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Opto Plus LED Corp.
0.56" SMD Type LED Display
OPS-D5611SE-STT(R)-1.5-G(B)W
OPS-D5612SE-STT(R)-1.5-G(B)W

● **EDIT HISTORY**

Version A: Mar. 24, 2025

Preliminary Spec.

Confidential Document



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OPS-D5612SE-STT(R)-1.5-G(B)W

● FEATURES

- 0.56 inch (14.22 mm) digit height.
- Super thin SMD type.
- Low current operation.
- RoHS Compliant, Pb Free.

● DESCRIPTION

The device are 0.56 inch (14.22 mm) height dual 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-D5612SE-STT-1.5-GW | Common Anode Gray face White segment Top mount |
| OPS-D5611SE-STT-1.5-GW | Common Cathode Gray face White segment Top mount |
| OPS-D5612SE-STT-1.5-BW | Common Anode Black face White segment Top mount |
| OPS-D5611SE-STT-1.5-BW | Common Cathode Black face White segment Top mount |
| OPS-D5612SE-STR-1.5-GW | Common Anode Gray face White segment Reverse mount |
| OPS-D5611SE-STR-1.5-GW | Common Cathode Gray face White segment Reverse mount |
| OPS-D5612SE-STR-1.5-BW | Common Anode Black face White segment Reverse mount |
| OPS-D5611SE-STR-1.5-BW | Common Cathode Black face White segment Reverse mount |

RoHS Compliance



Pb Free.



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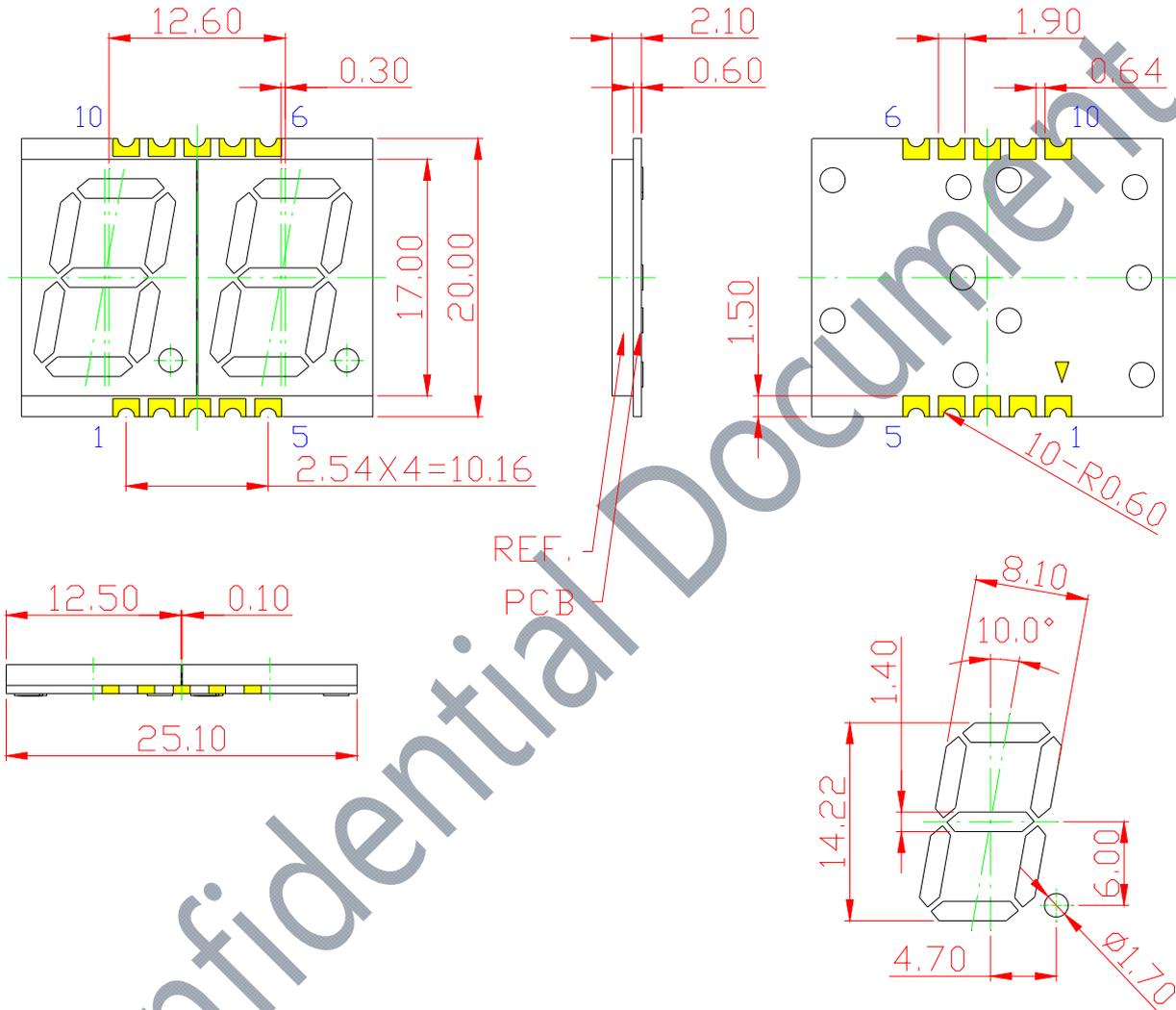
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● **MECHANICAL DIMENSIONS**



NOTES: All dimensions are in millimeters. Tolerances are ± 0.25 mm unless otherwise noted.



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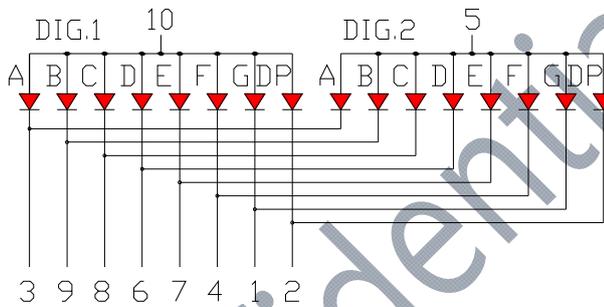
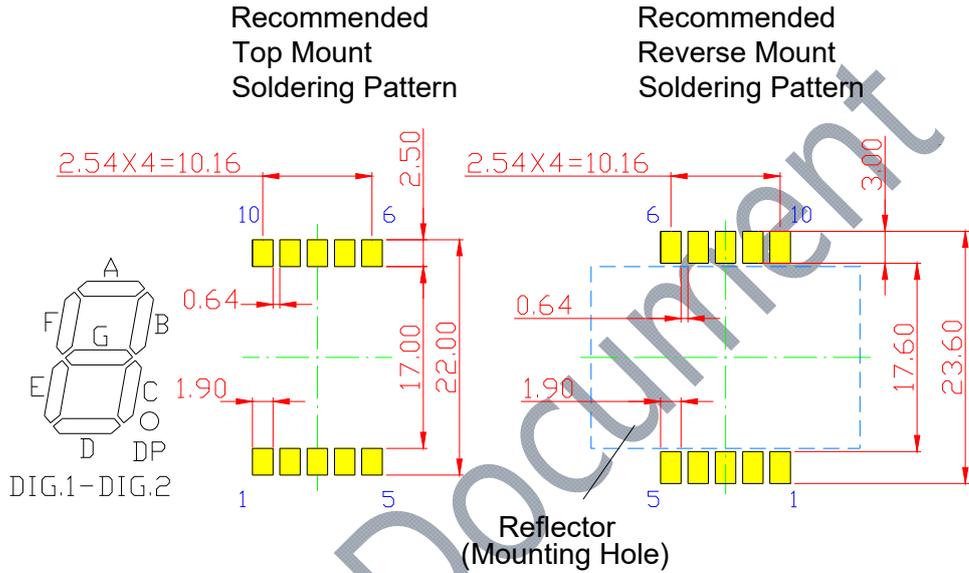
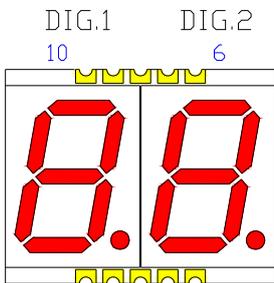
0.56" SMD Type LED Display

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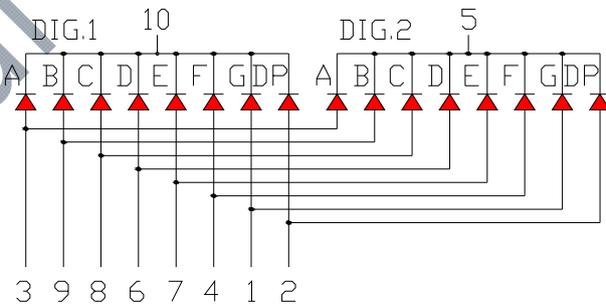
OPS-D5612SE-STT(R)-1.5-G(B)W

● TYPICAL INTERNAL EQUIVALENT CIRCUIT

Turn On Color



OPS-D5612SE-STT(R)-1.5-G(B)W
(Common Anode)



OPS-D5611SE-STT(R)-1.5-G(B)W
(Common Cathode)

※EMITTED COLOR : SUPER BRIGHT RED



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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 or contact 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-D5612SE-STT-1.5-GW | Common Anode Gray face White segment Top mount |
| OPS-D5611SE-STT-1.5-GW | Common Cathode Gray face White segment Top mount |
| OPS-D5612SE-STT-1.5-BW | Common Anode Black face White segment Top mount |
| OPS-D5611SE-STT-1.5-BW | Common Cathode Black face White segment Top mount |
| OPS-D5612SE-STR-1.5-GW | Common Anode Gray face White segment Reverse mount |
| OPS-D5611SE-STR-1.5-GW | Common Cathode Gray face White segment Reverse mount |
| OPS-D5612SE-STR-1.5-BW | Common Anode Black face White segment Reverse mount |
| OPS-D5611SE-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 _{AD} | 48 | mW |
| Continuous forward current | I _{AF} | 20 | mA |
| Peak current (duty cycle 1/10, 1kHz) | I _{PF} | 40 | 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 | - | 2.1 | 2.4 | V |
| Reverse Current, (Per Dice) | I _R | V _R = 5V | - | - | 10 | μA |
| Peak Wavelength | λ _P | I _F = 20mA | - | 632 | - | nm |
| Dominant Wavelength | λ _D | I _F = 20mA | 619 | - | 629 | nm |
| Luminous Intensity | I _v | I _F = 20mA | 20 | - | 50 | mcd |
| Spectral Line Half-Bandwidth | Δλ | I _F = 20mA | - | 20 | - | nm |



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● **SE: BIN GRADE (Unit :mcd) 20mA**

| | | | |
|------------------|-------------|-------------|-------------|
| Super Bright Red | H | I | J |
| | 20.0 - 30.0 | 30.1 - 40.0 | 40.1 - 50.0 |

● **SE: HUE GRADE (λ_D : nm)**

| | | |
|---------------|---------------|---------------|
| 1 | 2 | 3 |
| 619.0 – 623.0 | 623.1 – 626.0 | 626.1 – 629.0 |

● **AVAILABLE BIN / HUE TABLE**

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



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

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

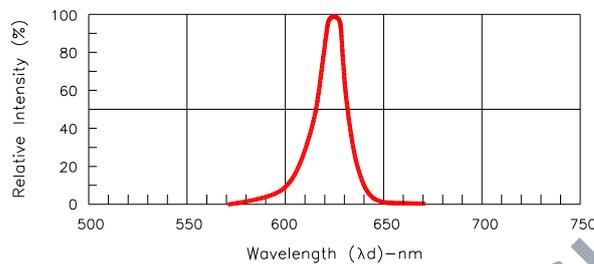


Fig.1-Relative Intensity VS. Wavelength

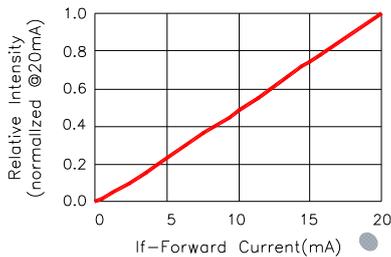


Fig.2-Relative Luminous Intensity vs. Forward Current

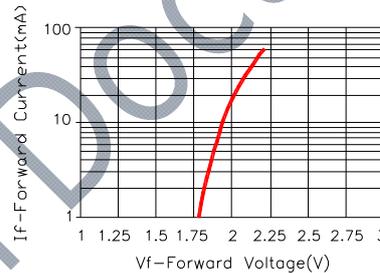


Fig.3-Forward Current vs. Forward Voltage

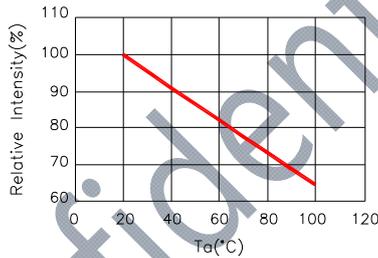


Fig.4-Relative Intensity(@20mA) vs. Ambient Temperature

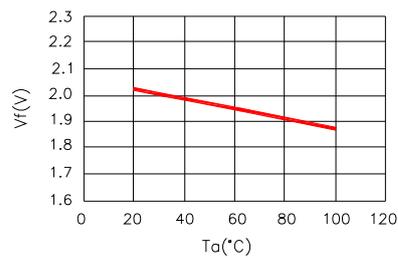


Fig.5-Forward Voltage(@20mA) vs. Ambient Temperature

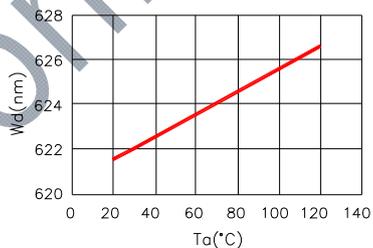


Fig.6-Dominant Wavelength(@20mA)
VS. Ambient Temperature

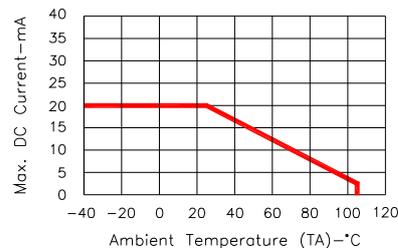


Fig.7-Max. Allowable DC Current
VS. Ambient Temperature



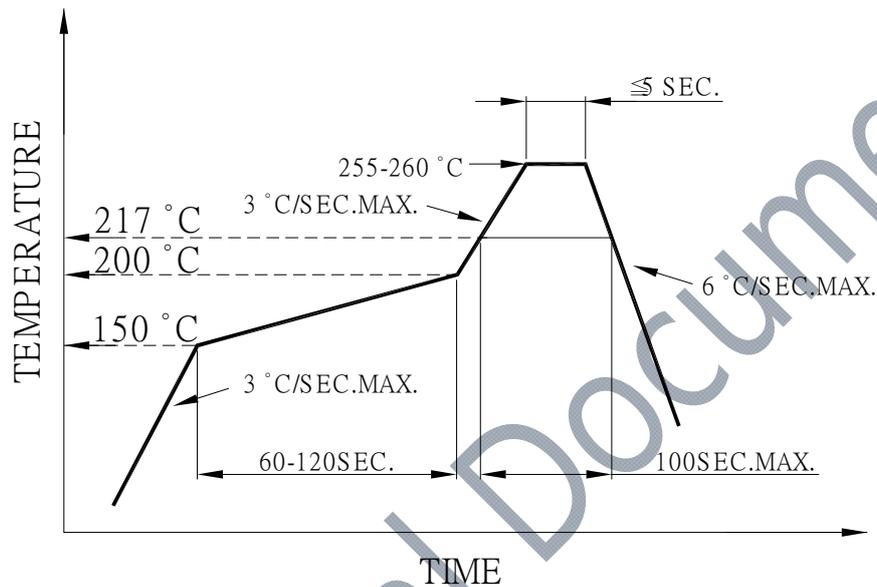
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● **SMT REFLOW SOLDERING INSTRUCTIONS**

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 ≤ 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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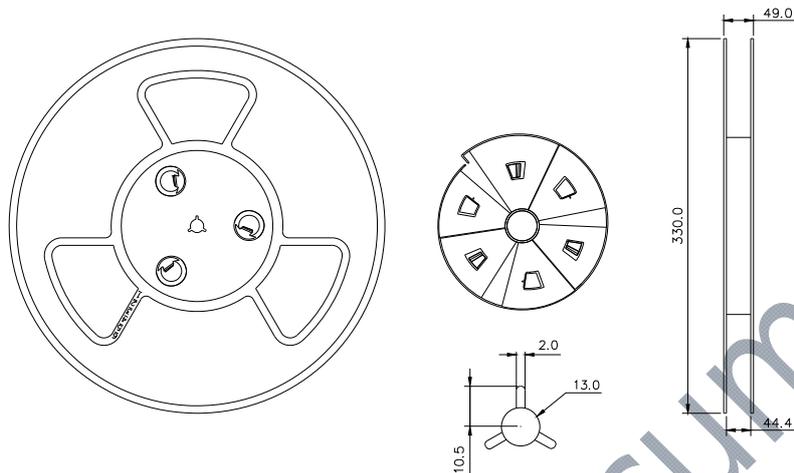
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● REEL DIMENSIONS



● PACKING & LABEL SPECIFICATIONS

| OPS-D5612(1)XX-STT-1.5-BW Top Mount | OPS-D5612(1)XX-STR-1.5-BW Reverse Mount | OPS-D5612(1)XX-STT-1.5-BW OPS-D5612(1)XX-STR-1.5-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) |