

# S1D13L03

## S1D13L03 WVGA Simple LCD Controller

The S1D13L03 is a simple color LCD graphics controller with an embedded 768 KB display buffer. Targeting WVGA designs using 18-bit TFT panels, the S1D13L03 can support many applications in embedded markets such as office automation, factory automation, and medical instruments.

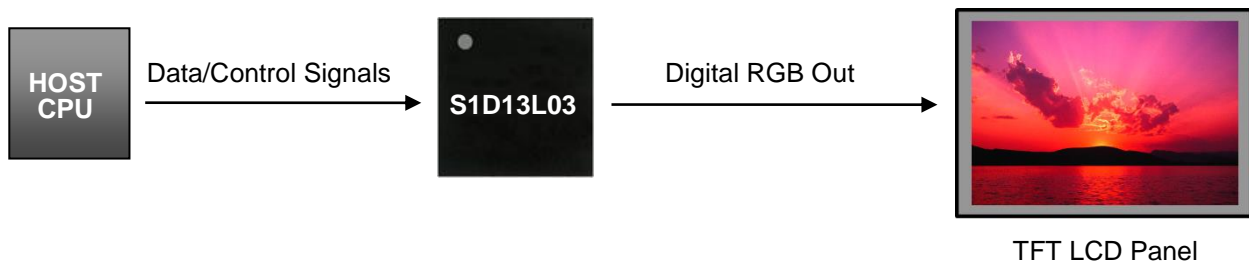
The S1D13L03 supports a 8/16-bit Intel 80 CPU architecture while providing high performance bandwidth into display memory allowing for fast screen updates. Resolutions supported include 800x480 single buffered and 352x416 double buffered. The S1D13L03 can implement a double-buffer architecture to prevent any visual tearing during streaming video screen updates.

While the S1D13L03 targets embedded markets, its impartiality to CPU type or operating system makes it an ideal display solution for a wide variety of other applications.

### FEATURES

- Embedded 768 KB SRAM display buffer
- 8/16-bit Intel 80 interface (used for display or register data)
- RGB: 8:8:8, 6:6:6, 5:6:5 (8:8:8 will be truncated to 16 or 18 bpp)
- Supports TFT panels
- Supports 18-bit RGB interface
- Supports resolutions up to 800x480
- General purpose input/output pins
- QFP21 176-pin package
- 16/18 bit-per-pixel (bpp) color depths
- Double-buffer available to prevent image tearing during streaming input
- Gamma Correction LUT
- Internal programmable PLL
- Single MHz clock input: CLKI
- Hardware and software power save mode
- Low operating voltage
  - $CORE_{VDD}$  1.5 volts
  - $IO_{VDD}$  1.65 ~ 3.6 volts

### SYSTEM BLOCK DIAGRAM



### S1D13L03 Features

- 768 KB SRAM
- 18-bit TFT interface
- Gamma LUT
- Double Buffering



## DESCRIPTION

### Display Memory

- Embedded 768 KB SRAM

### Display Features

- 16/18 bpp color depths
- 16 bpp to 18 bpp input data conversion
- All display writes handled by window apertures/position for complete or partial display updates
  - Window coordinates referenced to top left corner of the displayed image
- Double-buffer available to prevent image tearing during streaming input
  - Resolutions inside 384k bytes (1/2 of total available display buffer)
  - Typical resolution of 352x416

### Display Support

- Supports TFT panels
- 18-bit RGB interface
- Supports resolutions up to 800x480
- Gamma correction

### CPU Interface

- 8/16-bit Intel 80 interface (used for display or register data)
- Chip select is used to select device. When inactive, any input data/command will be ignored.

### Input Data Formats

- RGB: 8:8:8, 6:6:6, 5:6:5
  - 8:8:8 truncated to 16 or 18bpp

### Miscellaneous

- Internal programmable PLL
- Single MHz clock input: CLKI
- CLKI available as CLKOUT (separate CLKOUTEN pin associated with output)
- Hardware and software power save mode
- Input pin to enable/disable power save mode
- General purpose input/output pins available (GPIO[7:0])
- COREVDD 1.5 volts and IOVDD 1.65 ~ 3.6 volts
- QFP21 176-pin package

For more information on the S1D13L03 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.

[https://global.epson.com/products\\_and\\_drivers/semicon/information/support.html](https://global.epson.com/products_and_drivers/semicon/information/support.html)



#### NOTICE:

Document code: XB1A-C-001-01.2

No part of this material may be reproduced or duplicated in any form or by any means without the written permission of Seiko Epson. Seiko Epson reserves the right to make changes to this material without notice. Seiko Epson does not assume any liability of any kind arising out of any inaccuracies contained in this material or due to its application or use in any product or circuit and, further, there is no representation that this material is applicable to products requiring high level reliability, such as, medical products. Moreover, no license to any intellectual property rights is granted by implication or otherwise, and there is no representation or warranty that anything made in accordance with this material will be free from any patent or copyright infringement of a third party. When exporting the products or technology described in this material, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations. You are requested not to use, to resell, to export and/or to otherwise dispose of the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes.

All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective companies.

©Seiko Epson Corporation 2015 - 2018. All rights reserved.