



**Opto Plus LED Corp.**  
**1.5" Case Mold Type LED Display**  
**OPD-S15012UPG | OPD-S15013UPG**

● **EDIT HISTORY**

Version A : Nov. 04, 2020

Preliminary Spec.



# Opto Plus LED Corp.

## 1.5" Case Mold Type LED Display

### OPD-S15012UPG | OPD-S15013UPG

#### ● FEATURES

- 1.5 inch (38.1 mm) Digit Height.
- Low current operation.
- Case mold type.
- RoHS compliant, Pb Free.

#### ● DESCRIPTION

The device are 1.5 inch (38.1 mm) height single digit 7-segment displays.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Pure Green 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                                 |
|------------------|---|
| OPD-S15012UPG-GW | Common Anode   Gray face   White segment    |
| OPD-S15013UPG-GW | Common Cathode   Gray face   White segment  |
| OPD-S15012UPG-BW | Common Anode   Black face   White segment   |
| OPD-S15013UPG-BW | Common Cathode   Black face   White segment |

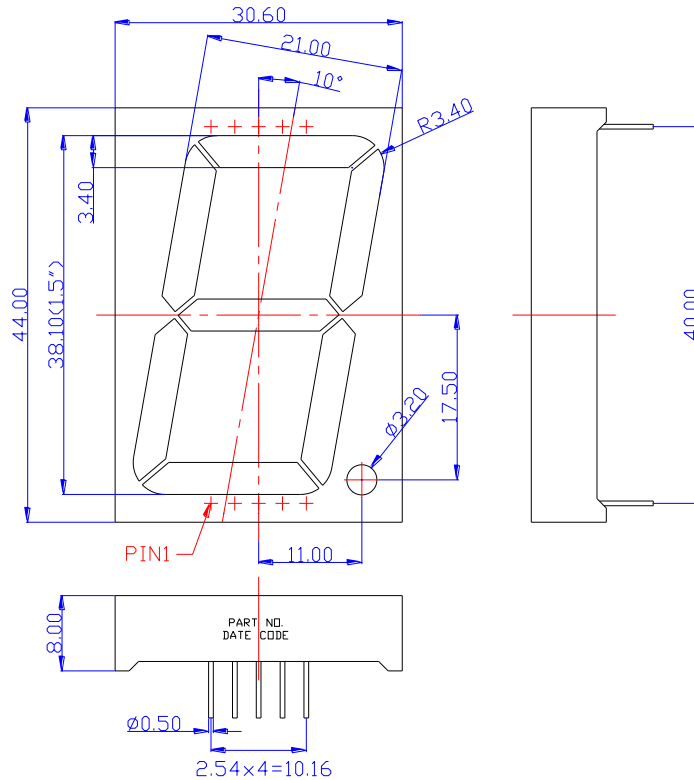
#### RoHS Compliance



#### Pb Free.



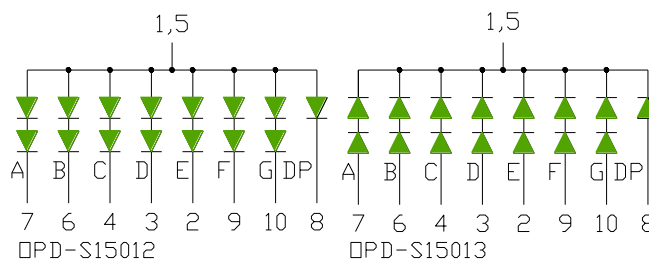
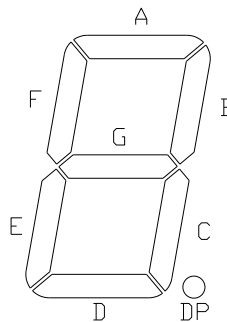
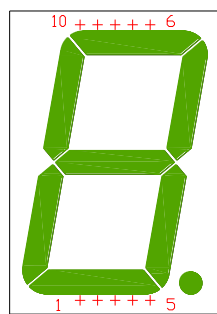
### MECHANICAL DIMENSIONS



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

### TYPICAL INTERNAL EQUIVALENT CIRCUIT

Turn On Color



※EMITTED COLOR : PURE GREEN



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### OPD-S15012UPG | OPD-S15013UPG

● **PG: PURE GREEN (InGaN/GaN)**  
 ABSOLUTE MAXIMUM RATING AT Ta=25°C

| Parameter                            | Symbol           | Maximum Rating | Unit |
|--------------------------------------|------------------|----------------|------|
| Power dissipation per dice           | P <sub>AD</sub>  | 68             | mW   |
| Continuous forward current per dice  | I <sub>AF</sub>  | 20             | mA   |
| Peak current (duty cycle 1/10, 1kHz) | I <sub>PF</sub>  | 60             | mA   |
| Reverse voltage                      | V <sub>R</sub>   | 5              | V    |
| Operating temperature                | T <sub>OPR</sub> | -40 to +85     | °C   |
| Storage temperature                  | T <sub>STG</sub> | -40 to +85     | °C   |

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

| Characteristic                   | Symbol         | Condition            | Min. | Type.        | Max.         | Unit |
|----------------------------------|----------------|----------------------|------|--------------|--------------|------|
| Forward voltage per Segment (DP) | V <sub>F</sub> | I <sub>F</sub> =20mA | -    | 5.6<br>(2.8) | 6.4<br>(3.2) | V    |
| Reverse Current per dice         | I <sub>R</sub> | V <sub>R</sub> =5V   | -    | -            | 10           | μA   |
| Dominant Wavelength              | λ <sub>D</sub> | I <sub>F</sub> =20mA | 515  | 525          | 530          | nm   |
| Luminous Intensity               | I <sub>V</sub> | I <sub>F</sub> =20mA | -    | 400          | -            | mcd  |
| Spectral Line Half-Bandwidth     | Δλ             | I <sub>F</sub> =20mA | -    | 30           | -            | nm   |



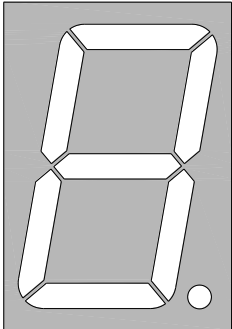
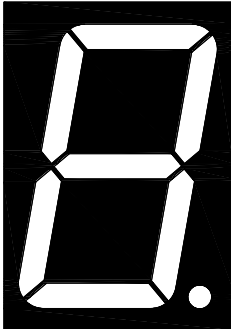
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## 1.5" Case Mold Type LED Display

### OPD-S15012UPG | OPD-S15013UPG

#### ● 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-S15012UPG-GW | Common Anode   Gray face   White segment    |
| OPD-S15013UPG-GW | Common Cathode   Gray face   White segment  |
| OPD-S15012UPG-BW | Common Anode   Black face   White segment   |
| OPD-S15013UPG-BW | Common Cathode   Black face   White segment |



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## 1.5" Case Mold Type LED Display

### OPD-S15012UPG | OPD-S15013UPG

#### ● UPG: PURE GREEN (InGaN/GaN) CURVE

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

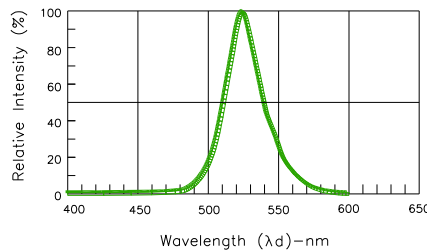


Fig. 1 Relative Intensity VS. Wavelength

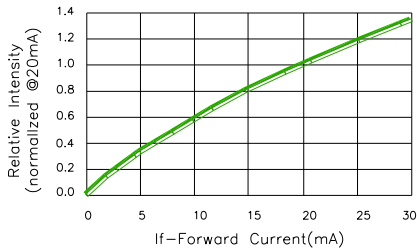


Fig.2-Relative Luminous Intensity vs. Forward Current

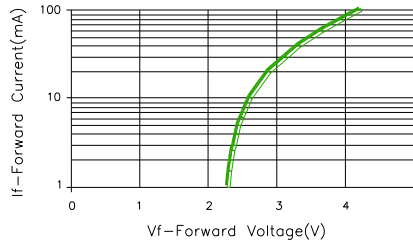


Fig.3-Forward Current vs. Forward Voltage

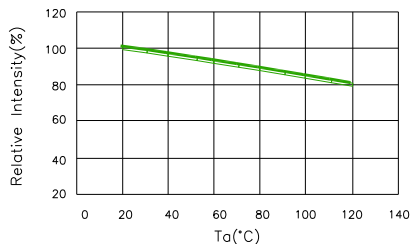


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

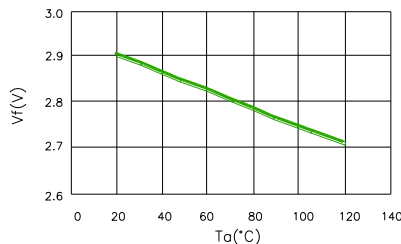


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

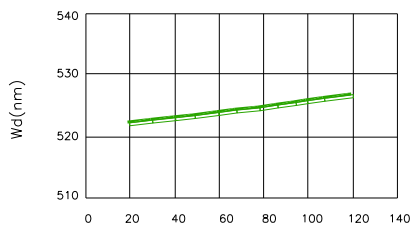


Fig.6-Dominant Wavelength(@20mA)  
VS. Ambient Temperature

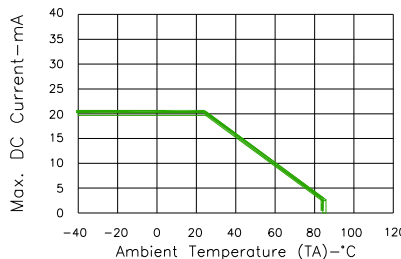
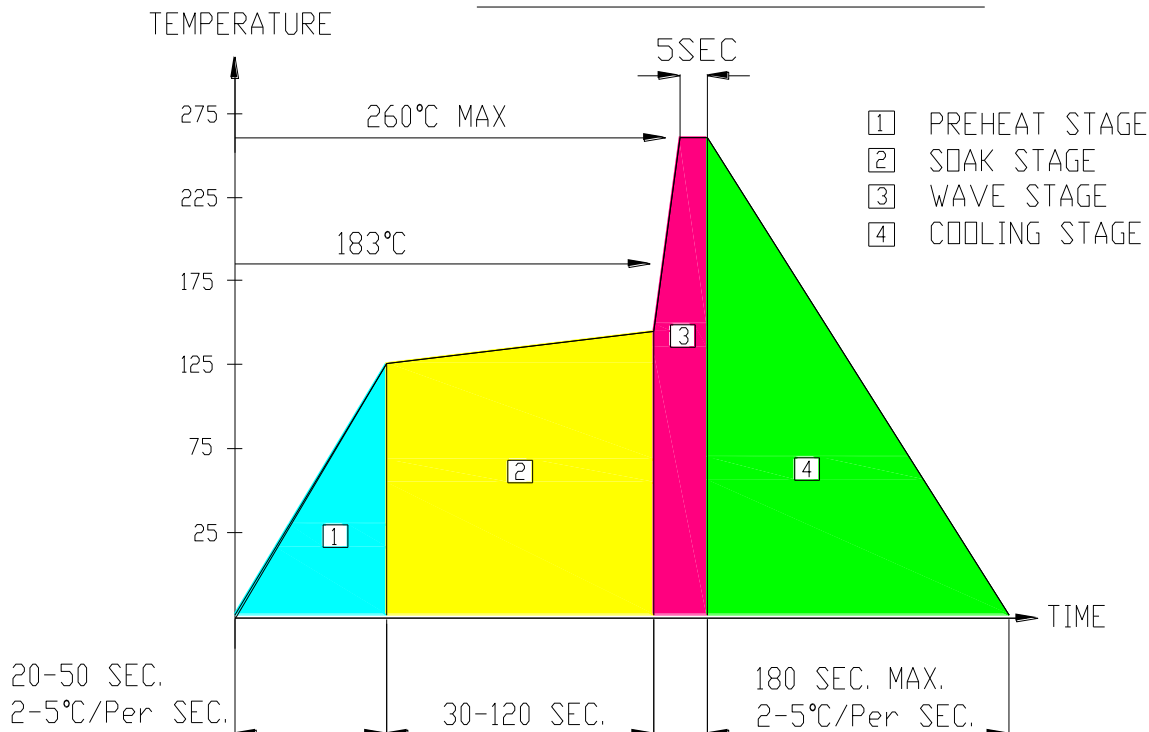


Fig.7-Max. Allowable DC Current  
VS. Ambient Temperature

## ● 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.