S1D13748

EPSON
EXCEED YOUR VISION

S1D13748 WVGA LCD Controller

The S1D13748 is a low cost, low power WVGA LCD Controller providing TFT panel support for embedded products requiring up to WVGA resolution. Supporting up to three display layers, the S1D13748 provides the host processor with flexibility in handling multiple image sources. Its ability to receive high speed host writes, combined with its support for a wide variety of LCD panels, makes the S1D13748 an excellent choice for a multitude of LCD applications.

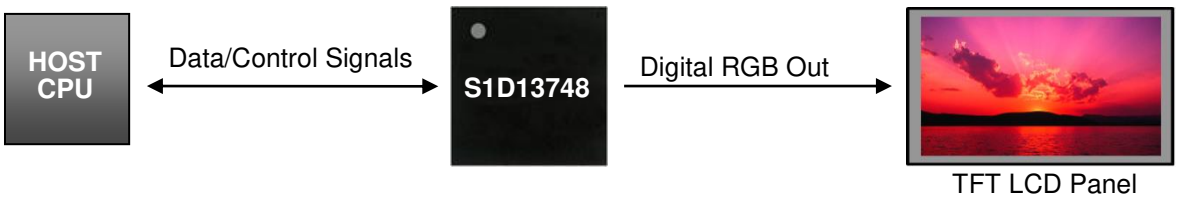
The S1D13748 includes a pixel doubling feature which allows easy migration to larger panel sizes using existing image data. The feature set includes independent resizing of PIP window image data using the bi-cubic scaler, scrolling control for each layer, and LCD output manipulation such as gamma control and optional dithering. This allows the host processor to provide image data, but off-loads the image processing requirement from the host.

The S1D13748 contains 1024 KB of embedded SRAM which is used to store image data for up to three layers which are combined to output the panel image. This feature set provides a low cost, low power single chip solution to meet the demands of embedded markets requiring up to WVGA resolution.

FEATURES

- Embedded 1024 KB SRAM display buffer
- Low operating voltage
- 16-bit indirect host interface
  - High speed host writes
  - Rectangular, rotated, and mirror host write modes
  - Input formats: YUV 4:2:2, 4:2:0 and RGB 5:6:5
- Support for TFT panels
- RGB interface: 9/12/16/18/24-bit
- Support for up to 3 display layers with overlay and alpha blending
  - Main layer image can be doubled in size
  - PIP1 layer can be resized from 8x to 1/8x
  - PIP2 layer can be resized from 8x to 1/8x
- Independent scrolling control for each layer
- LUT for gamma control of LCD output
- Optional dithering of LCD output
- Internal PLL or digital clock input
- Software initiated power save mode
- PFBGA 121-pin or QFP20 144-pin packages

SYSTEM BLOCK DIAGRAM



S1D13748 Features

- 1024 KB SRAM
- Up to 3 display layers
- Overlay and alpha blending
- Display scrolling
- Gamma control of LCD output

S1D13748

EPSON
EXCEED YOUR VISION

DESCRIPTION

CPU Interface

- 16-bit Indirect host interface
- Supports high speed host writes
- Integrated host interface write controller supports: rectangular, rotated and mirror write modes

Input Data Format

- RGB: 5:6:5
- YUV 4:2:2, 4:2:0

Display Support

- Supports TFT panels
- 9/12/16/18/24-bit RGB interface

Miscellaneous

- Internal PLL or digital clock input (CLKI)
- Software initiated power save mode
- Hardware/software power save mode
- Input pin to enable/disable power save mode
- General purpose input/output pins
- COREVDD 1.5 volts
  IOVDD 1.80, 2.80, or 3.30 volts
- PFBGA 121-pin and QFP20 144-pin packages available

Display Memory

- Embedded 1024 KB SRAM

Display Features

- Supports up to 3 layers with overlay and alpha blending functions
- Main layer features:
  - Image can be stored as RGB 5:6:5
  - Pixel doubling which doubles the size of the display image (independent horizontal/vertical)
- PIP1 Layer features:
  - Image can be stored as RGB 5:6:5 or YUV 4:2:2
  - Bi-cubic scaler can resize image from 8x - 1/8x
  - Edge enhancement support
- PIP2 Layer features:
  - Image can be stored as RGB 5:6:5 or YUV 4:2:2
  - Bi-cubic scaler can resize image from 8x - 1/8x
  - Panorama function allows variable vertical scaling
  - Edge enhancement support
  - LUT for independent gamma control of PIP2 window
- Independent display scrolling for each layer (Main, PIP1, PIP2)
- LUT for gamma control of the LCD output
- Optional dithering for the LCD output

For more information on the S1D13748 and other Epson Display Controllers, visit the Epson Global website.

https://global.epson.com/products_and_drivers/semicon/products/display_controllers/

For Sales and Technical Support, contact the Epson representative for your region.

https://global.epson.com/products_and_drivers/semicon/information/support.html

Document code: X80A-C-001-02.2