	1330		
8	Efficiency	LPW	3000K	-	130	-	lm/W	@700mA, 12.1V Tc = 45℃
			3500K	-	132	-		
			4000K	-	**136**	-		
			5000K	-	140	-		
9	Operating Current	Iop	-	-	700	750	mA	-
10	Operating Voltage	Vdc	-	11.0	12.2	13.4	V	@700mA, Tc = 45℃
11	Power Consumption	-	-	7.7	8.5	9.4	W	@700mA, Tc = 45℃

No.	Item	Specifications					Unit	Remark
		Sym.	Model	Min.	Nom.	Max.		
12	SDCM	-	-	-	3	-	step	MacAdam @ initial time
			-	-	5	-		@ 10K hrs
13	Color Rendering Index	CRI	-	80	-	-	Ra	-
14	CCT	-	3000K	2953	3029	3106	K	@700mA, 12.1V Tc = 45℃
			3500K	3351	3458	3566		
			4000K	3869	3995	4121		
			5000K	4826	5056	5286		

※ 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.

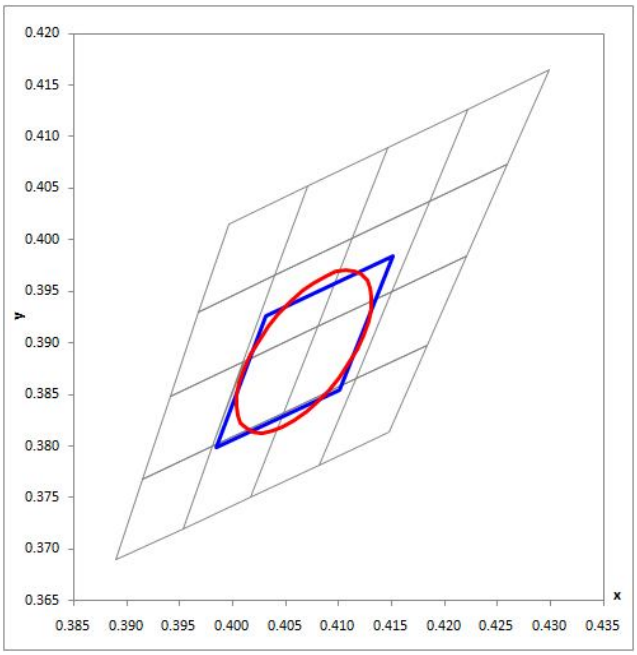
[15] Color Coordinates

3000 K



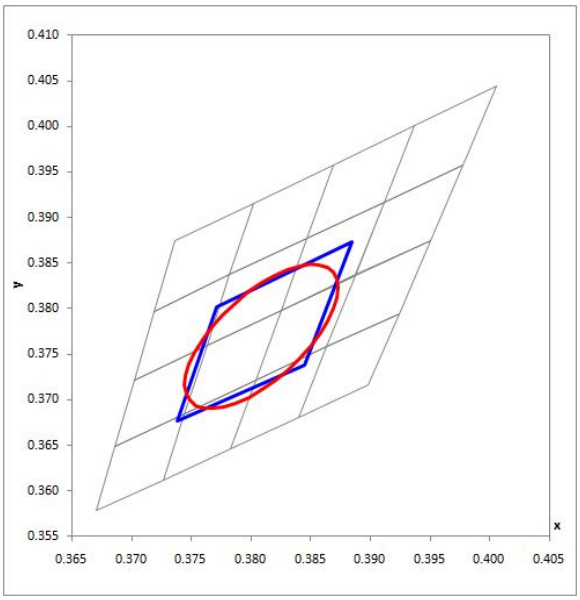
x	0.4250	0.4352	0.4422	0.4313
y	0.3915	0.3950	0.4090	0.4052

3500 K



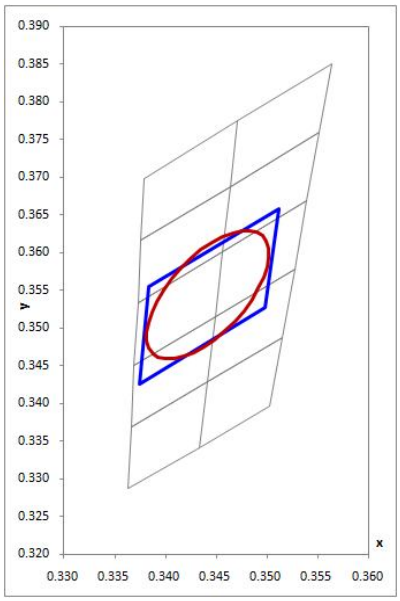
x	0.3984	0.4101	0.4151	0.4031
y	0.3798	0.3854	0.3984	0.3926

4000 K



x	0.3738	0.3844	0.3884	0.3771
y	0.3676	0.3737	0.3873	0.3801

5000 K



x	0.3374	0.3498	0.3511	0.3383
y	0.3426	0.3527	0.3659	0.3555

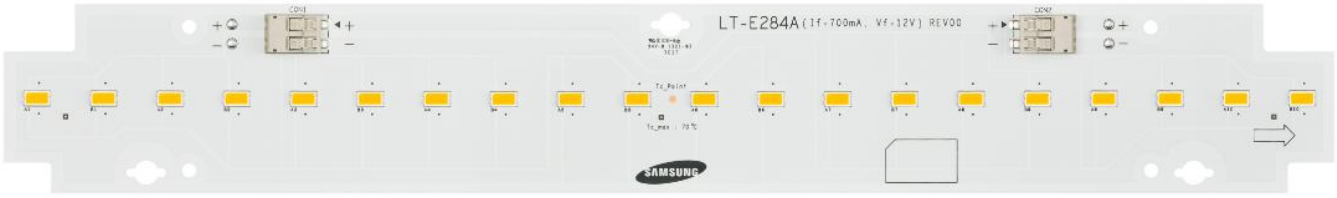
@700mA, 12.1V, Tc = 45℃

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.

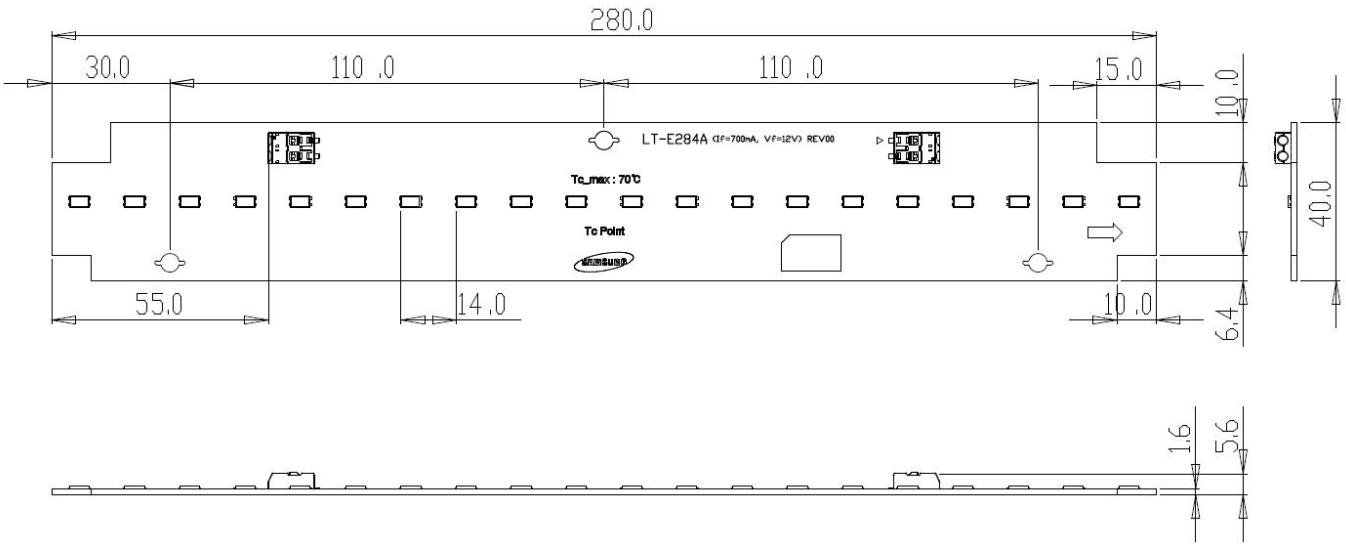
3. Structure and Assembly

3-1. Appearance



<Top View>

3-2. Drawing & Dimension

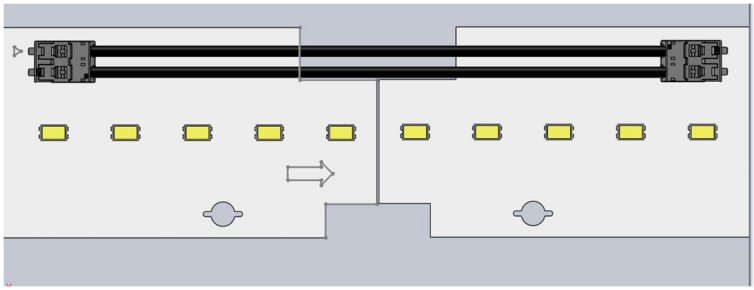


Item		Specifications
L	Length of PCB	280.0 ± 0.5 mm
W	Width of PCB	40.0 ± 0.3 mm
H1	Thickness of PCB	1.6 ± 0.1 mm
H2	Height of PCBA	5.95 ± 0.2 mm

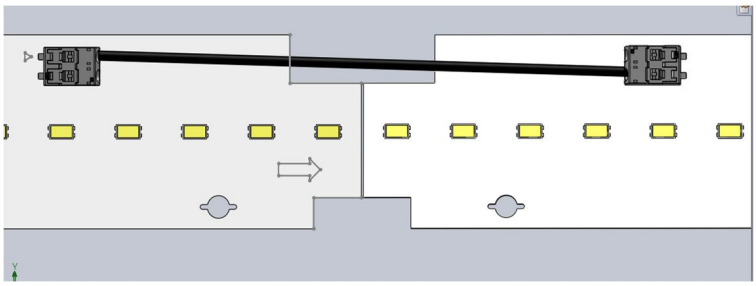
3-3. Assembly

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

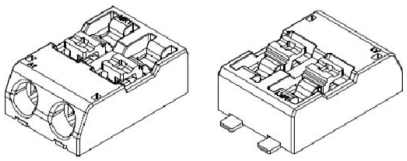
- Parallel Connection



- Serial Connection



- Connector : Terminal strip type



AWG 24-18

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

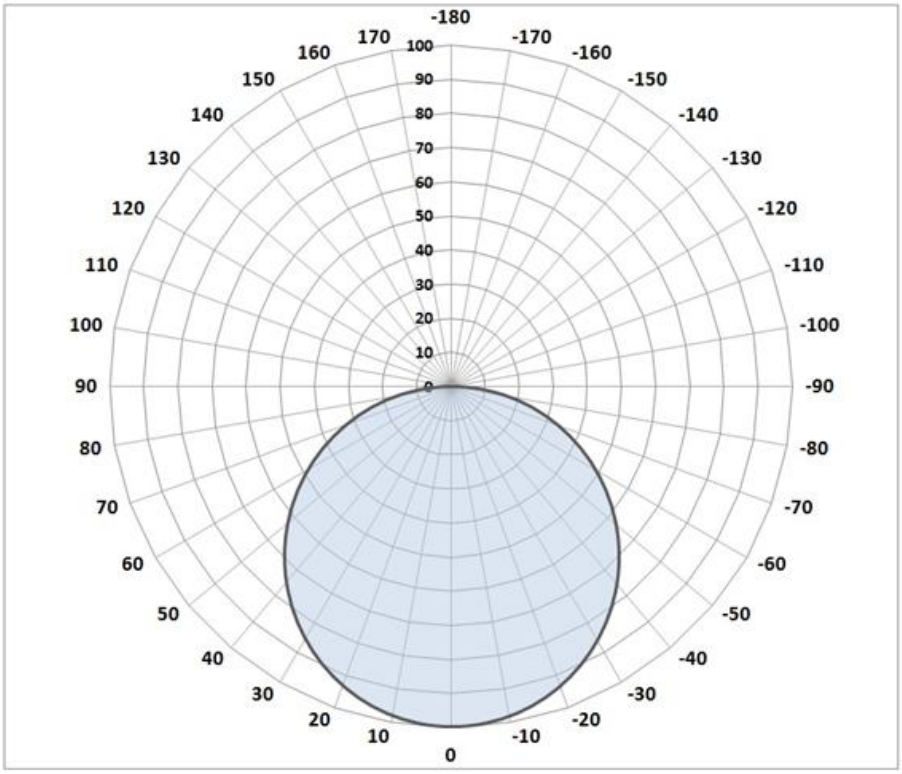
(2) Insert or remove fine-standard conductors by lightly pressing on push-button.

3-4. Structure

No.		Item	Specifications
Module Assembly	3-1	LED	LM561B : Middle Power LED 20 ea
	3-2	PCB	Material : Copper, Solder mask and Epoxy
	3-3	Connector	AWG 24-18 Strip Length 6-7 mm

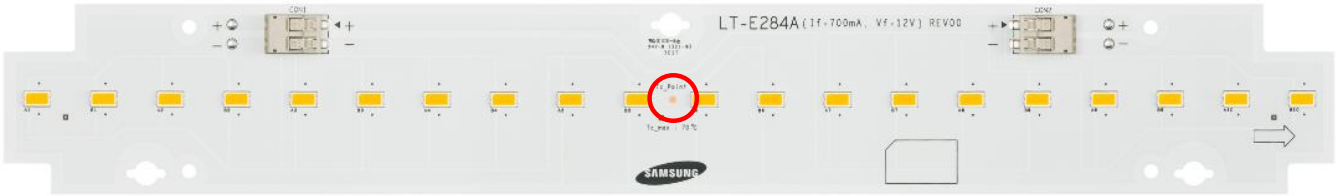
3-5. Light Distribution

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



3-6. Thermal Management

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



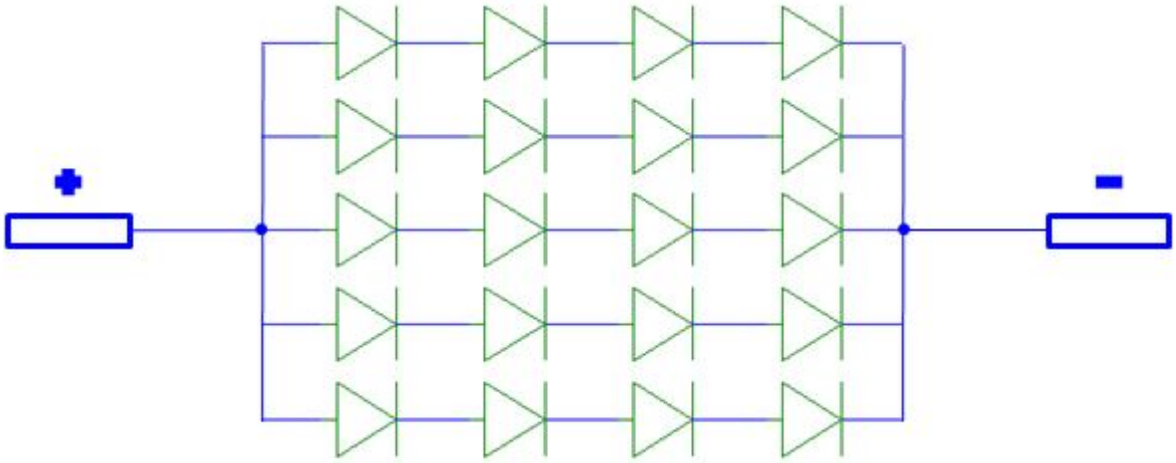
(2) Tc_life : Max temperature to reach 50,000 hours

- 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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