



**American Opto Plus LED Corp.**  
**0.51" SMD Type LED Display**  
**SMA512LB G/W**  
**SMC512LB G/W**

● **FEATURES**

- 0.51 inch (13.0 mm) Digit Height.
- SMD type.
- Low current operation.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The SMA512LB GW & SMC512LB GW are 0.51 inch (13.0mm) height  
Dual 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
SMA512LB GW	Common Anode
SMC512LB GW	Common Cathode

**RoHS Compliance**



**Pb free.**





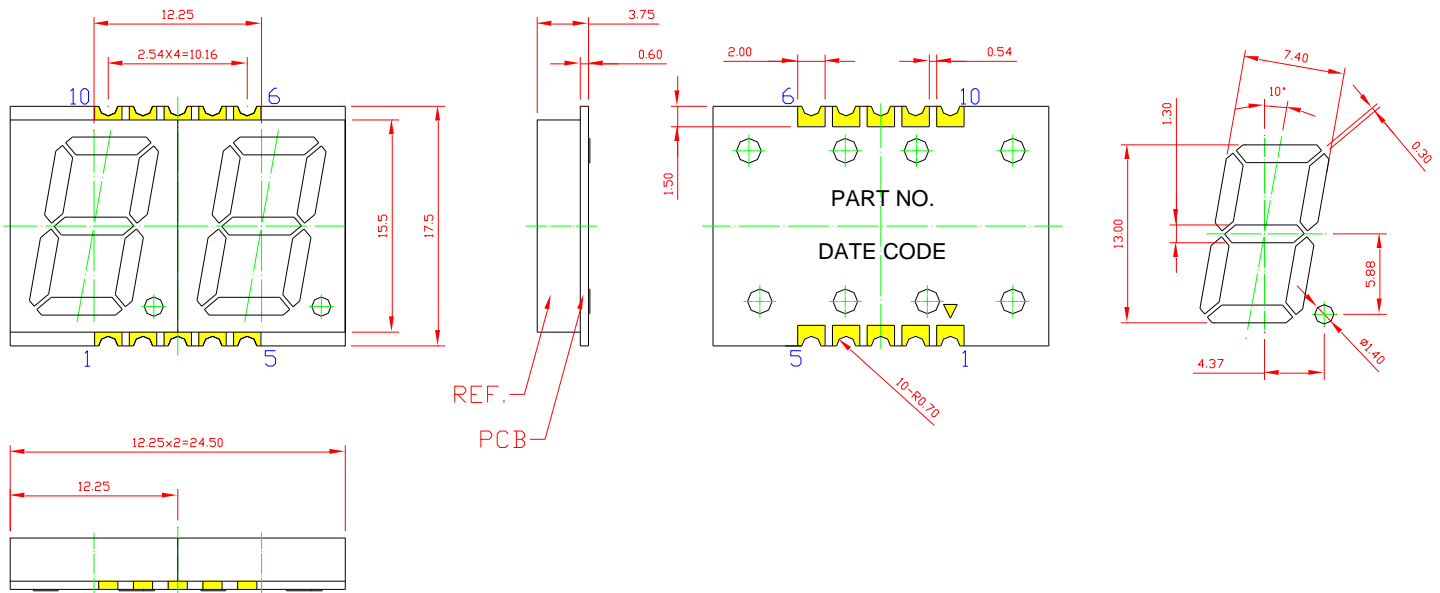
# American Opto Plus LED Corp.

## 0.51" SMD Type LED Display

### SMA512LB G/W

### SMC512LB G/W

### ● MECHANICAL DIMENSIONS



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



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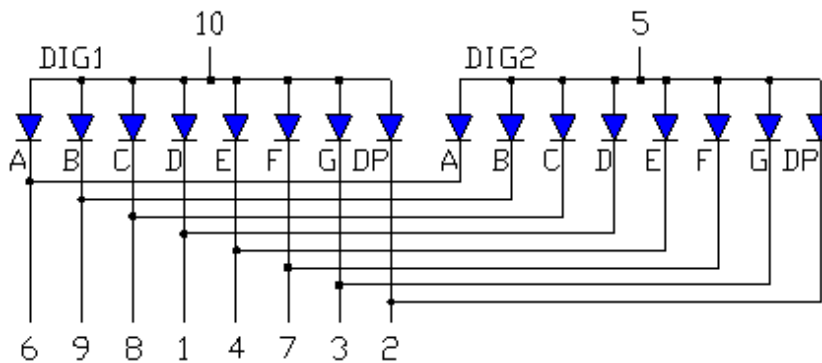
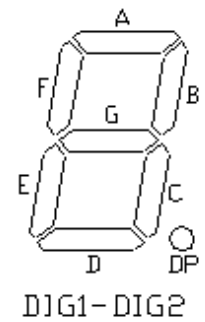
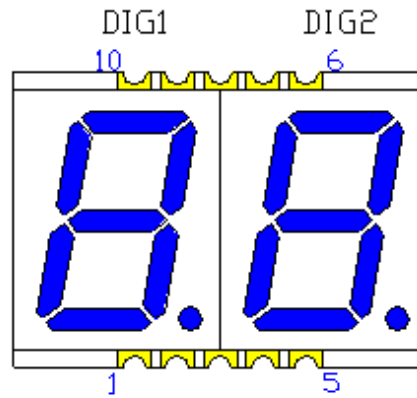
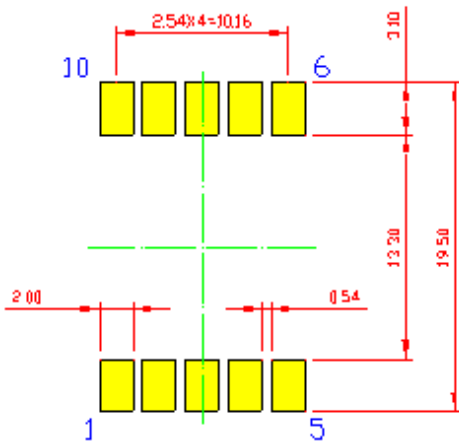
## 0.51" SMD Type LED Display

### SMA512LB G/W

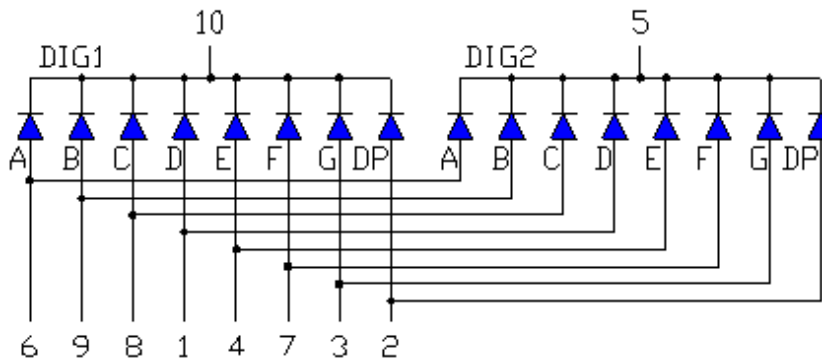
### SMC512LB G/W

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT

Recommended Soldering Pattern



(Common Anode)



(Common Cathode)



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● **SUPER BRIGHT BLUE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT  $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	$P_{AD}$	120	mW
Derating liner from $25^{\circ}\text{C}$	-	0.3	mA / $^{\circ}\text{C}$
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	$^{\circ}\text{C}$
Storage temperature	$T_{STG}$	-40 to +105	$^{\circ}\text{C}$

ELECTRICAL - OPTICAL CHARACTERISTICS AT  $T_a=25^{\circ}\text{C}$

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage, (Per Dice)	$V_F$	$I_F=20\text{mA}$	-	3.2	4.0	V
Reverse Current, (Per Dice)	$I_R$	$V_R=8\text{V}$	-	-	10	$\mu\text{A}$
Dominant Wavelength	$\lambda_D$	$I_F=20\text{mA}$	-	470	-	nm
Luminous Intensity	$I_V$	$I_F=20\text{mA}$	-	40	-	mcd
Spectral radiation bandwidth	$\Delta\lambda$	$I_F=20\text{mA}$	-	30	-	nm



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## 0.51" SMD Type LED Display

### SMA512LB G/W

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#### ● SUPER BRIGHT BLUE (InGaN/GaN) CURVE

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

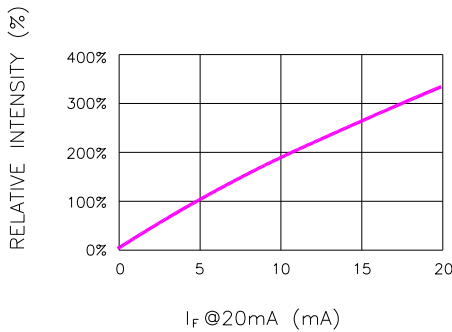


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

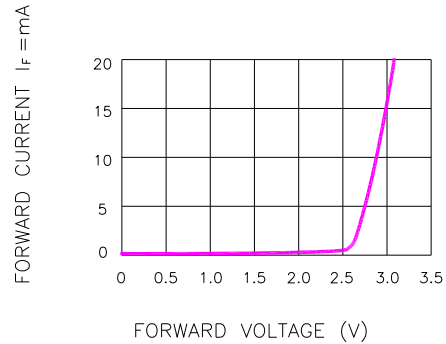


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

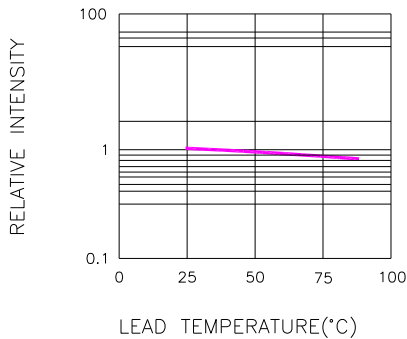


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

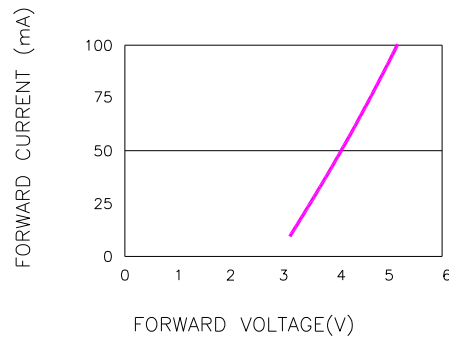


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

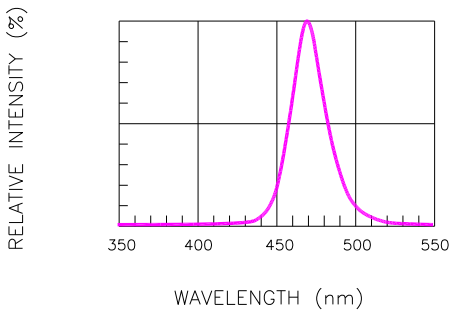


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

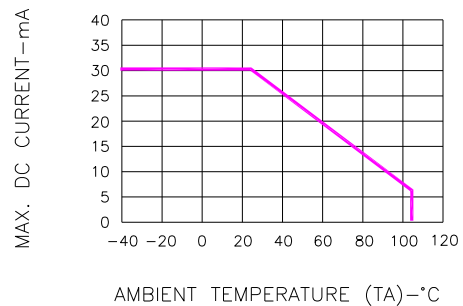


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

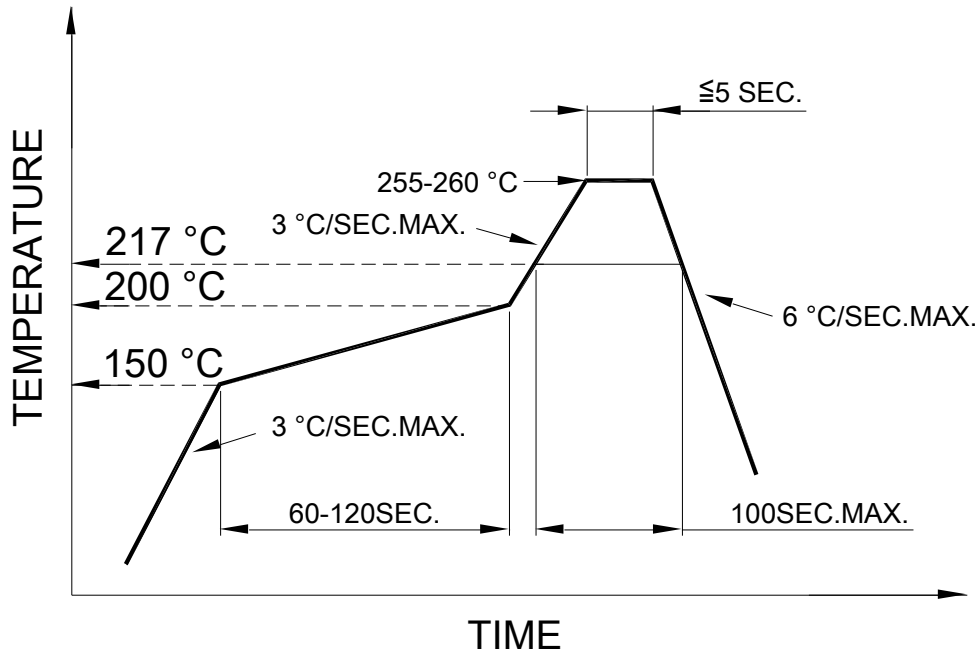


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● **RECOMMEND SOLDERING PROFILE**

SMT Soldering Profile

Pb free reflow soldering Profile



● **SOLDERING IRON**

Basic specification :  $\leq 4$  seconds 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  $\leq 3$  sec under 350°C.