



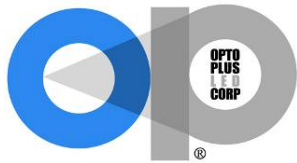
Opto Plus LED Corp.
0.40" SMD Type LED Display
OPS-AT4020SB-GW
OPS-AT4021SB-GW

● **EDIT HISTORY**

Version A: Oct. 08, 2015

Preliminary spec.

Manufacture	Examination	Approving



Opto Plus LED Corp.
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OPS-AT4020SB-GW
OPS-AT4021SB-GW

● **FEATURES**

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

● **DESCRIPTION**

The OPS-AT4020SB-GW & OPS-AT4021SB-GW are 0.40 inch (10.16 mm) height Triple alphanumeric digits display.

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**

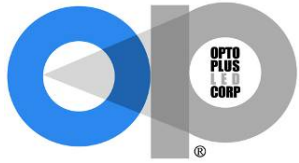
PART NO	DESCRIPTION
OPS-AT4020SB-GW	Common Anode
OPS-AT4021SB-GW	Common Cathode

RoHS Compliance



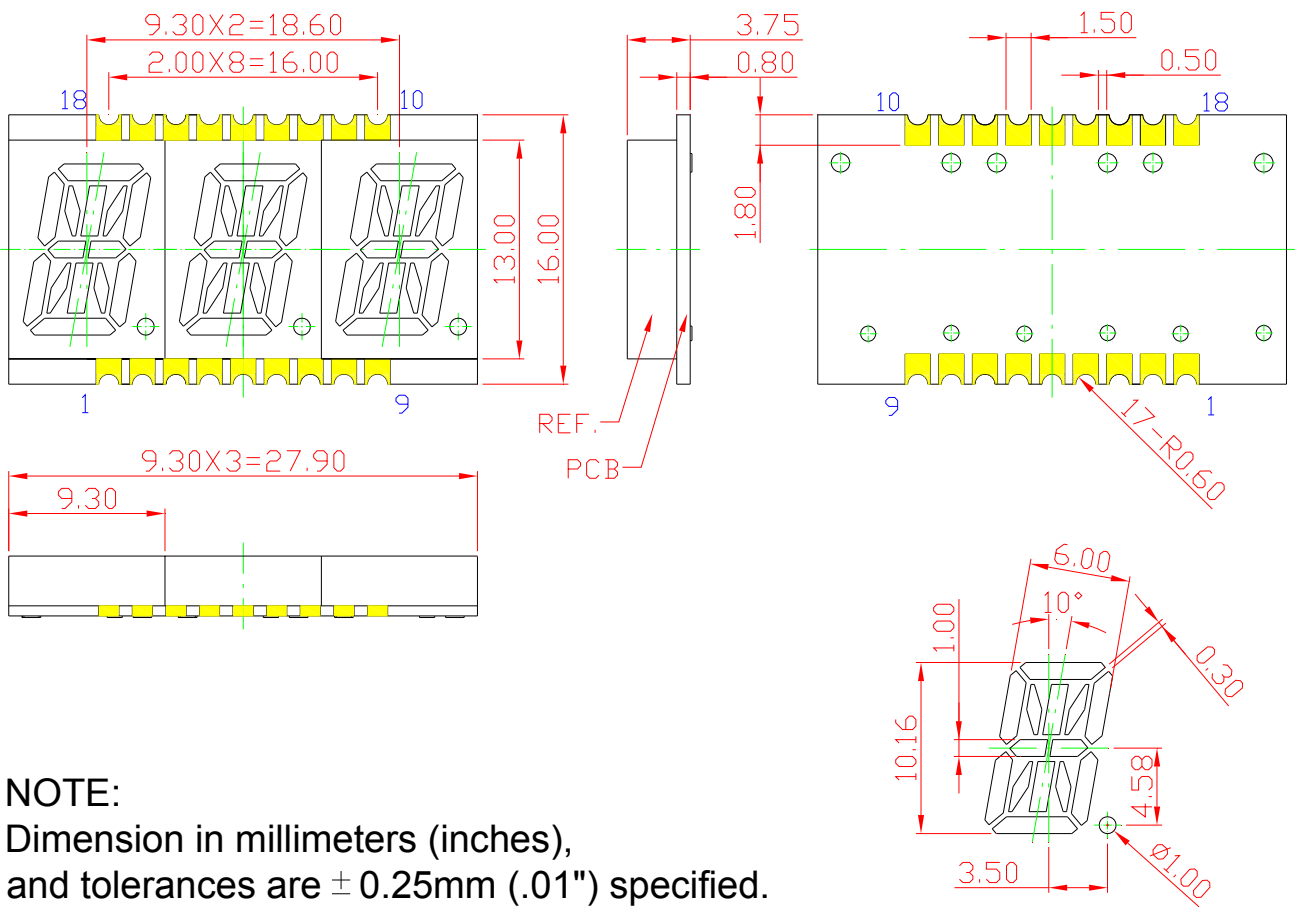
Pb free.





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● **MECHANICAL DIMENSIONS**



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



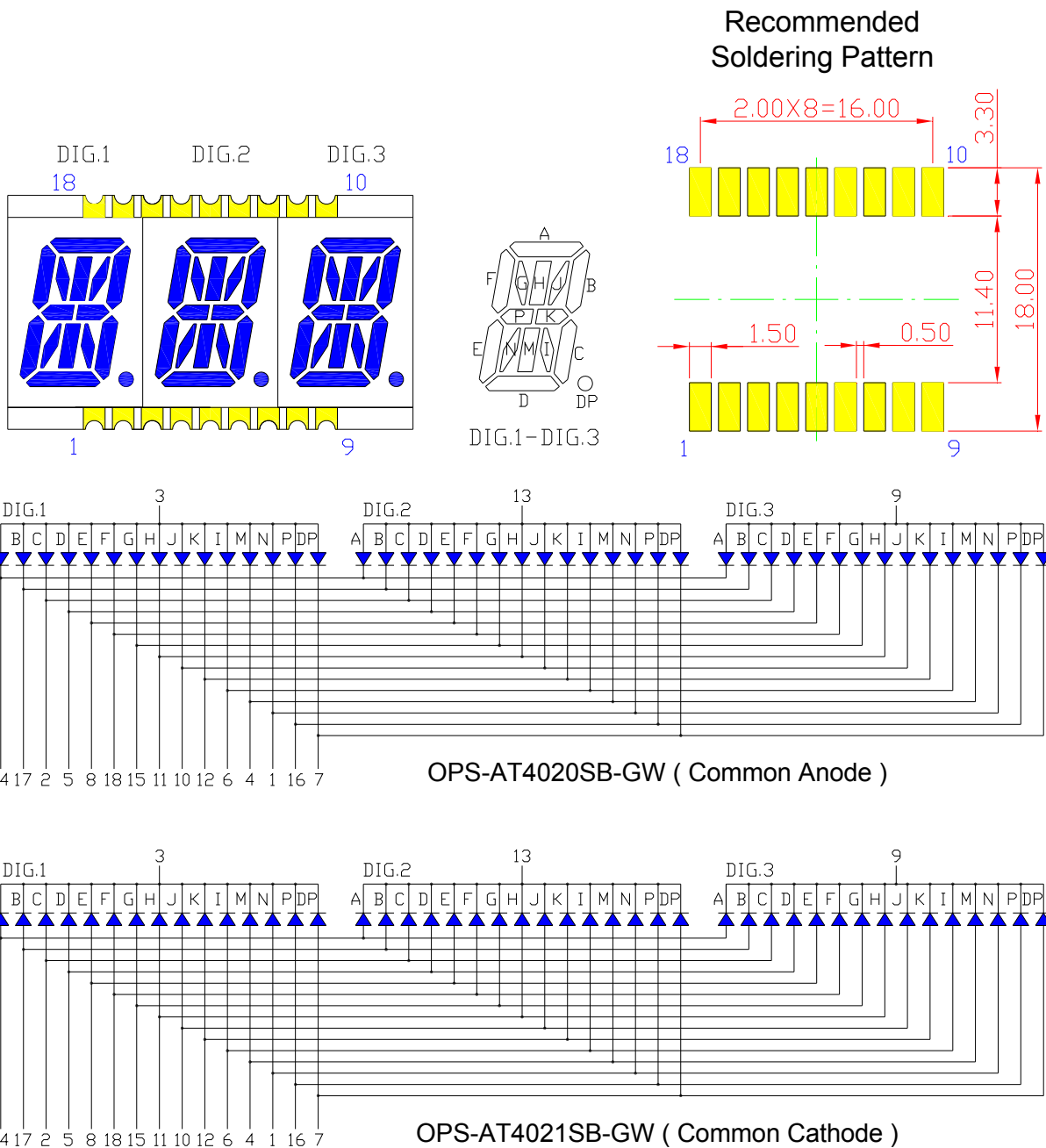
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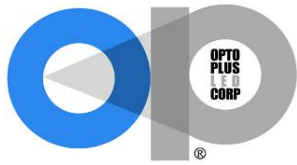
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● TYPICAL INTERNAL EQUIVALENT CIRCUIT





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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 1/5, 100Hz)	I_{PF}	43	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	$I_F = 20\text{mA}$	-	3.0	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	-	100	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	N	O	P
	30.0 ~ 50.0	50.1 ~ 70.0	70.1 ~ 100.0

● **SB: HUE GRADE (λD : nm)**

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

● **AVAILABLE BIN / HUE TABLE**

N1	O1	P1
N2	O2	P2
N3	O3	P3



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

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

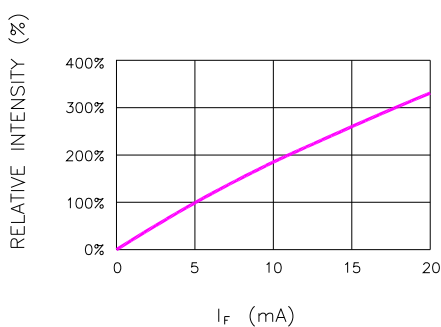


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

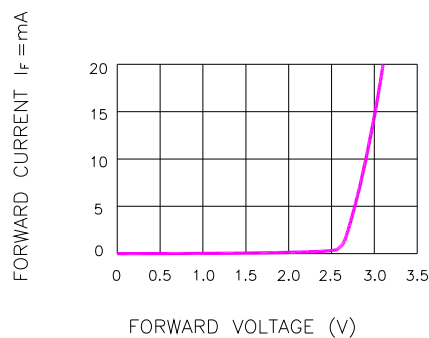


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

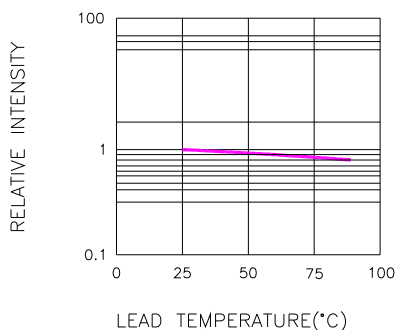


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

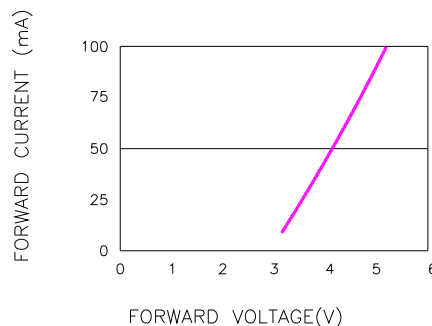


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

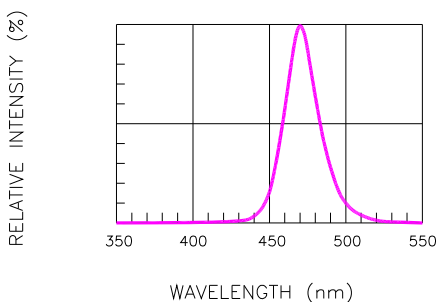


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

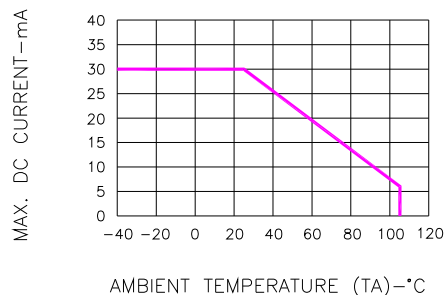


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

Version: A Date: 10/08/2015

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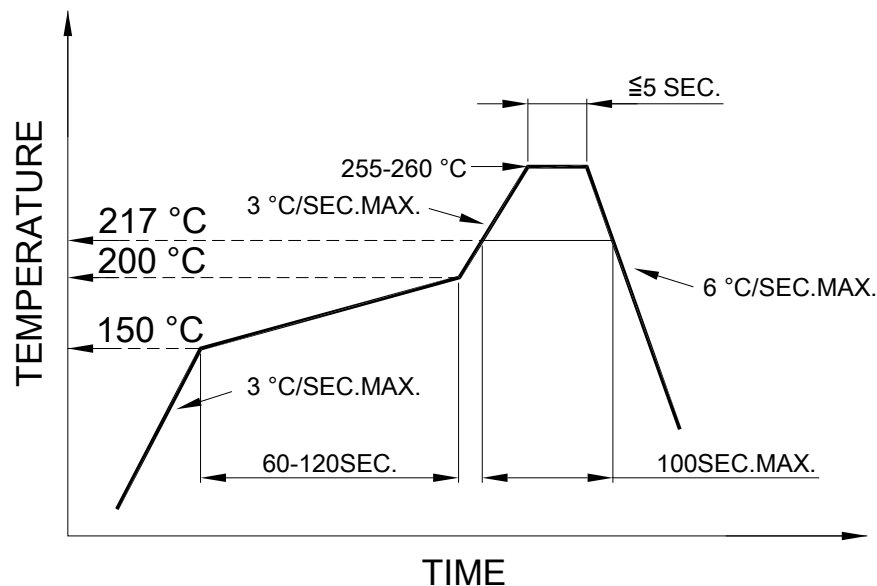


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

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.



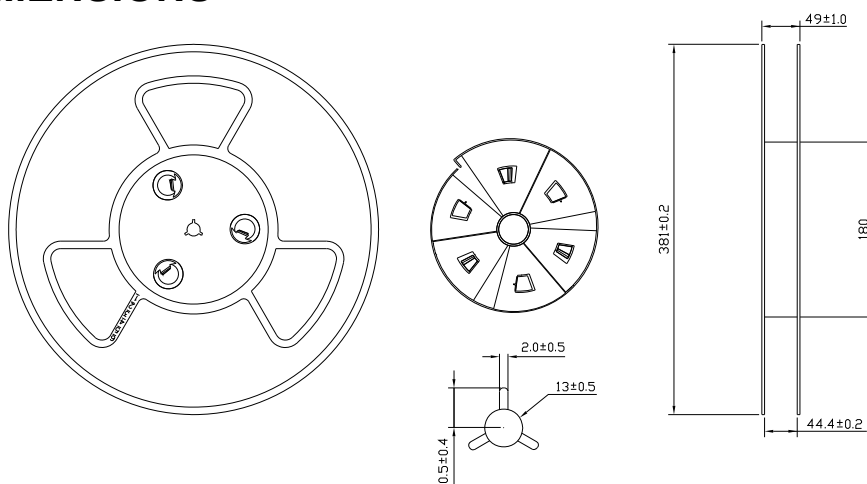
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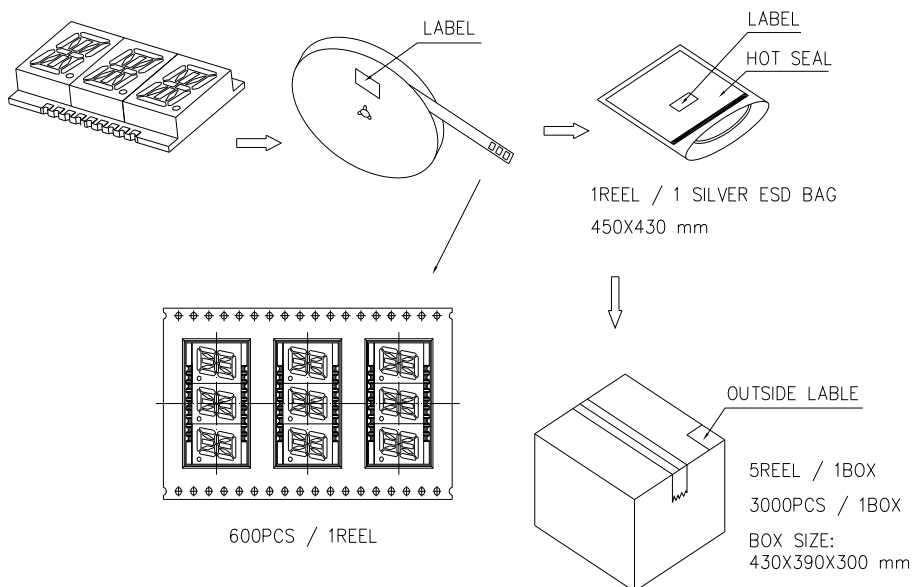
OPS-AT4020SB-GW

OPS-AT4021SB-GW

● 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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