Press Release

Fujitsu Microelectronics Limited

Fujitsu Launches New Ultra-Low Power Full HD H.264 CODEC LSIs

- Includes 60 frames per second, 60p, superior picture quality -

Tokyo, October 30, 2008 - Fujitsu Microelectronics Limited announced today two new LSIs to expand its line-up of H.264(1) CODEC LSIs, that encode and decode Full HD (1,920 dots x 1,080 lines) video in the H.264 format. The first of the two products to be launched, the ultra-low power MB86H55, features power consumption of only 500mW during Full HD encoding including the in-package memory, an industry-leading level for low power consumption. Sample shipments of the MB86H55 will start in January 2009. In addition, the upcoming LSI, MB86H56, will offer processing of Full HD video at 60 frames per second (progressive), 60p(2), to improve picture quality even further. Samples shipments of the MB86H56 will start from April 2009.

The two new products have memory in-package offer a small package size of 15mm x 15mm, thus making it ideal to record, play and transmit picture quality HD video on portable devices such as digital camcorders, as well as on home networked appliances, commercial broadcast equipment, and security cameras.

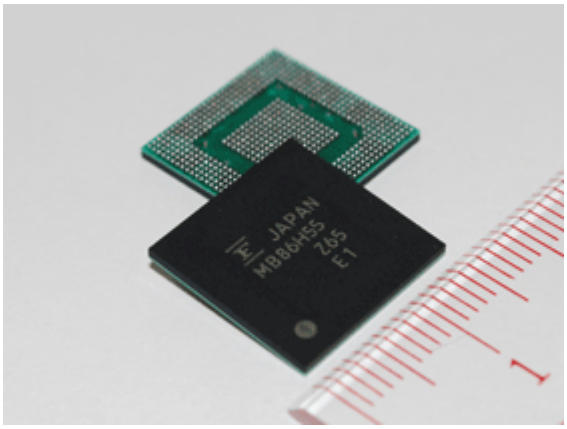

Figure 1: H.264 CODEC LSI, MB86H55

For digital camcorders, the H.264 compression format has become mainstream, providing longer recording times than the previous MPEG-2 compression format. At the same time, longer battery life is essential to increase the length of you can continuously record or play on one battery charge. However, with the ever-shrinking size of digital camcorders, large batteries can't be used, thus making low power consumption of the internal components a key requirement.

Since 2007, Fujitsu Microelectronics has been providing its MB86H51, which is a Full HD H.264 CODEC featuring in-package memory. The new low power MB86H55 has a power consumption of only 500mW during Full HD encoding, including the in-package memory power consumption. This allows an extension in the length of time one can continuously record and play HD video on digital camcorders and other portable devices while maintaining superior picture quality.

The other new CODEC LSI, MB86H56, continues the reputation for high picture quality of the existing MB86H51, by even further increasing the picture quality with processing at 60 frames per second (progressive).

These two new products, as well as the existing MB86H51 CODEC LSI, utilize Fujitsu Laboratories' proprietary picture quality algorithm to realize superior picture quality and a reduced video processing burden enabled by high-compression technology. Leveraging Fujitsu's highly regarded expertise in image processing-related technologies and products, Fujitsu Microelectronics will continue to strengthen its imaging and video processing ASSPs.

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Sample Availability

Product Name	Sample Availability
MB86H55	January 2009
MB86H56	April 2009

Sales Target

200,000 units per month

Key Features

1. **Small form-factor, low power consumption necessary for portable devices**
   Both new products contain one 512M bit memory (FCRAM[3]) in-package. Due to the reduction in the number of memory chips, as well as the usage of 65nm process technology, the power consumption during Full HD encoding, including the in-package memory, is reduced to 500mW (at 30 frames per second). Also, it is provided in a small form-factor, 15mm x 15mm package.

2. **Processing at 60 frames/second (progressive) further improves picture quality (MB86H56)**
   The existing CODEC product, MB86H51, processes video at 30 frames per second; while the new MB86H56 doubles this to 60 frames per second (progressive), 60p, to boost picture quality.

3. **Both LSIs feature embedded scaler for picture expansion/reduction**
   Both products have an embedded scaler for expansion or reduction of the picture. In units of 16 bit x 32 lines, pictures can be expand by a maximum of 6 times or reduced to 1/6, therefore enabling flexible accommodation of the requirements for picture quality, resolution, and bit rate depending on the application.

4. **Improved connectivity to peripheral LSIs**
   Both products contain many interfaces for improved connectivity. For the host interface to connect to an external CPU, there is a 16 bit parallel interface and a TS interface as the video stream interface. In addition, there is a serial interface in which a reduction of pins for host interface is possible, as well as a PCI interface for connecting a PC or a recorder. Connection to external ROM is also possible, thus realizing high-speed boot for devices that feature this LSI.

Glossary and Notes

1 **H.264:**

A video compression standard defined by the International Telecommunication Union, Telecommunication Standardization Sector (ITU-T). A video-encoding format noted for offering more compression than MPEG-2 and other earlier formats. The International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) has defined the MPEG-4 Part 10 Advanced Video Coding (MPEG-4 AVC), however it is the same as H.264.

2 **60 frames/sec (progressive) processing:**

Referred to as "60p". Every second, 60 video frames are processed, by all the lines in the frame being processed in sequence (progressive). This creates higher picture quality than so called "60i" where odd lines and even lines are drawn alternately (interlace), such that 30 frames per second processing appears like 60 frames.

3 **FCRAM (Fast Cycle RAM):**

Fujitsu Microelectronics' proprietary RAM core architecture featuring high-speed and low power consumption.

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For more information

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Fujitsu Microelectronics Ltd. - Video Processing LSIs

About Fujitsu Microelectronics (FML)

Fujitsu Microelectronics Limited designs and manufactures semiconductors, providing highly reliable, optimal solutions and support to meet the varying needs of its customers. Products and services include ASICs/COT, ASSPs, power management ICs, and flash microcontrollers, with wide-ranging expertise focusing on imaging, wireless, automotive and security applications. Fujitsu Microelectronics also drives power efficiency and environmental initiatives. Headquartered in Tokyo, Fujitsu Microelectronics Limited was established as a subsidiary of Fujitsu Limited on March 21, 2008. Through its global sales and development network, with sites in Japan and throughout Asia, Europe, and the Americas, Fujitsu Microelectronics offers semiconductor solutions to the global marketplace. For more information: http://jp.fujitsu.com/group/fml/en/

Key Specifications of the CODEC LSIs MB86H55 and MB86H56

Video	Profile	MB86H55	H.264 high profile /Level 4.0 half-duplex CODEC
		MB86H56	H.264 high profile /Level 4.2[*1] half-duplex CODEC
	Resolution	1920x1080x60p/50p (MB86H56 only), 1920x1080x60i/50i/30p/24p, 1440x1080x60i/50i/30p/24p, 1280x720x60p/50p, 720x480x60i, 720x576x50i Up/Down scaler embedded	
	Bit Rate	MB86H55	24 Mbit per sec. (max.)
		MB86H56	30 Mbit per sec. (max.)
	Interface	SMPTE274M/SMPTE296M-2001, ITU-R BT.656, External synchronous	
Audio	Formats	Dolby® Digital(AC-3)[*2], MPEG-2/4 AAC(LC profile), MPEG-1 Audio Layer2, Linear PCM	
	Channels	Max. 5.1ch[*3]	
	Interface	I^2S, S/PDIF	
System	Formats	ISO/IEC13818-1+Amd3(MPEG-2 TS), Video/Audio ES output	
	Interface	8 bit parallel, Serial, PCI	
Host Interface		General purpose 16 bit parallel, Serial, PCI	
Peripheral I/O		SPI	
Input Clock Frequency		27 MHz	
Operating Frequency		MB86H55	108MHz, (internal memory interface only, 135MHz)
		MB86H56	189MHz, (internal memory interface only, 189MHz)
Power Consumption (including memory)		MB86H55	500mW(typ., 1.2V 1920x1080x60i encoding)
		MB86H56	850mW(typ., 1.2V 1920x1080x60p encoding)
Package		FBGA 650 pin 15mm x 15mm SiP (ball pitch 0.5mm)	
Memory		512 Mbit FCRAM×1	
Process Technology		65nm	

[Notes]

*1 Support up to a maximum of 30Mbps bit rate.

*2 Dolby is a registered trademark of Dolby Laboratories.

*3 Number of channels depend on audio format.