



**Opto Plus LED Corp.**  
**0.28" SMD Type LED Display**  
**OPS-S2812SPG-GW**  
**OPS-S2811SPG-GW**

● **EDIT HISTORY**

Version A: Oct. 28, 2015

Preliminary Spec.

Manufacture	Examination	Approving



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**OPS-S2812SPG-GW**  
**OPS-S2811SPG-GW**

● **FEATURES**

- 0.28 inch (7.00 mm) Digit Height.
- SMD type.
- Low current operation.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The OPS-S2811SPG-GW & OPS-S2812SPG-GW are 0.28 inch (7.00 mm) height Single digit 7-segment displays.

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

The display has Gray face, White segment.

● **DEVICE**

PART NO	DESCRIPTION
OPS-S2812SPG-GW	Common Anode
OPS-S2811SPG-GW	Common Cathode

**RoHS Compliance**



**Pb free.**



Version: A Date: 10/28/2015

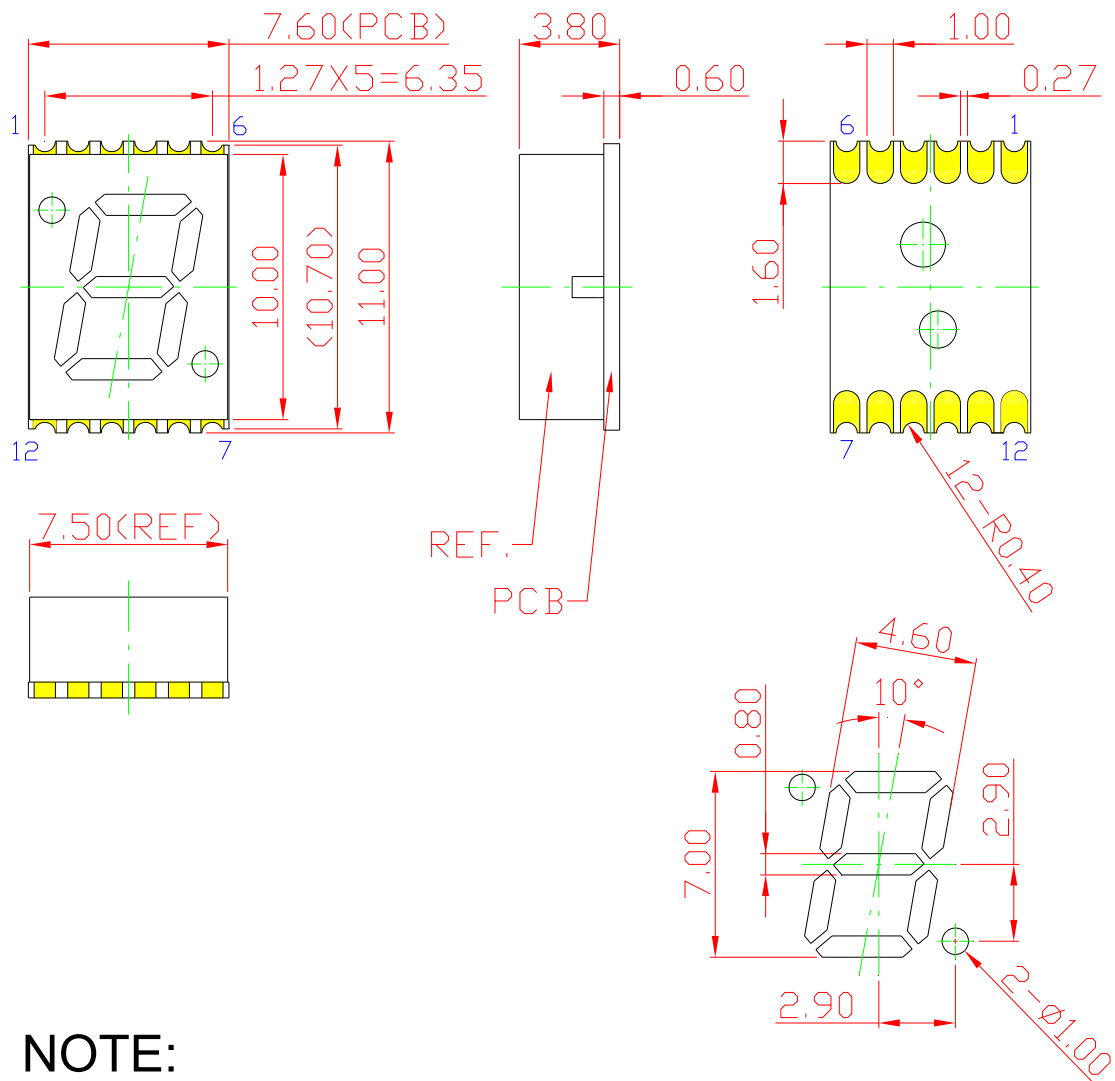
Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)

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● **MECHANICAL DIMENSIONS**



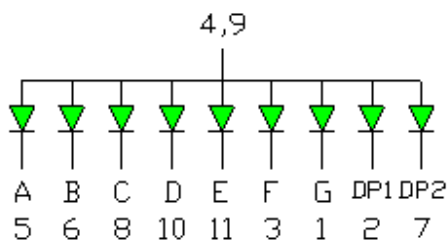
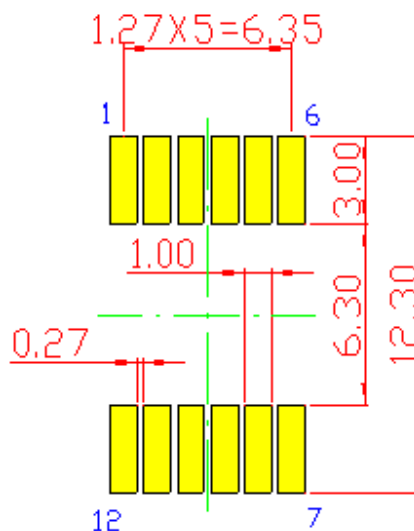
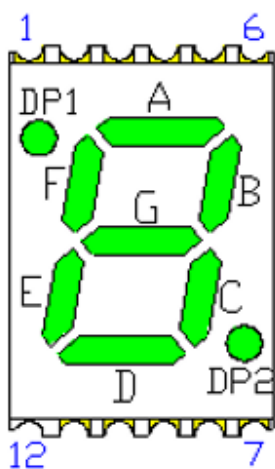
**NOTE:**  
Dimension in millimeters (inches),  
and tolerances are  $\pm 0.25\text{mm}$  (.01") specified.



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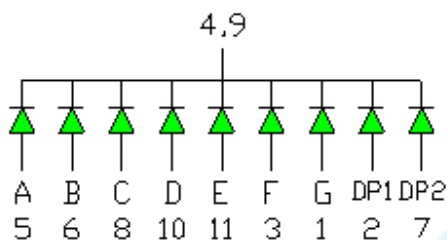
● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**

**Recommended Soldering Pattern**



12 PIN No Connect

**OPS-S2812SPG-GW (Common Anode)**



12 PIN No Connect

**OPS-S2811SPG-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 <sub>AD</sub>	120	mW
Derating liner from 25°C	-	0.3	mA / °C
Continuous forward current	I <sub>AF</sub>	30	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	100	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	-	3.2	4.0	V
Reverse Current, (Per Dice)	I <sub>R</sub>	V <sub>R</sub> = 8V	-	-	10	μA
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> = 20mA	515	-	530	nm
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> = 20mA	50	-	185	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> = 20mA	-	30	-	nm



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

PURE GREEN	P	Q	R
	50.0 – 95.0	95.1 – 140.0	140.1 – 185.0

● **SPG: HUE GRADE ( $\lambda_D$  : nm)**

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

● **AVAILABLE BIN / HUE TABLE**

P1	Q1	R1
P2	Q2	R2
P3	Q3	R3



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## 0.28" SMD Type LED Display

### OPS-S2812SPG-GW

### OPS-S2811SPG-GW

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

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

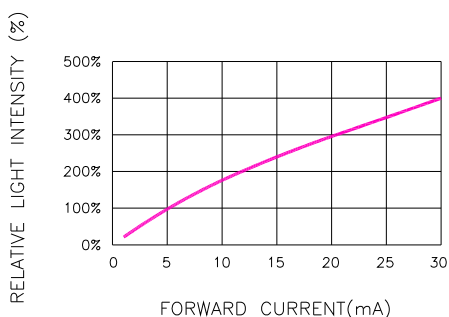


Fig.1 RELATIVE LIGHT INTENSITY VS. FORWARD CURRENT

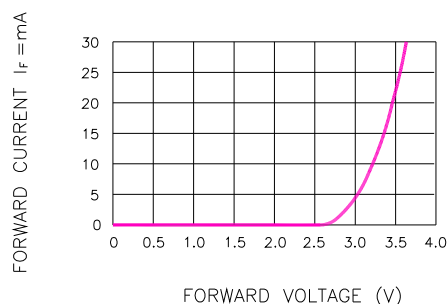


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

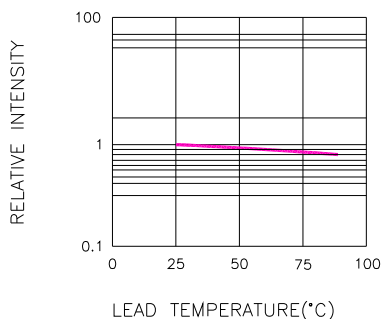


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

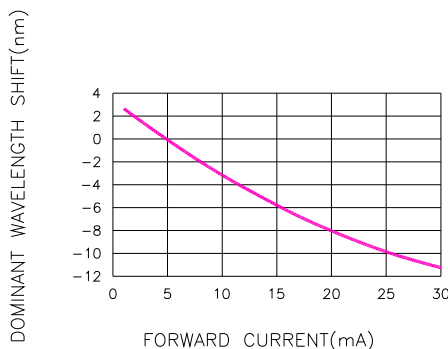


Fig.4 DOMINANT WAVELENGTH SHIFT VS. FORWARD CURRENT

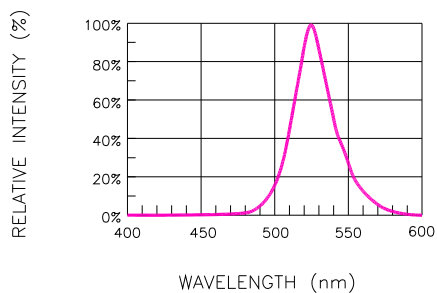


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

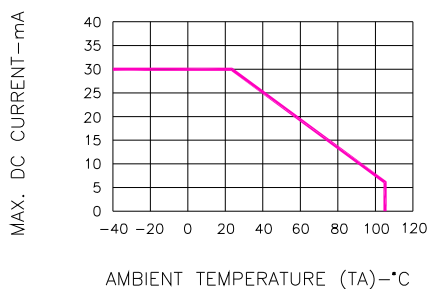


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

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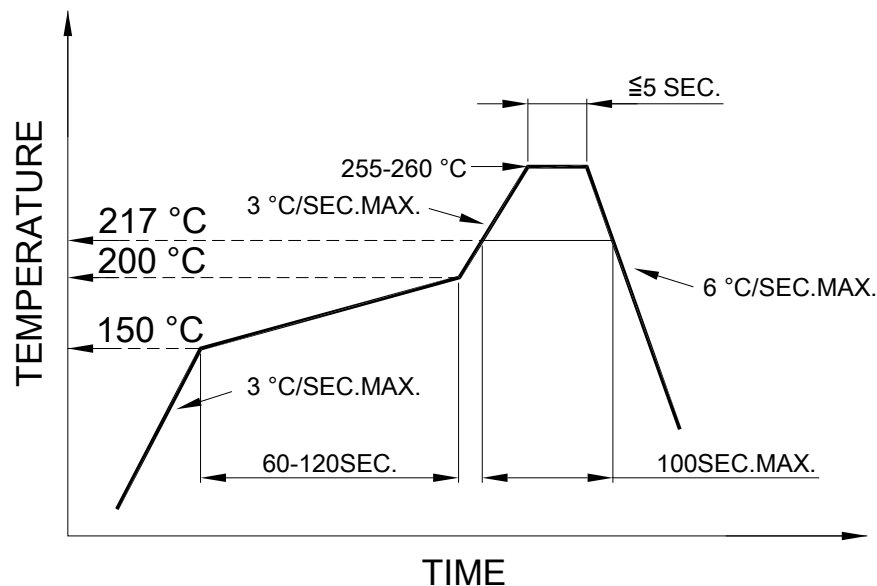


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

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.

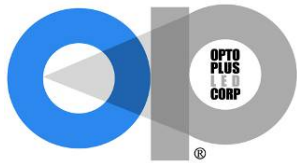
● **SOLDERING IRON**

Basic spec is  $\leq 4$  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.





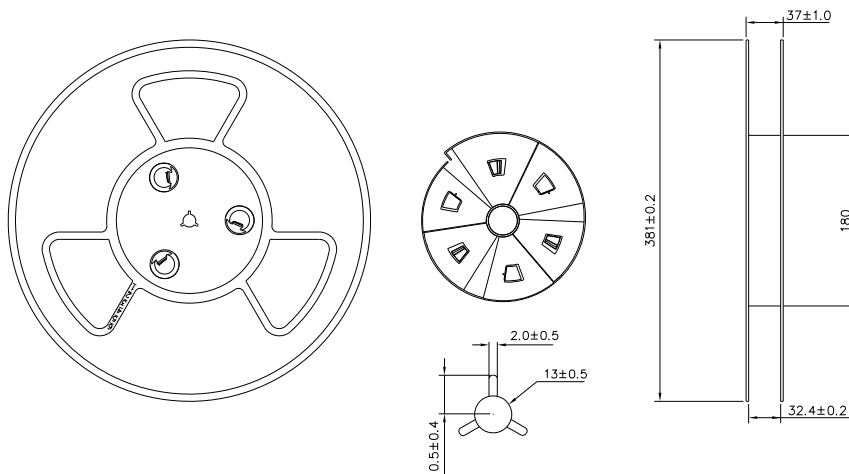
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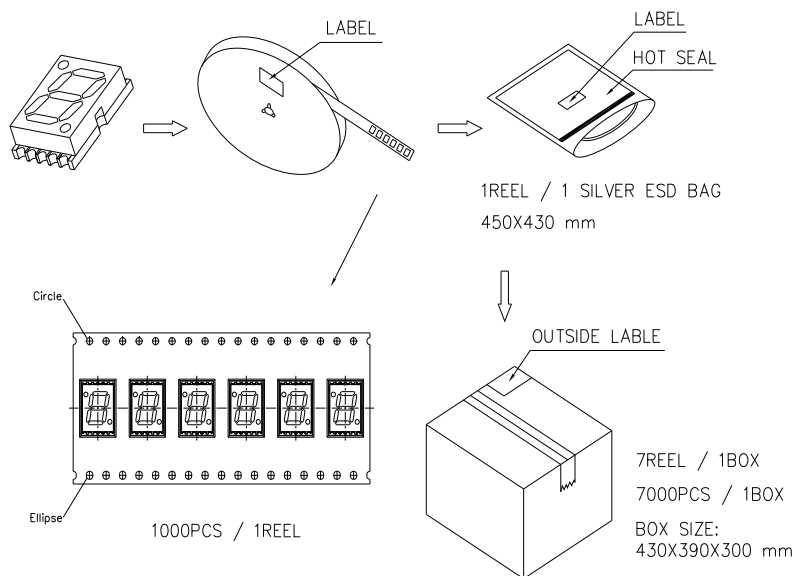
### OPS-S2812SPG-GW

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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)

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