

# PRODUCT SPECIFICATION

## Part Number PDM88120 Series

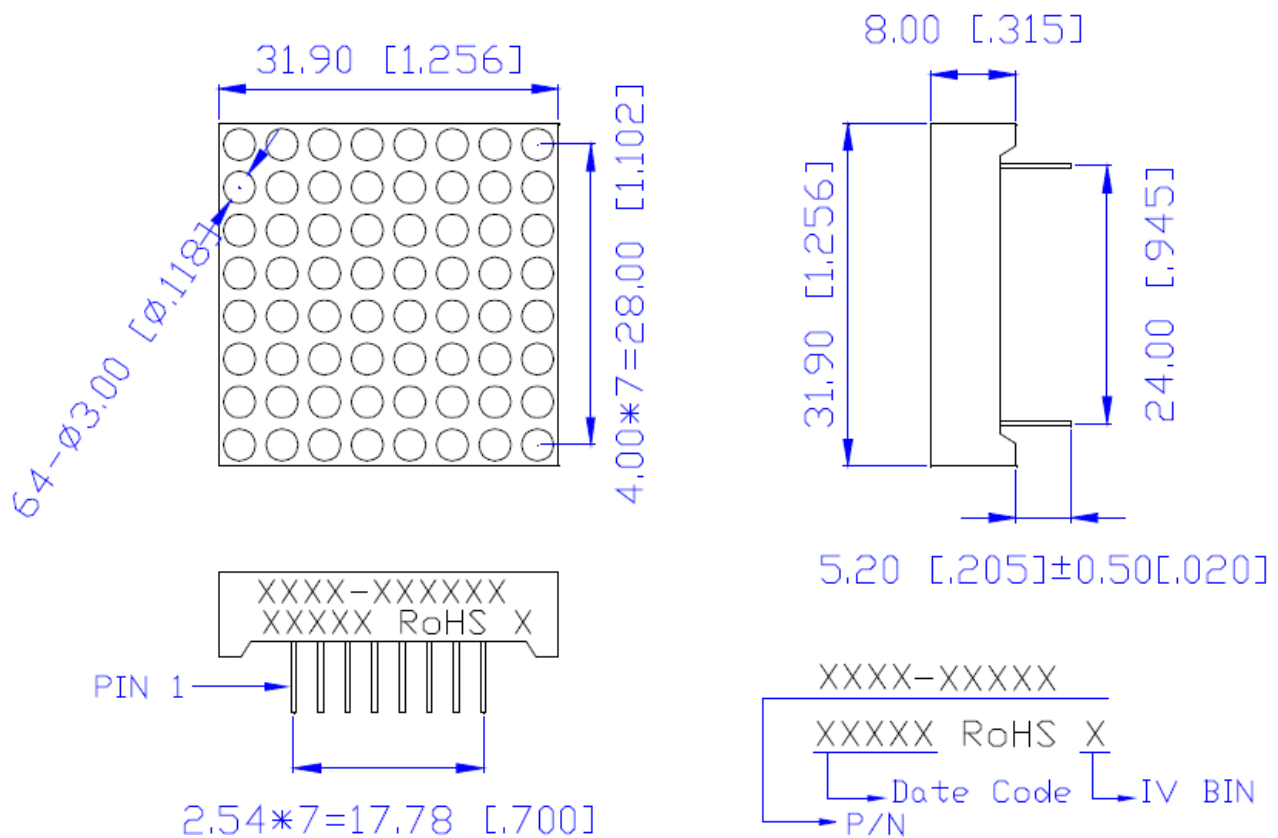
### Details

- 1.2" (31.0mm) Dot Matrix Display
- 8x8 Array
- Available in Common Anode or Cathode
- Emitting Color: Pure Green, Yellow Green, Yellow, Amber, Orange-Red, Red or Deep Red

### Features

- Low power consumption
- RoHS Compliant
- Gray or Black Face, White Segment
- Easy mounting on PCB or socket

### Mechanical Dimensions



#### Notes:

1. Dimensions in millimeters [inch], and tolerance is  $\pm 0.25$  [0.010] and angle is  $\pm 1^\circ$  unless otherwise noted.
2. Bending  $\leq$  Length\*1%
3. All pins are  $\phi 0.60$  [0.020]  $\pm 0.1$  [0.004]
4. Specifications subject to change without notice





**Device Selection Guide**

| Model Number  | Chip     |                | Description                                 |
|---------------|----------|----------------|---|
|               | Material | Emitting Color |   |
| PDM88120x-G05 | InGaN    | True Green     | Common Cathode x=C<br>/<br>Common Anode x=A |
| PDM88120x-G17 | AlInGaP  | Yellow Green   |   |
| PDM88120x-Y04 |          | Yellow         |   |
| PDM88120x-A11 |          | Amber          |   |
| PDM88120x-R02 |          | Orange-Red     |   |
| PDM88120x-R11 |          | Red            |   |
| PDM88120x-R21 |          | Deep Red       |   |

**Absolute Maximum Ratings at Ta=25°C**

| Parameter                                     | Symbol           | Rating                  |      | Unit  |
|---|------------------|-------------------------|------|-------|
|   |                  | G17/Y04/A11/R02/R11/R21 | G05  |       |
| Power Dissipation per Dice                    | P <sub>AD</sub>  | 70                      | 114  | mW    |
| Derating Liner from 25°C per Dice             | --               | 0.33                    | 0.4  | mA/°C |
| Continuous Forward Current Per Dice           | I <sub>AF</sub>  | 25                      | 30   | mA    |
| Peak Current Per Dice (duty cycle 1/10, 1KHz) | I <sub>PF</sub>  | 90                      | 100  | mA    |
| Reverse Voltage Per Dice                      | V <sub>R</sub>   | 5                       | 5    | V     |
| Electrostatic Discharge (HBM)                 | ESD              | /                       | 1000 | V     |
| Operating Temperature                         | T <sub>opr</sub> | -35~+85                 |      | °C    |
| Storage Temperature                           | T <sub>stg</sub> | -35~+85                 |      | °C    |

Solder Conditions: 1/16 inch below seating plane for 3 -5 seconds at 260°C.



**Electrical and Optical Characteristics at Ta=25°C**

| Parameter                                      | Symbol                | Chip                    | Min. | Typ.    | Max. | Unit    | Condition |
|--|-----------------------|-------------------------|------|---------|------|---------|-----------|
| Forward Voltage Per Segment                    | VF                    | G05                     | --   | 3.2     | 3.8  | V       | IF=20mA   |
|  |                       | G17/Y04/A11/R02/R11/R21 | --   | 2       | 2.8  |         |           |
| Luminous Intensity Per Segment                 | Iv                    | G05                     | --   | 357     | --   | mcd     | IF=10mA   |
|  |                       | G17                     | --   | 23      | --   |         |           |
|  |                       | Y04                     | --   | 69      | --   |         |           |
|  |                       | A11                     | --   | 92      | --   |         |           |
|  |                       | R02                     | --   | 55      | --   |         |           |
|  |                       | R11                     | --   | 53      | --   |         |           |
|  |                       | R21                     | --   | 27      | --   |         |           |
| Peak Emission Wavelength / Dominant Wavelength | $\lambda P/\lambda d$ | G05                     | --   | */525   | --   | nm      | IF=20mA   |
|  |                       | G17                     | --   | 572/570 | --   |         |           |
|  |                       | Y04                     | --   | 592/590 | --   |         |           |
|  |                       | A11                     | --   | 612/605 | --   |         |           |
|  |                       | R02                     | --   | 632/625 | --   |         |           |
|  |                       | R11                     | --   | 644/630 | --   |         |           |
|  |                       | R21                     | --   | 660/645 | --   |         |           |
| Reverse Current                                | IR                    |                         | --   | --      | 100  | $\mu$ A | VR=5V     |
| Luminous Intensity Matching Ratio              | Iv-m                  |                         | --   | --      | 2:1  | --      | IF=10mA   |

**Typical Electrical/Optical Characteristic Curves**

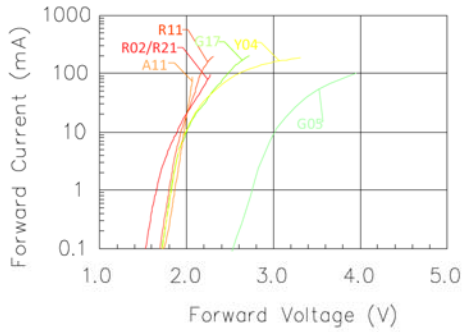


Fig 1. Forward Current vs. Forward Voltage

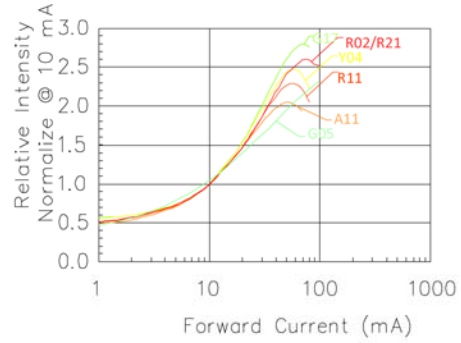


Fig 2. Relative Intensity vs. Forward Current

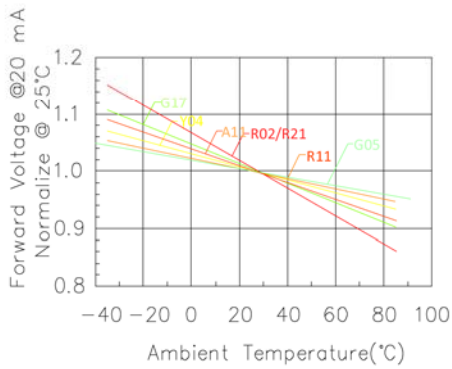


Fig 3. Forward Voltage vs. Temperature

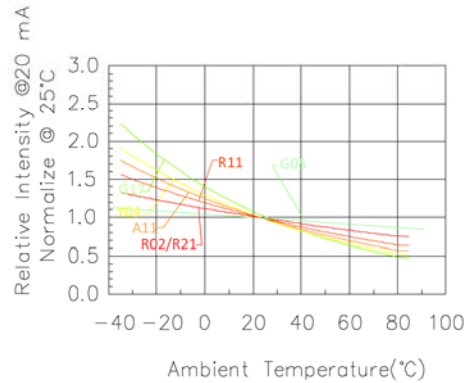


Fig 4. Relative Intensity vs. Temperature

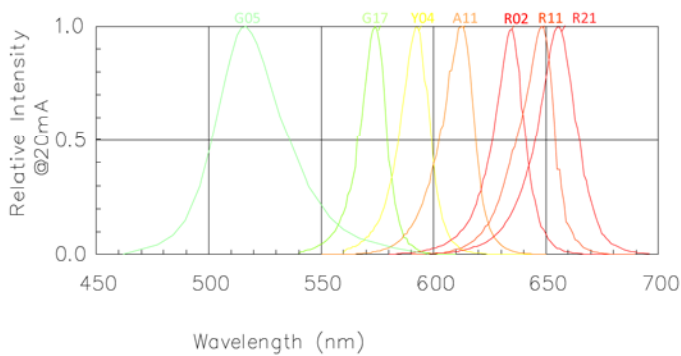


Fig 5. Relative Intensity vs. Wavelength

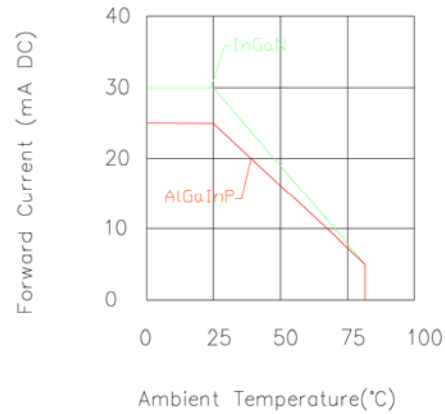


Fig 3. Forward Current vs. Ambient Temperature



**Luminous General lv Bin Grade (IF = 10mA)**

**Color Rank Limits (IF=20mA)**

Remark: Unit=mcd

\*Tolerance: ±20%

Remark: Unit=nm

\*Tolerance: ±1

**● Pure Green(G05)**

| Y       | 1       | 2       | 3       | 4       |
|---------|---------|---------|---------|---------|
| 202.450 | 263.185 | 342.142 | 444.786 | 578.222 |
|         |         |         |         |         |
| 263.184 | 342.141 | 444.785 | 578.221 | 751.689 |

| 1     | 2     | 3     | 4     | 5     |
|-------|-------|-------|-------|-------|
| 515.0 | 518.0 | 520.0 | 522.0 | 524.0 |
|       |       |       |       |       |
| 518.0 | 520.0 | 522.0 | 524.0 | 527.0 |

**● Yellow Green(G17)**

| M      | N      | P      | Q      | R      |
|--------|--------|--------|--------|--------|
| 11.293 | 14.682 | 19.088 | 24.815 | 32.261 |
|        |        |        |        |        |
| 14.681 | 19.087 | 24.814 | 32.260 | 41.939 |

| 0     | 1     | 2     | 3     | 4     |
|-------|-------|-------|-------|-------|
| 567.5 | 569.5 | 570.5 | 571.5 | 573.0 |
|       |       |       |       |       |
| 569.4 | 570.4 | 571.4 | 572.9 | 575.0 |

**● Yellow (Y04)**

| R      | S      | T      | U      | V       |
|--------|--------|--------|--------|---------|
| 32.261 | 41.940 | 54.523 | 70.881 | 92.146  |
|        |        |        |        |         |
| 41.939 | 54.522 | 70.880 | 92.145 | 119.790 |

| 1     | 2     | 3     | 4     | 5     |
|-------|-------|-------|-------|-------|
| 583.0 | 585.0 | 587.0 | 589.0 | 591.0 |
|       |       |       |       |       |
| 585.0 | 587.0 | 589.0 | 591.0 | 593.0 |

**● Amber (A11)**

| S      | T      | U      | V       | W       |
|--------|--------|--------|---------|---------|
| 41.940 | 54.523 | 70.881 | 92.146  | 119.791 |
|        |        |        |         |         |
| 54.522 | 70.880 | 92.145 | 119.790 | 155.729 |

**● Orange (R02)**

| R      | S      | T      | U      | V       |
|--------|--------|--------|--------|---------|
| 32.261 | 41.940 | 54.523 | 70.881 | 92.146  |
|        |        |        |        |         |
| 41.939 | 54.522 | 70.880 | 92.145 | 119.790 |

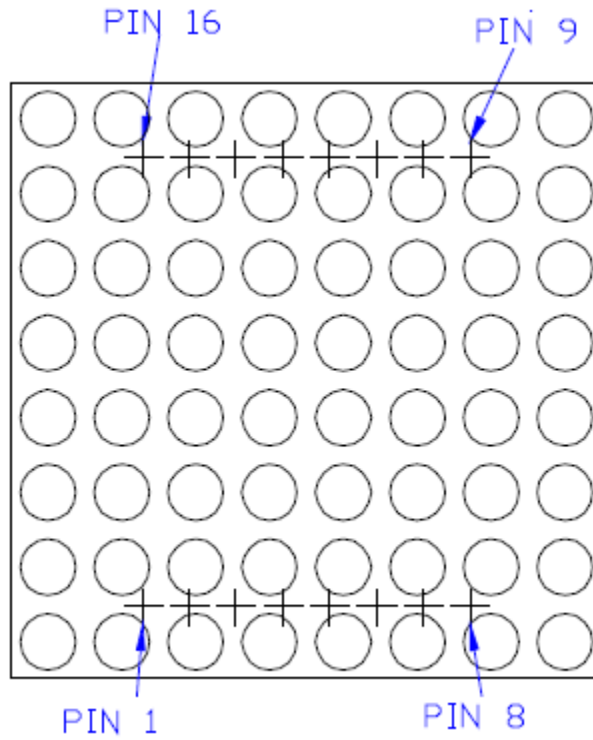
**● Red (R11)**

| Q      | R      | S      | T      | U      |
|--------|--------|--------|--------|--------|
| 24.815 | 32.261 | 41.940 | 54.523 | 70.881 |
|        |        |        |        |        |
| 32.260 | 41.939 | 54.522 | 70.880 | 92.145 |

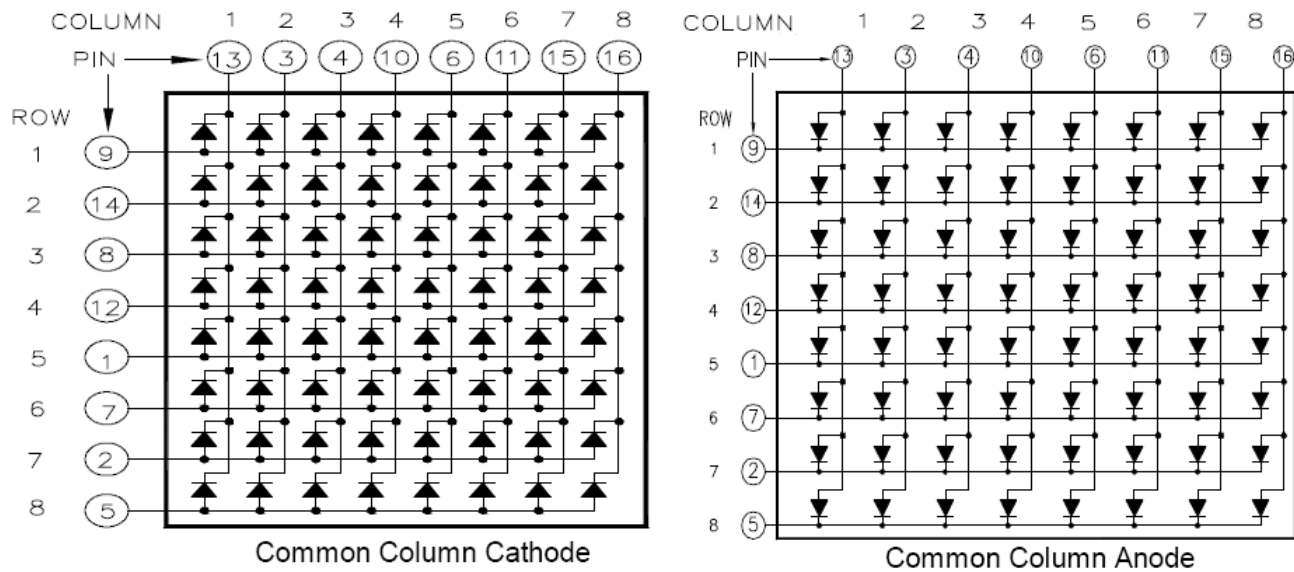
**● Deep Red(R21)**

| N      | P      | Q      | R      | S      |
|--------|--------|--------|--------|--------|
| 14.682 | 19.088 | 24.815 | 32.261 | 41.940 |
|        |        |        |        |        |
| 19.087 | 24.814 | 32.260 | 41.939 | 54.522 |

**All Light-On Segments Feature & Pad Position**



**Internal Circuit Diagram**

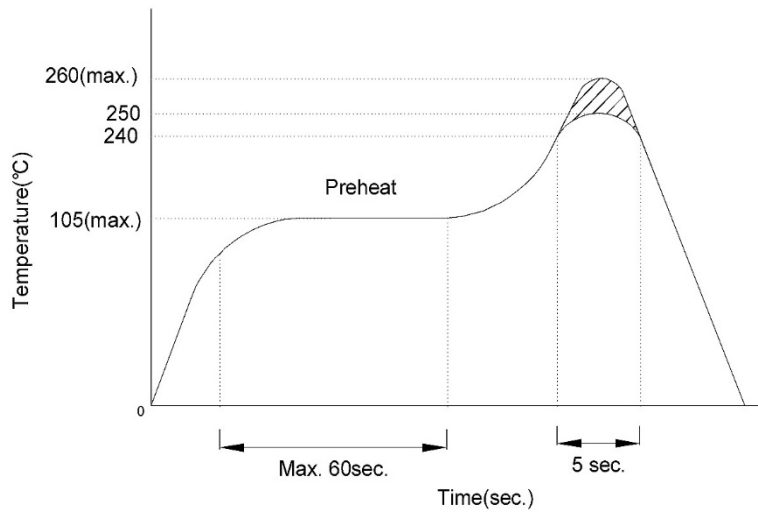


## *Precautions for Use*

### 1. Recommended soldering conditions

#### 1.1. Wave soldering

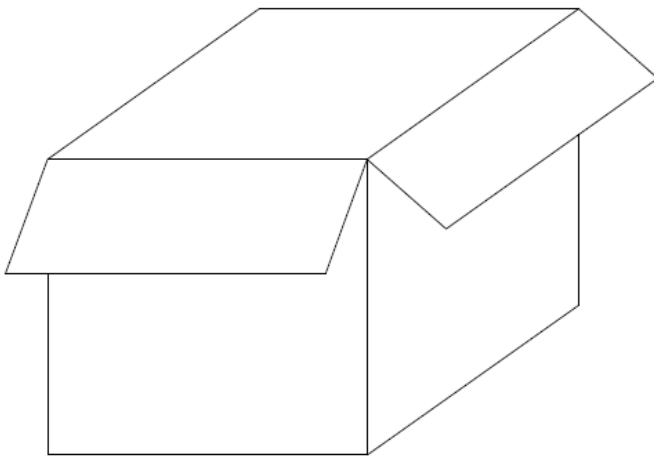
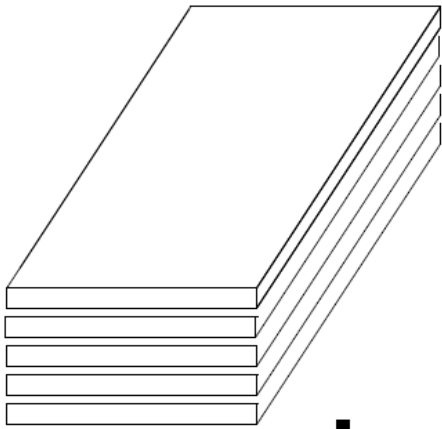
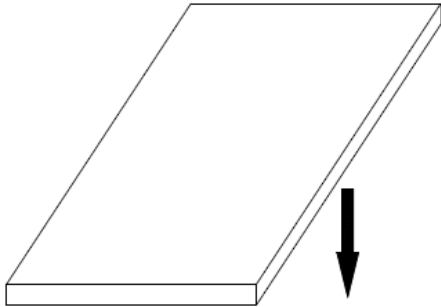
Basic SPEC is  $\leq 5$ sec. When  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow -1$ sec.).



#### 1.2. Soldering Iron:

Power dissipation of iron should be smaller than 15W and temp should be controllable. Soldering temperature should be under  $260^{\circ}\text{C}$ , time  $\leq 3$ sec.

*Packing Dimensions*



32 Pcs Per PE.foam  
PE.foam Size:  
L295xW195xH15mm

9 PE.foam Per Box  
Q'TY: 288 PCS  
Box Size:  
L300\*W205\*H240mm