

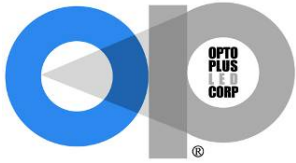
Opto Plus LED Corp.
0.4" SMD Type LED Display
OPS-D4013SPG-GW
OPS-D4014SPG-GW

● **EDIT HISTORY**

Version A: Oct. 23, 2015

Preliminary Spec.

Manufacture	Examination	Approving



Opto Plus LED Corp.
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OPS-D4014SPG-GW

● **FEATURES**

- 0.40 inch (10.16 mm) Digit Height.
- Low current operation.
- SMD type.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The OPS-D4013SPG-GW and OPS-D4014SPG-GW are 0.40 inch (10.16 mm) height Dual digit 7-segment displays.

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

The display has Gray face, White segment.

● **DEVICE**

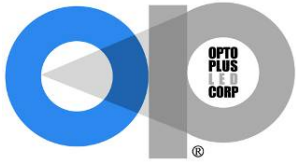
PART NO	DESCRIPTION
OPS-D4014SPG-GW	Common Anode
OPS-D4013SPG-GW	Common Cathode

RoHS Compliance



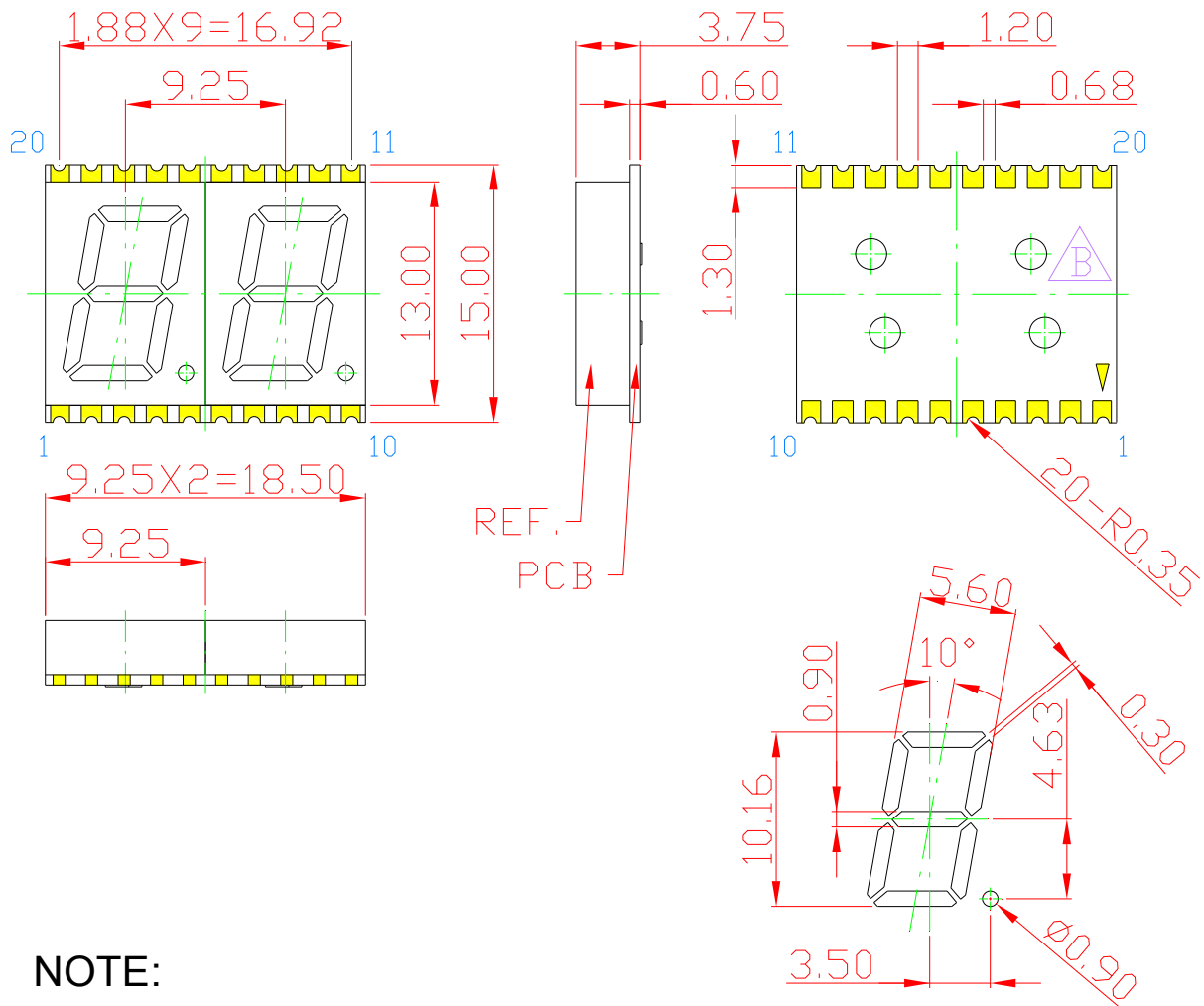
Pb free.



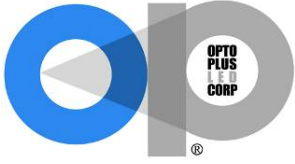


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● **MECHANICAL DIMENSIONS**



NOTE:
 Dimension in millimeters (inches),
 and tolerances are ± 0.25 mm (.01") specified.



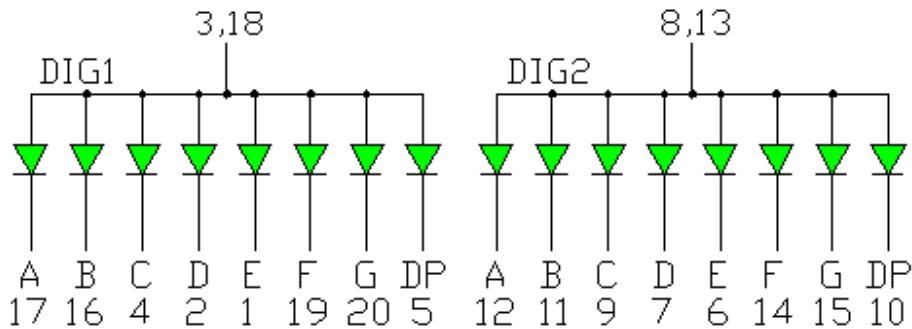
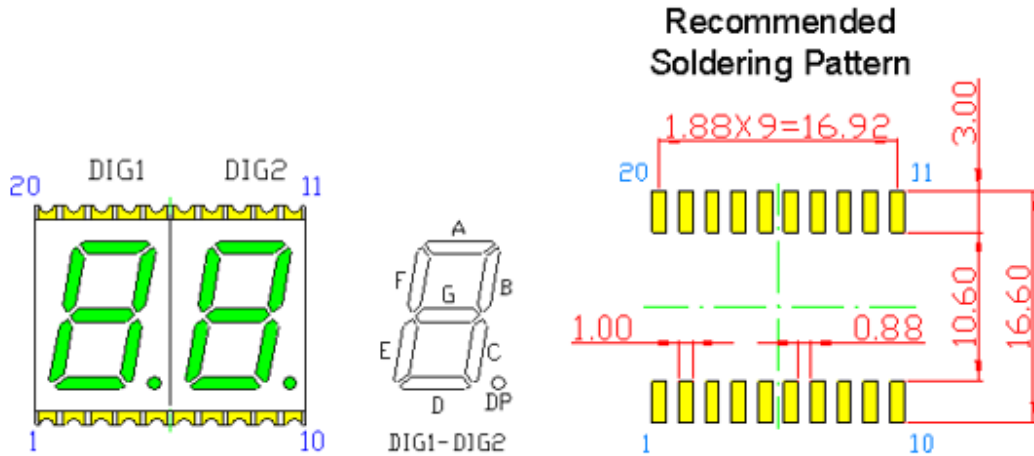
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0.4" SMD Type LED Display

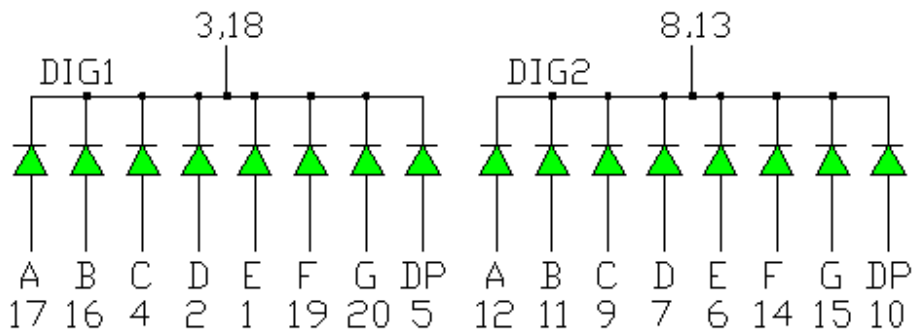
OPS-D4013SPG-GW

OPS-D4014SPG-GW

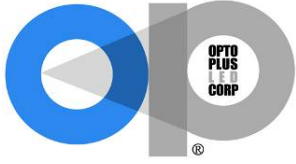
● TYPICAL INTERNAL EQUIVALENT CIRCUIT



OPS-D4014SPG-GW (Common Anode)



OPS-D4013SPG-GW (Common Cathode)



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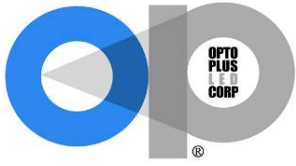
● **SB: SUPER BRIGHT BLUE (InGaN/GaN)**

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	$I_F = 20\text{mA}$	70	-	300	mcd
Spectral radiation bandwidth	$\Delta\lambda$	$I_F = 20\text{mA}$	-	30	-	nm



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

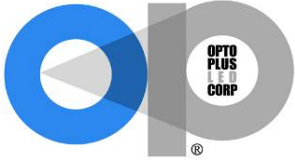
PURE GREEN	Q	R	S
	70.0 – 140.0	140.1 – 220.0	220.1 – 300.0

● **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**

Q1	R1	S1
Q2	R2	S2
Q3	R3	S3



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● SPG: PURE GREEN (InGaN/GaN) CURVE

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

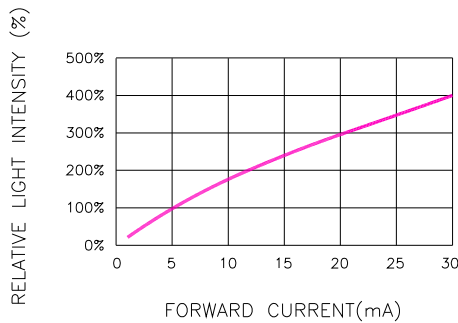


Fig.1 RELATIVE LIGHT INTENSITY VS. FORWARD CURRENT

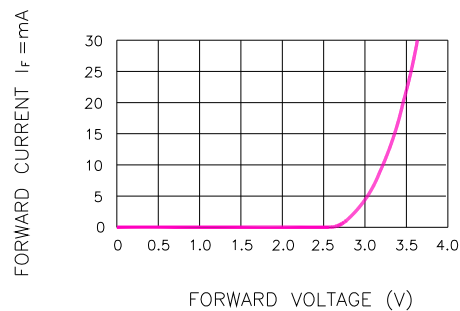


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

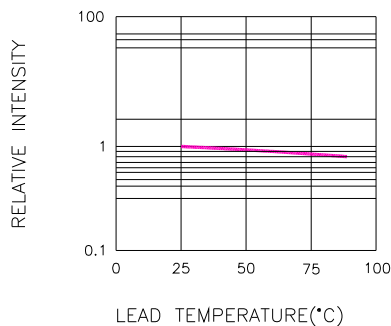


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

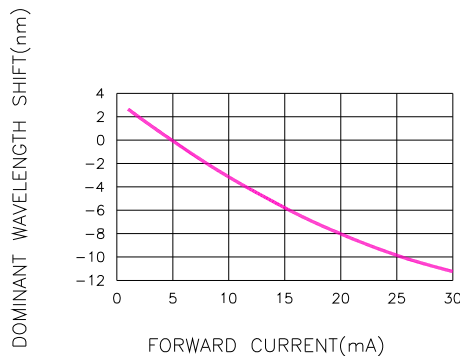


Fig.4 DOMINANT WAVELENGTH SHIFT VS. FORWARD CURRENT

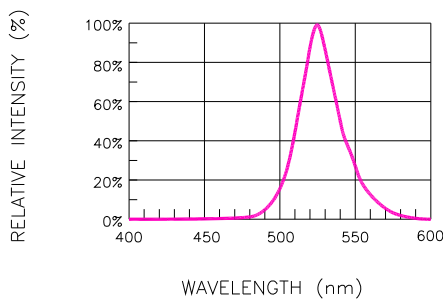


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

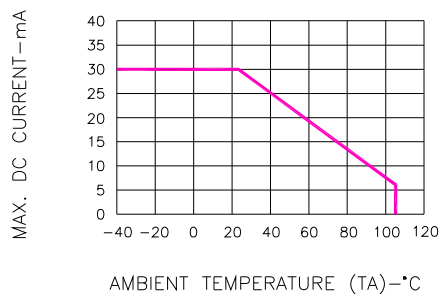
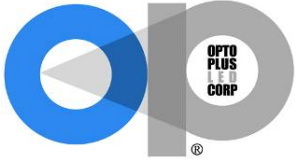


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE



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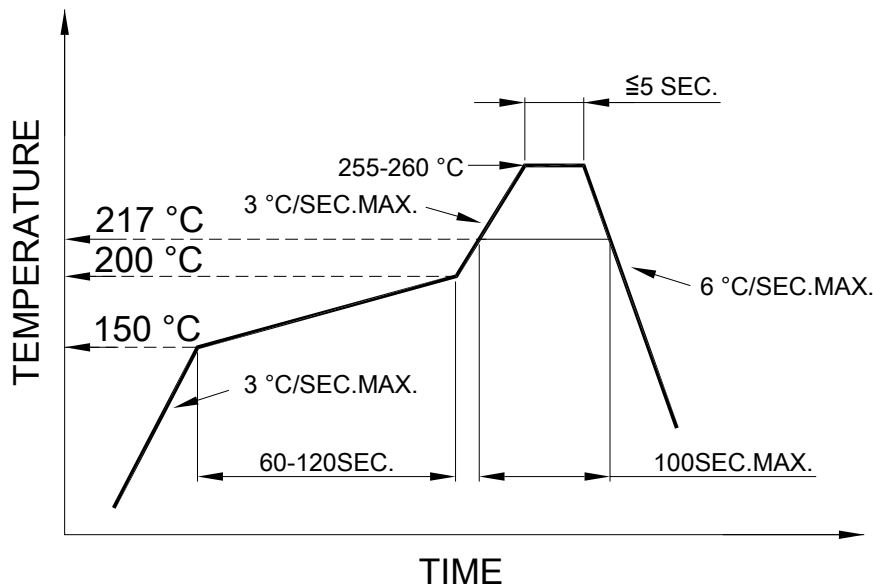
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● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



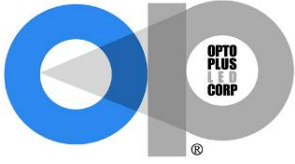
- We recommend the reflow temperature 245°C (+/- 5°C).
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

● SOLDERING IRON

Basic spec is $\le 4\text{ sec}$ 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.



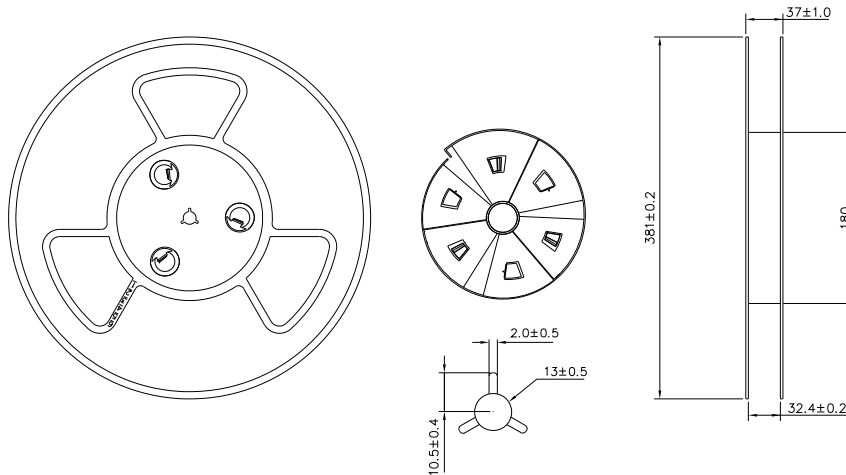
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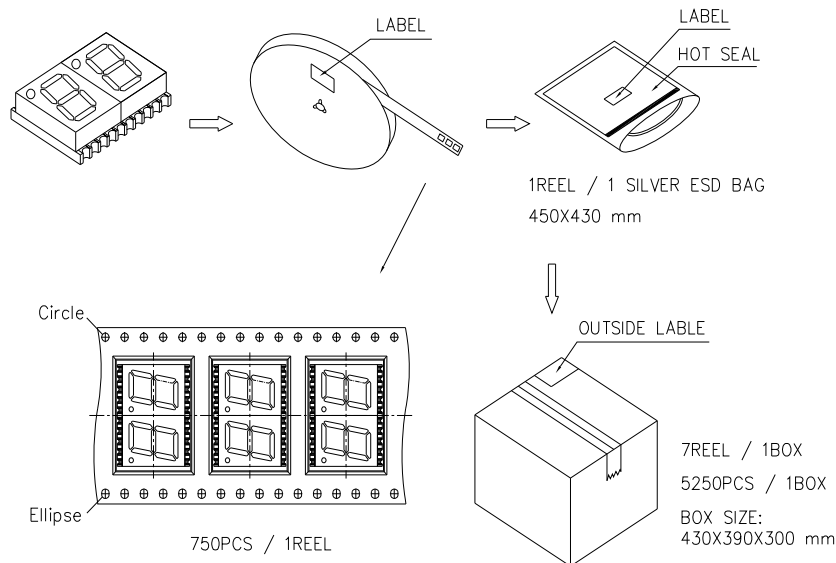
OPS-D4013SPG-GW

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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)