



# American Opto Plus LED Corp.

## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### FEATURES

- 0.27 inch (6.80 mm) Digit Height.
- Semi-Epoxy type.
- Low current operation.
- Black face, White segment.
- RoHS compliant, Pb Free.

#### DESCRIPTION

This is a 0.27 inch (6.80 mm) height digit with icon

For custom displays.

This device utilizes Super Bright Yellow Green & Super Red LED chip

Which are made from AlGaInP on a Transparent GaAs, substrate.

The display has Black face, White segment.

#### DEVICE

PART NO	DESCRIPTION
Super Bright Yellow Green & Super Bright Red	Common Anode

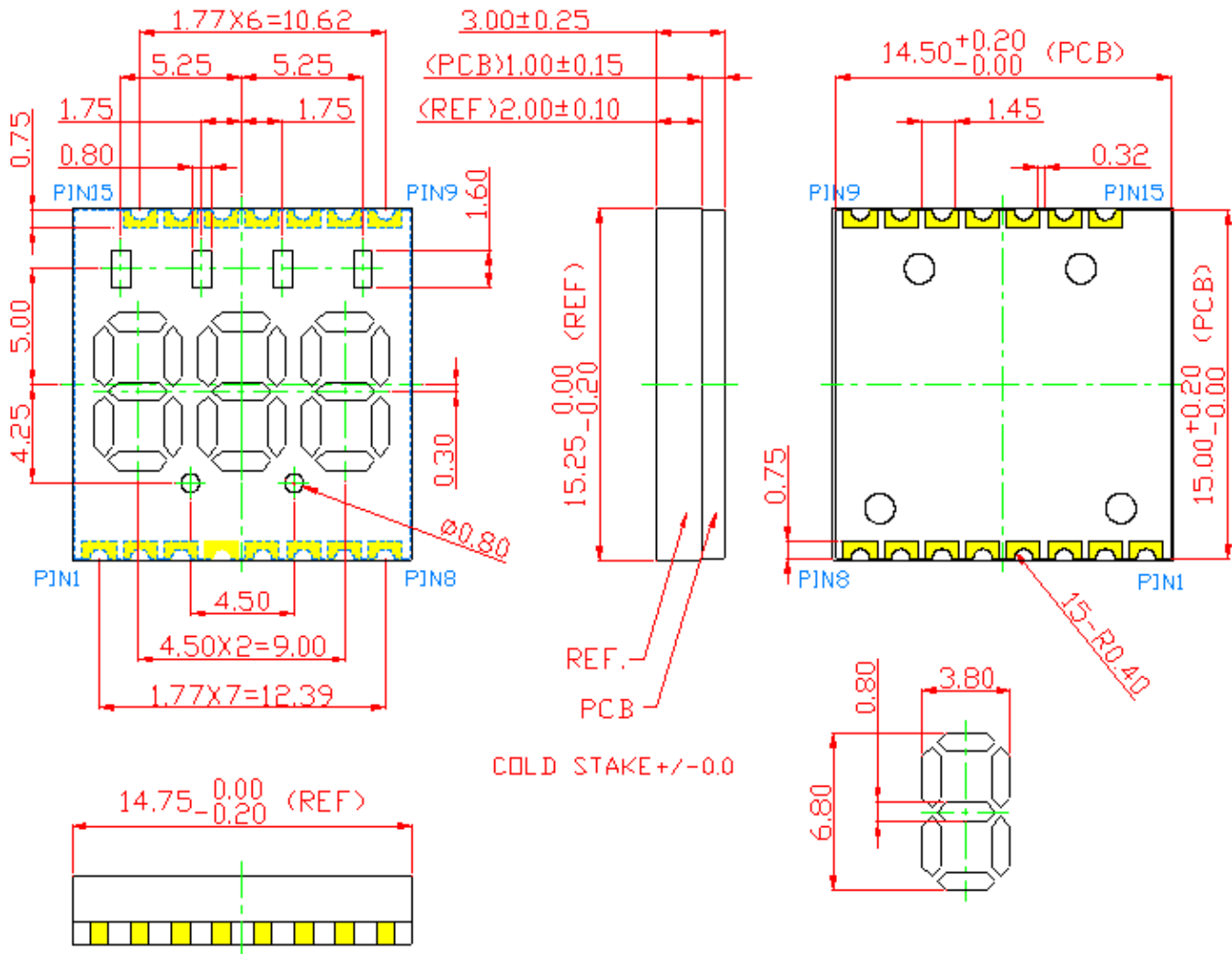


# American Opto Plus LED Corp.

## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### MECHANICAL DIMENSIONS



#### Notes:

1. All dimensions are in millimeters (inches); tolerances are  $\pm 0.25\text{mm}$  ( $0.01''$ ) specified
2. 6 Layer PCB. No electrical contact on backside of PCB

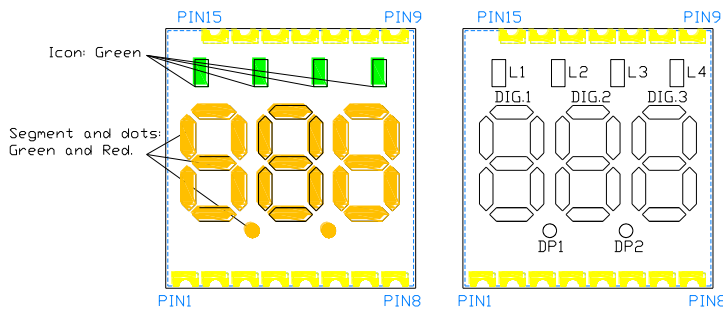


# American Opto Plus LED Corp.

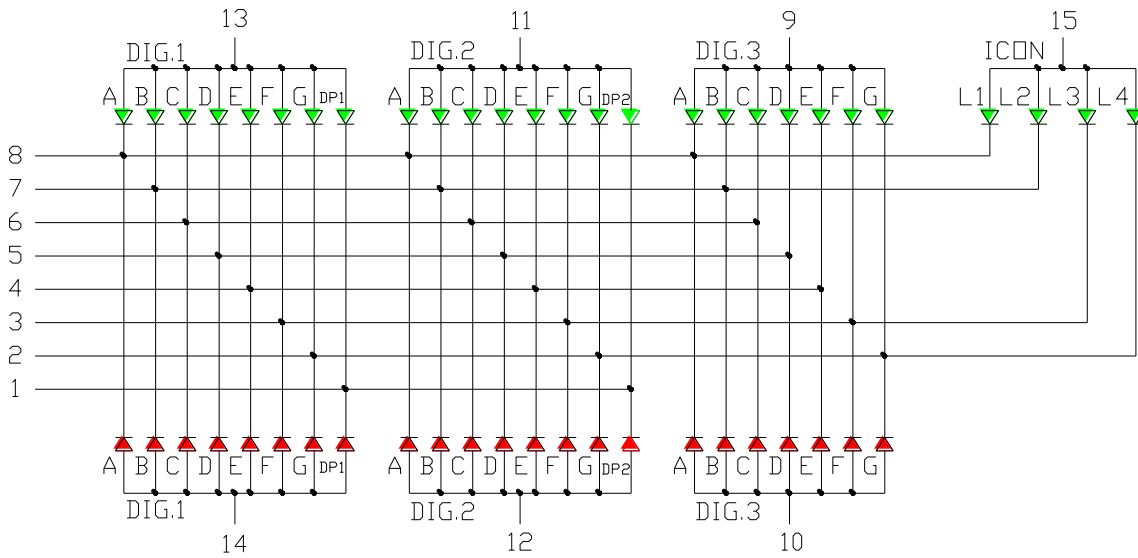
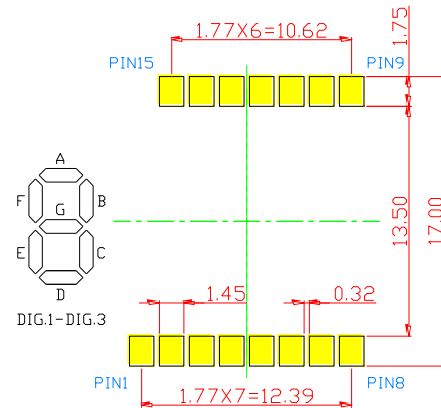
## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### TYPICAL INTERNAL EQUIVALENT CIRCUIT



#### Recommended Soldering Pattern



THE SIGN " " IS STANDARD FOR SUPER BRIGHT YELLOW GREEN LED CHIP.

THE SIGN " " IS STANDARD FOR SUPER RED LED CHIP.



**American Opto Plus LED Corp.**  
**0.27" SMD Type LED Display**  
**SMA-V1415LRYG-BW**

**YG: SUPER BRIGHT YELLOW GREEN (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	-	2.1	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	-	573	-	nm
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> = 20mA	-	571	-	nm
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> = 20mA	-	5.5	-	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> = 20mA	-	20	-	nm



# American Opto Plus LED Corp.

## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### LR: SUPER RED (AlGaInP/GaAs)

#### ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	75	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, (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	-	650	-	nm
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> = 20mA	-	640	-	nm
Luminous Intensity (Per Segment)	I <sub>V</sub>	I <sub>F</sub> = 20mA	-	5.5	-	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> = 20mA	-	20	-	nm



# American Opto Plus LED Corp.

## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### YG: SUPER BRIGHT YELLOW GREEN (AlGaInP/GaAs) CURVE

#### TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVE

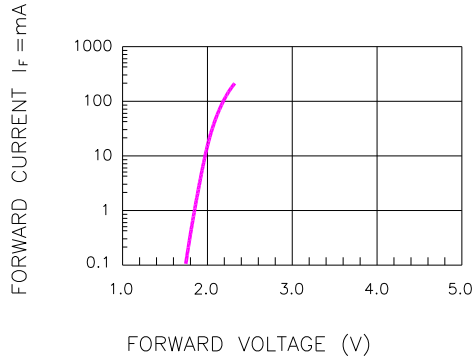


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

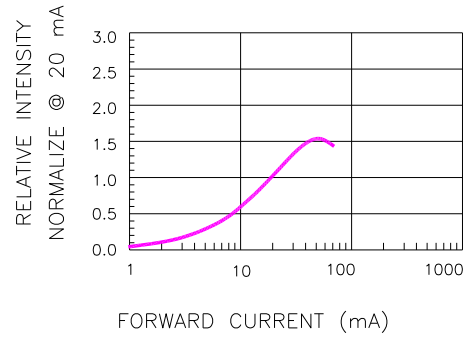


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

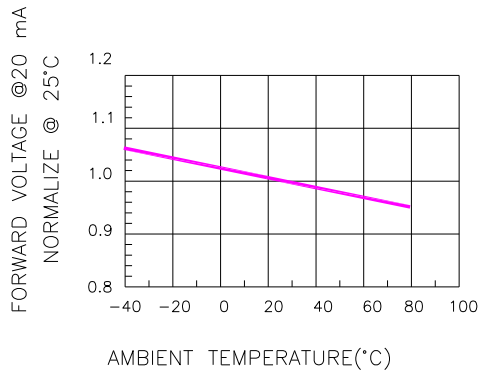


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

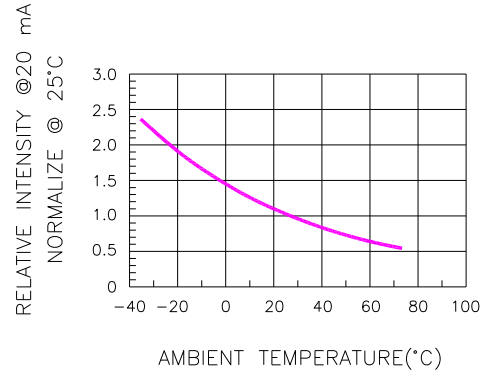


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

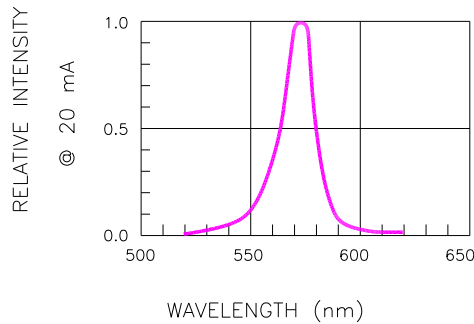


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

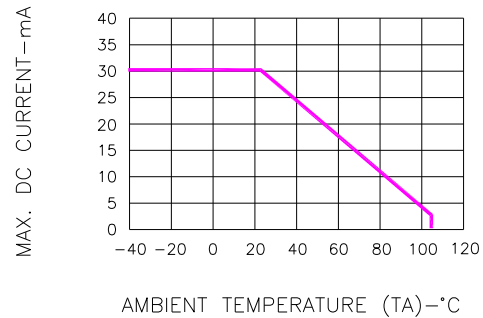


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE



# American Opto Plus LED Corp.

## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### LR: SUPER RED (AlGaInP/GaAs) CURVE

#### TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVE

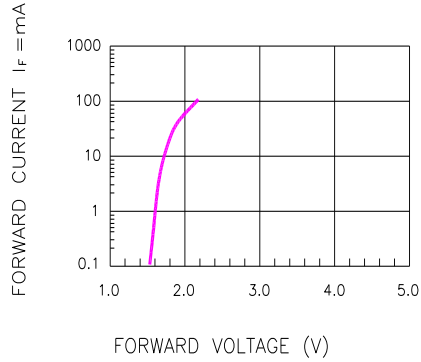


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

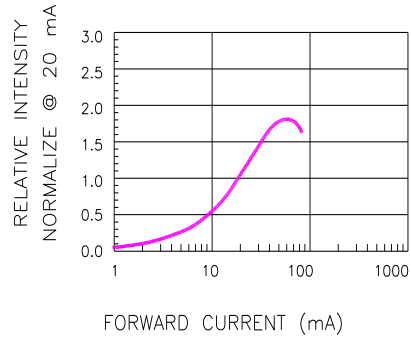


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

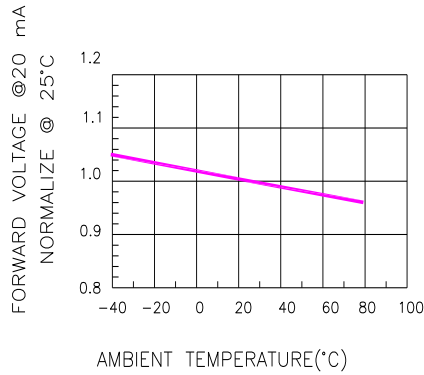


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

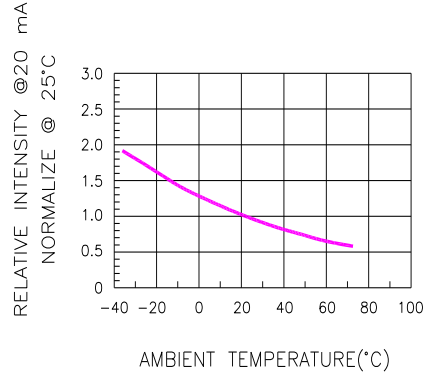


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

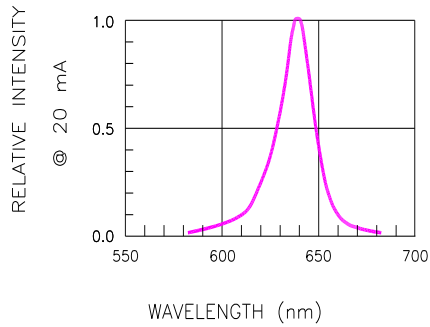


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

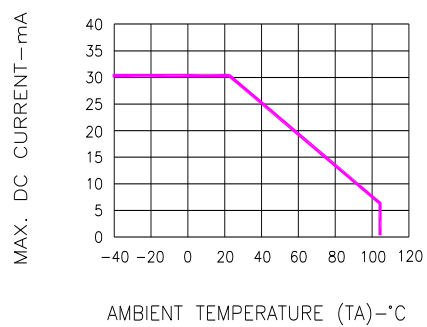


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE



# American Opto Plus LED Corp.

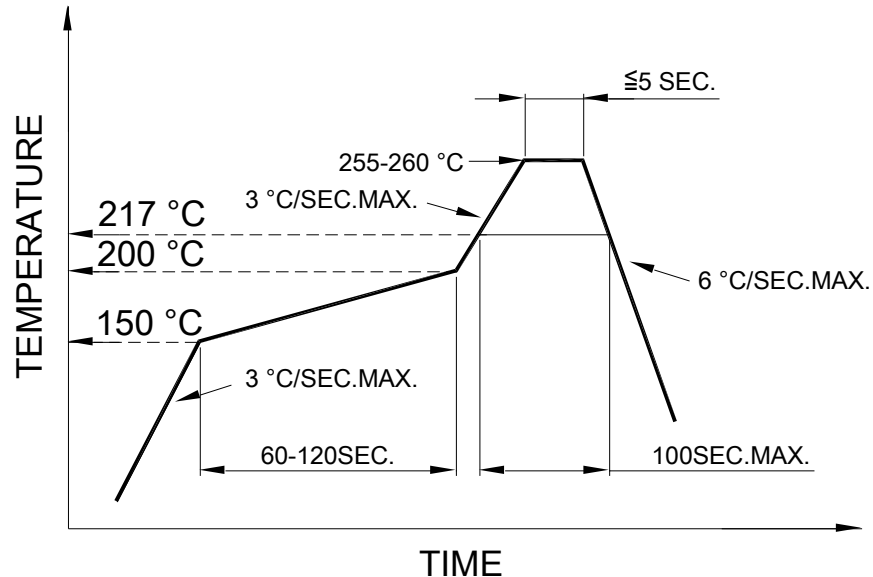
## 0.27" SMD Type LED Display

### SMA-V1415LRYG-BW

#### RECOMMEND SOLDERING PROFILE

SMT Soldering Profile

Pb free reflow soldering Profile



Notes:

1. We recommend the reflow temperature  $245^{\circ}\text{C} (\pm 5^{\circ}\text{C})$ . The maximum soldering temperature should be limited to  $260^{\circ}\text{C}$
2. Number of reflow process shall be 2 times or less

#### SOLDERING IRON

Basic spec is  $\le 4 \text{ sec}$  when  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow 1 \text{ sec}$ ). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under  $230^{\circ}\text{C}$

#### REWORK

1. Customer must finish rework within 3 sec under  $350^{\circ}\text{C}$
2. The head of soldering iron cannot touch copper foil