FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

Chip Sales Continue Rising

SAN FRANCISCO — Semiconductor sales continued the upward trend that characterized the market for all of 2017, setting an another all-time sales record in November and putting the industry on a firm track to notch to break the $400 billion mark for the year, according to the Semiconductor Industry Association (SIA) trade group.

The three-month moving average for sales in November totaled $37.7 billion, with all major regional markets posting sales growth on both a sequential and an annual basis, the SIA said. The November global total represented an increase of 1.6 percent from October and an increase of 21.5 percent from November 2016, according to the SIA, which reported sales figures compiled by the World Semiconductor Trade Statistics organization.

The WSTS last month updated its forecast for the year, saying chip sales would rise 20.6 percent in 2017 to reach $408.7 billion. This would mark the first time that global semiconductor sales totaled more than $400 billion in any year, just four years after breaking the $300 billion barrier.

B'com Shifts Switch To 12.8 Tbits/S

SAN JOSE, Calif. — Broadcom is sampling a 12.8 Tbit/second Ethernet switch chip targeting large data centers. The news shows the company continues to set the pace for a growing pack of competitors angling for a piece of one of the most demanding markets in networking.

The Tomahawk-3 packs twice the aggregate bandwidth of the Tomahawk-2 launched 14 months ago, both made in the same 16FF+ TSMC process. The company used engineering cleverness to pack 256 56-Gbit PAM-4 serdes in an "incrementally larger" die than the T2 that used as many 25G serdes.

In recent years, the Ethernet switch market has attracted seven merchant players. At least one of them, startup Innovium, aims to sample its own 12.8 Tbit/s chip within weeks. Broadcom dominates the market today with a 73 to 94 percent share, depending on how market watchers slice the sector valued at nearly a billion dollars. Its closest rival, Cisco Systems, takes most of the rest with systems using its own ASICs. Juniper, Hewlett Packard Enterprise and Huawei also make Ethernet switch ASICs for their systems.

Cryptocurrency Craze Boosts Demand for Memory Chips

The cryptocurrency craze all around the world is bringing up the increased demands of memory chips.

According to industry sources on December 17, the demand of memory chips, such graphics processing unit (GPU) and DRAM, as well as high performance computer that is a digger needed to collect the digital currency, are on the rise.

When your computers solve complicated math problems, you get bitcoin in exchange as you dig gold in mines. As the price of bitcoin surges across the world, an increasing number of people are joining the mining race. Computers needs a higher level of

performance to dig bitcoin so the demand of high performance memory chips is growing rapidly.

Until now, GPU chips manufactured by NVIDIA and AMD have been frequently used to dig the digital currency. It opened up a new market for GPUs that were mainly used in gaming consoles. The price of NVIDIA shares rose a whopping 79 percent this year.

Recently, there is an increase in the number of cases that provide customized system semiconductors which are optimized to dig bitcoin. Accordingly, Taiwan's TSMC, a semiconductor foundry for fabless firms, are attracting attention. GPU chips are also being manufactured on a consignment basis. In addition, Samsung Electronics strengthened its foundry business division this year. Accordingly, market watchers say that the virtual currency sector can be a new opportunity.

Startup Tapes Out MRAM-Based MCU Demo For Iot

LONDON — A semiconductor intellectual-property startup in Grenoble, France, has taped out a magnetoresistive RAM (MRAM)-based microcontroller targeting battery-powered Internet of Things (IoT) and wearable devices.

The startup, eVaderis, provides CMOS-compatible nonvolatile-memory-based IP products such as memory blocks, logic cells, and memory and processor subsystems. The company says it has successfully demonstrated a fully functioning design platform, including software, system, and memory IP, for an ultralow-power MCU in Beyond Semiconductor's BA2x product line.

The tapeout is a demonstration vehicle to showcase eVaderis' "proficiency in disruptive, nonvolatile embedded IP design and flow for low-power, digital devices," Virgile Javerliac, deputy CEO and head of technology and marketing at eVaderis, said in an interview with EE Times. "We are not developing the MRAM technology itself, but the architecture based on it."

Infineon Enables Flexible Wireless Charging For Automotive And Consumer Applications

Efficient and Easy-to-use wireless charging for smartphones, wearables, medical and industrial devices possible with the AURIX™ and XMC™ microcontroller families. Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) offers flexible chip sets for high performance including software IP for smart and safe wireless charging applications. Working with a systems solution partner, Infineon provides reference designs for both inductive and resonant wireless charging solutions for on-the-go charging, whether in the car, at home or in public places.

5G Baseband Dialed In At 3GPP

SAN JOSE, Calif. — The 3GPP announced with a tweet from a meeting in Portugal it finished the first standard for a 5G cellular radio. The effort was on an accelerated path to define a spec before the end of the year for baseband chips that are now on their own accelerated path to market before July.

The milestone concludes a process that attracted as many as 800 engineers submitting up to 3,000 proposals per meeting.

“Given operator interest, we’ve been doing everything we can to improve the time from spec freeze to commercialization, it is a race to launch 5G devices…so as decisions were made in meetings, we shared them with the ASIC team implementing hardware — it’s all pipelined to incorporate the final changes,” said John Smee, a vice president of engineering for corporate R&D at Qualcomm.

Radio Wave Imaging Firm Gets Funding, Partners With Softbank

LONDON — Israel-based Vayyar Imaging has raised $45 million in a series C financing round to develop its radio wave 3D image sensors, bringing the total capital raised to date of $79 million. The company also announced it will be collaborating with SoftBank in IoT applications in Japan.

Radio wave 3D imaging makes it possible to map and create images without using cameras. It's historically been more common in military and geographical mapping environments. Vayyar Imaging has over the last five years been developing commercially viable 3D imaging sensors for more down to earth applications, such as breast cancer screening, detecting water leakage, people tracking and monitoring vital signs.

Vayyar was founded in 2012 by Raviv Melamed, who previously ran Intel’s mobile wireless group, where among other roles, he was director of engineering for the mobile WiMAX chipset group. He joined Intel in 2004 as part of Intel's acquisition of Envara, a fabless semiconductor company based in Israel. Prior to that he held several roles in the military where he dealt with project management and system engineering of large-scale communication and radar systems spanning from acoustic to Ka band.

Industry News & Trends

Chipmakers Look To New Materials

Graphene, the wonder material rediscovered in 2004, and a host of other two-dimensional materials are gaining ground in manufacturing semiconductors as silicon's usefulness begins to fade. And while there are a number of compounds in use already, such as gallium arsenide, gallium nitride, and silicon carbide, those materials generally are being confined to specific niche applications.

Transition metal dichalcogenides (TMDCs), a class of 2D materials derived from basic elements—principally tellurium, selenium, sulfur, and oxygen—are being widely explored by researchers for their use as semiconducting materials. These include molybdenum disulfide (MOS2), molybdenum diselenide (MOSe2), molybdenum ditelluride and molybdenum telluride (MOTe2), tungsten disulfide (WS2), and tungsten diselenide (WSe2), which are among the materials being tested for use in chips.

MEMS Chip Aims To Beat Heart Disease

LAKE WALES, Fla. — Instead of dissecting rats or culturing sacrificial heart cells in petri dishes, medical researchers may be able to study the causes of cardiovascular disease and ways to prevent it using a microelectromechanical system (MEMS) microfluidic chip developed at Nanyang Technological University in Singapore.

The chip mimics the blood flow in delicate arteries when fat and cholesterol accumulate as plaque on the interior arterial walls. In living tissue, the resultant atherosclerosis restricts blood flow and can cause a heart attack. The key to the chip is its ability to model the inflammatory responses of heart vessel cells that cause them to cut off the blood supply. If those responses can be suppressed, then a heart attack will not occur.

In the study, the researchers first used artificial blood to perfect the flow through the microfluidic "vessels" and then used real blood to initiate the inflammatory responses that need to be eliminated to prevent heart attacks. Because the responses of the cells lining the blood vessels can be closely observed in the chip, the research team claims its modeling approach for atherosclerosis is vastly superior to methods that model the condition using cultured cells or lab animals.

Chirp Adds Sonar-on-Chip to ToF Battle

MADISON, Wis. — Whether they appear in drones, robotic vacuums, VR/AR headsets, smartphones or cars, sensors are proliferating in consumer and industrial systems, to capture "accurate range and position measurement" information.

Depth information is critical in an imaging world when things are fast transitioning from 2D to 3D sensing. Knowing accurate distances, for example, can augment position tracking in VR/AR headsets, and prevent robotic vacuum cleaners from running into walls or objects.

Although the market has already seen time-of-flight (ToF) sensors built on different technologies — such as IR and optical — Chirp Microsystems believes its new MEMS-

based millimeter-sized ultrasound chip will become an effective alternative to the competition. Chirp boasts that it operates at ultra-low power with high precision range. It stands up to harsher environments while working both in total darkness and under the full sun, according to the company.

Mediatek, ITRI Claim Firsts In 5G Technology

TAIPEI — MediaTek and Taiwan's Industrial Technology Research Institute (ITRI) have developed a range of technologies that include what they say is the world's first LWA (LTE / Wi-Fi Link Aggregation) prototype system in preparation for commercialization of 5G by 2020.

The partners have developed LWA technology that can improve network bandwidth in the 38/39 GHz millimeter range to overcome limitations with high-frequency transmission, according to a press statement today from MediaTek. In addition, the partners announced their Multi-User Superposition Transmission (MUST) technology for 5G base stations as part of an effort to build an ecosystem for Taiwan's telecommunications industry.

"In 2017, we have developed the world's first dual-mode base station prototype that combines LTE with 4G and 5G, breaking through with a technology for access at high-frequencies," said Chiueh Tzi-cker, vice president of ITRI's Information and Communications Laboratories.

Samsung Electronics Unveils Driverless Car Parts, Infotainment Platform

The automotive industry is one of the fastest-growing segments of the technology market, with carmakers looking to add more autonomous features as the race to put driverless cars on the road heats up.

At an annual trade show in Las Vegas this week, Samsung Electronics unveiled an automotive camera system featuring collision warning, lane-departure warning, and adaptive cruise control, developed in collaboration with Harman.

Samsung bought Harman in an $8 billion deal that closed in March 2017, the biggest overseas acquisition ever by a South Korean company.

Samsung plans to begin shipping the camera system, which is built on machine learning and augmented reality, this year. It did not give details on the exact timing.

China In Push To Lure Overseas Tech Talent Back Home

As Chinese companies spend billions of dollars buying overseas rivals and their technology, investors from the country are enticing China-born tech executives and scientists back home to launch start-ups of their own.

Private and state-backed investors in China have set up venture capital funds to target executives and senior researchers at companies such as Google, Apple, Airbnb and Facebook, betting on the rapid development of the domestic tech sector to produce high returns on the investments. Other initiatives include a programme set up by China's Communist party that focuses on Chinese graduates and academics at foreign universities.

“They recognise that the economy needs to shift to higher-quality production,” said Shan Guangcun, a machine-learning specialist who recently received state funding to return to China from Germany. “So they need talent to come back from overseas, and they are willing to pay for it.”

East European News & Trends

Chinese Eye Investment In Russian Science

Tus-Holdings, a Chinese company, has unveiled plans to set up a $1bn venture fund in Russia to finance joint research projects.

At stage one, the Chinese partner is expected to allocate $150m for the fund, with the rest to come at later stages.

In another initiative, Tus-Holdings and the Skolkovo Foundation have reached an agreement over the setup of a new Russo-Chinese center for advanced technologies on the premises of the Skolkovo Innovation Center in Moscow. Tus-Holdings is reportedly expected to invest $50m in the new center

Scientists Bet On Improved Lithium-Ion Batteries

To step up Li-ion battery capacity and increase charging speed, Russian scientists are using a combination of graphene and a vanadium disulfide monolayer as a new anode material.

“The new composite has a 2D structure with graphene and vanadium disulfide as two non-homogenous layers about one nanometer thick. We have shown that Li ions can be bonded both on the surface of such material and between the layers, which results in an increase in specific capacity,” said Maksim Vysotin of the Krasnoyarsk-based Kirensky Institute of Physics in Siberia.

The scientists estimate the composite’s possible capacity at 569mAh per gram of the anode material, which is double that of graphite, a material widely used in today’s Li-ion batteries. Computation has led the team to believe that using the vanadium disulfide / graphene heterostructure does not only improve electron transfer but also makes the material stronger mechanically.

With New Moscow Quantum Solution, No Further Phone Tapping

Researchers at the Moscow Lomonosov State University (MSU) are offering their own technology shield against the breach of personal data integrity during phone calls. They have developed a quantum phone that they believe will rule out any possibility of phone tapping, Hi-news.ru reported.

With this new phone, an encrypted signal is transmitted through a conventional channel, while a protected quantum communications solution is used to transmit encryption keys; a special key distribution server is utilized for that. This is an answer to the long-standing problem of data transfer vulnerability, the developers say, as in conventional telephony the key can be intercepted as people are talking. With the quantum communications, no such interception is possible, the team believes.

World Economic Round Up

A broad uptick in economic growth around the world in 2017 has led economists at the World Bank to conclude that, for the first time in a decade, the global economy is operating at its potential. At the root of this observation is a calculation that the world economy performed far worse than its potential in the decade after the global financial crisis that sent most of the world's economies into severe recession. This difference between the economy's actual performance and its potential is known as the output gap. When output gaps are large, as they have been the past 10 years, it indicates weak economic demand, spare capacity of businesses and factories, widespread unemployment and a major drag on inflationary pressures.

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 2018

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – 13th March 2018
- Industry Forecast Briefing, London – 18th September 2018

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

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

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Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 13th March 2018
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 18th September 2018

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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