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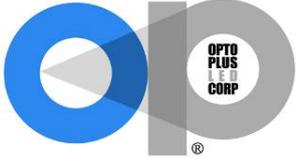
**Opto Plus LED Corp.**  
**0.40" SMD Type LED Display**  
**OPS-AS4020W3 | OPS-AS4020W3**

● **EDIT HISTORY**

Version A: Jul. 08, 2022

Preliminary Spec.

Confidential Document



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# Opto Plus LED Corp.

## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● 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 alphanumeric displays.  
 The device is Opto Plus LED Corp standard LED Display.  
 This device utilizes Super Bright White SMD 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

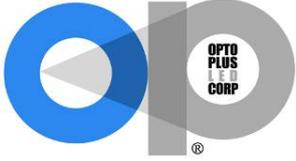
PART NO.	DESCRIPTION
OPS-AS4020W3-GW	Common Anode   Gray face   White segment
OPS-AS4021W3-GW	Common Cathode   Gray face   White segment
OPS-AS4020W3-BW	Common Anode   Black face   White segment
OPS-AS4021W3-BW	Common Cathode   Black face   White segment

**RoHS Compliance**



**Pb Free.**





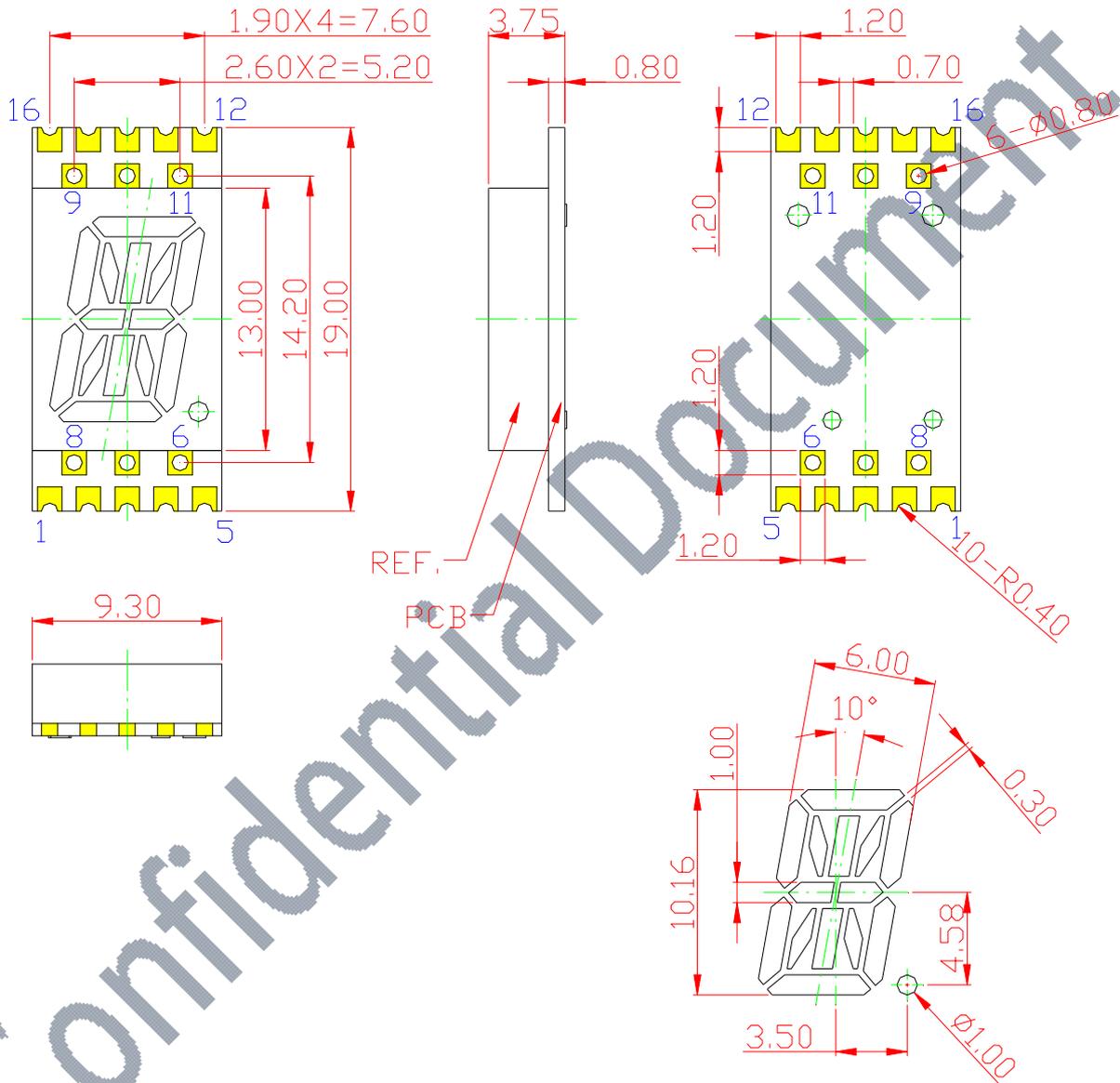
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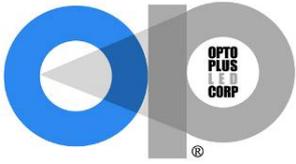
## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● MECHANICAL DIMENSIONS



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



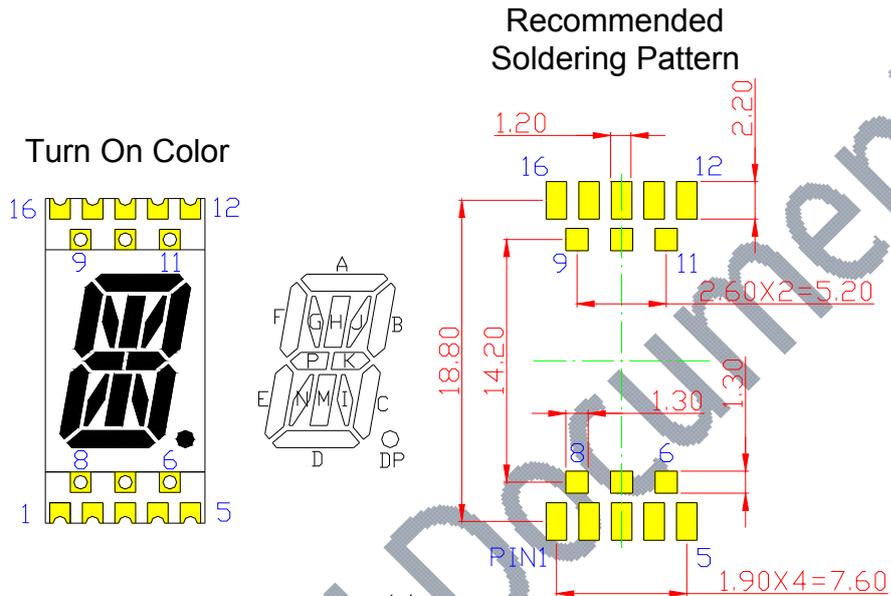
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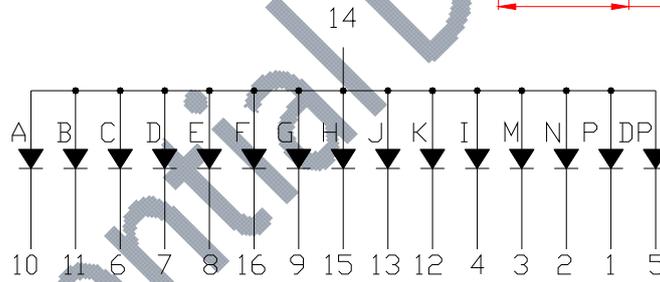
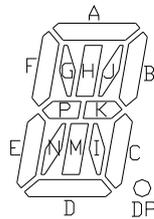
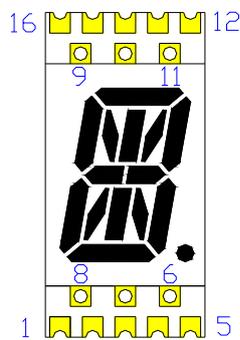
## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

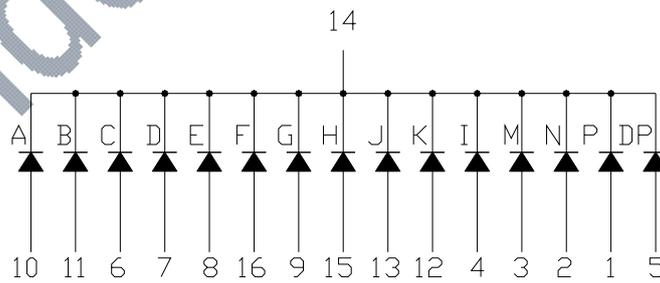
#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



Turn On Color

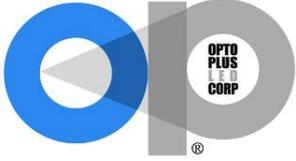


OPS-AS4020W3-GW ( Common Anode )



OPS-AS4021W3-GW ( Common Cathode )

※EMITTED COLOR : SUPER BRIGHT WHITE



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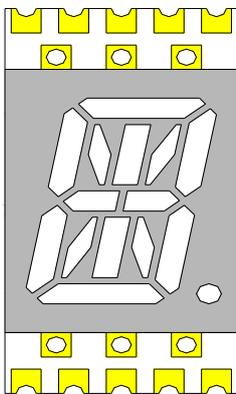
# Opto Plus LED Corp.

## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● PRODUCT APPEARANCE

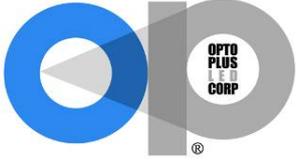
The most common reflector color and segment color are show in below diagram.

-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-AS4020W3-GW	Common Anode   Gray face   White segment
OPS-AS4021W3-GW	Common Cathode   Gray face   White segment
OPS-AS4020W3-BW	Common Anode   Black face   White segment
OPS-AS4021W3-BW	Common Cathode   Black face   White segment



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**0.40'' SMD Type LED Display**  
**OPS-AS4020W3 | OPS-AS4020W3**

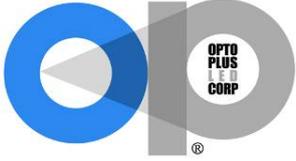
● **W3: SUPER BRIGHT WHITE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C (Per SMD Chip)

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>D</sub>	16	mW
Forward current	I <sub>F</sub>	5	mA
Pulse forward current	I <sub>FP</sub>	15	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OP</sub>	-40 to + 85	°C
Storage temperature	T <sub>ST</sub>	-40 to + 100	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C (Per SMD Chip)

Characteristic	Symbol	Condition	Min.	Type	Max.	Unit
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =5mA	-	2.8	3.2	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =5mA	71.5	150	226	mcd
Chromaticity Coordinate		X	-	0.3000		
		Y	-	0.2963		



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● **WHITE: IV BIN (Unit : mcd) 5mA**

Super Bright White	1	2	3
	71.5 – 112.5	112.5 – 180.0	180.0 – 226.0
SMD BIN	Q	R	S1

Note: It maintains a tolerance of  $\pm 10\%$  on Luminous Intensity

● **WHITE: COLOR BIN**

CIE	X	Y	X	Y	X	Y
	0.2700	0.2325	0.2900	0.2600	0.3100	0.2875
	0.2700	0.2775	0.2900	0.3050	0.3100	0.3325
	0.2900	0.3050	0.3100	0.3325	0.3300	0.3600
	0.2900	0.2600	0.3100	0.2875	0.3300	0.3150
SMD BIN	C2		D1		D2	

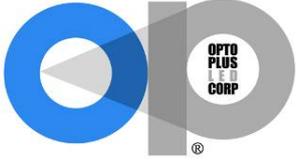
Note: It maintains a tolerance of x,y  $\pm 0.007$

● **FORWARD VOLTAGE (VF) BIN:**

BIN CODE	G1	G2	G3	G4
SPEC. RANGE	2.4-2.5	2.5-2.6	2.6-2.7	2.7-2.8

BIN CODE	H1	H2	H3	H4
SPEC. RANGE	2.8-2.9	2.9-3.0	3.0-3.1	3.1-3.2

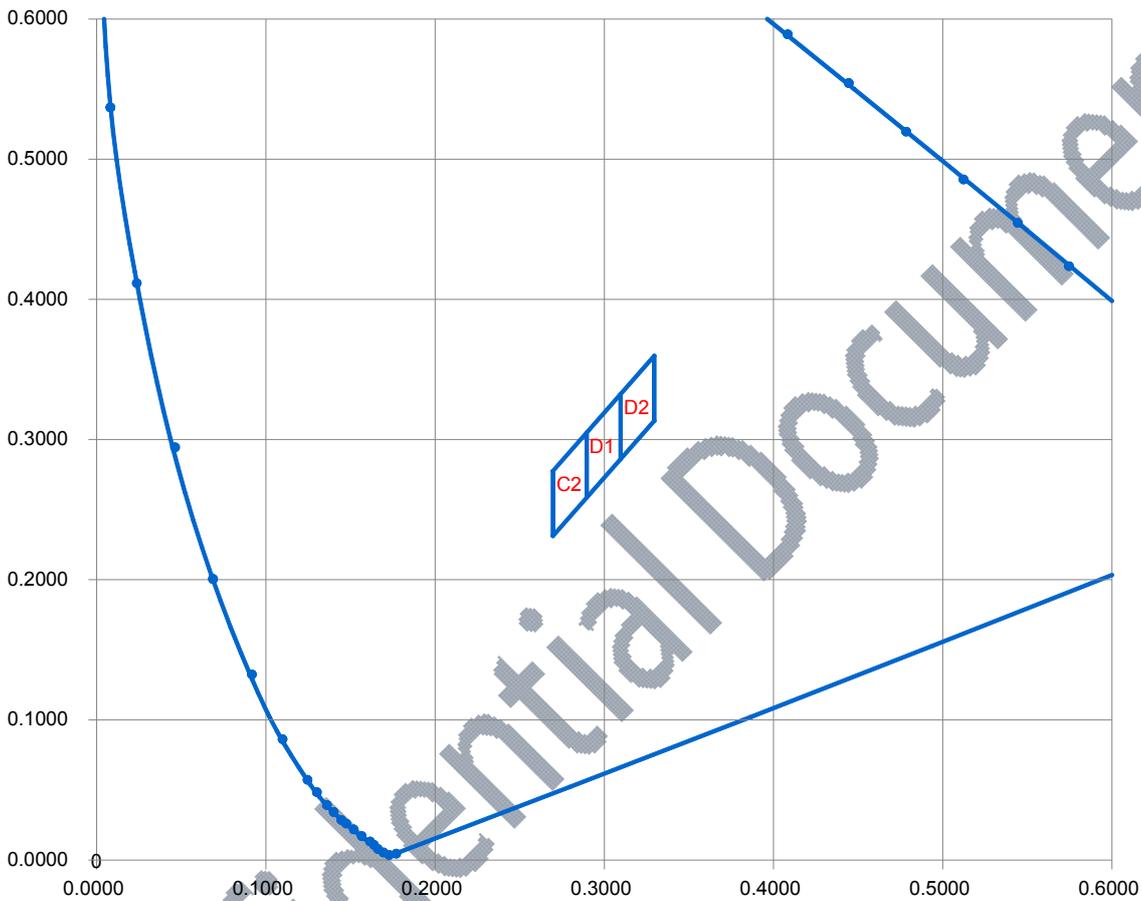
Note: It maintains a tolerance of  $\pm 0.05V$  on forward voltage measurements



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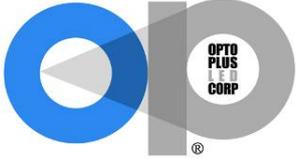
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**OPS-AS4020W3 | OPS-AS4020W3**

● **CHROMATICITY COORDINATE:**



● **AVAILABLE BIN / HUE TABLE**

1C2	2C2	3C2
1D1	2D1	3D1
1D2	2D2	3D2



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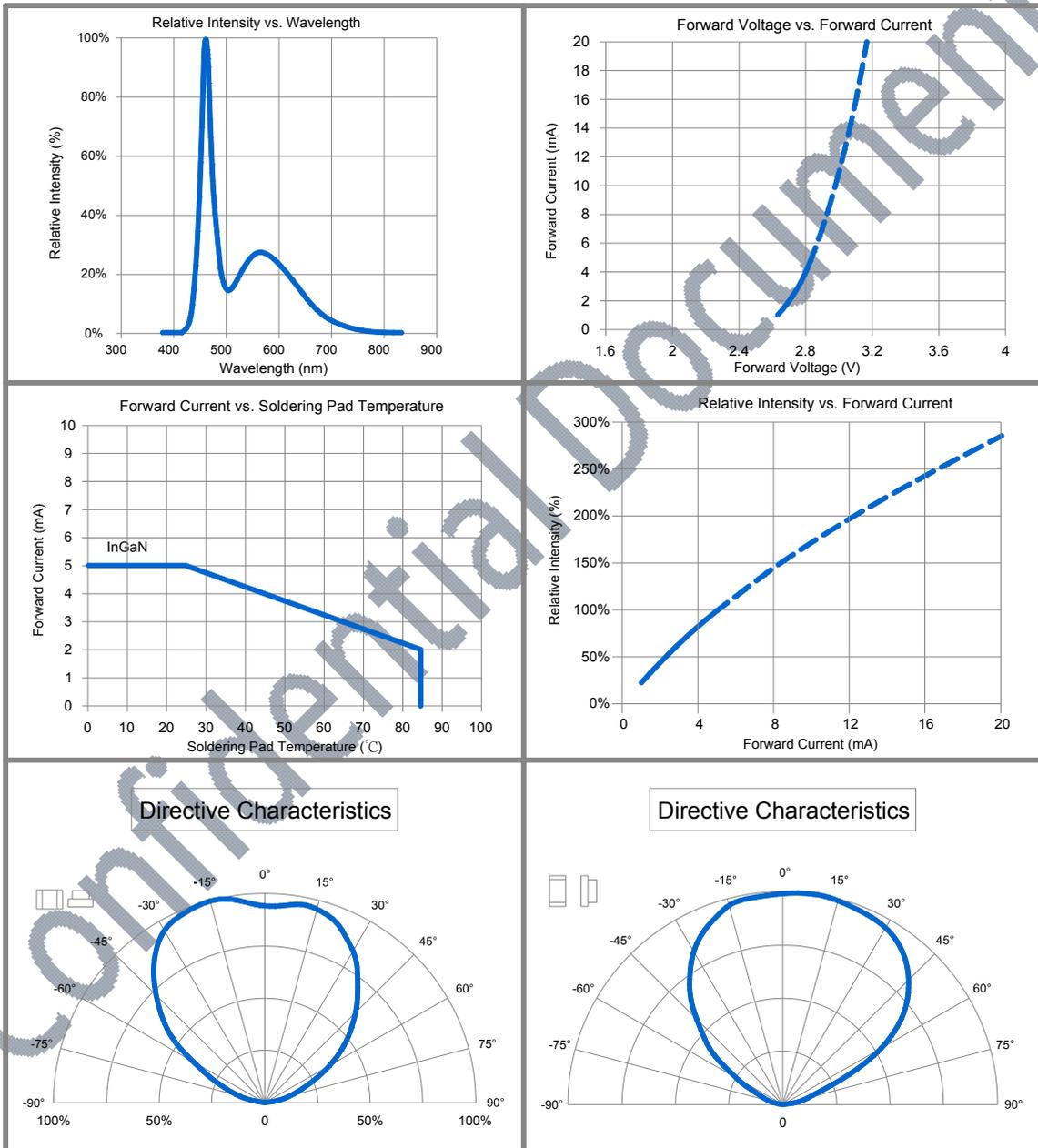
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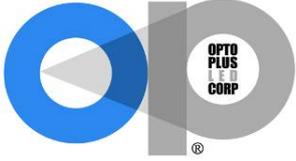
## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● W3: SUPER BRIGHT WHITE (InGaN/GaN) CURVE

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





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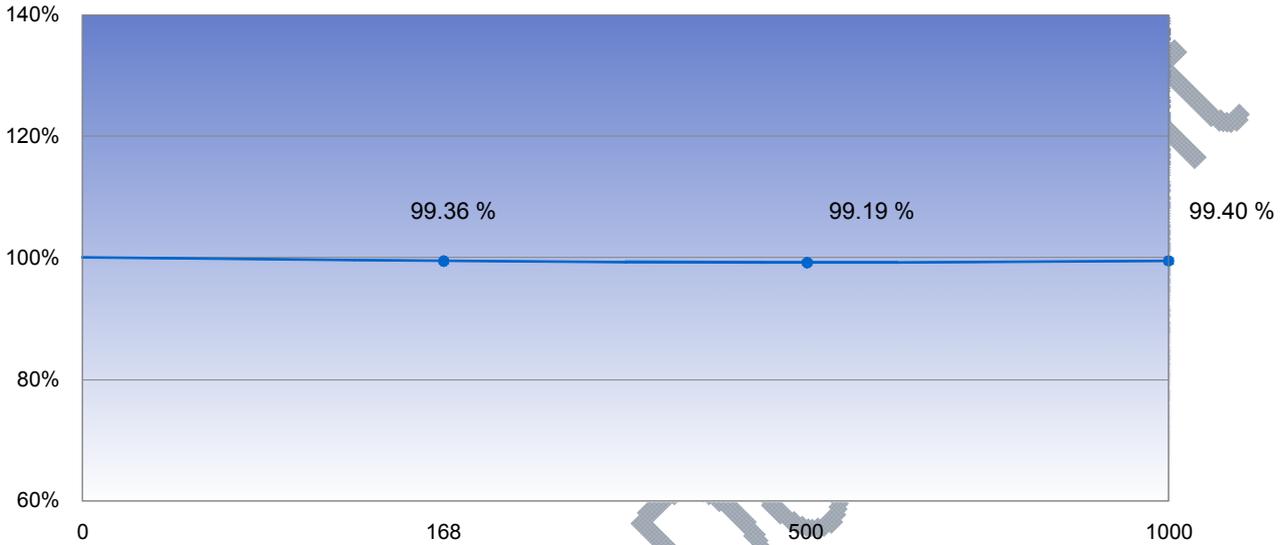
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## 0.40" SMD Type LED Display

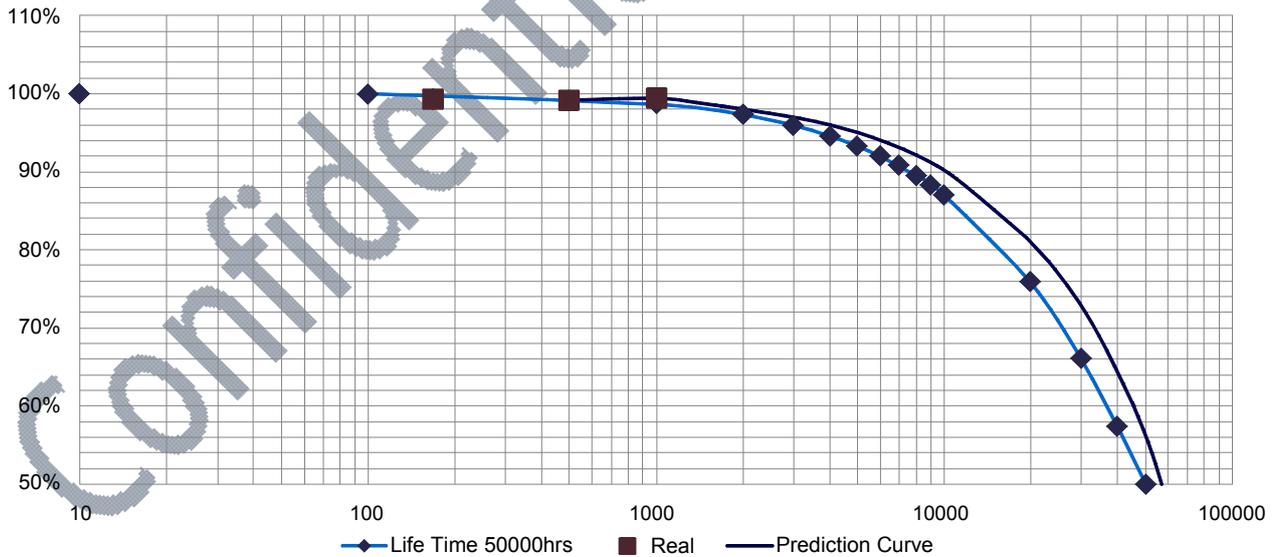
### OPS-AS4020W3 | OPS-AS4020W3

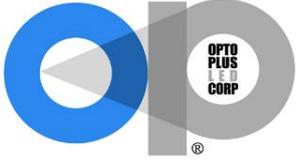
#### ● LIFE TIME

(25°C , 5mA)



#### LIFE Estimate





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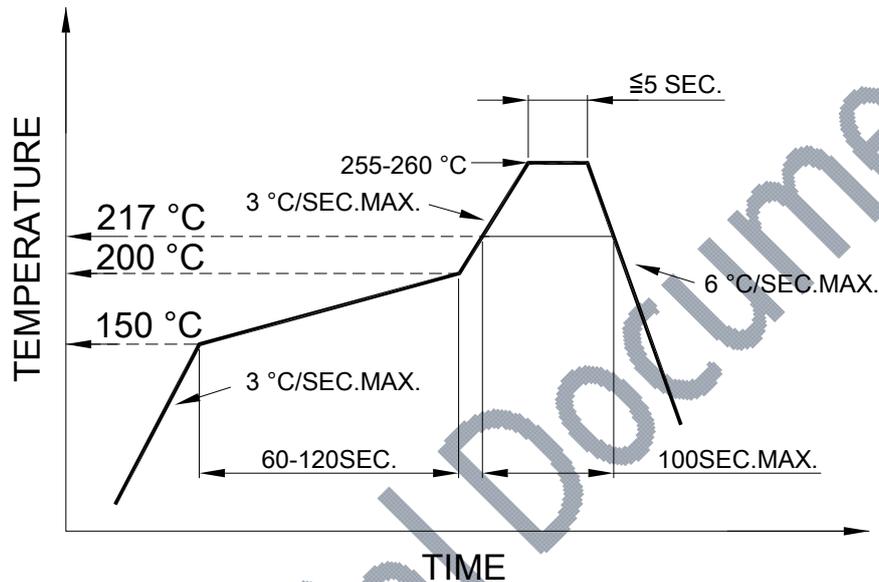
## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



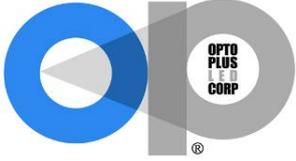
- We recommend the reflow temperature 245°C (+/- 5°C).  
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

#### ● 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.



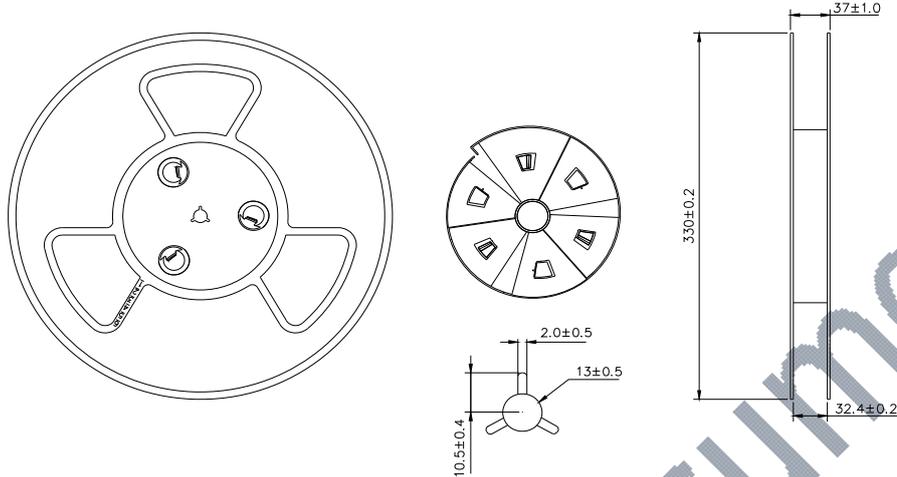
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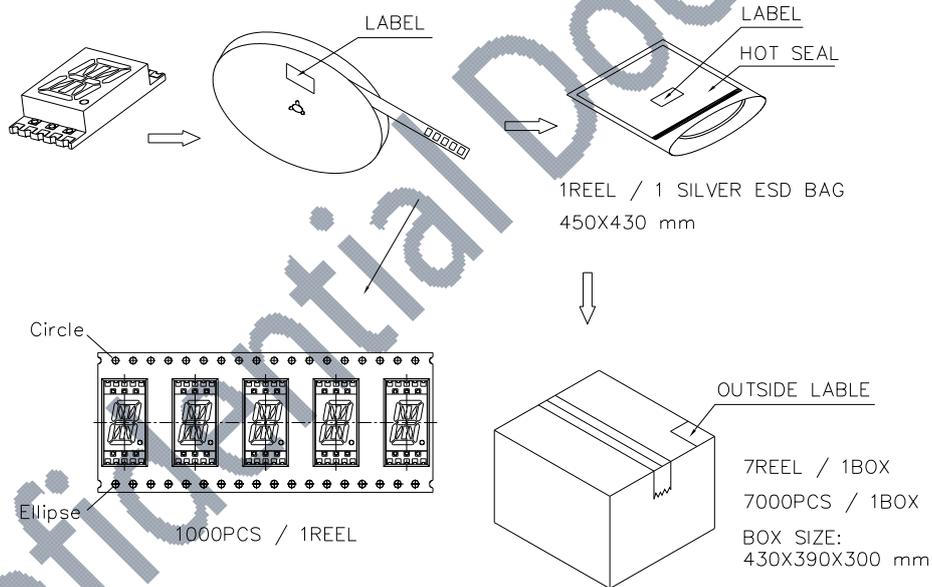
## 0.40" SMD Type LED Display

### OPS-AS4020W3 | OPS-AS4020W3

#### ● 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)