



American Opto Plus LED Corp.
0.51" SMD Type LED Display
SMA512LB G/W
SMC512LB 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 SMA512LB GW & SMC512LB GW are 0.51 inch (13.0mm) height
Dual 7-segment displays.

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

The display has Gray face, White segment.

● **DEVICE**

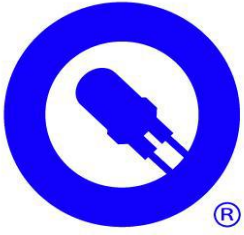
| PART NO | DESCRIPTION |
|-------------|----------------|
| SMA512LB GW | Common Anode |
| SMC512LB GW | Common Cathode |

RoHS Compliance



Pb free.





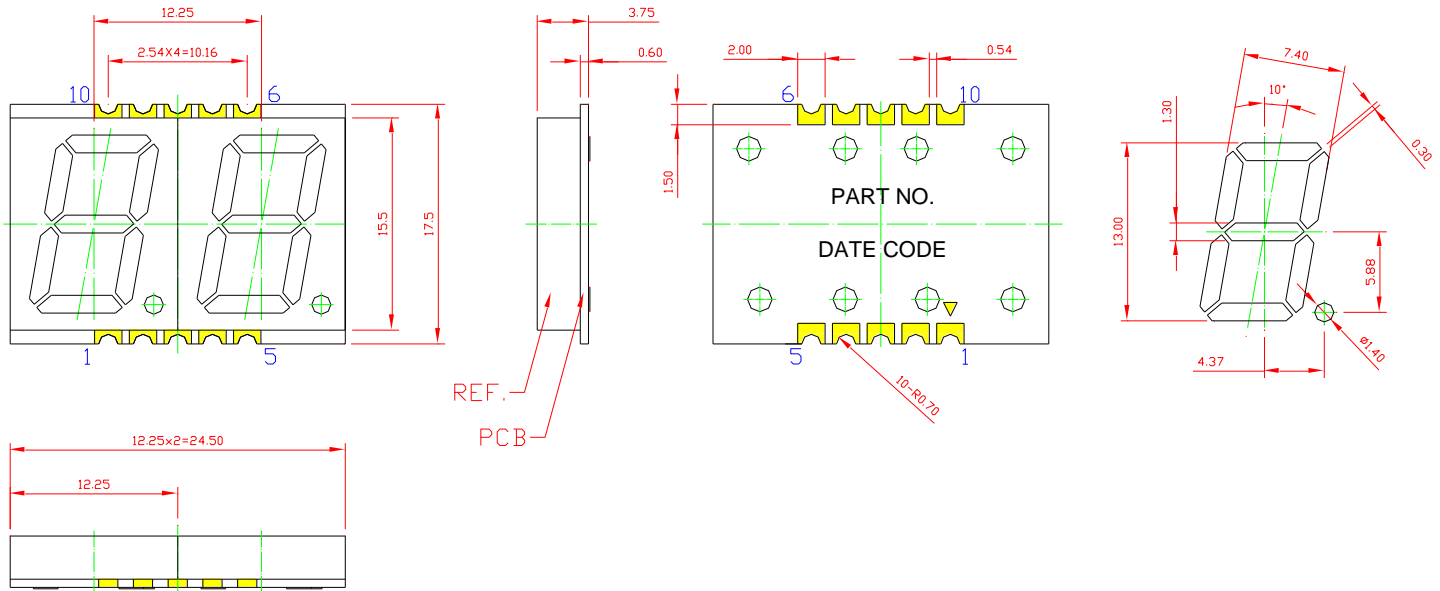
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● MECHANICAL DIMENSIONS



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



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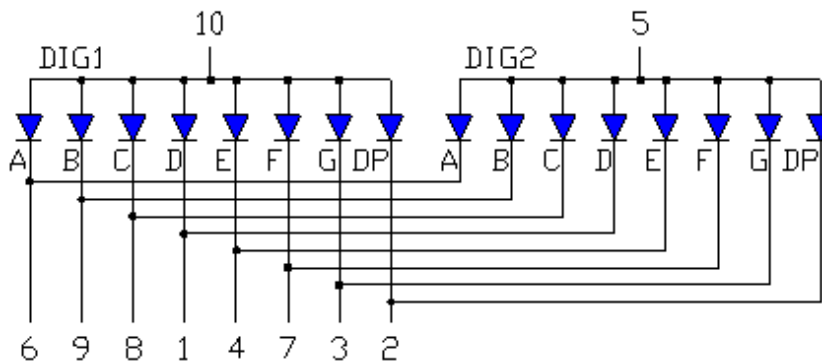
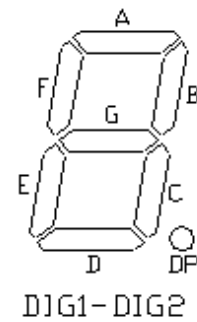
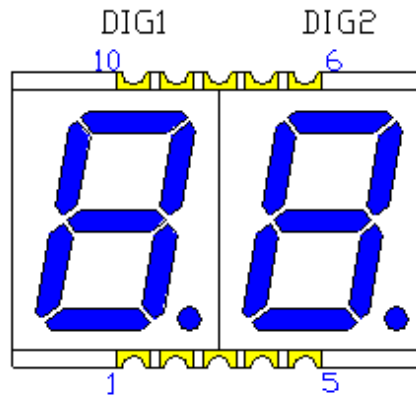
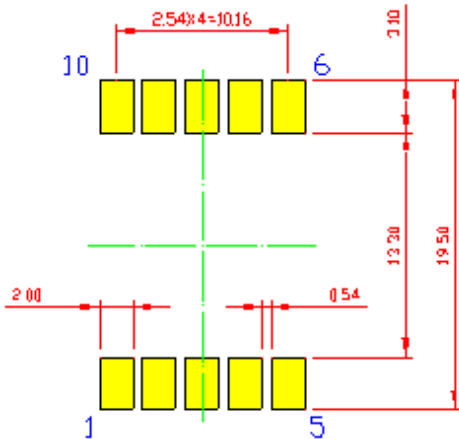
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SMA512LB G/W

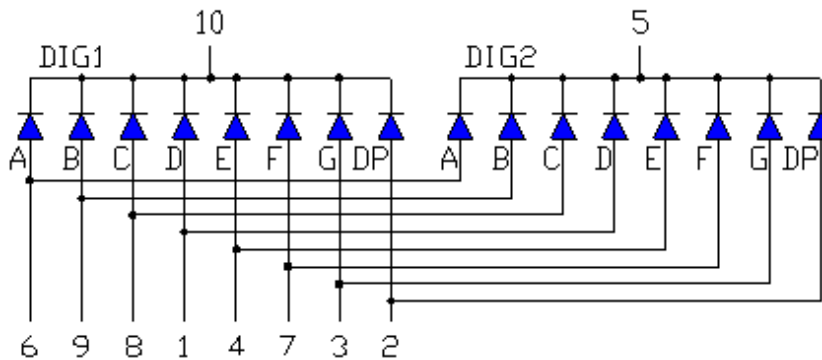
SMC512LB G/W

● TYPICAL INTERNAL EQUIVALENT CIRCUIT

Recommended Soldering Pattern



(Common Anode)



(Common Cathode)



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● **SUPER BRIGHT BLUE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT $T_a=25^{\circ}\text{C}$

| Parameter | Symbol | Maximum Rating | Unit |
|--|-----------|----------------|-------------------------|
| Power dissipation | P_{AD} | 120 | mW |
| Derating liner from 25°C | - | 0.3 | mA / $^{\circ}\text{C}$ |
| 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 | $^{\circ}\text{C}$ |
| Storage temperature | T_{STG} | -40 to +105 | $^{\circ}\text{C}$ |

ELECTRICAL - OPTICAL CHARACTERISTICS AT $T_a=25^{\circ}\text{C}$

| Characteristic | Symbol | Condition | Min. | Type. | Max. | Unit |
|------------------------------|-----------------|-------------------|------|-------|------|---------------|
| Forward Voltage, (Per Dice) | V_F | $I_F=20\text{mA}$ | - | 3.2 | 4.0 | V |
| Reverse Current, (Per Dice) | I_R | $V_R=8\text{V}$ | - | - | 10 | μA |
| Dominant Wavelength | λ_D | $I_F=20\text{mA}$ | - | 470 | - | nm |
| Luminous Intensity | I_V | $I_F=20\text{mA}$ | - | 40 | - | mcd |
| Spectral radiation bandwidth | $\Delta\lambda$ | $I_F=20\text{mA}$ | - | 30 | - | nm |



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● SUPER BRIGHT BLUE (InGaN/GaN) CURVE

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

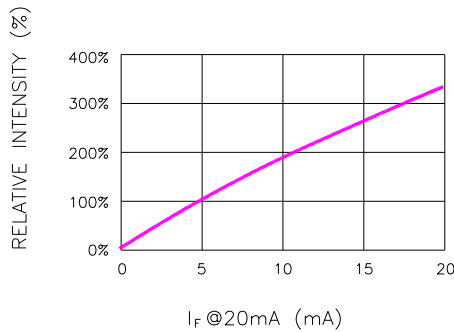


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

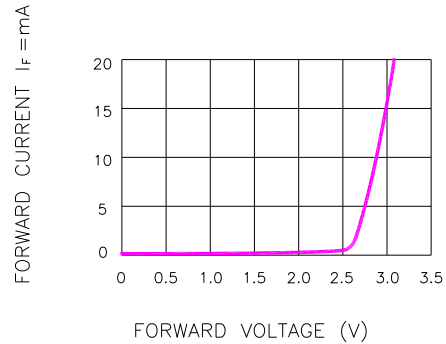


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

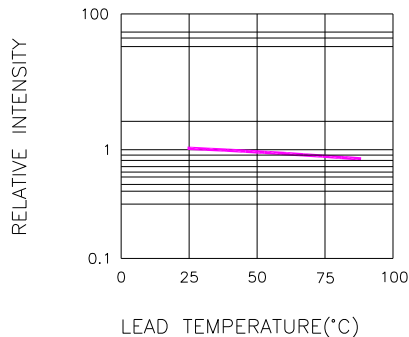


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

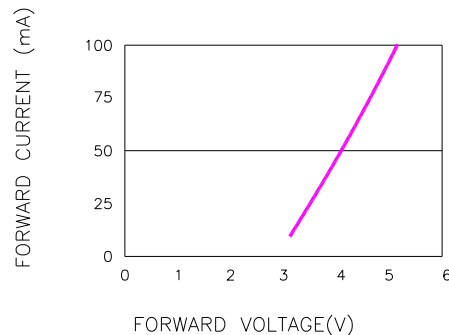


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

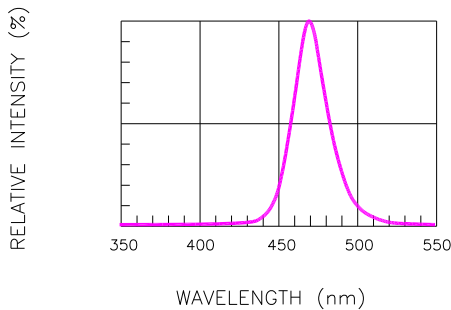


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

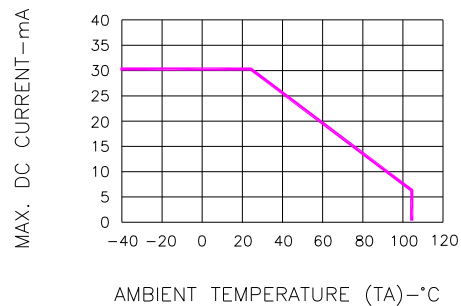


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

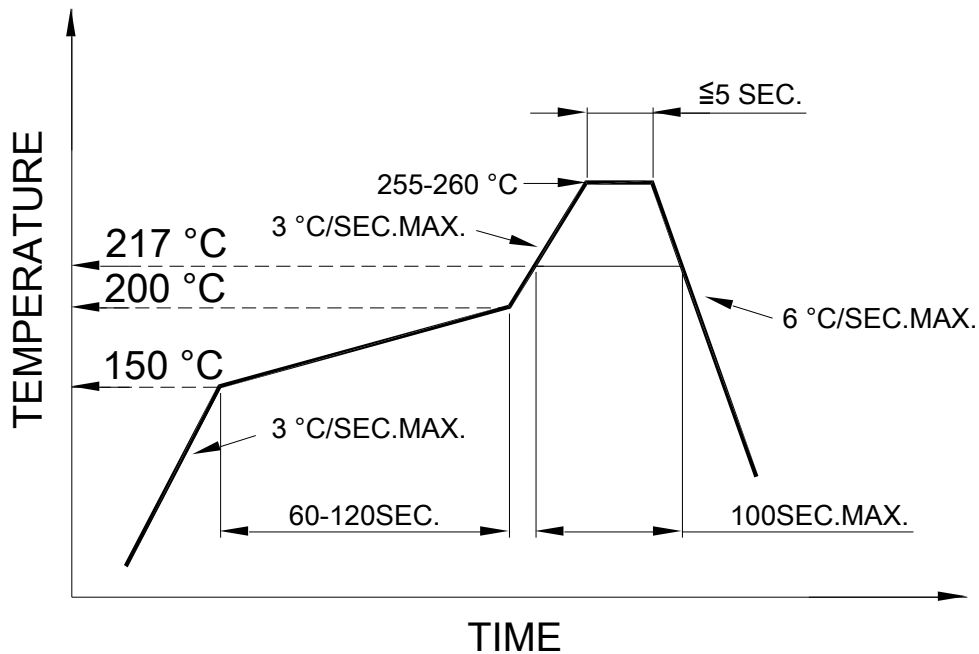


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● **RECOMMEND SOLDERING PROFILE**

SMT Soldering Profile

Pb free reflow soldering Profile



● **SOLDERING IRON**

Basic specification : ≤ 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 ≤ 3 sec under 350°C.