FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

AMD Fills Out Ryzen CPU Family

SAN JOSE, Calif.—Advanced Micro Devices sketched out plans to fill out its portfolio of desktop x86 CPU products as its high-end Ryzen 7 processors officially went on sale. The Ryzen 5 and 3 lines are named to correspond to competing iCore 7, 5 and 3 families from rival Intel.

The flagship Ryzen 5 1600X uses six of AMD's Zen cores handling 12 threads and running at a 3.6 GHz base data rate. It beats Intel's Core i5 7600L by 69 percent in a Cinebench nT multithreaded benchmark and will ship before June, AMD said.

The Ryzen 5 line also includes four-core processors. The chips fall in a broad $100-$300 price range. AMD provided no details on the Ryzen 3 family except that it will ship in the second half of the year.

Apple Watch Dominates As Smartwatches Return To Growth

SAN FRANCISCO—Apple Inc.'s Apple Watch logged 63 percent market share in the fourth quarter of 2016 as the global smartwatch market returned to modest growth after two consecutive quarters of declines, according to market research firm Strategy Analytics.

Strategy analytics also recently released estimates for the smartphone and tablet market in 2016, saying smartphone shipments increased by 9 percent while tablet shipments declined by 9 percent.

Shipments of smartwatches increased by 1 percent compared to the fourth quarter of 2015, reaching 8.2 million units, Strategy Analytics said. Apple shipped some 5.2 million Apple Watch units during the quarter, the firm said.

ARM Library Covers Machine Learning Frameworks

ARM has demonstrated at the Mobile World Congress a free library of popular machine learning and computer vision routines optimised to run on its CPUs and GPUs. The library contains low-level building blocks for imaging, vision and machine learning, which will be available by the end of March as open source software.

The library covers common functions for machine learning frameworks and includes neural networks, colour manipulation, feature detection image reshaping and General Matrix-to-Matrix Multiplication (GEMM) that can be at the heart of implementing convolutional neural networks on maths-capable processors.

Fujitsu Rolls First FRAM For Automotive Market

MUNICH--Japan's Fujitsu Ltd. announced what it describes as the first FRAM devices that truly meet automotive requirements.

Being a non-volatile memory technology, FRAM (Ferroelectric Random-Access Memory) is regarded as a future-prone candidate for many applications where short

wake-up and boot times are essential. For rough automotive environments however, FRAM was not regarded as a primary choice.

Fujitus's new FRAM chip bears the unspeakable product name MB85RS256TY, but engineers perhaps should memorize this designator. The device covers the entire automotive temperature range up to 125°C and down to -40°C; a company spokesperson said it would be feasible to make chips that can stand even -55°C. The 256 kilobit device is guaranteed to retain its data content for ten years or even longer, even under worst-case conditions of 85°C constantly.

As a consequence of the rising demand from automotive customers for electronic control systems accessing multiple and various sensor types, the demand for high-performance non-volatile memory technologies is increasing. Only with such memory types as FRAM, the sensor data can be stored reliably and without delay.

Infineon Joins Charin To Support Global Standards In Electric Mobility

Munich and Berlin, Germany – January 24, 2017 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) is key for the automated and electric car. An appropriate charging infrastructure is critical to support the rapidly growing electric vehicles market worldwide. As the world's leading semiconductor supplier for driver assistance systems and electric mobility Infineon supports the global standardization of charging infrastructure for hybrid and electric vehicles. Infineon has joined the global Charging Interface Initiative e.V. (CharIN). CharIN's goal is to develop, establish and promote a world standard for a charging system for all kinds of battery-powered electric vehicles. Among its founding members are major automotive manufacturers.

"Infineon has an essential role to play in making a fast, energy-efficient and standardized charger infrastructure a worldwide reality," said Peter Schiefer, President of the Automotive division at Infineon. "We are accelerating the deployment of electric mobility with our know-how in automotive systems and safety, and our automotive semiconductor solutions based on leading-edge materials."

Infineon provides to CharIN its vast system expertise in electric mobility as well as its automotive safety and data security knowledge. As a member, Infineon contributes to making vehicle chargers safe, efficient, and fast while also making off-board chargers highly efficient.

Infineon Is VW's First Strategic Semiconductor Partner

Volkswagen has named Infineon as its first partner in a strategic programme designed to ensure that its future requirements for electronic systems can be met. As part of the programme, VW intends to cooperate directly with chip manufacturers to develop technology solutions for future vehicles and says a key aspect will be the precise definition of requirements.

According to VW, automated and electric vehicles will require the use of key technologies, including sensors that recognise surroundings, microcontrollers that process

data and enable real-time decision-making, and power electronics for the vehicle drivetrain.

“Joint development tools, such as virtual prototyping systems, will make it possible to further reduce development times, despite the continual increase in system complexity,” said Dr Volkmar Tanneberger, VW’s head of electrical and electronic development.

Mitsubishi Robot Reduces Generator Inspection Time

Mitsubishi Electric has developed a 19.9mm inspection robot that can inspect the gap between the rotor and the stator, reducing time for inspection.

Mitsubishi Electric has created a 19.9mm inspection robot that can inspect a power generator without removing the rotor. It passes through the narrow gap between the rotor and stator, reducing amount of time spent on inspections, according to the company.

Conventional generators inspections require 34 days to complete, especially due to the time it takes when removing the rotor. Mitsubishi said with the 19mm inspection robot, inspection time may be cut down a week, without compromising accuracy.

Openthread, Silicon Labs Complete Interoperability Testing

Thread has announced that four software stacks from ARM, NXP Semiconductors, OpenThread and Silicon Labs “have successfully completed interoperability testing to become the first stack to achieve certification as Thread Certified Components.”

The industry group called it “a milestone,” because the Thread Group didn’t just verify Thread 1.1 specification conformance by measuring against single reference implementations, but that it went a step further by testing each device's specification conformance “against a blended network composed of all four stacks.” The Thread group set its goal high in enabling “true multi-vendor choice for the connected device ecosystem

Renesas Electronics Becomes First Semiconductor Supplier to Join Civil Infrastructure Platform Project to Accelerate Smart Industrial Devices

Renesas Electronics Corporation (TSE:6723), a premier supplier of advanced semiconductor solutions, today announced that it has joined the Civil Infrastructure Platform (CIP) project. Launched in April 2016 as a cooperative project of The Linux Foundation, a nonprofit organization that supports the dissemination of the Linux operating system (OS), the CIP provides a base layer for industrial-grade open source software (OSS, Note 1) for civil infrastructure systems. Starting with the RZ/G Series, Renesas plans to develop an embedded platform for industrial applications incorporating the industrial-grade Linux OS from the project into an embedded platform for industrial applications.

“As an active Gold Member of The Linux Foundation, Renesas has contributed to open source development as a Platinum Member of the Automotive Grade Linux (AGL) project,” said Mike Woster, Chief Operations Officer at The Linux Foundation. “Now, with the CIP project, Renesas will bring its industry-leading track record to bear on issues facing civil infrastructure and industrial devices, as well as develop an OSS that will form the foundation for highly reliable civil infrastructure systems.”

TSMC Joins Chip Research Consortium

LAKE WALES, Fla.—Foundry giant Taiwan Semiconductor Manufacturing Co. (TSMC) joined other semiconductor industry heavyweights, joining the technology research consortium Semiconductor Research Corp. (SRC).

As the semiconductor industry migrates to advanced nodes approaching the atomic scale and beyond, chip firms are researching and developing new materials, process technologies, architectures, quantum mechanics and whatever else it takes to keep the semiconductor fabs advancing. SRC, a university-research consortium, offers members access to university research results, intellectual property and students.

SRC’s membership includes many of the most advanced semiconductor companies, including Intel, IBM, Texas Instruments, Qualcomm, Globalfoundries and ARM, among others.

“TSMC is a distinguished member of all SRC research programs, specifically the New Science Team (NST) project and multiple research thrusts within SRC’s Global Research Collaboration (GRC), " Ken Hansen, President & CEO of SRC told EE Times in an exclusive interview.

Taiwan Semiconductor Mfg. Co. Ltd. Says 5-Nano Tech To Enter Risk Production In 2019

Taiwan Semiconductor Manufacturing Company (NYSE:TSM), the largest pure-play contract chip manufacturer, reportedly said (per DigiTimes) that it intends to begin "risk production" of chips using its 5-nanometer technology in the "first half of 2019."

It usually takes about a year from risk-production start to mass-production start, so if TSMC achieves this timeline, it should begin volume production of chips using its 5-nanometer technology in the first half of 2020.

Staying true to Moore's Law

Chip manufacturers have historically tried to advance their respective manufacturing technologies at a regular pace prescribed by what is commonly referred to as Moore's Law.

According to this "law," the number of transistors (chips are made up of millions, if not billions, of transistors these days) that can be crammed into a given chip area doubles roughly every 24-months.

Chip Group Sets 2017 Policies

SAN JOSE, Calif. – The semiconductor industry's trade group released its policy agenda for 2017 as the industry reported record sales for last year. Some of the policies are likely to clash with priorities of the Trump Administration, which has yet to state plans or make appointments specific to the tech sector.

The Semiconductor Industry Association (SIA) released an eight-point policy plan calling for lower taxes and expanded investments in chip-related research in universities and federal agencies. It also called for "balanced reforms to reduce abusive patent litigation and increased protection of trade secrets" and tougher enforcement to protect chip makers from counterfeiting.

Some measures in the plan may put the industry into conflict with President Trump's stated views.

The SIA called for "robust international trade." It has supported free trade agreements such as the Trans-Pacific Partnership that President Trump recently abandoned with an executive order. On the campaign trail, Trump repeatedly said he would renegotiate all trade deals, and since the election has come down hard on U.S. companies manufacturing overseas, a widespread practice in semiconductors and electronics generally.

Samsung, Apple Lead As Top Global Semiconductor Customers: Report

NEW DELHI: Samsung Electronics and Apple remained the top two semiconductor chip buyers in 2016, representing 18.2 percent of the total worldwide market, according to Gartner.

Samsung and Apple together consumed $61.7 billion of semiconductors in 2016, an increase of $0.4 billion from 2015.

"This is the sixth consecutive year that Samsung Electronics and Apple have topped the semiconductor consumption table," said Masatsune Yamaji, principal research analyst at Gartner.

"While both companies continue to exert considerable influence on technology and price trends for the wider semiconductor industry, their impact has lessened due to falling expectations for future growth," said Yamaji.

Although Samsung Electronics experienced intense competition from Chinese original equipment manufacturers (OEMs) in various markets including smartphones, LCD TV and LCD panel through 2016, the company increased its design total available market (TAM) and came back as the global top design TAM company in 2016 with 9.3 percent share. Apple decreased its design TAM in 2016 for the first time since Gartner started design TAM research in 2007, ending the year with 8.8 percent share of the market. The iPad did not sell well through 2016 and Apple also lost market share in the PC market.

Amazon To Hire 5,000 In Latest UK Tech Expansion

Amazon will hire 5,000 people across the UK this year, boosting its headcount by a quarter when it moves into new offices in London's Shoreditch, in a clear sign of the ecommerce giant's long-term commitment to Britain. The Seattle-based company's pledge to expand follows promises by several large technology companies including Google and Facebook to increase their UK workforce over the next year, despite fears of instability following the UK vote to leave the EU. By the end of the year, Amazon's UK workforce will have expanded to 24,000 people — about 26 per cent larger than today — with at least 500 new jobs in its research and development centres in Edinburgh, Cambridge and London, where products ranging from the voice assistant Alexa, to drones and Prime Video are developed.

Electronic Circuit Breaker Enables DC Grids

High-voltage DC transmission and distribution could imply major gains over the use of AC. However, major barricade to the implementation of such plan is the absence of an effective and reliable circuit-breaker function. Every high current, when being interrupted by a physical gap, will cause an arc to strike. With the polarisation reversals of AC, arcs can be extinguished.

Work reported by partners in the research project "NEST-DC" describes research for DC power grids, establishing the technological basis for high performance electronic (as opposed to electromechanical) breakers.

The German research team has explored the technological basis for reducing the energy losses in power grids and electric devices by more than half through the use of DC. The five project partners from industry and science sector investigated the foundations of a semiconductor-based and completely electronic circuit breaker that can be used for future DC power grids and applications.

Batteries Get Safer Enclosures

The recently released data from Samsung regarding the fires associated with the Galaxy Note 7, indicate that the battery design appears to be the primary case of the fires. This is another instance in a string of lithium-ion (Li+) battery issues over the past decade.

The problem is that no matter how well you design a Li+ cell and battery pack, there will always be some small statistical chance that a cell will fail and trigger a fire. The chance increases exponentially if there is physical damage to the battery, as in the case of the Tesla electric car fires.

The issue arises from the very chemistry of the battery. The most common chemistry is lithium-cobalt-oxide, which contains a flammable electrode and reactive substance under pressure. When a cell is damaged or the cell overheats, there is potential for fire. Once one cell catches fire, the fire can spread to other cells causing a chain reaction called thermal runaway propagation (TRP).

2017 Cloud Spending To Reach $122.5b

The International Data Corp. (IDC) has reported that worldwide spending on public cloud services and infrastructure will reach $122.5 billion in 2017, an increase of 24.4% over 2016. Over the 2015-2020 forecast period, overall public cloud spending will experience a 21.5% compound annual growth rate (CAGR) – nearly seven times the rate of overall IT spending growth. By 2020, IDC forecasts public cloud spending will reach $203.4 billion worldwide.

Software as a Service (SaaS) will remain the dominant cloud computing type, capturing nearly two thirds of all public cloud spending in 2017 and roughly 60% in 2020. SaaS spending, which comprises applications and system infrastructure software (SIS), will in turn be dominated by applications purchases, which will make up more than half of all public cloud spending throughout the forecast period. However, spending on Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) will grow at much faster rates than SaaS with five-year CAGRs of 30.1% and 32.2%, respectively.

Infineon RF Solutions For Fast, Efficient And Reliable 5G

Munich, Germany – February 27, 2017 – With unprecedented scale, speed and complexity the upcoming 5G network will revolutionize the way large and small companies do business. It will create new opportunities for existing and emerging markets while making our homes, cities, cars and industries more intelligent, automated and interconnected. However, the challenges of such a disruptive change are great: ultra-high-bandwidth, latency as low as 1 ms and highly reliable connectivity. Additionally, RF architectures must be scalable, efficient, reliable and still extremely compact.

Based on half a century of system competency, Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) now leverages the 4G experience and enables the 5G vision for cellular infrastructure and mobile devices by providing the leading RF technologies and key building blocks. Infineon provides the highly efficient and integrated architecture that 5G systems demand. As proprietary of the broadest portfolio available in the market serving the wide 5G frequencies spectrum, Infineon combines:

High efficiency RF power technologies, namely GaN-on-SiC and GaN-on-Si for integrated architectures above 6 GHz and LDMOS for price competitive and high ruggedness sub 6 GHz systems. Packaging innovations enable wideband integrated Doherty amplifiers

Flexible RF solutions for mobile and low power infrastructure including SiGe, BiCMOS, GaN mmW technologies and RF CMOS. They allow for optimal performance requirements granting alternative options, from cost optimized designs to high integration needs

Scalable mmW solutions for frequencies as high as 100 GHz allowing customers a large degree of flexibility in design-phase and helping them to reduce time-to-market.

Microbatteries Power Electronics In Humans, Fish

For many reasons, batteries of various technologies and form factors get a lot of attention. Everyone is looking for a battery with higher energy density by weight and volume, with superior discharge (and even charge) specifications and low cost. As a result, there's been lots of attention on lithium-ion (Li-ion) chemistry and its many variations, since that seems to offer–at least for the foreseeable future–the greatest potential (pun intended) in meeting those density objectives.

Still, there are applications where unusual chemistries, construction and form factor are the priorities, more than just an incrementally better Li-ion cell. Consider the work being done by a team lead by Professor Christopher Bettinger at Carnegie Mellon University. They are developing edible, biocompatible batteries that use non-toxic materials already present in the body, with available liquids such as stomach acid as the electrolyte; see references below (Figure 1). His team has produced cathodes based on melanin, a pigment already in the body, and anodes made of manganese oxide, which is also already present; other versions based on body-friendly materials have also been developed.

China Smartphone Maker Xiaomi Designs Its First Chip

China’s Xiaomi has become the world’s fourth smartphone maker to design its own processor, revealing its “Pinecone” chip on Tuesday aimed at breaking its reliance on foreign providers such as Qualcomm.The handset maker is leading a wave of Chinese tech groups that are trying to follow Apple, Samsung and Huawei by creating their own internal intellectual property, rather than relying on external sources.“The ability to create its own chip sets is the pinnacle of achievement for any smartphone company. For Xiaomi, the move is an essential next step in our development,” said Lei Jun, chief executive, at the launch.

Smartphones Get Wider In 2017

LG Electronics has gone wide with its latest smartphone and thinks Apple and Samsung will, too. The G6 debuted at Mobile World Congress uses a 5.7in display with an 18:9 aspect ratio and dual wide-angle cameras.

“We tried to make the screen the biggest part of this device…we see 18:9 as an emerging format, and many movies are being published or shot in this format this year,” said Ian Hwang, product planning manager for LG’s G and V series phones, who believes the Apple iPhone 8 and Samsung Galaxy 8 will both support the 18:9 aspect ratio this year.

LG makes the new LCD display in the G6 which uses two LEDs to deliver a 500 nit brightness indoors and 650 nits outdoors.

Why Vendors Are Standing Behind 'Non-Standalone' 5G

During the Mobile World Congress (MWC) in Barcelona, conversations over 5G have not only kept drifting back to 4G, but also quietly shifted from 5G's "Core Network" to "New Radio (NR)."

In 2016, MWC was all about the promise of 5G networks. Vendors then talked about how 5G will be nothing like 4G—opening up a world of new possibilities for operators.

As elements like software defined network and network function virtualisation come to the core network, they promised operators should be able to provide many types of differentiated network service over the same infrastructure. The MWC last year painted a picture of 5G that was both exciting and a little frightening.

A year later, at this week's MWC, the conversation on the show floor kept drifting back to 4G. Tech vendors discussed how the industry can still milk the LTE network for years to come.

Russians' View Of Science And Technology 20% More Positive Than In EU—Study

48% of the Russians put a lot of stock in science and technology development potential; their attitude towards science and technology is about 20% more positive than in the rest of Europe. These are some of the key findings from a recent comprehensive study by RVC, Russia's government-owned fund of funds for innovation. The research was aimed at determining the Russians' values and behavioral settings capable of impacting the development of tech entrepreneurship and the formation of innovation-driven economic sectors.

The results show that the Russian populations are Europe's most obvious "techno-optimists." For example, half of the polled agreed to the statement that "in future, science and technology will help uncover all the enigmas of Mother Nature," a huge difference from just 27% of the EU citizens answering similar questions in previous polls by EU institutions.

There are 28% of "techno-skeptics" in Russia, though, who do not believe innovation could solve human problems, are sure that novel technologies have no immediate impact on their daily lives, and assert that science and technology cannot give a dramatically new level of knowledge.

Moscow Team Taps UV To Improve Smartphones And Printers

Scientists at MIPT, a leading Moscow-based tech university, partnered with colleagues from Saudi Arabia and China in what appears to be a successful effort to improve the properties of photodetectors. The researchers have discovered the ability of ultraviolet to change a simple photodetector, widely used in smartphones, printers and an array of other devices, into a broadband one.

The results of the research have been published in English in Advanced Functional Materials.

As a rule, photodetectors react to narrow wavelengths, which creates lots of problems for developers. "Photodetectors that are able to "feel" broadband emission are in strong demand but are also very difficult to put together as materials for them are hard to come by; substances that are transparent for UV are usually nontransparent in the infrared spectrum span, and vice versa. We have found a rapid, economical and efficient way of broadening the photodetector's sensitivity range," said Vadim Agafonov, the head of MIPT's Molecular Electronics Center.

Russia's Autovaz Starts Lada Vesta Sales In Germany

Autovaz launched sales of Lada Vesta cars in Germany, the Russian automaker said on Feb. 21. The sales opening ceremony was staged in Hamburg.

"Over 200 Lada Vesta cars were shipped for sales in Germany to date. The initial price of the Russian sedan car in Germany is about 12,500 euro for a car with a mechanic transaxle and 13,300 euro for a car with an automatic one," Autovaz said.

Lada Vesta was upgraded for the Germany market, the company said. The Euro-6 toxicity reduction system was used in the vehicle.

Russians Out, Intel In: State Firms "Gainfully" Exit Innovative CPU Developer

RVC, Russia's fund of funds for innovation, and Rusnano, the largest Russian government-owned nanotech corporation, have successfully exited Soft Machines, a special architecture chip developer. It's Intel that has bought their shares, portal Firrma.ru reported.

The portal quoted Indian source Inc42 as reporting that Intel had paid $300m in cash and equity. How much the two Russian ex-stockholders have earned has yet to be specified; it's only been leaked that both gained considerably in dollar terms.

Rusnano invested a total of $14m in Soft Machines over a two-year period. The RVC investment has yet to be announced.

Russia's Market To Halve Optical Fiber Imports?

Optic Fiber Systems, a Russian company, has completed the certification of its products in Russia and is ready to meet up to 50% of the domestic market's demand for optical fiber, announced Rusnano, Russia's nanotech giant owning a major stake in the optical fiber manufacturer. By now, the Russian market was 100% supplied from imports.

Optic Fiber Systems is reported to have partnered for rigorous testing procedures with Rostelecom, the national telecom provider, and VNIIKP, a leading domestic research institute providing R&D for the Russian cable industry.

Optic Fiber Systems produces optical fiber by making fine 0.125mm thick filaments from heated synthetic quartz, shielding it with a protective cover afterwards.

World Economic Round Up

The economic establishment has watched with growing alarm as a nationalist wave turned British voters against the European Union, swept Donald Trump into the White House, and now gives France's anti-euro, anti-immigrant National Front a shot at the presidency. Yet predictions that nationalist policies will upend markets and the economy oversimplify their complicated relationship with economics. On the one hand their opposition to free trade, immigration and foreign investment are all unfriendly to growth in the long run. Yet they often preside over expansionary budgets, easy monetary policy and lower currencies, all of which support growth in the short run. Critics often note that in Latin America, left-wing populists such as Venezuela's former president, Hugo Chávez, and Argentina's Kirchner family ushered in inflation and ruin

The latest economic news by country to include USA, Europe, UK, Japan, China, Asia Pacific and India can be found each month in our Semiconductor Monthly Report.

Industry Events 2017

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – 13th March 2017
- Industry Forecast Briefing, London – 19th September 2017

To book your place on any of our events please contact us on:

Telephone: +44 1732 740440
Email: mail@futurehorizons.com

Download Future Horizons Full Events Calendar Here

Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 13th March 2017
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 19th September 2017

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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