

# S1D13746

## S1D13746 Video Encoder / TV Controller

The S1D13746 is a low cost video encoder that can also be used as a TV controller. Internal high quality scaling algorithms allow low resolution input to be smoothly scaled to the full resolution of PAL or NTSC standards. The controller contains a 312KB SRAM display buffer which allows image data to be stored for processing or displayed to a TV.

Supporting a variety of input formats, input images larger than the memory size are automatically scaled down using a Bi-cubic method before being stored. All images can be stored using a double-buffered architecture to prevent any visual tearing and act as a rate converter. All stored images can be further scaled up/down for output. If the resulting scaled image does not fit the maximum resolution as defined by the TV standard, the image is auto-centered and bordered.

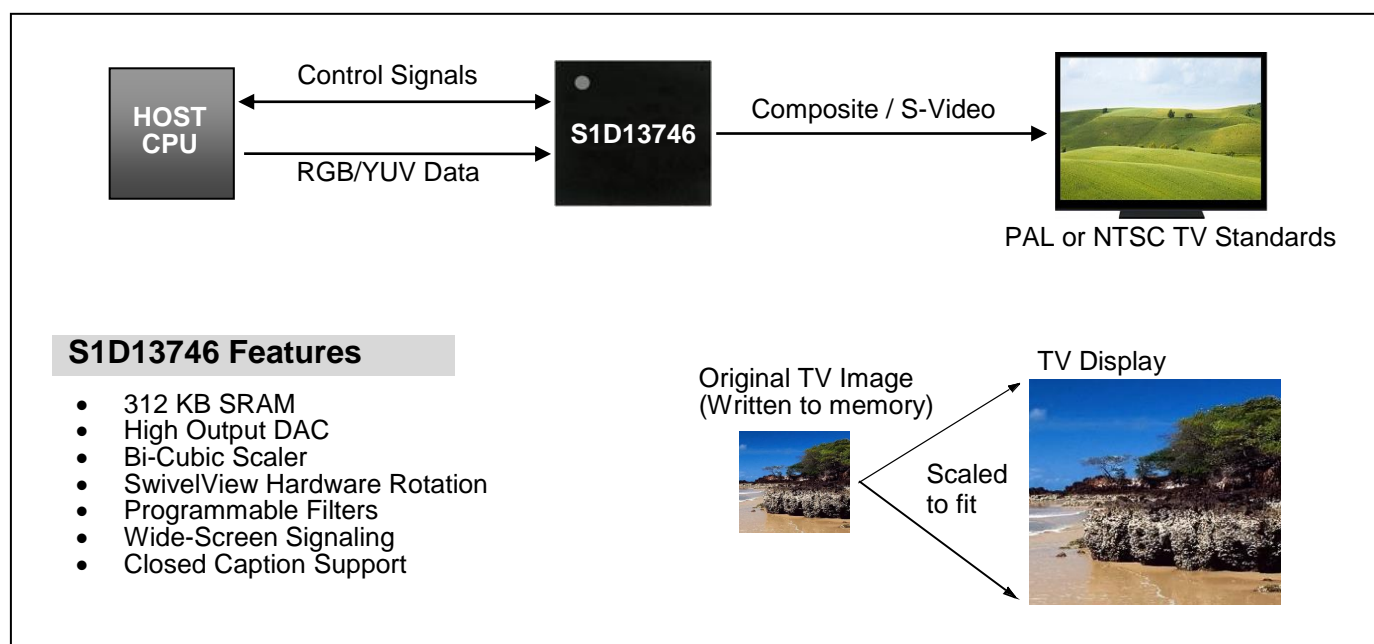
The S1D13746 includes a 3x3 pixel filter and programmable chrominance / luminance filters to generate a high quality resulting image. Additional features such as, Wide-Screen Signaling, Closed Captioning, and a built-in Test Pattern Generator are also supported.

The minimal feature set and high level of integration (embedded high output DAC) provides a low cost, low power, single chip solution to meet the demands of embedded markets requiring digital video.

### FEATURES

- Embedded 312KB SRAM display buffer
- Double-buffered for streaming video
- Low Operating Voltage
- Serial / Parallel Host Interface
- Parallel RGB Interface
- Multiple Input Data formats
- High Output DAC
- SwivelView™ (90/180/270° hardware rotation of image)
- Bi-Cubic Scalar from input to output
- PAL and NTSC output
- Automatic Border
- Auto-Centering
- Destructive Windows (Overlays) with transparency function
- Software Initiated Power Save Mode
- Internal PLL or Digital Clock Input

### SYSTEM BLOCK DIAGRAM



## DESCRIPTION

### Display Buffer

- Embedded 312K byte SRAM frame buffer

### CPU Interface

- Parallel Indirect Interface (Intel 80)
- Serial Interface
  - 3-wire (9-bit)
  - 4-wire (8-bit SPI)
- Parallel RGB Interface

### Input Formats

- RGB: 3:3:2, 5:6:5, 6:6:6, 8:8:8
- YUV: 4:2:0, 4:2:2
- All input formats are converted and stored as YUV 4:2:0
- Input image can be rotated (SwivelView™ 90/180/270°)

### Input Scaler

- Bi-Cubic, 9-bit, non-integer based
- Arbitrary Horizontal / Vertical settings
- Automatic scaling based on input/output window settings

### TV Outputs

- Composite PAL/NTSC output
- S-Video PAL/NTSC output
- Programmable Chrominance / Luminance Filters
- 3x3 Pixel filter
- Auto-Border / Auto-Center
- Wide-Screen Signaling Support (ETSI EN 300 294 compliant)
- Closed Caption Support (CEA-608-B)
- Test Pattern Generator
- Supports Destructive Windows (overlays) with transparency function

### Miscellaneous

- Internal PLL or digital clock input
- Software initiated power save mode
- COREVDD 1.5 Volts and IOVDD 1.8 to 3.3 Volts
- Package:
  - 100-pin PFBGA
  - 128-pin QFP15

For more information on the S1D13746 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/)



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

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Document code: X74A-C-001-01.2

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