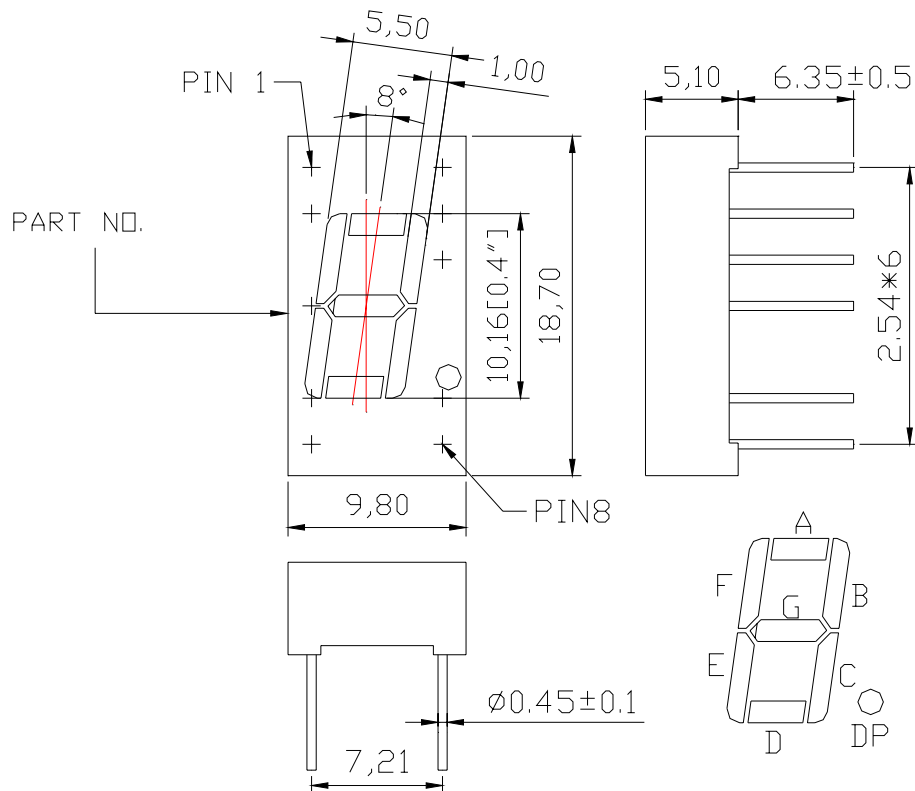


**WCN1-0040SD-C21R****SPECIFICATION**

| WCN             |            |             | CUSTOMER<br>Confirmed |
|-----------------|------------|-------------|-----------------------|
| Prepared by     | Checked by | Approved by |                       |
| Liu             | Athena     | William     |                       |
| REVISION RECORD |            |             |                       |

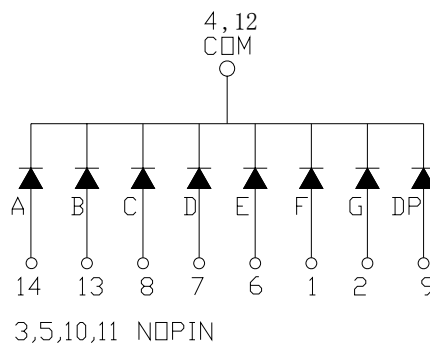
**REVISION: A0**

## Outer Dimension:



Notes: Unless otherwise stated, the tolerance is  $\pm 0,25\text{mm}$ .

## Circuit Diagram:



## Pin Connection:

| PIN NO. | CONNECTION     | PIN NO. | CONNECTION     |
|---------|----------------|---------|----------------|
| 1       | Anode F        | 8       | Anode C        |
| 2       | Anode G        | 9       | Anode DP       |
| 3       | NP             | 10      | NP             |
| 4       | Common Cathode | 11      | NP             |
| 5       | NP             | 12      | Common Cathode |
| 6       | Anode E        | 13      | Anode B        |
| 7       | Anode D        | 14      | Anode A        |

# WCN Opto Group Co., Limited

## ■ Features:

- High Reliability
- Color: Super Red
- Low Power Requirement
- Easy Assembly

## ■ Description:

- Single Digit LED Display
- Digit Height: 10.16mm(0.40")
- Black Face and Milky Segment

## ■ Absolute Maximum Rating (Ta=25°C):

| Parameter                        | Symbol           | Condition          | Color | Rating  | Units |
|----------------------------------|------------------|--------------------|-------|---------|-------|
| Power Dissipation Per Segment    | P <sub>d</sub>   | —                  | Red   | 62.5    | mW    |
| Forward Current Per Segment      | I <sub>F</sub>   | —                  | Red   | 25      | mA    |
| Peak Forward Current Per Segment | I <sub>FP</sub>  | 1/10 Duty<br>10KHz | Red   | 100     | mA    |
| Reverse Voltage Per Segment      | V <sub>R</sub>   | —                  | Red   | 5       | V     |
| Operating Temperature Range      | T <sub>opr</sub> | —                  | —     | -35~+85 | °C    |
| Storage Temperature Range        | T <sub>stg</sub> | —                  | —     | -35~+85 | °C    |

## ■ Electrical/Optical Characteristics Rating(Ta=25°C)

| Item                                                   | Symbol           | Test conditions      | Location    | Rating |      |      | Units |
|--------------------------------------------------------|------------------|----------------------|-------------|--------|------|------|-------|
|                                                        |                  |                      |             | Min.   | Typ. | Max. |       |
| Forward Voltage                                        | V <sub>F</sub>   | I <sub>F</sub> =20mA | Per Segment | —      | 2.00 | 2.50 | V     |
| Reverse Current                                        | I <sub>R</sub>   | V <sub>R</sub> =5V   | Per Segment | —      | —    | 100  | μA    |
| Luminous Intensity                                     | I <sub>V</sub>   | I <sub>F</sub> =10mA | Per Segment | 6101   | 9200 | —    | μcd   |
| Peak Emission Wave Length                              | λ <sub>P</sub>   | I <sub>F</sub> =20mA | Per Segment | —      | 660  | —    | nm    |
|                                                        | λ <sub>D</sub>   |                      |             |        | 640  |      |       |
| Spectral Line Half Width                               | △λ               | I <sub>F</sub> =20mA | Per Segment | —      | 20   | —    | nm    |
| Luminous Intensity Matching Ratio (Segment to Segment) | I <sub>v-m</sub> | I <sub>F</sub> =10mA | —           | —      | —    | 2:1  |       |

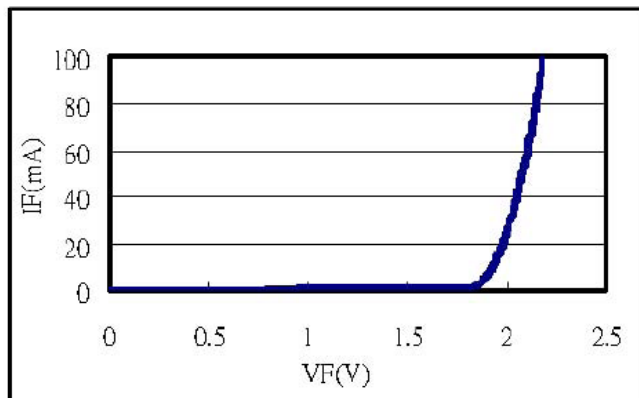
## ■ Luminous Intensity Sorting: (Luminous Intensity Tolerance is +/-10%)

| Rank | Symbol | Condition            | Min   | Max   | Unit |
|------|--------|----------------------|-------|-------|------|
| N    | N      | I <sub>F</sub> =10mA | 6101  | 7200  | μcd  |
| O    | O      | I <sub>F</sub> =10mA | 7201  | 8500  | μcd  |
| P    | P      | I <sub>F</sub> =10mA | 8501  | 10500 | μcd  |
| Q    | Q      | I <sub>F</sub> =10mA | 10501 | 12800 | μcd  |
| R    | R      | I <sub>F</sub> =10mA | 12801 | 15250 | μcd  |

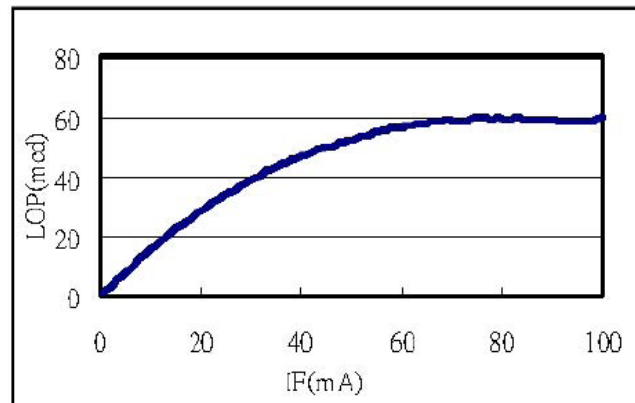
## ■ Soldering Conditions: Soldering Temp. ≤+260°C, Soldering Time. ≤3sec. (at 2mm Distance from The Case of Reflector Edge)

## ■ Typical Electro-Optical Characteristics Curve:

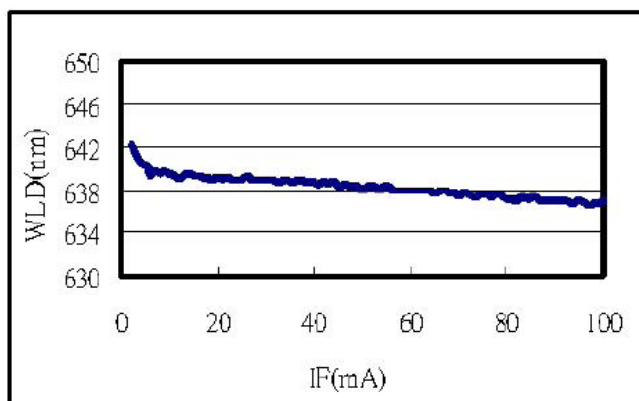
**Fig1. Forward Current vs. Forward Voltage:**



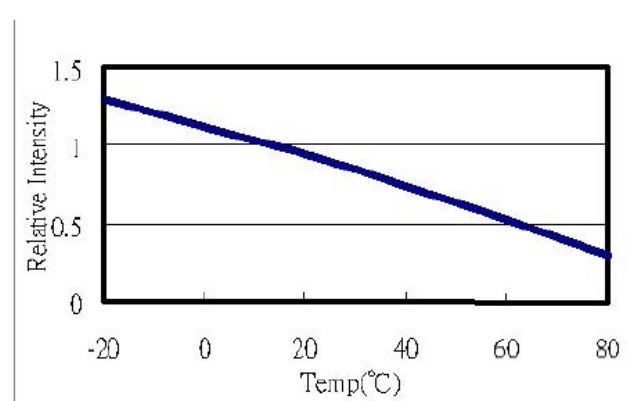
**Fig2. Forward Current vs. Relative Intensity:**



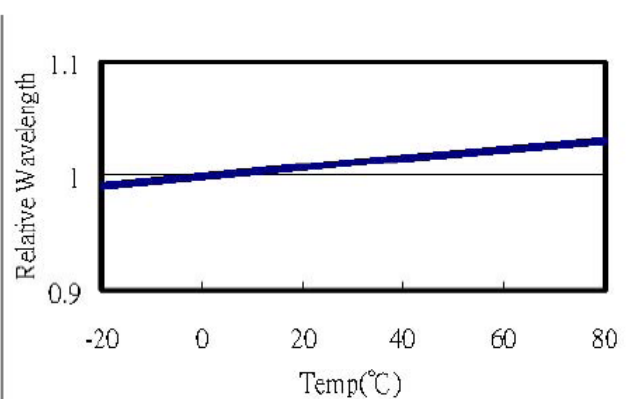
**Fig3. Forward Current vs. Relative Wavelength:**



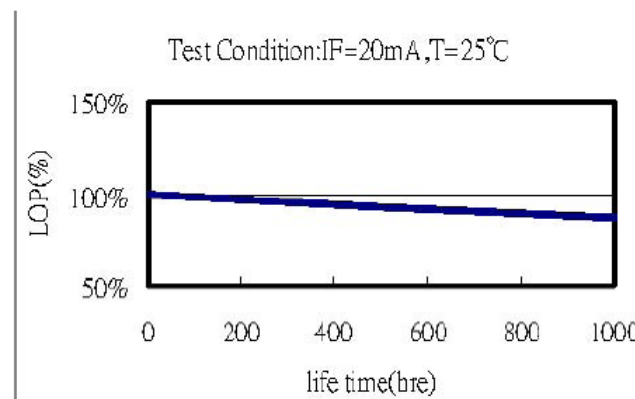
**Fig4. Temperature vs. Relative Intensity:**



**Fig5. Temperature vs. Relative Wavelength:**



**Fig6. Life Test at 20mA R.T. 1000hrs:**



## LED Displays Reliability Test:

| CLASSIFICATION     | TEST ITEM                                    | DESCRIPTION AND TEST CONDITION                                                                                                                                                                                                                                                                |
|--------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENDURANCE TEST     | OPERATION LIFE                               | EVALUATES RESISTANCE OF THE DEVICE WHEN OPERATED AT ELECTRICAL STRESS<br>$T_a$ = UNDER ROOM TEMPERATURE<br>$I_F = I_{F \max}$                                                                                                                                                                 |
|                    | HIGH TEMPERATURE<br>HIGH HUMIDITY<br>STORAGE | EVALUATES MOISTURE RESISTANCE OF THE DEVICE WHEN STORED FOR A LONG TERM AT HIGH TEMPERATURE AND HUMIDITY<br>$T_a = 65 \pm 5^\circ\text{C}$<br>RH=90~95%RH<br>TEST TIME=240 $\pm$ 2Hrs                                                                                                         |
|                    | HIGH TEMPERATURE<br>STORAGE                  | EVALUATES DEVICE DURABILITY FOR LONG TERM STORAGE IN HIGH TEMPERATURE<br>$T_a = 85 \pm 5^\circ\text{C}$ (COB: $T_a = 65 \pm 5^\circ\text{C}$ )<br>TEST TIME=1000Hrs(-24Hrs, +72Hrs)                                                                                                           |
|                    | LOW TEMPERATURE<br>STORAGE                   | EVALUATES DEVICE DURABILITY FOR LONG TERM STORAGE IN LOW TEMPERATURE<br>$T_a = -35 \pm 5^\circ\text{C}$<br>TEST TIME=1000Hrs(-24Hrs, +72Hrs)                                                                                                                                                  |
| ENVIRONMENTAL TEST | TEMPERATURE<br>CYCLING                       | EVALUATES RESISTANCE OF DEVICE AT THERMAL STRESSES OR EXPANSION AND CONTRACTION<br>$85^\circ\text{C} \sim 25^\circ\text{C} \sim -35^\circ\text{C} \sim 25^\circ\text{C}$<br>30min 5min 30min 5min<br>10 CYCLES(COB: $T_{\text{hot}}=65^\circ\text{C}$ , $T_{\text{cold}}=-25^\circ\text{C}$ ) |
|                    | THERMAL SHOCK                                | EVALUATES DEVICE STRUCTURE AND STRUCTURE AND MECHANICAL RESISTANCE WHEN SUDDENLY EXPOSED AT SERVE CHANGES<br>$85 \pm 5^\circ\text{C} \sim -35 \pm 5^\circ\text{C}$<br>10min 10min<br>10 CYCLES(COB: $T_{\text{hot}}=65^\circ\text{C}$ , $T_{\text{cold}}=-25^\circ\text{C}$ )                 |
|                    | SOLDERABILITY                                | EVALUATES SOLDERABILITY ON LEADS OF DEVICE<br>$T_{\text{SOL}}=230 \pm 5^\circ\text{C}$<br>DWELL TIME=5 $\pm$ 1sec.                                                                                                                                                                            |
|                    | SOLDER<br>RESISTANCE                         | EVALUATES RESISTANCE TO THERMAL STRESS CAUSED BY SOLDERING<br>$T_{\text{SOL}}=260 \pm 5^\circ\text{C}$<br>DWELL TIME=10 $\pm$ 1sec.                                                                                                                                                           |

## Package Pattern 1:

255pcs / Red Expandable Polyethylene.

1780pcs / Box(360\*175\*130mm).

10680pcs / Carton(550\*380\*280mm).

## Package Pattern 2:

26pcs / IC Tube.

2028pcs / Box(537\*175\*125mm).

8112pcs / Carton(550\*380\*280mm)