FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

Infineon's 40nm Security Chip Technology Enhances Vietnam's National ID Card

In the modern age of digitalization, establishing a citizen's identity is even more critical than ever before. Therefore, an electronic ID (eID) can serve to legalize a person's identity in the form of a legal document. In addition to simply identifying the citizen, the functionality of national eIDs can also be expanded to enable people to access government services and benefits online. This eliminates the need to stand in long lines at local government offices, which is a major advantage, especially in times of pandemics.

In Vietnam, such a state-of-the-art and eID document is now becoming a reality: for the enhancement of the national ID card, Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) partners with MK Smart, a subsidiary of MK Group. By delivering the chip and its operating system on smart cards capable of securely storing ICAO-compliance e-ID data, they enable protected biometrics and digital signing to access citizenry services on government and private portals. Citizens can also use the card for authentication with government bodies and banks. To enable these features, Infineon supplied the SLC37 security controller using the latest 40nm security chip technology and an innovative dual-interface packaging (Coil on Module).

Microchip Expands Gan RF Power Portfolio With New MMIC Devices

Microchip Technology Inc. recently expanded its gallium nitride (GaN) radio frequency (RF) power device portfolio with new monolithic microwave ICs (MMICs) and discrete transistors that cover frequencies up to 20 gigahertz (GHz). Earlier this year, Microchip unveiled its first GaN MMIC power amplifier, the ICP2840 (originally released as the GMICP2731-10). The MMIC devices target 5G, satellite communications, and defense applications.

These new devices complement Microchip’s existing portfolio of GaAs MMIC RF power amplifiers (PAs), switches, low-noise amplifiers, and Wi-Fi front-end modules, as well as a GaN-on-SiC high electron mobility transistor (HEMT) driver, and final amplifier transistors for radar systems.

Microchip’s product strategy for its GaN RF products is to support all applications at all frequencies from microwave to millimeter wavelengths from low-power to 2.2 kW.

Mycronic Receives Order For An SLX Mask Writer

STOCKHOLM, Jan. 14, 2022 /PRNewswire/ -- Mycronic AB (publ) has received an order for an SLX mask writer from a new customer in Asia. The order value is in the range of USD 3-5 million. Delivery of the system is planned for the second quarter of 2022.

The SLX laser mask writer meets rising demand for photomasks for the semiconductor industry and a future need for replacement and modernization. Photomasks manufactured by laser mask writers are of high importance and account for 70-75 percent of all photomasks produced for semiconductor manufacturing. SLX is a new and modern mask writer based on the same technology as Mycronic's mask writers for displays.

"It is gratifying to initiate 2022 by announcing another SLX order, this time from a new customer.

Nvidia Acquires Bright Computing

As hyper-scalers gang supercomputing clusters to support AI and other high-end automation workloads, infrastructure providers are looking for better ways to manage HPC clusters, collections of servers linked via high-speed networks.

While its acquisition of chip IP vendor Arm remains stalled in regulatory limbo, GPU leader Nvidia did manage to pull off a separate if less flashy acquisition this week, announcing a deal for HPC software specialist Bright Computing.

When asked, Nvidia said details of the transaction would not be disclosed.

Based in Amsterdam, privately-held Bright Computing was spun out from Linux integrator ClusterVision in 2009. Its software is used to provision and manage HPC and Kubernetes container clusters along with private clouds, including those running in data centers on the OpenStack cloud computing platform.

Samsung Claims First With In-Memory MRAM

Samsung today announced an MRAM innovation, claiming the world’s first in-memory computing based on MRAM capable of performing both data storage and data computing within a single memory network. The company claims its MRAR array chip is the next step to realizing low-power AI chips.

Use of in-memory computing architectures has increased over the years because of its ability to crunch data at the edge, which can in turn reduce the amount of data movement and network latency. Samsung’s renewed focus on in-memory computing, however, stems from MRAR’s low-resistant nature, which ordinarily limits its ability to reduce power consumption when used in standard in-memory architecture.

Samsung claims its own MRAR array chip eliminates this issue, however, with what it calls ‘resistance sum’ in-memory computing architecture.

TSMC Plans To Spend $44 Billion On Increasing Chip Manufacturing Capacity This Year

The world's largest contract semiconductor manufacturer plans to spend tens of billions to expand.

Taiwan Semiconductor Manufacturing Company (TSMC) will spend as much as $44 billion to increase its manufacturing capacity in 2022, up from $30 billion last year - at the time a company record.

The expansion comes amid a global chip shortage that began with the Covid-19 pandemic, first caused by supply issues, and then exacerbated by record demand.

With many working from home, sales of smartphones and personal computers skyrocketed. But analysts have warned that this jump could be temporary, with home workers not needing to upgrade their systems for some years yet.

Industry News & Trends

Moving From SoCs To Chiplets Could Help Extend Moore's Law

As Moore's Law is again reaching its limits, several technologies, specifically Chiplets, could be the key to extending it for many more years.

Moore's Law, named after former Intel CEO Gordon Moore, states that the number of transistors in an integrated circuit doubles every two years. The prediction is widely used in the semiconductor industry, especially for microprocessors. Manufacturers use the "law" to

Obviously, to continue this increasing density and miniaturization of semiconductors, many new technologies have appeared in the 55 years since Moore's Law was first proposed.

Historically, the photomask or reticle of a wafer was limiting the maximum size of a single chip. Therefore, manufacturers and designers had to use several chips to perform different functions. And, in many cases, they installed several chips for the same purpose, especially processor cores and memory modules.

Are All-Electric Planes and Trains Next?

There's no question that all aspects of EVs have improved dramatically in the past few years, from basic components to system-level architectures. Now that all-electric vehicles (EVs) are available if not in wide use as standard consumer choices, a logical consideration is how some of their technology can be adapted to other modes of transportation. Planes, Trains and Automobiles, anyone?

(Note that "pure" EVs account for about 2% of vehicles sales in the U.S. in 2020 and are slightly higher in other regions, but not by much. As for what that percentage might be in two, five, and 10 years, the experts with their crystal balls and automakers are all over the place on this, with some saying it will be half of vehicles by 2030, others much lower. Your prediction is as valid as theirs, seems to me.)

EVs to Drive 6in SiC Wafer Demand

automakers' race towards high-voltage EV platforms has noticeably intensified, with various major automakers gradually releasing models featuring 800V charging architectures, such as the Porsche Taycan, Audi Q6 e-tron, and Hyundai Ioniq 5.

Demand from the global automotive market for 6-inch silicon carbide (SiC) wafers is expected to reach 1.69 million units in 2025 thanks to the rising penetration rate of EVs and the trend towards high-voltage 800V EV architecture, according to TrendForce.

The revolutionary arrival of the 800V EV charging architecture will bring about a total replacement of Si IGBT modules with SiC power devices, which will become a standard component in mainstream EV VFDs (variable frequency drives). As such, major automotive component suppliers generally favor SiC components. In particular, Tier 1 supplier Delphi has already begun mass producing 800V SiC inverters, while others such

as BorgWarner, ZF, and Vitesco are also making rapid progress with their respective solutions.

Webb Telescope Sharpens its Focus

NASA launched a high-stakes space shuttle mission in 1993 to repair the Hubble Space Telescope's faulty primary mirror. Back then, the resourceful astronaut office proved far more reliable than the managers of the Hubble program, fixing the flawed mirror during a series of complex space walks in low-Earth orbit, enabling Hubble to capture decades worth of stunning images.

The U.S. space agency appears light years more confident this time around, with the recent full deployment of the James Webb Space Telescope. After a precision launch, astronomers sweated out two weeks of high drama before mission controllers announced on Jan. 8 the infrared observatory's had passed the stiffest test with deployment of its 21-foot, gold-coated primary mirror.

All-In-One Flexible Supercapacitor With Ultra-Stable Performance Under Extreme Load

Fiber-type solid-state supercapacitors can provide a stable power supply for next-generation wearable and flexible electronics. Typically, high charge storage and superior mechanical properties can be integrated into a single fiber to realize fiber-type, solid-state supercapacitors. In a new report now published in Science Advances, You Wan Na, Jae Yeong Cheon and Jae Ho Kim and a team of scientists in advanced nanohybrids and composite research, in Korea, designed a "jeweled necklace"-like hybrid composite fiber composed of double-walled carbon nanotube yarn and metal-organic frameworks (MOFs). The team heat-treated the MOFs and transformed them into MOF-derived carbon to maximize energy storage capabilities while retaining their mechanical properties. The hybrid fibers with tunable properties and mechanical robustness functioned under a variety of mechanical deformation conditions for the resulting super-strong fiber to deliver sufficient power to activate light emitting diodes while suspending a weight of 10 Kg

East European News & Trends

Smart Robot Can Clean Up And Disinfect Stores And Hospitals

Scientists at Skoltech (Skolkovo Institute of Science and Technology) in Moscow have come up with a self-contained robotic platform that can disinfect large facilities, Scientific Russia reported.

The disinfector robot is reported to be able to map out its best possible route all on its own. It can be used on large areas, such as stores and hospitals.

The machine is equipped with UV lamps on both sides and can cover up to 4,000 square meters for six-seven hours without recharging. Users are recommended to deploy such robots at nighttime to safeguard humans against unnecessary exposure to UV; however, deploying some during the day shouldn't cause concern, as the robot will immediately notice a person nearby and has been taught to turn off its lamp on the side closer to the human.

Research Shows How Cyber Criminals Can Take Advantage Of Pet Wearables

Scientists at the LETI St. Petersburg State University of Electrical Engineering have found out that pet tracking wearables could compromise the integrity of pet owners' confidential data in their smartphones. Details can be found in International Journal of Computer Science (IJCS).

GPS-connected pet tracking wearables are Internet of Things devices worn by companion animals such as dogs and cats which capture activity, health, or even location data.

Research has shown that in addition to capturing the above pet-related data such trackers can exchange other data with their owners' gadgets such as smartphones, thus exposing confidential information to cyber threats.

Quantum Communications From Home – New Russian Option

A collaborative team of researchers from Qrate, a Russian technology company, and Moscow-based MISiS University has unveiled plans to develop by the end of next year a compact and competitively priced quantum communications system which could reportedly be used in any PC for protected data transfer.

According to a MISiS spokesman, at the core of the effort is a quantum key distribution mini-system to be available to everybody across the B2B and B2C segments. The system is basically an expansion card for ordinary PCs, enabling users to connect to a quantum network and exchange data with up to a hundred network clients.

Russian Start-Up Offers New Easy-To-Use Virus Detector

A Russian start-up called Troitsk Engineering Center (part of TechnoSpark Group) has developed a special device, the Indicator-BIO, to diagnose viral infections.

Their partners in the project, biologists and physicians from the Federal Medical-Biological Agency (FMBA), have, in their turn, come up with advanced chips and reagents to go with the device, which are said to take within 15 minutes to pinpoint in biological fluids an array of dangerous viruses, including the COVID-19.

World Economic Round Up

Will 2022 be the year where the world economy recovers from the pandemic? That's the big question on everyone's lips as the festive break comes to an end. One complicating factor is that most of the latest major forecasts were published in the weeks before the omicron variant swept the world. At that time, the mood was that recovery was indeed around the corner, with the IMF projecting 4.9 percent growth in 2022 and the OECD projecting 4.5 perent. These numbers are lower than the circa 5 percent to 6 percent global growth expected to have been achieved in 2021, but that represents the inevitable rebound from reopening after the pandemic lows of 2020. So what difference will omicron make to the state of the economy? We already know that it had an effect in the run-up to Christmas, with for example UK hospitality taking a hit as people stayed away from restaurants.

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 2020

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – March 2022
- Industry Forecast Briefing, London – September 2022

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 March 2022
AND
INDUSTRY FORECAST BRIEFING
TUESDAY September 2022

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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