

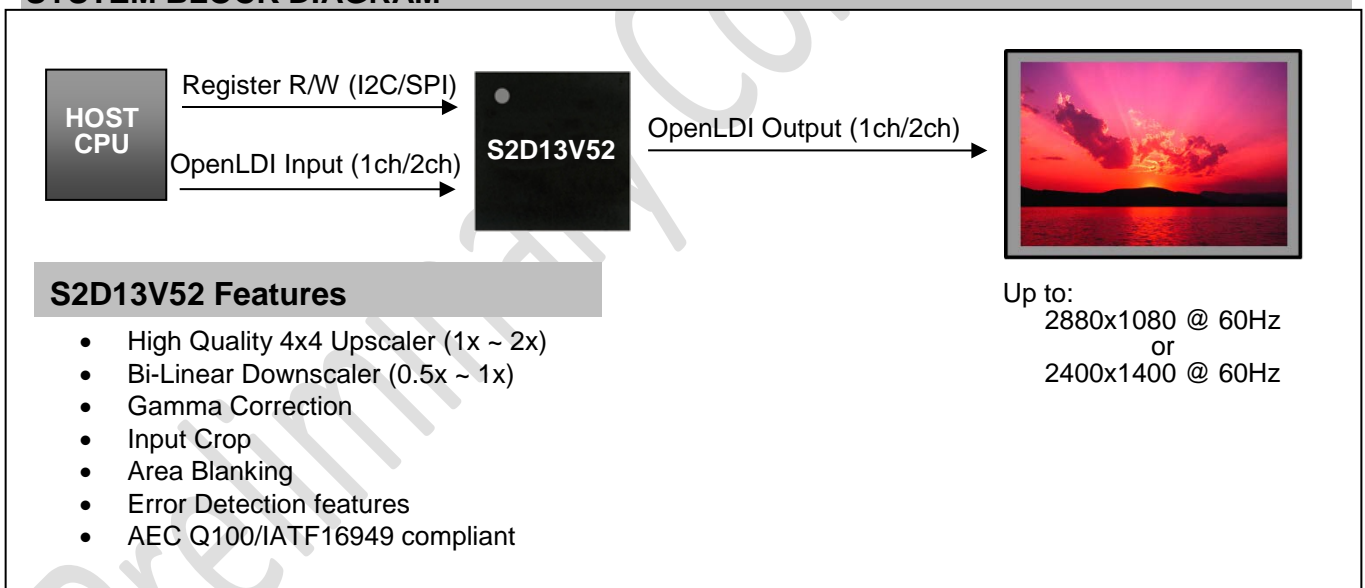
Scaler IC for Automotive

The S2D13V52 is a Scaler used to upscale/downscale streaming image data from one resolution to another. The input and output display timings can be completely independent as long as the frame rates match. An internal line buffer and special synchronization logic provide seamless transition from one display resolution to another. A full frame buffer is not required. Both input and output timings / resolutions are fully programmable and can support output resolutions up to 2880x1080 @ 60Hz. A selectable SPI/I2C interface is provided for device communication. The input and output display interfaces are OpenLDI and can be configured for 1 or 2 channel. S2D13V52 is qualified for automotive design including AEC Q100/IATF16949 compliance and several error detection features. Other features include a double buffered LUT for gamma correction, self-test image pattern generation, input crop, area blanking, and a spread spectrum clock generator (TBD) to reduce EMC.

FEATURES

- CPU Interface: SPI, I2C
- Display Input: OpenLDI (1ch or 2ch)
- Display Output: OpenLDI (1ch or 2ch)
- Input Resolution: Up to 1920x1080 (full HD)
- Display Resolution: Up to 2880x1080 or 2400x1400 @ 60Hz
- Display Features:
 - Gamma Correction
 - Input Crop
 - Area Blanking
 - Left/Right Split Function
- 1x to 2x Upscaler (High Quality 4x4)
- 0.5x to 1x Downscaler (Bi-Linear)
- Self test image pattern
- Single clock input
- Internal PLL
- Up to 5 GPIO pins
- Power Supply: Dual 1.8V / 3.3V
- Supply Temperature range: -40°~ 105°C
- **Package: H4QFP15 100-pin**
- Error Detection Features
- AEC Q100/IATF16949 compliant

SYSTEM BLOCK DIAGRAM



DESCRIPTION

CPU Interface

CPU Interface supports: SPI slave (Mode 0 or Mode 3), I2C slave

Display Support

- Display Input supports OpenLDI selectable between 1 channel or 2 channel
- Display Input Resolution up to 1920x1080 (full HD)
- Display Output supports OpenLDI selectable between 1 channel or 2 channel
- Display Output Resolution up to: 2880x1080 @ 60Hz, 2400x1400 @ 60Hz
- Display data format is 24 bpp

S2D13V52

Scaler Features

- 1x to 2x Upscaling using High Quality 4x4 filter
- 0.5x to 1x Downscaling using Bi-Linear interpolation
- Arbitrary, non-integer scale factors
- Input Crop
- Area Blanking
- Independent scaling for horizontal and vertical directions

Display Features

- LUT for Gamma Correction and Dithering
- Error Detection Features:
 - Output Hsync/Vsync watchdog timer
 - Input/Output resolution check
 - Open LDI Rx clock stop check
 - Register setting CRC check
 - Input video data CRC check
 - FIFO underflow/overflow check
 - CLKI stop check
 - Host Interface Integrity Check
- Left/Right Split function

Miscellaneous

- AEC Q100/IATF16949 Compliant
- Self test image pattern generation
- Single clock input
- Internal PLL
- Up to 5 GPIO pins
- Internal Spread Spectrum Clock Generator (TBD)
- Operating Temperature: -40°C to 105°C
- Power Supply: Dual 1.8 volts / 3.3 volts supply
- Package: H4QFP15 100-pin

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 2020, All rights reserved

Seiko Epson Corporation

Sales & Marketing Division

Device Sales & Marketing Department
421-8 Hino, Hino-shi, Tokyo 191-8501, JAPAN
Phone: +81-42-587-5814 FAX: +81-42-587-5116

EPSON semiconductor website

global.epson.com/products_and_drivers/semicon/

Document code: 413962200
First issue February, 2020