



Opto Plus LED Corp.
0.2” SMD Type LED Display
OPS-S2010SPG-GW
OPS-S2011SPG-GW

● **EDIT HISTORY**

Version A: Sep. 01, 2015

Preliminary spec.

| Manufacture | Examination | Approving |
|-------------|-------------|-----------|
| | | |



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● **FEATURES**

- 0.20 inch (5.08 mm) Digit Height.
- SMD type.
- Low current operation.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The OPS-S2010SPG-GW & OPS-S2011SPG-GW are 0.20 inch (5.08 mm) height Single digit 7-segment displays.

This device utilizes Pure Green chip which are made from InGaN on a transparent GaN, substrate.

The display has Gray face, White segment.

● **DEVICE**

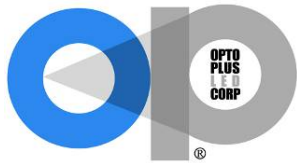
| PART NO | DESCRIPTION |
|-----------------|----------------|
| OPS-S2010SPG-GW | Common Anode |
| OPS-S2011SPG-GW | Common Cathode |

RoHS Compliance



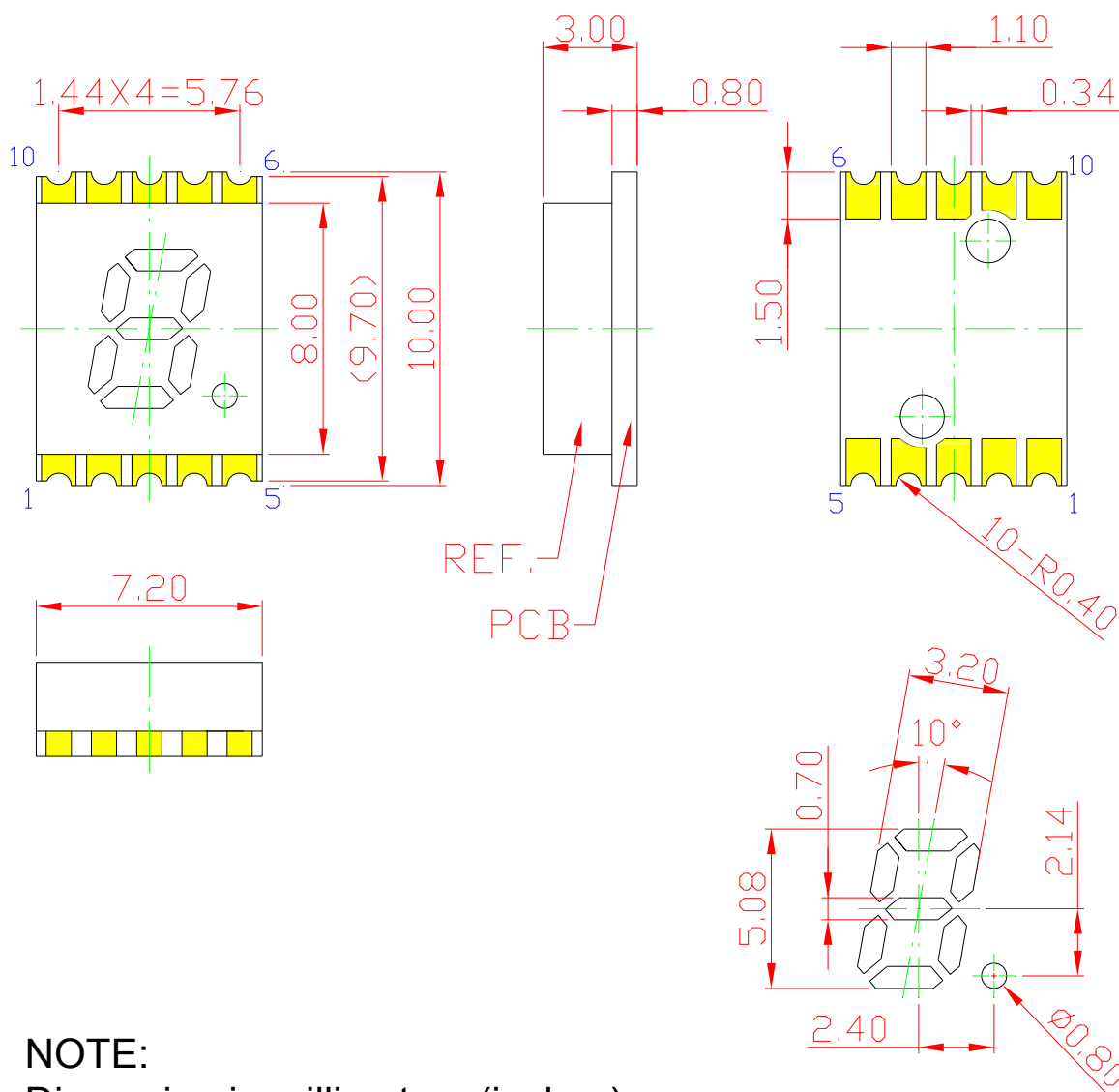
Pb free.





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● **MECHANICAL DIMENSIONS**



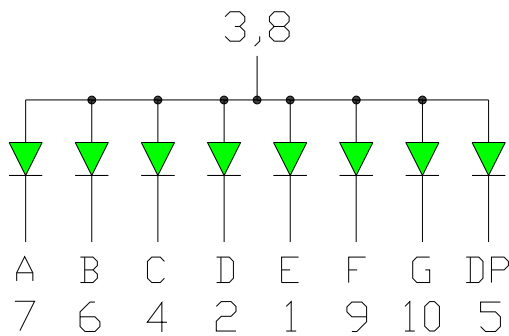
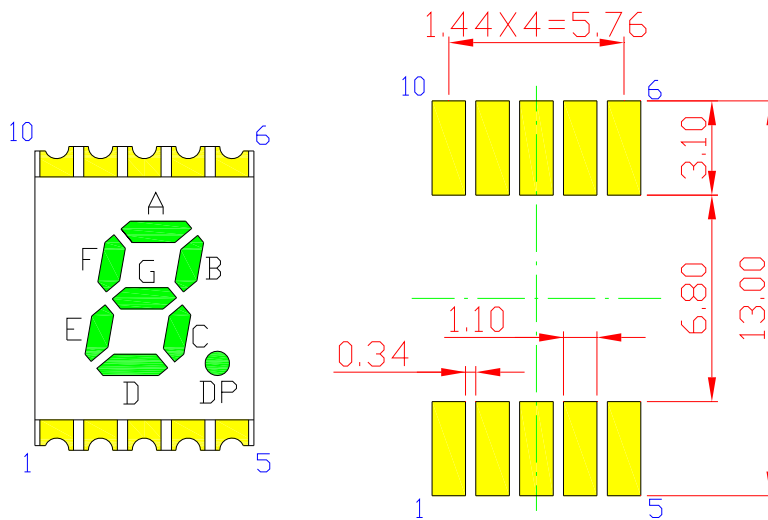
NOTE:
 Dimension in millimeters (inches),
 and tolerances are $\pm 0.25\text{mm}$ (.01") specified.



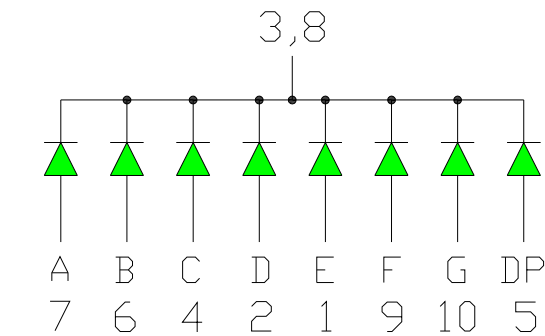
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● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**

Recommended Soldering Pattern



OPS-S2010SPG-GW
(Common Anode)



OPS-S2011SPG-GW
(Common Cathode)



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● **SPG: PURE GREEN (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

| Parameter | Symbol | Maximum Rating | Unit |
|--------------------------------------|-----------|----------------|---------|
| Power dissipation | P_{AD} | 120 | mW |
| Derating liner from 25°C | - | 0.3 | mA / °C |
| Continuous forward current | I_{AF} | 30 | mA |
| Peak current (duty cycle 1/10, 1kHz) | I_{PF} | 100 | 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 | $I_F = 20\text{mA}$ | - | 2.8 | 3.8 | V |
| Reverse Current, (Per Dice) | I_R | $V_R = 8\text{V}$ | - | - | 10 | μA |
| Dominant Wavelength | λ_D | $I_F = 20\text{mA}$ | 515 | - | 530 | nm |
| Luminous Intensity | I_v | $I_F = 20\text{mA}$ | 50 | - | 130 | mcd |
| Spectral radiation bandwidth | $\Delta\lambda$ | $I_F = 20\text{mA}$ | - | 30 | - | nm |



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● **SPG: BIN GRADE (Unit : mcd) 20mA**

| PURE GREEN | O | P | Q |
|------------|-------------|--------------|---------------|
| | 50.0 – 75.0 | 75.1 – 100.0 | 100.1 – 130.0 |

● **SPG: HUE GRADE (λ_D : nm)**

| 1 | 2 | 3 |
|---------------|---------------|---------------|
| 515.0 – 520.0 | 520.1 – 525.0 | 525.1 – 530.0 |

● **AVAILABLE BIN / HUE TABLE**

| | | |
|----|----|----|
| O1 | P1 | Q1 |
| O2 | P2 | Q2 |
| O3 | P3 | Q3 |



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● SPG: PURE GREEN (InGaN/GaN) CURVE

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

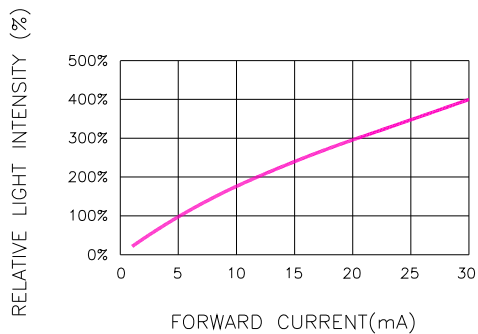


Fig.1 RELATIVE LIGHT INTENSITY VS. FORWARD CURRENT

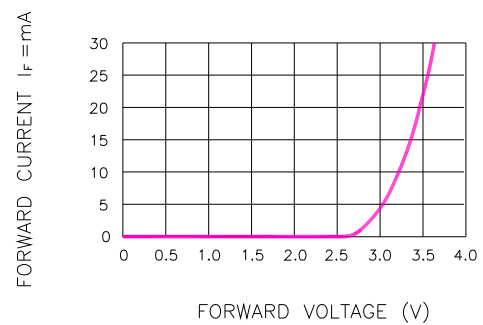


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

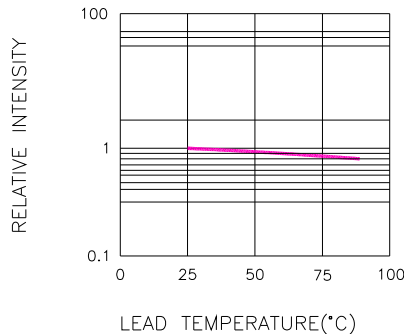


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

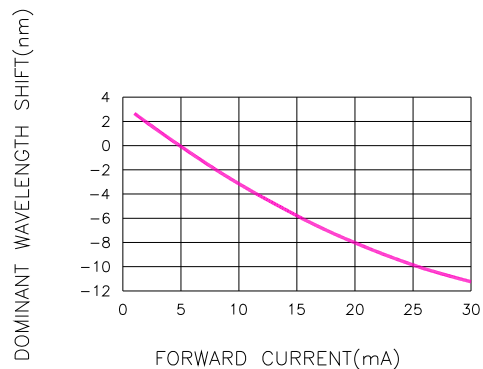


Fig.4 DOMINANT WAVELENGTH SHIFT VS. FORWARD CURRENT

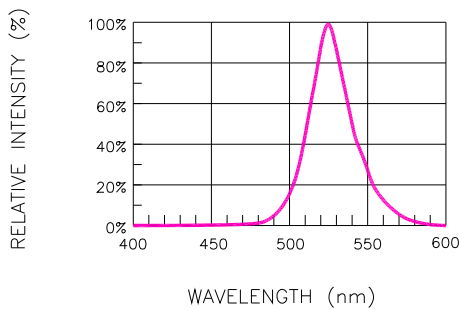


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

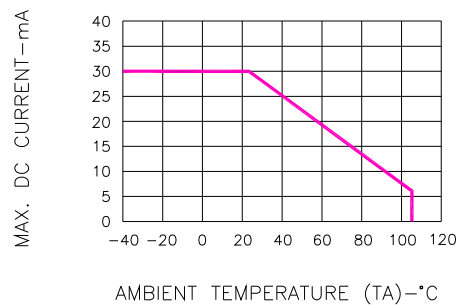


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

Version: A Date: 09/01/2015

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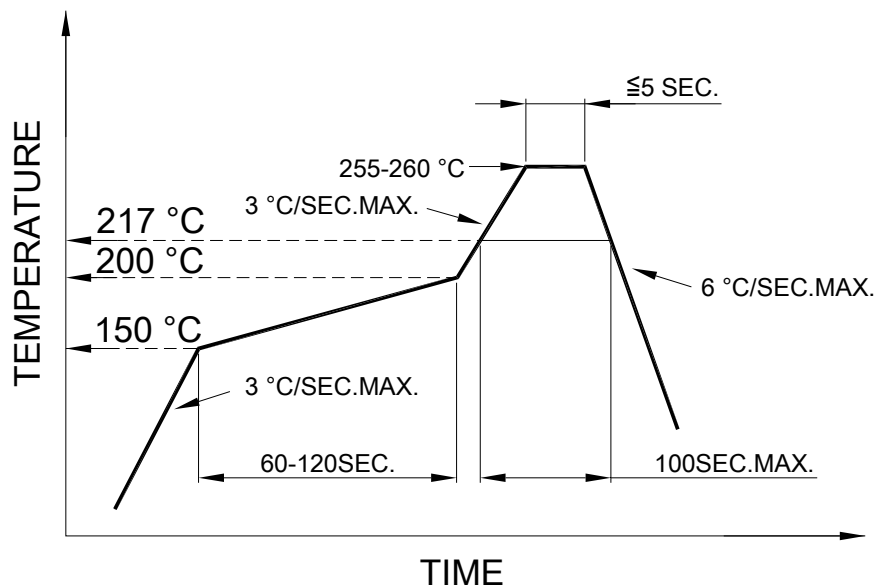


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

SMT Soldering Profile

Pb free reflow soldering Profile



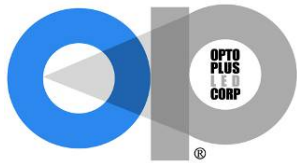
- We recommend the reflow temperature 245°C (+/- 5°C).
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

● **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.



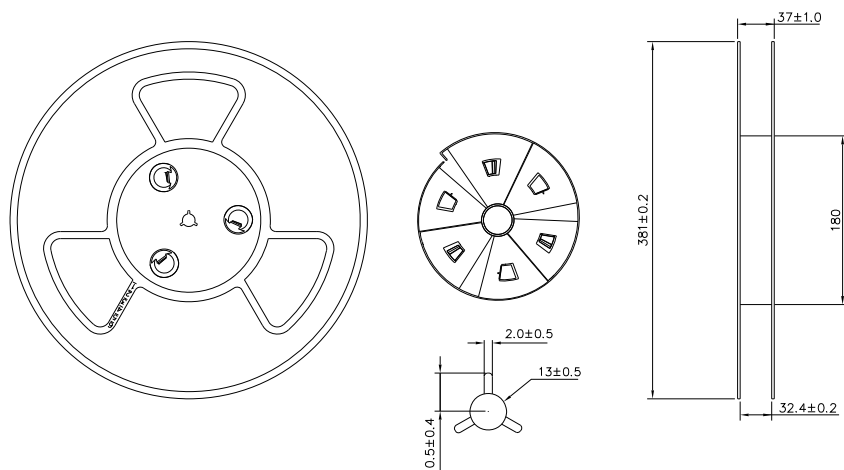
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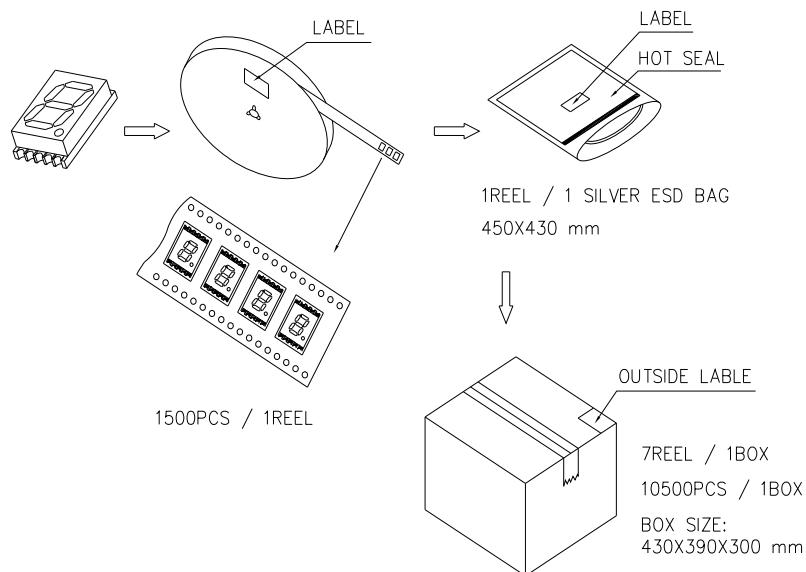
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● REEL DIMENSIONS



● PACKING & LABEL SPECIFICATIONS



● 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) |