VS6451

Ultra small reflowable CIF+ camera module

Data Brief

Features

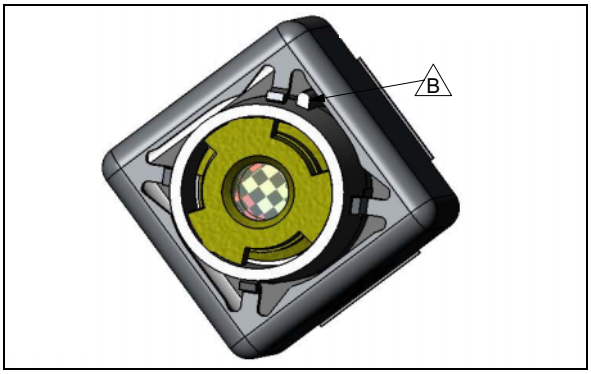
- CIF+ resolution sensor (384x320 or 320x384)
- Electrical and logical interface fully SMIA compliant
- Video data interface - CCP2.0
- Command interface - CCI
- 2.8 V/1.8 V operation
- On-board 10-bit ADC
- Small physical size
- Integral EMC shielding
- Ultra low power standby mode
- On-chip PLL
- Lead free reflowable module

Description

This VS6451 is an ultra small reflowable CIF+ camera module for use across a range of mobile phone handsets and accessories. It is primarily designed to be used as a second camera in video conferencing applications, but it may also be used as a primary camera. The camera sensor is SMIA class 2 profile 0 compliant and is capable of generating raw bayer CIF+ images up to 30 fps. The VS6451 supports the CCI control and CCP2.0 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 algorithms. Where the baseband cannot support this processing load, a separate hardware accelerator (STV0976 or STV0984) device can be incorporated in the phone system to run the algorithms in hardware.

The STV0984 processor can support 2 cameras. The specifications of these devices are contained in a separate document.



The module design is optimized to provide an ultra small footprint and height, and is designed to be reflowable at lead-free solder profiles. The product is lead free.

The lens design is optimized for video conferencing and maintains its performance even after the high temperatures of lead-free reflow.

VS6451 offers an ultra low power consumption hardware standby mode consuming less than 30 µW.

Applications

- Mobile phone
- PDA
- Videophone

Order code

Part number	Package
VS6451R0BA/T2	Lead-free reflowable module

Figure 1. Application diagram

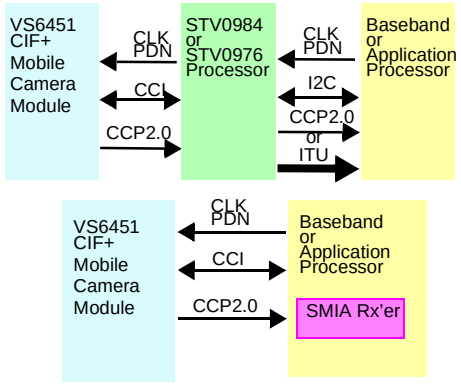


Figure 2. Block diagram

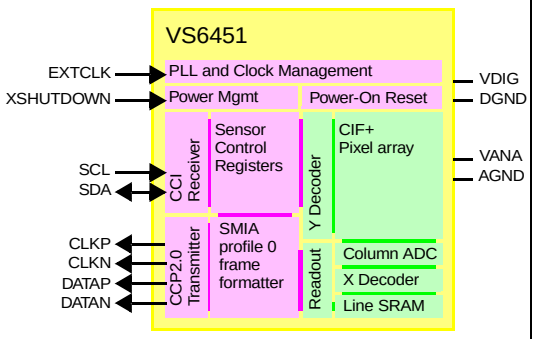


Table 1. Technical specifications

Parameter	Values
Pixel array	CIF+ portrait and landscape
Sensor technology	0.18 µm HCMOS8i shrink
Pixel size	3.6µm x 3.6µm
Exposure control	+8 dB
Analogue gain	+24 dB (max)
Dynamic range	61 dB
Signal to noise	34 dB (@ 100 lux)
Minimum illumination	< 7lux
Supply voltage	Analogue: 2.4V to 2.9V Digital: 1.8V ± 0.1V
Average power consumption @ 30fps	<60 mW
Module size (XYZ) max	4.5 mm x 4.5 mm x 3.6 mm
Lens HFOV	45°+/- 2° (CIF+, CIF equiv. 45°)
F number	2.8
Lens SFR	On axis 45% (typ) Horizontal field (70%) 25% (typical)
Lens TV distortion	<|5%|
Relative illumination	60% (typ)
System connectivity	Lead free reflowable BGA
Storage temperature	[-40; +85]°C
Functional operating temperature	[-30; +70]°C
Normal operating temperature	[-25; +55]°C
Optimal operating temperature	[+5; +30]°C

Figure 3. Mechanical data

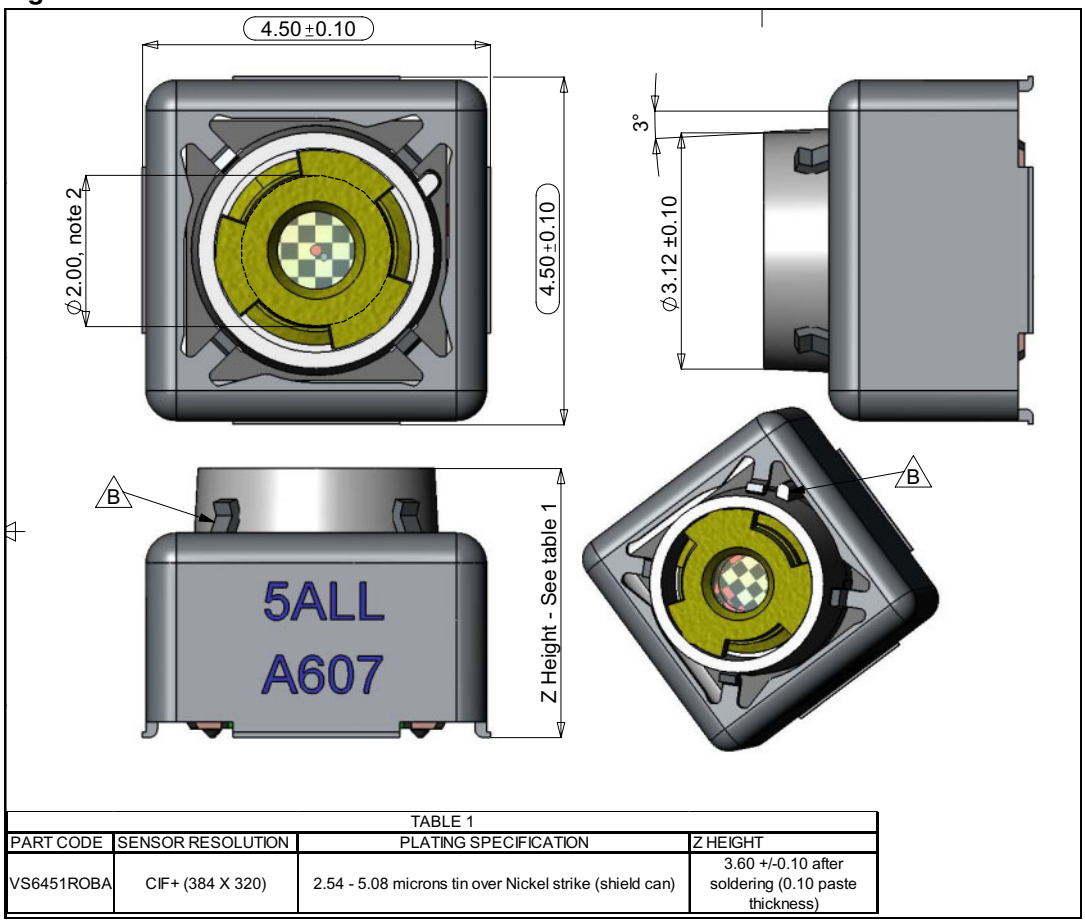


TABLE 1

PART CODE	SENSOR RESOLUTION	PLATING SPECIFICATION	Z HEIGHT
VS6451ROBA	CIF+ (384 X 320)	2.54 - 5.08 microns tin over Nickel strike (shield can)	3.60 +/-0.10 after soldering (0.10 paste thickness)

Revision history

Table 2. Document revision history

Date	Revision	Changes
26-Apr-2006	1	Initial release.

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