

S2D13719

S2D13719 QVGA LCD Automotive Controller

The S2D13719 is a LCD controller solution designed with support for digital video in automotive markets. The S2D13719 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 up to QVGA TFT panels. The LCD controller supports all standard TFT panel types. The S2D13719, with its 512 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 S2D13719 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.

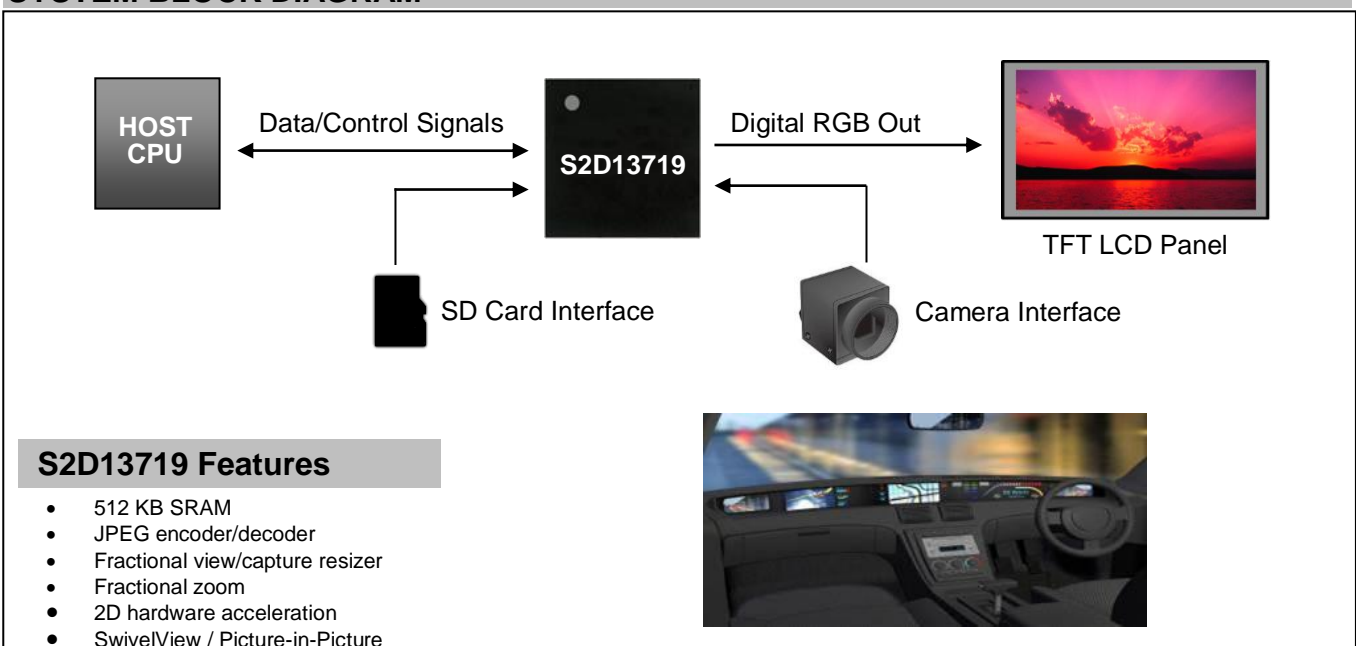
The S2D13719 provides impressive support for automotive solutions requiring digital video support. Its impartiality to CPU type or operating system makes it an ideal display solution for a wide variety of applications.

NOTE: S1D13719 is also available for non-automotive applications (does not meet automotive spec).

FEATURES

- Embedded 512 KB SRAM display buffer
- Low operating voltage
- Direct and indirect CPU interfaces
- Programmable resolutions and color depths
- Support for RGB interface panels
- Support for TFT panels
- Internal PLL or digital clock input
- SD memory card interface
- Dual port camera interface
- Extended Temp Range: -40 to +105°C
- Fractional view and capture hardware resizer, reduction from 1x to 1/2x size in 128 steps
- Fractional zoom for YUV 4:2:2, expand from 1x to 2x size in 128 steps
- Hardware JPEG encoder/decoder
- YUV to RGB converter
- SwivelView™ 90°, 180°, 270° rotation
- Picture-in-Picture
- 2D hardware acceleration engine
- Software initiated power save mode

SYSTEM BLOCK DIAGRAM



DESCRIPTION

Display Buffer

- 512 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, reduction from 1x to ½ x size in 128 steps with trimming
- YUV to RGB and RGB to YUV converters
- Support for external MPEG codec interface
- Fractional zoom for YUV 4:2:2, expand from 1x to 2x size in 128 steps

Miscellaneous

- Internal PLL or digital clock input
- Software initiated power save mode
- CORE_{VDD} 1.8 volts and IO_{VDD} 3.0 volts
- Operating Temperature: -40 to +105°C
- QFP22 208-pin package

For more information on the S2D13719 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



NOTICE:

Document code: X59A-C-002-01.2

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 2004 - 2018. All rights reserved.