Epson Display Controllers at a glance

What is a display controller (LCDC)?

Display Controller (hereafter, LCDC) receives image data to be displayed on the LCD panel from a host CPU and outputs the data and required synchronous signal suitable for the LCD panel. From host CPU side, LCDC looks like a SRAM which holds display image data. All display related operations are done by LCDC according to the image data and the required LCDC register settings programmed via host CPU. The LCDC driver populated on LCD panel receives data and timing signal then drives each pixel with required voltage.

Main features of LCDC

Epson LCDCs support a wide variety of LCD panels with small resolutions under QVGA(320x240) and also panels ranging in resolution from QVGA(320x240) up to XGA(1024x768). Epson LCDCs support the following features.

1. Multi-window

Overlays additional window onto the main window.

2. Window Rotation

Rotates the display image.

3. Alpha blending

Blends two images by using a specified alpha value.
(4) Transparency

Specified key color of 2nd window will be transparent and overlaid on the main image.

LCDC development tools

Epson provides a LCDC configuration tool and evaluation board to make LCDC evaluation and development simpler.

(1) LCDC set up tool

Configuration tool generates LCDC register settings for a LCD panel.

(2) LCDC evaluation board

Board populated with LCDC. Evaluation of the LCDC can be done by connecting a host CPU and LCD panel.

S1D13781

LCDC

LED back light circuit

S5U13781R01C100

FPC connector (54 pin) for LCD panel connection (40 pin connector is also populated on back side)
LCDC product line up

Epson’s product line up includes a variety of products that support a broad range of resolutions, memory types (embedded SRAM and external SDRAM), features.

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Resolution QVGA</th>
<th>VGA</th>
<th>WVGA</th>
<th>SVGA</th>
<th>XGA</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1D13513</td>
<td>TFT, MTN, CSTN</td>
<td>16M colors (XGA)</td>
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<td>64k colors (WVGA)</td>
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<td>TFT</td>
<td>256 colors (VGA)</td>
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</tr>
<tr>
<td>S1D13781</td>
<td>TFT</td>
<td>16M colors (WQVGA)</td>
<td>256 colors (VGA)</td>
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<tr>
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<td>Simple LCDC for WVGA panel</td>
<td>Simple LCDC</td>
<td>16M colors (WQVGA)</td>
<td>256 colors (WVGA)</td>
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<tr>
<td>S1D13709</td>
<td>TFT, MTN</td>
<td>CG ROM embedded, applicable up to WVGA by scaling function (TFT)</td>
<td>Simple LCDC</td>
<td>16 gray scale, 16 colors (QVGA)</td>
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</tr>
</tbody>
</table>

LCDC technical information web site

Technical information is published on the following web sites.

(1) Summary

[global.epson.com/products_and_drivers/semicon/products/display_controllers/](global.epson.com/products_and_drivers/semicon/products/display_controllers/)

(2) Technical information site

[vdc.epson.com/display-controllers/lcd-controllers](vdc.epson.com/display-controllers/lcd-controllers)