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**Opto Plus LED Corp.**  
**0.20" SMD Type LED Display**  
**OPS-Q2012SYG | OPS-Q2013SYG**

● **EDIT HISTORY**

Version A: Nov. 11, 2020

Preliminary Spec.

Confidential Document



# Opto Plus LED Corp.

## 0.20" SMD Type LED Display

### OPS-Q2012SYG | OPS-Q2013SYG

#### ● FEATURES

- 0.20 inch (5.08 mm) Digit Height.
- SMD type.
- Low current operation.
- RoHS Compliant, Pb Free.

#### ● DESCRIPTION

The device are 0.20 inch (5.08 mm) height quadruple digit 7-segment displays.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright Yellow Green LED chip which are made from AlGaInP on a transparent GaAs, substrate

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

#### ● DEVICE

PART NO.	DESCRIPTION
OPS-Q2012SYG-GW	Common Anode   Gray face   White segment
OPS-Q2013SYG-GW	Common Cathode   Gray face   White segment
OPS-Q2012SYG-BW	Common Anode   Black face   White segment
OPS-Q2013SYG-BW	Common Cathode   Black face   White segment

**RoHS Compliance**



**Pb Free.**





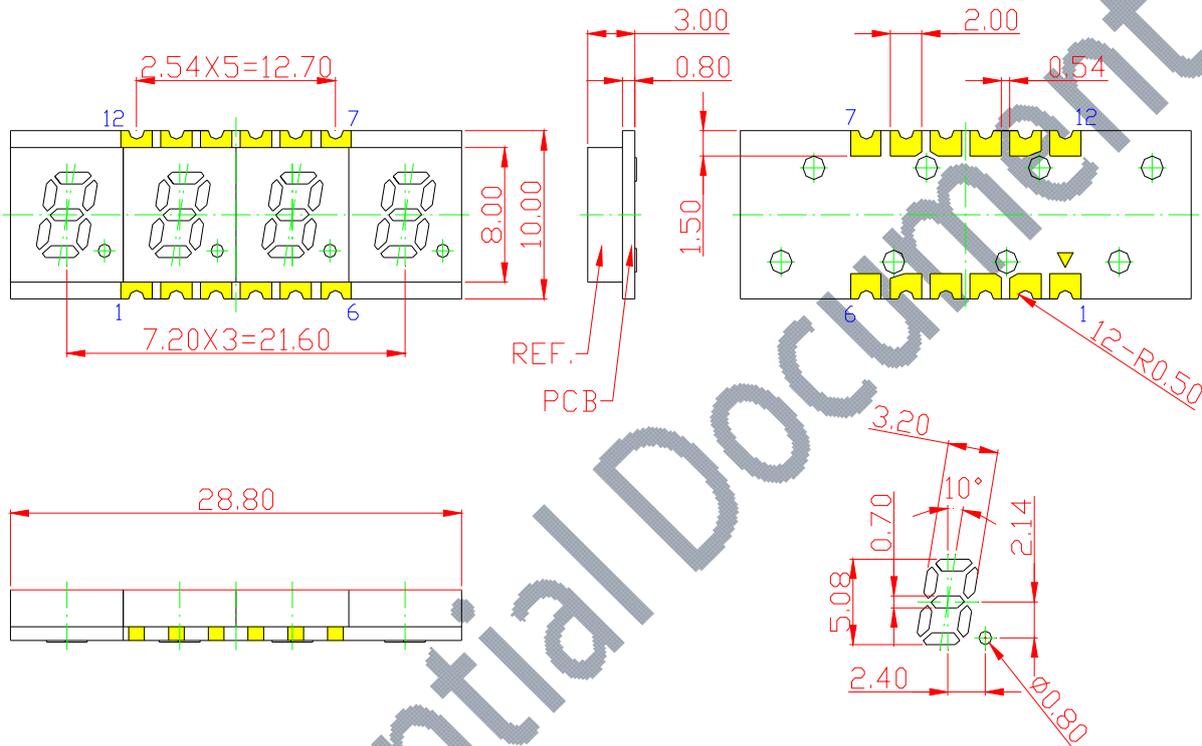
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# Opto Plus LED Corp.

## 0.20" SMD Type LED Display

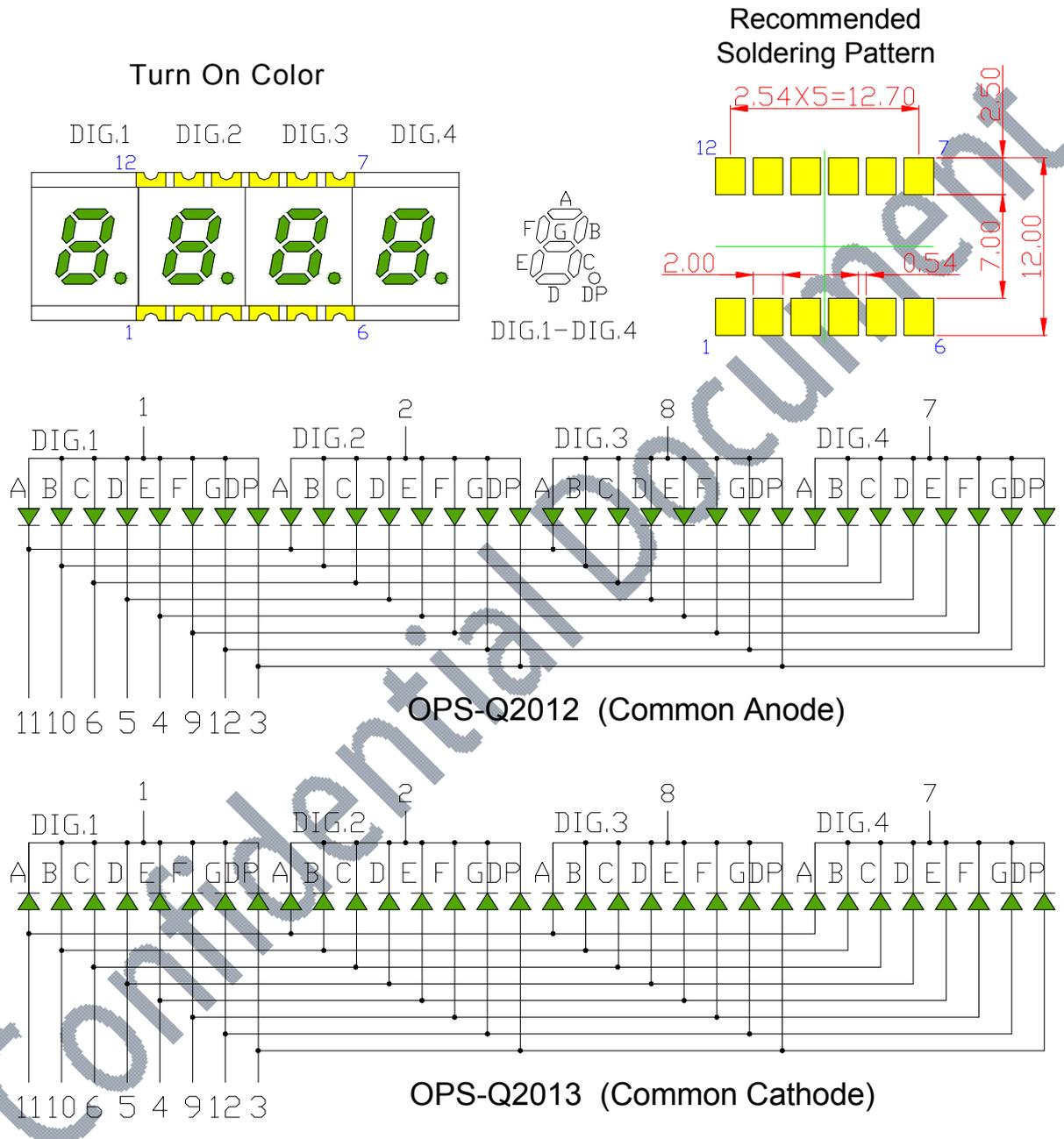
### OPS-Q2012SYG | OPS-Q2013SYG

#### ● MECHANICAL DIMENSIONS



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

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



※EMITTED COLOR : SUPER BRIGHT YELLOW GREEN



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#### ● 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-Q2012SYG-GW	Common Anode   Gray face   White segment
OPS-Q2013SYG-GW	Common Cathode   Gray face   White segment
OPS-Q2012SYG-BW	Common Anode   Black face   White segment
OPS-Q2013SYG-BW	Common Cathode   Black face   White segment



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● **SYG: SUPER BRIGHT YELLOW GREEN (AlGaInP/GaAs)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	48	mW
Continuous forward current	I <sub>AF</sub>	20	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	40	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	-	2.1	2.4	V
Reverse Current, (Per Dice)	I <sub>R</sub>	V <sub>R</sub> = 5V	-	-	10	μA
Peak Wavelength	λ <sub>P</sub>	I <sub>F</sub> = 20mA	-	573	-	nm
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> = 20mA	567	-	576	nm
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> = 20mA	2	8	15	mcd
Spectral Line Half-Bandwidth	Δλ	I <sub>F</sub> = 20mA	-	20	-	nm



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● SYG: BIN GRADE (Unit :mcd) 20mA

Super Bright Yellow Green	<b>F</b>	<b>G</b>	<b>H</b>
	2.0 - 6.0	6.1 - 10.0	10.1 - 15.0

● SYG: HUE GRADE ( $\lambda D$  : nm)

<b>1</b>	<b>2</b>	<b>3</b>
567.0 - 570.0	570.1 - 573.0	573.1 - 576.0

● AVAILABLE BIN / HUE TABLE

F1	F2	F3
G1	G2	G3
H1	H2	H3



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### OPS-Q2012SYG | OPS-Q2013SYG

#### ● SYG: SUPER BRIGHT YELLOW GREEN (AlGaInP/GaAs) CURVE

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

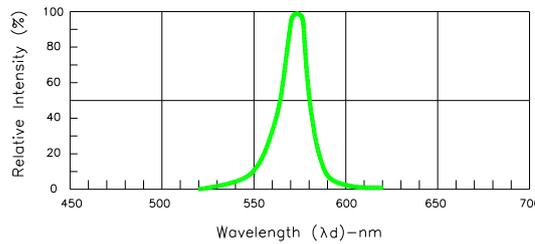


Fig.1-Relative Intensity VS. Wavelength

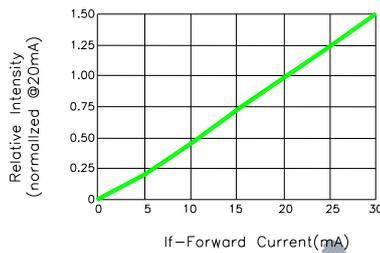


Fig.2-Relative Luminous Intensity vs. Forward Current

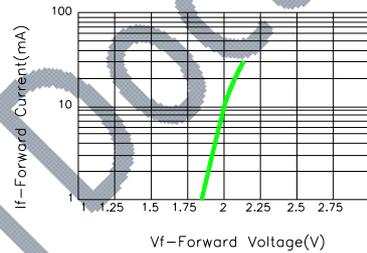


Fig.3-Forward Current vs. Forward Voltage

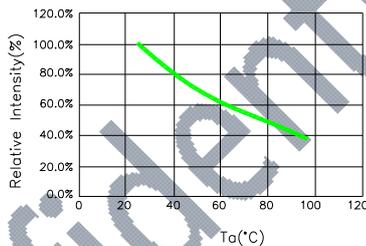


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

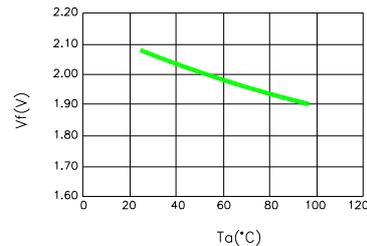


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

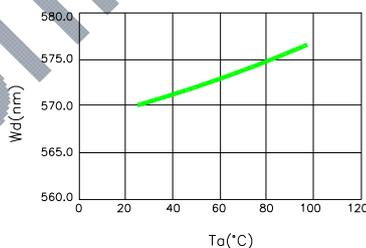


Fig.6-Dominant Wavelength(@20mA) VS. Ambient Temperature

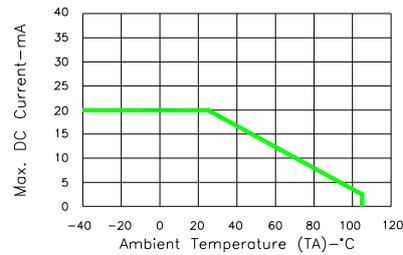


Fig.7-Max. Allowable DC Current VS. Ambient Temperature



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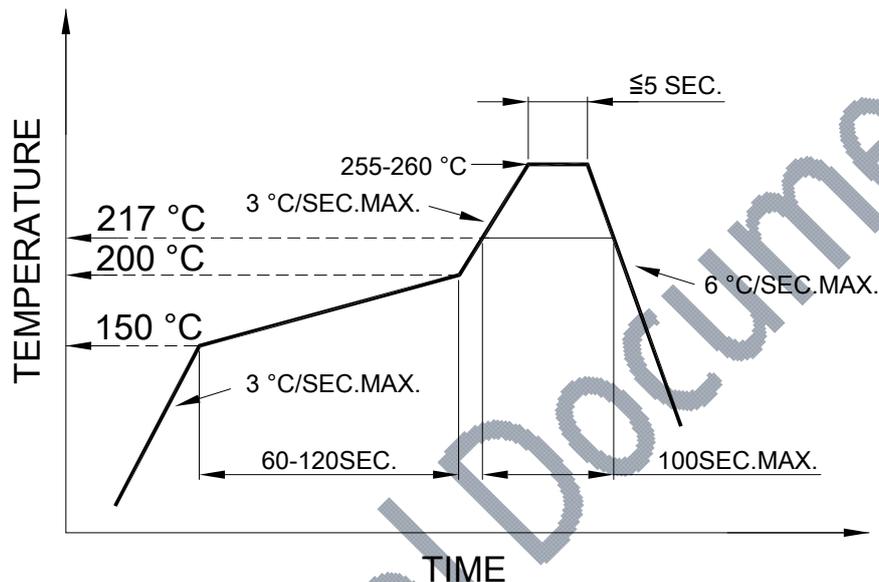
## 0.20" SMD Type LED Display

### OPS-Q2012SYG | OPS-Q2013SYG

#### ● 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.



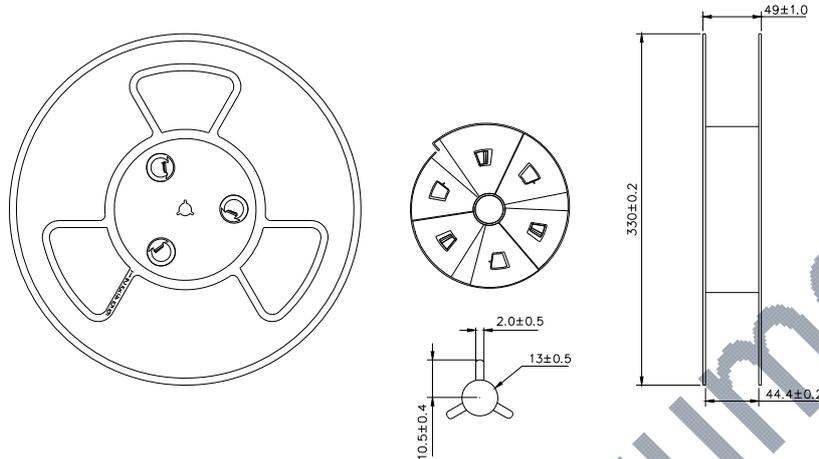
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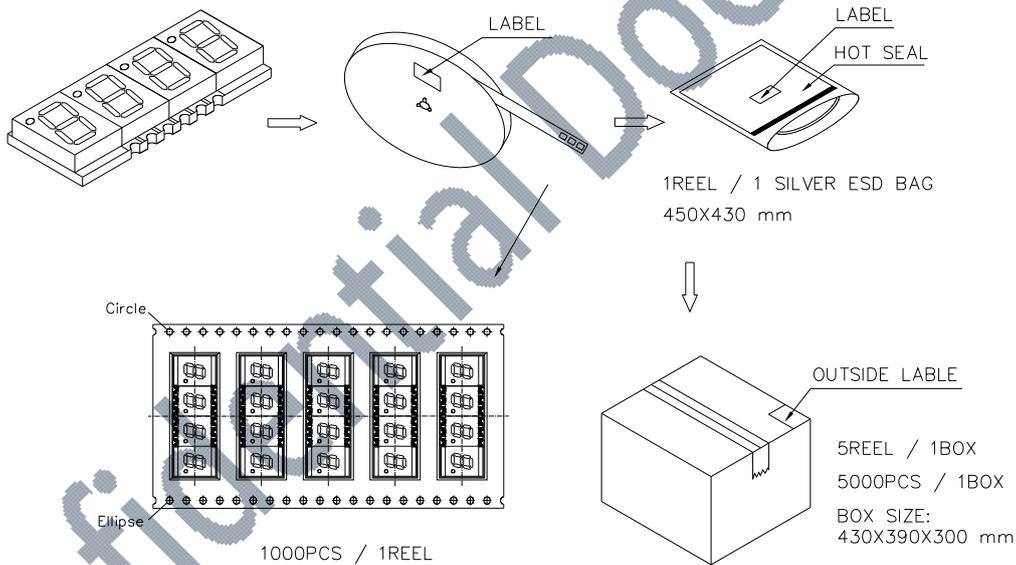
## 0.20" SMD Type LED Display

### OPS-Q2012SYG | OPS-Q2013SYG

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