



**American Opto Plus LED Corp.**  
**0.56" SMD Type LED Display**  
**SMA561LE-ST-1.5 G/W**  
**SMC561LE-ST-1.5 G/W**

● **EDIT HISTORY**

Version A: Jul. 20, 2015

Preliminary spec.

Version B: Jul. 22, 2015

1. Modify mechanical dimensions.
2. Modify typical internal equivalent circuit.

Version C: Aug. 17, 2015

1. Modify mechanical dimensions.
2. Modify typical internal equivalent circuit.



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● **FEATURES**

- 0.56 inch (14.22 mm) Digit Height.
- Low current operation.
- Super thin SMD type.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The SMA561LE-ST-1.5 G/W & SMC561LE-ST-1.5 G/W

Are 0.56 inch (14.22mm) height single digit 7-segment display.

This device utilizes Super Bright Red LED chip which are made from AlGaInP on a transparent GaAs substrate.

The display has Gray face, White segment.

● **DEVICE**

PART NO	DESCRIPTION
SMA561LE-ST-1.5 G/W	Common Anode
SMC561LE-ST-1.5 G/W	Common Cathode

**RoHS Compliance**



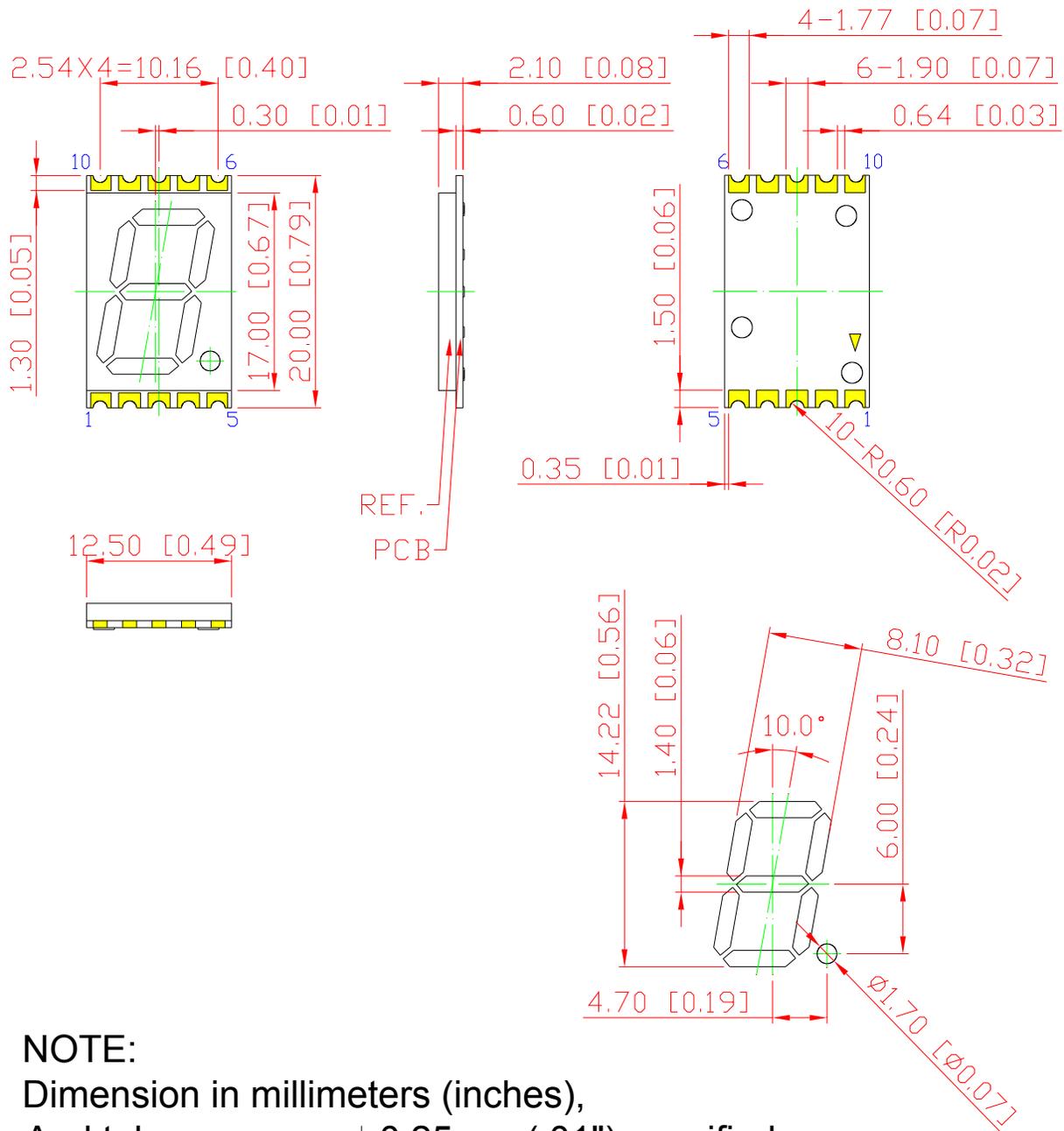
**Pb free.**





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● **MECHANICAL DIMENSIONS**

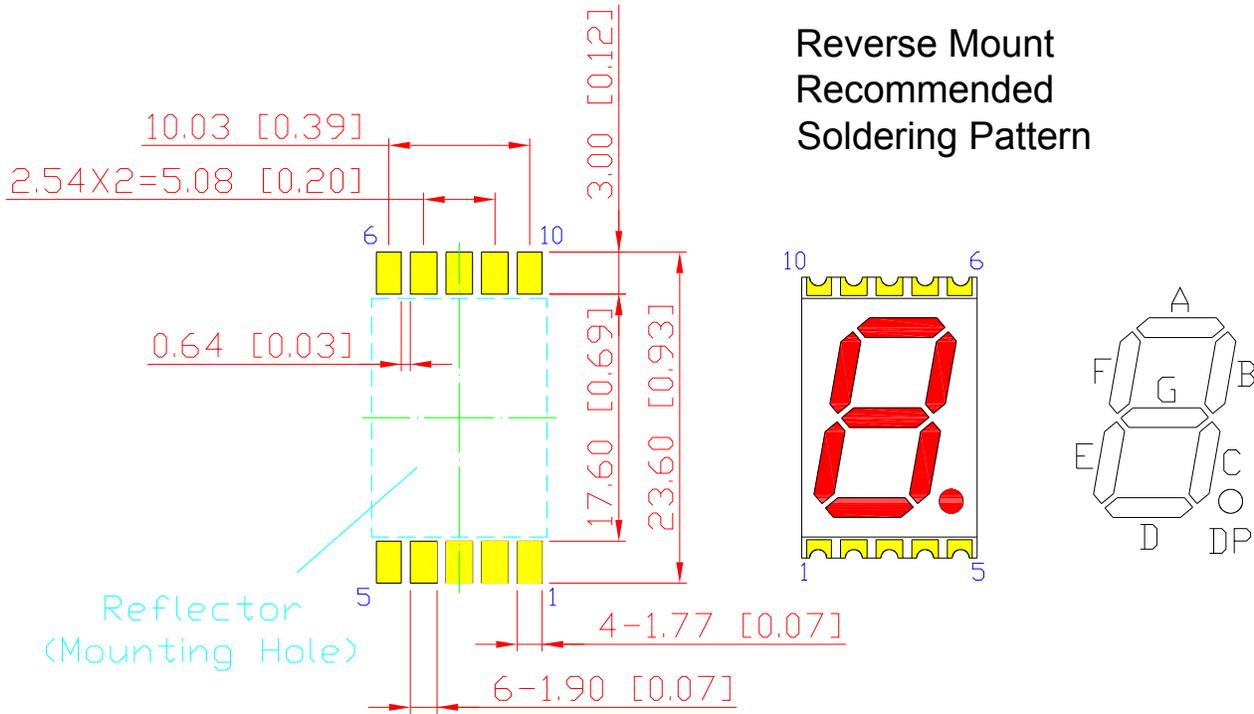


**NOTE:**  
Dimension in millimeters (inches),  
And tolerances are  $\pm 0.25\text{mm}$  (.01") specified.

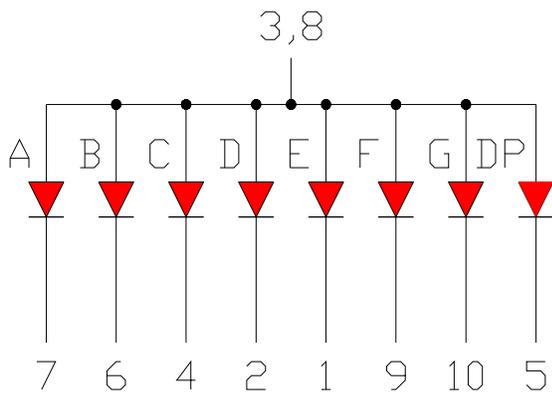


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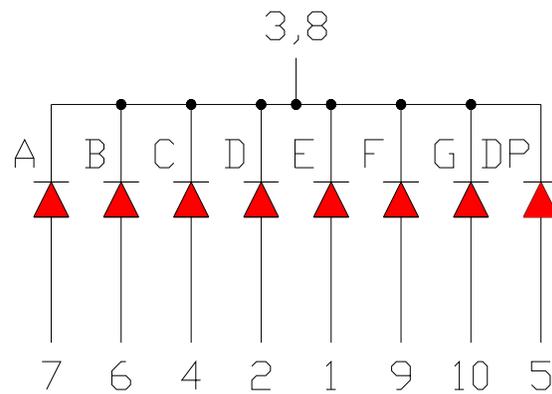
● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**



Reverse Mount  
 Recommended  
 Soldering Pattern



**SMA561LE-ST-1.5 G/W**



**SMC561LE-ST-1.5 G/W**



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● **LE: SUPER BRIGHT RED (AlGaInP/GaAs)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	70	mW
Derating liner from 25°C	-	0.28	mA / °C
Continuous forward current	I <sub>AF</sub>	25	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	90	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, (Per Dice)	V <sub>F</sub>	I <sub>F</sub> =20mA	-	2.0	2.6	V
Reverse Current, (Per Dice)	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA
Peak Wavelength	λ <sub>P</sub>	I <sub>F</sub> =20mA	-	632	-	nm
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> =20mA	619	-	629	nm
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> =10mA	10	-	40	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> =20mA	-	20	-	nm



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● **LE: BIN GRADE (Unit : mcd) Test Condition: 5V / 10mA**

Super Bright Red	G	H	I
	10.0 – 20.0	20.1 – 30.0	30.1 – 40.0

● **LE: HUE GRADE ( $\lambda_D$  : nm)**

1	2	3
619.0 – 623.0	623.1 – 626.0	626.1 – 629.0

● **AVAILABLE BIN / HUE TABLE**

G1	H1	I1
G2	H2	I2
G3	H3	I3



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### SMA561LE-ST-1.5 G/W

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#### ● LE: SUPER BRIGHT RED (AlGaInP/GaAs) CURVE

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

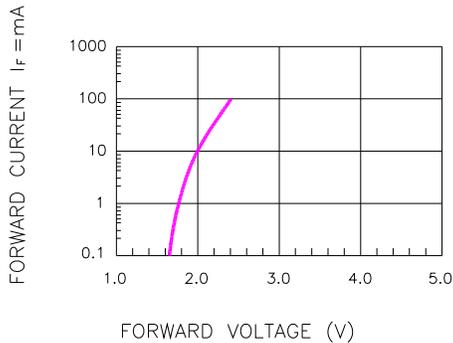


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

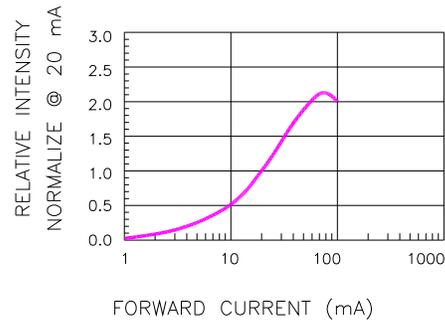


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

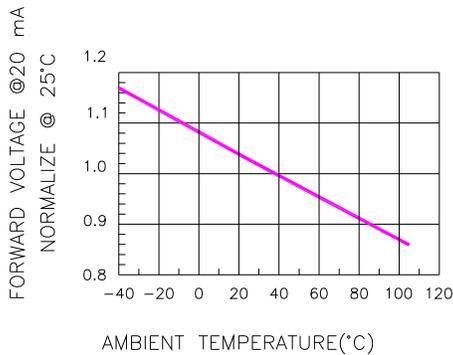


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

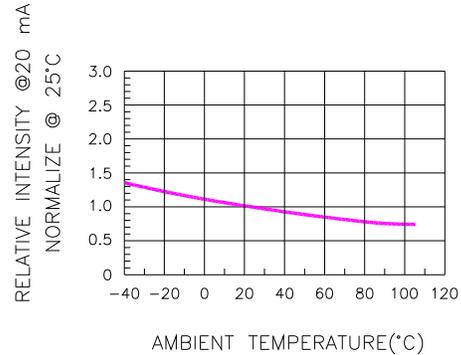


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

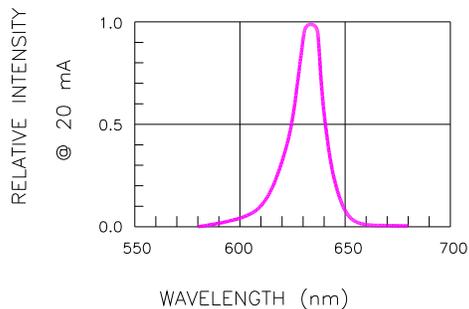


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

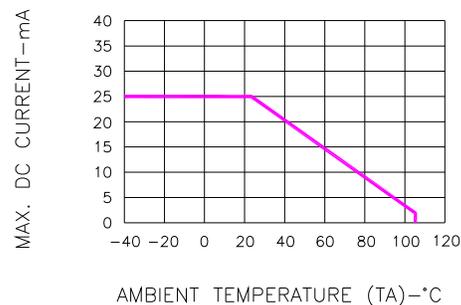


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

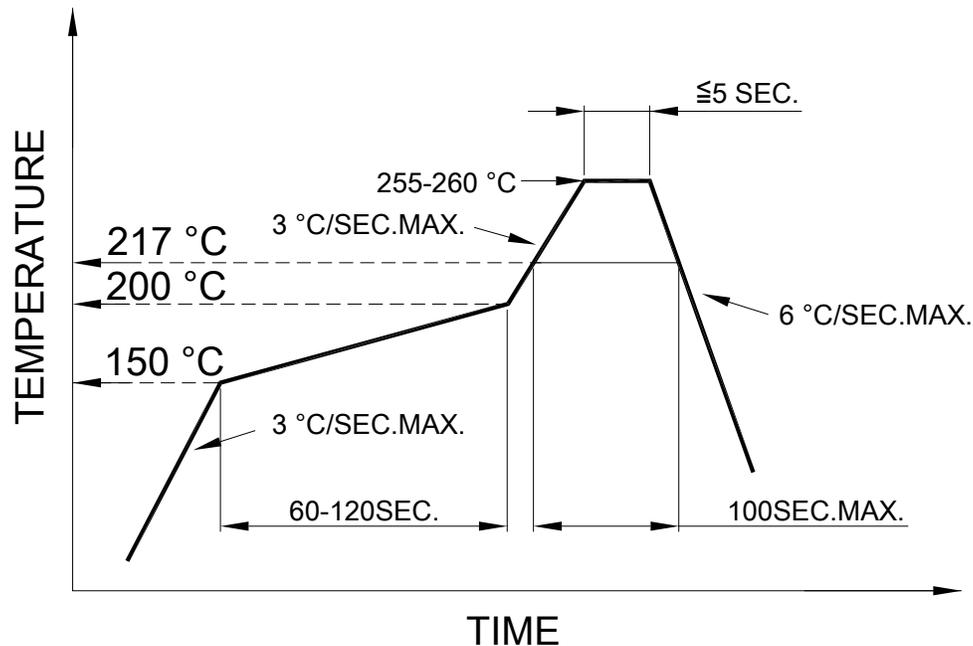


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

SMT Soldering Profile

Pb free reflow soldering Profile



● **SOLDERING IRON**

Basic spec is  $\leq 4$  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.
- Number of reflow process shall be times or less.