Features
- LOW POWER CONSUMPTION.
- POPULAR T-1 3/4 DIAMETER PACKAGE.
- GENERAL PURPOSE LEADS.
- RELIABLE AND RUGGED.
- LONG LIFE - SOLID STATE RELIABILITY.
- AVAILABLE ON TAPE AND REEL.
- RoHS COMPLIANT.

Description
The Super Bright Red source color devices are made with Gallium Aluminum Arsenide Red Light Emitting Diode.

Package Dimensions

Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.
Selection Guide

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Dice</th>
<th>Lens Type</th>
<th>Iv (mcd) [2] @ 20mA</th>
<th>Viewing Angle [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP7113SRD/D</td>
<td>Super Bright Red (GaAlAs)</td>
<td>RED DIFFUSED</td>
<td>180</td>
<td>281/2</td>
</tr>
</tbody>
</table>

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.
2. Luminous intensity/ luminous Flux: +/-15%.

Electrical / Optical Characteristics at TA=25°C

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Device</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>λpeak</td>
<td>Peak Wavelength</td>
<td>Super Bright Red</td>
<td>660</td>
<td>nm</td>
<td>IF=20mA</td>
<td></td>
</tr>
<tr>
<td>λD [1]</td>
<td>Dominant Wavelength</td>
<td>Super Bright Red</td>
<td>640</td>
<td>nm</td>
<td>IF=20mA</td>
<td></td>
</tr>
<tr>
<td>Δλ1/2</td>
<td>Spectral Line Half-width</td>
<td>Super Bright Red</td>
<td>20</td>
<td>nm</td>
<td>IF=20mA</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Capacitance</td>
<td>Super Bright Red</td>
<td>45</td>
<td>pF</td>
<td>VF=0V; f=1MHz</td>
<td></td>
</tr>
<tr>
<td>VF [2]</td>
<td>Forward Voltage</td>
<td>Super Bright Red</td>
<td>1.85</td>
<td>2.5</td>
<td>V</td>
<td>IF=20mA</td>
</tr>
<tr>
<td>IR</td>
<td>Reverse Current</td>
<td>Super Bright Red</td>
<td>10</td>
<td>uA</td>
<td>VR = 5V</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.

Absolute Maximum Ratings at TA=25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Super Bright Red</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power dissipation</td>
<td>75</td>
<td>mW</td>
</tr>
<tr>
<td>DC Forward Current</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Peak Forward Current [1]</td>
<td>155</td>
<td>mA</td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Operating/Storage Temperature</td>
<td>-40°C To +85°C</td>
<td></td>
</tr>
<tr>
<td>Lead Solder Temperature [2]</td>
<td>260°C For 3 Seconds</td>
<td></td>
</tr>
<tr>
<td>Lead Solder Temperature [3]</td>
<td>260°C For 5 Seconds</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. 2mm below package base.
3. 5mm below package base.
Super Bright Red WP7113SRD/D

**Graphs and Data:**

1. **Relative Radiant Intensity vs. Wavelength**
   - Wavelength (nm) vs. Relative Radiant Intensity
   - Peak at 650 nm
   - Temperature: T=25°C

2. **Forward Current vs. Forward Voltage**
   - Forward voltage (V) vs. Forward Current (mA)
   - Forward Current increases as voltage increases

3. **Luminous Intensity vs. Forward Current**
   - Luminous Intensity vs. Forward Current at different voltages

4. **Forward Current vs. Ambient Temperature**
   - Forward Current derating curve
   - Ambient Temperature (°C) vs. Forward Current

5. **Spatial Distribution**
   - Spatial distribution of intensity at different angles (°)
   - Intensity decreasing as angle increases from center to 30°
PACKING & LABEL SPECIFICATIONS

WP7113SRD/D

Kingbright

LABEL

500PCS / BAG

OUTSIDE LABEL

OUTSIDE LABEL

32K / 9# BOX

18K / 5# BOX

Kingbright

Q.C.

Q.C.

CASSED

TYPE NO : WP7113XXX
QUANTITY : 500 pcs
S/N : XX CODE : XX
LOT NO : RoHS Compliant

SPEC NO: DSAF2433 REV NO: V.2 DATE: MAY/11/2007 PAGE: 4 OF 6
LED MOUNTING METHOD

1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead-forming may be required to insure the lead pitch matches the hole pitch. Refer to the figure below for proper lead forming procedures. (Fig. 1)

"○" Correct mounting method  "×" Incorrect mounting method
Note 1-2: Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.

2. When soldering wire to the LED, use individual heat-shrink tubing to Insulate the exposed leads to prevent accidental contact short-circuit. (Fig. 2)

3. Use stand-offs (Fig. 3) or spacers (Fig. 4) to securely position the LED above the PCB.
LEAD FORMING PROCEDURES

1. Maintain a minimum of 2mm clearance between the base of the LED lens and the first lead bend. (Fig. 5 and 6)

![Fig. 5](image1)
![Fig. 6](image2)

2. Lead forming or bending must be performed before soldering, never during or after soldering.

3. Do not stress the LED lens during lead-forming in order to fractures in the lens epoxy and damage the internal structures.

4. During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB. (Fig. 7)

5. Do not bend the leads more than twice. (Fig. 8)

![Fig. 7](image3)
![Fig. 8](image4)

6. After soldering or other high-temperature assembly, allow the LED to cool down to 50°C before applying outside force (Fig. 9). In general, avoid placing excess force on the LED to avoid damage. For any questions please consult with Kingbright representative for proper handling procedures.

![Fig. 9](image5)