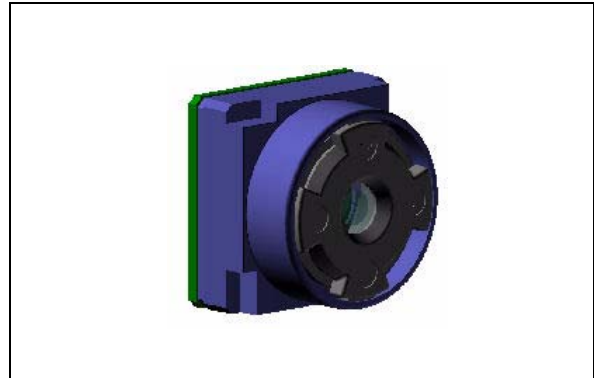


## 2 megapixel single-chip camera module

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  $\mu\text{m}$  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.

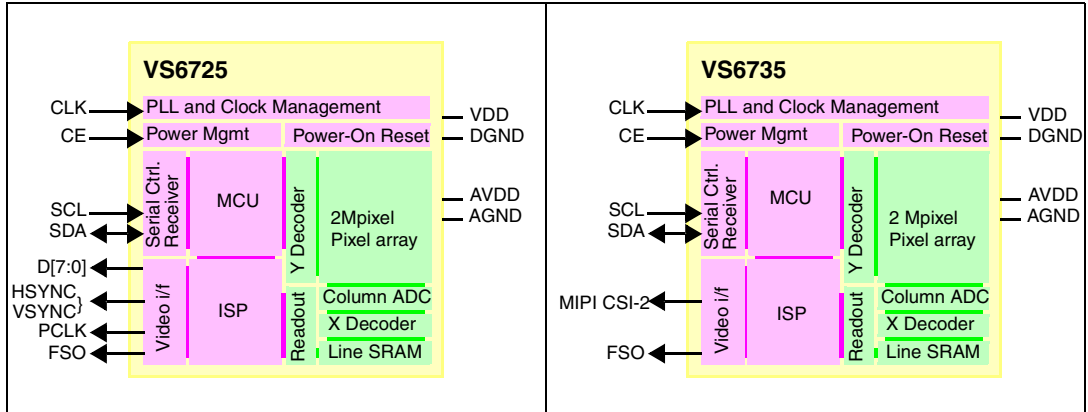
The VS6725/VS6735 is capable of streaming UXGA video up to 15fps, with ITU-R BT.656-4 YUV 4:2:2 frame format or 30fps SVGA using analog binning.

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.

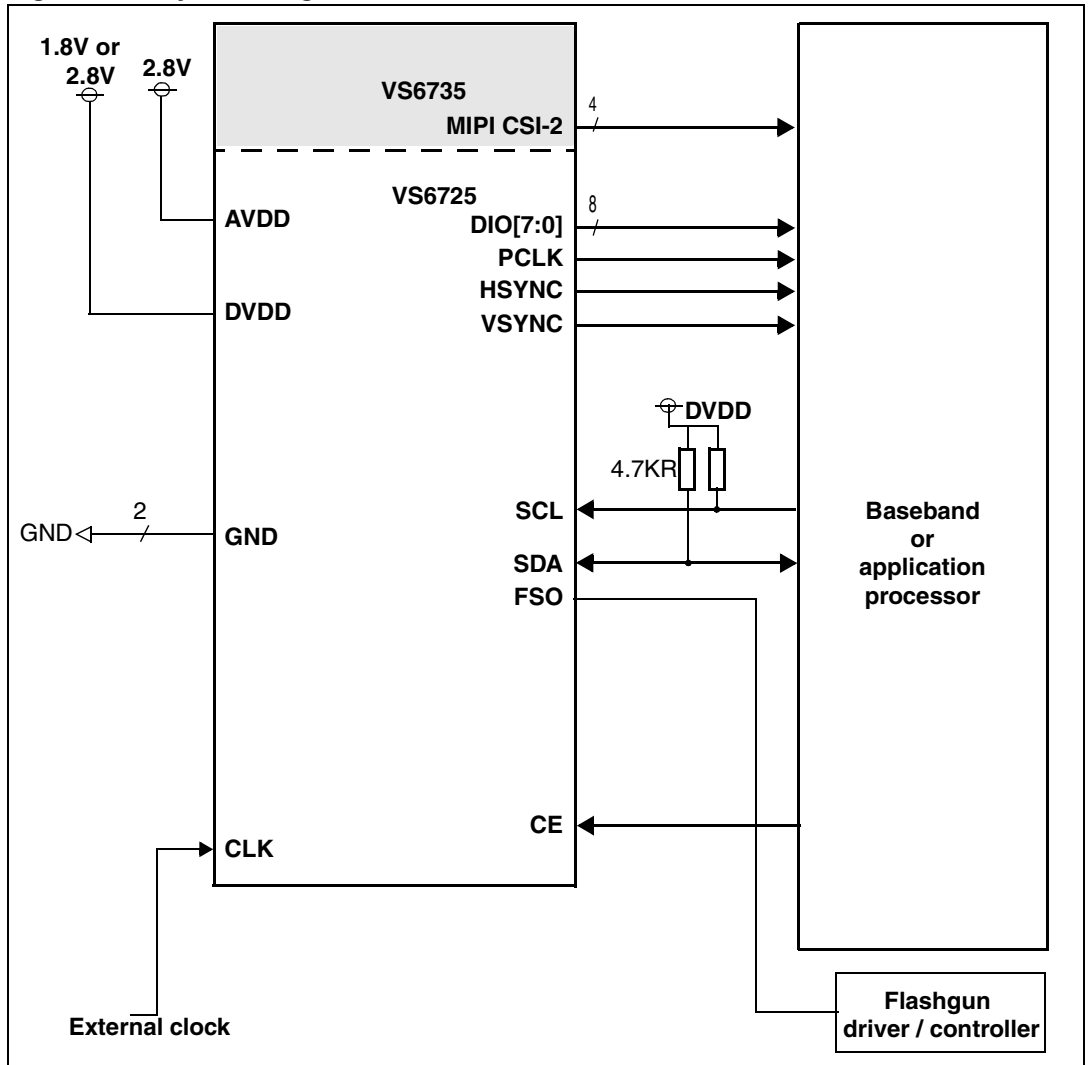
This complete camera module is ready to connect to camera enabled baseband processors, back-end IC devices or PDA engines.

# 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 $\mu\text{m}$ x 1.75 $\mu\text{m}$
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 $\mu\text{A}$
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 <sup>(1)</sup> . Tape and reel
VS6735xQ045/TR	SmOP2, 6.0 mm x 6.0 mm x 4.0 mm	20-pin socket <sup>(1)</sup> . 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.

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