

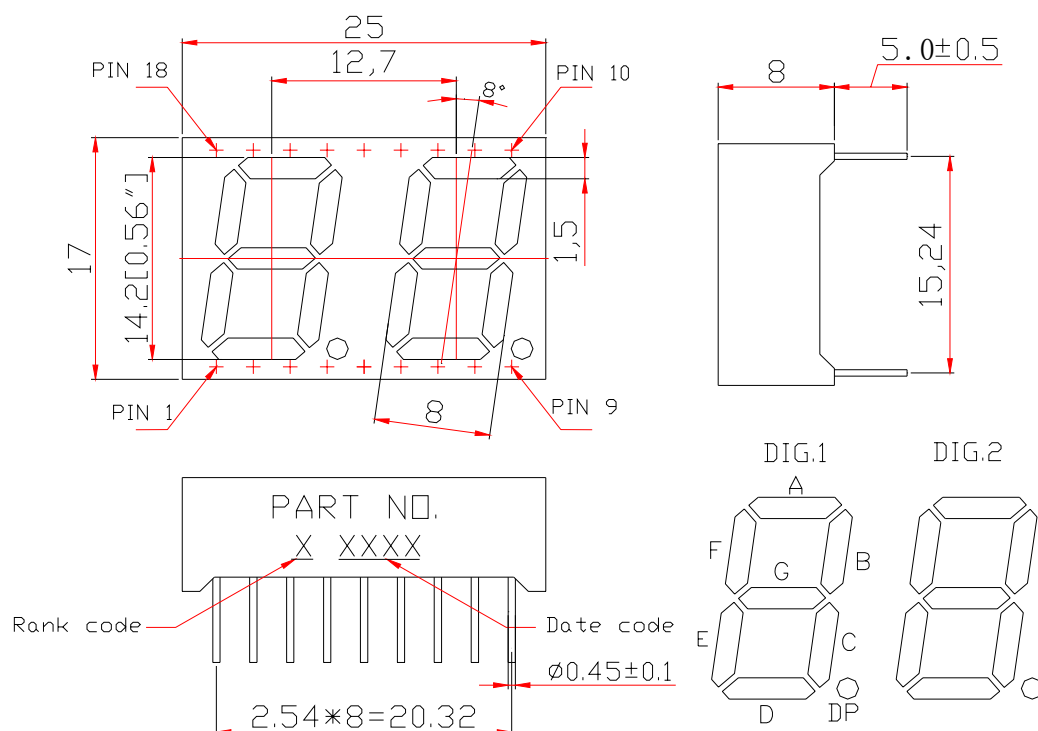
# **WCN2-1056R5-AE2-H**

## **SPECIFICATION**

| <b>WCN</b>                      |                   |                    | <b>CUSTOMER<br/>Confirmed</b> |
|---------------------------------|-------------------|--------------------|-------------------------------|
| <b>Prepared by</b>              | <b>Checked by</b> | <b>Approved by</b> |                               |
| <b>Fei</b><br><b>2017-12-08</b> | <b>Athena</b>     |                    |                               |
| <b>REVISION RECORD</b>          |                   |                    |                               |

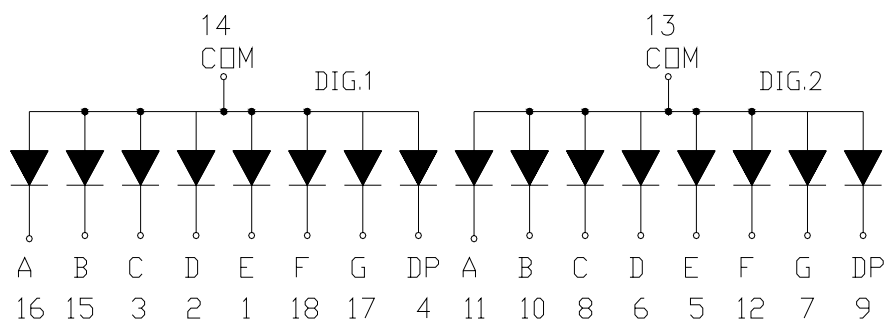
**REVISION: A0**

■ **Outer Dimension:**



**Notes: Unless otherwise stated, The tolerance is  $\pm 0.25\text{mm}$ .**

■ **Circuit Diagram:**



### ■ Pin Connection:

| PIN NO. | CONNECTION  | PIN NO. | CONNECTION  | PIN NO. | CONNECTION   |
|---------|-------------|---------|-------------|---------|--------------|
| 1       | Cathode 1E  | 7       | Cathode 2G  | 13      | Common Anode |
| 2       | Cathode 1D  | 8       | Cathode 2C  | 14      | Common Anode |
| 3       | Cathode 1C  | 9       | Cathode DP2 | 15      | Cathode 1B   |
| 4       | Cathode DP1 | 10      | Cathode 2B  | 16      | Cathode 1A   |
| 5       | Cathode 2E  | 11      | Cathode 2A  | 17      | Cathode 1G   |
| 6       | Cathode 2D  | 12      | Cathode 2F  | 18      | Cathode 1F   |

## ■ Features:

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

## ■ Description:

- Dual Digit LED Display
- Digit Height: 14.2mm(0.56" )
- Gray 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   | 65       | 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> | —                  | —     | -40~+105 | °C    |
| Storage Temperature Range        | T <sub>stg</sub> | —                  | —     | -40~+105 | °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 | 2.60  | 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   | 9500 | 15250 | μcd   |
| Peak Emission Wave Length                              | λ <sub>P</sub>   | I <sub>F</sub> =20mA | Per Segment | —      | 650  | —     | 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 | —           | —      | —    | 1.2:1 |       |

## ■ 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 Elector-Optical Characteristics Curve:

Fig 1. Forward Current vs. Forward Voltage

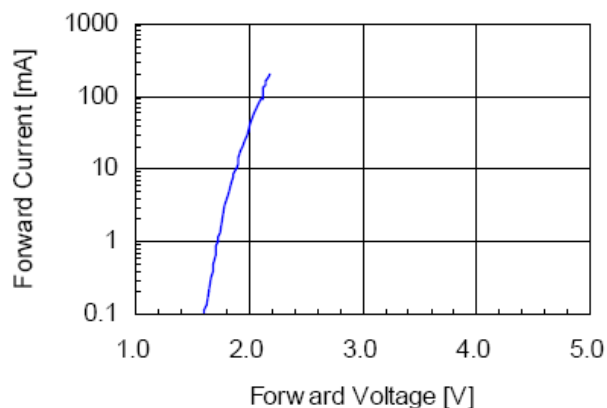


Fig 2. Relative Intensity vs. Forward Current

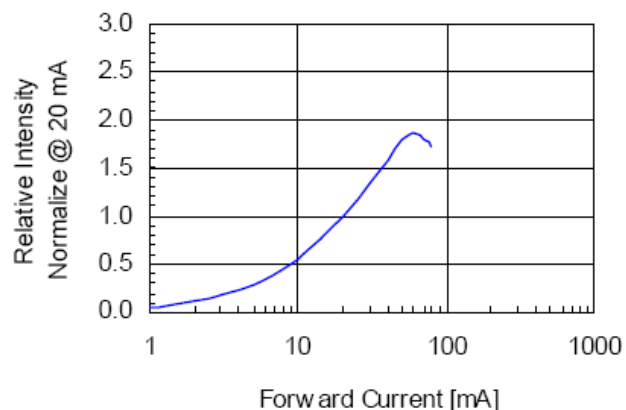


Fig 3. Forward Voltage vs. Temperature

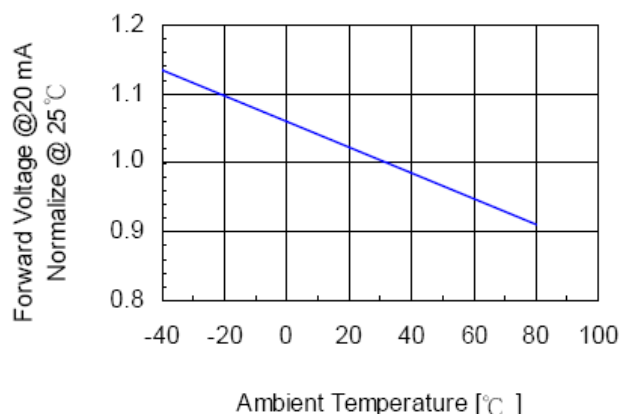


Fig 4. Relative Intensity vs. Temperature

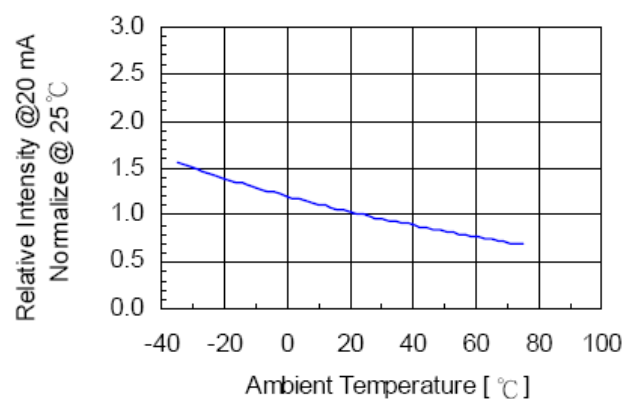
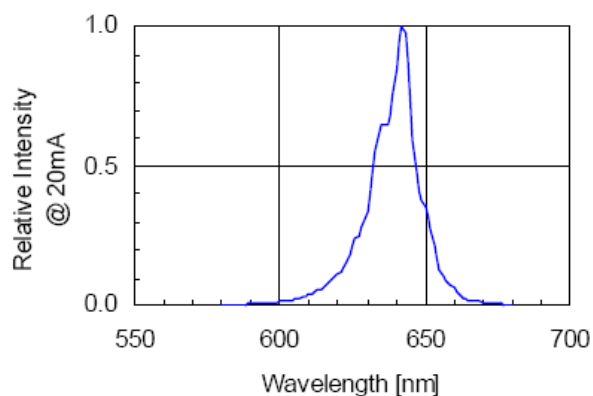
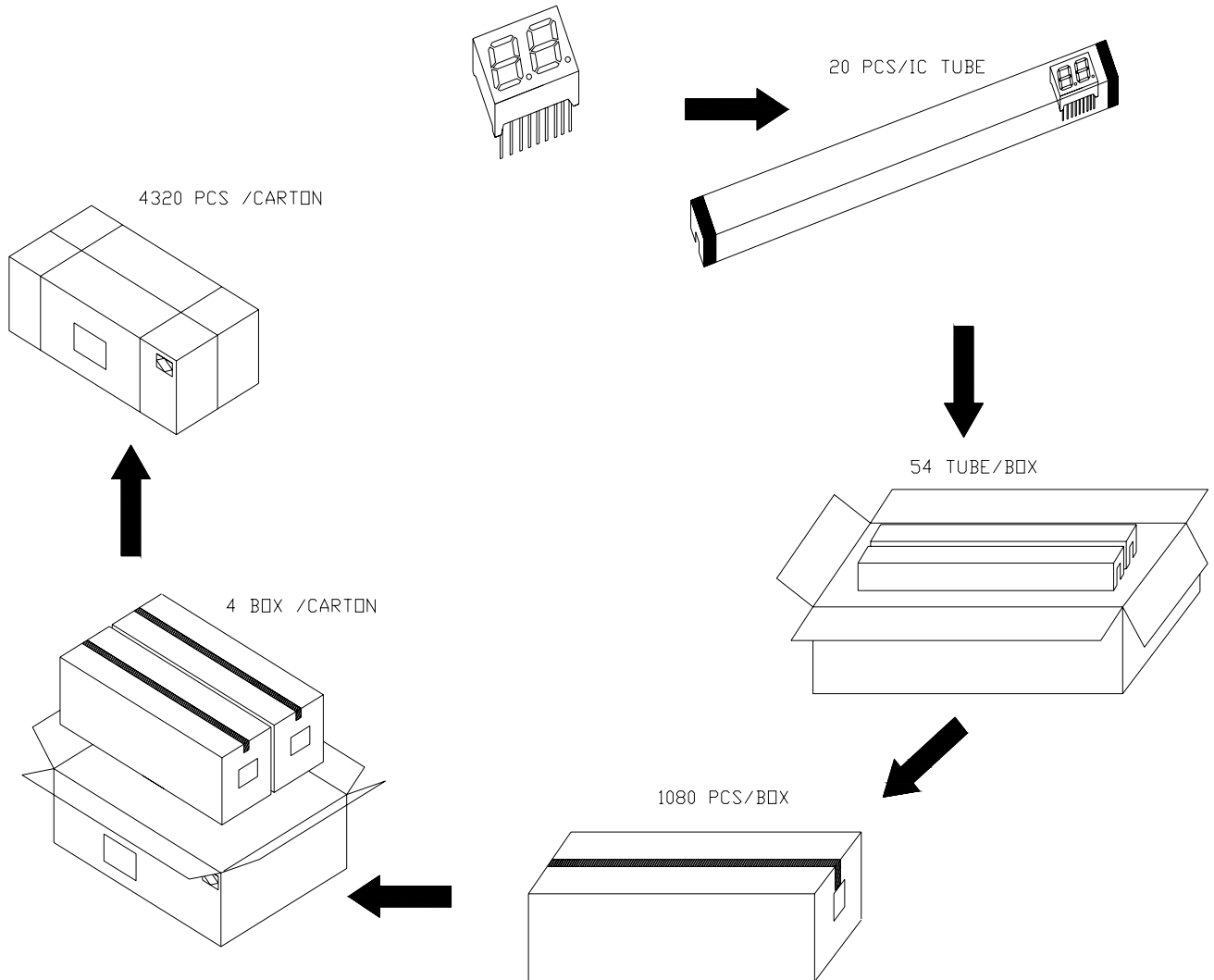


Fig 5. Relative Intensity vs. Wavelength

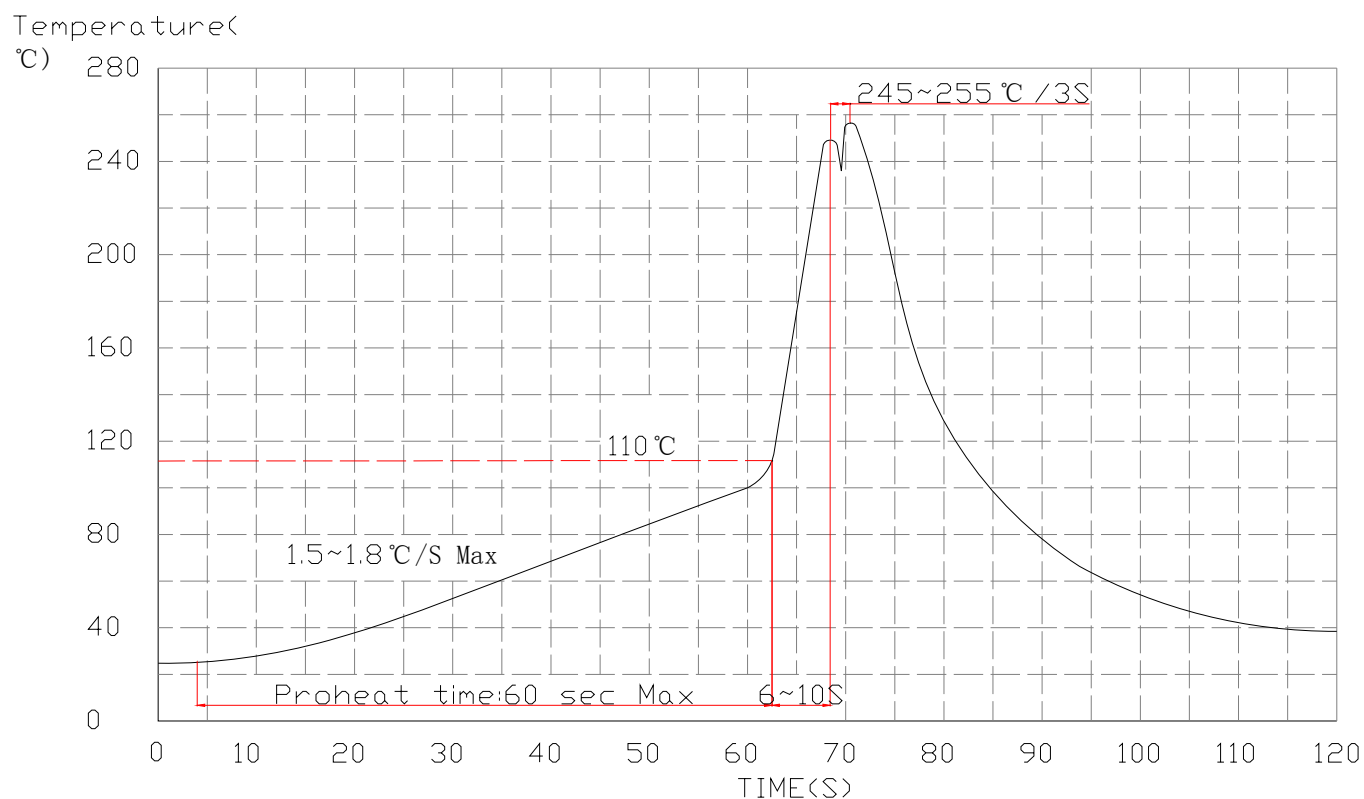


## LED Displays Reliability Test:

| 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>$I_F = I_F \text{ max}$                                                                                                                                                            |
|                    | 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.                                                                                                                                                           |

**■ Packing method :****20 pcs / IC Tube. (520\*19.7\*18.6)****1080 pcs / Box(537\*175\*125mm).****4320 pcs / Carton(550\*380\*280mm).**

## Recommended Wave Soldering Profiles:



## Notes:

1. Recommend pre-heat temperature of 110°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C.
2. Peak wave soldering temperature between 245°C~255°C for 3 sec .
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.

## Recommended Soldering Pad :

