

## LED Module

LT-HB22D  
LT-H562D  
LT-H282D



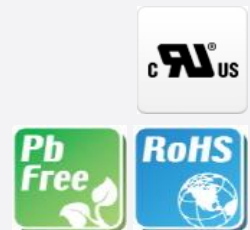
### Features & Benefits

- Premium linear to deliver the highest efficacy, 187 lm/W @ 4000K
- Three options of the board length : 4ft / 2ft / 1ft
- Same foot print as M-series for easy expansion of fixture line-up
- Seamless design & re workable poke-in connector

### Applications

Indoor Lighting:

- Replacement of T5/T8 tubes
- Office / Retail / Living space
- Troffer / Linear / Pendant



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## 1. Product Code Information

### - LT-HB22D

Nominal CCT (K)	Type	Product Code
3000	Front CNT	SI-B8V221B2HUS
3500		SI-B8U221B2HUS
4000		SI-B8T221B2HUS
5000		SI-B8R221B2HUS

### - LT-H562D

Nominal CCT (K)	Type	Product Code
3000	Front CNT	SI-B8V11156HUS
3500		SI-B8U11156HUS
4000		SI-B8T11156HUS
5000		SI-B8R11156HUS

### - LT-H282D

Nominal CCT (K)	Type	Product Code
3000	Front CNT	SI-B8V05128HUS
3500		SI-B8U05128HUS
4000		SI-B8T05128HUS
5000		SI-B8R05128HUS

## 2. Characteristics

### a) Basic Information

Item	Rating	Unit	Remark
Rated Lifetime	>50,000	hour	L70B50
Ingress Protection (IP)	no rating	-	
Ambient / Operating Temperature ( $t_{amb}$ )	-20 ~ +50	°C	
Storage Temperature	-30 ~ +80	°C	

### b) Electro-Optical Characteristics

#### - LT-HB22D

Item	Nom. CCT (K)	Rating			Unit	Remark
		Min	Typ.	Max		
Luminous Flux ( $\Phi_v$ )	3000	3480	3870	4260	lm	$I_f = 960 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
	3500	3630	4035	4440		
	4000	3735	4150	4565		
	5000	3640	4040	4440		
Luminous Efficacy	3000	161	179	197	lm/W	
	3500	168	187	206		
	4000	173	192	211		
	5000	169	187	206		
CCT	3000	2930	3018	3109	K (Initial)	Mac Adam 3 step
	3500	3301	3412	3530		
	4000	3781	3926	4075		
	5000	4735	4915	5105		
Color Rendering Index (Ra)	-	80	83	-	-	Integrating Sphere
Operating Current ( $I_f$ )	-	-	960	2400	mA	$I_f = 960 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
Operating Voltage ( $V_f$ )	-	20.8	22.5	24.2	Vdc	
Power Consumption	-	20.0	21.6	23.2	W	

#### Notes:

- $t_p$  : temperature at which performance is specified; measured at "Tc point".
- Samsung maintains a measurement tolerance of: Luminous flux:  $\pm 7\%$ , CRI:  $\pm 3.0$ , Voltage:  $\pm 5\%$
- Max 4 kV for ESD(Direct contact)
- Measurement tolerance of CCT is  $\pm 5\%$

## - LT-H562D

Item	Nom. CCT (K)	Rating			Unit	Remark
		Min	Typ.	Max		
Luminous Flux ( $\Phi_v$ )	3000	1740	1935	2130	lm	$I_f = 480 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
	3500	1820	2020	2220		
	4000	1870	2075	2285		
	5000	1820	2020	2220		
Luminous Efficacy	3000	161	179	197	lm/W	
	3500	169	187	206		
	4000	173	192	212		
	5000	169	187	206		
CCT	3000	2930	3018	3109	K (Initial)	Mac Adam 3 step
	3500	3301	3412	3530		
	4000	3781	3926	4075		
	5000	4735	4915	5105		
Color Rendering Index (Ra)	-	80	83	-	-	Integrating Sphere
Operating Current ( $I_f$ )	-	-	480	1200	mA	
Operating Voltage ( $V_f$ )	-	20.8	22.5	24.2	Vdc	$I_f = 480 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
Power Consumption	-	10.0	10.8	11.6	W	

**Notes:**

- 1)  $t_p$  : temperature at which performance is specified; measured at "Tc point".
- 2) Samsung maintains a measurement tolerance of: Luminous flux:  $\pm 7\%$ , CRI:  $\pm 3.0$ , Voltage:  $\pm 5\%$
- 3) Max 4 kV for ESD(Direct contact)
- 4) Measurement tolerance of CCT is  $\pm 5\%$

## - LT-H282D

Item	Nom. CCT (K)	Rating			Unit	Remark
		Min	Typ.	Max		
Luminous Flux ( $\Phi_v$ )	3000	870	970	1065	lm	$I_f = 240 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
	3500	910	1010	1110		
	4000	935	1040	1145		
	5000	910	1010	1110		
Luminous Efficacy	3000	161	180	197	lm/W	
	3500	169	187	206		
	4000	173	193	212		
	5000	169	187	206		
CCT	3000	2930	3018	3109	K (Initial)	Mac Adam 3 step
	3500	3301	3412	3530		
	4000	3781	3926	4075		
	5000	4735	4915	5105		
Color Rendering Index (Ra)	-	80	83	-	-	Integrating Sphere
Operating Current ( $I_f$ )	-	-	240	600	mA	
Operating Voltage ( $V_f$ )	-	20.8	22.5	24.2	Vdc	$I_f = 240 \text{ mA}$ $t_p = 40 \text{ }^\circ\text{C}$
Power Consumption	-	5.0	5.4	5.8	W	

**Notes:**

- 1)  $t_p$ : temperature at which performance is specified; measured at "Tc point".
- 2) Samsung maintains a measurement tolerance of: Luminous flux:  $\pm 7\%$ , CRI:  $\pm 3.0$ , Voltage:  $\pm 5\%$
- 3) Max 4 kV for ESD(Direct contact)
- 4) Measurement tolerance of CCT is  $\pm 5\%$

### c) Temperature Characteristics

Item	Nominal( $t_p$ )*	Life**	Max( $t_c$ )***	Unit
Temperature	40	80	90	°C

#### Notes:

- \* Temperature used to specify performance of the module ( $t_p$ ).
  - \*\* Rated maximum performance temperature at which lifetime is specified.
  - \*\*\* Rated maximum temperature, highest permissible temperature to avoid safety risk ( $t_c$ ).
- All temperatures are measured at the designated "Tc point" as indicated on the module. (See page 7)

### d) Thermal Measurement

Performance temperatures are measured on "Tc point" as indicated on the module.

#### - LT-HB22D



#### - LT-H562D



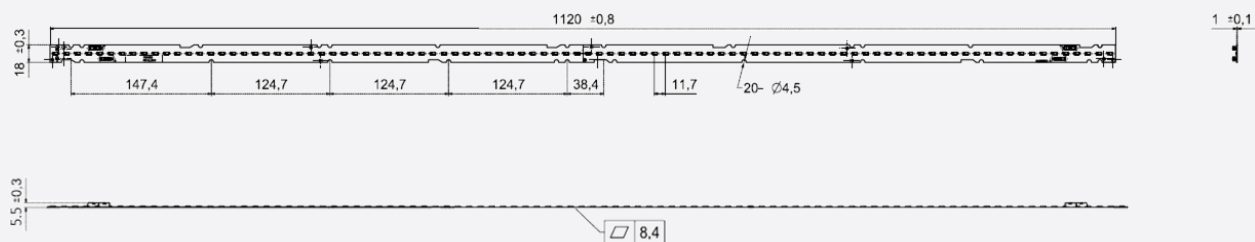
#### - LT-H282D



### 3. Structure and Assembly

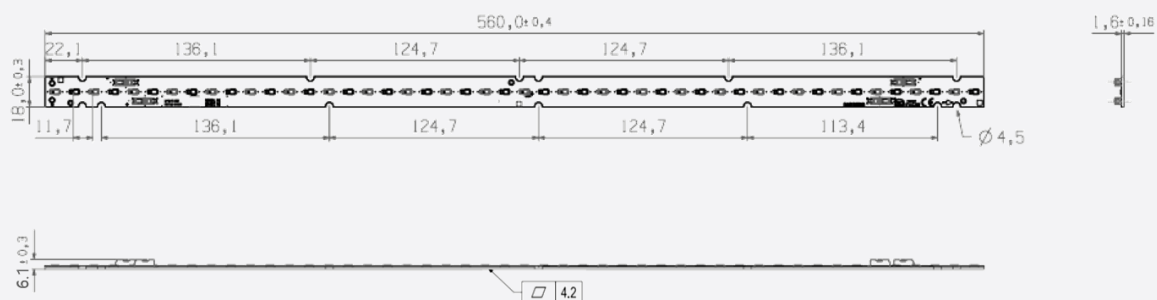
#### a) Appearance & Dimension

##### - LT-HB22D



Dimension	Specification	Tolerance	Unit
Module Length	1120.0	±0.8	mm
Module Width	18.0	±0.3	mm
Module Height	5.5	±0.3	mm
PCB Thickness	1.0	±0.1	mm
Module Weight	45.0	±2.3	g

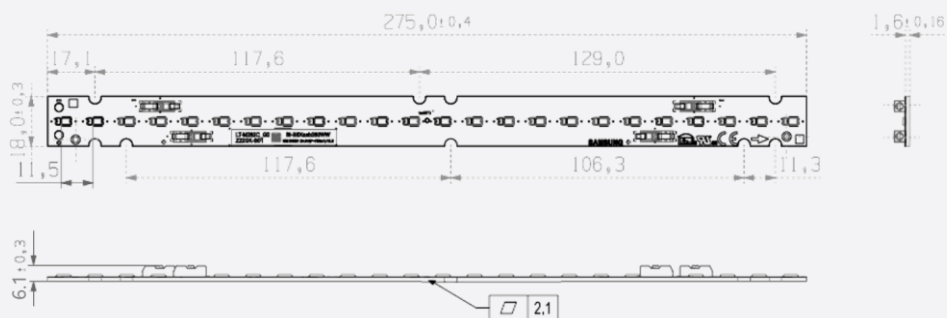
##### - LT-H562D



Dimension	Specification	Tolerance	Unit
Module Length	560.0	±0.4	mm
Module Width	18.0	±0.3	mm
Module Height	6.1	±0.3	mm
PCB Thickness	1.6	±0.16	mm
Module Weight	28.5	±1.5	g



## - LT-H282D



Dimension	Specification	Tolerance	Unit
Module Length	275.0	±0.4	mm
Module Width	18.0	±0.3	mm
Module Height	6.1	±0.3	mm
PCB Thickness	1.6	±0.16	mm
Module Weight	14.0	±1.0	g

### b) Structure

Item	Specification
LED	LM561C Middle Power LED
PCB	Material : copper, solder mask, epoxy
Connector	Wago 2060-451
Wire	24~18 AWG ; terminal strip length of 7.0~9.0 mm (Appendix 2)

### c) Schematic Circuit

- LT-HB22D : 8S x 12P
- LT-H562D : 8S x 6P
- LT-H282D : 8S x 3P

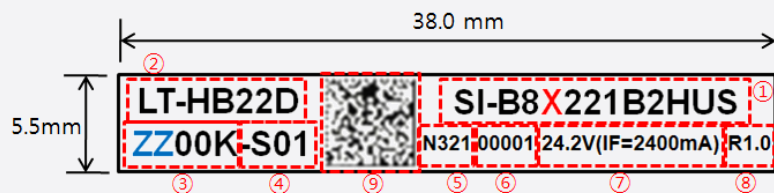
#### 4. Certification and Declaration

Item	Compliant to	Remark
Test & Certification	UL	E344519
	cUL	E344519
	Photo biological Safety(LM561C LED)	IEC / EN 62471
Declaration	RoHS	Hazardous Substance & Material
	REACH	Hazardous Substance & Material

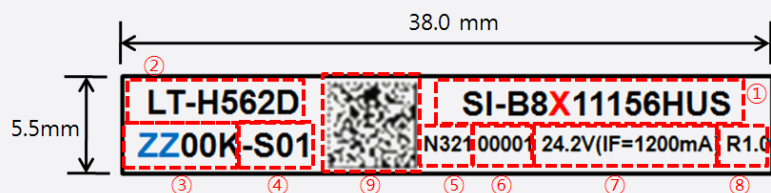
## 5. Label Structure

### a) Module Label

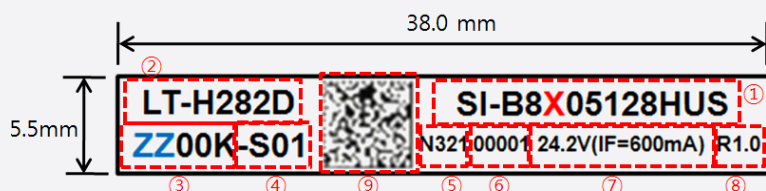
#### - LT-HB22D



#### - LT-H562D



#### - LT-H282D



Number	Item	Remark
①	Model code	Refer to page 3 X = V, U, T, R, P
②	Product name	Refer to page 3
③	Color temperature	ZZ = 30, 35, 40, 50, 65
④	LED maker & Bin rank	-S (Samsung) 00~ZZ
⑤	SMT date	N321 (2013-March-21th)
⑥	Serial No.	00001~99999; Setting "00001" every working day
⑦	Voltage (IF).	
⑧	Product Revision	
⑨	QR Code	LT-HB22D : SI-B8X221B2HUS_N321100001ZZ00K-S01 LT-H562D : SI-B8X11156HUS_N321100001ZZ00K-S01 LT-H282D : SI-B8X05128HUS_N321100001ZZ00K-S01

## b) TRAY &amp; MBB bag LABEL

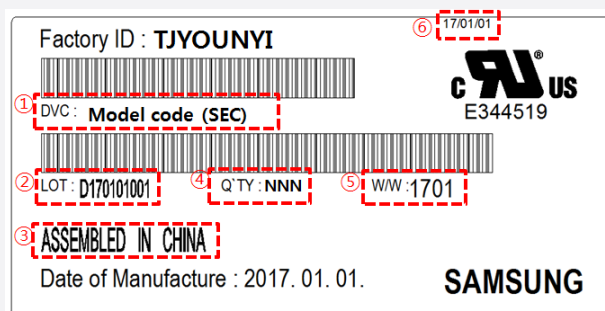
- 100mm x 50mm



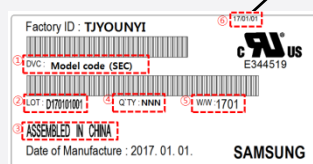
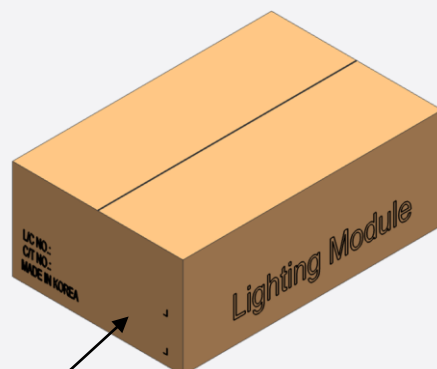
Number	Item	Remark
①	Model Code	Refer to page 3
②	LOT ID	
③	Quantity	Refer to page 14
④	Date of production	
⑤	Date of Issue	

## C) Box Label

- 100mm x 50mm



Number	Item	Remark
①	Model Code	Refer to page 3
②	LOT ID	
③	Place of origin	
④	Quantity	Refer to page 14
⑤	Describe production week	
⑥	Date of Issue	



## 6. Packing Structure

Product	Packing	Quantity (modules)	Dimension (mm)		
			Length	Width	Height
LT-HB22D	Tray	20 ea	1180	310	16.8
	Outer Box	200 ea	1185	315	160
	Pallet	2400 ea	1200	1000	130
LT-H562D	Tray	40 ea	600	444	25
	Outer Box	280 ea	605	449	155
	Pallet	5600 ea	1100	1100	130
LT-H282D	Tray	40 ea	380	330	24
	Outer Box	400 ea	385	335	225
	Pallet	12800 ea	1100	1100	130

## 7. Precautions in Handling & Use

A. The LED Lighting Modules 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).

Also when the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.

### B. Handling

To prevent the LED Lighting Modules from making any defectives, please handle the LED Lighting Modules with care as follows.

- (1) Don't drop the unit and don't give the unit any shocks.
- (2) Don't bend the PCB and don't touch the LED Resin.
- (3) Don't storage the Module in a dusty place or room.
- (4) Don't take the product apart.
- (5) Don't touch the LED and also PCB and other circuit parts of Module with your naked fingers or sharpness things.
- (6) Take care so that do not pull wire with hand in case of carries or moves LED Lighting Modules.

### C. Cleaning

The LED Lighting Modules should not be used in any type of fluid such as water, oil, organic solvent, etc.

It is recommended that IPA (Isopropyl Alcohol) be used as a solvent for cleaning the LED Lighting Modules.

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 Lighting Modules by the ultrasonic.

Before cleaning, a pre-test should be done to confirm whether any damage to the LED Lighting Modules will occur.

### D. Static Electricity

Static electricity or surge voltage damages the LED Lighting Modules. Please keep the working process anti-static electricity condition to prevent the Lighting from destroying, as following.

- (1) Anyone who handles the unit should be well grounded.(earth ring or anti-static glove)
- (2) Anyone who handles the unit should wear anti-electrostatic working clothes.
- (3) All kinds of device and instruments, such as working table, measuring instruments and assembly jigs in your production lines should be well grounded.

### E. Storage

The LED Lighting Modules must be stored to insert a package of a moisture absorbent material(silica gel) in a box.

### F. Others

If over voltage which exceeds the absolute maximum rating is applied to LED Lighting Modules.

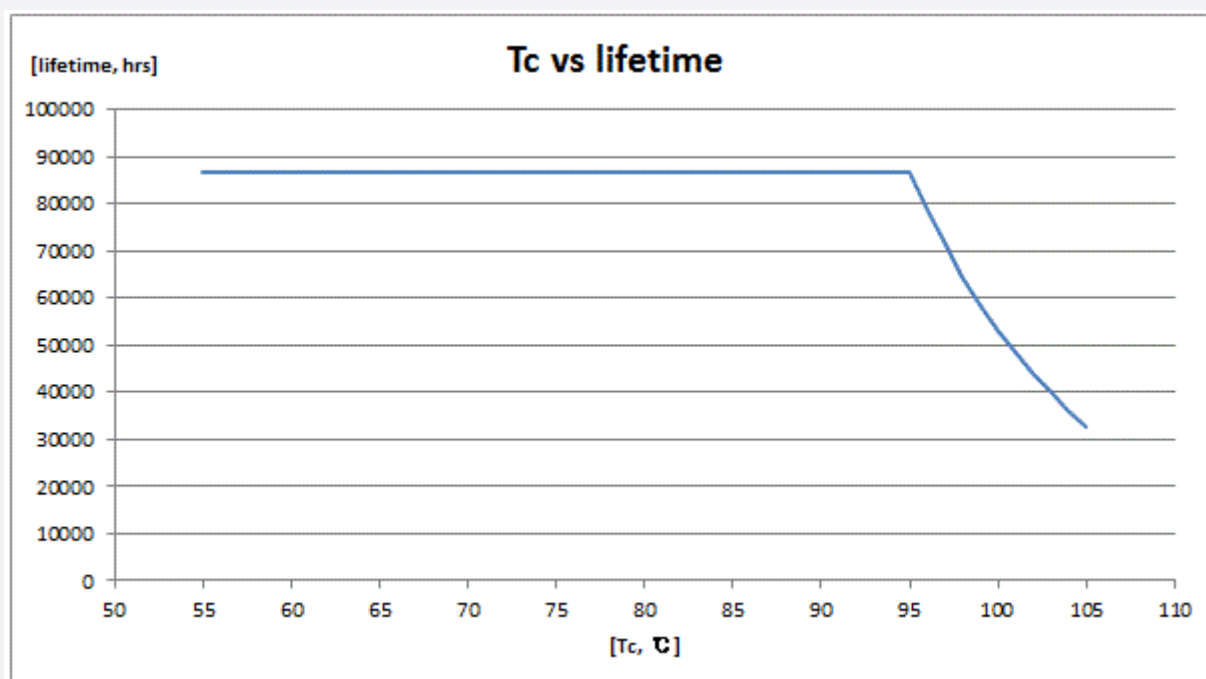
It will cause damage Circuits(that LED is included) and result in destruction.

Do not directly look into lighted LED with naked eyes.

Please use this product within 5 months, which is kept in its original packaging unopened when stocked

# Appendix

## 1. Tc vs Lifetime





# Appendix

## 2. Applicable Solid Wires

### a) Strip details

Wiring method	Push In
Cross section [solid]	0.2-0.75mm <sup>2</sup>
Cross Section [AWG]	24-18
Strip length	8.0 ±1mm
Conductor entry angle to the PCB	0 °
※ outside insulation diameter Φ2.1mm Max.	

### b) Material details

Temperature stability	-40°C ~ +105°C
Flammability category, based on UL94	V0
Insulating material group	I
Insulating material	PPA-GF

### c) Important processing notes

Depending on the SMD soldering process and associated parameters a minor discoloration might occur.  
However, this will not influence the functionality.

# Legal and additional information.

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