

QXGA camera module with auto focus

Data Brief

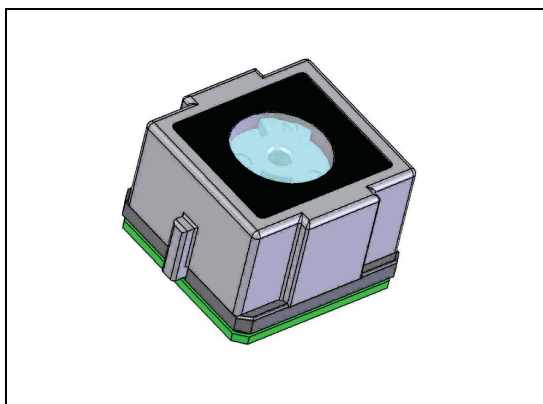
Features

- 3.15 megapixel resolution sensor (2048 x 1536)
- Integrated auto-focus mechanism
- High level autofocus control interface
- 4 element lens
- Compact size: 8.5 mm x 8.5 mm x 5.9 mm
- Compatible with SMIA 1.0 profile 2 functional specification
- Video data interface - CCP2.0
- Command interface - CCI
- Analog power supply from 2.4 V to 2.9 V
- Digital power supply from 1.7 V to 2.9 V
- On-board 10 bit ADC
- Integral EMC shielding and EMI reduction techniques
- Ultra low power standby mode
- Analog binning (2x2, 2x4) for low power video mode

Description

This databrief outlines a high performance 3.15 megapixel auto-focus camera module (VB6851) for use across a range of mobile phone handsets and accessories. It is designed to be used for both high quality stills capture and video modes. The module is SMIA 1.0 profile 2 compatible and is capable of generating raw bayer 3 MP images up to 20 fps. The VB6851 supports the CCI control and CCP 2.0 data interfaces.

As different phone platforms have different baseband processors with varying capabilities, it may not be possible for all phones to support the associated image processing and auto-focus algorithms. Where the baseband cannot support this processing load, a separate hardware



accelerator (e.g. STV0986) or application engine (e.g. STn8815) device can be incorporated in the phone system to run the algorithms in hardware. The specifications of these devices are contained in a separate document.

The module design is optimized for both footprint and height. The auto-focus mechanism combined with a multi-element lens provides excellent image quality at focus distances from less than 10 cm to infinity. All external components, including the auto-focus actuator drivers, are integrated inside the camera module, apart from two CCI pull-up resistors.

VB6851 offers an ultra low power consumption hardware standby mode consuming less than 30 μ W (typ.).

1 Overview

Figure 1. System diagram

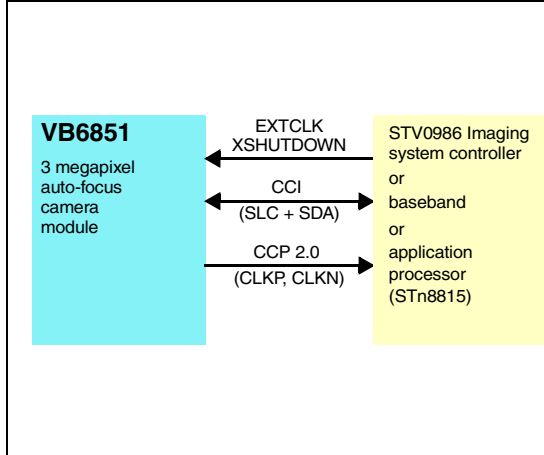


Figure 2. Block diagram

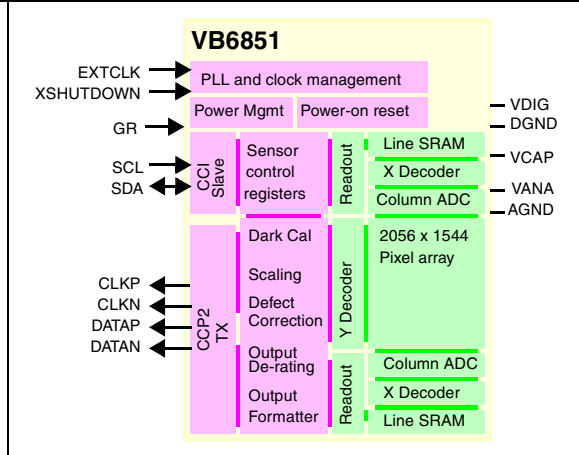


Table 1. Technical specifications

| Parameter | Description |
|---------------------------------|--|
| Pixel resolution | 2048 x 1536 (QXGA) |
| Sensor technology | ST IMG175 process |
| Pixel size | 1.75 μm x 1.75 μm |
| Exposure control | + 81 dB |
| Analog gain | + 24 dB (max) |
| Digital gain | + 6 dB (max) |
| Dynamic range | 60 dB |
| Signal to noise | 36 dB (@ 100 lux) |
| Supply voltages | Analog: 2.4 V - 2.9 V Digital: 1.7 V - 1.9 V |
| Average power consumption 20fps | <150 mW in infinity <350 mW at macro including actuator current |
| Package size (lxwxh) | 8.5 mm x 8.5 mm x 5.9 mm |
| Lens | 51° +/- 2 HFOV F/2.8 |
| TV distortion | < 1.0% |
| Relative illumination | 45 % (typ.) |
| Package type | SMIA85 auto-focus |
| System attach | SMIA85 socket |

2 Ordering information

Table 2. Order codes

| Order code | Package | Packing |
|------------------------------|------------------------------------|---------------|
| VB6851S0VO/T2 ⁽¹⁾ | SMIA85AF with CCP2 I/F with socket | Tape and reel |

1. ECOPACK® package

3 Revision history

Table 3. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 07-Feb-2008 | 1 | Initial release. |

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