DC7G3HWA
10 Segment Bar Graph Array

DESCRIPTIONS
- The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode
- The Bright Red source color devices are made with Gallium Phosphide Red Light Emitting Diode

FEATURES
- Suitable for level indicators
- Low current operation
- Excellent on/off contrast
- End stackable
- Mechanically rugged
- Standard: gray face, white segment
- RoHS compliant

APPLICATIONS
- Home and smart appliances
- Display time and digital combination
- Industrial and instrumental applications
- Numeric status

PACKAGE DIMENSIONS

| DC7G3HWA | 10 Segments Bar graph - Display
|          | 7x Green 3x Bright Red |

SELECTION GUIDE

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Emitting Color (Material)</th>
<th>Lens Type</th>
<th>( \text{Iv (ucd)} ) @ 10mA (^{(1)} )</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC7G3HWA</td>
<td>■ Green (GaP)</td>
<td>White Diffused</td>
<td>5600 12000</td>
<td>10 Segments Bar graph - Display</td>
</tr>
<tr>
<td></td>
<td>■ Bright Red (GaP)</td>
<td></td>
<td>*1400 *4000</td>
<td>7x Green 3x Bright Red</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>900 1900</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*240 *560</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Luminous intensity / luminous flux: +/-15%.
2. Luminous intensity value is traceable to CIE127-2007 standards.
## ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Emitting Color</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength at Peak Emission $I_F = 10mA$</td>
<td>$\lambda_{\text{peak}}$</td>
<td>Green Bright Red</td>
<td>565 700</td>
<td>nm</td>
</tr>
<tr>
<td>Dominant Wavelength $I_F = 10mA$</td>
<td>$\lambda_{\text{dom}}$ [1]</td>
<td>Green Bright Red</td>
<td>568 635</td>
<td>nm</td>
</tr>
<tr>
<td>Spectral Bandwidth at 50% $\Phi$ REL MAX $I_F = 10mA$</td>
<td>$\Delta \lambda$</td>
<td>Green Bright Red</td>
<td>30 45</td>
<td>nm</td>
</tr>
<tr>
<td>Capacitance</td>
<td>$C$</td>
<td>Green Bright Red</td>
<td>15 40</td>
<td>pF</td>
</tr>
<tr>
<td>Forward Voltage $I_F = 10mA$</td>
<td>$V_F$ [2]</td>
<td>Green Bright Red</td>
<td>2.0 2.05 2.45</td>
<td>V</td>
</tr>
<tr>
<td>Reverse Current ($V_R = 5V$)</td>
<td>$I_R$</td>
<td>Green Bright Red</td>
<td>- 10</td>
<td>$\mu$A</td>
</tr>
</tbody>
</table>

Notes:
1. The dominant wavelength ($\lambda_d$) above is the setup value of the sorting machine. (Tolerance $\lambda_d$ : ±1nm.)
2. Forward voltage: ±1V.
3. Wavelength value is traceable to CIE127-2007 standards.
4. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

## ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Dissipation</td>
<td>$P_D$</td>
<td>62.5 62.5</td>
<td>mW</td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td>$V_R$</td>
<td>5 5</td>
<td>V</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>$T_J$</td>
<td>110 125</td>
<td>°C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>$T_{\text{op}}$</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{\text{stg}}$</td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>DC Forward Current</td>
<td>$I_F$</td>
<td>25 25</td>
<td>mA</td>
</tr>
<tr>
<td>Peak Forward Current</td>
<td>$I_{FM}$ [1]</td>
<td>140 130</td>
<td>mA</td>
</tr>
<tr>
<td>Electrostatic Discharge Threshold (HBM)</td>
<td>-</td>
<td>8000 8000</td>
<td>V</td>
</tr>
<tr>
<td>Lead Solder Temperature [2]</td>
<td></td>
<td>260°C For 3-5 Seconds</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. 2mm below package base.
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/STD-033.
TECHNICAL DATA

GREEN

Forward Current vs. Forward Voltage

Luminous Intensity vs. Forward Current

Forward Current Derating Curve

Luminous Intensity vs. Ambient Temperature

BRIGHT RED

Forward Current vs. Forward Voltage

Luminous Intensity vs. Forward Current

Forward Current Derating Curve

Luminous Intensity vs. Ambient Temperature
RECOMMENDED WAVE SOLDERING PROFILE

Soldering General Notes
1. Through-hole displays are incompatible with reflow soldering.
2. If components will undergo multiple soldering processes, or other processes where the components may be subjected to intense heat, please check with Kingbright for compatibility.

CLEANING
1. Mild "no-clean" fluxes are recommended for use in soldering.
2. If cleaning is required, Kingbright recommends to wash components with water only. Do not use harsh organic solvents for cleaning because they may damage the plastic parts.
3. The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
4. When water is used in the cleaning process, immediately remove excess moisture from the component with forced-air drying afterwards.

THROUGH HOLE DISPLAY MOUNTING METHOD

Lead Forming
Do not bend the component leads by hand without proper tools. The leads should be bent by clinching the upper part of the lead firmly such that the bending force is not exerted on the plastic body.

Installation
1. The installation process should not apply stress to the lead terminals.
2. When inserting for assembly, ensure the terminal pitch matches the substrate board's hole pitch to prevent spreading or pinching the lead terminals. (Fig. 1)
3. The component shall be placed at least 5mm from edge of PCB to avoid damage caused excessive heat during wave soldering. (Fig.2)

CIRCUIT DESIGN NOTES
1. Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
2. LEDs mounted in parallel should each be placed in series with its own current-limiting resistor. (Fig.3)
3. The driving circuit should be designed to protect the LED against reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
4. The safe operating current should be chosen after considering the maximum ambient temperature of the operating environment.
5. Prolonged reverse bias should be avoided, as it could cause metal migration, leading to an increase in leakage current or causing a short circuit.
PACKING & LABEL SPECIFICATIONS

PRECAUTIONARY NOTES
1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
3. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
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6. When any special process such as potting is required for LED assembly, please consult with Kingbright representative before proceeding.
7. All design applications should refer to Kingbright application notes available at https://www.KingbrightUSA.com/ApplicationNotes