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**Opto Plus LED Corp.**  
**0.20" SMD Type LED Display**  
**OPS-S2040SE-STT(R)-1.5-G(B)W**  
**OPS-S2041SE-STT(R)-1.5-G(B)W**

● **EDIT HISTORY**

Version A: Mar. 24, 2025

Preliminary Spec.

Version B: Jul. 07, 2026

Change packaging specifications.

Confidential Document



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### OPS-S2040SE-STT(R)-1.5-G(B)W

### OPS-S2041SE-STT(R)-1.5-G(B)W

## ● FEATURES

- 0.20 inch (5.08 mm) Digit Height.
- Low current operation.
- Excellent character appearance.
- Super thin SMD type.
- RoHS compliant, Pb Free.

## ● DESCRIPTION

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

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright Red 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-S2040SE-STT-1.5-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-S2041SE-STT-1.5-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-S2040SE-STT-1.5-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-S2041SE-STT-1.5-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-S2040SE-STR-1.5-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-S2041SE-STR-1.5-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-S2040SE-STR-1.5-BW | Common Anode   Black face   White segment   Reverse mount   |
| OPS-S2041SE-STR-1.5-BW | Common Cathode   Black face   White segment   Reverse mount |

**RoHS Compliance**



**Pb Free.**

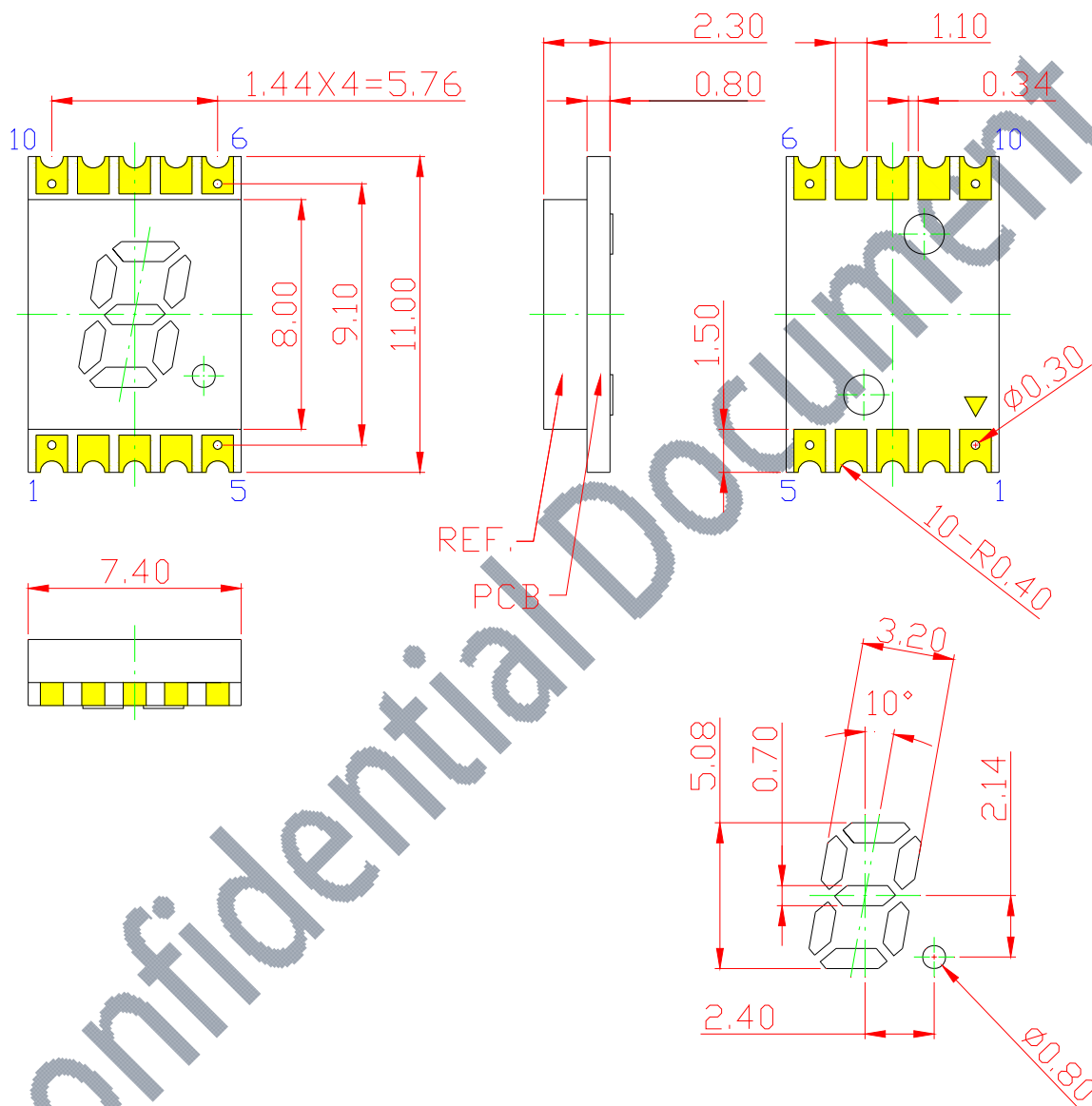




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● **MECHANICAL DIMENSIONS**



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



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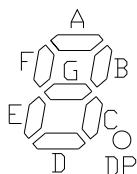
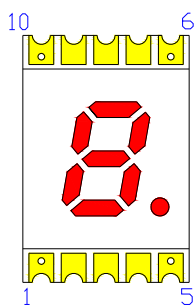
## 0.20" SMD Type LED Display

### OPS-S2040SE-STT(R)-1.5-G(B)W

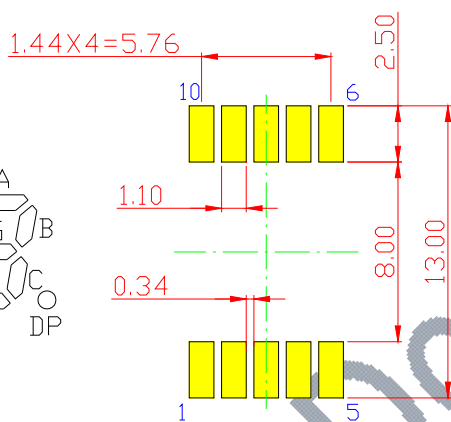
### OPS-S2041SE-STT(R)-1.5-G(B)W

## ● TYPICAL INTERNAL EQUIVALENT CIRCUIT

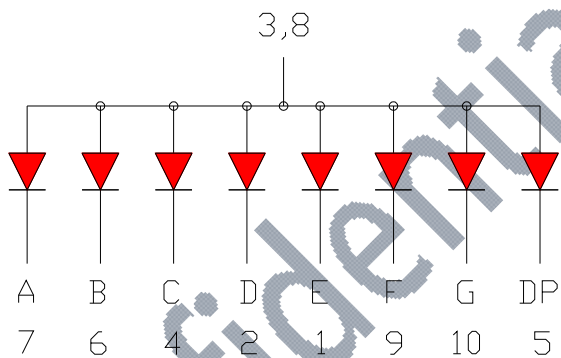
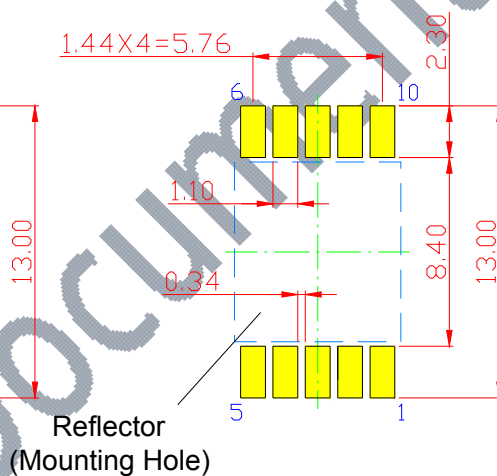
Turn On Color



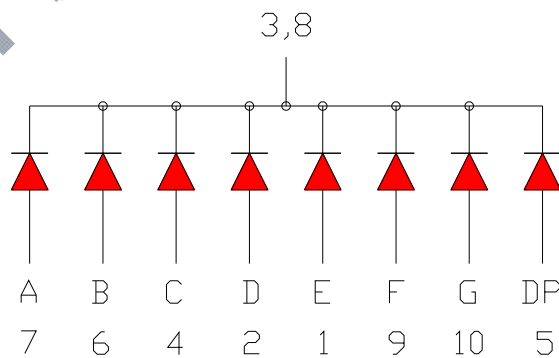
Recommended  
Top Mount  
Soldering Pattern



Recommended  
Reverse Mount  
Soldering Pattern

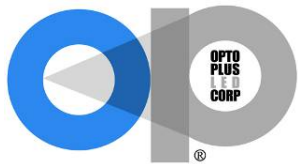


OPS-S2040SE-STT(R)-1.5-G(B)W  
(Common Anode)



OPS-S2041SE-STT(R)-1.5-G(B)W  
(Common Cathode)

※EMITTED COLOR : SUPER BRIGHT RED



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## 0.20" SMD Type LED Display

### OPS-S2040SE-STT(R)-1.5-G(B)W

### OPS-S2041SE-STT(R)-1.5-G(B)W

## ● PRODUCT APPEARANCE

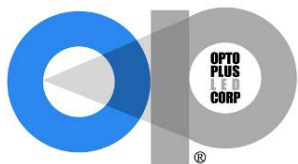
The most common reflector color and segment color are show in below diagram.

| -GW                                               | -BW                                                |
|---------------------------------------------------|----------------------------------------------------|
|                                                   |                                                    |
| ※ REFLECTOR COLOR: Gray<br>※ SEGMENT COLOR: White | ※ REFLECTOR COLOR: Black<br>※ 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-S2040SE-STT-1.5-GW | Common Anode   Gray face   White segment   Top mount        |
| OPS-S2041SE-STT-1.5-GW | Common Cathode   Gray face   White segment   Top mount      |
| OPS-S2040SE-STT-1.5-BW | Common Anode   Black face   White segment   Top mount       |
| OPS-S2041SE-STT-1.5-BW | Common Cathode   Black face   White segment   Top mount     |
| OPS-S2040SE-STR-1.5-GW | Common Anode   Gray face   White segment   Reverse mount    |
| OPS-S2041SE-STR-1.5-GW | Common Cathode   Gray face   White segment   Reverse mount  |
| OPS-S2040SE-STR-1.5-BW | Common Anode   Black face   White segment   Reverse mount   |
| OPS-S2041SE-STR-1.5-BW | Common Cathode   Black face   White segment   Reverse mount |



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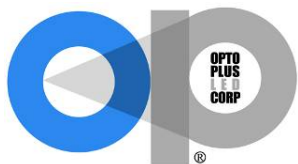
● **SE: SUPER BRIGHT RED (AlGaInP/GaAs)**

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 | -    | 632   | -    | nm   |
| Dominant Wavelength          | λ <sub>D</sub> | I <sub>F</sub> =20mA | 619  | -     | 629  | nm   |
| Luminous Intensity           | I <sub>v</sub> | I <sub>F</sub> =20mA | 10   | -     | 40   | mcd  |
| Spectral Line Half-Bandwidth | Δλ             | I <sub>F</sub> =20mA | -    | 20    | -    | nm   |



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● SE: BIN GRADE (Unit :mcd) 20mA

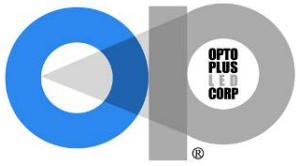
| Super Bright Red | H           | I           | J           |
|------------------|-------------|-------------|-------------|
|                  | 10.0 - 20.0 | 20.1 - 30.0 | 30.1 - 40.0 |

● SE: HUE GRADE ( $\lambda D$  : nm)

| 1             | 2             | 3             |
|---------------|---------------|---------------|
| 619.0 – 622.0 | 622.1 – 626.0 | 626.1 – 629.0 |

● AVAILABLE BIN / HUE TABLE

|    |    |    |
|----|----|----|
| H1 | H2 | H3 |
| I1 | I2 | I3 |
| J1 | J2 | J3 |



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### OPS-S2041SE-STT(R)-1.5-G(B)W

#### ● SE: SUPER BRIGHT RED (AlGaInP/GaAs) CURVE

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

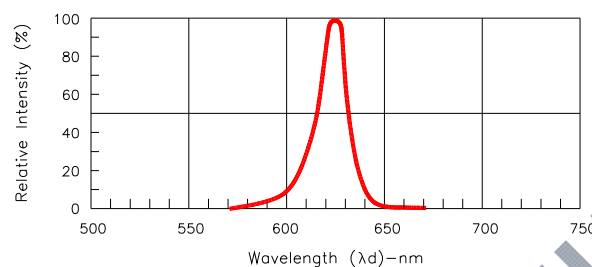


Fig.1-Relative Intensity VS. Wavelength

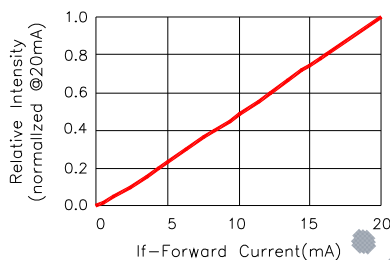


Fig.2-Relative Luminous Intensity vs. Forward Current

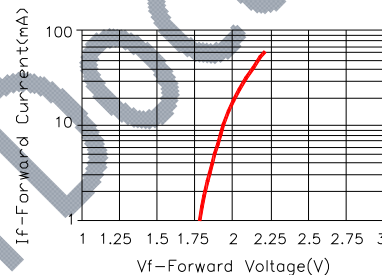


Fig.3-Forward Current vs. Forward Voltage

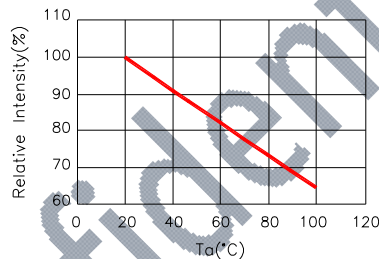


Fig.4-Relative Intensity(@20mA) vs. Ambient Temperature

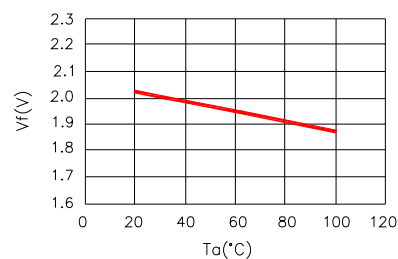


Fig.5-Forward Voltage(@20mA) vs. Ambient Temperature

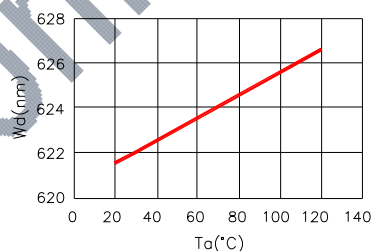


Fig.6-Dominant Wavelength(@20mA)  
VS. Ambient Temperature

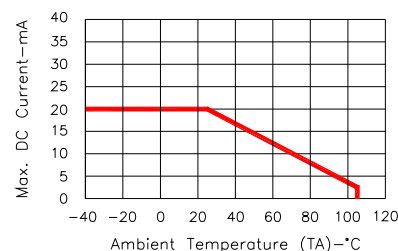
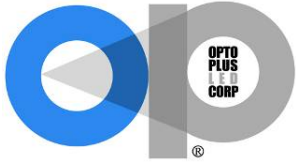


Fig.7-Max. Allowable DC Current  
VS. Ambient Temperature



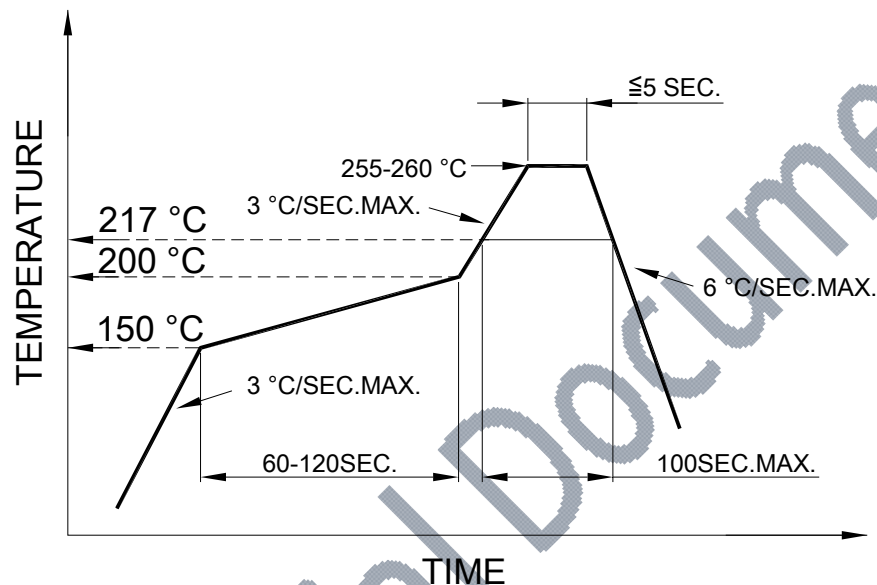
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## ● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



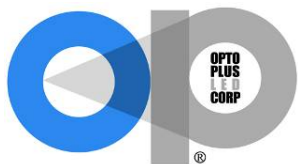
- We recommend the reflow temperature 245°C (+/- 5°C).  
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

## ● 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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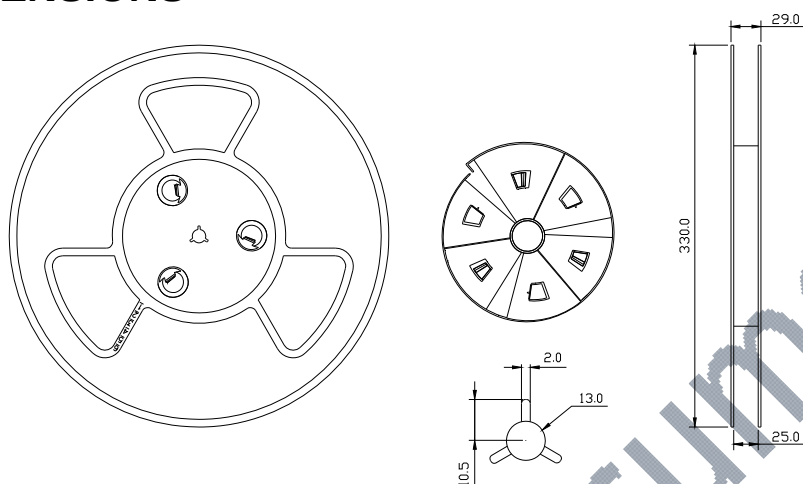
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### OPS-S2041SE-STT(R)-1.5-G(B)W

## REEL DIMENSIONS



## PACKING & LABEL SPECIFICATIONS

| OPS-S2040(1)XX-STT-1.5-G(B)W<br>Top Mount | OPS-S2040(1)XX-STR-1.5-(G)BW<br>Reverse Mount | OPS-S2040(1)XX-STT-1.5-(G)BW<br>OPS-S2040(1)XX-STR-1.5-(G)BW |
|-------------------------------------------|-----------------------------------------------|--------------------------------------------------------------|
|                                           |                                               |                                                              |

## 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) |