Advanced 640 x 600 pixel, backside illuminated global shutter, ultra compact sensor, with high QE, high MTF, excellent PLS, and full-features

Features

- Global shutter technology, ST proprietary single layer
- 3D stacked sensor 40 nm/65 nm
- 2.61 µm x 2.61 µm BSI pixel with full CDTI (capacitive deep trench)
- High performance with excellent
  - QE (quantum efficiency)
  - MTF (modulation transfer function) up to near IR
  - Perfect PLS (shutter efficiency)
- Smallest sensor on market with:
  - Compact die size: 2.6 mm x 2.5 mm
  - 640 pixel x 600 pixel resolution
  - Very small pixel array, 1.67 mm x 1.57 mm
  - Optical format between 1/9 inch
- Operating junction temperature: -30°C to 85°C
- Single lane transmitter MIPI CSI-2 (copyright© 2005-2010 MIPI Alliance, Inc. Standard for Camera Serial Interface 2 (CSI-2) version 1.0) version 1.3, 1.2 Gbps per lane
- Fast mode+ I2C control interface
- Integrated temperature sensor
- Up to 210 fps (frames per second) at full resolution and 260 fps with VGA resolution
- Programmable sequences of 4-frame contexts, including frame parameters
- Automatic dark calibration
- Dynamic defective correction
- Embedded auto-exposure
- 4 multiple function IO, dynamically programmable with frame contexts (GPIO, strobe pulse, pulse-width modulation, V sync)
- Up to 4 illumination control outputs, synchronized with sensor integration periods and master/slave external frame start
- Mirror/flip readout
- Fully sequenceable with frame contexts
- Crop
- Binning (x2 and x4)
- Analog binning: 320x240 @ 500fps, 320x252 @ 480fps, 320x300 @ 414 fps
- Sub sampling (x2 and x4)

Order code	Description
VD55G0	Bare die

Application

Engineered for high-performance computer vision applications, including AR/VR, personal and industrial robotics, drones, barcodes, biometrics and gestures, embedded vision or scene recognition.

Typical use cases where high-performance near IR sensing is key. Also demanding computer vision on scene with movement requiring no shutter artifacts.

Description

The VD55G0 is a global shutter image sensor with high BSI performance which captures up to 210 frames per second in a 644 x 604 resolution format. The pixel construction of this device minimizes crosstalk while enabling a high quantum efficiency (QE) in the near infrared spectrum.

DB4129 - Rev 4 - January 2022
For further information contact your local STMicroelectronics sales office.

www.st.com

Revision history

Table 1. Document revision history

Date	Version	Changes
30-Jan-2020	1	Initial release
10-Feb-2020	2	Corrected typo
10-Mar-2020	3	Features: changed "dual lane" to "single lane"
28-Jan-2022	4	Features: changed DTI to CDTI, and removed mention of map-based defective correction, and 8x8 zone statistics Updated Section Description

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