Datasheet

MODEL NAME	CRI	CCT	SEC CODE
V Series Gen3 V562C Ver	90	30/35/40/5000K	SI-B9x123560WW
V Series Gen3 VB22C Ver	90	30/35/40/5000K	SI-B9x243B20WW
V Series Gen3 VB22F Ver	90	30/35/40/5000K	SI-B9x463B20WW
V Series Gen3 VB24F Ver	90	30/35/40/5000K	SI-B9x923B20WW

SAMSUNG				CUSTOMER
DEVELOP.	PRODUCT MANAGER	QA(DQA)	SALES	

SAMSUNG ELECTRONICS CO,.LTD.
1 Samsung-ro , Giheung-gu ,
Yongin-si , Gyeonggi-do 17113 , KOREA

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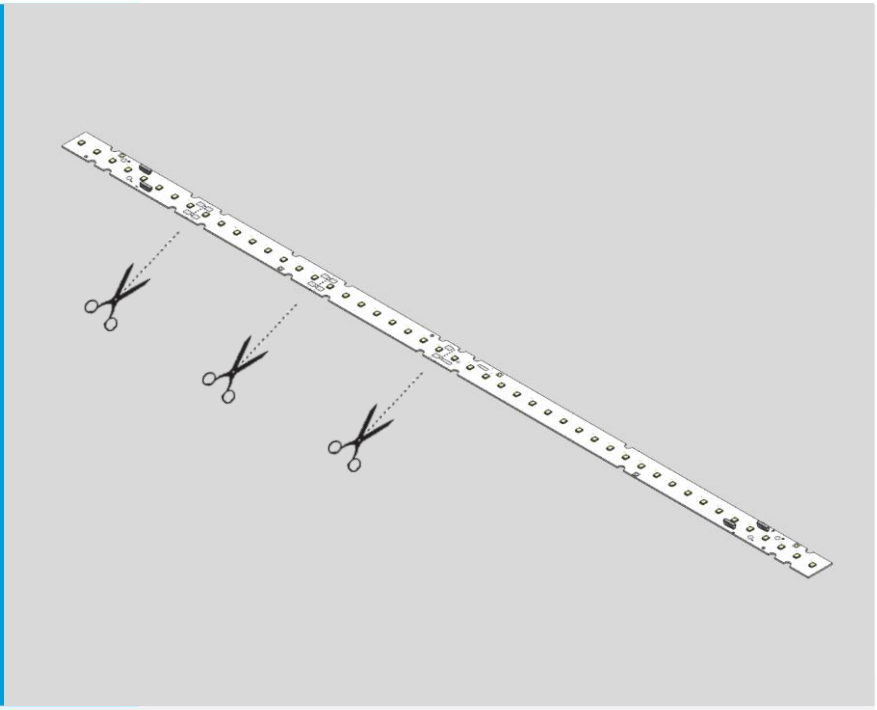
Rev	Remark	Page	Date	Traced
0.0	The Preliminary Specification established.	ALL	21.05.28.	JK Lee
1.0	The Specification updated.	ALL	21.07.09.	JK Lee
1.1	An additional label added	13	22.01.12.	JK Lee
1.2	The Color information changed. (Color Coordinate → CCT)	5, 6, 7, 8	23.01.18	JK Lee
	Added MacAdam information.(3-step ellipse)	5, 6, 7, 8		

LED Module

V Series Gen3 Ver. CRI90

CUTTABLE



Features & Benefits

- Design flexibility for module length by cuttable design
- 2835 Pro of high degree of reliability & long lifetime
- Four variations of 1900/3800/7000/14000lm
- High efficacy up to 164 lm/W

Application

- Office, Building, Education
- Troffer, Linear, Line
- Highbay/Lowbay for warehouse, plant, high ceiling etc

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Appendix

1. Product Code Information

a) V562C

Nominal CCT (K)	Product Code
3000	SI-B9V123560WW
3500	SI-B9U123560WW
4000	SI-B9T123560WW
5000	SI-B9R123560WW

b) VB22C

Nominal CCT (K)	Product Code
3000	SI-B9V243B20WW
3500	SI-B9U243B20WW
4000	SI-B9T243B20WW
5000	SI-B9R243B20WW

c) VB22F

Nominal CCT (K)	Product Code
3000	SI-B9V463B20WW
3500	SI-B9U463B20WW
4000	SI-B9T463B20WW
5000	SI-B9R463B20WW

d) VB24F

Nominal CCT (K)	Product Code
3000	SI-B9V923B20WW
3500	SI-B9U923B20WW
4000	SI-B9T923B20WW
5000	SI-B9R923B20WW

2. Characteristics

a) Basic Information

Item	Rating	Unit	Remark
Rated Lifetime	>50,000	hour	L70B50@ t_p≤80ºC, Rated current
Ingress Protection (IP)	no rating	-	
Ambient / Operating Temperature (t_a)	-30 ~ +50	ºC	V562C, VB22C
	-40 ~ +65	ºC	VB22F, VB24F
Storage Temperature	-30 ~ +80	ºC	V562C, VB22C
	-40 ~ +85	ºC	VB22F, VB24F
Isolation Breakdown Voltage	Min. 500	Vac	

Notes:

※ I_F: Forward current or Operating current

※ t_p: temperature at which performance is specified measured at “Tc point”.

※ t_a: ambient temperature

b) Electro-Optical Characteristics

- V562C

Item	Nom. CCT (K)	Rating			Unit	Remark
		Min	Typ.	Max		
Luminous Flux	3000	1630	1780	1950	lm	I_f = 530mA t_p = 50ºC
	3500	1690	1840	2020		
	4000	1750	1930	2120		
	5000	1780	1930	2120		
Luminous Efficacy	3000	138	151	165	lm/W	
	3500	143	156	171		
	4000	148	164	180		
	5000	151	164	180		
CCT	3000	2870	3045	3220	K	
	3500	3220	3465	3710		
	4000	3710	3985	4260		
	5000	4746	5029	5312		
Color Consistency (initial)	-	-	-	3	MacAdam step	-
Color Rendering Index (Ra)	-	90	-	-	-	-
Operating Current (I_f)	-	50	530	1800	mA	-
Operating Voltage (V_f)	-	21.0	22.2	23.5	Vdc	I_f = 530mA t_p = 50ºC
Power Consumption	-	11.1	11.8	12.5	W	

Notes

※ t_p : temperature at which performance is specified measured at “Tc”.

※ Samsung maintains a measurement tolerance of : Luminous flux: ±7 %, CRI: ±3.0, Voltage: ±0.3 V, Power Consumption: ±0.3W, CIE_x / CIE_y ± 0.005

- VB22C

Item	Nom. CCT (K)	Rating Min	Rating Typ.	Rating Max	Unit	Remark
Luminous Flux	3000	3260	3560	3910	lm	I_f = 530mA t_p = 50ºC
	3500	3370	3680	4040		
	4000	3490	3850	4230		
	5000	3540	3850	4230		
Luminous Efficacy	3000	139	151	166	lm/W	
	3500	143	157	172		
	4000	149	164	180		
	5000	151	164	180		
CCT	3000	2870	3045	3220	K	
	3500	3220	3465	3710		
	4000	3710	3985	4260		
	5000	4746	5029	5312		
Color Consistency (initial)	-	-	-	3	MacAdam step	-
Color Rendering Index (Ra)	-	90	-	-	-	-
Operating Current (I_f)	-	50	530	1800	mA	-
Operating Voltage (V_f)	-	41.8	44.4	47.0	Vdc	I_f = 530mA t_p = 50ºC
Power Consumption	-	22.2	23.5	24.9	W	

Notes

※ t_p : temperature at which performance is specified measured at “Tc”.

※ Samsung maintains a measurement tolerance of : Luminous flux: ±7 %, CRI: ±3.0, Voltage: ±0.3 V, Power Consumption: ±0.3W, CIE_x / CIE_y ± 0.005

- VB22F

Item	Nom. CCT (K)	Rating Min	Rating Typ.	Rating Max	Unit	Remark
Luminous Flux	3000	5930	6470	7110	lm	I_f = 1010mA t_p = 65ºC
	3500	6140	6690	7350		
	4000	6350	7000	7700		
	5000	6460	7000	7700		
Luminous Efficacy	3000	130	142	156	lm/W	
	3500	135	147	162		
	4000	140	154	169		
	5000	142	154	169		
CCT	3000	2870	3045	3220	K	
	3500	3220	3465	3710		
	4000	3710	3985	4260		
	5000	4746	5029	5312		
Color Consistency (initial)	-	-	-	3	MacAdam step	-
Color Rendering Index (Ra)	-	90	-	-	-	-
Operating Current (I_f)	-	100	1010	2020	mA	-
Operating Voltage (V_f)	-	42.0	45.0	47.8	Vdc	I_f = 1010mA t_p = 65ºC
Power Consumption	-	42.4	45.5	48.3	W	

Notes

※ t_p : temperature at which performance is specified measured at “Tc”.

※ Samsung maintains a measurement tolerance of : Luminous flux: ±7 %, CRI: ±3.0, Voltage: ±0.3 V, Power Consumption: ±0.3W, CIE_x / CIE_y ± 0.005

- VB24F

Item	Nom. CCT (K)	Rating Min	Rating Typ.	Rating Max	Unit	Remark
Luminous Flux	3000	11860	12950	14240	lm	I_f = 2020mA t_p = 65ºC
	3500	12280	13390	14720		
	4000	12690	14000	15400		
	5000	12900	14000	15400		
Luminous Efficacy	3000	130	142	157	lm/W	
	3500	135	147	162		
	4000	140	154	169		
	5000	142	154	169		
CCT	3000	2870	3045	3220	K	
	3500	3220	3465	3710		
	4000	3710	3985	4260		
	5000	4746	5029	5312		
Color Consistency (initial)	-	-	-	3	MacAdam step	-
Color Rendering Index (Ra)	-	90	-	-	-	-
Operating Current (I_f)	-	200	2020	2020	mA	-
Operating Voltage (V_f)	-	42.0	45.0	47.8	Vdc	I_f = 2020mA t_p = 65ºC
Power Consumption	-	84.8	90.9	96.6	W	

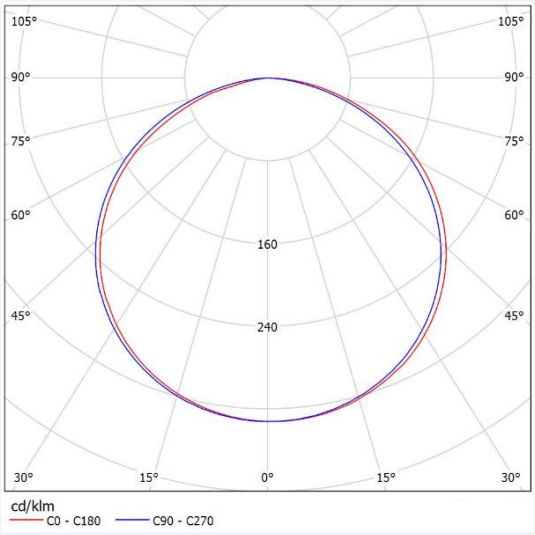
Notes

※ t_p : temperature at which performance is specified measured at “Tc”.

※ Samsung maintains a measurement tolerance of : Luminous flux: ±7 %, CRI: ±3.0, Voltage: ±0.3 V, Power Consumption: ±0.3W, CIE_x / CIE_y ± 0.005

d) Light Distribution

Item	Unit	Nominal	Tolerance	Remark
Beam Angle (FWHM)	˚(degree)	118	± 5	



e) Temperature Characteristics

- V562C, VB22C

Item	Nominal(t_p)*	Life(t_L)**	Max(t_c)***	Unit
Temperature	50	80	90	ºC

- VB22F, VB24F

Item	Nominal(t_p)*	Life(t_L)**	Max(t_c)***	Unit
Temperature	65	80	90	ºC

Notes

* Temperature used to specify performance of the module (t_p).

** Rated maximum performance temperature at which lifetime is specified in L70B50 (t_L).

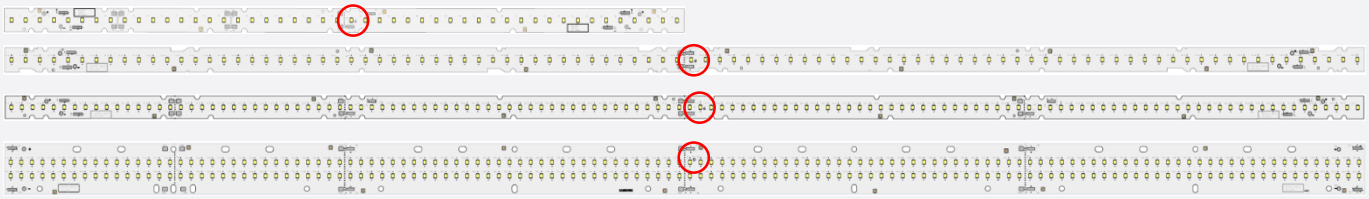
*** Rated maximum temperature, highest permissible temperature to avoid safety risk (t_c).

All temperatures are measured at the designated “tc” as indicated on the module. (See page 6)

Please use heat-sink(or heat dissipation solution) with proper thermal capacity(operating wattage).

f) Thermal Measurement

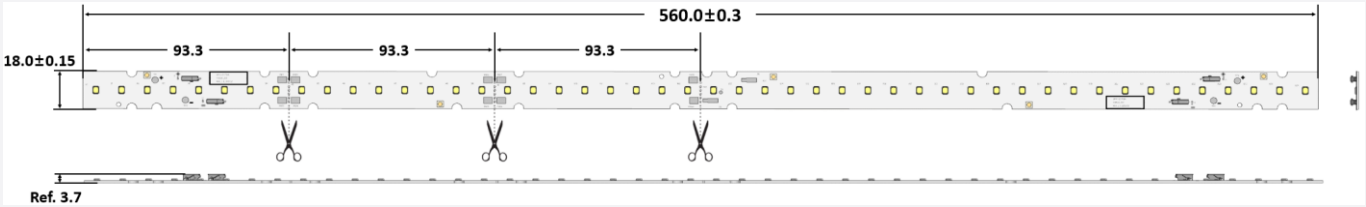
Performance temperatures are measured on “Tc point” as indicated on the module.



3. Structure and Assembly

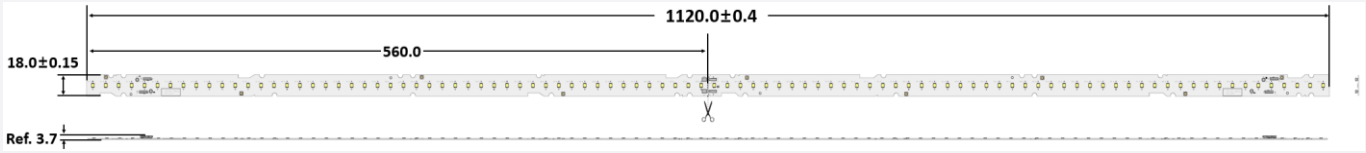
a) Appearance & Dimension

- V562C



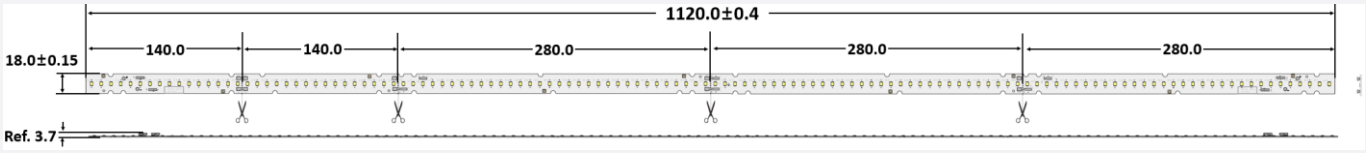
Dimension	Specification	Tolerance	Unit
Module Length	560.0	±0.3	mm
Module Width	18.0	±0.15	mm
Module Height	3.7	±0.2	mm
PCB Thickness	1.0	±0.1	mm
Module Weight	21.0	±1.1	g

- VB22C



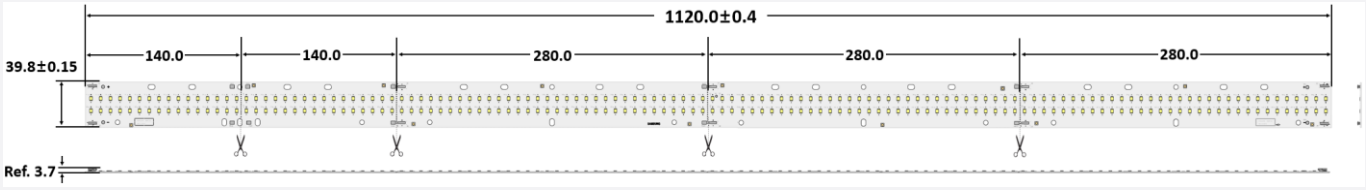
Dimension	Specification	Tolerance	Unit
Module Length	1120.0	±0.4	mm
Module Width	18.0	±0.15	mm
Module Height	3.7	±0.2	mm
PCB Thickness	1.0	±0.1	mm
Module Weight	42.0	±2.1	g

- VB22F



Dimension	Specification	Tolerance	Unit
Module Length	1120.0	±0.4	mm
Module Width	18.0	±0.15	mm
Module Height	3.7	±0.2	mm
PCB Thickness	1.0	±0.1	mm
Module Weight	42.0	±2.1	g

- VB24F



Dimension	Specification	Tolerance	Unit
Module Length	1120.0	±0.4	mm
Module Width	39.8	±0.15	mm
Module Height	3.7	±0.2	mm
PCB Thickness	1.0	±0.1	mm
Module Weight	91.0	±4.6	g

b) Structure

Item	Specification
LED	LM281B+ Pro Middle Power LED
PCB	CEM-3 PCB
Connector	1pin poke-in type

c) Schematic Circuit

- V562C 8S x 6P
- VB22C 16S x 6P
- VB22F 16S x 8P
- VB24F 16S x 16P

d) Handling Guide

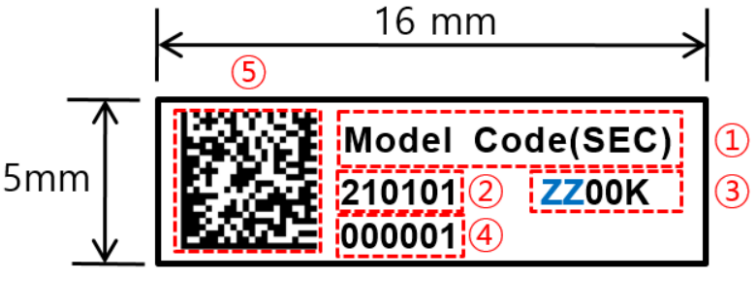
* Please use antistatic gloves or other ESD protection methods when handling this cuttable board to prevent ESD damage or contamination of LEDs.
* Customers should use proper tools and not use hands when they separate this cuttable board. It is not allowed to bend PCB and touch LED.
* Please be thoughful of securing withstanding voltage spec in case of cutting this board.
* If customers don't follow above guideline regarding handling, we won't be responsible for any quality issue.
* It is necessary to use after insulation work when exposed to insulating layer on PCB section.

4. Certification and Declaration

Item	Compliant to	Remark
Certification	UL/cUL	E344519 Input Types(Input supply limitations) : Class 2
Declaration	RoHS	Hazardous Substance & Material

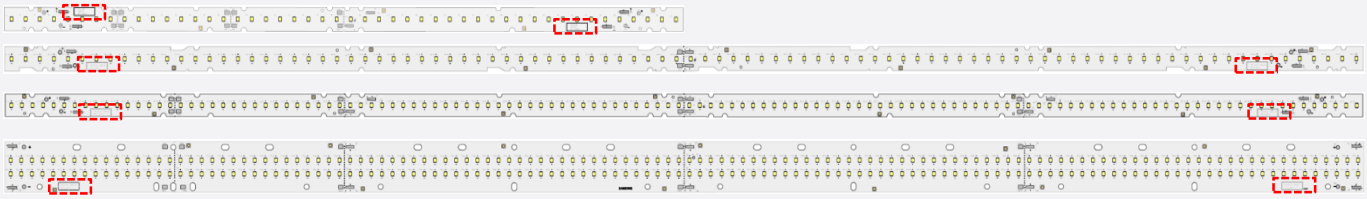
5. Label Structure

a) Module Label



Number	Item	Remark
①	Model code	Refer to page 3
②	Date of manufacture	YYMMDD
③	Color temperature	ZZ = 30, 35, 40, 50
④	Series number	000001~999999; Setting "000001" every working day
⑤	QR code	V562C : SI-B9X123560WW YYMMDD ZZ00K 000001 VB22C : SI-B9X243B20WW YYMMDD ZZ00K 000001 VB22F : SI-B9X463B20WW YYMMDD ZZ00K 000001 VB24F : SI-B9X923B20WW YYMMDD ZZ00K 000001

※ **Module Label attachment point (2ea/bar)**



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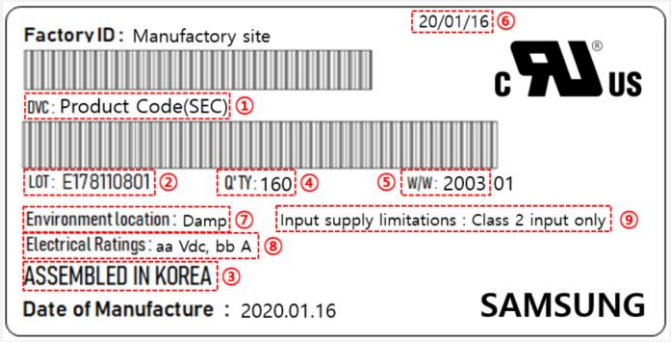
b) Tray & MBB Bag Label

Number	Item	Remark
①	Model Code	Refer to page 3
②	LOT ID	
③	Quantity	Refer to page 15
④	Date of production	
⑤	Date of Issue	
⑥	Place of origin	

c) Box Label



Number	Item	Remark
①	Product Code	Refer to page 3
②	LOT ID	
③	Place of origin	
④	Quantity	Refer to page 15
⑤	Describe production week	
⑥	Date of Issue	
⑦	Environment location	Damp
⑧	Electrical Ratings (voltage/current)	V562C 28Vdc, 1.8A VB22C 55Vdc, 1.8A VB22F 49Vdc, 2.02A VB24F 49Vdc, 2.02A
⑨	Input supply limitations	Class 2 input only

6. Packing Structure

Product	Packing	Quantity (modules)	Dimension (mm)		
			Length	Width	Height
V562C	Tray	40 ea	600	444	25
	Outer Box	280 ea	605	449	155
	Pallet	5600 ea	1100	1100	130
VB22C/VB22F	Tray	11 ea	1180	310	22
	Outer Box	110 ea	1185	315	163
	Pallet	1650 ea	1200	1000	130
VB24F	Tray	6 ea	1180	310	22
	Outer Box	60 ea	1185	315	163
	Pallet	900 ea	1200	1000	130

7. Precautions in Handling & Use

1) This LED Module 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. When using other solvents it should be confirmed beforehand whether the solvents may react with the Module material. The banned Freon solvents should not be used. Do not clean using ultrasonic cleaner.

2) 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 LED Modules. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices. 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.

3) VOCs (Volatile Organic Compounds) can be generated from adhesives, flux, hardener or organic additives used in luminaires (fixtures). Transparent LED silicone encapsulant is permeable to those chemicals and they may lead a discoloration of encapsulant when they exposed to heat or light. This phenomenon can cause a significant loss of light emitted (output) from the luminaires (fixtures). In order to prevent these problems, we recommend users to know the physical properties of the materials used in luminaires, and they must be selected carefully.

4) Risk of sulfurization (or tarnishing)
   The LED uses a silver-plated lead frame and its surface color may change to black (or dark colored) when it is exposed to sulfur (S), chlorine (Cl) or other halogen compound. Sulfurization of lead frame may cause intensity degradation, change of chromaticity coordinates and, in extreme cases, open circuit. It requires caution. Due to possible sulfurization of lead frame, the LED Modules should not be used and stored together with oxidizing substances made of materials such as rubber, plain paper, lead solder cream, etc.

5) The resin area is very sensitive, please do not handle, press, touch or rub it.

6) Do not drop the Module or give shocks.

7) Do not store the Module in a dusty place or humid location.

8) Do not disassemble the Module.

9) Do not directly look into the lighted LED with naked eyes for a long period of time.

10) Please consider the creepage and clearance distance at the end product.

11) Solder ball

There might be solder ball and/or residue on the surface of module as long as they do NOT affect performance and safety.

12) When you install products in fixture, you should not connect the product while it is powered on. It will cause damage Circuits(that LED is included) and result in emitting smoke and ignition.

[Appendix]

1. Applicable Solid Wire Information

a) Strip details

Connection method	Push In
Solid Conductor	0.2-0.75mm^2 / 24-18 AWG
Strip length	8.5±1mm
Conductor entry angle to the PCB	0 °

b) Important processing notes

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

2. Connection

Product	Max parallel	Max series	Remark
V562C	1	4	Operating current / module = 1.8A
VB22C	1	4	Operating current / module = 1.8A
VB22F	1	4	Operating current / module = 2.02A
VB24F	1	4	Operating current / module = 2.02A

Notes

※ The type of screw to be used is not considered.

※ Do not connect more than 2 product while the product is in operation.

Legal and additional information.

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Samsung Electronics Co., Ltd.
1, Samsung-ro, Giheung-gu,
Yongin-si, Gyeonggi-do, 17113
KOREA
www.samsung.com/led

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