Corporate Message

In China market's development, Fujitsu Semiconductor has always been engaged in promoting product R&D's localization, deepening the cooperation with China enterprises, providing more complete solutions, and actively cultivating local talents. During years' development in China, Fujitsu Semiconductor has adopted the localization strategy into various business development fields, not only in traditional fields such as automobile electronic and MCU, but also in developing fields such as digital television, USB3.0. Fujitsu Semiconductor's has gradually achieved depth development in localization. With the excellent localization performance and industrial leading position, Fujitsu Semiconductor won award of "Y2010 (sixth) Most Popular Semiconductor Brand in China" hosted by China Electronics News which is the sixth continuous award Fujitsu received.

In the past two months, Fujitsu Semiconductor enlarged the cooperation with universities across Taiwan straits. First, Fujitsu actively promoted MCU design competition, not only conducting lectures and seminars on FM3 knowledge in Southwest Jiao Tong University, Nanchang University of Aeronautics and Astronautics and other universities, but also discussed and strengthen the long term cooperation with Taiwan university professors, which led to a successful conclusion of the first stage competition. The registration has been broken 1,100 and the paper submission is more than 300 pieces. More than 110 groups participated in the competition from Taiwan and Hong Kong. Second, Fujitsu continued to spare efforts on the discipline construction of IOT who signed the joint lab cooperation agreement with University of Science and Technology Beijing, Chongqing University, Jiangsu University, Shandong University and Xi'an Jiao Tong University separately on the third meeting of "The national university IOT specialty Teaching guide group". Fujitsu discussed the issues on IOT's discipline construction with university representatives during the meeting.

Fujitsu Semiconductor also took part in the annual IC industry event IIC-China 2011 and exhibited its latest products and solutions for the automotive electronics, consumer electronics, wireless communication, power management and storage fields, among others. In the field of automotive electronics and MCUs, Fujitsu Semiconductor has introduced a range of innovative products, reinforcing its leadership in the field. The company's first commercial multi-mode transceiver and mobile equipment system solutions for wireless communication were exhibited publicly at the show for the first time. A number of other product lines also showcased Fujitsu Semiconductor's technical strength.

In the field of digital television, Fujitsu launched a new generation of A/VS interactive TV set-top box decoder solutions MB86H06 in China market. Meanwhile, Fujitsu also took part in CCBN 2011 during March 23 to 25 in Beijing bringing its latest set-top box decoder solution which can be applied in domestic NGB (the next generation of broadcast networks), cable and ground, as well as overseas market. Fujitsu also discussed commercial mode and application trends regarding three nets fusion during the thematic seminar with industrial professionals.

In the field of automobile electronics, Fujitsu successively participated in International Conference on Advanced Automotive Electronics Technology during Electronica & Productronica China 2011 as well as the AutoTronics Taipei 2011, discussing the latest technology developing trend of automobile electronic industry. Fujitsu also shared its latest solutions such as new generation of automobile integration network solutions, innovative 360 degrees full view 3D video imaging system and design for new generation Graphics instrument platform, EV/HEV MCU solution promoting energy utilization efficiency and more.

Read on for more news of Fujitsu Semiconductor's recent achievements.

Press Release:
Fujitsu Semiconductor launches the new generation A/VS interactive STB decoder solution

Activities:
Fujitsu Semiconductor shines in AutoTronics Taipei 2011
Fujitsu Semiconductor attends International Conference on Advanced Automotive Electronics Technology
Fujitsu Semiconductor shows full set of digital TV solutions at CCBN 2011

Fujitsu Semiconductor participates in EDN ASIA Embedded Systems Seminar 2011

The first stage of Y2010-2011 Fujitsu semiconductor cup MCU design competition is drawing to a close

Fujitsu Semiconductor holds campus seminar in Southwest Jiao Tong University

Fujitsu semiconductor cooperates with universities to strengthen the discipline construction of "Internet of things"

Fujitsu Semiconductor wins "Y2010 (sixth) Most Popular Semiconductor Brand in China"

Fujitsu Semiconductor attends 2011 Digitimes high-speed transmission forum

Fujitsu Semiconductor develops the cooperation with Taiwan universities through FM3 training seminar

Fujitsu Semiconductor holds FM3 University seminar in Nanchang University of Aeronautics and Astronautics

Media Interview:
Andy Chang, vice president of Fujitsu Semiconductor Asia Pacific, was interviewed by China Electronics News
Cai Zhenyu, senior product engineer of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by EDN China during IIC-China 2011
Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch, was interviewed by Hopenet Ctimes during AutoTronics Taipei 2011
Abu, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by International Broadband Network

Technical Article:
Emerging markets for H.264 video encoding
Integrating a serial interface in FRAM RFID devices

Ads:
MB86H06
MB86H61

About Fujitsu Semiconductor Limited Asia

Collaborating collectively on its distinct strengths and expertise, Fujitsu Semiconductor (Shanghai) Co Ltd, Fujitsu Semiconductor Asia Pte Ltd, Fujitsu Semiconductor Pacific Asia Ltd and Fujitsu Semiconductor (Chengdu) Co Ltd collectively form Fujitsu Semiconductor Limited Asia (FSL Asia), to provide a one-stop center for its semiconductor products to all customers in the Asia-Pacific region. Apart from sales and marketing of semiconductor products, FSL Asia also offers flexible business and system solutions for the digital AV, automotive, consumer electronics, and mobile and wireless markets, as well as design and technical support for customers, locally and regionally.

With technology resource centers and ASIC design support centers strategically located in Hong Kong, Taiwan, Shanghai and Chengdu, FSL Asia can speedily and competitively meet customers' stringent design-in requirements on ASSP, MCU and ASIC products. With heavy investments in design and engineering capabilities and application support resources, complemented by a regional network of design partners, suppliers and distributors, FSL Asia can readily delivers innovative and value-added solutions and varied range of products to its target markets in the Asia-Pacific region.

Press Releases

Fujitsu Semiconductor launches the new generation AVS interactive STB decoder solution

Singapore, 3 March 2011 - Fujitsu Semiconductor Asia Pte Ltd. (FSAL) released MB86H06, a new generation of
interactive Set Top Box (STB) Mpeg2/H.264 decoder solution capable of supporting China's AVS format too. The chip is mainly used in the standard definition digital STB/integrated digital television (iDTV), Cable Television (bidirectional interactive), Terrestrial Television Broadcasting and Satellite H.264 in Asia. Sample shipments for MB86H06 has started.

For more information, please visit:

Activities

Fujitsu Semiconductor shows full set of digital TV solutions at CCBN 2011

Fujitsu Semiconductor (Shanghai) Co Ltd showed its full set of digital TV solutions at the 19th China Content Broadcasting Network Exhibition (CCBN2011) held in Beijing China International Exhibition Centre on March 23 to 25, 2011. This exhibition has the theme of "advancing triple play and sharing broadcasting future" and focuses on the progress of triple play. As for this hot topic, Fujitsu Semiconductor demonstrated the latest set-top-box solutions for domestic NGB (next generation broadcasting network), cable and terrestrial TV broadcasting market at this exhibition and discuss commercial mode and application trend of triple play with insiders. Mr Cedric Huang, senior manager of Fujitsu Semiconductor (Shanghai) Co Ltd, delivered a speech entitled "How Chip Manufacturers Help Carriers Establish Harmonious Triple Play Business Models" at Digital Technology Future Series Seminar during the exhibition, and introduced Fujitsu Semiconductor's latest measures and solutions in establishing triple play business models.

Fujitsu Semiconductor's booth won the "Best Green Award" in creative design competition during CCBN 2011 which was specially initiated among 700 exhibitors and came out after one and a half days' on-site visitors rating.

Fujitsu Semiconductor participates in EDN ASIA Embedded Systems Seminar 2011

On 21 April 2011, Fujitsu Semiconductor participated in EDN ASIA Embedded Systems Seminar 2011 in Bangalore, India. The event attracted 173 engineers from 81 companies all over the world. Mr Dipanjan Jana, field application engineer of Fujitsu Semiconductor Asia Pte Ltd, delivered a speech entitled "Shaping Future with Fujitsu" during the seminar, and introduced three latest technologies from Fujitsu, including graphic display controllers used for automotive & High end Display systems, ARM portfolio offerings and FRAM technology and portfolio.
The first stage of Y2010-2011 Fujitsu semiconductor cup MCU design competition is drawing to a close

The first stage of Y2010-2011 Fujitsu semiconductor cup "shipping innovation with you" MCU design competition has concluded. Up to now, the registration and fist round paper submission is already ended. Per Preliminary statistics, the registration has been broken 1100 and the paper submission is more than 300 pieces. In the first round of competition, 50 pieces of paper from totally 110 registered teams were collected which came from 11 Universities in Taiwan and HK. The result for first round of competition has been announced in early of May.

Fujitsu Semiconductor holds campus seminar in Southwest Jiao Tong University

On March 7, Edwin Kwong, the senior vice president of Fujitsu semiconductor Asia Pacific, made speech during the campus seminar held in Southwest Jiao Tong University, mainly introducing the semiconductor's developing trend which was warmly welcomed by students. The Q&A session which last more than an hour help the students to get a in-depth idea of semiconductor industry's latest development and problems to be focused in the process of learning.

Fujitsu semiconductor cooperates with universities to strengthen the discipline construction of "Internet of things"

On April 13, the third meeting of "The national university IOT specialty Teaching guide group" was held in Chang Sha. Dr
Edwin Kwong, the senior vice president of Fujitsu Semiconductor Asia Pacific participated in the meeting and delivered a speech. During the meeting, Fujitsu Semiconductor signed the joint lab agreement with University of Science and Technology Beijing, Chongqing University, Jiangsu University, Shandong University and Xi'an Jiao Tong University separately which was a major initiatives for Fujitsu to support Chinese IoT development. Besides, the representatives participated the meeting discussed the issues on the discipline construction of "Internet of things".

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**Fujitsu Semiconductor wins “Y2010 (sixth) Most Popular Semiconductor Brand in China”**

Wang Yu, marketing director of Fujitsu Semiconductor (Shanghai) Co., LTD, attended the award ceremony of “Y2010 (sixth) Most Popular Semiconductor Brand in China” which was hosted by China Electronics News on 16 March. Fujitsu Semiconductor won the honor because of its excellent localization performance and industrial leading position. Other awarding enterprises include Altera, Broadcom, Freescale, MediaTek, NXP, Renesas, Rohm, Triquint and Xilinx.

The competition attracted more than 30 well-known semiconductor enterprises. The result showed that foreign semiconductor enterprises who can promote the localization of product R&D according to China rapid growing market, deepen cooperation with Chinese enterprises, provide more complete solutions and actively foster local talents are more welcomed by China market. Those companies can also achieve higher growth compared with industrial average level.
Fujitsu Semiconductor shines in AutoTronics Taipei 2011

Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch attended AutoTronics Taipei 2011 during April 12-15 at South Exhibition Hall of TWTC, displaying latest related products and technology on the theme of "Committed to New Energy Green Cars" which included the latest generation of automobile integration network solutions, EV/HEV MCU solution promoting energy utilization efficiency etc. The exhibits are displayed in three areas respectively, including development highlights in 2011, key automotive products and the latest automobile system.

Fujitsu Semiconductor holds FM3 University seminar in Nanchang University of Aeronautics and Astronautics

On 3rd March, Fujitsu Semiconductor held FM3 University seminar in Nanchang University of Aeronautics and Astronautics to attract more university talents participating MCU design competition. The seminar also introduced Fujitsu's latest technology and FM3 series products.

Fujitsu Semiconductor attends International Conference on Advanced Automotive Electronics Technology

Welch Ding, products manager of Fujitsu Semiconductor (Shanghai) Co Ltd attended International Conference on Advanced Automotive Electronics Technology on 16 March during Electronica & Productronica China 2011. Mr Ding

Welch Ding is delivering a speech

Fujitsu Semiconductor attends 2011 Digitimes high-speed transmission forum
On March 15, Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch attended the 2011 Digitimes high-speed transmission forum and giving speech with the theme of "extensive application of USB3.0". In his speech, Richard analyzed USB3.0's present market situation, main application, technical advantages, ecological system and developing trend. Fujitsu's latest USB3.0 products were introduced as well.

Richard Lee is delivering a speech

Fujitsu Semiconductor develops the cooperation with Taiwan universities through FM3 training seminar
On March 14, Fujitsu Semiconductor Pacific Asia Ltd held a training seminar for university professors elaborating on Fujitsu's FM3 technology. The professors from 10 universities in Taipei and South TW showed up and discussed the long term university cooperation plan and project with Fujitsu.

Richard Lee is making introduction to guests
Andy Chang, vice president of Fujitsu Semiconductor Asia Pacific, was interviewed by China Electronics News. He analyzed the development trends of HD set-top box markets and introduced Fujitsu Semiconductor’s HD promotion strategies.

For more information, please visit:

English Version:

Adjustments to HD promotion strategy

Fujitsu Semiconductor believes that HD set-top boxes will usher in a new era of household technology. Notably, operators in Beijing, Shenzhen and Guangxi have set out development strategies for promoting HDTV. As well as establishing partnerships with set-top box/design companies, semiconductor manufacturers should be looking to strengthen their links with middleware vendors and CA manufacturers.

China's typical HD promotion patterns

There are hundreds of thousands of HDTV users in Beijing, Shenzhen and Guangxi, and operators in these regions have provided their development strategies to other regions for reference.

As a leading provider of HD solutions, Fujitsu began to develop HDTV offerings for the Chinese market several years ago. In an interview with China Electronics News, Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, said that some of the country’s leading operators have marketed the technology aggressively in Beijing, Shenzhen and Guangxi, boosting user numbers to the hundreds of thousands. The development of HDTV in these regions has provided a model for operators elsewhere, who are now devising their own promotion plans. With the continuing advance of triple play networks in China, operators all over the country are catching up, creating a potential explosion in demand for HD set-top box technology.

By volume, China’s digital cable TV sector has gained a commanding lead globally. By the end of 2010, the number of digital cable TV users in China had reached 90 million. The expansion of China’s HDTV market will be well worth watching in other countries. To help grow the segment, Beijing has provided each household with one HD set-top box free of charge. In Shenzhen, set-top boxes can be rented. In Guangxi, HD set-top boxes are bundled with TV content to attract consumer interest. All three approaches provide interesting examples of how to market HDTV that could easily be adopted elsewhere. Taking into account the characteristics of the networks and their users, other regions could target their promotions to make them as effective as possible. As economies of scale start to bite, the success of such promotions could become exponential within a relatively short time.

Strengthening cooperation with CA/middleware providers
From the outset, semiconductor manufacturers should ensure they understand what their customers are looking for and offer timely responses.

A long cycle is needed to link the chip companies, the highest upstream point in the supply chain, with their customers further down. Andy Chang says that operators typically talk first to software providers or set-top box manufacturers as their needs change. Only by communicating with those manufacturers can chipmakers become familiar with these discussions and begin working on solutions that deliver what is required. Only once a reference solution is chosen and integrated into a set-top box product do operators (and their end user customers) begin to see the benefits of the new products. "This cycle takes about two or three years," says Chang. "If the R&D center or decision-makers are not in China, it can take longer." For this reason, Fujitsu transferred its R&D center and the relevant decision-makers to China several years ago.

"In the latest phase of HDTV development, semiconductor manufacturers need to continue with their efforts to communicate directly with end-users in order to provide timely responses," he adds. "This way, they will see quicker benefits to their bottom line and longer-term, they will also drive the development of China's HDTV industry more rapidly."

Over the past few years, Fujitsu and its partners have participated in HDTV projects in a number of provinces and cities around China and provided high quality, low power consumption HD set-top box solutions. Andy Chang believes that ensuring quality is the right way to go: it results in low failure rates (or re-work rates) for the devices, reducing operation and maintenance costs and ultimately, user dissatisfaction. Given the prevailing preference for energy efficiency and environmental sustainability, low power consumption is a particular priority for many HDTV stakeholders. Fujitsu's HD chip is the only HD chip that doesn't require heat sink paste, saving on device manufacturing costs.

At the same time, operators need timely and constant technical support services in the implementation of HD projects, so Fujitsu provides a specialist team of set-top box technical support staff that works with partners to offer on-site support.

This year, Fujitsu has made further adjustments to its HD set-top box promotion strategies in the China market as a result of its collaborations with middleware vendors and CA manufacturers. In addition to increasing the support to partnerships with set-top box/design companies, Fujitsu will strengthen technology cooperation with middleware vendors and CA manufacturers. Through such collaborations, Fujitsu is ideally positioned to introduce solutions that truly cater to operators' needs, accelerating the take-up of its chip products in the marketplace. Fujitsu conducts periodic visits to the operators it works with, ensuring effective communication that enables it to stay abreast of what operators and consumers want, and tailor its products accordingly.

EDN China, 31 March 2011

Eric Cai, senior product engineer of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by EDN China during IIC-China 2011. He introduced the latest MCU products of Fujitsu Semiconductor.

For more information, please visit: http://www.ednchina.com/topic/LEDDrive/other/a_tour_of_semiconductor_companies_q1_2011.htm
English Version:

**An overview of China's semiconductor industry in the first quarter of 2011**

During the IIC-China tradeshow, EDN China journalists interviewed makers of embedded soc, analog and power integrated circuits. The products that these companies exhibited at the show represent the current mainstream IC designs and applications in the first quarter of 2011. Through market expectations and analysis, it is easy to see the application hotspots and competition structure of the semiconductor industry this year.

**Two hotspots for Fujitsu Semiconductor MCUs**

Fujitsu Semiconductor currently has two plans for its MCU product line: first, it will continue to optimize its independent 8-bit kernel / 16/32 bit MCU family; secondly, it will increasingly harness the newly-imported ARM Cortex-M3 core as a platform for 32-bit MCUs.

Eric Cai, product manager, Fujitsu Semiconductor (Shanghai) Co Ltd, says the new 8FX family meets all Fujitsu's high-performance requirements for 8-bit microcontrollers. This family applies the F2MC-8FX core, the pin range of which is 8-80 pins. Target markets include white goods such as air conditioners, washing machines and cookers, portable medical equipment, power chargers and LED lighting. Featuring content protection, the new 8FX family can be rewritten hundreds of thousands of times and applies the same technologies that are used in high-end consumer and automotive applications. This family is equipped with a wealth of peripheral units, such as the LCD control unit, an analog amplifier and comparator, dedicated MPG motor control unit and a 10-bit ADC unit. Targeted integration takes place according to the application. For example, the MB95F430 half-bridge induction cooker solution integrates the necessary operational amplifier and several voltage comparators, AD converter, FRT and the OCT modules. It is capable of driving dual half-bridge IGBT for the power supplies between 600W and 5000W and is the most streamlined half-cooker solution. The MB95410 meter solution integrates a 3-way, 4/8COM LCD display controller, UART, AD converters and 60k Flash ROM, meeting the requirements for mainstream metering.

Fujitsu's new generation of 32-bit generic MCU, the FM3 family, consists primarily of two series: the MB9BF500/400 /300/100 family features excellent performance and high speed. The products are used for servo control in industrial automation applications, frequency control, electric cars, solar inverters, smart grid data acquisition and other industrial applications. The standard MB9AF100 family of products is designed to consume less power and is usually applied in white goods (air conditioners, refrigerators, washing machines, and so on), digital consumer equipment and office automation equipment. The valuable experience Fujitsu has accumulated in the field of frequency control helps provide customers with more mature and cost-effective control solutions.

Eric stressed that importing generic processor cores reflects the open attitude that Fujitsu Semiconductor takes towards meeting market demands. Despite the best efforts of various competitors, Fujitsu's design concepts, which combine years of experience and local market knowledge, often offer greater benefits to customers. For example, the Cortex-M3 MCUs of many other manufacturers can only work with power supplies of under 3.6V. However, Fujitsu's FM3 family can work in the 2.7V–5.5V range, making the 5V system MCU the best choice for industrial automation equipment and large household appliances. Eric added that Fujitsu Semiconductor will shortly be introducing a new, ultra-low-power family that runs on 1.8V-3.6V of power to further expand the application range for 32-bit MCU products.
Eric Cai, senior product engineer of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Cntronics.com and analyzed ARM Cortex development trends in the future 32-bit MCU markets.


English Version:

Fujitsu teams up with ARM Cortex to advances its technologies even further

High-end perspective from Fujitsu:

• Make full use of China’s design team, facilitate product localization
• Remain fully abreast of customers’ needs and expectations, catering to their requirements and leveraging their feedback
• Continue to harness the benefits of integrating peripherals into new products

Fujitsu’s development trends:

• Integrate ARM Cortex MCUs seamlessly to generate sales growth
• Launch products that use both ARM’s Cortex™-M3 MCU Fujitsu’s own CPU products

ARM microprocessors are now extensively used in industrial controls, consumer electronics products, communication systems, antenna systems and other applications, as ARM technology continues to proliferate and gradually permeate into people's daily lives. Currently in the 32-bit MCU market, some manufacturers are using ARM Cortex instead of their own architecture. Is this a sign that ARM Cortex will be the only choice in the future 32-bit MCU market? Cntronics.com discussed precisely this question with Eric Cai, product manager, Fujitsu Semiconductor (Shanghai) Co Ltd.

Eric indicated that embedded applications have been very popular, and demand for diversified CPUs is driven by the different requirements of different markets. ARM's Cortex is quite similar to the previous 8051 series. While very popular, this series has not inhibited the development and sales of other 8-bit MCUs. For now, it is not true to say that ARM's Cortex dominates the market.

Taking Fujitsu as an example, the company launched 44 new products in the FM3 32-bit MCU family, bringing together the ARM® Cortex™-M3 core's global standard processor and Fujitsu's respected range of peripherals gradually developed over the years for the FR MCU. The company sees no conflict between bringing out these new products and also working to further develop its own CPU products. The company is not giving up on its own products, and sees its strategy as an instrument to expand its market rather than a conflict with or a substitute for its own CPU cores. ARM's market is different to that of Fujitsu's original products, such as the 8FX, 16FX and 32-bit FR product families, which are targeted more at automotive, industrial controls and white goods applications. Fujitsu's FM3 family will not only continue to focus on white goods and industrial applications but will expand into consumer electronics, mobile communications, handheld and medical equipment, in line with its products’ low voltage and low power consumption capabilities. As Fujitsu sees it, there is no reason why the Cortex™-M3 and Fujitsu's own CPUs cannot coexist. Below is the roadmap for the FM3 family of products.
Fujitsu will pay attention to metrics such as customer demand and customer feedback in the future 32-bit MCU market, designing products suitable for the local market and local applications in China as well as the Asia-Pacific region. Moreover, Fujitsu doesn't rely solely on its CPU cores for brand differentiation, but also on various peripherals. Fujitsu has accumulated a range of products that enhance both the FR and ARM Cortex MCUs. With the company's 200-strong design team in Chengdu, made up of application and design engineers, Fujitsu is well-placed to ensure that its products are tailored to the local and regional markets where its customers are based.

Eric points out that the new 8FX MCU series, based on Fujitsu's unique F2MC-8FX CPU core, has attracted more orders than similar products from competitors and has achieved the required processing performance in lower frequencies, helping customers to reduce power consumption. Below is the roadmap for the new 8FX MCU series products.

Let's take a closer look at two solutions based on the new 8FX series products.

**Solutions for induction cookers, based on the MB95F430 series**

The MB95430 series MCU features Fujitsu's unique F2MC - 8FX CPU core, with a high working frequency of 16.25 MHz, dual-operation platform Flash, which can simulate EEPROM in data storage; a built-in hardware four-way comparator that can be applied in a number of ways such as for high-speed sampling, alarm circuits, automatic control circuits, measurement technology as well as open circuit protection, fast sensors, power supply and voltage monitoring circuits, zero detection circuits, and so on. The products are mainly applied in induction cookers, microwave ovens, circuit breakers, protectors, monitoring equipment, monitoring instruments and high power supply products.

Induction cookers (ranging from 1,000-2,000W) are the most popular product category at present. They usually use single IGBT drive mode, that results in difficulties caused by temperature increases, especially when power consumption reaches 2,000W. A solution based on Fujitsu's MB95F430 series can handle 600W-5000W of power with double IGBT design, unlike other manufacturers' products. In order to equip these solutions with a half-bridge design and to cut down on customers' running costs and development time, Fujitsu integrated a four-way voltage comparator with operational amplifier in one chip, and also used a built-in AD converter and FRT and OCT modules which can drive the half-bridge double IGBT – a perfect solution. This will help customers overcome the problems already described and is also the simplest half-bridge induction cooker solution on the market. Fujitsu owns the intellectual property rights to this solution, and the design is made freely available to customers.
Electric metering solution based on the MB95410 series

Chart 4: Demonstration of an electric meter using the MB95410 series MCU

Fujitsu's electric metering solution is based on the MB95410 and integrates a 3-way UART, a 4 / 8COM LCD display controller, a high resolution AD converter and 60k Flash ROM required by electric meters. This combination greatly reduces the system's structural components so as to cut down on cost. To comply with new regulations for power grid applications, the solution features 60k ROM and 2k RAM, in line with mainstream electric metering requirements. The main feature of this solution is its LCD display, which boasts the capability to display a maximum of 288 segments and measures power through pulse calculation.

Ctimes.com.tw, 12 April 2011

Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch, was interviewed by Hopenet Ctimes during AutoTronics Taipei 2011. He introduced the latest digital dashboards and FlexRay framework of Fujitsu Semiconductor.

For more information, please visit:

English Version:

Catching the highlights, Fujitsu improves digital dashboard + FlexRay architecture

The annual Taipei International Automobile Electronics Show is held in the Nangang Exhibition Hall, where automotive power semiconductor manufacturer Fujitsu exhibited a diverse range of automotive electronics solutions, from single-chip digital dashboard systems and automotive FlexRay and IDB-1394 internal networks to microcontrollers for electric cars.
and hybrid vehicles. Fujitsu has always stayed abreast of the full range of requirements of both Japanese and European carmakers and their supply chains, even the more minor players, in order to ensure it has all the bases covered in terms of the multimedia-integrated architectures that are likely to become common in the future.

Mr. Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd (Taiwan) said that, thanks to its FlexRay networks and digital dashboard SoC solutions, Fujitsu has established a foundation for developing the next generation of automotive electronic digital dashboards.

Lee said that integrated FlexRay and CAN/LIN digital dashboard SoC solutions use the graphics display controller (GDC) as the core. Digital metering SoC solutions integrate key mathematical algorithms to convert automotive dashboards displaying analog messages such as row of file, brake, throttle and steering wheel control through stepper motors to a real-time display, without latency. In addition to full digital simulation of instrument display programs, Fujitsu's solution is also tailored to be interoperable with maintenance requirements in the depot, and has launched dashboard display solutions that integrate the speed, rotating speed and oil temperature analog displays with digital instrument panel graphics display control.

FlexRay's architecture can also work with the IDB -1394 networks needed by multimedia video applications. Through the IDB-1394 module and the network cable, a host of multimedia consumer video content applications can be retrieved and displayed on the display screens in different cars. Passengers can watch DVDs, DTV, STB and other types of multimedia video content. At the same time, through FlexRay's integration of CAN and LIN network architecture, important control messages such as those generated by the Tire Pressure Monitoring System (TPMS) can also be displayed on digital dashboards. Lee added that related IDB-1394 automotive network solutions will be rolled out in 2012.

According to Lee, Fujitsu's digital meter SoC architecture can give priority to the GDC, greatly improving the real-time performance and accuracy of digital metering displays. The difficulty is to offer complete analog messages on different platforms. At present, Fujitsu applies two digital meter SoC processing cores: as well as Fujitsu's own FR81S core, the company is making greater use of ARM's 9 processor core. Lee believes that the design of the SoC makes it a compelling choice of core for FlexRay and IDB-1394 solutions because of the price difference.

In addition, Fujitsu also demonstrated its 32-bit MCU solutions for use in the motors of electric cars. With floating point capabilities and an RDS module design, this class of MCUs also harnesses a FR81S processor core and can be used in motor dynamic speed control and high-speed voltage and current monitoring.

Because of design engineers' familiarity with the ARM development environment and the comprehensive software support available, Fujitsu plans for its automotive CPU product line to follow ARM core-based architecture in the future. As well as existing Japanese and European automotive customers, Fujitsu will work closely with CRE automotive electronics and Taiwanese depot supply chain vendors, promoting the cutting-edge architecture of its automotive networks and digital metering solutions and helping its customers strengthen their competitive edge.

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Micro-Electronics, 14 April 2011

Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch, was interviewed by Micro-Electronics and introduced Fujitsu Semiconductor's latest automotive electronics products and system solutions.

Special report: Fujitsu Semiconductor unveils its FlexRay solutions at the Taipei International Auto Parts Exhibition and Taipei International Automobile Electronics Show, paving the way for lighter vehicles

In order to make vehicles that weigh less and consume less fuel, carmakers are constantly looking for ways to use lighter raw materials in their vehicle designs. This is as true of automotive wire materials as any other component, but the reliability of a vehicle’s communications cannot be compromised. At the Taipei International Automobile Electronics Show, Fujitsu Semiconductor unveiled its FlexRay solutions designed to fulfill these requirements, along with other MCU products that support the AUTOSAR standard software platform.

Richard Lee, FAE assistant manager of Fujitsu Semiconductor Pacific Asia Ltd Taiwan said that the company would adopt the ARM CortexR4F MCU to develop GDC and 32-bit CPU products that are efficient and effective.

Lee explains that, in order to reduce vehicle weight, auto manufacturers are looking to reduce the total number of vehicle wires. FlexRay also offers the advantages of higher transmission speeds and greater stability than CAN, enabling makers to cut down on the complexity of vehicle communication wiring and save weight.

At the exhibition, Fujitsu Semiconductor demonstrated the reliability and versatility of FlexRay solutions, as well as the latest integration concepts: FlexRay supports a variety of real-time video transmission types such as IDB-1394 wires and 3D video GDC. Lee says that great strides have been made in the progress of automotive network transmission performance that improve automotive entertainment systems by integrating additional features and functions into the systems. These significantly enhance the safety and reliability of the on-board network, so FlexRay really is pushing back the boundaries of vehicle network solutions.

Fujitsu has also introduced a variety of MCU products supporting the standardized software platforms developed by AUTOSAR, a platform that enables automotive electronics designers and manufacturers to develop the software and systems that consumers want. Whereas most European auto manufacturers use MOST wiring, Eric believes that IDB-1394 distinguishes itself, boasting bandwidth of 400Mbit/s which meets the transmission requirements for HD and Blu-Ray video formats. Now, in a bid to increase the market penetration of IDB-1394, more carmakers in Japan, Europe and South Korea are conducting R&D around the possibilities it offers.

Fujitsu Semiconductor also exhibited two GDC products that use 32-bit MCUs for digital dashboards, known as Sapphire
English Version:

Fujitsu: breathing new life into China's television industry

From the perspective of the technology and the latest developments in the field, HD and interactive TV are breathing new life back into TV broadcasting in 2011. Faced with growing competition from IPTV and internet video, the traditional TV segment needs to leverage its bandwidth advantage to drive its evolution. Seen in this light, the development of HDTV is a necessary step on the journey towards offering consumers something that internet TV for the time being cannot – a more interactive user experience on a larger scale. This may be the only way for traditional broadcasting to survive.

"HD will be a hot issue in the field in the near future," predicts Abu, product manager at Fujitsu Semiconductor (Shanghai) Co Ltd. "The traditional, passive model of TV consumption is changing and Fujitsu is embracing this change. The development of HDTV in the Chinese market brings real opportunities."

How to translate these opportunities into profits in the face of stiff competition is the crucial question for many HDTV stakeholders. As a supplier of HD set-top box solutions, we believe that offering the best solutions to partners and helping operators to improve the profitability of their business models and services is the right strategy. In 2010, Fujitsu already had strategic partnerships in place with a number of operators and had become the exclusive set-top box technology supplier in some of China's provinces. Fujitsu has helped its partners win valuable market share in the domestic cable TV market, underlining the importance of working collaboratively with our partners in the supply chain.

Currently, Fujitsu is working directly with leading CA manufacturers, middleware providers and solution designers around the country to offer quick HD set-top box solutions that cater to market demands. In 2011, Fujitsu has increasingly focused on the HD market as a growth area.

Abu predicts a bright future for the TV and broadcasting segment, believing that there are certain gaps between traditional broadcasting and telecom operators in terms of both technology and capital. Traditional broadcasters focus on the external industry landscape, working with third-party technology companies that can offer timely, effective and long-term support as key partners. In terms of capital, the broadcast segment enjoys significant advantages of scale. It could build on these advantages by speeding up network integration and attracting external capital investment.

CCBN is an annual gathering of the television industry. Fujitsu's theme at this year's event was "Combining HD, interaction, broadband, environmental protection to build the future of broadcasting", in line with current trends in the industry. Fujitsu will exhibit the latest NGB solutions, open network Android-based solutions and a series of digital TV solutions for middlewares in different markets. This underlines Fujitsu's view that, far from being a spent force, television is ripe for re-invention.
Emerging markets for H.264 video encoding
EMERGING MARKETS FOR H.264 VIDEO ENCODING

A lready dominant in traditional applications such as video conferencing and TV broadcasting, the H.264 Advanced Video Coding (AVC) standards are expanding into applications that benefit from the use of high-definition (HD) content that can be stored and networked efficiently. These applications typically take advantage of today’s highly integrated semiconductor solutions to minimize costs while achieving high-speed H.264 compression and decompression.

The emerging H.264 applications include medical operating rooms, where video from HD cameras is streamed to other locations and/or stored for archival purposes; universities and other educational institutions offering distance learning as well as an effective way for students to replay lectures; and rural telecommunication providers who want to broadcast content to small communities.

VIDEO COMPRESSION HISTORY

The H.264 AVC standards have their origins in the standards developed by the Motion Picture Experts Group (MPEG). MPEG is a part of the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC), an organization that creates standards for audio and video compression. The MPEG-2 standard completed in the late 1990s is now widely used as the digital television format for terrestrial over-the-air broadcast, cable and satellite systems.

After the success of MPEG-2, the ITU-T Video Coding experts group collaborated with ISO/IEC MPEG to develop a new audio and video compression standard with aggressive goals:

- Compression 2 to 3 times more efficient than MPEG-2
- Support for a wide range of applications from broadcast TV to mobile phones using a single compression standard
- Support these applications with the ability to scale from mobile phone data networks to full HD applications across a wide range of bandwidths
- Ensure efficient streaming using Internet Protocol (IP), allowing HD-quality video to be streamed over the Internet efficiently
- Make sure that the cost to implement the standard is not substantially higher than that of MPEG-2 so that low-cost products can proliferate in the market

Through hard work and much deliberation, the group released its first draft of the standard known as H.264 AVC (also known as MPEG-4 Part 10) in 2003. This standard achieves a 50 percent efficiency improvement over MPEG-2 for full HD video. H.264 supports a wide variety of profiles as well as narrowing the compatibility requirements to target each specific application. Work on the standard continues through the addition of new profiles as new technology becomes available.

In the meantime, H.264 is mandatory for Blu-Ray and HD-DVD standards. Many broadcasters are using H.264 in their high-end broadcast equipment. Note that H.264/AVC is a video compression standard developed by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC Moving Picture Experts Group (MPEG), and it was the product of a partnership effort known as the Joint Video Team (JVT).

The ITU-T H.264 standard and the ISO/IEC MPEG-4 AVC standard (formerly ISO/IEC 14496-10 - MPEG-4 Part 10, Advanced Video Coding) are jointly maintained so that they have identical technical content.

EMERGING MARKETS

In addition to high coding efficiency, H.264 AVC supports the ability to convert full HD video to IP digital video using the standard’s network adaptation layer (NAL). This capability suits the current market trend to converge three kinds of applications: data, voice and video over IP. This powerful combination fuels growth in a number of emerging market areas, with H.264 AVC supporting applications ranging from mobile devices running...
low-resolution video to full HDTV.

MEDICAL APPLICATIONS

The merits of capturing HD video in one operating room are clear to everyone involved. The detail and clarity of HD have many uses for the surgeons completing the procedure as well as for many others both within and outside of the room. HD cameras would already be equipped with HD cameras for even the most routine procedures.

Unfortunately, HD video coverage is far from routine. The challenge lies primarily in the difficulty of storage and distribution of video for the system. Early cameras allowed for storage only about 20 minutes of video. Blu-ray disks increase storage capacity by about 5X—still barely adequate for many surgical procedures. Additionally, storing the video to disk for archival purposes is only part of the application requirement. What about streaming the video to students and others outside the operating room? The huge volume of HD video overwhelms most networks.

Adding H.264 encoding to the system easily overcome these challenges. The H.264 compression enables a single-sided Blu-ray disk to store 4.5 hours of HD video. Moreover, transfer the HD content to a remote video server—thus eliminating the need for DVD or Blu-ray media storage in the operating room. With these capabilities, hospitals now have the ability to stream the video real-time to other locations so others can observe the operation. Additionally, large video servers can store and organize all of the video content.

In the US, university hospitals have been the first to adopt such systems in their operating rooms. The HD video can be encoded and streamed real-time to numerous locations and shared by many people at the same time—the ideal way for students and other surgeons to quickly learn about new techniques as they are introduced. Even if the observers do not watch live, the ability to replay these videos from a server saves distribution compared to the old practice of copying optical disks. As H.264 encoding and video distribution mature, this capability could be easily employed and could be expanded to smaller medical clinics as well as home health care. Ill or disabled people could have a small video camera equipped with an H.264 encoder to stream information to doctors. This system could save time and money, as well as provide higher levels of care for patients.

The use of distance learning continues to grow in universities throughout the US and even in K-12 school districts. The primary reason for this growth is convenience, followed by cost as educational institutions try to do as much as they can with limited budgets. Distance learning can be implemented using two different models. In the synchronous model, students and teachers can interact in real time. In the asynchronous model, students access the content from a remote location at their own convenience.

In the synchronous case, typically which is encoded using H.264 and then streamed to a number of remote locations. Whether the video is HD or SD (standard definition), both benefit from H.264 compression since the speed of the links between the main and remote sites may vary. For lower-speed links, the system can be tuned to display the video at lower resolution levels to maintain a real-time connection. Because such connections provide opportunities for remote students to participate in class discussion, students and teachers often prefer to give up image resolution in favor of low latency.

In the asynchronous case, video as well as other content can be stored on a server and then typically accessed over the Internet. Students get the greatest amount of flexibility in this situation by being able to take classes at any time and most likely within their own homes.

Even for students meeting in traditional classrooms, universities can encode lectures and make them students brush up on concepts that they might have missed in their notes.

In most cases, a university buys purchasing a single H.264 encoder and video camera for use within a classroom. If they are pleased with the results, university administrators expand the number of video systems. As the cost of the encoder and video camera in each classroom.

BROADCAST APPLICATIONS

Many broadcasters in the cable and satellite industries started with MPEG-2 encoding for standard-definition TV, but MPEG-2 is still the most dominant standard today. Industry trends require broadcasters to support ever greater bandwidth, however.

As viewers watch more HD content, the bandwidth demand for a single channel can be roughly 4X the bandwidth of an SD channel. In the broadcasting industry, we can expect to see the envelope on network bandwidth requirements. These services include video on demand, real-time, and gaming.

To respond to these requirements, broadcasters look to H.264 AVC as a workable option for expanding network bandwidth.

Early users of H.264 tended to be telecom providers rolling out IPTV services. H.264 helped telecom providers make best use of the limited bandwidth in existing broadband networks. As the number of IPTV vendors grows, customers will have a fourth option in addition to the
Integrating a serial interface in FRAM RFID devices
INTEGRATING A SERIAL INTERFACE IN FRAM RFID DEVICES

capacity memory and support for high-speed writing. Integrating a serial interface to connect sensors with RFID is creating new possibilities in RFID applications.

Latest RFID (radio frequency identification) LSI products being developed for the HF band (13.56 MHz) and the UHF band (860-960 MHz) offer high-speed writing and high read/write endurance, the devices are increasingly being adopted all over the world as data-carrier-type of passive RFID LSIs.

The advantage lies in the fact that RFID tags can store and recall information. The embedded FRAM can record traceability data frequently, such as fabrication, production, logistics, maintenance, and so forth. They can also be used for various assets, products, and parts management. FRAM is a nonvolatile memory that utilizes the ferroelectric material as data capacitor.

EPROM, another nonvolatile memory used in RFID, has been widely adopted because of its high-speed, high-endurance write operation. Thus its writing speed is quite slow (on the order of milliseconds) and its write endurance is limited to around 10⁵ times. Therefore, the mainstream of EPROM-based RFID LSI is small memory capacity products, which rather focus on read operation.

In contrast, the write performance of FRAM is the same as its read performance because both principles are the same. The writing speed of FRAM itself is on the 100ns order and its read/write endurance is 10⁷ times. This performance is the reason why FRAM is mainly adopted for the centralized management in which the data is stored in the server side and related with tags' own unique ID. On the other hand, FRAM RFID is suitable for fast writing and reading applications, such as asset management, maintenance, and production control.
in the decentralized data management, in which the data is stored in the tag itself, and lightens the load of the servers. This is especially suitable for fabrication history management in the FA (Factory Automation) field, where frequent writing is required during the several hundred or processes, for serial data and also for maintenance field where it is required for on-site data confirmation such as repairing history and parts information without asking the data server.

Another key feature of the FRAM is its strong radiation resistance. For example, in case of the gamma-ray sterilization process conducted for medical instruments and packages, food, or linen, the data in the EPROM is strongly affected by radiation because of the data storage mechanism with electron charge. In contrast, the data stored in FRAM is confirmed to survive even under the irradiation level of 45kGy (gray).

Given the above advantages of RFID LSIs with embedded FRAM, Fujitsu Semiconductor has integrated a serial interface SPI on the devices to further expand their application segments.

**BUILT-IN SERIAL INTERFACE ON RFID LSI**

Integrating a serial interface in FRAM RFID LSIs provides additional function for the device as a data carrier. The main feature is that the same FRAM memory area can be accessed from both serial interface and RF interface.

By connecting with a microcontroller (MCU) through the serial interface, the FRAM can be treated as an external memory for the MCU, while being accessed through the RF interface. As a consequence, it is possible for the RFID reader to read the stored data written by the MCU, and on the other hand for the MCU to read the parameter data such as operating conditions written through RF interface.

For example, if we imagine that a sensor is connected to the MCU, it should be possible to treat the RFID as kinds of sensor tag. In this case, the MCU regularly monitors sensor data and writes into the FRAM memory, then later the accumulated traceability data is read through the RF interface. Also it should be possible to treat the RFID as parameter recorded memory for MCU. In this case, MCU refers to some parameter stored in the specific memory area where the data can be changed through RF interface, and then MCU changes for example the interval to get sensor data or the condition to flash LED for kinds of notification.

Regarding the combination between RFID and the sensor, the Active tag is also a well-known solution. But Active tag is one-way communication from the tag, and it does not have data memory which can be read out later by the RFID reader. Therefore Active tag cannot be used for traceability purpose as a data carrier.

On the other hand, FRAM RFID has capability to record traceability data to be read out later because of its large memory capacity, which enables to record data through serial interface when the tag is not in the RF field.

In addition to sensor applications, built-in serial interface feature theoretically make it possible for the RFID to connect with various kinds of applications, if they are controlled by an MCU.

Practical applications might be the status monitoring of facility and equipment in the manufacturing facilities (e.g. pressure, flow meter, etc.), or the history data record for game machine, healthcare instrument, and so forth. As already known, some of those applications have already been realized with existing technologies such as contactless smartcard, while some of them may not meet their requirement with our specification in terms of memory capacity, transmission speed, and so forth.

However, we’re expecting that this technology will help to find new RFID usage and applications, and will be used for further examination to realize various ideas.

**SERIAL INTERFACE INTEGRATION ISSUES**

Through customers feedback so far received, we recognize something to be considered regarding the usage of serial interface connection. One key issue is related with battery, while the other one is in communication distance.

RF data transmission is established by passive communication, which means that the power is provided from reader/writer. Therefore the serial data transmission requires external battery. Apart from that, the battery issue is a common issue with Active tag; in fact our technology is sometimes misunderstood as an Active tag. But anyway, the lifetime of battery is issue to be considered.

From this point, the serial interface feature is the most suitable for the embedded applications in the machines or instruments, where stable power is always provided. However, if the tag is firmly assembled and attached to some assets or objects to be moved, battery management would become an issue, because the battery cannot be replaced when it is the end of life.

It is thus important to estimate the battery lifetime based on the usage condition, and consider some rechargeable mechanism such as rechargeable battery or battery generation with some energy. Ideally it must be good if the power is generated during RF communication. However, it is not realistic because the communication distance would be seriously affected.

In regard to the communication distance, it is well known that impedance matching is extremely important for UHF and it determines the communication performance. Therefore it must be considered that the impedance matching is heavily affected by connecting various LSIs and devices through the serial interface, and also by being assembled on the board. From the points above, antenna design may become more complex compared to the conventional RFID tags when the serial interface is used.
Fujitsu Semiconductor Launched the New Generation AVS Interactive STB Decoder Solution

Singapore — Fujitsu Semiconductor Asia Pte. Ltd. (FSAL) today announced the release of MB86H06, a new generation of interactive Set Top Box (STB) Mpeg2/H.264 decoder solution capable of supporting China’s AVS format too. The chip is mainly used in the standard definition digital STB/Integrated digital television (IDTV), Cable Television (bidirectional interactive), Terrestrial Television Broadcasting and Satellite H.264 in Asia. Sample shipments for MB86H06 will start as of today.

The MB86H06 chip is based on a multi-core CPU structure with the maximum frequency reaching 324MHz. It not only supports visual decoding formats such as MPEG-2, H.264 and AVS etc., its audio decoding unit can also support many advanced audio formats, such as AAC/HE-AAC etc. MB86H06 has embedded a secured area suitable for applications requiring high security functionality too.

As an integrated SOC, MB86H06 has enhanced support for bidirectional interactions like on-chip Ethernet, L58 functions to support multiple channels of serial Flash and single DDR2 memory.

Adding a simple RF Tuner to MB86H06 on a 2 layer PCB board effectively completes the design for a cost effective STB and IDTV product.

The high performance CPU with an independent 3D hardware graphics acceleration engine in MB86H06 allows for the ease of creating dynamic and eye-catching menus needed in today’s products to capture the interest of the consumer.

MB86H06, a standard definition decoder, is equipped with an integrated HDMI output to bring out the advantages brought about by media digitalization. Standard definition videos quality can be preserved, transferred losslessly to the flat screen television set via the HDMI high definition digital interface. in a time when the flat screen television is becoming a “must have” in the home, MB86H06 delivers high SD quality videos right to the home.

Fujitsu Semiconductor always regards Asia as an important market for STB. We have developed profound partnership with box manufacturers, browsers, middleware and CAS vendors to offer the right combination to meet the customer’s specific requirements.

Fujitsu Semiconductor is closely following the evolution of NCB (i.e. convergence of telecommunication network, computer and cable television network) and 3D television and will continue to develop effective solutions to meet various needs of our customers.

About Fujitsu Semiconductor Asia Pte Ltd (FSAL)

Fujitsu Semiconductor Asia Pte Ltd was established as the Asia Pacific Headquarters of Fujitsu Limited Electronic Devices Group in 1986. It provides support, sales and marketing of semiconductors and electronic devices to the Asia Pacific region, including India and Oceania. Fujitsu Semiconductor Asia offers a wide and varied product range like ASIC, ASSPs, Microcontrollers / Microprocessors (FR-V), System Memory (FRAM / FCRAM) and System LSIs (DVF, MPEG Source Decoders / MPEG-2 Encoders).
Fujitsu Semiconductor has presented its MB86H06 series in the recent advertisements.
Fujitsu Semiconductor has presented its MB86H61 series in the recent advertisements.
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