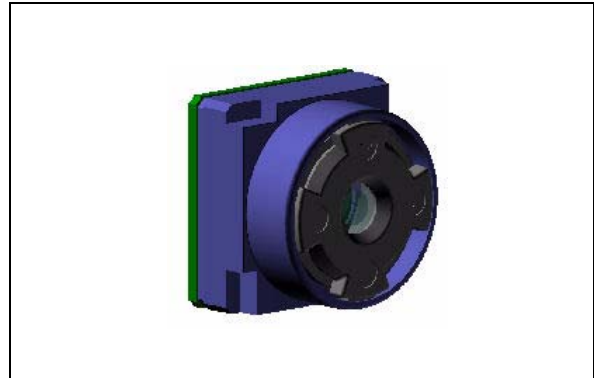


2 megapixel single-chip camera module

Data Brief

Features

- VS6725: 8-bit parallel interface with external syncs
- VS6735: MIPI CSI-2 serial interface
- 2 megapixel resolution (1600H x 1200V)
- 1.75 μm pixel size, 1/5 inch optical format
- 15 fps UXGA progressive scan
- SXGA emulation with FFOV output
- Low power 30 fps SVGA progressive scan for video capture
- RGB Bayer color filter array
- Integrated 10-bit ADC
- Integrated digital image processing functions, including defect correction, noise reduction, lens shading correction, image scaling, demosaicing, peaking, gamma correction and color space conversion.
- Embedded camera controller for automatic exposure control, automatic white balance control, black level compensation, 50/60 Hz flicker detection and cancelling, flashgun support.
- Fully programmable independent H and V scaling with derating
- ITU-R BT.656-4 YUV (YCbCr) 4:2:2, RGB 565, RGB 444 output formats
- 8-bit parallel video interface, horizontal and vertical syncs, 80 MHz (max) clock (VS6725)
- MIPI CSI-2 interface option (VS6735)
- Two-wire serial control interface
- On-chip PLL, 6 to 27 MHz clock input
- Analog power supply, from 2.4 V to 3.05 V
- Separate I/O power supply, 1.8 V or 2.8 V levels
- Integrated power management with power switch, automatic power-on reset and power-safe pins



- Low power consumption, ultra low standby current
- 3-element lens, F#2.8, 52 degree horizontal field of view (HFOV)
- 6.0 mm x 6.0 mm x 4.0 mm fixed focus camera module with embedded passives
- 20-pin socket

Description

The VS6725/VS6735 is a CMOS color digital camera featuring low size and low power consumption for mobile applications. It integrates a high-sensitivity pixel array, a digital image processor and camera control functions.

The VS6725/VS6735 is capable of streaming UXGA video up to 15fps, with ITU-R BT.656-4 YUV 4:2:2 frame format or 30fps SVGA using analog binning.

It supports 1.8 V/2.8 V digital interface and requires a 2.4 V to 3.05 V analog power supply. If required, the VS6725/VS6735 can operate as a 2.8 V single supply camera. The integrated PLL allows for low frequency system clock, and flexibility for successful EMC integration.

This complete camera module is ready to connect to camera enabled baseband processors, back-end IC devices or PDA engines.

1 Overview

Figure 1. VS6725 application diagram **Figure 2. VS6735 application diagram**

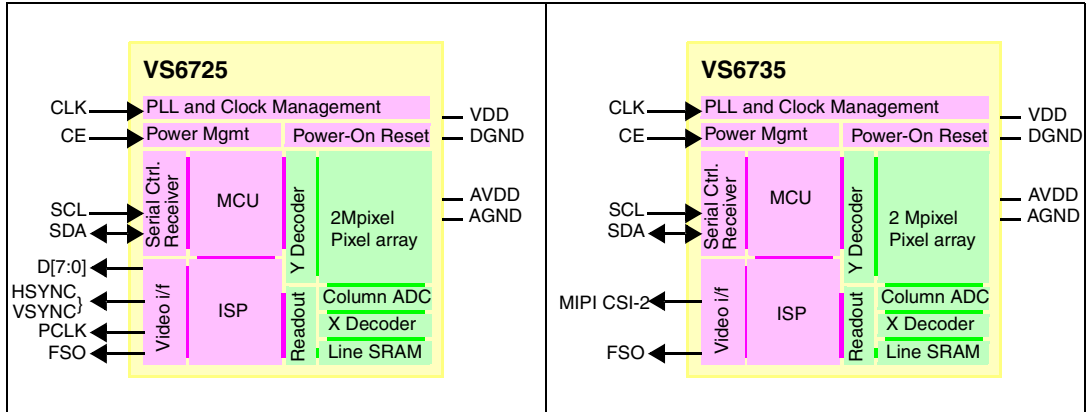


Figure 3. System diagram

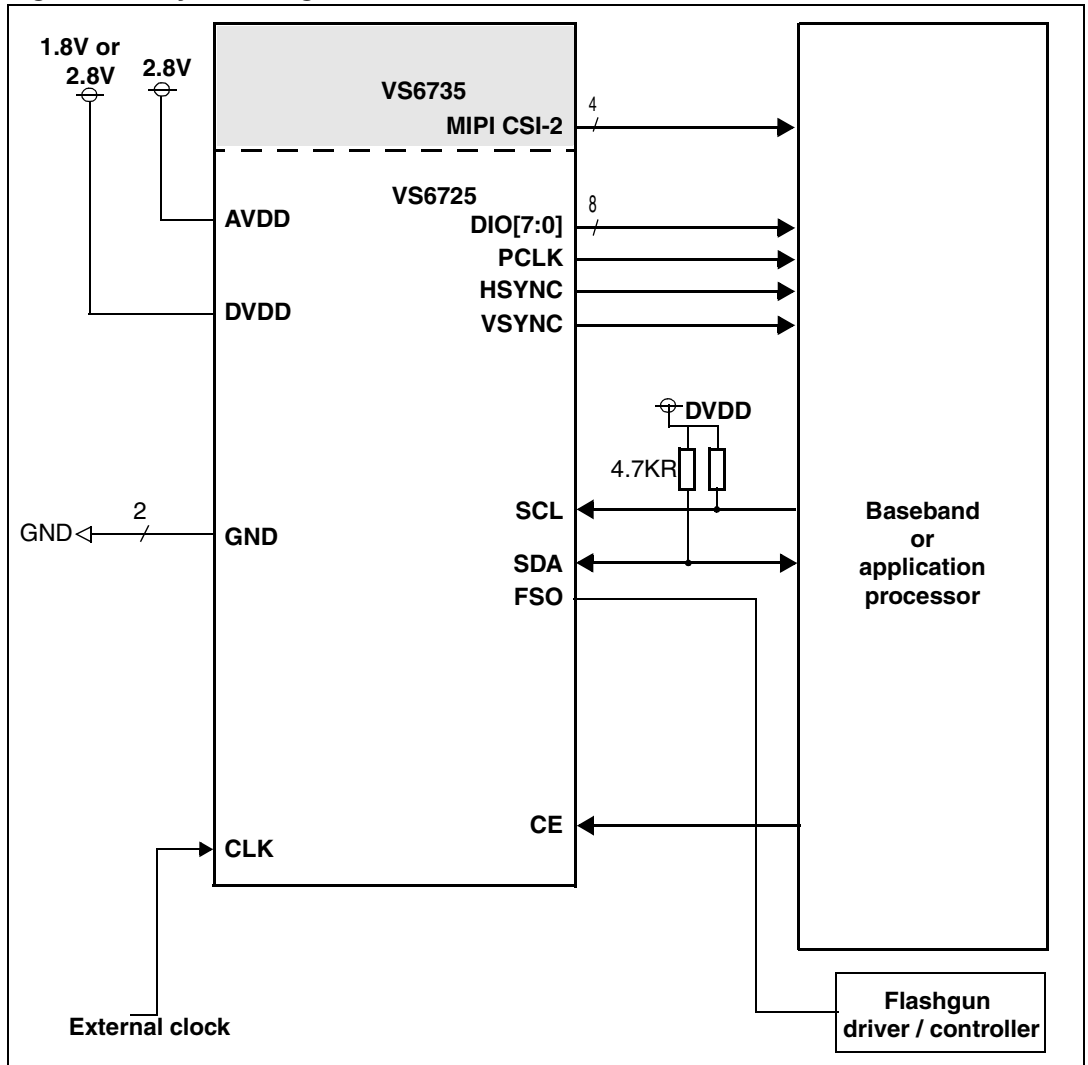


Table 1. Technical specifications

Parameter	Description
Visible pixel array	1600H x 1200V
Pixel size	1.75 μm x 1.75 μm
Color filter array	RGB Bayer
Sensor technology	ST IMG175 CMOS
Exposure control	+120 dB
Analog gain	+24 dB (max)
Dynamic range	61 dB (typical)
Signal-to-noise Ratio	33 dB at 150 lux (typical)
Frame rate(s)	1 Hz to 15 Hz UXGA 1 Hz to 30 Hz SVGA
Image format(s)	Separate X & Y downscale from 1 to 10 Arbitrary cropping Horizontal / vertical flip
Data format(s)	YUV 4:2:2 RGB 565, RGB 444
Video Interface (s)	8-bit parallel video, PCLK, hsync, vsync ITU-R BT.656-4 compliant, 80 MHz max or CSI 2 serial interface 640 MHz max (VS6735)
Clock input	6 MHz to 27 MHz
Supply voltage	2.4 V to 3.05 V analog
I/O voltage	1.7 V to 1.9 V or 2.4 V to 3.05 V
Power consumption (maximum)	Streaming 15 fps UXGA: TBD mA Power down: TBD μA
Lens	3-element, 52° +/- 2% HFOV, F# 2.8
Depth of field	60 cm to infinity
TV distortion	< 11%
Package size	6.0 mm x 6.0 mm x 4.0 mm (wlh)
System attach	20-pin socket.
Storage temperature	-40 °C to +85 °C
Functional temperature	-30 °C to +70 °C
Normal operating temperature	-25 °C to +55 °C
Optimal operating temperature	+5 °C to +30 °C

2 Device summary

Table 2. Device summary

Reference	Package	Packing
VS6725xQ045/TR	SmOP2, 6.0 mm x 6.0 mm x 4.0 mm	20-pin socket ⁽¹⁾ . Tape and reel
VS6735xQ045/TR	SmOP2, 6.0 mm x 6.0 mm x 4.0 mm	20-pin socket ⁽¹⁾ . Tape and reel

1. Flex variants are available on request.

3 Revision history

Table 3. Document revision history

Date	Revision	Changes
08-Feb-2008	1	Initial release.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2008 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com