



**Opto Plus LED Corp.**  
**0.40" SMD Type LED Display**  
**OPS-AS4020SPG | OPS-AS4020SPG**

● **EDIT HISTORY**

Version A: Jan. 05, 2021

Preliminary Spec.



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# Opto Plus LED Corp.

## 0.40" SMD Type LED Display

### OPS-AS4020SPG | OPS-AS4020SPG

#### ● FEATURES

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

#### ● DESCRIPTION

The device are 0.4 inch (10.16 mm) height Single digit 7-segment displays.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Pure Green 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-AS4020SPG-GW	Common Anode   Gray face   White segment
OPS-AS4021SPG-GW	Common Cathode   Gray face   White segment
OPS-AS4020SPG-BW	Common Anode   Black face   White segment
OPS-AS4021SPG-BW	Common Cathode   Black face   White segment

#### RoHS Compliance



#### Pb Free.





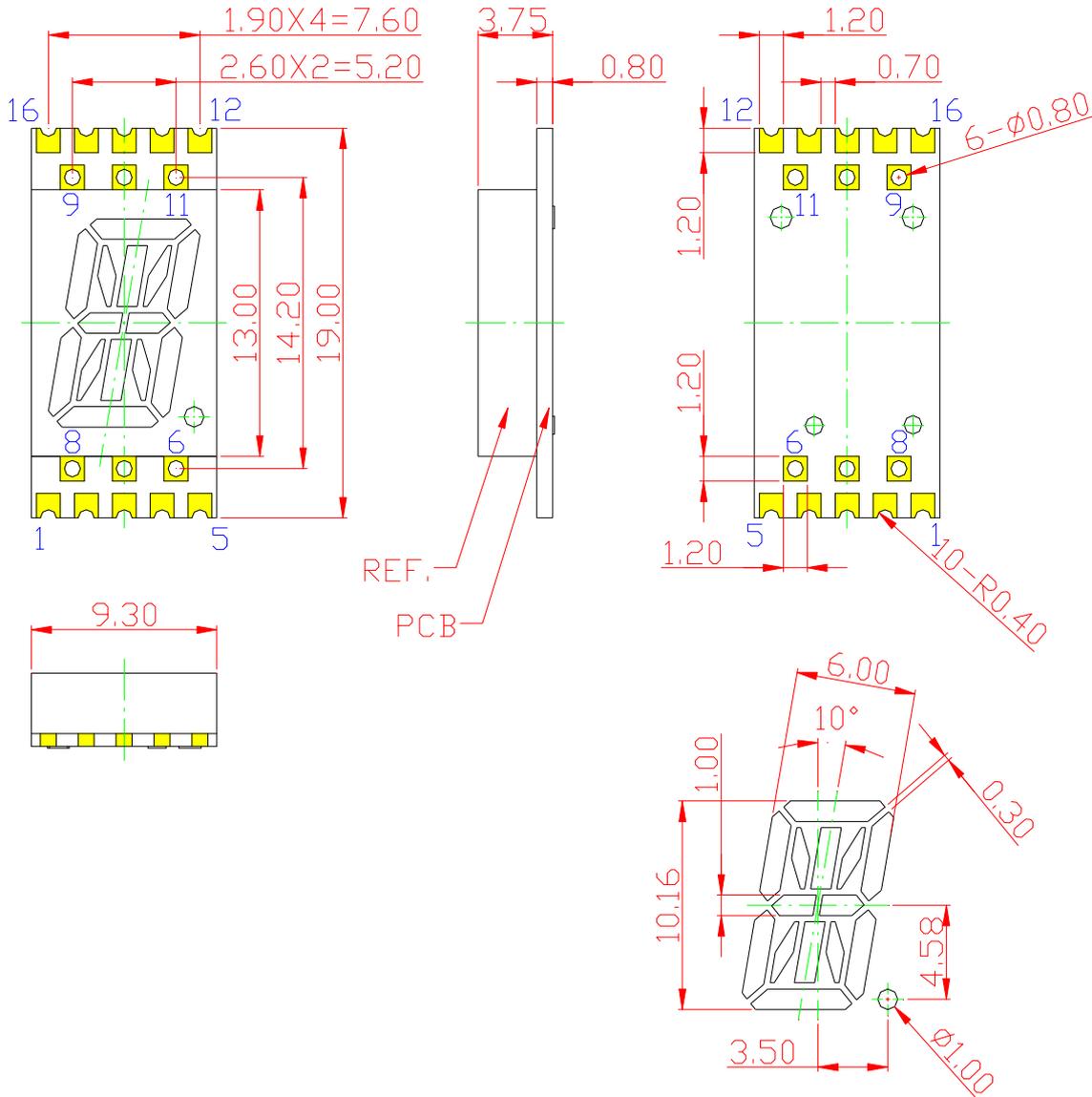
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#### ● MECHANICAL DIMENSIONS



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

Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)  
 Website: [www.opledtw.com](http://www.opledtw.com) E-mail: [sales@opledtw.com](mailto:sales@opledtw.com) Tel: 886-2-2222-5698 Fax: 886-2-2222-2566

Disclaimer:  
 Subject to change without notice

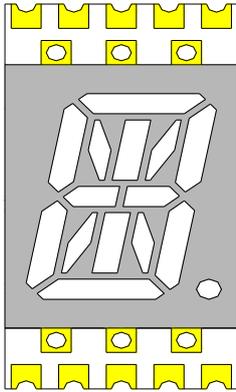
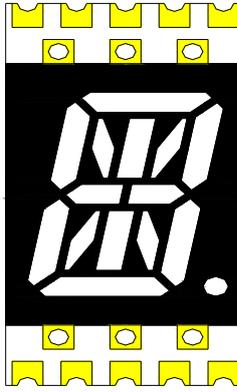




## Opto Plus LED Corp. 0.40" SMD Type LED Display OPS-AS4020SPG | OPS-AS4020SPG

### ● PRODUCT APPEARANCE

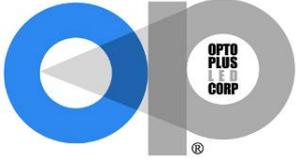
The most common reflector color and segment color are show in below diagram.

-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-AS4020SPG-GW	Common Anode   Gray face   White segment
OPS-AS4021SPG-GW	Common Cathode   Gray face   White segment
OPS-AS4020SPG-BW	Common Anode   Black face   White segment
OPS-AS4021SPG-BW	Common Cathode   Black face   White segment



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## 0.40'' SMD Type LED Display

### OPS-AS4020SPG | OPS-AS4020SPG

#### ● SPG: PURE GREEN (InGaN/GaN)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	$P_{AD}$	90	mW
Continuous forward current	$I_{AF}$	30	mA
Peak current (duty cycle 1/10, 1kHz)	$I_{PF}$	60	mA
Reverse voltage	$V_R$	5	V
Operating temperature	$T_{OPR}$	-40 to +105	°C
Storage temperature	$T_{STG}$	-40 to +105	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage, (Per Dice)	$V_F$	$I_F = 20mA$	-	3.0	3.4	V
Reverse Current, (Per Dice)	$I_R$	$V_R = 5V$	-	-	10	$\mu A$
Dominant Wavelength	$\lambda_D$	$I_F = 20mA$	515	-	530	nm
Luminous Intensity	$I_V$	$I_F = 20mA$	30	90	150	mcd
Spectral Line Half-Bandwidth	$\Delta\lambda$	$I_F = 20mA$	-	20	-	nm



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- **SPG: BIN GRADE (Unit : mcd) 20mA**

<b>Pure Green</b>	<b>O</b>	<b>P</b>	<b>Q</b>
	30.0 – 70.0	70.1 – 110.0	110.1 – 150.0

- **SPG: HUE GRADE ( $\lambda D$  : nm)**

<b>1</b>	<b>2</b>	<b>3</b>
515.0 – 520.0	520.1 – 525.0	525.1 – 530.0

- **AVAILABLE BIN / HUE TABLE**

O1	O2	O3
P1	P2	P3
Q1	Q2	Q3



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## 0.40" SMD Type LED Display

### OPS-AS4020SPG | OPS-AS4020SPG

#### ● SPG: PURE GREEN (InGaN/GaN) CURVE

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

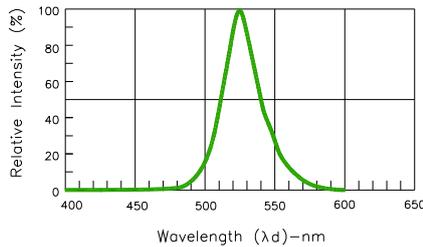


Fig.-1 Relative Intensity VS. Wavelength

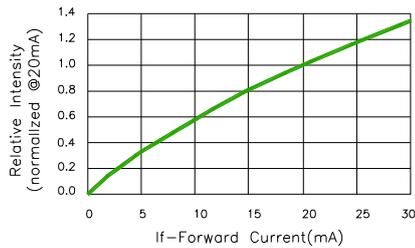


Fig.2-Relative Luminous Intensity vs. Forward Current

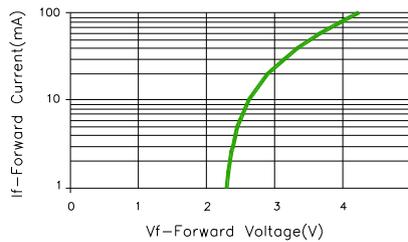


Fig.3-Forward Current vs. Forward Voltage

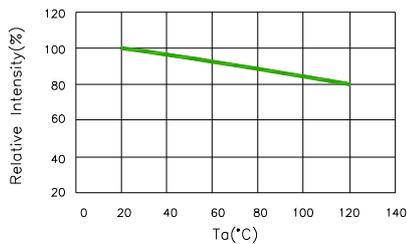


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

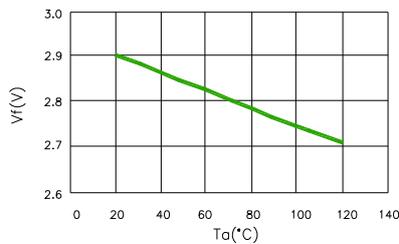


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

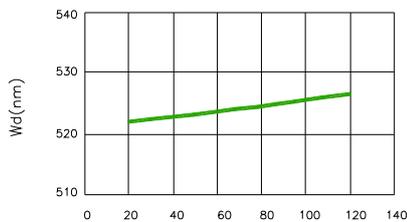


Fig.6-Dominant Wavelength(@20mA)  
VS. Ambient Temperature

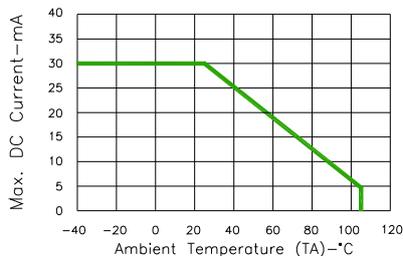


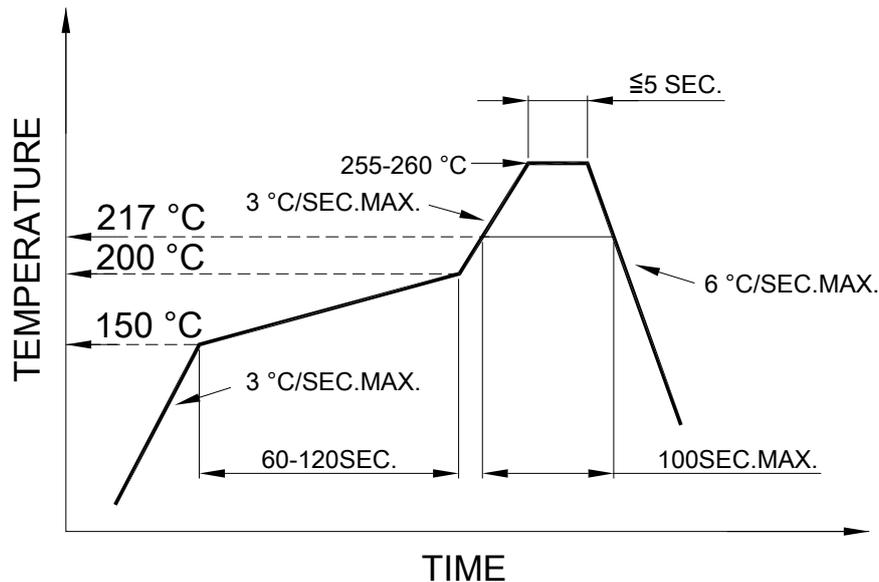
Fig.7-Max. Allowable DC Current  
VS. Ambient Temperature



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● **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.



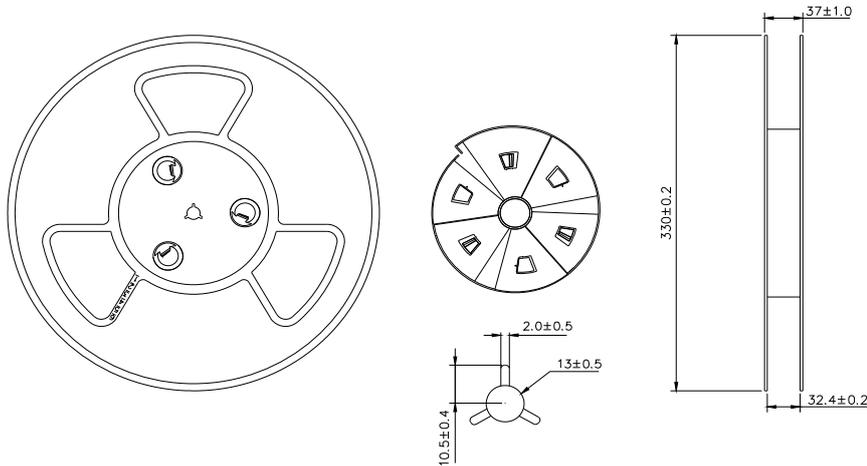
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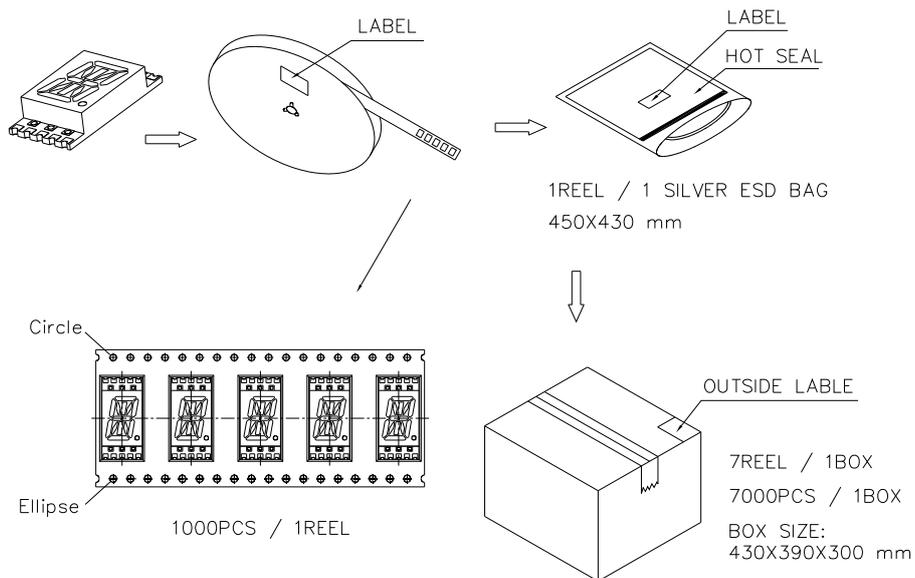
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#### ● REEL DIMENSIONS



#### ● PACKING & LABEL SPECIFICATIONS



#### ● STORAGE 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)