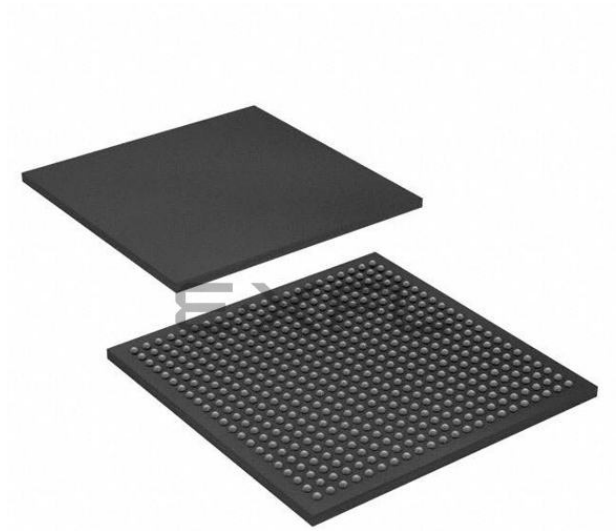


Welcome to E-XFL.COM

Embedded - Microcontrollers - Application Specific: Tailored Solutions for Precision and Performance

Embedded - Microcontrollers - Application Specific represents a category of microcontrollers designed with unique features and capabilities tailored to specific application needs. Unlike general-purpose microcontrollers, application-specific microcontrollers are optimized for particular tasks, offering enhanced performance, efficiency, and functionality to meet the demands of specialized applications.

What Are Embedded - Microcontrollers - Application Specific?

Application-specific microcontrollers are engineered to

Details	
Product Status	Obsolete
Applications	Embedded Multimedia Communication, Security and Entertainment
Core Processor	ARM9®
Program Memory Type	-
Controller Series	-
RAM Size	-
Interface	EBI/EMI, Ethernet, I²S, IrDA, SD/MMC, SPI, UART/USART, USB OTG
Number of I/O	-
Voltage - Supply	-
Operating Temperature	-
Mounting Type	Surface Mount
Package / Case	484-TFBGA
Supplier Device Package	484-TFBGA (15x15)
Purchase URL	https://www.e-xfl.com/product-detail/nxp-semiconductors/asc8850et-m2-557

NXP SoCs for IP cameras ASC884x, ASC885x

Integrated solutions for full HD security IP cameras with H.264 compression

This family of single-chip solutions supports all the required functions of a full HD IP camera. These products take raw image output from the image sensor, optimize the image, compress the video, and send it over the network.

Key features

- Support for up to 12 MPixels raw data
- Complete image processing
- Up to 1080p @ 45 fps or D1 @ 270 fps H.264 encoding
- ROI encoding and SVC-T for H.264 compression
- I^2S audio and multiple audio codecs
- Up to 24-bit video output for up to 1080p @ 60 fps
- Advanced data encryption
- ARM926 CPU running at up to 600 MHz
- SDRAM support up to a total of 2 GB
- Wide range of peripheral interfaces supported
- Compact TFBGA-484 package (15 x 15 mm, 0.65 mm pitch)
- ~1.2 W for (1080p @ 30 fps + 720p @ 30 fps) H.264 encoder

Key benefits

- Dedicated hardware compression engine for multi-stream and multi-encoding
- Feature rich and configurable image processing pipeline hardware for flexible and superior picture quality tuning
- Pin-to-pin and SW-compatible family of products
- Reference design and software development kit (SDK) available for fast time-to-market
- SDK supporting a wide range of image sensors from all major suppliers[1]

Key applications

- Security IP camera
- Video conferencing
- Video door phone and intercom
- Industrial vision

Digital IP cameras are the new direction in security. Today's security applications are moving away from analog cable networks and toward digital switched networks. These networks support longer distances without losing quality, have fewer interference issues, are easy to integrate into existing data networks, and enable high-definition video.

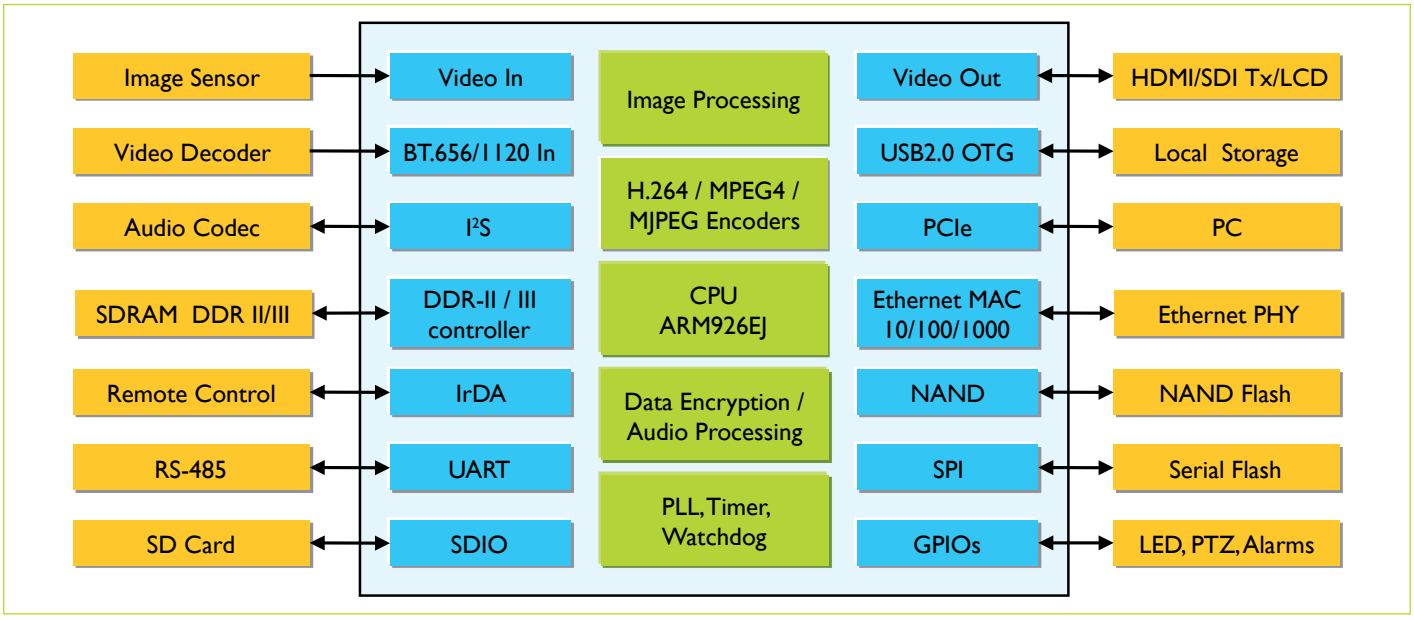
To transmit video over an IP network, the camera controller compresses the video into a digital format with low delay while at the same time preserving and optimizing video quality.

The NXP ASC884x and ASC885x take raw image output from the image sensor, handle digital WDR, optimize the image, compress the video into H.264, MPEG-4, or MJPEG and send it over the network via the integrated Ethernet controller.

Peripheral connectivity is supported by USB, SPI, PCIe, and UARTs and 20 GPIO for PTZ or other control functions. The I²S interface can be used for local audio recording and playback. A video output is available to display the captured video for local viewing.

The ASC884x and ASC885x use high-resolution digital WDR for superior video quality even under low-light conditions, and they automatically adjust the exposure and support pixel binning.

ASC884x, ASC885x IP camera block diagram



Selection guide for ASC884x, ASC885x family[II]

Product feature		ASC8848	ASC8849	ASC8850	ASC8851
ARM926EJ frequency		400 MHz	500 MHz	600 MHz	600 MHz
Max sensor resolution		5 MPixels	5 MPixels	12 MPixels	12 MPixels
Single stream video compression max performance	H.264	720p @ 45 fps or 1080p @ 20 fps or 4 x D1 @ 30 fps	SXGA @ 40 fps or 1080p @ 25 fps or 5 x D1 @ 30 fps	1080p @ 30 fps or 6 x D1 @ 30 fps	1080p @ 45 fps or 9 x D1 @ 30 fps
	MPEG-4	D1 @ 60 fps	D1 @ 66 fps	720p @ 30 fps	720p @ 30 fps
	M-JPEG	720p @ 30 fps	1080p @ 30fps	1080p @ 40 fps	1080p @ 40 fps
Video input	Bayer RGB / CMYG	12 bits: 1-ch	16 bits : 1-ch	16 bits : 1-ch	16 bits : 1-ch
	BT.1120	N.A.	1-ch	1-ch	1-ch
	BT.656	3-ch	4-ch	6-ch	8-ch
	BT.601	1-ch 8-bit	2-ch 8bit or 1-ch 16-bit		
Video output	Output pins	8	24	24	24
	BT.656	8-bit			
	RGB-24b	N.A.	720p @ 60 fps	1080p @ 60 fps	1080p @ 60 fps
	BT.1120	N.A.	720p @ 60 fps	1080p @ 60 fps	1080p @ 60 fps
Interfaces	I²S	x1	x5	x5	x5
	SPI	x1	x2	x2	x2
	SD / SDIO / MMC	x1	x2	x2	x2
	UART	x2 (1 full + 1 partial)	x4 (2 full + 2 partial)	x4 (2 full + 2 partial)	x4 (2 full + 2 partial)
	NAND Flash	x1	x2	x2	x2
SDRAM channels, each supporting up to 1 GB DDR-III or up to 512 MB for DDR-II		1-ch @ 266 MHz	2-ch @ 333 MHz	2-ch @ 400 MHz	2-ch @ 400 MHz
Ethernet MAC		MII	MII / GMII / RGMII	MII / GMII / RGMII	MII / GMII / RGMII

[I] Please contact application support at http://www.nxp-asc.com for upto date list of supported image sensors.

[II] Specification are for M2 version of products, for M1 version please contact application support.

ASC885x technical specs[II]

Sensor and video input	▸ Up to 12 MPixels 16-bit raw data (RGB and CMYG) with pixel clock up to 180 MHz. ▸ Directly interfaces with CMOS sensors and supports CCD image sensor with external analog front-end ▸ Supports external decoders with BT.656, quad-multiplexed BT.656, BT.1120, BT.601 interface and HDMI transmitters
Image processing	▸ Color and gamma correction ▸ Noise reduction, edge-enhancement and de-interlacing ▸ Digital WDR, advanced contrast enhancement ▸ Auto white balance, auto exposure ▸ Auto iris, auto focus, zoom control and IR-cut filter support through SW and GPIOs ▸ Cropping, mirroring, flipping, up and down scaling ▸ Photometric and geometric lens distortion correction ▸ Privacy mask, text, and image overlay ▸ Motion detection for up to 16 windows
Video compression	▸ Up to 1080p @ 45 fps or D1 @ 270 fps H.264 video compression ▸ Baseline, Main, and High Profile for H.264, supporting CAVLC and CABAC entropy encoding with VBR, CBR and CVBR ▸ Up to 2 reference frames for motion estimation ▸ ROI encoding ▸ SVC-T support enabling , e.g., H.264 (1080p @ 30 fps + 1080p @ 15 fps + 1080 @ 7.5 fps + 1080p @ 3.75 fps) + H.264 (720p @ 30 fps + 720p @ 15 fps + 720 @ 7.5 fps + 720p @ 3.75 fps) ▸ Support for MPEG4 simple profile up to 720p @ 30 fps and M-JPEG baseline with up to1080p @ 40 fps. ▸ Multi-stream and multi-encoding support, e.g. H.264(1080p @ 30 fps + 720p @ 30 fps) + MJPEG (1080p @ 30 fps)
Audio	▸ Up to 5 I^2S channels (4 input only and 1 input/output to support playback) ▸ Multiple codecs: G.711, AAC, GAMR, G.726
Video output	▸ Up to 24-bit RGB supporting up to 1080p @ 60 fps to HD-SDI Tx/ HDMI Tx / LCD ▸ BT.1120 to HD-SDI Tx/ HDMI Tx ▸ BT.656
Data encryption	▸ AES, TDES, DES, SHA-1, SHA-224, SHA-256, SHA-384, SHA-512
CPU	▸ ARM926EJ-S CPU with 16 K I-Cache and 16 K D-cache operating at up to 600 MHz running Linux 2.6
Memory	▸ 2x 16-bit SDRAM memory channels, each supporting up to 1 GB DDR-III or 512 MB DDR-II @ 400 MHz
Interfaces	▸ Ethernet MAC 10/100/1000, USB 2.0 OTG, PCIe 1.1, SPI, SD / SDIO/ MMC, UARTs, IrDA

[I] Please contact application support at http://www.nxp-asc.com for upto date list of supported image sensors.

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