



American Opto Plus LED Corp.
0.56" SMD Type LED Display
SMA561SPG-ST-1.5 G/W
SMC561SPG-ST-1.5 G/W

● **EDIT HISTORY**

Version A: Jul. 15, 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.

Version D: Aug. 31, 2015

Add bin & hue data.



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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 SMA561SPG-ST-1.5 G/W & SMC561SPG-ST-1.5 G/W

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

This device utilizes Pure Green LED chip which are made from InGaN

On a transparent GaN, substrate.

The display has Gray face, White segment.

● **DEVICE**

PART NO	DESCRIPTION
SMA561SPG-ST-1.5 G/W	Common Anode
SMC561SPG-ST-1.5 G/W	Common Cathode

RoHS Compliance



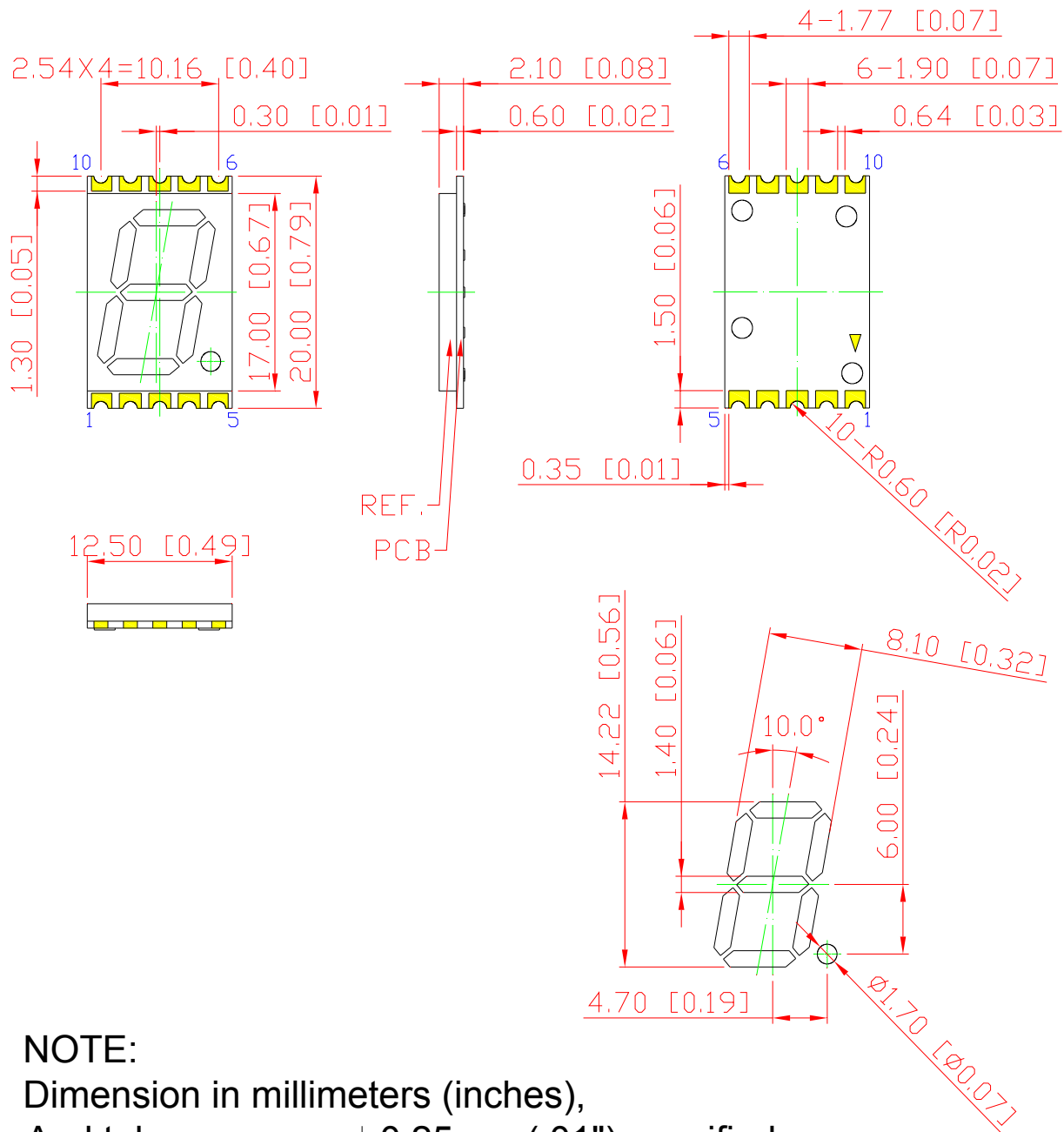
Pb free.





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● **MECHANICAL DIMENSIONS**



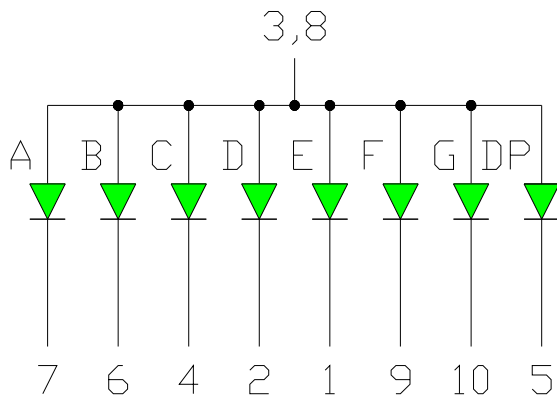
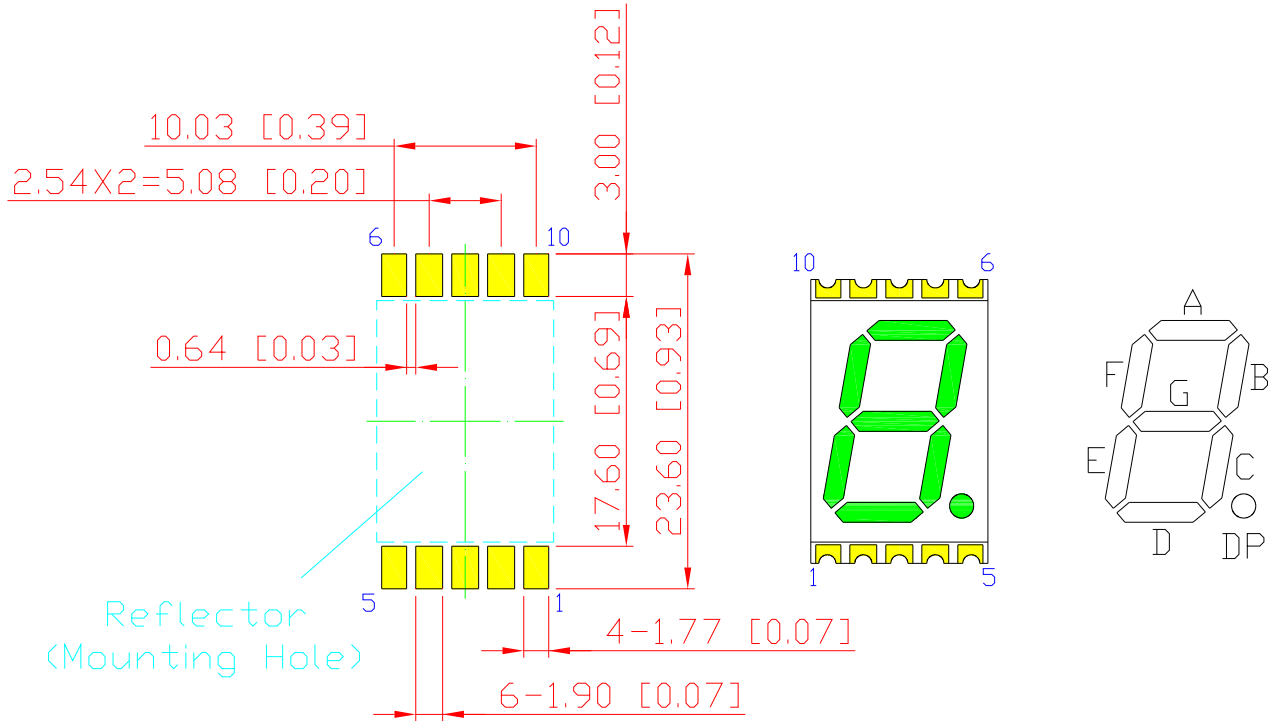
NOTE:

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

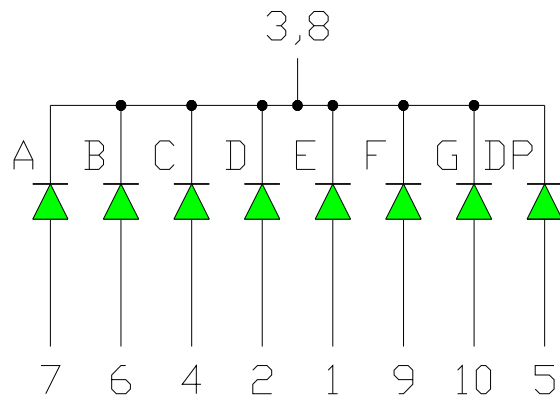


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● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**



SMA561PG-ST-1.5 G/W



SMC561PG-ST-1.5 G/W



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● **SPG: PURE GREEN (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 =20mA	-	2.8	3.6	V
Reverse Current, (Per Dice)	I _R	V _R =8V	-	-	10	μA
Dominant Wavelength	λ _D	I _F =20mA	515	-	530	nm
Luminous Intensity	I _V	I _F =20mA	250	-	600	mcd
Spectral radiation bandwidth	Δλ	I _F =20mA	-	30	-	nm



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● **SPG: BIN GRADE (Unit : mcd / $I_F = 20\text{mA}$)**

PURE GREEN	S	T	U
	250.0 – 370.0	370.1 – 480.0	480.1 – 600.0

● **SPG: HUE GRADE (λ_D : nm)**

1	2	3
515.0 – 520.0	520.1 – 525.0	525.1 – 530.0

● **AVAILABLE BIN / HUE TABLE**

S1	T1	U1
S2	T2	U2
S3	T3	U3



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● SPG: PURE GREEN (InGaN/GaN) CURVE

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

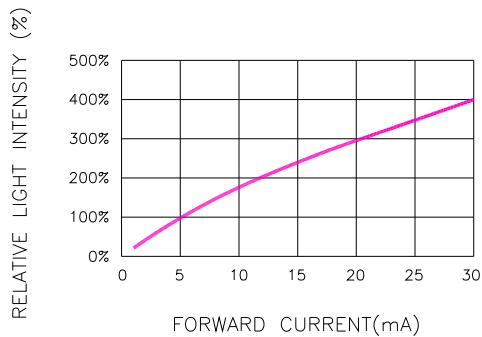


Fig.1 RELATIVE LIGHT INTENSITY VS. FORWARD CURRENT

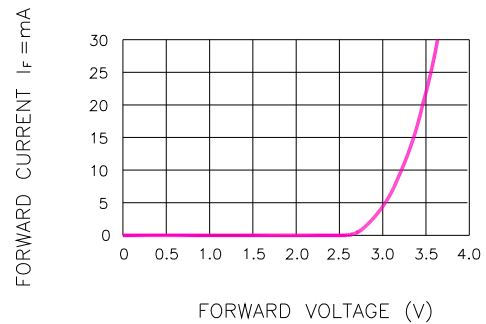


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

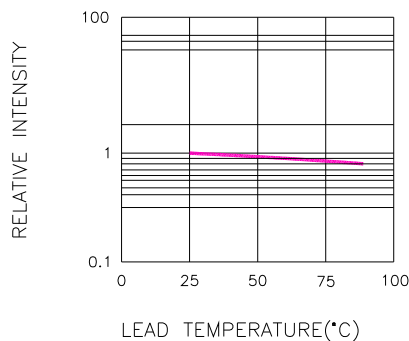


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

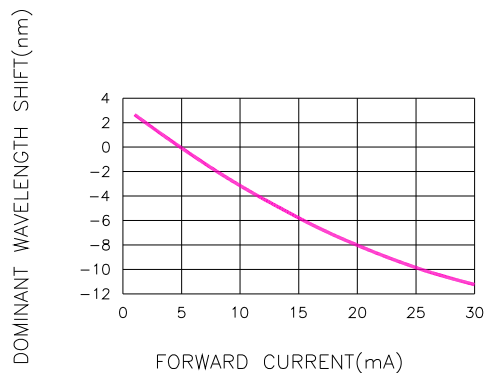


Fig.4 DOMINANT WAVELENGTH SHIFT VS. FORWARD CURRENT

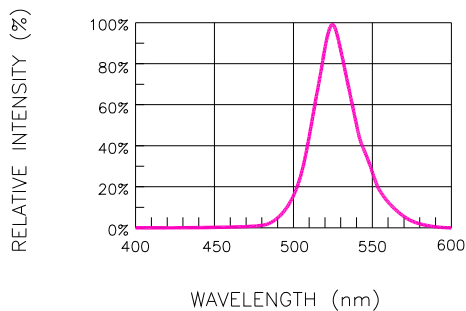


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

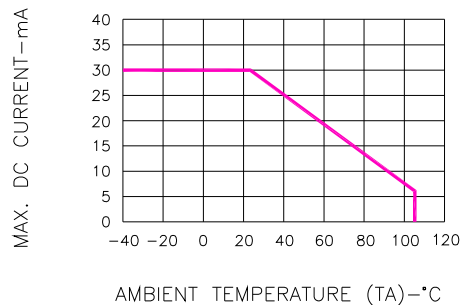


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

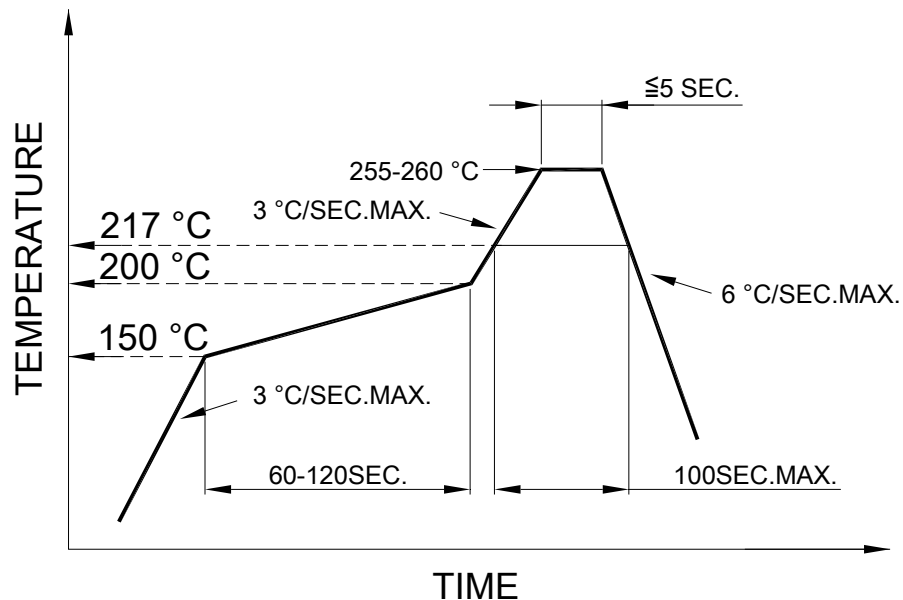


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

SMT Soldering Profile

Pb free reflow soldering Profile



- 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.