



Hi3516C Professional HD IP Camera SoC

## **Brief Data Sheet**

<b>Issue</b>	01
<b>Date</b>	2012-12-15
<b>Baseline Date</b>	2012-12-12

**Copyright © HiSilicon Technologies Co., Ltd. 2012. All rights reserved.**

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of HiSilicon Technologies Co., Ltd.

## **Trademarks and Permissions**



**HISILICON**, and other HiSilicon icons are trademarks of HiSilicon Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

## **Notice**

The purchased products, services and features are stipulated by the contract made between HiSilicon and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

## **HiSilicon Technologies Co., Ltd.**

Address: Huawei Industrial Base  
Bantian, Longgang  
Shenzhen 518129  
People's Republic of China

Website: <http://www.hisilicon.com>

Email: [support@hisilicon.com](mailto:support@hisilicon.com)



# Hi3516C Professional HD IP Camera SoC

## Key Specifications

### Processor

- ARM926
  - Up to 440 MHz
  - 16 KB I-cache, 16 KB D-cache

### Video Encoding

- H.264 baseline profile
- H.264 main profile Level 4.0
- MJPEG/JPEG baseline

### Video Encoding Performance

- At most 2-megapixel resolution for H.264 encoding
- Real-time H.264&JPEG encoding of multiple types of streams: 1080p@30 fps+VGA@30 fps + JPEG snapshot 1080p@1 fps
- Supports constant bit rate (CBR) mode and variable bit rate (VBR) mode.
- Supports the output bit rate ranging from 32 Kbit/s to 40 Mbit/s.
- Encoding frame rate, ranging from 1/16 frame/s to 30 frame/s
- Eight ROIs
- OSD overlay of eight regions before encoding

### Intelligent Video Analysis

- Integrated intelligent analysis acceleration engine, supporting motion detection, boundary guard, and video diagnosis

### Video and Graphic Processing

- 3D denoise, pre-processing, image enhancement, edge enhancement, and de-interlace
- Anti-flicker processing for output videos and graphics
- 1/16x to 8x video scaling
- 1/2x to 2x image scaling
- OSD overlay pre-processing for eight areas during encoding
- Hardware graphics overlay post-processing for the videos at two layers (video layer and graphics layer 1)

### ISP

- Adjustable 3A function
- Highlight compensation, backlight compensation, gamma correction, and color enhancement
- Defect pixel correction, denoise, and digital image stabilizer
- Defogging
- Lens distortion correction
- Rotation by 90° or 270°
- Mirror and flip
- Digital WDR and tone mapping
- PC and ISP tuning tools

### Audio Codec

- Voice codec in compliance with multiple protocols by using software
- G.711, ADPCM, and G.726 encoding

- Echo cancellation

### Security Engine

- AES, DES, and 3DES encryption and decryption algorithms by using hardware
- Digital watermark

### Video Interfaces

- Input
  - 8-/10-/12-bit RGB Bayer input, a maximum of 74.25 MHz clock frequency
  - BT.601
  - BT.656
  - Compatibility with mainstream CMOSs provided by SONY, Aptina, OmniVision, and Panasonic
  - Compatibility with the CCD sensor
  - Various sensor voltages
  - Programmable sensor clock output
  - At most 2-megapixel input resolution
- Output
  - 1-channel CVBS output, automatic load detection
  - One 1080p@30 fps BT.1120 VO interface for connecting to the external HDMI or SDI interface

### Audio Interfaces

- Integrated audio codec x1, 16-bit voice inputs and outputs

### Peripheral Interfaces

- POR
- High-accurate RTC
- A dual-channel SAR-ADC
- UARTx3
- IRx1, I<sup>2</sup>Cx1, SPIx2 in master/slave mode, and GPIOs
- PWMx3
- SDIO 2.0x1, SDHC
- USB 2.0 hostx1
- RMI and MII modes, 10 Mbit/s or 100 Mbit/s full-duplex or half-duplex mode. PHY clock output is provided in RMI mode.

### External Memory Interfaces

- DDR2 or DDR3 SDRAM
  - 16-bit DDR2/DDR3@440 MHz
  - Maximum capacity of 2Gbit
- SPI/NOR flash
  - 1-, 2-, or 4-bit SPI/NOR flash
- NAND flash
  - 8 bits
  - SLC, MLC, and 1-, 4-, 8-, or 24-bit ECC
  - Components with 8 GB capacity or larger
- NOR flash or NAND flash boot mode

### SDK

- SDK based on Linux-3.0.y
- High-performance H.264 PC decoding library

### Physical Specifications

- Power consumption

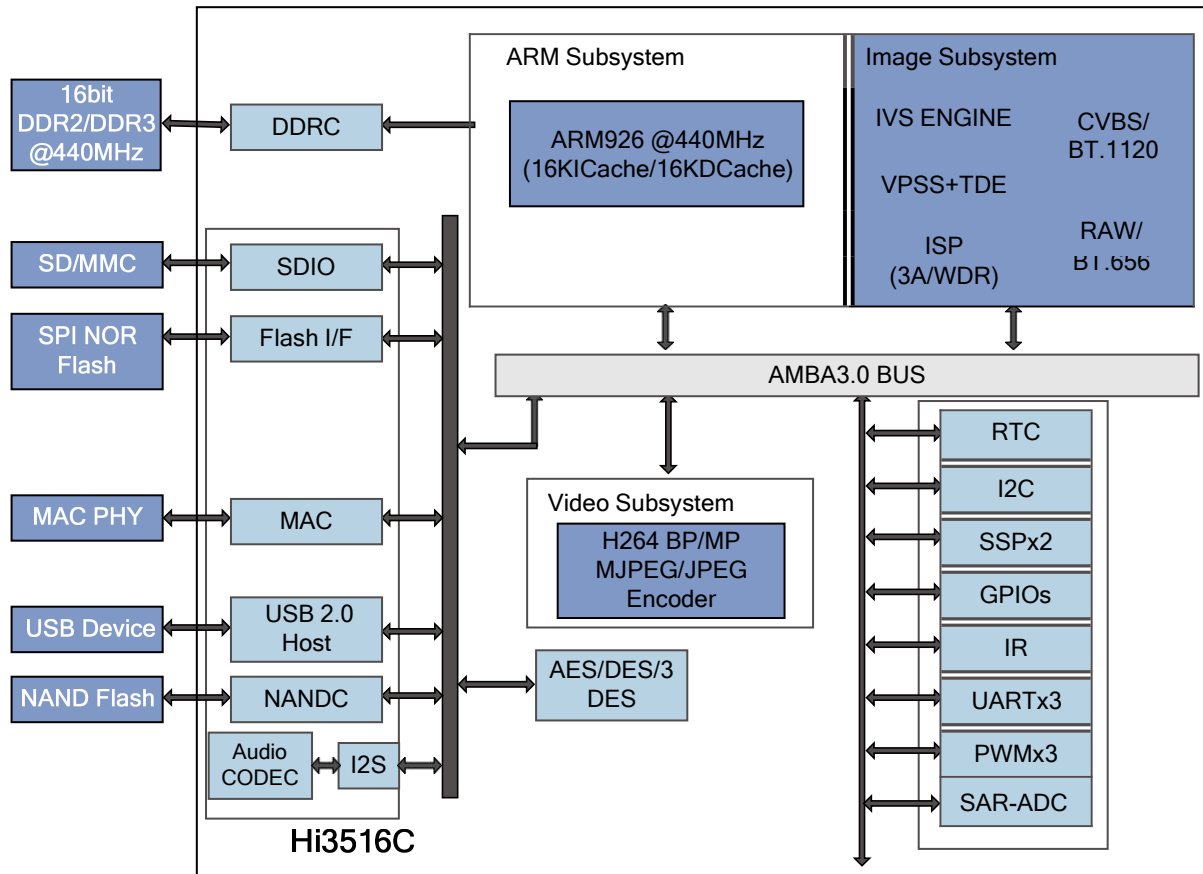


## Hi3516C Professional HD IP Camera SoC

- Typical power of 850 mW
- Multiple-level power-saving modes
- Operating voltage
  - 1.2 V core voltage
  - 3.3 V I/O voltage, and 3.8 V tolerance voltage
  - 1.5 V or 1.8 V DDR SDRAM voltage (1.5 V for DDR3 or 1.8 V for DDR2)
- Package
  - 293-pin TFBGA Package with 13 x 13 body size, 0.65 pitch

# Hi3516C Professional HD IP Camera SoC

## Functional Block Diagram



The Hi3516C is a new-generation SoC designed for the [HD IP camera](#). It has a new-generation ISP and H.264 encoder. It uses an optimized pre-encoding image algorithm, advanced low-power technology, and low-power architecture. The Hi3516C features low bit rate, high picture quality, and low power consumption. The Hi3516C also supports 90° or 270° rotation and lens distortion correction. These innovative features enable the Hi3516C to meet requirements of different surveillance applications. It fully supports 3A algorithms, which allow customers to design different types of IP cameras including the IP AF zoom module. Because the Hi3516C integrates the POR, RTC, and audio CODEC, and supports various sensor voltages and clock outputs, the EBOM costs for the Hi3516C HD IP camera are significantly reduced. Similar to the DVR or NVR SDK, the Hi3516C SDK allows rapid mass production and facilitates system layout of IP cameras, DVRs, and NVRs.

## Hi3516C HD IP Camera Solution



# Hi3516C Professional HD IP Camera SoC

