FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

Semiconductor Startup Shows Off the World's Biggest Processor

In the semiconductor industry, bigger is not usually better. For 60 years, chip companies have strived to make the brains of computers as tiny as possible.

Startup Cerebras Systems will turn this maxim on its head on Monday when it unveils a processor measuring roughly 8 inches by 8 inches. That's at least 50 times larger than similar chips available today.

The logic behind going big is simple, according to founder Andrew Feldman. Artificial intelligence software requires huge amounts of information to improve, so processors need to be as fast as possible to crunch all this data -- even if that means the components get really chunky.

Fujitsu And Qualcomm Complete 5G Data Calls In Sub-6 GHz And mmWave Spectrum Bands

Fujitsu Limited and Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated, have achieved non-standalone (NSA) 5G New Radio (NR) data calls on sub-6 GHz and mmWave spectrum bands1. The two parties successfully conducted Network–Device Vendor Interoperability Testing (NV-IOT) for NTT DOCOMO, INC., leveraging Fujitsu's commercial 5G base station (gNB) products together with a mobile smartphone form-factor test device, powered by the Qualcomm® Snapdragon™ X50 5G modem and antenna modules with integrated RF transceiver, RF front-end and antenna elements.

These latest NV-IOT testing bi-directional data calls, compliant with the 3GPP release 15 specifications, were completed in mid-July at Fujitsu in Japan.

This achievement marks a significant milestone to build a successful 5G end-to-end ecosystem in Japan, composed of 5G network infrastructure from Fujitsu and a broad range of 5G user devices using Qualcomm Technologies' modems and RF Front-end solutions.

Japanese Semiconductor Parts Producers Acquiring U.S. Firms

U.S.-based GlobalFoundries Inc., the world's third largest semiconductor foundry, is selling off its photomask business to Japan's Toppan Photomasks Inc. A photomask is one of the essential raw materials for semiconductor manufacturing. It is one of the items subject to export control by the Japanese government.

GlobalFoundries has decided to sell off its Fab 9's photomask production facility in Burlington, Vermont, and IP to Toppan Photomasks, a subsidiary of Tokyo-listed Toppan Printing Co., according to semiconductor industry sources on Aug. 19. A photomask is used to transfer the circuit patterns formed on a blank mask to a wafer.

GlobalFoundries said it has decided to sell off its photomask unit to strengthen the competitiveness of its foundry operations. The company, which gave up the development of 7-nm process technology last year, has sold its Fab 3E and Fab 7 in Singapore to improve its structure. The company plans to use the plant space created by transferring the photomask production equipment for production of 200-mm RF chips.

Combating Relay Car Theft Through UWB Technology

HAMBURG, Germany — NXP Semiconductors N.V. and Volkswagen have unveiled their first concept car utilizing ultra-wideband (UWB) technology, showing off what is considered one of the major benefits of the technology — the ability to combat relay theft protection, one of the biggest problems with keyless entry systems in modern cars.

As indicated earlier this month when the FiRa consortium was launched, the ability to precisely determine spatial information with extremely high accuracy down to just a few centimeters and with low latency makes UWB, or fine ranging technology, ideal for security and especially keyless access systems.

Senseg Unveils Breakthrough Flexible Actuator Technology

Creating a new category of flexible electronics, Senseg has unveiled the industry's first family of flexible actuators, manufactured on newly developed roll-to-roll manufacturing technology, delivering advantages in scalability, size, weight, and cost. The new Senseg elastomeric film actuator, or ELFIAC, can be used as a replacement for traditional actuators, including piezoelectric devices. It also opens up new opportunities for haptic technologies in applications, such as wearables, soft robotics, and virtual reality/augmented reality (VR/AR) devices.

The flexible actuator is composed of insulated electrode films separated by silicone elastomer spacers, or pillars. The silicon micro pillars work like springs. An electrostatic force compresses the layers and provides the actuation. The key enablers are the mechanical properties of the liquid silicon rubber used in the elastomer pillars, micromachining technologies, other new manufacturing methods which enable scaling to very large sizes, and a new high-voltage driver.

New VIPer Converter From STMicroelectronics

The STMicroelectronics VIPer26K high-voltage converter integrates a 1050V avalanche-rugged N-channel power MOSFET that enables offline power supplies to combine a wide input-voltage range with the advantages of a simplified design.

The extremely high voltage rating of the VIPer26K MOSFET eliminates the need for conventional stacked FETs and associated passive components to achieve similar voltage capability, and smaller external snubber components can be adopted. Drain current-limit protection is built-in and the MOSFET includes a senseFET connection for over-temperature protection.

With high-voltage startup circuitry, a built-in error amplifier, and current-mode PWM controller all integrated on-chip, the VIPER26K can support all common switched-mode power supply topologies, including isolated flyback with secondary-side or primary-side regulation, non-isolated flyback with resistive feedback, buck, and buck-boost converters.

Industry News & Trends

Blocking 5G From mmwave Will Limit Its Potential, GSMA Warns

The trade body representing the mobile communications industry, GSMA, has issued a statement warning the space industry not to prevent 5G services from accessing millimeter wave spectrum at the forthcoming World Radio Communications Conference 2019 (WRC-19). The mmWave spectrum is expected to be allocated at the conference taking place at the end of October 2019 in Egypt.

The GSMA is worried the space industry's protectionist attitude will limit spectrum allocation to 5G in the bands above 24GHz and up to 86GHz. It said the full potential of 5G applications and their socio-economic impact, in terms of high-capacity and low-latency, requires access to sufficient spectrum in the mmWave band.

As part of its lobbying, the GSMA presented a host of numbers to illustrate the societal and economic impact of 5G, and how blocking spectrum access would be detrimental to the world economy. In a report released this month, it said that releasing 5G mmWave capacity will create $565 billion of economic expansion. This figure represents 2.9% of global GDP growth by 2034

Memory Makers And Foundries Step Up To Hyperscale Demands

There's never been more pressure on memory to meet the demands of new applications — everything from edge computing and the Internet of things (IoT) to increasingly smarter phones and smart cars. There's also artificial intelligence (AI) and machine learning, both of which are becoming a big part of next-generation platforms being developed by the major hyperscale players — the Googles, Facebooks and Amazons of the world.

The world's biggest companies, used to upending businesses and altering cultures, are starting to remake the semiconductor industry. What exactly are they doing that's so unprecedented, why are they doing it, and what might be the consequences?

All of them are expecting a great deal of innovation from the broad electronics industry and the memory makers, whether it's further improvements to incumbent memories such as DRAM and NAND flash — or making emerging memories that incorporate novel materials commercially viable as part memory devices for new computing architectures. But despite their deep pockets, it's unlikely any of the companies will ever invest in manufacturing equipment to make their own memory devices, and they're not interested in paying a premium price. If DRAM still does the job, they're not going to pay five dollars more per device for an emerging memory because at this scale, it adds up quickly.

More 5G Handsets Hit The Chinese Market

The third quarter has always been the traditional peak season for consumer electronics in China. After half a year of market downturn, major mobile phone manufacturers are looking forward to using 5G communication products to reactivate consumer enthusiasm. First-tier manufacturers including Huawei and Samsung Electronics will release 5G new

mobile phones in August, and the entire consumer electronics industry chain is expected to enter the peak of stocking.

At the same time, influenced by external factors, the concept of China's smartphone industry chain's self-controllability has gradually advanced. With the recent launch of Huawei's operating system, the consumer electronics industry chain is expected to continue to become the focus of the market in the third quarter.

Major brands of 5G mobile phones continue to be listed

There were 34.2 million smartphones shipped in China in July, down 7.5% compared with last year, according to China Telecomtsu. A total of 36 models of smartphones were launched in July, according to the same report, down 44.6% year-on-year.

Is It Time To Forget About Huawei?

Silence is deafening. When asked about the latest delay to a full-scale Huawei trade ban, most chip and component manufactures declined to speak to us. The 90-day extension announced earlier this week by the U.S. Commerce Department purportedly allows suppliers and customers to disengage from the Chinese telecom giant with minimal disruption.

But here's a frightening question to confront: Is it time for the U.S. tech companies to forget about ever seeing another big Huawei design opportunity ever again? The US chip industry is certainly not giving up on China, but Huawei — and by extension China — is inclined to give up on the United States.

The U.S. government, citing national security concerns, has all but barred Huawei products from the United States. American tech companies can still sell to Huawei under a special license, but that’s set to expire in mid-November.

Chinese Foundry SMIC Begins 14nm Production

One of the longstanding trends in semiconductor manufacturing has been a steady decrease in major foundry players. Twenty years ago, when 180nm manufacturing was cutting-edge technology, there were no fewer than 28 firms deploying the node. Today, there are three companies building 7nm technology — Samsung, TSMC, and Intel. A fourth, GlobalFoundries, has since quit the cutting-edge business to focus on specialty foundry technologies like its 22nm and 12nm FDX technology.

What sometimes gets lost in this discussion, however, is the existence of a secondary group of foundry companies that do deploy new nodes — just not at the cutting-edge of technological research. China’s Semiconductor Manufacturing International Corporation (SMIC) has announced that it will begin recognizing 14nm revenue from volume production by the end of 2019, a little more than five years after Intel began shipping on this node. TSMC, Samsung, and GlobalFoundries all have extensive 14nm capability in production, as does UMC, which introduced the node in 2017.

Blockchain Bolstering The Internet Of Things

Across the electronics industry the terms "blockchain" and "the Internet of things" (IoT) are beginning to be linked together. Blockchain first gained attention as part of the cryptocurrency wave, typified by Bitcoin, challenging the norms of financial transactions. But it's not so much monetary interactions that have caught the attention of IoT providers as it is data transactions. Blockchain at its core provides a tamper-proof, distributed, recordkeeping mechanism that looks to be highly applicable to resolving key issues associated with networks of autonomously interacting connected devices.

At a high concept level, at least, the match between blockchain and the IoT looks strong. The most compelling IoT use cases call for distributed devices interacting directly with one another rather than being coordinated through a central service. An industrial IoT system, for instance, might call for a temperature sensor at one point in a process flow to inform a valve controller at another point in the flow to adjust its setting. Yet, there often also needs to be a record of such interactions for oversight or regulatory purposes. Blockchain provides a mechanism for creating such records in multiple locations simultaneously while keeping them both consistent tamper-resistant.

East European News & Trends

Qualcomm and Russian Mobile Operators to Enable Europe's First 5G mmWave Network in Moscow This Fall

Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated, today announced its work with the Department for Information Technologies of Moscow, Russian mobile operators, equipment and software vendors to support testing and deployment of Europe's first 5G millimeter wave (mmWave) network in Moscow this fall.

As the first 5G NR mmWave (band n257) network launch in Europe this year, the Moscow project will enable the testing and commercialization of a wide range of new applications, from improved fixed broadband and mobile wireless access for private users to unique business solutions. In particular, the project is meant to kickstart a range of new 5G-enabled digital services and innovation in the city, including virtual and augmented reality applications, which are set to become some of the most important elements of the Russian capital's digital space. This can allow the city and technology companies operating in Moscow to create new jobs developing next-generation applications, giving new impetus to the growth of high-tech industries in the area and increasing the role of Moscow as one of the world's leading technology centres. For that reason, the Department of Information Technologies of Moscow is providing support to the Russian wireless communication industry in preparation for the launch.

Koreans Use Machine Learning Technology Of Russian Origin

Stickeroid AI, a two-year-old start-up, earlier this year sold its technology to a Korean group of companies called Naver.

The Cyprus-based company of Russian origin is developing a cloud platform that applies machine learning to converting words into stickers.

According to CEO Viktor Kokh, it's "not the company that's been sold in the deal; it's only part of the technology."

One Of Russia's Biggest Telcos Backs Start-Ups

MTS, one of Russia's main mobile operators, earlier this year launched a corporate venture fund targeting start-ups across Russia and neighboring countries.

In a recent update, telemedicine, Internet of Things, cybersports and other areas were singled out as key funding priorities for the new fund. The fund expects to invest around $15.5m in early-stage start-ups over the next two years.

Last year the corporation launched an in-house accelerator, MTS StartUp Hub, but start-ups may receive funding from the new corporate fund irrespective of whether they participate in that accelerator or not.

Brain4Net Develops SDN Solutions, Raises Government-Led Rounds

Brain4Net, a Russian software developer, is focused on the development and licensing of solutions in the field of software-defined networking (SDN) and networking functions virtualization.

Earlier this summer the company raised $4.6m from CommIT Capital, a VC fund owned by Russia's national telecom operator, Rostelecom, and a venture investing arm of the VEB Bank called VEB Innovations.

Mobile Operator Invests In 5G Tech

By the end of next year MTS, one of Russia's leading mobile operators, has plans to invest an estimated $1.6m in start-ups that develop 5G tech based solutions. A business incubator will be set up in Moscow to pursue the goal.

The mobile operator is interested in a range of cloud based services in remote gaming, new video streaming formats, Internet of Things solutions, data storage, and some others.

World Economic Round Up

Norway's central bank has cast doubt on whether it will raise interest rates again this year as growing economic uncertainty around the world fuels a global shift towards looser monetary policy. The bank was dubbed "the sole hawk in town" after raising rates at the end of June, its third increase in the past year. It had previously been widely expected to lift rates in September and again after that but the Norges Bank shifted its language about the outlook for the future, striking a more pessimistic note that analysts said could mean that September's rate hike is its last, or even that might not take place. Turkey's economy grew at a slower rate in the second quarter of 2019 than in the previous three months, but it beat analysts' predictions, shaking off concerns that the country could be heading for a double-dip recession

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 2019

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – 11th November 2019
- Industry Forecast Briefing, London – 21 January 2020

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

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Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 11th November 2019
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 21st January 2020

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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