

**SEVEN SEGMENT DISPLAY**

# **JZD052105R-BW**

## **DATA SHEET**

**DOCUMENT NO.:** WI-RD-LDS-052105R-BW

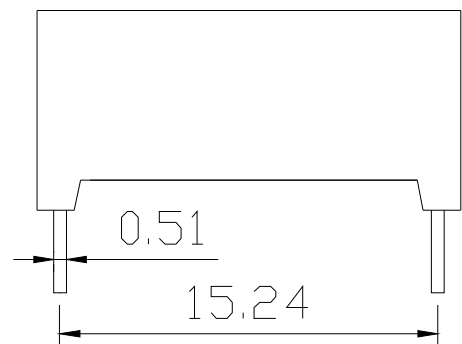
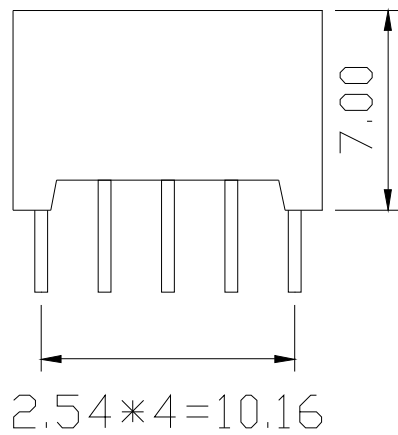
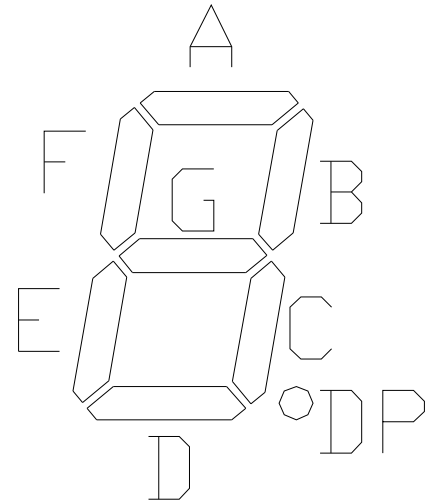
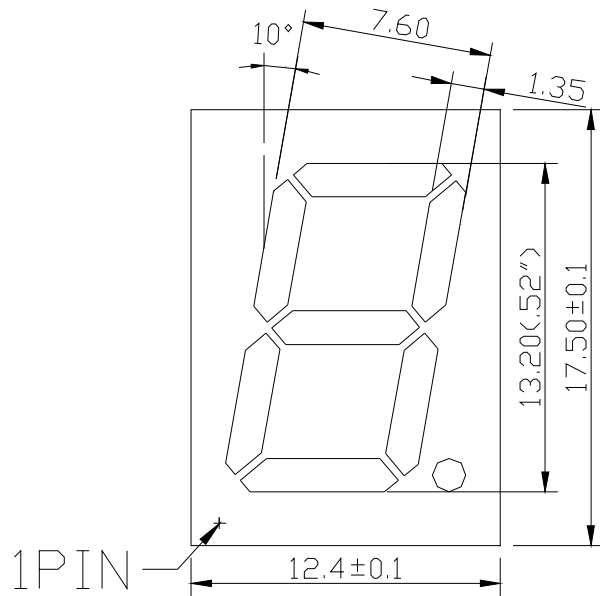
**RELEASE DATE:** 2007-9-28

**VERSION:** A/0

**RD No.:** JZD20070928001

# PART NO.: JZD052105R-BW

## Package Dimensions



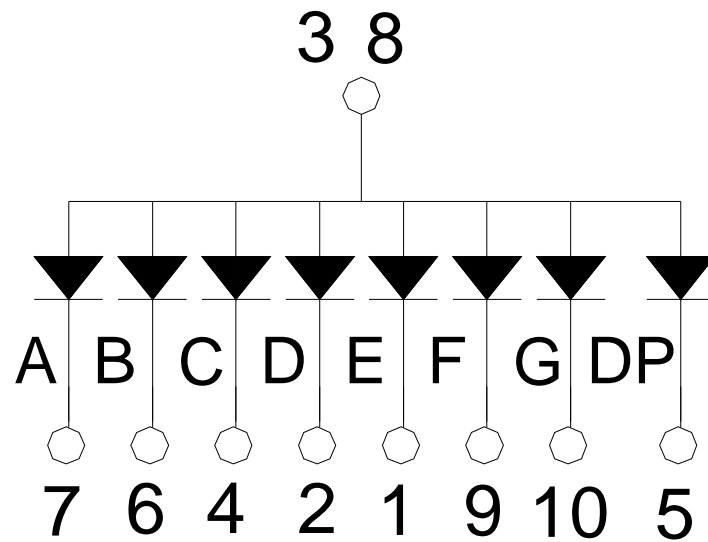
### Notes:

1. All dimension are in millimeters and(Inch)tolerance is $\pm 0.25$ mm unless otherwise noted.
2. Specifications are subject to change without notice.

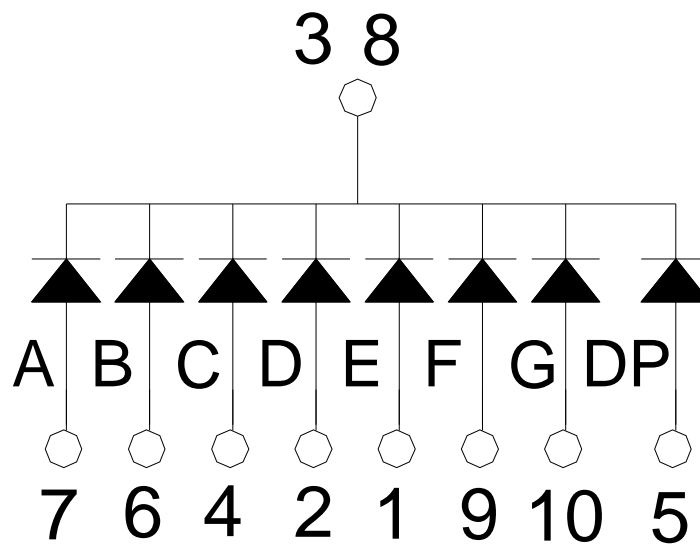
**PART NO.: JZD052105R-BW**

**Internal Circuit Diagram**

**JZD052106R-BW**



**JZD052105R-BW**



## PART NO.: JZD052105R-BW

### Electrical Connection

| PIN NO. | JZD052106R-BW        | PIN NO. | JZD052105R-BW          |
|---------|----------------------|---------|------------------------|
| 1       | E segment cathode    | 1       | E segment anode        |
| 2       | D segment cathode    | 2       | D segment anode        |
| 3       | Digital common anode | 3       | Digital common cathode |
| 4       | C segment cathode    | 4       | C segment anode        |
| 5       | DP segment cathode   | 5       | DP segment anode       |
| 6       | B segment cathode    | 6       | B segment anode        |
| 7       | A segment cathode    | 7       | A segment anode        |
| 8       | Digital common anode | 8       | Digital common cathode |
| 9       | F segment cathode    | 9       | F segment anode        |
| 10      | G segment cathode    | 10      | G segment anode        |
| 11      |                      | 11      |                        |
| 12      |                      | 12      |                        |
| 13      |                      | 13      |                        |
| 14      |                      | 14      |                        |

### Absolute Maximum Rating at=Ta=25°C

| Parameter                       | Symbol | Ratings | UNIT |
|---------------------------------|--------|---------|------|
|                                 |        | SGM     |      |
| Forward Current Per Chip        | IF     | 30      | mA   |
| Peak Forward Current Per Chip*1 | IFP    | 100     | mA   |
| Power Dissipation Per Chip      | PD     | 100     | mW   |
| Reverse Current Per Any Chip    | Ir     | 50      | uA   |
| Electrostatic Discharge*2       | ESD    | 1000    | V    |
| Operating Temperature           | Topr   | -25~+85 | °C   |
| Storage Temperature             | Tstg   | -25~+85 | °C   |

Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260°C

\*1:Duty 1/10,0.1ms Pulse With

\*2:Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

## PART NO.: JZD052106R-BW

### Part selection And Application Information(Ratings at 25°C)

| PART NO.      | COLOR<br>( EPOX<br>Y/SURF<br>ACE ) | CHIP     |         | Common<br>cathode<br>or anode | WD<br>(nm<br>) | Electrical |      |         |      | IV-<br>M  |
|---------------|------------------------------------|----------|---------|-------------------------------|----------------|------------|------|---------|------|-----------|
|               |                                    | Material | Emitted |                               |                | Vf(v)      |      | Iv(mcd) |      |           |
|               |                                    |          |         |                               |                | Typ.       | Max. | Min.    | Typ. |           |
| JZD052105R-BW | WHITE<br>DIFFUS<br>E/BLAC<br>K     | GaP      | RED     | Common<br>cathode             | 643            | 1.9        | 2.4  | 10      | 11   | 1:<br>1.1 |

Note:1.The forward voltage data did not including $\pm$ .01V testing tolerance.

2.The luminous intensity data did not including $\pm$ 15% testing tolerance.

### Test Condition For Each Parameter

| Parameter                         | Symbol | Unit | Test Condition |
|-----------------------------------|--------|------|----------------|
| Forward Voltage Per Chip          | Vf     | volt | If=20mA        |
| Luminous Intensity Per Chip       | Iv     | mcd  | If=20mA        |
| Peak Wavelength                   | WP     | nm   | If=20mA        |
| Dominant Wavelength               | WD     | nm   | If=20mA        |
| Spectral Line Half-Width          | ▲W     | nm   | If=20mA        |
| Reverse Current Any Chip          | Ir     | μA   | If=20mA        |
| Luminous Intensity Matching Ratio | IV-M   |      |                |

# Typical Optical-Electronic Characteristic Curves

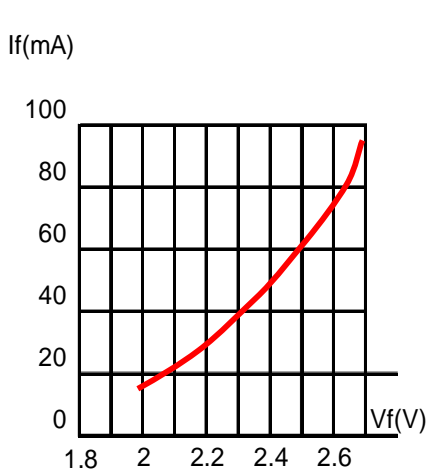
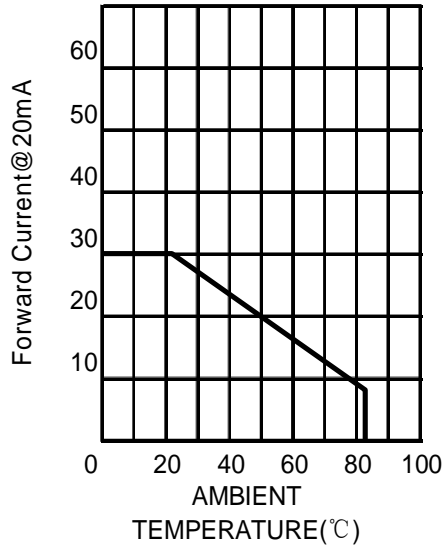


Fig.1 FORWARD CURRENT VS. FORWARD



TEMPERATURE(°C)

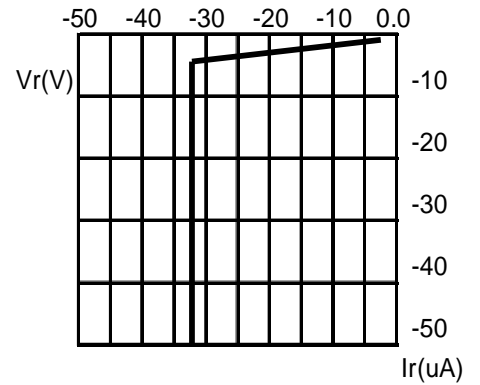


Fig.2 REVERSE CURRENT VS. REVERSE VOLTAGE.

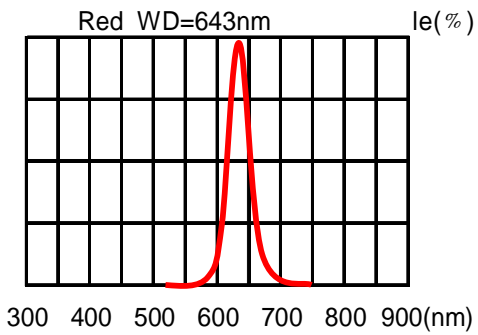
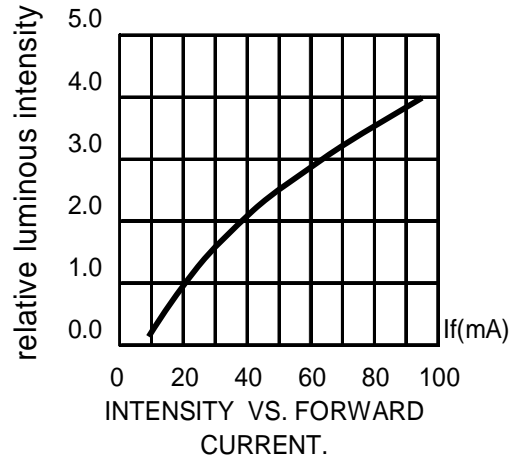


Fig.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.



INTENSITY VS. FORWARD CURRENT.

## Soldering Condition (Pb-Free)

### 1. Iron:

Soldering Iron: 30W Max

Temperature 350°C Max

Soldering Time: 3 Seconds Max (One time only)

Distance: Solder Temperature 1/16Inch Below Seating Plane

For 3 Seconds At 260°C

### 2. Wave Soldering Profile

Dip Soldering

Preheat: 120°C Max

Preheat time: 60 seconds Max

Ramp-up

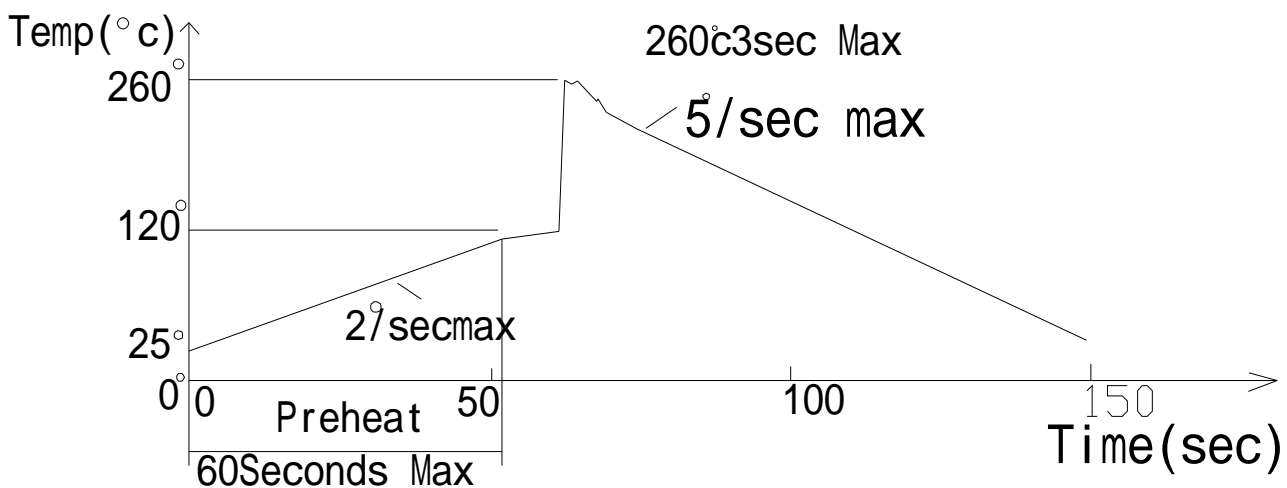
2°C/sec(max)

Ramp-Down: -5°C/sec(max)

Solder Bath: 260°C Max

Dipping Time: 3 seconds Max

Distance: Solder Temperature 1/16Inch Below Seating Plane for 3 Seconds At 260°C



Note: 1. Wave solder should not be made more than one time.

2. You can just only select one of the soldering conditions as above.

## Reliability Test:

| Test Item                           | Standard Test Method   | Test Condition  | Description  |
|-------------------------------------|--|---|--|
| Operating Life Test                 | JIS C7021:B-1<br>MIL-STD-750:1026<br>MIL-STD-883:1005                      | 1. Under Room Temperature<br>2. If=10 mA<br>3. t=1000hrs(-24hrs,+72hrs) | This test is conducted for the purpose of deteming the resistance of a part in electrical and themal stressed.   |
| High Temperature Storage Test       | JIS C 7021:B-10<br>MIL-STD-883:1008  | 1. Ta=105°C±5°C<br>2. t=1000hrs(-24hrs,+72hrs)                          | The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.   |
| Low Temperature Storage Test        | JIS C 7021:B-12  | 1. Ta=-40°C±5°C<br>2. t=1000hrs(-24hrs,+72hrs)                          | The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.  |
| High Temperature High Humidity Test | JIS C 7021:B-11<br>MIL-STD-202:103B  | 1. Ta=65°C±5°C<br>2. RH=90%~95%<br>3. Tt=240hrs±2hrs                    | The purpose of this id the resistance of the device which is laid under condition of low temperature for hours.  |
| Thermal Shock Test                  | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1011                   | 1. Ta=105 °C ±5 °C & -40 °C ±5 °C<br>(10min)(10min)                     | The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.   |
| Solder Resistance Test              | JIS C 7021:A-1<br>MIL-STD-202:210A<br>MIL-STD-750:2031                     | 1.T.Sol=260°C±5°C<br>2.Dwell time=10±1sec.                              | This test intended to determine the thermal characteristic resistance of the device to sudden exposures at ex treme changes in temperature when soldering the lead wire. |
| Solderability Test                  | JIS C 7021:A-2<br>MIL-STD-202:208D<br>MIL-STD-750:2026<br>MIL-STD-883:2003 | 1.T.Sol=230°C±5°C<br>2.Dwell time=5±1sec.                               | This test intended to see soldering well performed or not.   |

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