FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

January 2023

Contents Page

Industry News by Company	**Page 03 - 05**
Industry News & Trends	**Page 06 - 07**
East European News & Trends	**Page 08**
World Economic Round Up	**Page 09**
Future Horizons & Industry Events	**Page 10**

Industry News By Company

Foxconn, Nvidia Partner On Automated Evs With Drive Orin Chips

Foxconn and Nvidia announced a partnership to build the basics of automated electric vehicles, wherein Foxconn will produce electronic control units, a type of computer, that relies on Nvidia Drive Orin chips for use by automakers globally.

Nvidia's Drive Hyperion sensor architecture and development platform will also be integrated in Foxconn's technology for use in its EV fleets, Nvidia said. The partnership was announced two days before the opening of CES 2023 in Las Vegas where many vehicle and parts suppliers are showing new technology and designs.

Taiwan-based Foxconn is the world's largest electronics manufacturer and makes iPhones for Apple, but also has vast automotive ambitions and wants to eventually build half the world's EVs.

Micross Acquires RF And Microwave Product Maker KCB Solutions

Micross Components Inc of Orlando, FL, USA (a global provider of bare die and mission-critical microelectronic components and services for high-reliability aerospace & defense, space, medical, energy and industrial applications) has acquired KCB Solutions of Shirley, MA, USA, which manufactures RF and microwave surface-mount microcircuits and hybrids. The acquisition further expands the proprietary Hi-Rel component product portfolio of Micross.

As a privately held company and portfolio investment of Artemis Capital Partners of Boston, MA, KCB Solutions has established itself as a supplier of leaded and leadless GaN/GaAs (gallium nitride/gallium arsenide) RF and microwave switches, attenuators, amplifiers, multi-chip and functional modules in both standard and custom form. KCB manufactures products for applications in the space, aerospace and strategic defense end-markets, and its design team has extensive experience serving the requirements of prime customers and system-level contractors. Products are designed to meet MIL-PRF standards, and KCB's US-based operating facility maintains AS9100 quality certification.

Qualcomm Reaffirms Automotive Course With Soc For Mixed Criticality Tasks

For some time now, Qualcomm has been finding its way more and more into the development departments of the automotive industry. At CES, the company is presenting an SoC family that could give engineers at competitors like NXP or Nvidia a hard time.

The Snapdragon Ride Flex SoC is engineered to support mixed-criticality workloads across heterogenous compute resources, allowing for the digital cockpit, ADAS and AD functions to co-exist on a single SoC – while not neglecting the functional safety. According to Qualcomm, the SoC enables a hardware architecture to support isolation, freedom from interference, and quality-of-service (QoS) for specific ADAS functions and comes equipped with a dedicated Automotive Safety Integrity Level D (ASIL-D) safety island. Furthermore, the Flex SoC pre-integrates a software platform that supports multi-operating system operating concurrently, hypervisor enablement with isolated virtual machines, and real-time operating system (OS) with an Automotive Open System

Architecture (Autosar) to meet the mixed criticality workload requirements for driver assistance safety systems, digital reconfigurable clusters, infotainment systems, driver monitoring systems (DMS), and park-assist systems.

Samsung, Micron Battle for NAND Supremacy

Samsung Electronics and Micron Technology continue to fight for supremacy in the NAND market, with both companies recently announcing higher-density 3D NAND solutions—albeit with different nomenclatures.

Samsung has opted to focus on 3D NAND bit density with the introduction of its 1-terabit (Tb) triple-level–cell eighth-generation vertical NAND (V-NAND), which the company claims is the industry's highest bit density. Meanwhile, Micron has opted to present its latest 3D NAND in term of layers, having announced its 232-layer 3D NAND mid-year in 2022.

Samsung's eighth-gen V-NAND

SungHoi Hur, executive vice president of flash product and technology at Samsung, told EE Times during an interview that the company achieved high bit density through a Cell-on-Peri (COP) structure, which the company introduced with its seventh-generation V-NAND.

STMicroelectronics Automotive-grade Devices Feature Enhanced Power Densities

STMicroelectronics has introduced five power-semiconductor bridges in popular configurations, housed in its advanced ACEPACK SMIT package that eases assembly and enhances power density over conventional TO-style packages.

Engineers can choose from two STPOWER 650V MOSFET half bridges, a 600V ultrafast diode bridge, a 1.2kV half-controlled full-wave rectifier, and a 1.2kV thyristor-controlled bridge leg. All devices meet automotive-industry requirements and are suitable for electric vehicle on-board chargers (OBC) and DC/DC converters, as well as industrial power conversion.

ST's ACEPACK SMIT surface mounted package delivers the easy handling of an insulated package with the thermal efficiency of an exposed drain. It allows direct-bonded copper (DBC) die attachment for efficient top-side cooling. The 4.6cm2 exposed metal topside of the ACEPACK SMIT permits easy attachment of a planar heatsink. This creates a space-saving low profile that maximizes thermal dissipation for greater reliability at high power. The module and heatsink can be placed using automated inline equipment, which saves manual processes and boosts productivity.

TDK To Acquire Qeexo For Tinyml Edge Platforms

TDK has agreed to acquire Qeexo, a US venture-backed company spun out of Carnegie Mellon University working on no code end-to-end TinyML machine learning for edge devices and sensors.

Qeexo will become a wholly owned subsidiary of TDK, subject to customary closing conditions, including approval of the Committee on Foreign Investment in the US (CFIUS).

Qeexo, founded in 2012 and based in Mountain View, California, is the first company to automate end-to-end machine learning for edge devices. Its AutoML tool enables a no-code environment with data collection and training of 18 (and expanding) different machine learning algorithms, including both neural networks and non-neural-networks, to the same dataset. At the same time it generates metrics for each (accuracy, memory size, latency), so that users can pick the model that best fits their unique requirements.

It had raised has raised a total of $7.4m in funding over 3 rounds, with the last Series B round in 2016. The terms of the deal were not disclosed.

Industry News & Trends

Agilent To Expand Nucleic Acid-Based Therapeutics Production With $725 Million Investment

Agilent Technologies Inc. announced Monday it will invest $725 million to produce therapeutic nucleic acids as demand for their active pharmaceutical ingredients (API) continues to increase. The short DNA and RNA molecules that are the APIs used in therapeutics for a variety of diseases can also be called therapeutics oligonucleotides or oligos.

The announcement of the investment that will double the manufacturing capacity of therapeutic nucleic acids comes as the market for therapeutics oligos, currently estimated at $1 billion, is projected to grow to $2.4 billion in 2027.

“This additional capacity will enable us to meet strong demand for siRNA and antisense molecules and also significantly increase the number of CRISPR guide RNA programs we can take on,” said Sam Raha, president of Agilent’s Diagnostics and Genomics Group.

Stellantis To Manufacture Electric Aircraft For Archer Aviation

Multi-brand automotive company Stellantis (Chrysler, Citroën, Fiat, Opel, Peugeot, among others) has entered into a strategic partnership with U.S. startup Archer Aviation.

According to the agreement, Stellantis will provide its manufacturing expertise to produce Archer’s Midnight electrically powered vertical takeoff (eVTOL) aircraft. This support will accelerate the commercialization of the aircraft.

In addition to advanced manufacturing technology, Stellantis will also provide experienced personnel. This assistance will allow Archer to avoid hundreds of millions of dollars in capital expenditures, it says. In addition, Stellantis will provide $150 million in equity.

Stellantis will work with Archer to build a manufacturing facility in Covington, Georgia. Here, the two companies plan to begin series production of the Midnight aircraft in 2024. Midnight will be able to carry four passengers and a pilot with an expected payload of more than 454 kilograms. With a maximum range of about 100 miles (160 kilometers), Midnight is optimized for short-range flights of about 20 miles (32 kilometers). During stopovers, a charging time of only about 10 minutes should be sufficient to recharge the batteries.

Printed Battery Enables 2mm Thin Smart Label

A group of European companies have developed a smart label that is just 2mm thick with LTE CAT-M connectivity.

The label was developed by Sodaq in the Netherlands with connectivity from Pod Group, a Giesecke+Devrient (G+D) company, and tracking by Lufthansa Industry Solutions (LHIND).

The Smart Label, launched at CES 2023, uses the low-power cellular LTE-M connectivity to send data regarding device location and temperature back to a centralized dashboard, enabling logistics companies to track valuable goods which could be as small and light as an envelope containing important documents or as large as a full-sized oil painting.

MediaTek Powers Adoption of 5G, Future Tech Across Smart Phones, Device Ecosystem in India

As India enters its watershed moment of 5G adoption in 2023, MediaTek is well on track to drive 5G adoption with its increased commitment towards working with global as well as Indian OEMs and expanding its R&D facilities in India.

MediaTek Inc. recently hosted the 11th Chapter of MediaTek Technology Diaries. With the theme “Brilliant Technology the World Relies On”, the event focused on the latest technology trends from MediaTek in smartphones and smart devices market in India.

The company showcased its latest portfolio of cutting-edge technology and an innovation-based line-up of 5G chipsets, including the latest MediaTek Dimensity 9200, 8200 and 1080 and other chipsets like MediaTek Helio G99, Pentonic 1000, Kompanio 520 and 528, Filogic 880 and 380, T800 5G Modem Solutions among others.

East European News & Trends

Advanced Way Of Improving Storage Batteries

Researchers at the Center for Energy Science and Technology, which is a department of Skoltech University in Moscow, have offered a simple and scalable method of increasing the capacity of a wide range of cathode materials to be used in metal-ion storage batteries.

Research results may find their way into a possible new generation of advanced rechargeable energy storage devices.

At the core of the new approach is treating cathodes with reducing agents solutions, specifically alkali metal salts derived from aromatic molecules. Several types of such agents that come from substances like naphthalene were proven to be suitable.

Materials Get Improved Properties With New Semiconductor Technology

Chemists at the Tomsk State University (TSU) in Siberia have come up with a new technology of developing nanodispersed metal oxide semiconductor materials. With a proprietary combination of ingredients under their belt the researchers are said to be able to add to the materials some useful pre-computed properties, such as the ability to absorb or reflect the infrared spectrum. The technology may find its way into a wide variety of areas—from boosting solar panels efficiency to making innovative screens for smartphones, tablets and other gadgets, to protecting spacecraft against overheating.

The novel materials come from TSU's Siberian Institute of Physics and Technology (SIPT) and provide a set of complex indium-tin-based oxide systems. "During synthesis we add to them some elements that help increase the concentration of free charge carriers, thus making it possible to give materials properties we want them to possess," a developer in the TSU team was quoted as saying.

For example, it's possible to vary levels of electromagnetic absorption and reflection in a given wavelength range. Selective coatings based on nanodispersed semiconductor materials could be used in aircraft- and shipbuilding as well as in spacecraft and solar engineering projects to maintain desired thermal conditions and protect instruments from overheating.

Scientists Use "Molecular Sponge" To Make Drug Delivery More Targeted

Researchers at the Southern Federal University (SFedU) in Rostov-on-Don have developed novel nanodimensional containers for storage, target delivery and controllable dosing of drugs.

At the core of the new system are metal-organic polymeric nanoparticles that could be likened to molecular sponge. Acting like natural sponge, they can soak up medicines, use a patient's vascular system to take them to a destination, and then "squeeze" to release the drugs from their pores, wherever necessary

World Economic Round Up

Goldman Sachs, the Wall Street giant forecasts U.S. expansions of 1 percent in 2023 and 1.6 percent in 2024. Germany, the next worst performer among major economies after Russia and the U.K., is expected to see a 0.6 percent contraction this year, then expand by 1.4 percent in 2024. Economies around the world began the year still trying to emerge from the Covid-19 pandemic, with persistent lockdowns in China and other lingering supply bottlenecks forming what was now infamously mischaracterized by the U.S. Federal Reserve in 2021 as "transitory" inflationary pressure.

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 2022

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – March 2023
- Industry Forecast Briefing, London – September 2023

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

-

MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY March 2023
AND
INDUSTRY FORECAST BRIEFING
TUESDAY September 2023

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

Follow Us On Twitter

For weekly semiconductor news and updates follow us on Twitter.