

S1D13L02 VGA Graphics Controller

The S1D13L02 is a low cost, low power, multi-purpose Graphics LCD Controller with 1024KByte embedded SRAM display buffer.

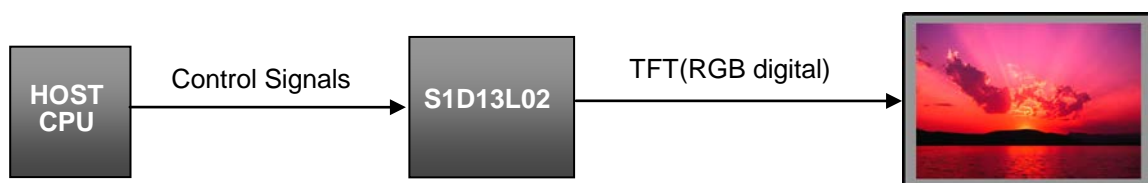
The S1D13L02 includes a pixel doubling feature which allows easy migration to larger panel sizes using existing image data such as QVGA to VGA. The feature set includes independent resizing of PIP window image data using the bi-cubic scaler and LCD output manipulation such as gamma control and optional dithering.

The S1D13L02 feature set and architecture are designed to meet the requirements of embedded systems such as Factory Automation, Medical Equipments and Office Automation applications.

■ FEATURES

- Embedded 1024K byte SRAM
- Low Operating Voltage
- 16-bit Indirect Host Interface
 - High Speed Host Writes
 - Rectangular, Rotated, and Mirror Host Write Modes
 - Input Formats: RGB 5:6:5
- Support for RGB Parallel I/F TFT panels
- 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
- Look-up Table for gamma control of LCD output
- Optional dithering of LCD output
- Internal PLL or Digital Clock Input
- Software Initiated Power Save Mode
- QFP22-208pin package

■ SYSTEM BLOCK DIAGRAM



S1D13L02 Features

1024kB SRAM
Up to 3 Display Layers
Overlay and Alpha Blending
Gamma Control of LCD output



S1D13L02

■ DESCRIPTION

Memory

- 1024K bytes of embedded SRAM

CPU Interface

- 16-bit Indirect Host Interface
- Supports High Speed Host Writes
- Integrated Host interface Write Controller supports:
 - Rectangular Write Mode
 - Rotated Write Mode
 - Mirror Write Mode

Panel Support

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

Input Formats

- Host can input image data as:
 - RGB 5:6:5

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
 - 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
 - Bi-Cubic Scaler can resize image from 8x - 1/8x
 - Edge Enhancement support
 - LUT (Look-Up Table) for independent gamma control of PIP2 window
- LUT (Look-Up Table) for gamma control of the LCD output
- Optional dithering for the LCD output

Miscellaneous

- Internal PLL or digital clock input (CLKI)
- Software initiated power save mode
- General Purpose IO pins
- CORE_{VDD} 1.5 volts and IO_{VDD} 1.80, 2.80, or 3.30 volts
- Packages:
 - QFP22 208-pin (28 x 28 x 1.4mm) (0.5mm pitch)

NOTICE:

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

MICRODEVICES OPERATIONS DIVISION

EPSON semiconductor website

http://www.epson.jp/device/semicon_e/

IC Sales & Marketing Department

421-8 Hino, Hino-shi, Tokyo 191-8501, JAPAN
Phone: +81-42-587-5814 FAX: +81-42-587-5117

Document code: 412706000
First issue February, 2014 in Japan

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Epson:

[S1D13L02F00A100](#) [S5U13L02P00C100](#)