



# PRODUCT SPECIFICATION

**Model No : CSM-88108VM9**

## Descriptions:

- 1.85 Inch Dot-Matrix Display
- 8\*8 Array with X-Y Select.
- CSM-88108: Column Cathode, Row Anode
- Emitting Color: Super Bright Orange
- Emitting Color: Super Bright Green



| CUSTOMER APPROVED<br>SIGNATURES | APPROVED BY | CHECKED BY | PREPARED BY |
|---------------------------------|-------------|------------|-------------|
|                                 |             |            |             |

**CHINA SEMICONDUCTOR CORPORATION**

Address:2FL. NO.909,Chung-Cheng Road,  
Chung-Ho City Taipei Hsien,Taiwan.

Tel:886-2-2223-9696

Fax:886-2-2223-9377

**OPTO PLUS TECHNOLOGIES CO.,LTD**

Address:696 Shun jiang Rd.,Ji Shan St.Shaoxing,  
ZheJiang,China

Tel:86-0575-88623888

Fax:86-0575-88623112



**Model No : CSM-88108VM9**

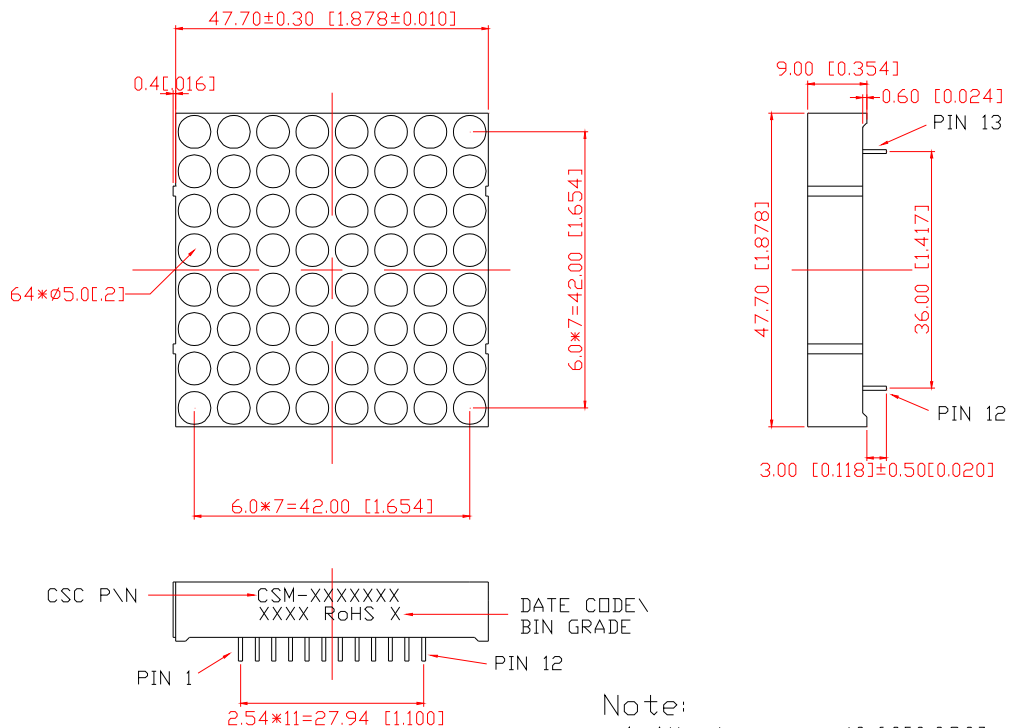
**Features -**

1. 1.85 inch (47.0mm) Matrix height.
2. Case mold type.
3. RoHS compliant.
4. Low power consumption.
5. Easy mounting on P.C. board or socket.

**Device Selection Guide -**

| Part No.     | Chip     |                     | Column  | Row   |
|--------------|----------|---------------------|---------|-------|
|              | Material | Emitted Color       |         |       |
| CSM-88108VM9 | AlGaInP  | Super Bright Orange | Cathode | Anode |
|              | AlGaInP  | Super Bright Green  |         |       |

**Package Dimensions -**



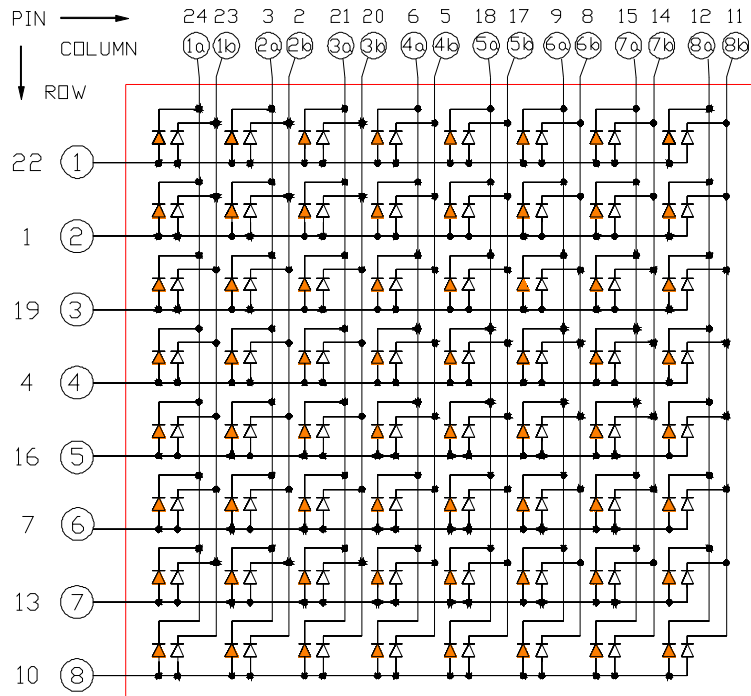
Note:  
 1 All pins are  $\varnothing 0.60 [0.020]$  mm  
 2 Dimension in millimeters (inch), tolerance is  $\pm 0.25 [0.010]$  unless otherwise noted.



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**Internal Circuit Diagrams -**

CSM-88108



| CSM-88108 |                   |         |                   |         |                   |
|-----------|-------------------|---------|-------------------|---------|-------------------|
| PIN NO.   | FUNCTION          | PIN NO. | FUNCTION          | PIN NO. | FUNCTION          |
| 1         | Anode Row 2       | 9       | Cathode Column 6a | 17      | Cathode Column 5b |
| 2         | Cathode Column 2b | 10      | Anode Row 8       | 18      | Cathode Column 5a |
| 3         | Cathode Column 2a | 11      | Cathode Column 8b | 19      | Anode Row 3       |
| 4         | Cathode Column 4  | 12      | Cathode Column 8a | 20      | Cathode Column 3b |
| 5         | Cathode Column 4b | 13      | Anode Row 7       | 21      | Cathode Column 3a |
| 6         | Cathode Column 4a | 14      | Cathode Column 7b | 22      | Anode Row 1       |
| 7         | Anode Row 6       | 15      | Cathode Column 7a | 23      | Cathode Column 1b |
| 8         | Cathode Column 6b | 16      | Anode Row 5       | 24      | Cathode Column 1a |

NOTE: "a" for Super Bright Orange color chip  
"b" for Super Bright Green color chip



Model No : CSM-88108VM9

■ Absolute Maximum Rating -

| Super Bright Orange   |        | (Ta=25°C) |       |
|---|--------|-----------|-------|
| Parameter   | Symbol | Rating    | Unit  |
| Power Dissipation Per Dice  | PAD    | 70        | mW    |
| Continuous Forward Current Per Dice                                     | IAF    | 25        | mA    |
| Peak Current Per Dice(duty cycle 1/10, 1kHz)                            | IPF    | 90        | mA    |
| Derating Linear From 25°C Per Dice                                      | -      | 0.33      | mA/°C |
| Reverse Voltage Per Dice  | VR     | 5         | V     |
| Operating Temp.   | Topr   | -35 ~ +85 | °C    |
| Storage Temp.   | Tstg   | -35 ~ +85 | °C    |
| Solder temperature 1/16 inch below seating plane for 3 seconds at 260°C |        |           |       |

| Super Bright Green  |        | (Ta=25°C) |       |
|---|--------|-----------|-------|
| Parameter   | Symbol | Rating    | Unit  |
| Power Dissipation Per Dice  | PAD    | 70        | mW    |
| Continuous Forward Current Per Dice                                     | IAF    | 25        | mA    |
| Peak Current Per Dice(duty cycle 1/10, 1kHz)                            | IPF    | 90        | mA    |
| Derating Linear From 25°C Per Dice                                      | -      | 0.33      | mA/°C |
| Reverse Voltage Per Dice  | VR     | 5         | V     |
| Operating Temp.   | Topr   | -35 ~ +85 | °C    |
| Storage Temp.   | Tstg   | -35 ~ +85 | °C    |
| Solder temperature 1/16 inch below seating plane for 3 seconds at 260°C |        |           |       |



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■ Electro-optical Characteristics -

| Super Bright Orange               |                  | (Ta=25°C) |      |      |      |                                  |
|-----------------------------------|------------------|-----------|------|------|------|----------------------------------|
| Parameter                         | Symbol           | Min.      | Typ. | Max. | Unit | Condition                        |
| Forward Voltage Per Dot           | V <sub>F</sub>   | -         | 2.0  | 2.8  | V    | I <sub>F</sub> =20mA             |
| Luminous Intensity Per Dot        | I <sub>v</sub>   | -         | 40   | -    | mcd  | I <sub>F</sub> =10mA             |
| Peak Emission Wavelength          | λ <sub>p</sub>   | -         | 632  | -    | nm   | I <sub>F</sub> =20mA             |
| Dominant Wavelength               | λ <sub>d</sub>   | -         | 624  | -    | nm   | I <sub>F</sub> =20mA             |
| Spectrum Radiation Bandwidth      | Δλ               | -         | 20   | -    | nm   | I <sub>F</sub> =20mA             |
| Reverse Current                   | I <sub>R</sub>   | -         | -    | 100  | μA   | V <sub>R</sub> =5V               |
| Luminous Intensity Matching Ratio | I <sub>V-m</sub> | -         | -    | 2:1  | -    | I <sub>p</sub> =80mA<br>1/16Duty |

| Super Bright Green                |                  | (Ta=25°C) |      |      |      |                                  |
|-----------------------------------|------------------|-----------|------|------|------|----------------------------------|
| Parameter                         | Symbol           | Min.      | Typ. | Max. | Unit | Condition                        |
| Forward Voltage Per Dot           | V <sub>F</sub>   | -         | 2.1  | 2.8  | V    | I <sub>F</sub> =20mA             |
| Luminous Intensity Per Dot        | I <sub>v</sub>   | -         | 18   | -    | mcd  | I <sub>F</sub> =10mA             |
| Peak Emission Wavelength          | λ <sub>p</sub>   | -         | 572  | -    | nm   | I <sub>F</sub> =20mA             |
| Dominant Wavelength               | λ <sub>d</sub>   | -         | 570  | -    | nm   | I <sub>F</sub> =20mA             |
| Spectrum Radiation Bandwidth      | Δλ               | -         | 20   | -    | nm   | I <sub>F</sub> =20mA             |
| Reverse Current                   | I <sub>R</sub>   | -         | -    | 100  | μA   | V <sub>R</sub> =5V               |
| Luminous Intensity Matching Ratio | I <sub>V-m</sub> | -         | -    | 2:1  | -    | I <sub>p</sub> =80mA<br>1/16Duty |



Model No : CSM-88108VM9

■ Typical Electrical / Optical Characteristics Curves -Super Bright Orange  
(Ta = 25°C Unless Otherwise Noted)

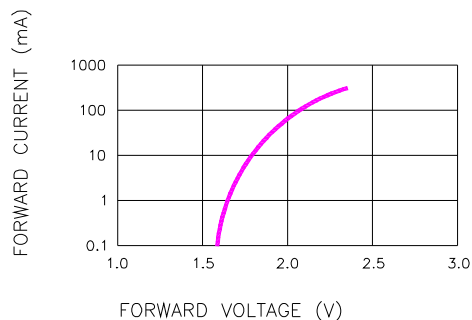


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

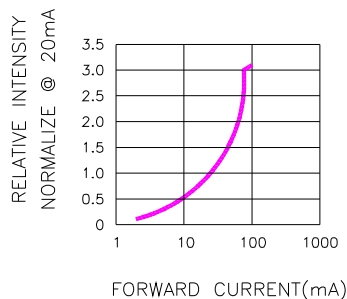


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

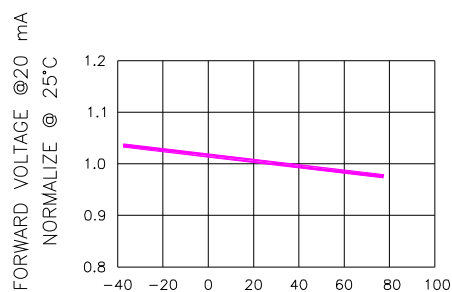


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

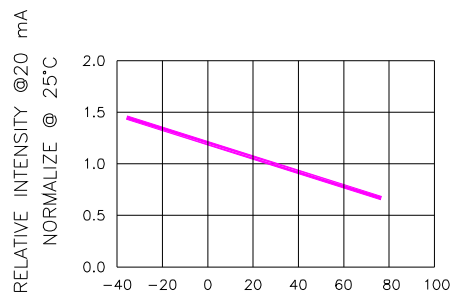


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

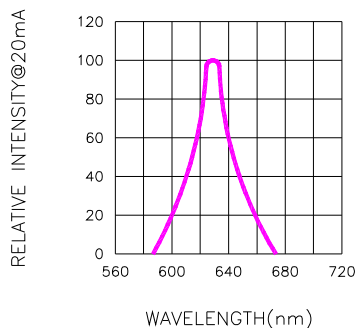


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH



**Model No : CSM-88108VM9**

**Typical Electrical / Optical Characteristics Curves -Super Bright Green  
(Ta = 25°C Unless Otherwise Noted)**

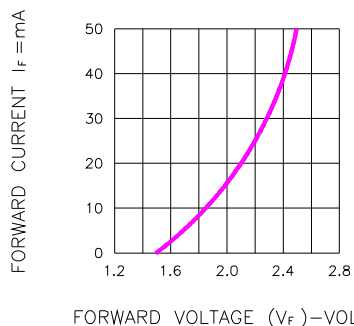


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

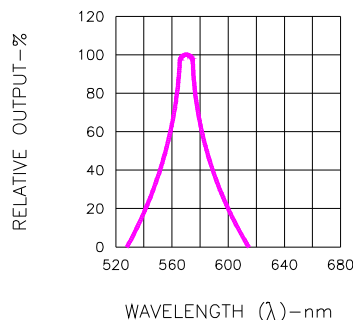


Fig.2 SPECTRAL RESPONSE

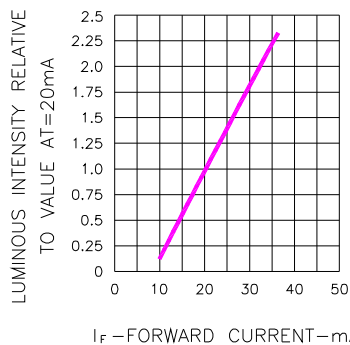


Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

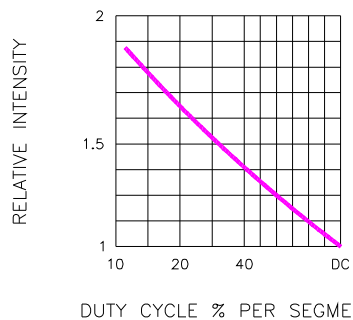


Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE

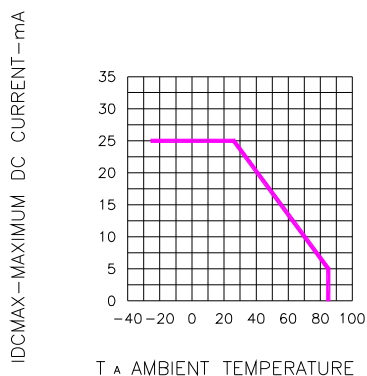


Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT VS. A FUNCTION OF AMBIENT TEMPERATURE

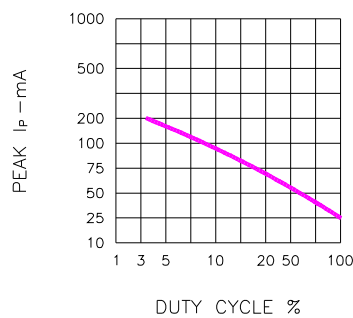
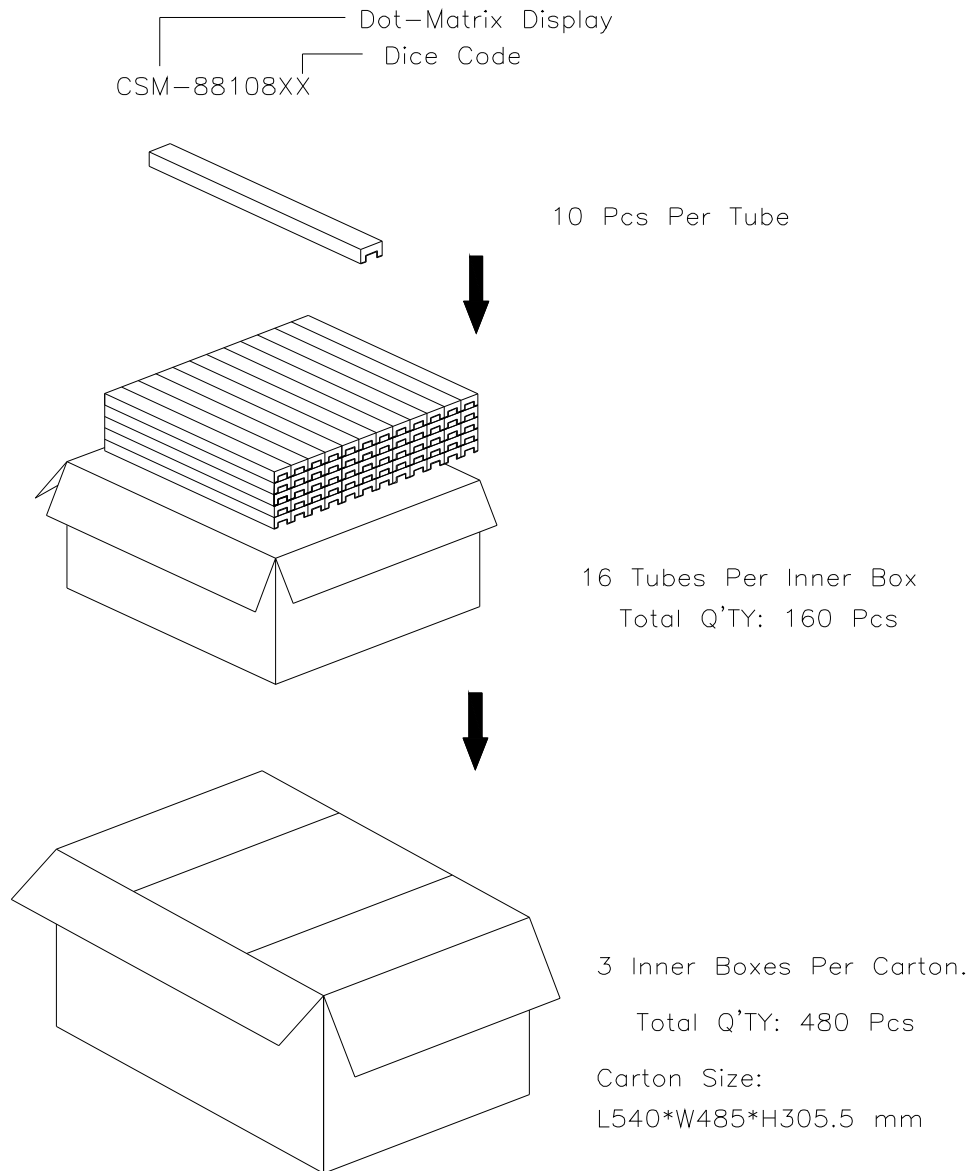


Fig.6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE f=1 KHz)



Model No: CSM-88108VM9

■ Package Dimensions



Note: The specifications are subject to change without notice. Please contact us for updated information.