



**American Opto Plus LED Corp.**  
**0.51" SMD Type LED Display**  
**SMA513W G/W**  
**SMC513W 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 SMA513W G/W & SMC513W G/W are 0.51 inch (13.0mm) height Triple 7-segment displays.

This device utilizes Super Bright White LED chip which are made from InGaN on a transparent GaN, substrate.

The display has Gray face, White segment.

● **DEVICE**

PART NO	DESCRIPTION
SMA513W G/W	Common Anode
SMC513W G/W	Common Cathode

**RoHS Compliance**



**Pb free.**





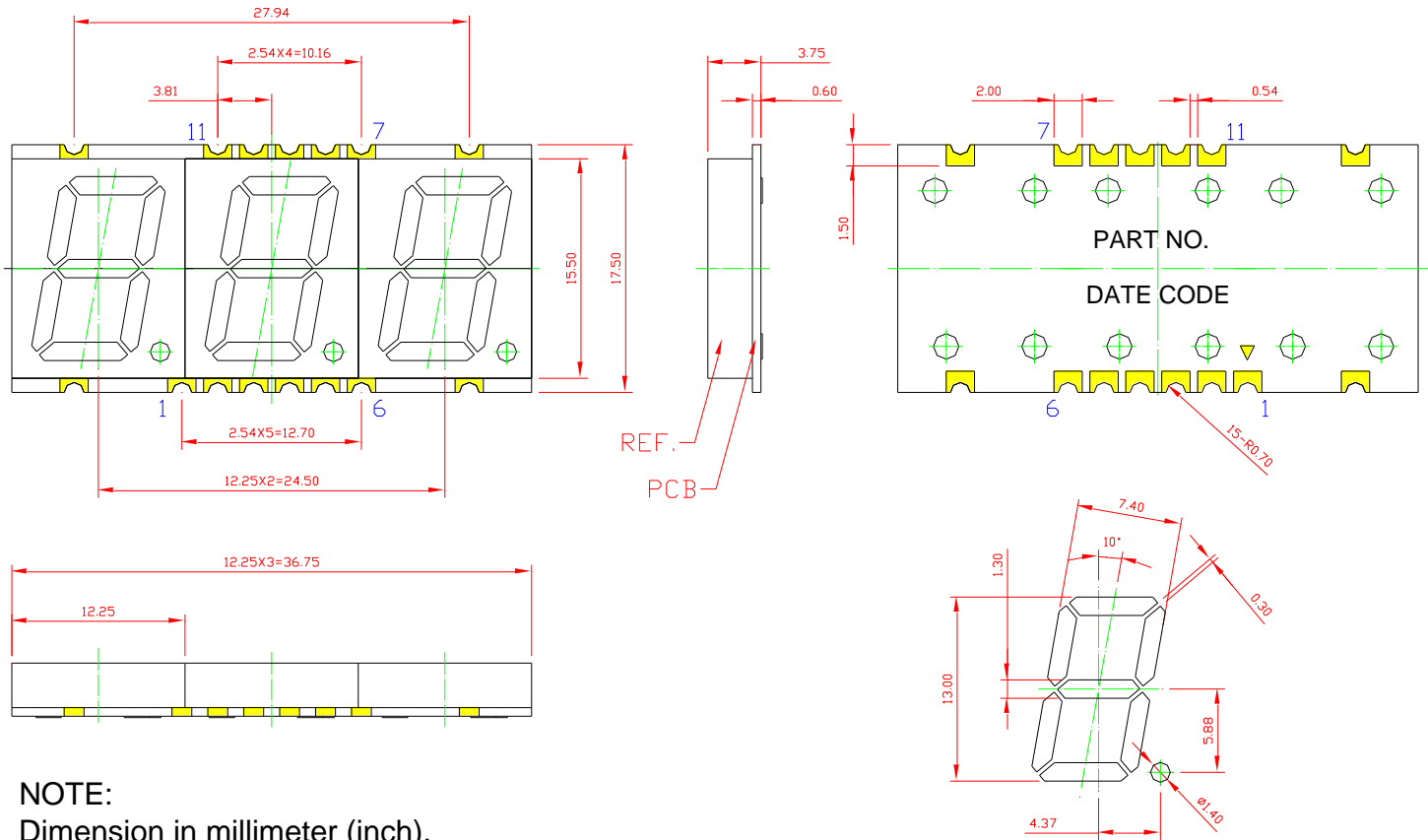
# American Opto Plus LED Corp.

## 0.51" SMD Type LED Display

### SMA513W G/W

### SMC513W G/W

### MECHANICAL DIMENSIONS



**NOTE:**  
Dimension in millimeter (inch),  
and tolerance is  $\pm 0.25$  (.01) specified.



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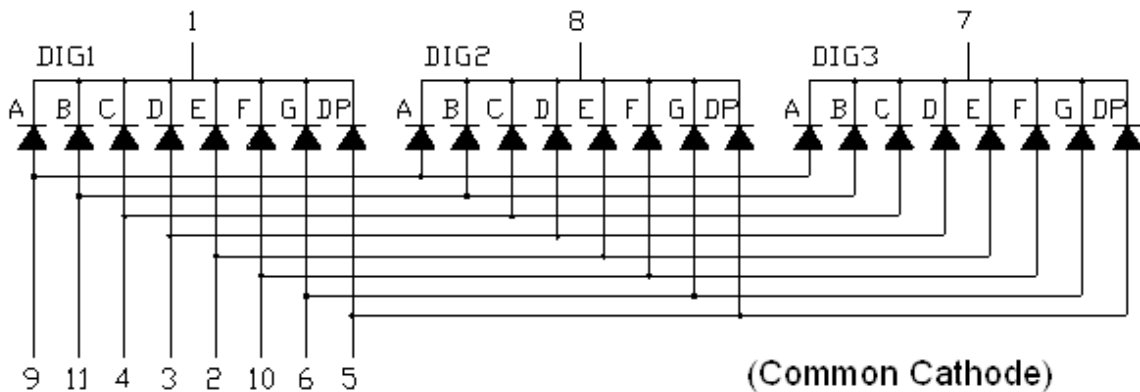
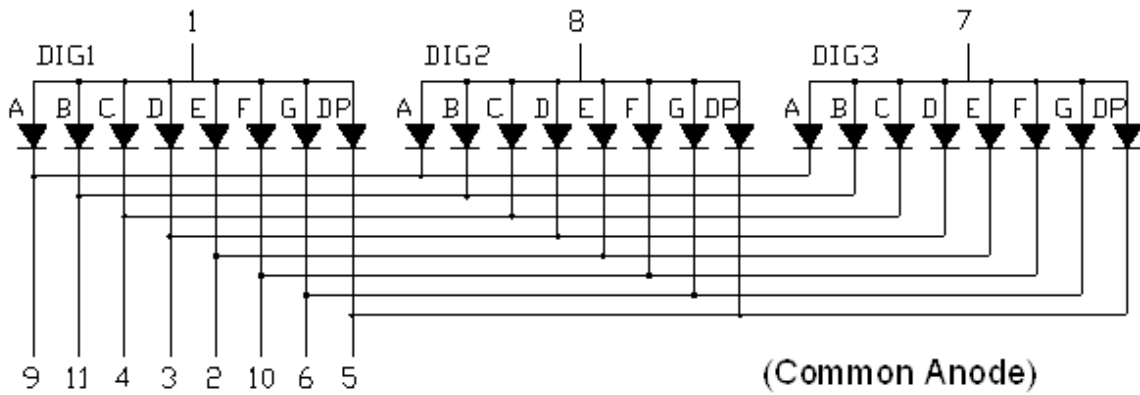
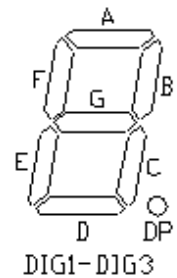
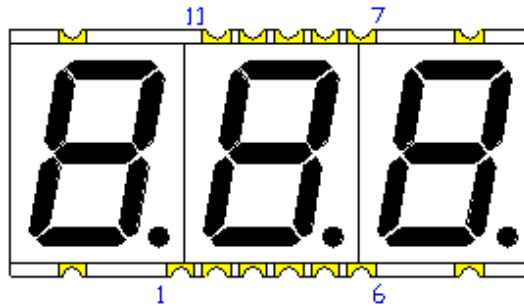
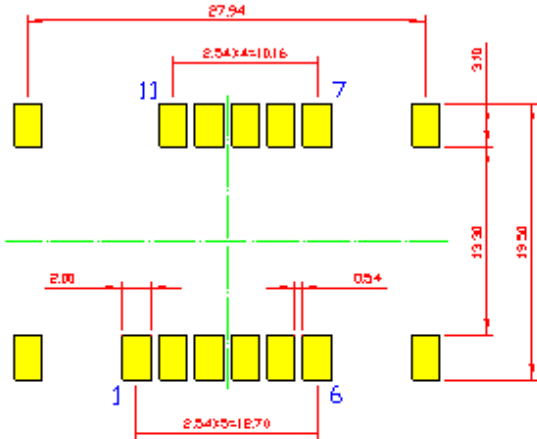
## 0.51" SMD Type LED Display

### SMA513W G/W

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#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT

Recommended  
Soldering Pattern





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● **W: SUPER BRIGHT WHITE (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	V <sub>F</sub>	I <sub>F</sub> =5mA	-	3.2	4.0	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> =8V	-	-	10	μA
Chromaticity coordinate	X	I <sub>F</sub> =5mA	-	0.29	-	-
	Y	I <sub>F</sub> =5mA	-	0.29	-	-
Luminous intensity	I <sub>v</sub>	I <sub>F</sub> =5mA	-	30	-	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> =5mA	-	30	-	nm



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### SMA513W G/W

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#### ● W: SUPER BRIGHT WHITE (InGaN/GaN) CURVE

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

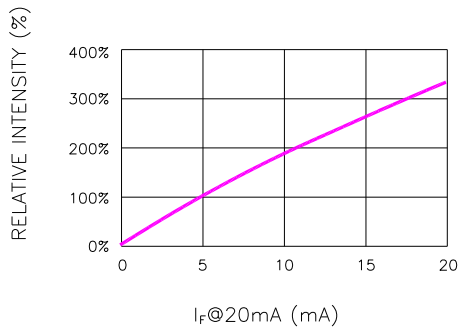


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

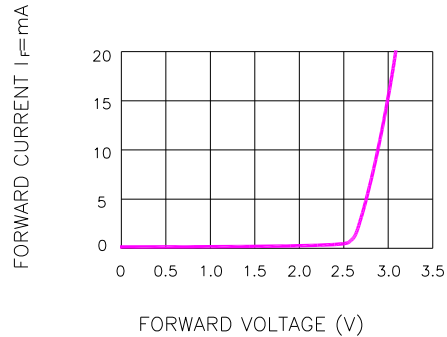


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

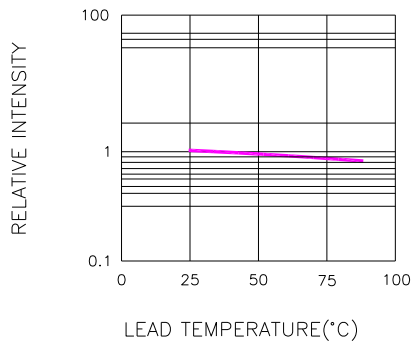


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

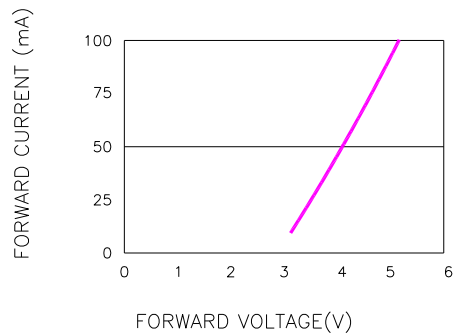


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

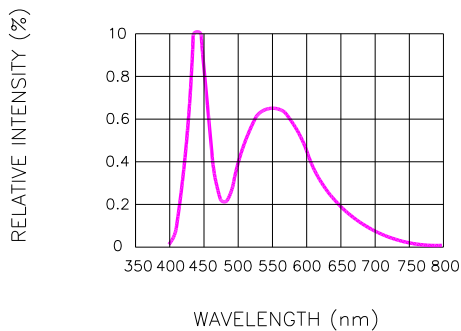


Fig.4 RELATIVE INTENSITY VS. WAVELENGTH

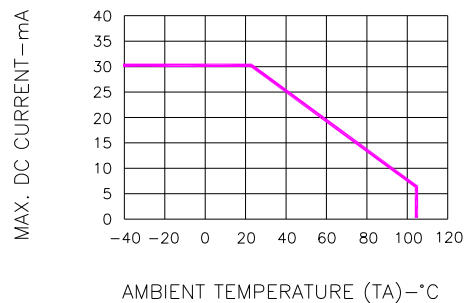


Fig.7 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

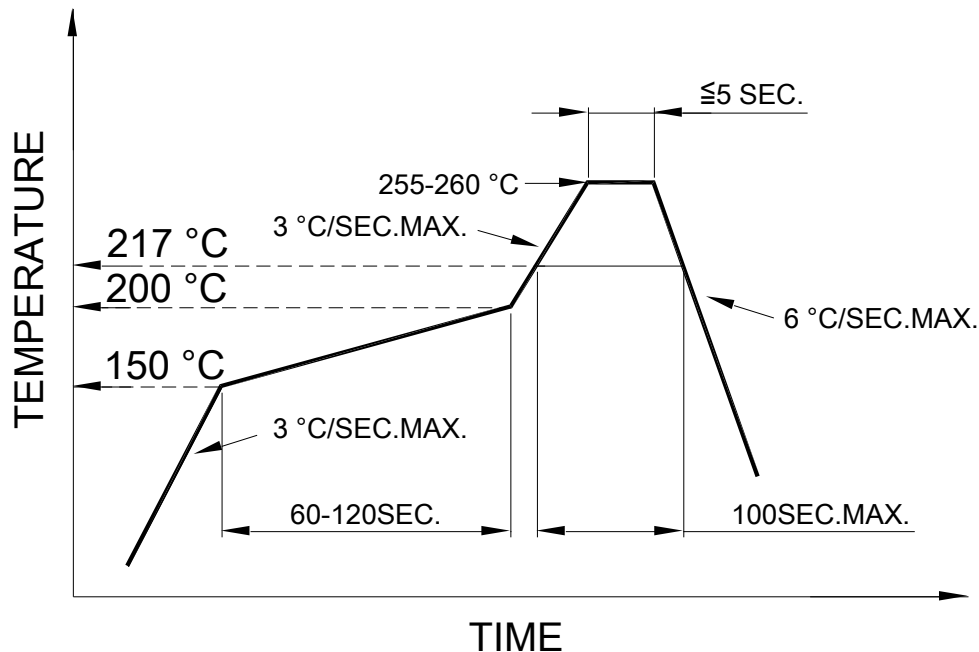


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● **RECOMMEND SOLDERING PROFILE**

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.