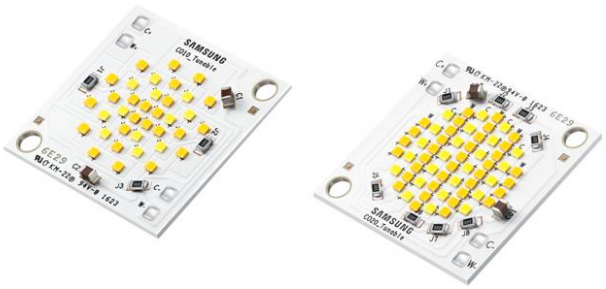
LED Module
CSP Spot Tunable

TO10
TO20



Samsung spot tunable is reasonable solution with compact size using Samsung CSP and good compatibility.

Features & Benefits

- Following COB form factor (Compatible with Partners' component)
- Color temperature range : 2700K to 5000K(or 6500K)
- Small LES(Light emitting surface) : 19mm

Applications

Indoor Lighting:

- Down Light
- Spot Light

SAMSUNG

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SAMSUNG

1. Product Code Information

CSP Spot TO10 CRI80

Nominal CCT (K)	Product Code
2700 – 6500	SI-N8A1016E0WW
2700 – 5000	SI-N8B1016E0WW

CSP Spot TO20 CRI80

Nominal CCT (K)	Product Code
2700 - 6500	SI-N8A1816E0WW
2700 - 5000	SI-N8B1816E0WW

2. Characteristics

CSP Spot Tunable All

Item		Rating	Unit	Remark
Rated Lifetime		>50,000	hour	L70B50 @ $t_{p,\,50}$ = 95 ºC
Ingress Protection (IP)		no rating	-	
Ambient / Operating Temperature (t_a)		-20 ~ +50	ºC	
Storage Temperature		-30 ~ +80	ºC	
Beam Angle	TO10	150(WW) / 145(CW)	º	±5
	TO20	140(WW / CW)		

CSP Spot TO10 - A CRI80

Nom. CCT (K) t_p = 25 °C	Item	Rating				Remark
		Min.	Typ.	Max.	Unit	
2700	Luminous Flux (Φ_v)	-	990	-	lm	Ch1 I_f = 250 mA Ch2 I_f = 0 mA t_p = 65 °C
	Luminous Efficacy	-	117	-	lm/W	
	Operating Voltage (V_f)	-	33.9	-	Vdc	
	Power Consumption	-	8.5	-	W	
HALF	Luminous Flux (Φ_v)	-		-	lm	Ch1 I_f = 125 mA Ch2 I_f = 125 mA t_p = 65 °C
	Luminous Efficacy	-		-	lm/W	
	Operating Voltage (V_f)	-		-	Vdc	
	Power Consumption	-		-	W	
6500	Luminous Flux (Φ_v)	-	1020	-	lm	Ch1 I_f = 0 mA Ch2 I_f = 250 mA t_p = 65 °C
	Luminous Efficacy	-	114	-	lm/W	
	Operating Voltage (V_f)	-	35.9	-	Vdc	
	Power Consumption	-	9.0	-	W	
Color Rendering Index (Ra)		80	-	-	-	

※Operating current tolerance may be ±5%.

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

※Samsung maintains a measurement tolerance of: Luminous flux: ±7 %, Ra: ±3.0, Voltage: ±5%.

CSP Spot TO10 - B CRI80

Nom. CCT (K) t_p = 25 °C	Item	Rating				Remark
		Min.	Typ.	Max.	Unit	
2700	Luminous Flux (Φ_v)	-	990	-	lm	Ch1 I_f = 250 mA Ch2 I_f = 0 mA t_p = 65 °C
	Luminous Efficacy	-	117	-	lm/W	
	Operating Voltage (V_f)	-	33.9	-	Vdc	
	Power Consumption	-	8.5	-	W	
HALF	Luminous Flux (Φ_v)	-		-	lm	Ch1 I_f = 125 mA Ch2 I_f = 125 mA t_p = 65 °C
	Luminous Efficacy	-		-	lm/W	
	Operating Voltage (V_f)	-		-	Vdc	
	Power Consumption	-		-	W	
5000	Luminous Flux (Φ_v)	-	1080	-	lm	Ch1 I_f = 0 mA Ch2 I_f = 250 mA t_p = 65 °C
	Luminous Efficacy	-	120	-	lm/W	
	Operating Voltage (V_f)	-	35.9	-	Vdc	
	Power Consumption	-	9.0	-	W	
Color Rendering Index (Ra)		80	-	-	-	

※Operating current tolerance may be ±5%.

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

※Samsung maintains a measurement tolerance of: Luminous flux: ±7 %, Ra: ±3.0, Voltage: ±5%.

CSP Spot TO20-A CRI80

Nom. CCT (K) t_p = 25 °C	Item	Rating				Remark
		Min.	Typ.	Max.	Unit	
2700	Luminous Flux (Φ_v)	-	1940	-	lm	Ch1 I_f = 500 mA Ch2 I_f = 0 mA t_p = 65 °C
	Luminous Efficacy	-	112	-	lm/W	
	Operating Voltage (V_f)	-	34.7	-	Vdc	
	Power Consumption	-	17.4	-	W	
HALF	Luminous Flux (Φ_v)	-		-	lm	Ch1 I_f = 250 mA Ch2 I_f = 250 mA t_p = 65 °C
	Luminous Efficacy	-		-	lm/W	
	Operating Voltage (V_f)	-		-	Vdc	
	Power Consumption	-		-	W	
6500	Luminous Flux (Φ_v)	-	2040	-	lm	Ch1 I_f = 0 mA Ch2 I_f = 500 mA t_p = 65 °C
	Luminous Efficacy	-	114	-	lm/W	
	Operating Voltage (V_f)	-	35.9	-	Vdc	
	Power Consumption	-	18.0	-	W	
Color Rendering Index (Ra)		80	-	-	-	

※Operating current tolerance may be ±5%.

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

※Samsung maintains a measurement tolerance of: Luminous flux: ±7 %, Ra: ±3.0, Voltage: ±5%.

CSP Spot TO20-B CRI80

Nom. CCT (K) t_p = 25 °C	Item	Rating				Remark
		Min.	Typ.	Max.	Unit	
2700	Luminous Flux (Φ_v)	-	1940	-	lm	Ch1 I_f = 500 mA Ch2 I_f = 0 mA t_p = 65 °C
	Luminous Efficacy	-	112	-	lm/W	
	Operating Voltage (V_f)	-	34.7	-	Vdc	
	Power Consumption	-	17.4	-	W	
HALF	Luminous Flux (Φ_v)	-		-	lm	Ch1 I_f = 250 mA Ch2 I_f = 250 mA t_p = 65 °C
	Luminous Efficacy	-		-	lm/W	
	Operating Voltage (V_f)	-		-	Vdc	
	Power Consumption	-		-	W	
5000	Luminous Flux (Φ_v)	-	2160	-	lm	Ch1 I_f = 0 mA Ch2 I_f = 500 mA t_p = 65 °C
	Luminous Efficacy	-	120	-	lm/W	
	Operating Voltage (V_f)	-	35.9	-	Vdc	
	Power Consumption	-	18.0	-	W	
Color Rendering Index (Ra)		80	-	-	-	

※Operating current tolerance may be ±5%.

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

※Samsung maintains a measurement tolerance of: Luminous flux: ±7 %, Ra: ±3.0, Voltage: ±5%.

CSP Spot All

Item	Nominal*	Life**	Max.***	Unit
Temperature	25 / 65 (t_p)	95 ($t_{p,\,50}$)	110 (t_c)	ºC

Notes:

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

** Rated maximum performance temperature at which lifetime is specified ($t_{p,\,50}$).

*** 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.

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

Color coordinate (*tp*=25℃)

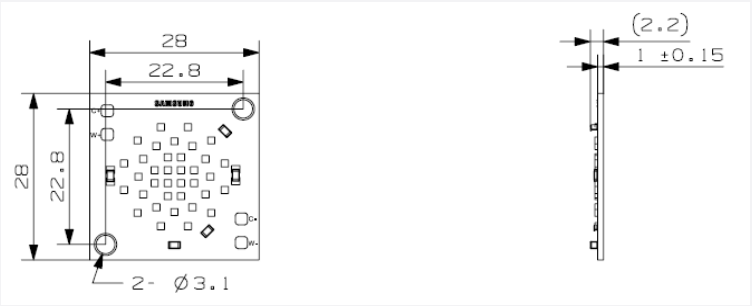
Model	Nom. CCT (K)	CIE 1931 Chromaticity Coordinates		
TO10 (@If = 250mA) TO20 (@If = 500mA)	2700	CIE x		
		CIE y		
		Center	CIE x	
	5000	CIE x		
		CIE y		
		Center	CIE x	
	6500	CIE x		
		CIE y		
		Center	CIE x	CIE y

TBD

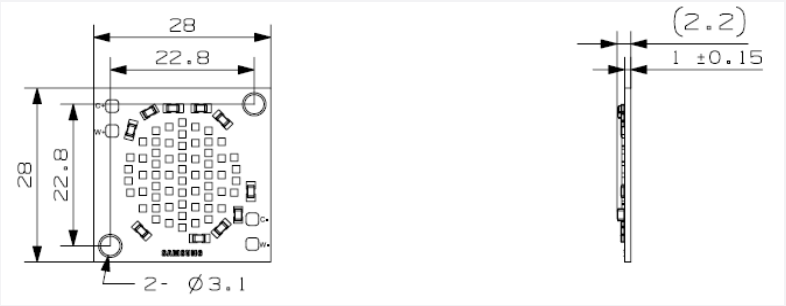
3. Structure and Assembly

a) Appearance

CPS Spot TO10



CPS Spot TO20



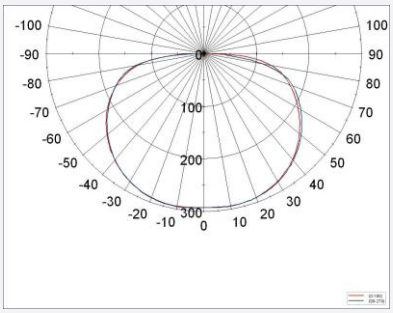
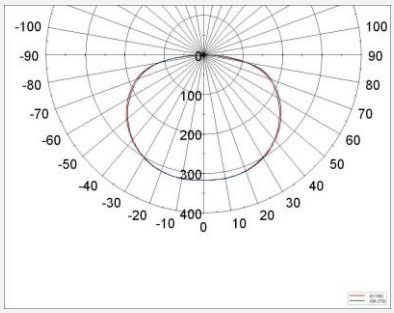
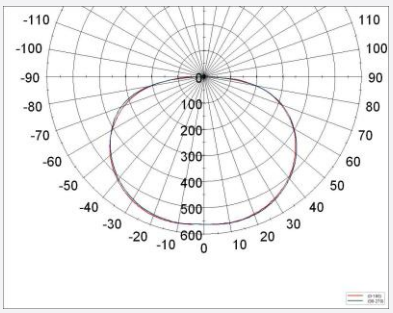
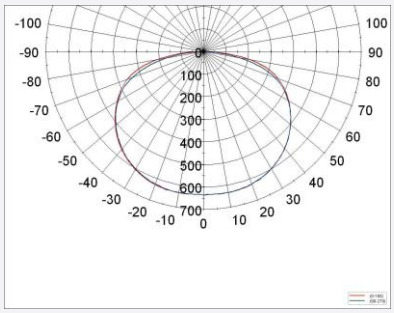
b) Dimension

Number	Item		Dimension	Tolerance	Unit
1	Module Diameter	TO10 / TO20	28 X 28	±0.2	mm
2	Module Height		Ref. 2.2	-	mm
3	Screw Hole Size (M3 screw)		3.1	±0.2	mm
4	Module Weight	TO10			g
		TO20			g

c) Structure

Item	Specification
LED	LM101A
PCB	MCPCB, White PSR, Cu 1oz Single layer
Connector	N/A

d) Light Distribution

Item	WW	CW
TO10		
TO20		

e) Thermal Management

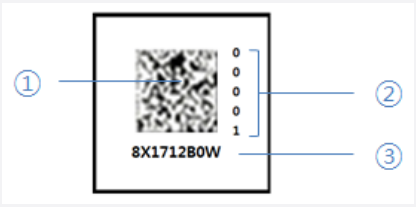
Performance temperatures are measured on “Tc point” as indicated on the module.

4. Certification and Declaration

Item	Compliant to	Remark
Test & Certification	CE	TBD
	ENEC	TBD
	VDE	
	UL / cUL	TBD
	Photo-biological Safety	TBD
Declaration	RoHS	TBD
	REACH	TBD

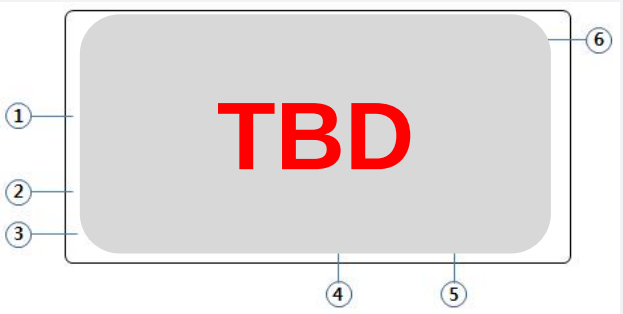
5. Label Structure

a) Module Label (Case of Round-050D)



Number	Item	Round-040D, Round-050D, Round-060D
①	2D Barcode (QR)	-
②	Serial No.	-
③	Model Number (Print specification)	Refer to page 3

b) Box Labels



Number	Item	Round-040D, Round-050D, Round-060D
①	Model Number (Product Code)	Refer to page 3
②	Lot No.	-
③	Country of Origin	ASSEMBLED IN CHINA
④	Packing Quantity	512 / 360 / 270
⑤	Product Date (year & week)	yyww
⑥	Product Date (year/month/date)	yy/mm/dd

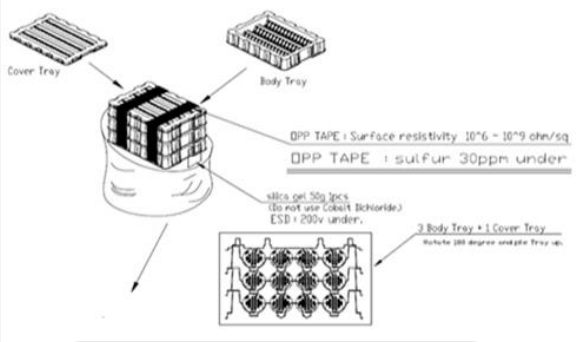
c) Certification Labels & Logo

Number	Item	Remark
①	Samsung logo	-
②	CE Certificate mark	-
③	ENEC Certificate mark	-
④	VDE Certificate marks	
⑤	Built-in module marks	-

6. Packing Structure

Packing Process (Case of Round-050D)

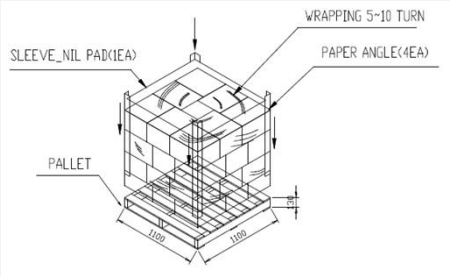
Step 1



Step 2

TBD

Step 3



Product	Packing	Quantity (modules)	Dimension (mm)			
			Length	Width	Height	Tolerance
TO10 / TO20	Tray					
	Outer Box					
	Pallet					

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.

Legal and additional information.

About Samsung Electronics Co., Ltd.

Samsung Electronics Co., Ltd. is a global leader in technology, opening new possibilities for people everywhere. Through relentless innovation and discovery, we are transforming the worlds of TVs, smartphones, tablets, PCs, cameras, home appliances, printers, LTE systems, medical devices, semiconductors and LED solutions. We employ 286,000 people across 80 countries with annual sales of US$216.7 billion. To discover more, please visit www.samsungled.com.

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