

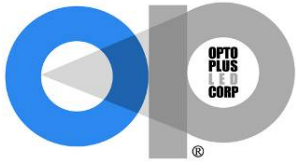
Opto Plus LED Corp.
0.4" SMD Type LED Display
OPS-D4013SB-GW
OPS-D4014SB-GW

● **EDIT HISTORY**

Version A: Oct. 23, 2015

Preliminary Spec.

Manufacture	Examination	Approving



Opto Plus LED Corp.
0.4" SMD Type LED Display
OPS-D4013SB-GW
OPS-D4014SB-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-D4013SB-GW and OPS-D4014SB-GW are 0.40 inch (10.16 mm) height Dual digit 7-segment displays.

This device utilizes Super Bright Blue LED chip which are made from InGaN

On a transparent GaN substrate.

The display has Gray face, White segment.

● **DEVICE**

PART NO	DESCRIPTION
OPS-D4014SB-GW	Common Anode
OPS-D4013SB-GW	Common Cathode

RoHS Compliance



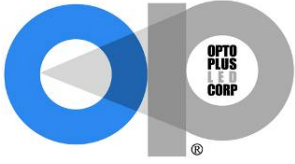
Pb free.



Version: A Date: 10/23/2015

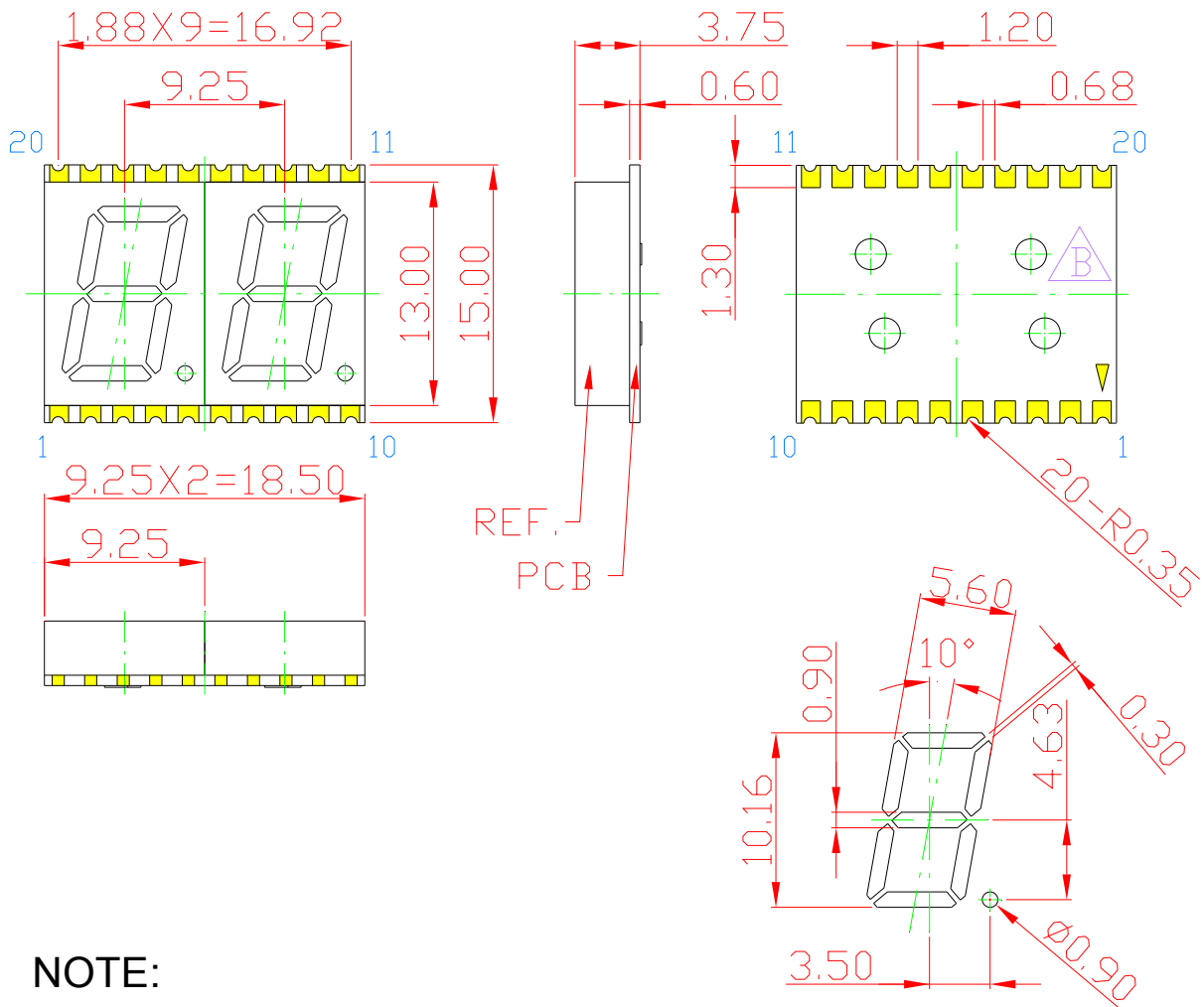
Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)

Website: www.opled.com.tw E-mail: sales@opled.com.tw Tel: 886-2-2222-5698 Fax: 886-2-2222-2566

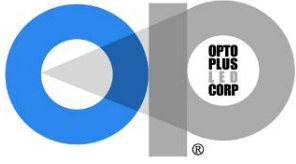


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● **MECHANICAL DIMENSIONS**

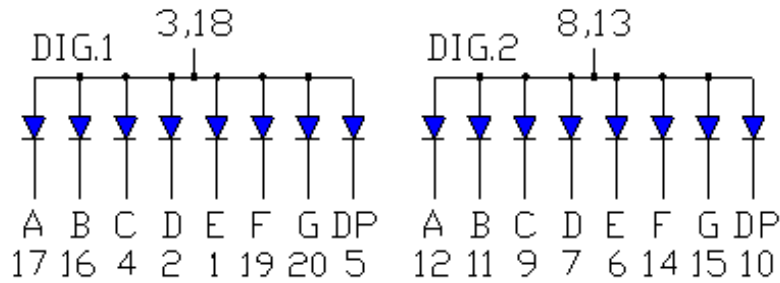
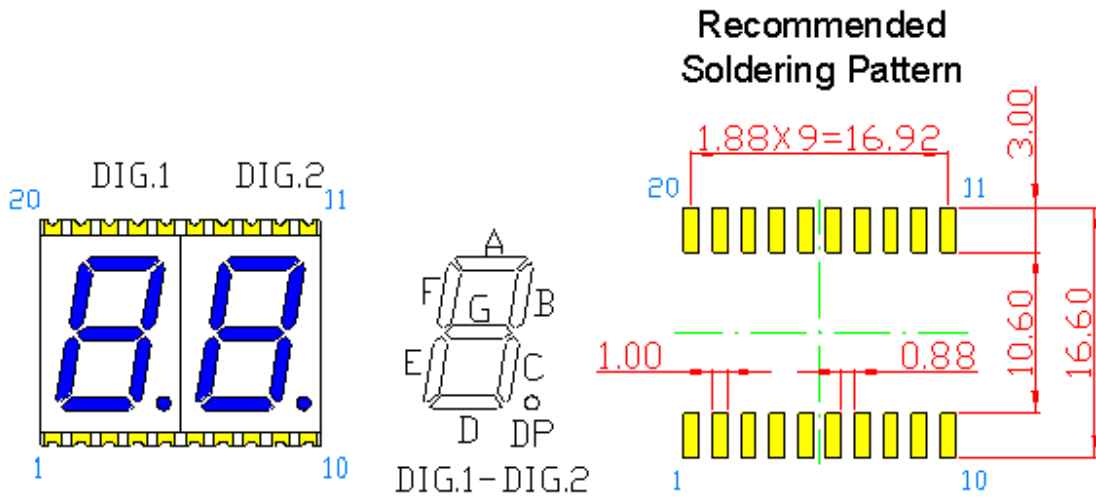


NOTE:
 Dimension in millimeters (inches),
 and tolerances are $\pm 0.25\text{mm}$ (.01") specified.

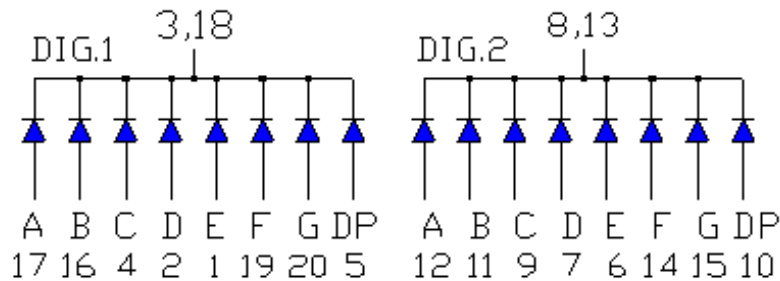


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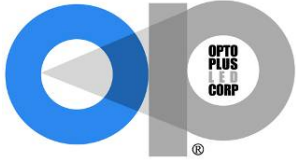
● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**



OPS-D4014SB-GW (Common Anode)



OPS-D4013SB-GW (Common Cathode)



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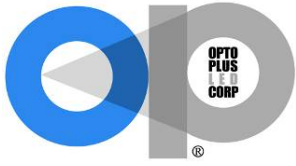
● **SB: SUPER BRIGHT BLUE (InGaN/GaN)**

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	$I_F = 20\text{mA}$	-	3.1	4.0	V
Reverse Current, (Per Dice)	I_R	$V_R = 8\text{V}$	-	-	10	μA
Dominant Wavelength	λ_D	$I_F = 20\text{mA}$	464	-	474	nm
Luminous Intensity	I_V	$I_F = 20\text{mA}$	30	-	90	mcd
Spectral radiation bandwidth	$\Delta\lambda$	$I_F = 20\text{mA}$	-	30	-	nm



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- SB: BIN GRADE (Unit : mcd) 20mA

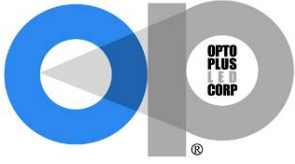
Super Bright Blue	L	M	N
	30.0 ~ 50.0	50.1 ~ 70.0	70.1~90.0

- SB: HUE GRADE (λD : nm)

1	2	3
464.0 ~ 467.0	467.1 ~ 470.0	470.1~ 474.0

- AVAILABLE BIN / HUE TABLE

L1	M1	N1
L2	M2	N2
L3	M3	N3



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

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

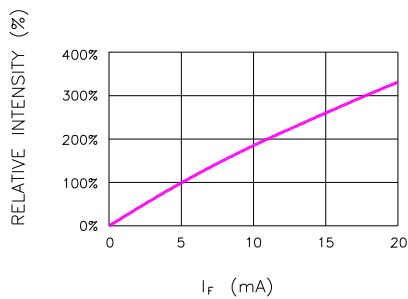


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

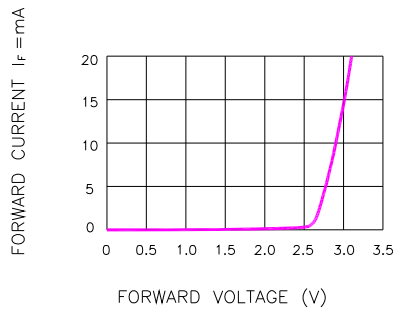


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

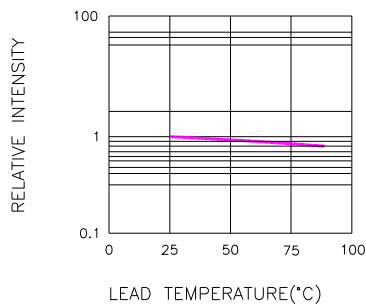


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

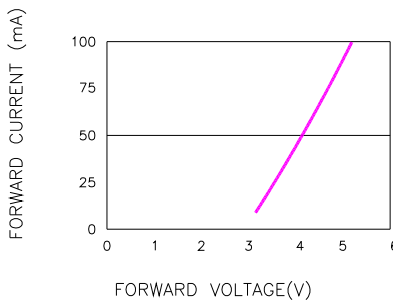


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

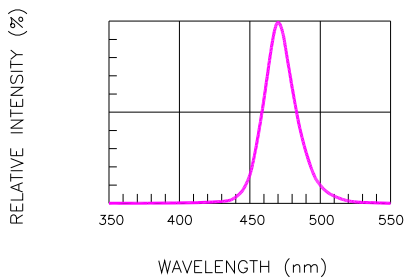


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

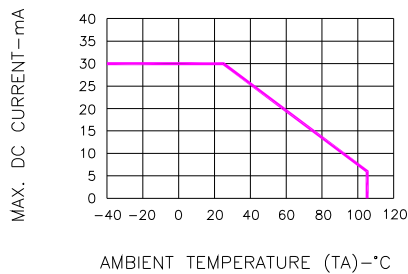
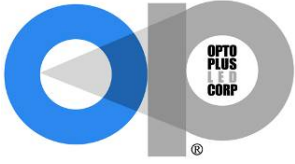


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE



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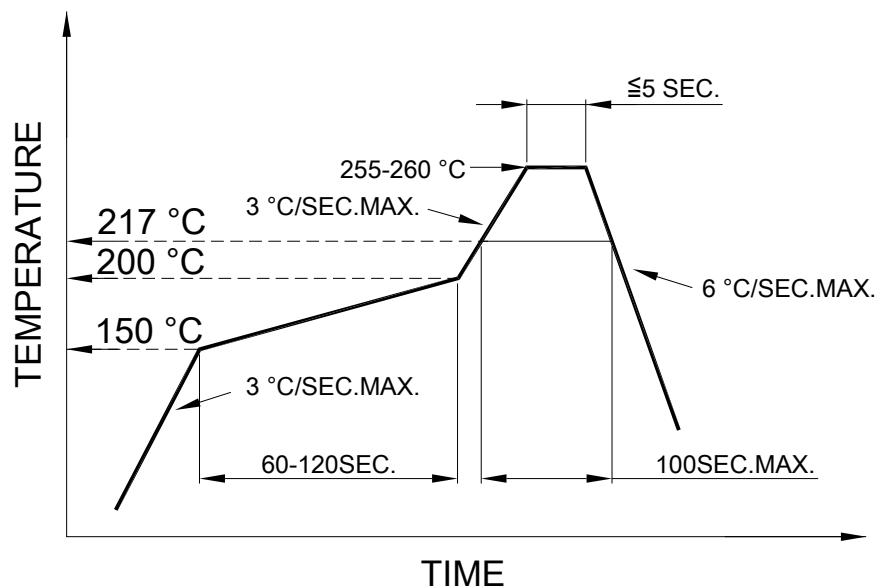
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● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



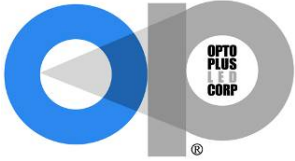
- We recommend the reflow temperature 245°C (+/- 5°C).
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

● SOLDERING IRON

Basic spec is ≤ 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.



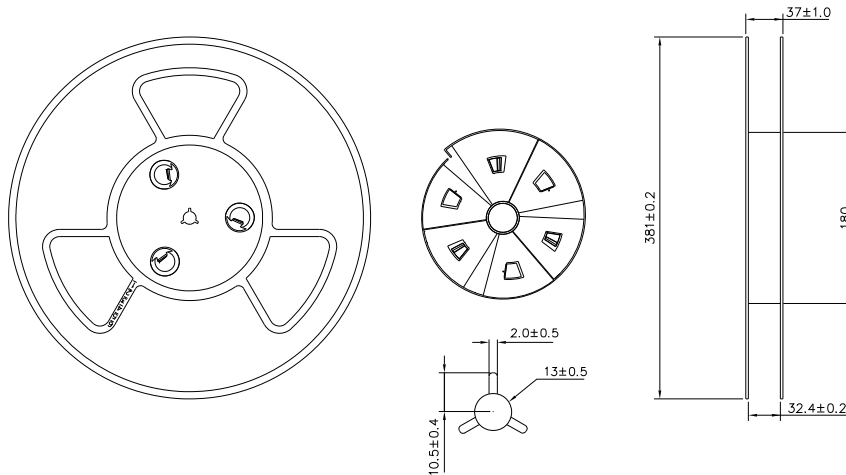
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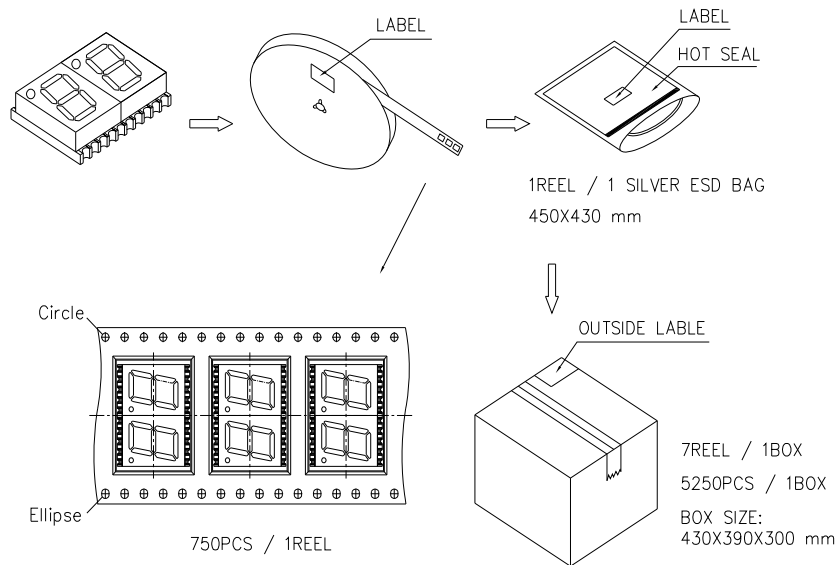
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● REEL DIMENSIONS



● 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)