



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.



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

● **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



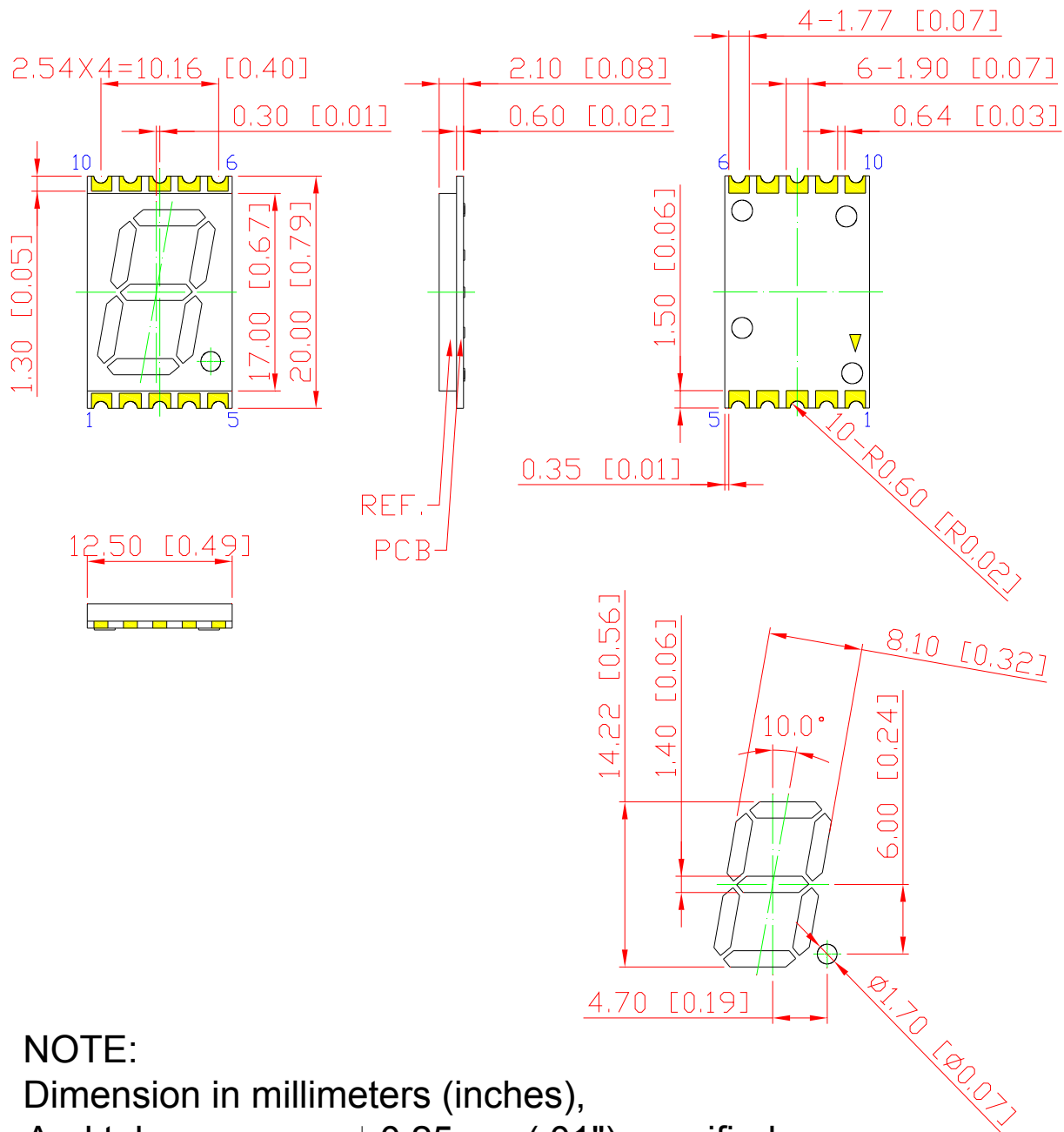
Pb free.





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

● **MECHANICAL DIMENSIONS**

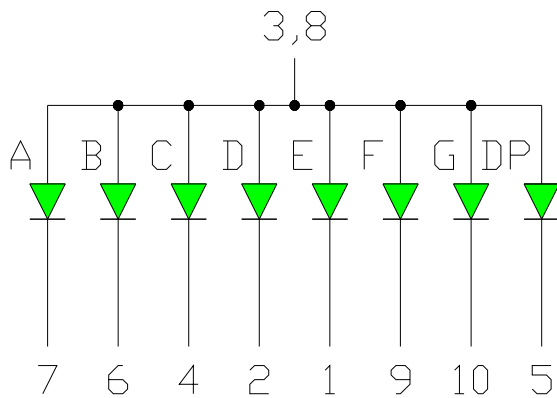
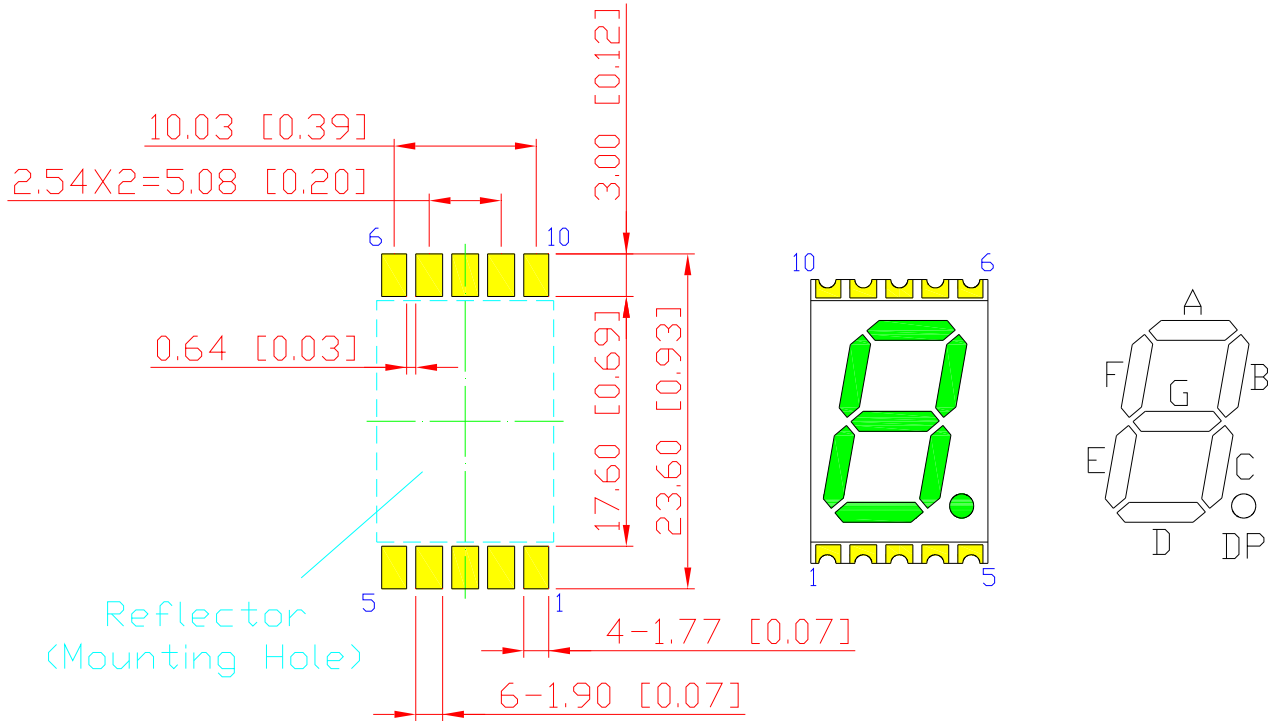


NOTE:
 Dimension in millimeters (inches),
 And tolerances are $\pm 0.25\text{mm}$ (.01") specified.

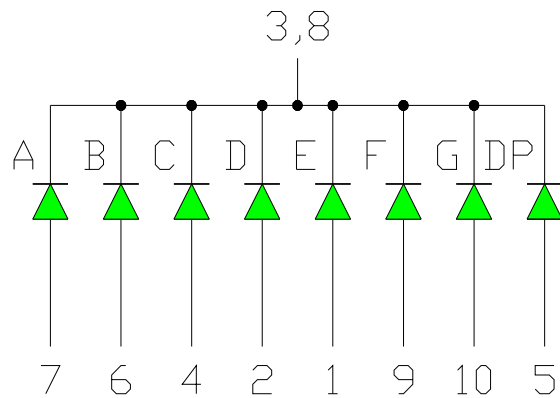


American Opto Plus LED Corp.
0.56" SMD Type LED Display
SMA561SPG-ST-1.5 G/W
SMC561SPG-ST-1.5 G/W

● **TYPICAL INTERNAL EQUIVALENT CIRCUIT**



SMA561PG-ST-1.5 G/W



SMC561PG-ST-1.5 G/W



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

● **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



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

● **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



American Opto Plus LED Corp.

0.56" SMD Type LED Display

SMA561SPG-ST-1.5 G/W

SMC561SPG-ST-1.5 G/W

● SPG: PURE GREEN (InGaN/GaN) CURVE

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

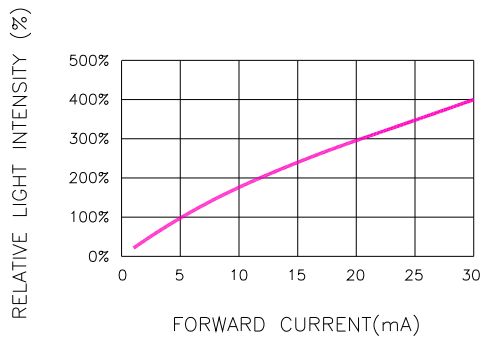


Fig.1 RELATIVE LIGHT INTENSITY VS. FORWARD CURRENT

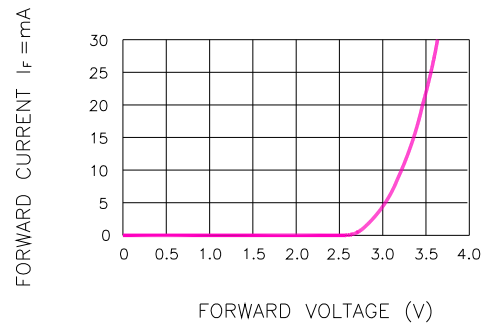


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

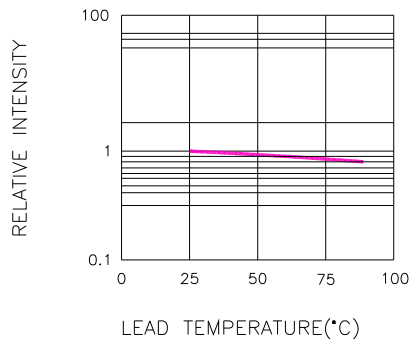


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

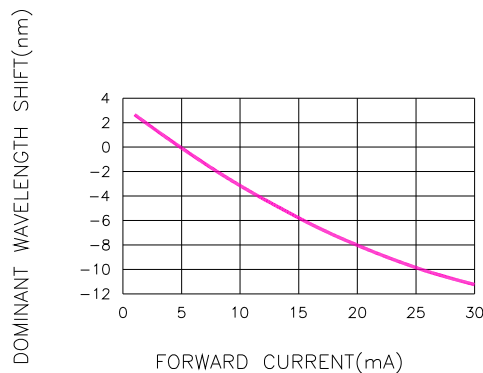


Fig.4 DOMINANT WAVELENGTH SHIFT VS. FORWARD CURRENT

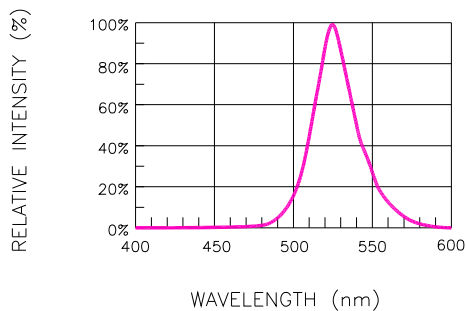


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

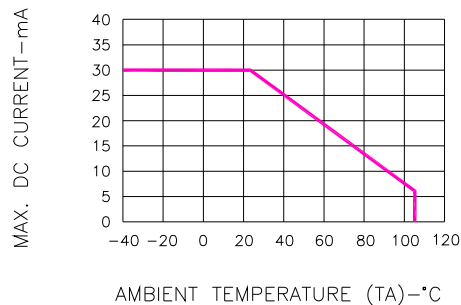


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

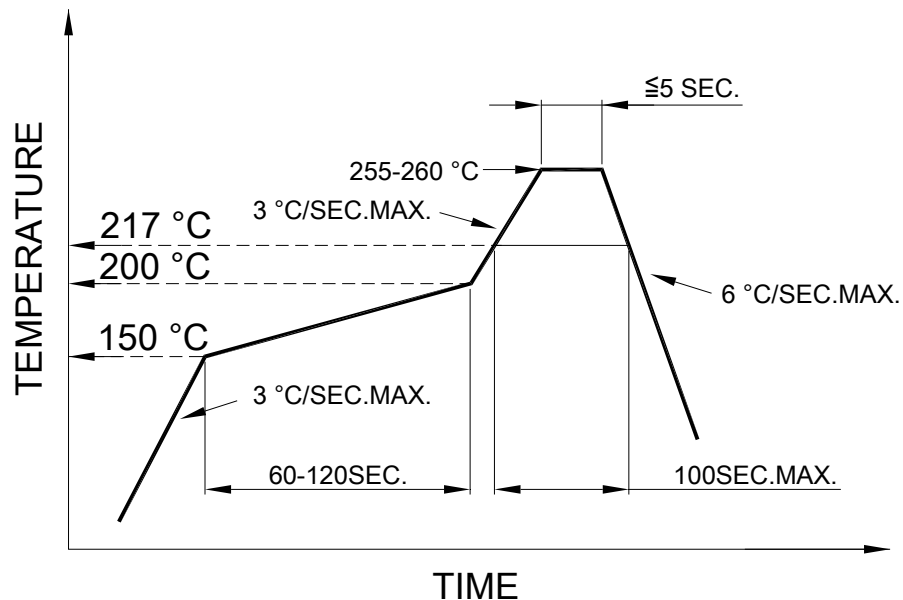


American Opto Plus LED Corp.
0.56" SMD Type LED Display
SMA561SPG-ST-1.5 G/W
SMC561SPG-ST-1.5 G/W

● **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.