S1D13719

S1D13719 QVGA LCD Controller

The S1D13719 is a LCD controller solution designed with support for digital video in embedded markets. The S1D13719 contains an integrated dual port camera interface, hardware JPEG encoder/decoder and can be interfaced to an external MPEG codec. Seamlessly connecting to both direct and indirect CPU interfaces, it provides support for QVGA panels. The LCD controller supports all standard TFT panel types. The S1D13719, with its 512 KB of embedded SRAM and rich feature set, provides a low cost, low power, single chip solution to meet the demands of embedded markets requiring digital video.

Additionally, products requiring a rotated display can take advantage of the SwivelView™ feature which provides hardware rotation of the display memory transparent to the software application. The S1D13719 also provides support for "Picture-in-Picture Plus" (a variable size window with overlay functions). Higher performance is provided by the hardware acceleration engine which provides 2D BitBLT functions.

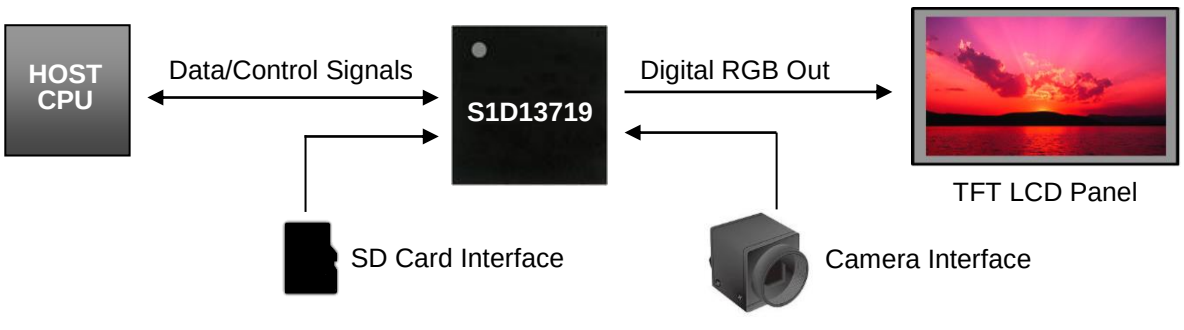
The S1D13719 provides impressive support for embedded products requiring digital video support. Its impartiality to CPU type or operating system makes it an ideal display solution for a wide variety of applications.

NOTE: S2D13719 is also available and meets automotive specifications.

FEATURES

- Embedded 512 KB SRAM display buffer
- Low operating voltage
- Direct and indirect CPU interfaces
- Programmable resolutions and color depths
- Support for RGB interface panels
- Support for TFT panels
- Internal PLL or digital clock input
- SD memory dard interface
- Dual port camera interface
- Fractional view and capture hardware resizer, reduction from 1x to 1/2x size in 128 steps
- Fractional zoom for YUV 4:2:2, expand from 1x to 2x size in 128 steps
- Hardware JPEG encoder/decoder
- YUV to RGB converter
- SwivelView™ 90°, 180°, 270° rotation
- Picture-in-Picture
- 2D hardware acceleration engine
- Software initiated power save mode

SYSTEM BLOCK DIAGRAM



S1D13719 Features

- 512 KB SRAM
- JPEG encoder/decoder
- Fractional view/capture resizer
- Fractional zoom
- 2D hardware acceleration
- SwivelView / Picture-in-Picture

S1D13719

DESCRIPTION

Display Buffer

- 512 KB of embedded SRAM
- Addressable as a single linear address space

Panel Support

- Supports TFT panels
  - 9/12/18/24-bit RGB interface
- Typical resolutions:
  - up to 320x480@16bpp
  - up to 320x240@32bpp

Display Features

- 8/16/32 bpp support
- Picture-in-Picture: displays a variable size window overlaid over the background image
- Overlay functions
- Pixel doubling: doubles the effective resolution
- Video invert: inverts display data

Acceleration

- 2D BitBLT engine
- SwivelView: 90°, 180°, 270° hardware rotation of display image
- Mirror display: hardware "mirror" image of display

CPU Interface

- 16-bit generic asynchronous CPU interface
- Direct and indirect addressing

Digital Video

- Dual port camera interface (YUV 4:2:2)
- Hardware JPEG encoder (YUV 4:2:2, 4:1:1, 4:2:0)
- Hardware JPEG decoder (YUV 4:4:4, 4:2:2, 4:1:1, 4:2:0)
- YUV display/capture (YUV 4:2:2, 4:2:0)
- Memory image JPEG encode (YUV 4:2:2, 4:1:1, 4:2:0)
- View and capture hardware resizer, reduction from 1x to ½ x size in 128 steps with trimming
- YUV to RGB and RGB to YUV converters
- Support for external MPEG codec interface
- Fractional zoom for YUV 4:2:2, expand from 1x to 2x size in 128 steps

Miscellaneous

- Internal PLL or digital clock input
- Software initiated power save mode
- $CORE_{VDD}$ 1.8 volts and IO_{VDD} 3.0 volts
- Operating Temperature: -40 to +85°C
- PFBGA 180-pin package

For more information on the S1D13719 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

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