



**Opto Plus LED Corp.**  
**0.40” SMD Type LED Display**  
**OPS-S4010SB | OPS-S4011SB**

● **EDIT HISTORY**

Version A: Nov. 19, 2020

Preliminary Spec.



# Opto Plus LED Corp.

## 0.40" SMD Type LED Display

### OPS-S4010SB | OPS-S4011SB

#### ● FEATURES

- 0.40 inch (10.16 mm) digit height.
- SMD type.
- Low current operation.
- RoHS Compliant, Pb Free.

#### ● DESCRIPTION

The device are 0.40 inch (10.16 mm) height single digit 7-segment displays.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright Blue LED chip which are made from InGaN

On a transparent GaN, substrate.

The device has face and segment option, please refer to **PRODUCT APPEARANCE**.

#### ● DEVICE

PART NO.	DESCRIPTION
OPS-S4010SB-GW	Common Anode   Gray face   White segment
OPS-S4011SB-GW	Common Cathode   Gray face   White segment
OPS-S4010SB-BW	Common Anode   Black face   White segment
OPS-S4011SB-BW	Common Cathode   Black face   White segment

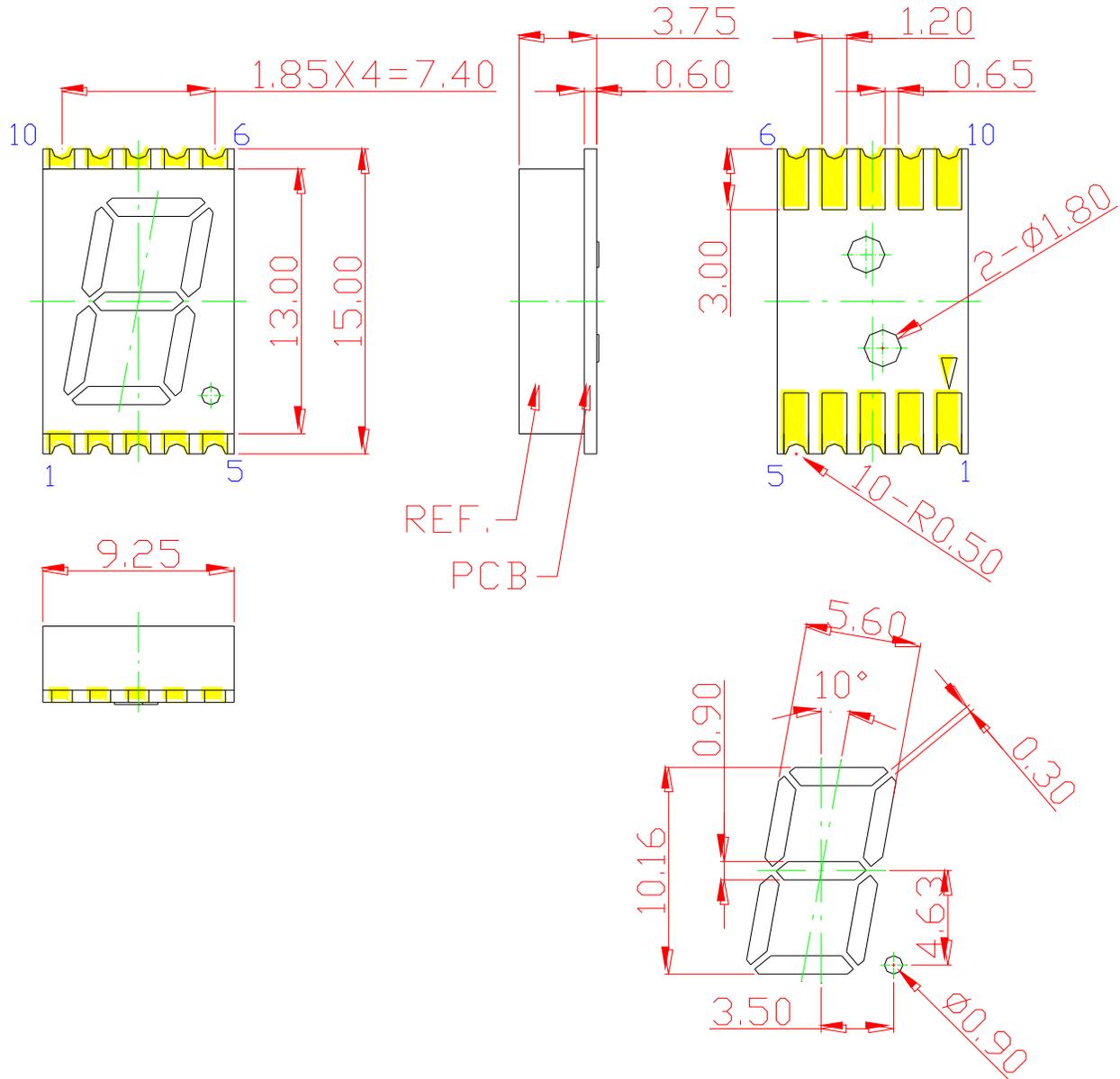
**RoHS Compliance**



**Pb Free.**



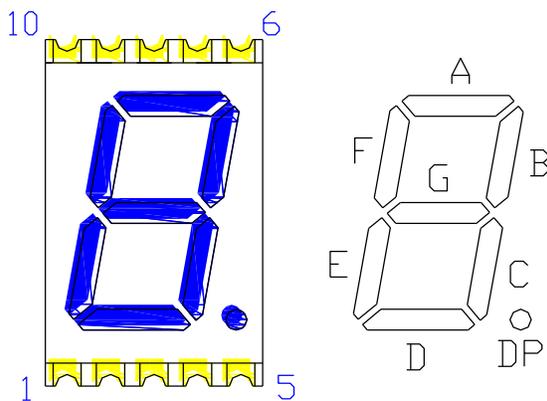
### MECHANICAL DIMENSIONS



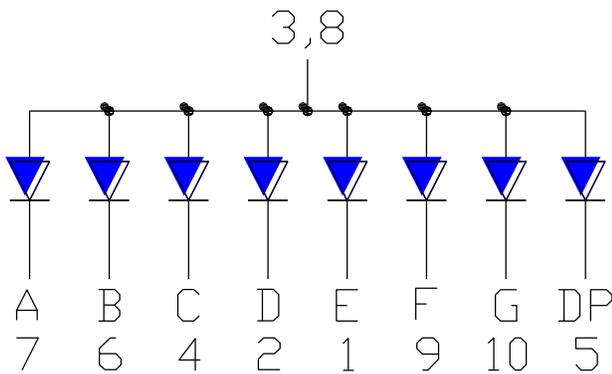
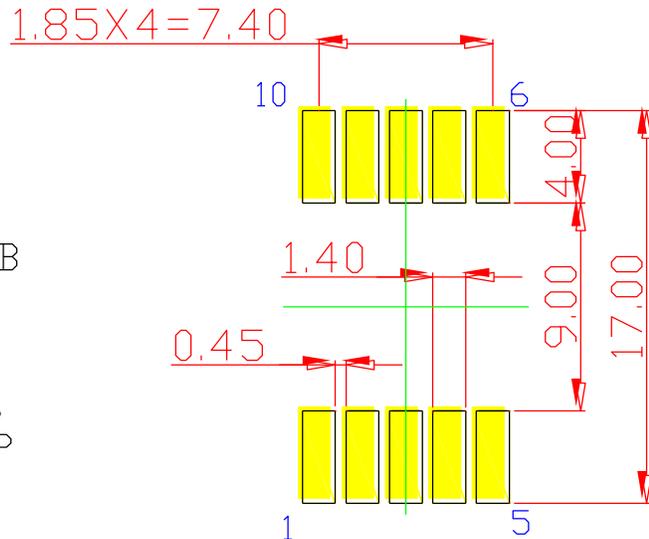
NOTES: All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm unless otherwise noted.

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT

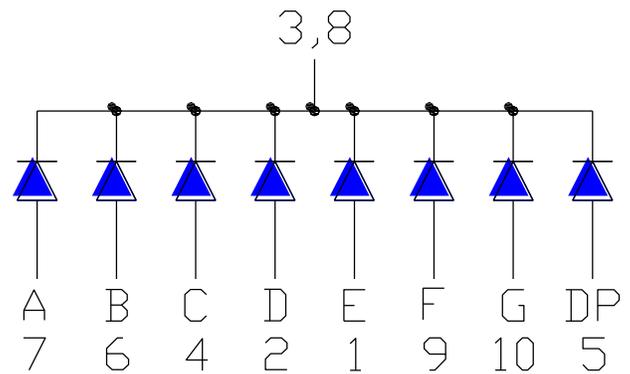
Turn On Color



Recommended Soldering Pattern



**OPS-S4010**  
( Common Anode )



**OPS-S4011**  
( Common Cathode )

※EMITTED COLOR : SUPER BRIGHT BLUE



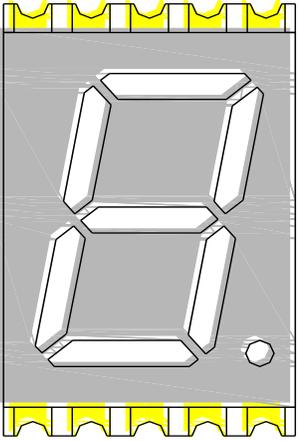
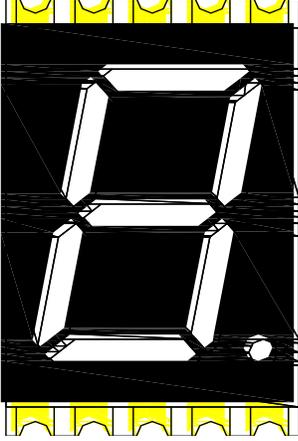
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### OPS-S4010SB | OPS-S4011SB

## ● PRODUCT APPEARANCE

The most common reflector color and segment color are show in below diagram.

-GW	-BW
	
※ REFLECTOR COLOR: Gray ※ SEGMENT COLOR: White	※ REFLECTOR COLOR: Black ※ SEGMENT COLOR: White

Opto Plus can customize reflector and segment colors by customer's request. If you have these request please visit [www.opledtw.com](http://www.opledtw.com) or contact [sales@opledtw.com](mailto:sales@opledtw.com) for more **Standard Product Customization** information.

Part NO. related to reflector and segment colors show as table below.

PART NO.	DESCRIPTION
OPS-S4010SB-GW	Common Anode   Gray face   White segment
OPS-S4011SB-GW	Common Cathode   Gray face   White segment
OPS-S4010SB-BW	Common Anode   Black face   White segment
OPS-S4011SB-BW	Common Cathode   Black face   White segment



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● **SB: SUPER BRIGHT BLUE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	90	mW
Continuous forward current	I <sub>AF</sub>	30	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	60	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OPR</sub>	-40 to +105	°C
Storage temperature	T <sub>STG</sub>	-40 to +105	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage, (Per Dice)	V <sub>F</sub>	I <sub>F</sub> =20mA	-	3.0	3.4	V
Reverse Current, (Per Dice)	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> =20mA	466	-	474	nm
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =20mA	30	52.5	75	mcd
Spectral Line Half-Bandwidth	Δλ	I <sub>F</sub> =20mA	-	20	-	nm



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● **SB: BIN GRADE (Unit : mcd) 20mA**

Super Bright Blue	L	M	N
	30.0 – 45.0	45.1 – 60.0	60.1 – 75.0

● **SB: HUE GRADE ( $\lambda_D$  : nm)**

Super Bright Blue	1	2
	466.0 - 470.0	470.1 - 474.0

● **AVAILABLE BIN / HUE TABLE**

L1	L2
M1	M2
N1	N2



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#### ● SB: SUPER BRIGHT BLUE (InGaN/GaN) CURVE

Typical Electro-optical Characteristic Curves  
(25 °C Free Air Temperature Unless Otherwise Specified)

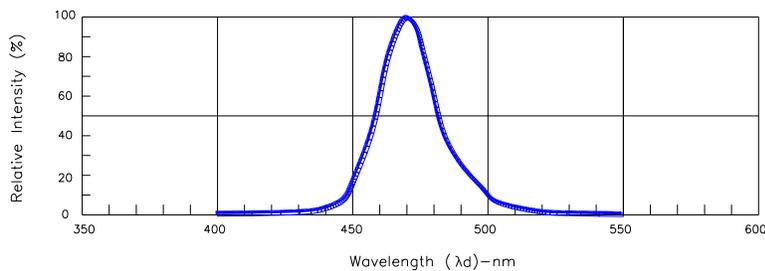


Fig.1-Relative Intensity VS. Wavelength

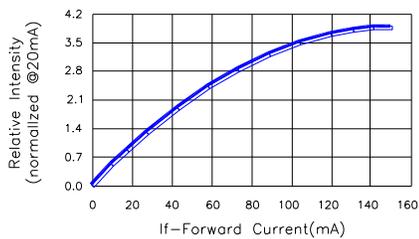


Fig.2-Relative Luminous Intensity vs. Forward Current

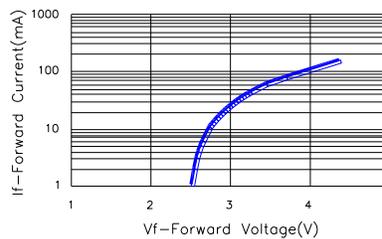


Fig.3-Forward Current vs. Forward Voltage

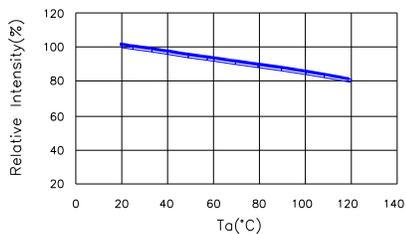


Fig.4-Relative Intensity(@20mA) VS. Ambient Temperature

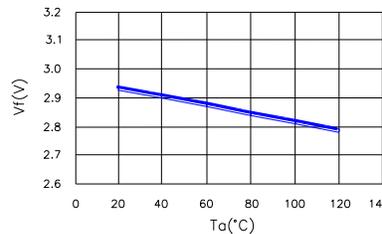


Fig.5-Forward Voltage(@20mA) VS. Ambient Temperature

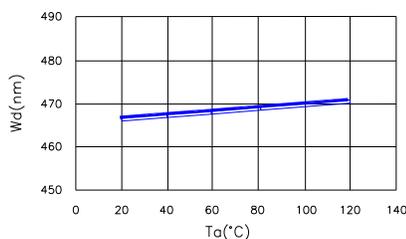


Fig.6-Dominant Wavelength(@20mA) VS. Ambient Temperature

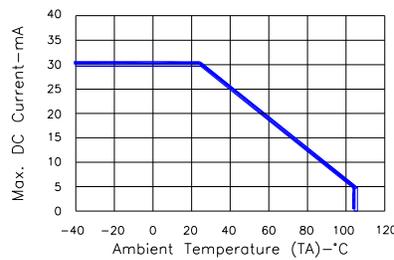


Fig.7-Max. Allowable DC Current VS. Ambient Temperature



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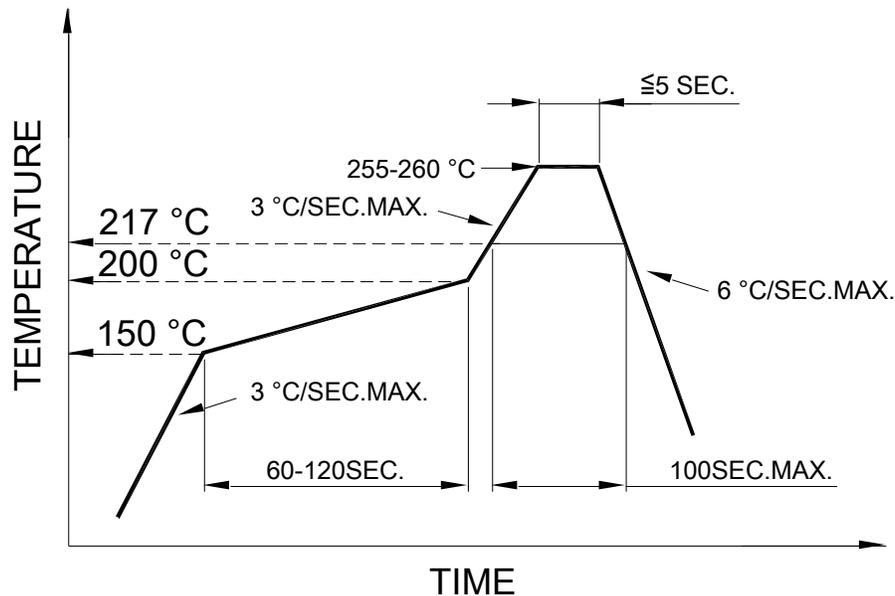
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## ● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



- We recommend the reflow temperature 245°C (+/- 5°C).  
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

## ● SOLDERING IRON

Basic spec is  $\leq 4$  sec when 260°C. If temperature is higher, time should be shorter (+10°C → 1 sec). Power dissipation of Iron should be smaller Than 15W, and temperature should be controllable. Surface temperature Of the device should be under 230°C.

## ● REWORK

- Customer must finish rework within 3 sec. under 350°C.
- The head of soldering iron cannot touch copper foil.

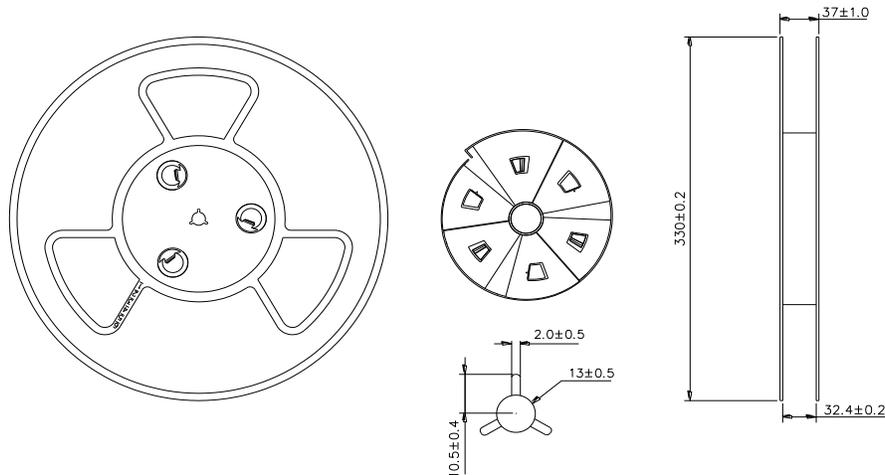


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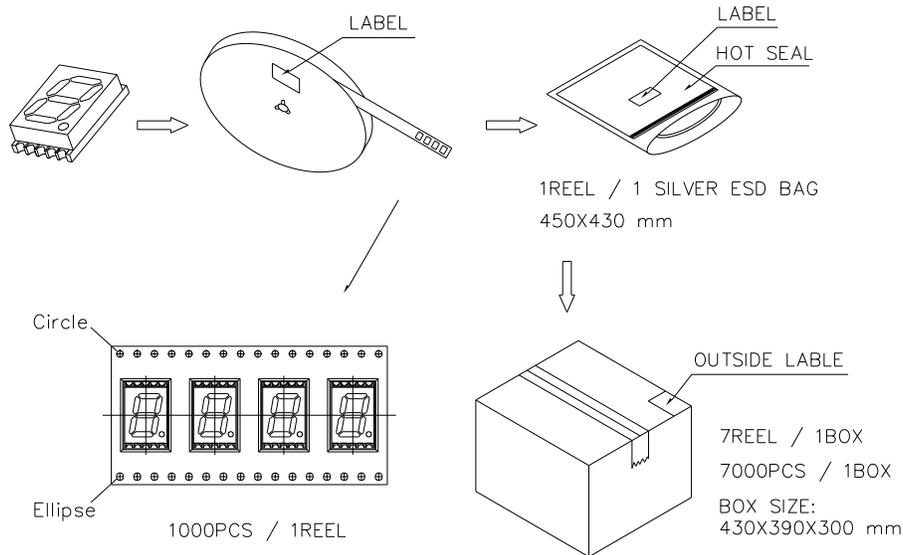
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#### ● REEL DIMENSIONS



#### ● PACKING & LABEL SPECIFICATIONS



#### ● STORED CONDITION

In factory original sealed bag package

TEMPERATURE CONDITION	HUMIDITY CONDITION
5°C ~ 30°C	Below 60%RH

After opened and not in factory original sealed bag package

TEMPERATURE CONDITION	HUMIDITY CONDITION	STORAGE TIME
5°C ~ 30°C	Below 60%RH	Within 4 weeks (MSL as level 2a)