Corporate Message

Today, talk of the 'Internet of Things' is on everybody's lips. The concept – shorthand for the networked interconnection of everyday objects and functions – is central to the latest competitive frontier in the world of information technology.

China's major cities have announced big plans in this area, and exploring the potential for harnessing the Internet of Things in China has become one of the focuses of local governments across the country. Experts predict that the technology will spawn huge growth in the high-tech sector. In order to meet anticipated demand in this growing market, Fujitsu Semiconductor has strengthened its research and development activities and has forged links with universities in order to cultivate the talent and ideas that will shape the future of the Chinese 'Internet of Things'.

During the CSIA-ICCAD Annual Conference & Internet of Things and IC Design Summit Forum 2010, Mr Liu Hui, senior marketing manager at Fujitsu Semiconductor (Shanghai) participated in one of the subject forums and gave a speech entitled Introduction to Fujitsu super high-speed ADC IP: the key solution for next generation 100G system ASIC that focused on Fujitsu Semiconductor's latest high-speed ADC IP technology. Fujitsu Semiconductor has also signed a memorandum with the National Steering Group for Education on the Internet of Things to participate in the construction of a teaching system, syllabus, textbooks, labs, training and related activities/contests to promote education within the segment.

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 terms of university programmes, information sessions arranged as part of the Fujitsu Semiconductor Cup MCU competition were held in mainland China, Hong Kong and Taiwan. The competition used a Facebook fan page as the platform to distribute information about the competition in Taiwan for the first time. Combined with promotional activities in the form of four campus road-shows across Taiwan, the fan page led over 1,000 people to sign up for the competition in two months – a very positive reception from Taiwan's colleges and universities.

In the TV segment, Fujitsu Semiconductor has also achieved a worthy milestone: Fujitsu stood out from 656 other companies to win the Top 10 International Television Brands Award at the Chuangyi Cup 2010. Judges chose Fujitsu due to its innovations, technology leadership and strong brand-recognition.

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

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**Press Release:**
New graphics display LSI for digital dashboards and car navigation featuring the industry's top-ranking rendering performance
Over one million units of Fujitsu Semiconductor's new low-cost MPEG-2 set-top box chip H20D shipped
Fujitsu Semiconductor 6MHz buck-boost DCDC converter IC allows for smaller external components and wider battery voltage range
Fujitsu announces Ginga solution on HD decoder family for Latin America DTT market

**Activities:**
Fujitsu Semiconductor Cup MCU competition leverages Facebook to grab the attention of over 1,000 people

**Media Interview:**
Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, was interviewed by Electronic Engineering & Product World
Fujitsu Semiconductor attends IIC-China 2011 Spring Show with brand new products

Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, was interviewed by Global Electronics China

Fujitsu Semiconductor boosts Internet of Things as a college curriculum

Chng Kean Wui, vice-president of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch, was interviewed by Compotech China
Abu Bu, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Electronics Supply & Manufacturing-China
Eric Cai, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Electronics Supply & Manufacturing-China
Alex Peng, marketing manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by eefocus.com
Welch Ding, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Topology Research Institute

Technical Article:
Controller LSI for automotive applications

About Fujitsu Semiconductor Limited Asia
Collaborating collectively on its distinct strengths and expertise, Fujitsu Microelectronics (Shanghai) Co Ltd, Fujitsu Semiconductor Asia Pte Ltd and Fujitsu Semiconductor Pacific Asia 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.

About Fujitsu Semiconductor Asia Pte Ltd (FSAL)
Fujitsu Semiconductor Asia Pte Ltd (FSAL) was established in 1986 to provide semiconductor sales and support solutions to customers in Southeast Asia, India and Oceania. FSAL offers a diverse array of application-oriented semiconductor products and solutions such as ASIC, ASSPs, microcontrollers/microprocessors (FR-V), System Memory (FRAM/FCRAM) and System LSIs (DVD MPEG Source Decoders/MPEG –2 Encoders).

Press Releases

New graphics display LSI for digital dashboards and car navigation featuring the industry's top-ranking rendering performance

Singapore, December 1, 2010 - Fujitsu Semiconductor Asia Pte Ltd (FSAL) announced the development of MB86R11, a LSI chip used in the graphic displays of automotive digital dashboards and car navigation systems. Samples of the new chip began shipping at the end of December 2010.

For more information, please visit:
Over one million units of Fujitsu Semiconductor's new low-cost MPEG-2 set-top box chip H20D shipped

Singapore, December 29, 2010 - Fujitsu Semiconductor Asia Pte Ltd (FSAL) announced that the shipment of Fujitsu's new low-cost MPEG-2 set-top box chip H20D has exceeded one million units. The product went into mass production in March 2010. This demonstrates the strong competitive edge of Fujitsu's set-top box solutions in the highly competitive, low-cost set-top box market.

For more information, please visit:

Fujitsu Semiconductor 6MHz buck-boost DCDC converter IC allows for smaller external components and wider battery voltage range

Shanghai, February 24, 2011 - Fujitsu Semiconductor (Shanghai) Co Ltd announced the development of 6MHz buck-boost DCDC converter IC "MB39C326" for radio frequency power amplifiers in mobile phones, smart phones, e-books and other handheld mobile devices. Sample shipments for the new IC product, MB39C306, will start from June 2011.

For more information, please visit:

Fujitsu announces Ginga solution on HD decoder family for Latin America DTT market

Singapore, February 25, 2011 - Fujitsu Semiconductor Asia Pte Ltd (FSAL) announced the adoption of a full Ginga software solution from TQTVD, a Brazilian company in the TOTVS group. TOTVS will port its Ginga solution to a Fujitsu High Definition (HD) Decoder product family and promote it, together with Fujitsu, as a full system solution to the SBTVD market. The porting will include TOTVS's ByYouTv* (Ginga-NCL and Ginga-J), ByYouZapper* and Sticker Center* enabling highly competitive end products with best-in-class quality. This solution is fully compliant with the Brazilian standard for digital TV (SBTVD) and can be deployed in all countries that decided to adopt this standard.

For more information, please visit:

Activities

Fujitsu Semiconductor participates in 2010 CSIA-ICCAD Annual Conference & Internet of Things and IC Design Summit Forum

The CSIA-ICCAD Annual Conference & Internet of Things and IC Design Summit Forum 2010 took place in Wuxi city, Jiangsu province on 1 December 2010. Officials from a range of key government and industry organisations including China Semiconductor Industry Association, the National Development and Reform Commission, the Ministries of Science and Technology and Industry and Information Technology, Jiangsu Economic and Information Technology Commission and the Wuxi Municipal Government attended the event, as well as senior executives and engineers from semiconductor and design companies. Mr Liu Hui, senior marketing manager of Fujitsu Semiconductor (Shanghai) participated in one of the subject forums and gave a speech entitled Introduction of Fujitsu super high-speed ADC IP: the key solution for next generation 100G system ASIC that focussed on Fujitsu Semiconductor's latest high-speed ADC IP technology, drawing interest from the industry figures who attended.
Fujitsu Semiconductor attends IIC-China 2011 Spring Show with brand new products

Fujitsu Semiconductor (Shanghai) Co Ltd attended the 16th International IC-China Conference and Exhibition (IIC-China 2011) held in Shenzhen Convention and Exhibition Centre on February 24 to 26, 2011, and exhibited its products and solutions for automotive electronics, consumer electronics, wireless communication, power management, storage and other fields. In the field of automotive electronics and MCUs, Fujitsu Semiconductor introduced innovative products, demonstrating its leadership. Fujitsu Semiconductor’s first commercial multimode transceiver and mobile equipment system solutions for wireless communication were exhibited publicly in IIC-China Spring Show for the first time, and a variety of product lines show technical strength of Fujitsu Semiconductor.

Fujitsu Semiconductor boosts Internet of Things as a college curriculum

In the recently held meeting of "the Construction of National High Education on Internet of Things, and the Second Meeting of the National Steering Group for Education of Internet of Things and Related Teachings", Fujitsu Semiconductor and the National Steering Group for Education of Internet of Things signed a memorandum on the construction of teaching system, textbooks, labs, faculty training and related activities/contests. This is an important initiative taken by Fujitsu Semiconductor for professional training in the new field.
Fujitsu Semiconductor Cup MCU competition leverages Facebook to grab the attention of over 1,000 people

The Fujitsu Semiconductor Cup MCU competition harnessed a Facebook Fan Page to serve as the platform to distribute information about the competition in Taiwan for the first time. Combined with promotional activities in the form of four campus road-shows across Taiwan, the fan page led over 1,000 people to sign up for the competition in the past two months—marking a positive reception from Taiwan's colleges and universities.

![Fujitsu Semiconductor's fan page in Facebook](image)

Fujitsu wins 2010 Top 10 International Television Brands Award
At the Chuangyi Cup 2010’s selection for the Top 10 Television Enterprises, Fujitsu was named the winner of the Top 10 International Television Brands Award. Mr Cedric Huang, senior marketing manager of Fujitsu Semiconductor (Shanghai), represented the company at the awards ceremony on 18 December 2010.

In order to promote the development of the radio and TV segments, Hc360.com and China Association of Press Technicians teamed up to host the Chuangyi Cup 2010 Top 10 Television Enterprises Selection. The competition launched in August 2010, with 656 companies and 32 people applying to take part. After four months of fierce competition, Fujitsu won the award on the back of its innovations, technology leadership and strong brand-recognition.

Group photo of representatives of awarded companies

Global Electronics China, January 2011

Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, was interviewed by Global Electronics China, and introduced Fujitsu's Green, low-carbon concept and extension of "green" concept of Fujitsu Semiconductor Cup competition.

For more information, please visit: http://news.eccn.com/news_2011011314371674.htm
Closely following market hot spots and driving green innovations, a dialogue with Andy Chang, vice president of marketing, Fujitsu Semiconductor Asia

With 2011 already well underway, what are the critical developments in the semiconductor industry? Where are the 'hot spots' of potential in today's market and what are semiconductor companies doing about them? What will the best marketing strategies for these hotspots prove to be? Fujitsu Semiconductor Asia's vice president of marketing shares his observations on the current state of the market and Fujitsu's future marketing strategies in an interview with Global Electronics China ('GEC')

GEC: At the end of 2010, the whole semiconductor industry seems to be clearing out the old and ushering in the new. As an industry expert yourself, what market features and trends are you seeing in 2011, and how do you expect the market to develop over the next year or two? What application fields hold the most potential for growth?

Andy: With the series of economic stimulus policies announced by the Chinese government such as home appliances and cars for rural areas and new home appliances for the elderly, China's semiconductor market maintains double-digit growth this year, driven by the application of Internet of Things, renewable energy sources and new materials. In terms of the direction of the industry, we're still optimistic about automotive and consumer electronics applications, renewable energy, LTE/4G terminals, lithium batteries and Internet of Things. From a science and technology perspective, Fujitsu is maintaining its focus on developing renewable energy resources, energy-saving power management, frequency conversion technologies, LTE and video codec technologies. Application areas with the biggest growth potential are automobiles, digital televisions, Internet of Things, smart phones and medical electronics. These are all worthy of the attention of semiconductor companies.

GEC: What is a good yardstick to measure the significance of the China market to the global semiconductor industry over the next two to three years?

Andy: According to predictions by some well-known consultancies, the global semiconductor market will grow by 10 per cent, while China's is set to grow by 17 per cent. As the European and American economies start to recover, consumers' confidence in global financial markets has been restored. As the largest electronics manufacturing and export base in the world, the demand within China for integrated circuits is gradually growing. We believe that, over the next two or three years, the demand for ICs in China will enter a new phase of healthy and steady growth, influenced by products like electric cars, smart phones, tablet computers, meters and monitoring and medical electronics.

GEC: What marketing strategies and business goals are planned, both in China and the Asia-Pacific region in 2011?

Andy: With respect to Fujitsu's marketing strategies and goals in the next year, we will follow the market, aiming to introduce new products that meet customer demand in a timely way.

In terms of current market dynamics, several things are on our radar at the moment:

At the high-end automotive electronics market, the demand for 16-bit and 32-bit MCUs is continuing to show strong growth. We will work on both lines in 2011 and launch new 16-bit and 32-bit products at the same time.

Based on the existing 16FX MCU family, we will introduce a more cost-effective 16FXS family of MCUs supporting AUTOSAR standards. The development tools are very convenient, economical and practical. The high-performing FR81S
family of 32-bit MCUs is based on the present MB91460 family of MCUs and will be introduced to support functional
security modules with multi-bus architecture, floating-point units and self-diagnosis. In this way, real-time control of
automotive systems can be achieved.

16FXS MCUs suit such market applications as power windows, power seat control, automatic air-conditioning,
dashboards, car audio, KE systems and centralised body control module.

FR81S MCUs suit applications like automobile airbags, electronic power steering, gateway control, electronic stability
control system, adaptive cruise control and night vision systems.

A lot of low-cost solutions are needed to meet the demand for applications that are popular with domestic carmakers – a
huge potential market. As we know, many compact cars are basically equipped with low-cost car audio devices that can't
play CDs and can only cope with music on USB sticks or memory cards. With the bus interface integrated with USB, SD,
Audio DAC and CAN, the single-chip MB9G711 MCU provided by Fujitsu can support MP3/WMA/AAC/OGG multi-format
decoders. MB9G711 solutions in particular can provide functions like Bluetooth hands-free, iPod play control and digital
RDS. At the same time, Fujitsu is also introducing 8-bit MCU MB95F176 for designing low-cost auto meters. The product
features an internal two-header motor control driver, a 112 LCD driver and adequate I/O ports.

With regard to the mid-range car market, graphical auto meters have been an important strategy for many OEMs and
auto manufacturers. In 2011, the product we would recommend most for this is the MB91F599 MCU. It is a single-chip
controller containing 32-bit FR81S MCU and GDC. For customers, MB91F599 incorporates critical features and
functions, such as 6-channel stepper motor control SMC, a graphical line-drawing function, a PAL/NTSC analog video
input interface and 3-channel CAN Bus Interface.

In the field of digital TV, Fujitsu believes that more innovative technologies will be applied to TV/STB in the next five
years, such as 3D, video phone, Wi-Fi and DLNA. TV/STB can provide ordinary people with more and better application
services and brings them the benefits of the extra convenience made possible by new technologies. We see business
potential for service providers in developing products that integrate newer features with those of traditional TV, telephone
and internet. Fujitsu, as a traditional semiconductor chipmaker, recognised early on that what the customers needed
most in today's rapidly changing market are complete solutions, so that is what we focus on today. With TV/STB as a
target field, our research and development focuses on providing customers with household multimedia terminal solutions
that support related services such as broadcasting and television, telecommunications and the internet. We believe that
household multimedia terminals will become must-have equipment in the digital households in the future.

In terms of power management, in 2011, Fujitsu will be introducing products and solutions featuring higher efficiency and
lower power consumption for application in laptop computers and netbooks. High-efficiency charge management ICs
made possible by our R&D in the area of processing can improve battery efficiency in laptops, prolonging battery life and
contributing to the drive to cut carbon emissions for tens of millions of laptop computers. In 2012, Fujitsu will launch the
revolutionary GaN processing device, which it will also apply to laptops. These enable ultra-low power consumption and
also allow designers to make thinner laptops, again marking a significant contribution to saving energy.

GEC: The development and application of the MCU, the core chip of the whole system, has always been a key
technology focus. Could you tell us more about the distinguishing features of Fujitsu Semiconductor's MCU products
compared to competitors? What are Fujitsu's plans for its MCU product lines? How will you win market acceptance for
new products?

Andy: Our extensive MCU product line is a result of over 30 years' of development experience of MCUs. With regard to
the 8-bit MCU market, a more experienced development team, more reliable materials, a more extensive product line and
localized technology services are all brought together in Fujitsu Semiconductor's proprietary kernel FFMC – 8L and
FFMC - 8FX 8-bit microcontrollers. Fujitsu Semiconductor's R&D and our 8-bit MCU application team has been
transferred from Japan to Chinese mainland, which benefits our development cost structures as well as the technical
support and market responsiveness we are able to offer. The 8-bit microcontrollers we're developing locally – the FFMC
latest 8FX family of products – have features like dual-operation flash memory and boast high performance, low power
consumption, an online debugging module and rich peripheral integration. All of these keep our products competitive.
Fujitsu Semiconductor's 8-bit microcontrollers are mainly used in white goods, personal and household healthcare
products, motor controls and intelligent instruments.

Fujitsu's 16-bit microcontroller will hold its ground in some important fields such as automotive electronic products and
industrial control products. However, in other markets, its application potential – and therefore its market – will come
under pressure from 8-bit and 32-bit microcontrollers. Fujitsu has its own 16-bit product line, such as products with the
FFMC - 16LX and FFMC - 16FX kernels. When it comes to the automotive sector, we expect these products to increase in
popularity. By improving wafer technology – i.e. by applying 0.18 micron technology – as well as adding on-chip
debugging functions and other product enhancements, we will continue to provide our customers with cost-effective, high-quality products. In the applications of consumer electronics, home appliances, industrial control and medical electronics, Fujitsu Semiconductor will focus on promoting the 8-bit MCU with FFMC-new 8FX microcontroller as the kernel, and 32-bit MCU with ARM's Cortex M3 microcontroller as the kernel.

Traditional 32-bit microcontrollers are the products with proprietary kernels of wafer providers as the main focus. These are mainly used in high-end products in a range of fields including communications, manufacturing, healthcare, consumer electronics and automotive electronics. Due to applications positioning, difficulties of technological development and high product performance, the price of 32-bit MCUs has stayed relatively flat. However, more recent developments such as technology enhancements, progress in IC designs and the promotion of intellectual property rights in 32-bit ARM technology in recent years are gradually bringing the price of 32-bit SCMs down, while their performance is guaranteed.

Since these rapid developments have started to force prices down, and the IC design threshold is lowered, more semiconductor manufacturers are expected to compete for market share. This will also accelerate price competition, as will the introduction of MCU products with ARM Cortex M0 and M3 32-bit microcontroller kernels, which are aimed at the high-end 8-bit and 16-bit market.

Fujitsu Semiconductor has closely followed this emerging trend. Our basic strategy for addressing it is to develop better products and services. How are we achieving this? Among 32-bit MCU products, Fujitsu Semiconductor is increasingly making use of the ARM Cortex-M3 as a kernel, as well as developing our own special kernels like the FR60 and FR80. The products with ARM Cortex-M3 as kernels will adopt Fujitsu's 90 nanometer production process and supply the markets for industrial controls, consumer electronics, home appliances and medical electronics with more cost-effective components. Fujitsu Semiconductor's 32-bit SCM is mainly applied in automotive electronics, home appliances and industrial control products. It's predicted that the applications in data interchanges (such as network control), intelligent instruments (such as smart grids) and medical products will be strengthened.

GEC: The 2010-2011 Fujitsu Semiconductor Cup of Innovative Design for MCUs is due to start soon in mainland China, Taiwan and Hong Kong. What's the purpose of the competition? As we know, many semiconductor companies hold such design contests. How is this one different, and how does it influence and drive innovation in China?

Andy: Since 2006, we have held four such contests. This time, we are extending the contest to three locations, providing teachers and students with a platform for communication and exchanges. At the end of contest, we will select the projects that best meet the demands of current market trends, evaluate and collect the prototypes and devise a comprehensive solution for "life in the future". Teachers and students from all three places will be invited to take part.

It is a distinctive feature of the Fujitsu Semiconductor Cup rather than that this specific contest. Fujitsu contests always follow the principles of innovation and environmental sustainability. The contest helps to lay the foundation for the low-carbon and environmentally-friendly future of chips that we aspire to, but imagination is just as important. It's easy to talk about the purpose, but the process of entrenching our low-carbon vision will take a good deal of time. Through the channel that the contest provides, Fujitsu encourages contestants to take this concept into account at the planning stage. It will influence the way they think in the future. By combining the resources of the chip, with its defined and knowable parameters, with the unlimited and subjective imagination of the participants, we can imagine that a greener chip may one day result from the competition.

So the Fujitsu Semiconductor Cup attaches importance to innovation as a core judging criterion, which is underlined by our Best Innovation Award. Those whose project fails to work for whatever reason but has unique innovative qualities may nevertheless fare well at the conference stage of the competition, and would certainly still be in the running to win the Award. To recruit able people without overstressing qualifications not only reflects Fujitsu Semiconductor's approach to talent sourcing and cultivation. It also reflects our hope that, in championing the quality of uniqueness, we will empower home-grown talents to fully realize their creative potential.

Electronic Engineering & Product World, January/February 2011

Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, was interviewed by Electronic Engineering & Product World and shared his views on semiconductor industry trends in 2011.

For more information, please visit: http://www.eepw.com.cn/article/116973.htm
Semiconductor firms seek growth as the recovery takes hold

The impact of the economic crisis of the last two years has impacted profoundly on a number of industries, fundamentally changing the competition patterns in some fields. The semiconductor industry is no exception: as the recovery starts to take hold, challenges co-exist with opportunities. In the first half of 2008, the number of orders was predictably reduced; the whole semiconductor industry was shrinking. However, due to the role that semiconductor products play in the production chain as a whole, the industry also looks being one of the first to pick up, just as it was one of the first to be hit when the crisis began.

As a result, since the second half of 2008, the semiconductor industry has gradually been getting back to full health. By 2010, almost every segment of the industry was showing signs of improvement, and by the beginning of this year, some companies in the sector were growing by more than 20 per cent. The data suggests that the semiconductor industry is well and truly out of the doldrums. This represents real opportunities for semiconductor companies: prudent planning is probably a wiser approach to the recovery period than taking risks to achieve high growth immediately. This approach lays the foundation for steady and sustainable growth. We invited a number of senior decision-makers from semiconductor companies to share their thoughts on the prospects for 2011, and their longer-term expectations and business objectives.

Semiconductor companies speak

Many integrated semiconductor manufacturers – even industry-leading ones – are gradually focusing on manufacturing fewer, higher-value products, concentrating their efforts on certain technology segments and developing products with segment-specific advantages, in order to maintain profit margin.

Fujitsu Semiconductor

As a series of policies to stimulate domestic demand have been implemented by the Chinese government, the semiconductor market has also gained momentum. In 2011, Andy Chang, vice president, marketing, Fujitsu Semiconductor Asia, is optimistic about such applications as automobiles, consumer electronics, LEDs, renewable resources, LTE/4G terminals, lithium batteries and Internet of Things. From the perspective of science and technology, Fujitsu is maintaining its focus on developing renewable products, energy-saving power management solutions, frequency inversion technologies and LTE and USB3.0 technologies. As the miniaturization and multi-functional nature of portable devices has become a trend, the public appetite for energy saving and environmentally sustainable products has become stronger and stronger. Power management technologies are required to enhance energy efficiency, cut standby power consumption and enable further progress in developing next-generation technology products.

These trends are reflected in a number of ways. First, intelligent power management chips are becoming increasingly important. Pure analog power management chips are unlikely to be able to meet the requirement of more intelligent control and miniaturization. Increasingly, power management chips are integrated into microcontrollers. Secondly, digital power management is still at the development stage, and it may take time to break through the bottlenecks of the present state of the technology. Thirdly, the demand for high and ultra-high pressure resisting products is growing rapidly, especially in terms of energy saving and environmental protection, such as the applications of LEDs and solar power. Finally, lithium batteries in power solutions impose extremely high power management requirements. As the market is
warming up, large-scale lithium batteries will prompt a new round of R&D in the field of power management chips.

In the field of automotive electronics, the main market applications include motor control, electronic power steering systems, night vision systems and remote control. In the field of digital TV, Fujitsu believes that more innovative technologies will be applied to TVs and STBs over the next five years, such as 3D, video telephony, Wi-Fi and DLNA.

Electronics Supply & Manufacturing-China, December 2010

Abu Bu, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Electronics Supply & Manufacturing-China and analyzed television industry trends.

For more information, please visit:
http://www.esmchina.com/ART_8800112508_1100_2201_3405_0_b9b560ec.HTM

English Version:

The 25th anniversary of Electronics Supply & Manufacturing China: leading TV solutions providers discuss market prospects

*STB is the multimedia terminal of digital households, says Bu Yangchun, product manager, Fujitsu Semiconductor*

In the past 25 years, big changes have taken place in the TV segment. Televisions have developed from black and white to colour, analogue to digital, one-way broadcast to interactive, SD to HD, and flat panel to 3D. Since last century, Fujitsu has dedicated itself to R&D of set-top box (STB) solutions to promote the transition from analogue to digital, interactive, HD TV.

Since the last twentieth century, Fujitsu Semiconductor has launched a large number of satellite digital TV, digital cable TV, interactive, HD and integrated digital STB solutions. Digital TV head-end encoding and decoding solutions (along with other digital applications) have helped to build the popularity of digital TV and win market acceptance for the technology.

Over 25 years of technology development, Fujitsu has had some significant STB successes. At present, Fujitsu's STB business has market penetration in Europe, South America, Australia, Africa and Asia, including cable, ground and satellite networks. It has over 100 partnerships and enterprises customers. It carefully maintains solid business relationship with market leaders in each market. In order to support the development of its business in China, Chip R&D and Technology Support Centers have been established in Shanghai and Chengdu. Total shipments of its STB decoding chips have exceeded 60 million.

Fujitsu believes that more innovative technologies will be applied to TVs and STBs in the next five years, such as 3D, video telephony Wi-Fi and DLNA. TVs and STBs can provide everyday users with more and better applications, allowing them to fully harness the potential of the new technologies. New business models and new service providers seem likely...
Fujitsu believes that the STB will become a household multimedia terminal and an essential part of ordinary households. We believe the potential market is huge.

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**Global Electronics China, February 2011**

Andy Chang, associate vice president, Fujitsu Semiconductor Limited Asia, was interviewed by Global Electronics China and introduced the latest development of information sessions of “Cross-strait Creative Future” MCU Electronic Design Competition.

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**English Version:**

**Fujitsu Semiconductor's information sessions on the Cross-Straits Creative Future MCU Electronic Design Competition get underway**

Recently, Fujitsu Semiconductor launched the Cross-Straits Creative Future MCU Electronic Design Competition. To explain the background and process of the competition to lecturers, students and other stakeholders, Fujitsu has held a series of recruitment seminars. These have been successful in generating interest in the competition and providing information to prospective entrants on its various different categories. The competition will focus on the FM3 family products and aims to unlock participants’ creativity and inspire innovative projects that are in line with current development trends.

Fujitsu Semiconductor has now held these seminars at a number of higher education institutions on both sides of the Straits of Taiwan. In mainland China these have included Wuhan University, Beijing University of Aeronautics and Astronautics, Xi’an University of Electronic Science and Technology, Southwest Jiaotong University and Fuzhou University in Chinese mainland. In Taiwan, Fujitsu has visited Taiwan University, National Chung Hsing University, Jiaotong University and National Cheng Kung University, as well as the Chinese University of Hong Kong. These seminars are continuing over March 2011, when Dalian University of Technology, Hangzhou University of Electronic Science and Technology and University of Electronic Science and Technology will be visited.

At the same time, follow-up sessions will take place at the Chinese University of Hong Kong, Hong Kong Polytechnic University and Hong Kong University of Science and Technology. During the seminar at Beijing University of Aeronautics and Astronautics, the Fujitsu Cup Innovation Competition also took place, and winners from the university will automatically be entered into the MCU competition along with their cohorts from a host of other Greater China
institutions. Fujitsu Semiconductor says that electronics enthusiasts from outside universities or colleges are also welcome to enter.

"During the four years that we have been holding the MCU competition, students’ enthusiasm and interest were very clear to see," said Andy Chang, vice president, marketing, Fujitsu Semiconductor Asia. "To provide them with information and hopefully answer their questions about this competition and about the industry more generally, we decided to hold this series of information sessions in universities. The emphasis of the competition is on independent thinking. We hope students will be stimulated to harness Fujitsu Semiconductor's technology platform to bring new ideas to life."

As well as focusing on development trends and the current status quo in the semiconductor segment, senior engineers from Fujitsu Semiconductor also looked back at 2010’s competition and the FM3 products that students applied. Fujitsu Semiconductor engineers explained complex points in a clear, easy-to-understand way, which not only ‘broke the ice’ for participants, but also fed their appetite for science and technology innovation in general. The atmosphere of the sessions was relaxed and informal, and many of the sessions were full. During the Q&A sections, participants were very active and asked detailed questions. Feedback on the sessions from teachers and students was highly positive.

The competition plays a central role in the semiconductor industry’s efforts to target universities. It has now been held four times and has won praise from the industry and universities themselves. While promoting the development of scientific research, it has also formed a platform for those looking to enter the industry to display their talents. The competition aims to nurture new talent by focusing on students’ practical and research capabilities and fresh ideas. It deliberately mirrors related courses and curricula of major universities, furthering teaching objectives and bridging the gap between theory and practical innovations in ways that contribute to Greater China's semiconductor industry of the future.

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Electronics Supply & Manufacturing-China, February 2011

Eric Cai, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Electronics Supply & Manufacturing-China, and shared his views on application industry and future supply and demand of memory.

English Version:

DDR3 remains the main focus of memory, with SSD set to enjoy growth next year

With the recovery of the semiconductor industry in 2010, demand for various memory devices including Flash, DDR3, MRAM, FRAM, SSD and HDD in various application fields has shot up. Is supply in the memory segment able to keep pace? Where is this demand coming from, and what are the main challenges in terms of fulfilling it? Even if supply is not an issue, are existing solutions and product capacities adequate in terms of what is asked of them? This article looks at current trends and attempts to answer these questions.

Demand for non-volatile memory has traditionally been driven by laptop computers. Because it ticks the boxes of relative stability and ultra-high density, portable disc drives have led the way in the sector. They differ from other forms of memory in that MRAM is able to avoid the ‘soft’ errors generated by cosmic rays. With lower speeds than MRAM, FRAM
Mr. Cai Zhenyu, a product manager at Fujitsu Semiconductor, says the main markets for FRAM are data-collecting
recorders such as electricity meters, water meters, gas meters, heating tables, medical instruments, RFID smart card
access control systems and vehicle data recorders. Their high reliability also sees them used in copiers, printers,
industrial controls, networking equipment, video games, vending machines (as the cache substitute for BBSRAM), bank
ATMs, tax receipt devices, EPOS devices and fax machines. He says that FRAM will be widely applied in three types of
meter, vehicle data recorders and EPOS products next year.

Cai says that Fujitsu provides various FRAM chips according to the intended end-application, since Fujitsu has
customers for its FRAM products in a number of different fields. For example, single FRAM chips based on three
communication interfaces (IIC, SPI, and Parallel) range from 16Kb to 4Mb; RFIC chips with FRAM memory media and
FRAM microcontrollers with built-in FRAM can provide a substitute for traditional Flash ROM and SDRAM.

As the technology develops and approaches norms of below 20nm, developers are seeing a significant increase in
effects. Flash memory management is becoming more difficult, which impacts adversely on the performance and reliability
of NAND flash memory.

**A targeted approach to meeting demand**

These unforeseen capacity constraints took the semiconductor industry by surprise in 2010. How will the industry
address them in 2011?

Cai believes that the present FRAM market has become more competitive and is on the brink of breaking through the
monopolies of a small number of established players. However, overall supply and demand remain more or less balanced.
Conscious of cost, the electric meter segment seems to prefer smaller-capacity FRAM, which may cause a short-term
spike in demand. To cater to this, Cai says Fujitsu will focus on 5V products with SPI interfaces, but will also introduce a
variety of memory products with capacities of between 16Kb-8Mb and 12C, SPI and Parallel interfaces to address
demand in other application fields.

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Eefocus.com, 10 January 2011

Alex Peng, marketing manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by eefocus.com. He shared
his views on the status of Japanese semiconductor manufacturers using ARM Cortex-M framework to produce MCU and
analyzed Cortex-M framework trends.

**For more information, please visit:**

http://www.eefocus.com/article/11-01/271294655811.html?sort=1111_1125_1480_0

**Fujitsu: Cortex-M architecture is a natural choice**

Japanese semiconductor manufacturers have been playing a very important role in the IC sector with advanced technologies and stable operation. European and American semiconductor news shows clearly that the Japanese semiconductor market is regarded as being in a different category to the rest of the Asian market due to its mature technology and established development paths. So when Japanese chipmakers such as Renesas or Fujitsu announced their intention of utilizing ARM Cortex-M architecture to produce MCUs after so many years of using autonomously-developed architectures, the move was met with raised eyebrows in the rest of the industry. Here, eefocus.com speaks to Alex Peng, MCU product manager, Fujitsu Semiconductor (Shanghai) about the reasons for the switch and what it will mean in the future.

Eefocus: In 2010, many Japanese manufacturers began to join the Cortex-M series MCU field. Fujitsu was one of them. What was the thinking behind this move?

Alex: Fujitsu began to use ARM cores such as the ARM7, ARM9 and ARM11 from 1998, which were mainly used in ASSP and SoC products. We've chosen to develop general MCUs based on Cortex-M3 cores in order to meeting market demand and offer convenience to our customers. As a global, universal 32-bit MCU core, the Cortex-M series has improved performance and lower power consumption and cost compared to the ARM7. This makes it more suited to a number of MCU applications, and its rich third-party software and hardware support enables customers to develop products quicker more conveniently. This is why you're seeing more MCU manufacturers develop general MCU products based on the Cortex M3 core.

Eefocus: How does Fujitsu Semiconductor compete with other MCU manufacturers who use? Can you differentiate your products?

Alex: Fujitsu always offers strong technical support, whether in terms of human support or solution provisions. Fujitsu Semiconductor has R&D centres in Hong Kong, Shanghai and Chengdu. Their design teams and the R&D team back in headquarters in Japan work together to develop new products for the Asia-Pacific market. The application development team in Shanghai and Chengdu will launch application solutions of ARM-CM3 series products and provide technical support for product applications. Our FM3 solution is based on Cortex-M3 architecture and is mainly applied in home and industrial products. For example, our motor control solutions range from simple switch control to step motor control to complex brushless DC motor control, including the popular 180-degree sine wave sensorless vector variable frequency control technology. These solutions are developed by Fujitsu Semiconductor, and are proprietary. In addition, Fujitsu Semiconductor has a strong local R&D team focusing on motor drive technology. Years of front-line experience enables Fujitsu Semiconductor to develop chips and solutions well suited to the Chinese market. We then complement that by offering strong on-site support to our Chinese clients.

Eefocus: How do you balance the competitive relationship between Cortex-M MCUs and your autonomously-developed architecture MCU products in applications where either would be suitable?

Alex: Actually there is no direct competition between Fujitsu Semiconductor MCUs with special cores and FM3 products with ARM-Cortex M3 cores. The two have different target markets. In terms of 32-bit MCUs, Fujitsu Semiconductor has MCUs with special cores, such as the FR60 and FR80 series, which are mainly used in automotive electronics and industrial controls applications, whereas for FM3 products with the ARM-Cortex M3, the target markets are consumer electronics, home appliances and more. For application areas other than the automotive industry, we will invest the resources to research, develop and promote ARM-Cortex M3-based products.

Eefocus: What did Fujitsu Semiconductor's Cortex-M-based MCUs achieve in 2010? What are your shipment figures and market share?

Alex: Fujitsu Semiconductor launched 44 ARM Cortex-M3-based FM3 products in October 2010. The target customers are in the design stage.

Eefocus: What are your expectations for your ARM Cortex-M3 core products in 2011?

Alex: In 2011, Fujitsu Semiconductor will provide customers with more FM3 products based on our advanced wafer manufacturing process and rich peripherals. In order to improve product performance and reduce power consumption, Fujitsu Semiconductor's 90nm wafer process will be fully applied in our FM3 family of general MCU products.

Eefocus: Many people believe the future Cortex-M0, M3 and M4 will replace the current 8-, 16- and 32-bit MCUs. What's your view?
Alex: I don't see this happening. With the involvement of MCU semiconductor manufacturers, the Cortex-M-based MCU family will be more popular and widely used. Cortex-M0 products will be applied in the current cost-optimized 8- and 16-bit MCU market, Cortex-M3 will be applied in the current cost-effective 32-bit MCU market, and Cortex-M4 will be applied in embedded control DSP and DSC markets. So we will definitely see more of this, which reflects the success of the ARM company and increasing use of Cortex products in MCUs. But the Cortex-M series will not replace autonomous architecture-based MCU across the board, because the market will still require multi-architecture MCUs in an environment where demand originates from such a wide variety of application fields.

Eefocus: Intel is making all-out efforts to promote the lower power consumption of its Atom processor to compete with ARM Cortex-M series MCU products. Is there any risk that Cortex-M-based MCUs may be slowly crowded out of the market by Atom?

Alex: As a new generation of MCU core for mobile network device platforms, Atom processors will compete with ARM Cortex-A or ARM11-based MCU. For mobile computers like netbooks that prioritise low power consumption and internet use, as well as smart mobile devices that center around mobile internet, Atom processors will be a strong competitor to the Cortex A series. But Intel will be facing ARM-based MCU semiconductor manufacturers. In the portable mobile market beyond traditional PCs and netbooks, it will be tough for Intel to disturb ARM's dominance.

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English Version:

Fujitsu Semiconductor: differentiation is key to MCU development

Japanese semiconductor manufacturers played a very important role in the IC sector with advanced technologies and stable operation. Fujitsu is one of these manufacturers. It has broad product lines including MCU, ASIC, ASSP/SoC, system memory chips and foundry services. It also occupies an important place in the MCU field, breaking the conservative often associated with Japanese manufacturers and expanding its market through combining autonomous architecture MCU products with those than run on ARM cores.

Alex Peng, MCU product manager of Fujitsu Semiconductor (Shanghai), said Fujitsu began to use ARM cores such as ARM7, ARM9 and ARM11 in 1998. These were used mainly in ASSP and SoC products. "Choosing ARM architecture for certain products was as very natural decision," said Alex. "More and more customers are showing interest in ARM architecture-based MCUs. As a universal 32-bit MCU core, ARM architecture performs well, but delivers low power consumption and running costs.

"But Fujitsu does not focus exclusively on ARM architecture-based MCU. In addition to ARM core-based MCUs, we make MCUs with special cores, such as FR60 and FR80 series. These are mainly used in the automotive electronics and industrial controls markets and have elicited positive feedback from customers."

According to Alex, MCUs will become more homogenous in the future, making it the more important to develop unique, indispensable MCUs. "This requires manufacturers to focus on differentiating their products. You can focus on interface functions, or price, or on providing rich solutions. In a market with a rich choice of MCUs for customers to pick, manufacturers need to ensure as far as possible that their products offer advantages that other do not."

In terms of differentiation, Fujitsu Semiconductor prides itself on offering strong technical support, whether in terms of human support or solution provision. Fujitsu Semiconductor has R&D centres in Hong Kong, Shanghai and Chengdu. Their design team and the R&D team at headquarters in Japan jointly work to develop new products for the Asia-Pacific market. The application development team in Shanghai and Chengdu will launch application solutions that use ARM-CM3
series products and can then provide technical support to customers. The company's FM3 solution is based on Cortex-M3 architecture and is mainly used in home industrial appliances. For example, its motor control solutions range from simple switch control to step motor control to complex brushless DC motor control, including the popular 180-degree sine wave sensorless vector variable frequency control technology. These solutions are self-developed by Fujitsu Semiconductor, and are proprietary.

"In addition, Fujitsu Semiconductor has a strong local R&D team focusing on motor drive technology. Years of front-line experience enables Fujitsu Semiconductor to develop chips and solutions well suited to the Chinese market," said Alex.

At the recently-concluded IIC-China 2011 industry event, Fujitsu showcased a number of brand new products. Two areas in which it has traditionally been a strong competitor are automotive electronics and consumer electronics. At the show, Fujitsu displayed the MB9G711 automotive-class 32-bit MP3 MCUs, the MB91590 series of system controllers, FlexRay-CAN gateway solutions, the latest 8FX MCUs including MB95560, MB95430 and MB95410, and the new generation, 32-bit general MCU FM3 series.

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Topology Research Institute, 4 January 2011

Welch Ding, product manager of Fujitsu Semiconductor (Shanghai) Co Ltd, was interviewed by Topology Research Institute and introduced the company's three smart car technologies.

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English Version:

Fujitsu focuses on three smart car technologies: control network, graphics chip and motor control

1. Fujitsu focuses on IDB-1394 technology to develop the automotive entertainment system market.
2. A new LSI graphics chip provides support for 3D image monitoring and auto meter graphical displays.
3. The increasing demand for motor control technology prompts Fujitsu to release new, application-specific products in this area.

Fujitsu has launched three smart car technologies. These include the MB86R11, LSI chips used in the graphic displays of automotive digital dashboards and car navigation systems, controllers that support IDB-1394 technology, and FlexRay and motor control MCUs. Samples of MB86R11 began shipping at the end of December 2010.

1. Fujitsu focuses on IDB-1394 technology to develop the automotive entertainment system market.

The two-control network IDB-1394 and MOST were developed for automotive multimedia entertainment systems. Although IDB-1394 is not as popular as MOST among manufacturers, IDB-1394 has good future prospects thanks to its future development potential and short time to market. IDB-1394 offers three major advantages: it features multiple video transmission with only 2 to 3ms of delay [WHAT IS THIS?]; its network topology is very flexible, unlike MOST which only supports Token Ring Network topology; and its short time to market advantage enables it to help customers reduce automotive wiring harness weight and system cost.

At present Fujitsu's IDB-1394 controller is intended mainly for the pre-installation market, including Japanese, American and Korean assembly plants. Fujitsu also provides products supporting MOST and CAN control network in other
applications, such as 16FX CAN MCU. Once a customer adopts an IDB-1394 solution, they pay just US$0.25 in royalties for each ECU, which is lower than other royalties. Overall, the future control network will be selected according to product design R&D considerations. Control network specifications and solutions will have potential for market development according to different end-applications and their requirements. This is a defining feature of automotive technology, which requires unified and diversified characteristics at the same time.

2. A new LSI graphics chip provides support for 3D image monitoring and auto meter graphical displays.

The MB86R11 has made it possible to use a single chip to support a 3D monitoring and infotainment system. The system synthesizes and converts a composite image of the synthesizers and converts images of the surroundings of a vehicle in real time from images provided by four cameras mounted at the vehicle's extremities, while at the same time processing car navigation and entertainment data. It also automatically corrects image contrast to ensure easy viewability at night or when high-contrast images are being watched. The product can switch between display content according to different driving situations and allows drivers to monitor what is going on around the car through the display screen. It also supports eco-driving and can provide various information to drivers in an intuitive way to improve road safety.

Changing from pointer to graphic display in the dashboard is becoming a trend in mid-range and high-end cars. Fujitsu's vehicle graphics processing chip Jade MB86R01 ranks first in the global high-end vehicle virtual meter market. In 2011, Fujitsu will focus on introducing a graphical processor for mid-range and low-end cars (the MB91F599) that also provides a graphical meter design platform capable of weathering changes in car price. The MB91F599 is a single chip controller that includes 32-bit FR81S MCU and GDC. It features 6-channel SMC stepper motor control, a GDC graphics line-drawing function, an NTSC direct analogy video input interface, and a 3-channel CAN bus interface.

3. The increasing demand for motor control technology prompts Fujitsu to release new, application-specific products in this area.

Motor control is one of the main power systems and a key automotive technology. Responding to market requirements, Fujitsu has released a new-generation, FR81S series motor control MCU, the MB91780. This 32-bit, high-speed MCU integrates a special motor control unit, internal RDC, a floating point unit and a FlexRay communication controller. Fujitsu has teamed up with several leading manufacturers in a variety of fields, including motor control design technology and algorithm technology for electric cars.

Compotech China, February 2011

Chng Kean Wui, vice-president of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch, was interviewed by Compotech China. He reviewed Fujitsu Semiconductor's development in 2010 and introduced company strategy in 2011.

English Version:

Fujitsu Semiconductor Pacific Asia Ltd, Taiwan Branch
Zhuang Jianwei, vice-president of Fujitsu Semiconductor Pacific Asia Ltd Taiwan Branch

2010: Looking back

Major product and technology news over 2010:
1. Fujitsu Semiconductor releases 44 products as initial offerings from its new FM3 family of 32-bit microcontrollers (MCUs)
2. Fujitsu Semiconductor's latest USB 3.0-SATA bridge IC MB86C31 earns USB-IF compliance certification
3. Fujitsu Semiconductor releases six products from the MB95390H series of 48-pin chips, expanding its F2MC-8FX family of high-performance 8-bit MCUs

Major business developments over 2010:

Fujitsu Semiconductor announced a strategic partnership with Taiwan-based Skyviia to develop compelling multimedia solutions.

2011: Looking ahead

Fujitsu Semiconductor established its strategic partnership with Skyviia in October 2010, aiming to expand its footprint in the global home entertainment segment and further enhance the design and development of its portfolio of products in the field, where the emerging market holds huge potential in applications like set-top-boxes (STB), TV sets and digital media adaptors. Both companies are hoping that the collaboration will yield better performing SoC solutions for the rapidly expanding market for Internet-enabled TVs and set-top-boxes. One example of the trend is the three-network convergence project in China, which is driving the integration of the country’s telecommunications, cable TV and Internet networks. The companies will jointly develop solutions for promising home entertainment end-applications like Internet-Enabled TV, IPTV, hybrid STB, and appliances for three-network convergence. The two companies have further collaborations lined up for 2011.

In mid-range and high-end automotive electronics market, demand remains high for 16- and 32-bit products. Fujitsu will continue to develop new products in both categories and plans to launch the latest generation of 16- and 32-bit MCUs this year.

In the field of 16-bit MCU products, we will introduce the more cost-competitive 16FXS series MCU. The product is based on the current 16FX MCU family, which supports the AUTOSAR standard and features convenient, economical and practical development tools. In terms of the latest 32-bit MCU products, we will release the FR81S series MCU, a higher-reliability product that is based on the current MB91460 product line, all of which supports multi-bus architecture, a floating point unit and features a security module with automatic diagnosis, enabling real-time control of automotive systems.

In terms of mid-market cars, graphical digital displays have become popular among many OEMs and car makers. Fujitsu has been a leader in this field for some time, and in 2011, we will focus on promoting our MB91F599 MCU to customers. The MB91F599 is a single-chip controller with 32-bit FR81S MCU and GDC. For customers, the product has many important features, such as a 6-channel SMC stepper motor control, graphics line drawing, a PAL/NTSC simulated video input interface, a 3-channel CAN bus interface and more.

In the global and Asia-Pacific markets, 8-bit MCUs have the largest market share among MCU products and the competition in this market is the fiercest. For customers in Taiwan and mainland China, Fujitsu Semiconductor’s 8-bit MCU with its autonomous core FFMC-8L and FFMC-8FX is supported by a highly experienced development team and provides greater reliability, wider product lines and localised technical services. Fujitsu Semiconductor’s 8-bit R&D and application teams have moved from Japan to mainland China, improving our development costs, our technical support and our responsiveness. Our locally-developed 8-bit MCU FFMC-8FX family of products feature dual-bank flash memory, low power consumption, online debugging module, rich peripheral integration, all of which will enhance the competitiveness of our products.

Fujitsu Semiconductor’s 8-bit MCU is mainly applied in white goods, personal home health care, motor control and smart instruments. The new 8-bit MCU based on 8FX will strengthen the application advantages of Fujitsu Semiconductor in these markets. 16-bit MCUs are only used in certain application fields such as automotive electronics and industrial controls. In other markets, its application space and market will come under pressure from 8- and 32-bit MCUs. Fujitsu has its own 16-bit MCU product lines such as products based on FFMC-16LX and FFMC-16FX, which will be improved and updated for automotive electronics applications. Though enhancing wafer processes (such as our 0.18um process that increases chip detection, improving product quality) we will provide customers with high quality and cost-effective products. Fujitsu Semiconductor will focus also on promoting 8-bit MCU based on FFMC-8FX and 32-bit MCUs based on the ARM Cortex M3 for other electronic product applications such as consumer electronics, home appliances, industrial controls and medical electronics.

The traditional 32-bit MCU is based on an autonomously-developed core, and is mainly used in higher-end markets including communications, manufacturing, healthcare, consumer electronics and automotive electronics. Thanks to the positioning of application products, the difficulties of technical development and the high product performance, 32-bit MCUs have maintained a relatively stable price to date. But improvements in the semiconductor process, progress in IC designs and the promotion ARM’s proprietary 32-bit technology are gradually reducing the price of 32-bit MCUs without
any sacrifice in performance. Rapidly growing markets and a lower IC design threshold will inevitably mean greater competition as more and more semiconductor manufacturers join the battle for market share. The target market of 32-bit MCUs with ARM Cortex M0 cores is higher-end applications that traditionally used 8- and 16-bit MCUs. This will also intensify price competition. Fujitsu Semiconductor was among the first to spot this market change. No matter how hard we must compete, however, our core focus remains providing customers with better products and services.

In addition to 32-bit MCUs with independently-developed core architectures such as the FR60 and FR80, Fujitsu Semiconductor also manufactures 32-bit MCUs based on the ARM Cortex M3. These use Fujitsu's 90nm production process and have a range of applications including industrial controls, consumer electronics, home appliances and healthcare products. Fujitsu Semiconductor's proprietary 32-bit MCUs are mainly used in the automotive electronics, home appliance and industrial controls fields. As time goes by, we plan to redouble our efforts in the areas of data communications, such as network controls, healthcare and 'smart' technology like smart grids.

Technology and application potential in 2011

The development of three-network convergence in China will generate higher demand for set-top boxes (STBs) with a range of functions. As well as improving performance of the core TV signal conversion function, STBs could also offer extra functions and better networking capability. STB suppliers need to take a longer-term view and rise to these challenges. Fujitsu Semiconductor's strategic alliance with Skyvia will enable Fujitsu Semiconductor to apply its technical strengths to this huge potential market. With Fujitsu Semiconductor's technology and Skyvia's professional competence in integrating video, internet and interactive features, Fujitsu will be ideally positioned to launch a variety of high-end multimedia solutions for various operating systems.

The two companies will strengthen their collaboration to develop better-performing SoC solutions for the rapidly growing market for Internet-ready TVs and STBs, catering to projects like China's three-networks convergence project, which is driving the integration of the country's telecommunications, cable TV and Internet networks.
**COMPONENTS**

**Smoke-detector IC**
Microchip Technology has introduced the RE46C190 3V photo smoke-detector IC with horn driver and boost regulator. Claimed to be the world's first smoke-detector IC to offer low-voltage operation with programmable calibration and operating modes, the RE46C190 IC enables the desired operating modes to be selected and calibrated during manufacturing. This simplifies smoke-detector design and manufacturing, and reduces component count and cost.

Additionally, the IC's low operating current of 8 microamperes (typical) enables up to ten years of operation from a single lithium battery. Two alkaline batteries may also be used to power the RE46C190.

Microchip Technology (India) Pvt Ltd, Bengaluru
Fax: (080) 30904123
Phone: 30904444
Web: www.microchipdirect.com

**Controller LSI for automotive applications**
Fujitsu Semiconductor has announced the MB91590 series of system LSI products for automotive applications. These products integrate colour display, video input and meter control on a single chip to realise dashboard (meter panel) and automotive human-machine interface applications. These integrate FR815 CPU core, a graphics display controller with strong sprite function, frame buffer memory for graphics (VRAM), video capture for inputting external video images, and communication functions such as CAN and LIN on a single chip. Compared to conventional systems that require a graphic display controller, control MCUs and external frame buffer memory for graphics, they realise cost reduction as a result of fewer peripheral circuits, a reduction in chip area and a reduction in the number of noise measure parts by having fewer external connection buses that are also sources of noise, thus enabling construction of a high-function system at a lower cost.
Fujitsu Semiconductor Auto Pte Ltd, Bengulan
Phone: 28141990
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E-mail: Samuel.Frances@fujitsu.com

**COMPUTING**

**Dual-channel memory kits**
Kingston Technology Company has released dual-channel memory kits (HyperX Genesis Special Edition Grey) that complement the new motherboards featuring the Intel P67 Sandy Bridge platform as well as existing P55-based systems.

HyperX Genesis Special Edition Grey is available in DDR3 2133MHz and 1600MHz 4GB versions. With performance memory frequency of 2133 MHz and 1600 MHz, these additions to the HyperX product family meet the demands of everyone from enthusiasts vying for a fast benchmark score to weekend gamers.
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**Special Press Report**

electronictechnology.com, 23 December 2010

New graphics display LSI for digital dashboards and car navigation featuring the industry's top-ranking rendering performance
2010-12-23


Fujitsu Semiconductor Limited announced the development of MB86R11, a LSI chip used in the graphic displays of automotive digital dashboards and car navigation systems. Samples of the new chip will begin shipping at the end of December 2010.

MB86R11 is a single-chip system LSI that combines ARM’s latest Cortex-A9™ CPU core with four video inputs, up to 3 display outputs, and various of peripheral interfaces for automotive applications. MB86R11’s rendering performance positions it as an industry leader in the field of graphics display chips for automotive applications.

MB86R11 makes it possible to freely change the content of the display based on the driving scenario, in addition to promoting safe driving by enabling drivers to use camera video to check the entire surroundings of a car, supporting eco-friendly driving, and conveying various information to drivers in an intuitive manner.

MB86R11 combines the high-performance Cortex-A9™ CPU with four video inputs and up to three display outputs, enabling the high-speed image processing of video data and output from these interfaces. For example, MB86R11 has made it possible using a single chip to develop a 3D monitoring system that synthesizes and converts a composite image of the surroundings and converts a composite image of the surroundings of a vehicle in real time from the images of four cameras mounted on the front, rear, left, and right of the vehicle.

A function that automatically corrects the image contrast ensures high visibility at night or when high contrast image in the same scene. In addition, this function makes it possible to correct the image of TV or DVD video, making it clear and bright. When displaying 3D maps in a car navigation system, graphics of not only intersections—which can already be displayed in high quality using existing systems—but also streets and scenery can be displayed using higher-resolution textures.

In the spring of 2011, Fujitsu plans to develop an upgraded version of MB86R11 for even higher definition display panels. In addition, the company plans to offer authoring tools that reduce the work involved in developing human machine interfaces (HMI) that employ graphics.

Product Features

- Four Built-In Video Capture Functions

The four video input ports enable simultaneous processing of various different video images. The input function supports resolution up to 1,280 x 720 pixels, along with the enlargement/reduction function and the function for converting moving images from interlaced format to progressive format, enabling images with minimal noise to be generated.

One of four video ports can handle interlaced input of up to a maximum of 1,920 x 1,080 pixels, enabling the input of digital TV images.

- Three Output Display Functions and High-Speed 2D/3D Rendering Functions

It is equipped with 3 display controllers, 2 of which can multiplex and output 2 screens each, thereby accommodating up to 5 display outputs.

With 8 display levels and an interlayer blending function, the outline of overlaid images on a background map screen dissolves, enabling images to blend into their surroundings. In addition, the dither function and gamma correction function enable high-quality images on displays with different resolution levels and color properties.

The built-in programmable-shader accurately renders light reflections and shadows, resulting in highly textured and life-like graphics images.

- Built-In Image Enhancement Circuit

A built-in dedicated video processing engine makes adjustments for edge enhancement, chromatic correction, backlighting, and to enhance the contrast of nighttime footage, resulting in higher-quality video images.

In addition, because backlight brightness is dynamically adjusted in accordance with the video stream data, power consumption for the system is reduced.
Over one million units of Fujitsu Semiconductor’s new low-cost MPEG-2 set-top box chip H20D shipped

Fujitsu Semiconductor Asia Pte Ltd (FSAL) announced today that the shipment of Fujitsu’s new low-cost MPEG-2 set-top box chip H20D has exceeded one million units. The product went into mass production in March 2010.

Fujitsu Semiconductor Asia Pte Ltd (FSAL) announced today that the shipment of Fujitsu’s new low-cost MPEG-2 set-top box chip H20D has exceeded one million units. The product went into mass production in March 2010. This demonstrates the strong competitive edge of Fujitsu’s set-top box solutions in the highly competitive, low-cost set-top box market.

The H20D chip is based on high-performance ARC architecture, and is aimed at the following markets: cable television, the basic terrestrial set-top box and the second set-top box for home use. It was built using the advanced 90nm manufacturing process, has ultra-low power consumption and was specially designed for the low-cost MPEG-2 basic set-top box. H20D supports serial Flash and SDRAM or DDR memory, and offers customers more choices in RAM memory types to fit their size and pricing criteria, allowing customers to reduce costs.

Furthermore, the H20D comes with an embedded security chip, ChipID, which can be used for cardless CA and other security applications. In addition, the chip comes with sophisticated software development support that can help customers to introduce new products to the market more quickly.

Andy Chang, Associate Vice President of Marketing, Fujitsu Semiconductor Asia, said: “We are pleased to have reached this important milestone and we also greatly appreciate the constant support of our customers. Fujitsu has always focused on innovative technologies to meet our customers’ needs while remaining committed to providing first-class service and support, evident by our strong market demand. Many manufacturers are also aware that they will benefit greatly from rolling out next-generation set-top boxes which use more cost-effective technology and have ultra-low power consumption.

Fujitsu has paid close attention to China’s cable television, terrestrial television and satellite broadcasting markets, and is very optimistic about the available business opportunities. Fujitsu Semiconductor will continue to offer up-to-date solutions to meet the constantly changing demands of its customers.

To know more about Fujitsu Semiconductor Asia Pte Ltd, visit www.sg.fujitsu.com.

Fujitsu Semiconductor 6MHz buck-boost DCDC converter IC allows for smaller external components and wider battery voltage range
Fujitsu 6MHz buck-boost DCDC convertor IC allows for smaller external components and wider battery voltage range

2011/02/03


"MB39C326" operates at an industry-leading 6MHz as the buck-boost DCDC convertor IC for radio frequency power amplifiers. The higher frequency operation of 6MHz can largely reduce the mounting area of the power supply part (half the ratio of existing products.)

Buck-boost operation makes it possible for Li-ion battery to operate at wider battery voltage range. "MB39C326" makes it possible to deliver stable voltages for the equipment and extend the life of Li-ion batteries, when the voltage of Li-ion batteries drops.

Mobile phones, smart phones, e-book and other handheld mobile devices are demanding higher performance with larger data transfer capacity, while aggressively miniaturizing components and board space. There is a strong push to reduce the overall size of RF amplifier without sacrificing stability and efficiency of its power supply. The passive inductor is one of the larger components requiring large space. With DCDC convertors switching at higher frequencies, inductor size can be reduced. Fujitsu Semiconductor's DCDC convertor switches at 6MHz compared to conventional 2 to 3MHz, allowing a smaller inductor to be used and can be expected to reduce the overall board space of the power management circuits by half. Its buck boost operation switches automatically to extend the operating voltage of the lithium battery, while providing stable power supply to the power amplifier.

Fujitsu Semiconductor will introduce the new buck-boost DCDC convertor, MB39C326, at the Mobile World Congress in Barcelona from 14th to 17th February 2011. Samples will be available in June 2011.
Fujitsu announces Ginga solution on HD decoder family for Latin America DTT market

Fujiitsu adopts Ginga solution for HD decoders

Keywords: Ginga, SBTVD, DTV

Fujitsu Semiconductor Asia Pte Ltd has adopted a full Ginga software solution from TQTVD Software Ltd. The Ginga solution will be incorporated into a Fujitsu HD decoder product family to create a full system solution for the SBTVD market in Brazil and other countries that adopt the standard.

Brazil has about 60 million households, representing the biggest potential for SBTVD in Latin America, followed by Argentina with around 13 million households. The process for the deployment of Ginga in these two countries is the most advanced in the SBTVD world. "Fujitsu is targeting the STB and integrated DTV market in Latin America offering system solutions from low cost to high-end rounded up with low power consumption and high quality chipssets for HD Decoding and ISDB-T demodulation," explained Miguel Estevez, strategic marketing manager, home entertainment business unit of Fujitsu Semiconductor.