



**Opto Plus LED Corp.**  
**0.4" Case Mold Type LED Display**  
**OPD-S4030LE | OPD-S4031LE**

● **EDIT HISTORY**

Version A : Mar. 14, 2024

Preliminary Spec.



# Opto Plus LED Corp.

## 0.4" Case Mold Type LED Display

### OPD-S4030LE | OPD-S4031LE

## ● FEATURES

- 0.4 inch (10.16 mm) Digit Height.
- Low current operation.
- Case mold type.
- 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 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                                 |
|----------|----------------|---------------------------------------------|
|          | OPD-S4030LE-GW | Common Anode   Gray face   White segment    |
|          | OPD-S4031LE-GW | Common Cathode   Gray face   White segment  |
|          | OPD-S4030LE-BW | Common Anode   Black face   White segment   |
|          | OPD-S4031LE-BW | Common Cathode   Black face   White segment |

### RoHS Compliance



### Pb Free.

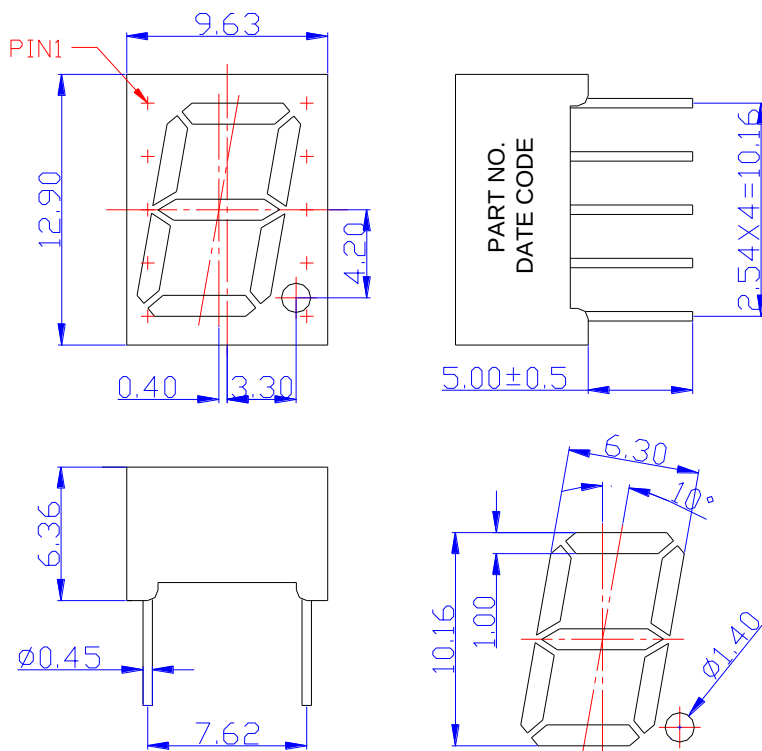


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## 0.4" Case Mold Type LED Display

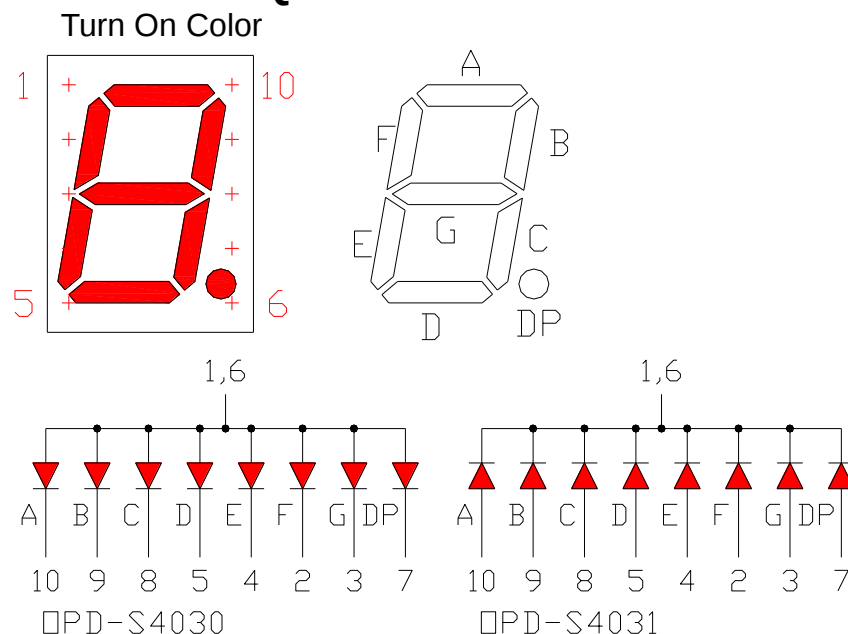
### OPD-S4030LE | OPD-S4031LE

#### MECHANICAL DIMENSIONS



NOTES: Dimension is in millimeters. Tolerance is  $\pm 0.25$  mm unless otherwise noted.

#### TYPICAL INTERNAL EQUIVALENT CIRCUIT



#### ※EMITTED COLOR : SUPER BRIGHT RED



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## 0.4" Case Mold Type LED Display

### OPD-S4030LE | OPD-S4031LE

#### ● LE: SUPER BRIGHT RED (AlGaInP/GaAs)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

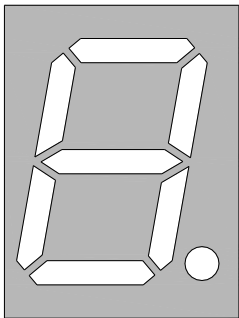
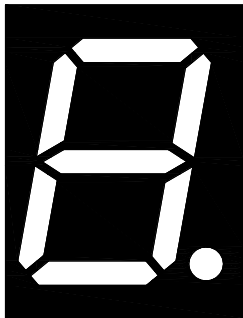
| Parameter                            | Symbol    | Maximum Rating | Unit |
|--------------------------------------|-----------|----------------|------|
| Power dissipation                    | $P_{AD}$  | 48             | mW   |
| Continuous forward current           | $I_{AF}$  | 20             | mA   |
| Peak current (duty cycle 1/10, 1kHz) | $I_{PF}$  | 40             | mA   |
| Reverse voltage                      | $V_R$     | 5              | V    |
| Operating temperature                | $T_{OPR}$ | -40 to +85     | °C   |
| Storage temperature                  | $T_{STG}$ | -40 to +85     | °C   |

#### ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

| Characteristic               | Symbol          | Condition           | Min. | Type. | Max. | Unit          |
|------------------------------|-----------------|---------------------|------|-------|------|---------------|
| Forward Voltage              | $V_F$           | $I_F = 20\text{mA}$ | -    | 2.1   | 2.4  | V             |
| Reverse Current              | $I_R$           | $V_R = 5\text{V}$   | -    | -     | 10   | $\mu\text{A}$ |
| Peak Wavelength              | $\lambda_P$     | $I_F = 20\text{mA}$ | -    | 632   | -    | nm            |
| Dominant Wavelength          | $\lambda_D$     | $I_F = 20\text{mA}$ | 619  | 624   | 629  | nm            |
| Luminous Intensity           | $I_V$           | $I_F = 20\text{mA}$ | -    | 40    | -    | mcd           |
| Spectral Line Half-Bandwidth | $\Delta\lambda$ | $I_F = 20\text{mA}$ | -    | 20    | -    | nm            |

## ● 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                                 |
|----------------|---------------------------------------------|
| OPD-S4030LE-GW | Common Anode   Gray face   White segment    |
| OPD-S4031LE-GW | Common Cathode   Gray face   White segment  |
| OPD-S4030LE-BW | Common Anode   Black face   White segment   |
| OPD-S4031LE-BW | Common Cathode   Black face   White segment |

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

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

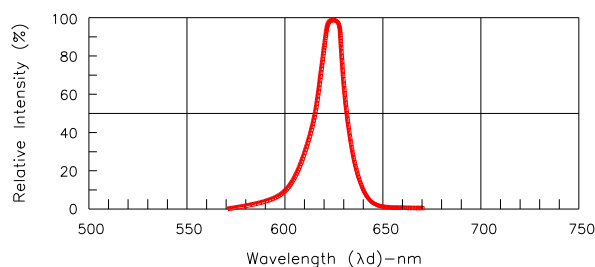


Fig.1-Relative Intensity VS. Wavelength

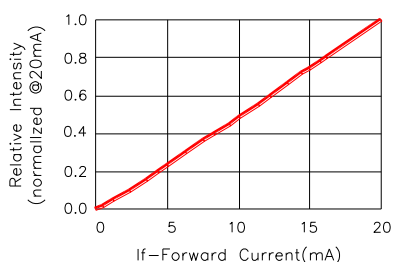


Fig.2-Relative Luminous Intensity vs. Forward Current

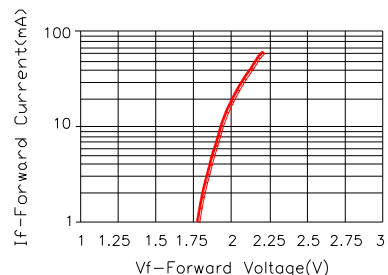


Fig.3-Forward Current vs. Forward Voltage

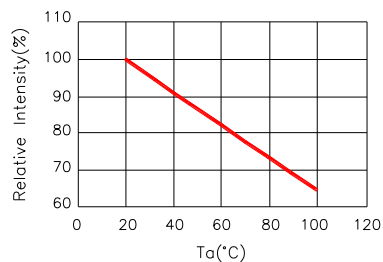


Fig.4-Relative Intensity(@20mA) vs. Ambient Temperature

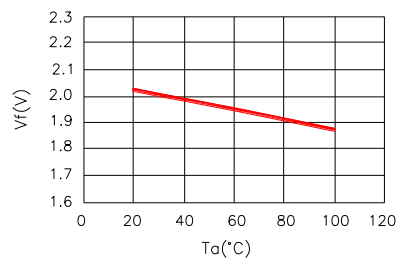


Fig.5-Forward Voltage(@20mA) vs. Ambient Temperature

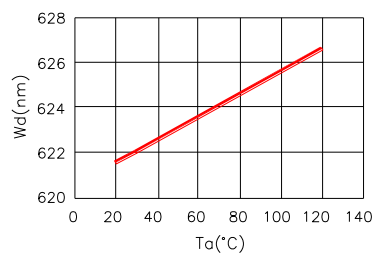


Fig.6-Dominant Wavelength(@20mA)  
VS. Ambient Temperature

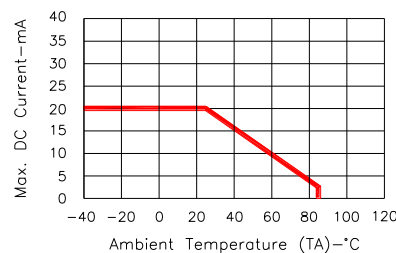
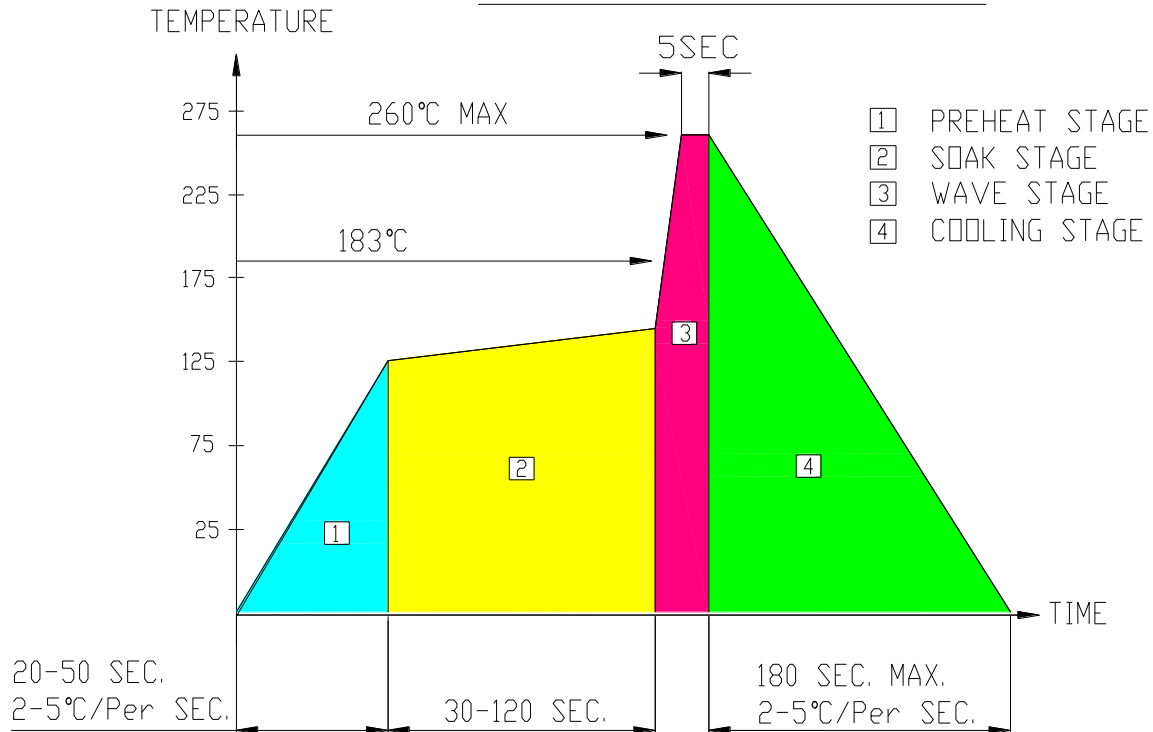


Fig.7-Max. Allowable DC Current  
VS. Ambient Temperature

## ● RECOMMEND SOLDERING PROFILE

### WAVE SOLDER PROFILE



## ● Note:

- Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
- Peak wave soldering temperature between 245°C ~ 225°C for 3 sec (5 sec max)
- No more than one wave soldering pass

## ● 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  $\leq 3$  sec under 350°C.  
 The head of soldering iron cannot touch copper foil.