Basic Character LCD Drawing

Part Number: FDS40x4(183x47)LBC

Features:
1. 5x8 Dots with cursor
2. Built-in controller (SPLC780D or Equivalent)
3. +5V power supply
4. 1/16 duty cycle; 1/5 bias
5. BKL to be driven by pin17, pin18
6. ROHS compliant

Mechanical Data

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODULE DIMENSION</td>
<td>190.0 X 54.0</td>
<td>mm</td>
</tr>
<tr>
<td>VIEWING AREA</td>
<td>147.0 X 29.5</td>
<td>mm</td>
</tr>
<tr>
<td>DOT SIZE</td>
<td>0.5 X 0.55</td>
<td>mm</td>
</tr>
<tr>
<td>CHARACTER SIZE</td>
<td>2.78 X 4.89</td>
<td>mm</td>
</tr>
</tbody>
</table>
## Interface Pin Connections

<table>
<thead>
<tr>
<th>NO</th>
<th>SYMBOL</th>
<th>LEVEL</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1~4</td>
<td>DB7~DB4</td>
<td>MPU</td>
<td>Four High Order bi-directional three-state data bus lines. Used for data transfer between the MPU.</td>
</tr>
<tr>
<td>5~8</td>
<td>DB3~DB0</td>
<td>MPU</td>
<td>Four Low Order bi-directional three-state data bus lines. Used for data transfer between the MPU and the LCM. These four are not used during 4-bit operation.</td>
</tr>
<tr>
<td>9</td>
<td>E1</td>
<td>MPU</td>
<td>Operation (data read/write) enable signal</td>
</tr>
<tr>
<td>10</td>
<td>R/W</td>
<td>MPU</td>
<td>Read/Write Select signal</td>
</tr>
<tr>
<td>11</td>
<td>RS</td>
<td>MPU</td>
<td>Register Select signal</td>
</tr>
<tr>
<td>12</td>
<td>V0</td>
<td>Power Supply</td>
<td>Contrast Adjust</td>
</tr>
<tr>
<td>13</td>
<td>VSS</td>
<td>Power Supply</td>
<td>Signal Ground for LCM (GND)</td>
</tr>
<tr>
<td>14</td>
<td>VDD</td>
<td>Power Supply</td>
<td>Power supply for logic (+5V) for LCM</td>
</tr>
<tr>
<td>15</td>
<td>E2</td>
<td>MPU</td>
<td>Enable signal (no pull-up resistor)</td>
</tr>
<tr>
<td>16</td>
<td>NC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>LED+</td>
<td>Power Supply</td>
<td>Power supply for LED backlight (+5V)</td>
</tr>
<tr>
<td>18</td>
<td>LED-</td>
<td>Power Supply</td>
<td>Power supply for LED backlight (0V)</td>
</tr>
</tbody>
</table>

## Absolute Maximum Rating

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SYMBOL</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Voltage</td>
<td>VDD-VSS</td>
<td>0</td>
<td>--</td>
<td>7.0</td>
<td>V</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>VIN</td>
<td>VSS</td>
<td>--</td>
<td>VDD</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>VOP</td>
<td>-20</td>
<td>--</td>
<td>+70</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>VST</td>
<td>-30</td>
<td>--</td>
<td>+80</td>
<td>°C</td>
</tr>
</tbody>
</table>

## Electrical Characteristics

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SYM</th>
<th>CONDITION</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage for LCD</td>
<td>VDD-VO</td>
<td>Ta =25°C</td>
<td>--</td>
<td>4.6</td>
<td>--</td>
<td>V</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>VDD</td>
<td>Ta =25°C, VDD=5.0V</td>
<td>4.7</td>
<td>5.0</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>Supply Current</td>
<td>IDD</td>
<td>Ta =25°C, VDD=5.0V</td>
<td>--</td>
<td>1.5</td>
<td>2.5</td>
<td>mA</td>
</tr>
<tr>
<td>Input Leakage Current</td>
<td>ILKG</td>
<td>--</td>
<td>--</td>
<td>1.0</td>
<td>uA</td>
<td></td>
</tr>
<tr>
<td>“H” Level Input Voltage</td>
<td>VIH</td>
<td>--</td>
<td>2.2</td>
<td>--</td>
<td>VDD</td>
<td>V</td>
</tr>
<tr>
<td>“L” Level Input Voltage</td>
<td>VIL</td>
<td>Twice Initial Value or Less</td>
<td>0</td>
<td>--</td>
<td>0.6</td>
<td>V</td>
</tr>
<tr>
<td>“H” Level Output Voltage</td>
<td>VOH</td>
<td>LOH= -0.25mA</td>
<td>2.4</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>“L” Level Output Voltage</td>
<td>VOL</td>
<td>LOH= 1.6mA</td>
<td>--</td>
<td>--</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Backlight supply voltage</td>
<td>VF</td>
<td>--</td>
<td>4.2</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backlight supply current</td>
<td>ILED</td>
<td>VF =4.2V</td>
<td>--</td>
<td>480</td>
<td>--</td>
<td>mA</td>
</tr>
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