

# S1D13715

## S1D13715 QVGA LCD Controller

The S1D13715 is a QVGA LCD Controller designed to support digital video in products for embedded markets. The S1D13715 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 TFT panels. The S1D13715, with its 320 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.

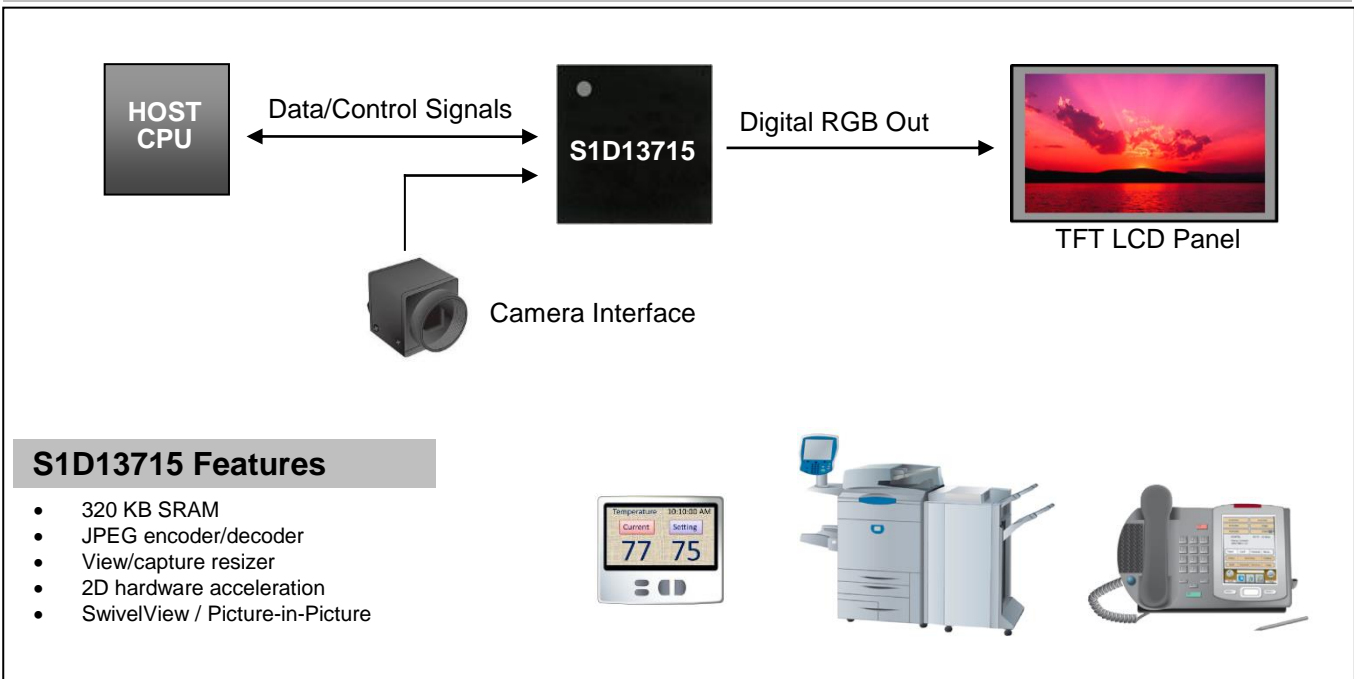
Additionally, products requiring a rotated display can take advantage of the SwivelView™ feature which provides hardware rotation of the display memory transparent to the software application. The S1D13715 also provides support for "Picture-in-Picture" (a variable size window with overlay functions). Higher performance is provided by the hardware acceleration engine which provides 2D BitBLT functions.

The S1D13715 provides impressive solutions for embedded markets requiring digital video support. Its impartiality to CPU type or operating system makes it an ideal display solution for a wide variety of applications.

### FEATURES

- Embedded 320 KB SRAM display buffer
- Low operating voltage
- Direct and indirect CPU interfaces
- Programmable resolutions and color depths
- Support for TFT panels
- 9/12/18/24-bit RGB interface
- Extended TFT interfaces including HR-TFT
- Internal PLL or digital clock input
- Dual port camera interface with resize function
- Hardware JPEG encoder/decoder
- YUV to RGB converter
- SwivelView™ 90°, 180°, 270° hardware for rotation of displayed image
- Picture-in-Picture
- 2D hardware acceleration engine
- Software initiated power save mode

### SYSTEM BLOCK DIAGRAM



## DESCRIPTION

### Display Buffer

- 320 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 with trimming and reduction functions
- YUV to RGB and RGB to YUV converters
- Support for external MPEG codec interface

### Miscellaneous

- Internal programmable PLL. or digital clock input
- Software initiated power save mode
- Multiple general purpose input/output pins
- COREVDD 1.8 volts and IOVDD 3.0 volts
- PFBGA 160-pin and QFP 176-pin packages

For more information on the S1D13715 and other Epson Display Controllers, visit the Epson Global website.

[https://global.epson.com/products\\_and\\_drivers/semicon/products/display\\_controllers/](https://global.epson.com/products_and_drivers/semicon/products/display_controllers/)



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