S1D13L02

EPSON
EXCEED YOUR VISION

S1D13L02 VGA Simple LCD Controller

The S1D13L02 is a simple low cost, low power, multi-purpose LCD controller with a 1024 KB embedded SRAM display buffer. The S1D13L02 provides a flexible, yet easy to develop display system suited to meet the requirements of embedded markets such as factory automation, medical equipments and office automation applications.

The S1D13L02 includes a pixel doubling feature which allows easy migration to larger panel sizes using existing image data such as QVGA to VGA. Designed with the capabiilty to independently resize PIP window image data using a bi-cubic scaler, it also features LCD output manipulation such as gamma control and optional dithering.

The S1D13L02 feature set and architecture are designed to meet the requirements of many embedded systems, but it's impartiality to CPU type or operating system also makes it an ideal display solution for a wide variety of other applications.

FEATURES

- Embedded 1024 KB SRAM
- Low operating voltage
- 16-bit indirect host interface
    - High speed host writes
    - Rectangular, rotated, and mirror host Write modes
    - Input format: RGB 5:6:5
- Support for TFT panels
- RGB Interface: 9/12/16/18/24-bit
- Sofware initiated power save mode

- 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
- LUT for gamma control of LCD output
- Optional dithering of LCD output
- Internal PLL or digital clock input
- QFP22 208-pin package

SYSTEM BLOCK DIAGRAM

HOST CPU → Data/Control Signals → S1D13L02 → Digital RGB Out → TFT LCD Panel
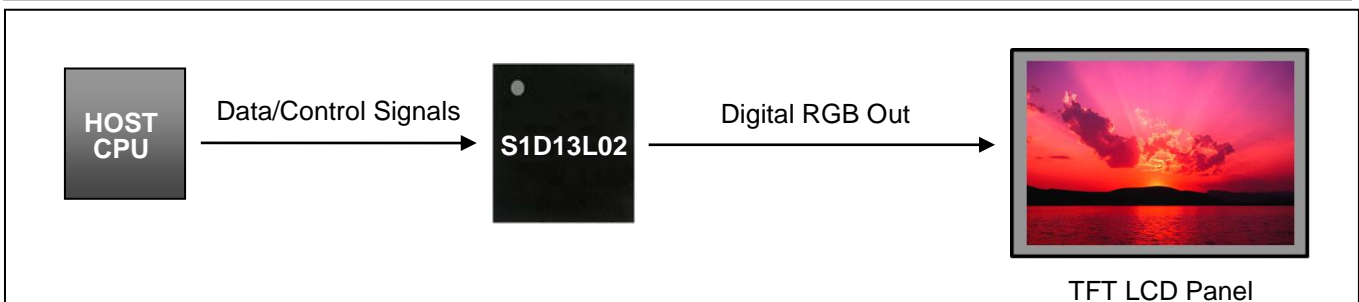
S1D13L02 Features

- 1024 KB SRAM
- Up to 3 display layers
- Overlay and alpha blending
- Gamma control of LCD output

S1D13L02

DESCRIPTION

Display Memory

- 1024 KB of embedded SRAM

CPU Interface

- 16-bit indirect host interface
- High speed host writes
- Host interface write controller supports:
  - Rectangular write mode
  - Rotated write mode
  - Mirror write mode

Display Support

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

Miscellaneous

- Internal PLL or digital clock input (CLKI)
- Software initiated power save mode
- General purpose input/output pins
- COREVDD 1.5 volts
  IOVDD 1.80, 2.80, or 3.30 volts
- Package: QFP22 208-pin

Display Features

- Support up to 3 layers with overlay and alpha blending functions
- Main layer features:
  - Image can be stored as RGB 5:6:5
  - Pixel doubling 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 for independent gamma control of PIP2 window
- LUT for gamma control of the LCD output
- Optional dithering for the LCD output

For more information on the S1D13L02 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