

FutureHorizons



The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

NAND Flash Wafer Prices Stabilize Due to High SSD Demand

NAND Flash demand continues to rise as strong sales of notebook (laptop) computers spur PC OEMs to place additional orders for client SSDs, according to TrendForce's latest investigations. Also, the supply-side inventory for NAND Flash memory has already fallen considerably due to the aggressive stock-up activities of some smartphone brands.

With customers in the data center segment expected to ramp up procurement in 2Q21, NAND Flash suppliers have decided to scale back the supply of NAND Flash wafers. Compared with other product categories, wafers have a lower gross margin. As a result of these factors, the decline in contract prices of wafers has been easing over the past two months (i.e., from December of last year to January of this year).

Dialog Confirms Talks With Renesas For \$5.9bn Cash Offer

Dialog Semiconductor confirmed Sunday that it is in advanced talks to be purchased by Renesas Electronics Corp. Renesas proposes to pay cash for all of Dialog's shares at €67.50 per share. Renesas has 28 days (i.e., until 7 March 2021) to either announce a firm intention to make an offer for Dialog or declare it does not intend to make an offer. The offer values the company at around €4.9 billion (around \$5.9 billion).

Dialog said it made the statement without the consent of Renesas in order to address press speculation. It added "A further announcement will be made as and when appropriate. There can be no certainty that any firm offer will be made for the Company, nor as to the terms on which any firm offer might be made."

Startup Exploits Synergy Between 5G and AI

Silicon Valley startup EdgeQ has emerged from stealth, with a plan to make a RISC-V SoC that exploits mathematical similarities between 5G and AI processing workloads. The company's first market will be telecom infrastructure, where AI is used in 5G network functionality such as by detecting unusual behavior that could signal a malicious attack. Client-side applications, such as industrial robots, vehicles and drones where the primary application is AI acceleration and the SoC also enables 5G connectivity, will follow.

EdgeQ is banking on the similarities of 5G and AI to make a chip that can accelerate both EdgeQ's SoC, still under development, will be a multi-core RISC-V design with custom extensions added to the instruction set for compute efficiency. The same chip will serve all markets, but firmware changes will allow it to be optimized for different applications, whether that's network infrastructure or client-side devices.

Micron Pulls Ahead on DRAM

Micron Technology has unveiled its 1-alpha node DRAM, which the company said offers a 40% improvement in memory density over its 1z node DRAM, as well as a 15% improvement in power-savings for mobile devices. This latest memory node supports

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densities from 8Gb to 16Gb, and Micron has started volume production of DDR4 memory for compute customers and Crucial consumer PC DRAM products on the new process node, while LPDDR4 is being sampled to mobile customers for qualification.

Aside from mobile devices, the company sees the density, reliability, and power efficiency its 1-alpha DRAM appealing to customers who value longevity, including embedded automotive solutions, industrial PCs, and edge servers as they typically have longer lifespans, said Thy Tran, Micron's vice president of DRAM Process Integration in a briefing with EE Times. The 1-alpha moniker reflects perceived scaling limitations of the 10-nanometer class process node that ended up being dubbed "X," she said. "The scaling path was unclear

[NXP Targets Wi-Fi 6E Access Points With 6 GHz Tri-Band SoC](#)

With widespread reallocation of the 6 GHz band, the rollout of Wi-Fi 6E devices with its super wide 160 MHz channels is gaining momentum. With this in mind, NXP Semiconductors is introducing a Wi-Fi 6E tri-band chipset designed for access points and service provider gateways to enable end network devices to take full advantage of the 6 GHz spectrum.

This year will certainly see proliferation in the consumer world for Wi-Fi 6E, as we saw with the launch at CES 2021 of mobile handsets and routers. In fact, in its predictions for 2021, the Wi-Fi Alliance said that we will see the delivery of 6 GHz to users with the widespread adoption of Wi-Fi 6E.

In a briefing with EE Times, Larry Olivas, head of marketing for NXP's wireless connectivity solutions, said that Wi-Fi 6E creates a wireless superhighway.

[Qualcomm to Buy Nuvia for \\$1.4 Billion](#)

Qualcomm today announced it is to buy Nuvia, a startup focused on developing server CPUs and founded by three ex-Apple CPU and system-on-chip (SoC) architects, for \$1.4 billion.

In its press statement, Qualcomm said Nuvia CPUs are expected to be integrated across Qualcomm Technologies' broad portfolio of products, powering flagship smartphones, next-generation laptops, and digital cockpits, as well as advanced driver assistance systems (ADAS), extended reality and infrastructure networking solutions. It said with 5G accelerating the convergence of mobility and computing, the acquisition of Nuvia builds on Qualcomm Technologies' Snapdragon platform, delivering step-function improvements in CPU performance and power efficiency to meet the demands of next-generation 5G computing.

This is an incredibly rapid exit for Nuvia, which was officially launched in 2019, and has to date raised \$293 million with prominent semiconductor industry investors backing it. These include Dell Technologies, WRVI Capital, and the founders of Marvell Technology Group. As Navin Chaddha, the managing director of one of the investors, Mayfield Fund, posted on LinkedIn today, "Our under-two-year journey has been fast and furious and sets a record in our recent history at Mayfield Fund for the shortest

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Samsung Debuts World's First Wi-Fi 6E Mobile Phone

In a kind of coming of age, the Samsung Galaxy line turns 21 today. The S21 line-up of phones was officially announced at the Galaxy Unpacked event. Rumours and renderings have been floating around for a while with the biggest news about the colors that would be offered, number of camera lenses on the back, and that the S21 variants will ship without a charging brick in the box.

What is significant is that a selection of those S21 boxes will contain the world's first Wi-Fi 6E enabled mobile phone, the Galaxy S21 Ultra. As you may recall, Wi-Fi 6E is the "extended" version of the standard that adds an additional seven 160 MHz channels in the 6 GHz band. The S21 will itself contain an important ingredient to enabling the extended Wi-Fi capability: the Broadcom BCM4389 Wi-Fi 6E and Bluetooth 5 combo chip.

Industry News & Trends

Wearable Device With Biometric Authentication

Italian startup Flywallet has unveiled Keyble at this year's Consumer Electronics Show (CES 2021). Keyble is a wearable solution with multiple biometric authentications to allow the users to prove their identity and enable contactless payments and digital services. The wearable device also features medical sensors that allow users to monitor their parameters and securely share them with their doctor or hospital institutions.

In an interview with EE Times Europe, Lorenzo Frollini, CEO and founder of Flywallet, explained how Keyble can be used in fashion accessories such as bracelets or watch straps, adapting to a person's lifestyle and allowing them to shop without a credit card.

“In addition to contactless payment, access badge, and passwordless login, the main functions of a smartwatch, such as receiving notifications, are available,” commented Frollini. “Through the device, you can perform a one-lead electrocardiogram (ECG), monitor your heart rate, blood oxygenation (SpO2) and sports activities. Concerning the possibility of implementing it in existing solutions, Keyble was created with this in mind and can be easily integrated into various fashion accessories. In fact, you can wear it as a smart band or together with a traditional watch as a strap closure, thanks to our customized straps. We have several compatible accessories in the pipeline that will make Keyble even more integrable and versatile.”

Miniature Module Integrates Cellular & GNSS into a SiP

U-blox has announced its ALEX-R5 module, which integrates low power wide area (LPWA) cellular communication and global navigation satellite system (GNSS) technology into a system-in-package. The two key elements are the company's UBX-R5 LTE-M / NB-IoT chipset with secure cloud functionality and the u-blox M8 GNSS chip for effective location accuracy for healthcare applications.

In an interview with Samuele Falcomer, principal product manager, product center cellular, u-blox, we looked at the new ALEX-R5 module's application opportunities. Falcomer pointed out the 14×14 mm module size, possible thanks to the SiP design that integrates the two communication technologies. It is half the size of the u-blox SARA-R5 module.

Falcomer commented that “the push toward full integration must meet some standard ingredients: consumption, positioning, and security. There is a lot to be said about security, especially with the advent of IoT. This is addressed in ALEX-R5 with a set of SaaS solutions. Most of the modules on the market are like our SARA modules, 26×16 mm – too large for wearable solutions. Chip-down integration means huge certification expenses and considerable integration effort, so this is not applicable at the industrial level.

Quantum Error Correction Algorithms Move Quantum Hardware Closer to Reality

Quantum computing holds extraordinary promise, but before quantum computers can be commercialized there are challenges to be resolved. One of the most important is finding ways to identify and correct errors in quantum computer hardware. Q-CTRL aims to solve the fundamental problems facing quantum technology, improving hardware performance and accelerating pathways to useful quantum computers and other technologies. In an interview with EE times, Michael J. Biercuk, Founder & CEO, Q-CTRL, discussed why quantum error correction (QEC) algorithms and their links to low-level quantum control are critical.

Quantum computing is a new way of storing and processing information using the rules of quantum physics. When we do this, problems that are impossible to solve even on the new generation of exascale supercomputers should become easy. Right now, in laboratories all over the world, real quantum computers are in operation and under development. But these face problems related to noise and hardware instability.

5G O-RAN Radio Unit Targeted at Indoor Deployment

Benetel is developing 5G platform solutions that are compliant with the latest O-RAN interface specification and targeted at indoor deployment. The latest addition of an open radio unit (O-RU) to the company's RU product family is called RAN550 O-RAN and delivers 100MHz of instantaneous bandwidth, with up to 250mW of output power per transmitter path.

In an interview with EE Times, Adrian O'Connor, CEO of Benetel, pointed out that RAN550's modular architecture can support 7.2 split fronthaul network configurations and is equipped with two 10 Gigabit Ethernet ports for fronthaul network interfacing. The built-in antennae support 4T4R MIMO operation.

“There's a strong motivation for operators and businesses to invest in indoor in much the same way as they would invest in outdoor networks. Caroline Gabriel, principal Analyst at Analysys Mason, commented recently that for new networks the importance of indoor quality of service is equal to that of outdoor quality of service, rather than being an afterthought. And Benetel has chosen to prioritize indoor product release first, but we will be releasing outdoor solutions as we move forward in the next few months. We're not ignoring our outdoor products, it's just that we're prioritizing indoor right now,” said O'Connor.

East European News & Trends

Researchers Develop New Materials For Superconducting Devices

Scientists from Russia, China and the U.S. teamed up in a successful effort to predict and then experimentally develop barium superhydride – a new high-temperature superconductor. Results of the research have been published in English in Nature Communications.

Special crystal structure prediction software called USPEX, developed by Prof. Artem Oganov, a Russian chemist and crystallographer, has been instrumental in achieving the success. Chemists and material science specialists from Prof. Oganov's laboratory at Skoltech University in Moscow partnered with their international colleagues as they used the USPEX to analyze and experimentally obtain the new barium compound which has been proven to be extremely rich in hydrogen and possess superconductivity properties.

3D-Printed Aircraft Engine May Hit Market This Year

A Russian 3D-printed gas-turbine aircraft engine designated MGTD-20 readies commercialization later this year or in 2022 after it was successfully tested in flight last summer in the mid-Volga region of Tatarstan.

In Russia's first-ever such effort, this 22 kilogram*force propulsion unit is a collaborative product of the federal Advanced Research Fund (of which the closest analog in the U.S., for example, is DARPA), the Moscow-based All-Russian Scientific Research Institute of Aviation Materials (VIAM in Russian), and the Simonov Aircraft Design Bureau headquartered in Kazan, in Tatarstan.

With a wingspan of three meters, the aircraft's take-off weight is 40kg and its payload is up to 10kg. During its test flight, the drone completed its flight plan in the autopilot mode, reaching all the areas it had been programmed to reach at an altitude of 170m and a maximum cruise speed of 154km/h, and landed problem free. The new engine operated at a maximum rotational speed of 101,600RPM.

Developer Of AI For Autonomous Driving Seeks Investors

Cognitive Pilot, a Russian high-tech developer, is considering launching a private placement procedure later this year, Co-Founder and CEO Olga Uskova was quoted by the Russian business daily Vedomosti as saying.

According to Ms. Uskova, her company has been in talks with "a number of investors"; no specific information has been disclosed at this stage.

Following the closure of the possible deal, Cognitive Technologies—one of the company's two co-founders; the other one is Sberbank, Russia's largest savings bank—and the Cognitive Pilot management will reportedly retain control over the asset. Cognitive Technologies currently owns 70% of its subsidiary, with Sberbank controlling the remaining 30%.

Russia Eyes Domestic Servers With Intel Architecture

Sitronics, a Russian telecom equipment maker, is reportedly investing \$2.7m in R&D and manufacture of its proprietary servers that would use Intel chips, the Russian business daily Kommersant reported.

A spokesman for Sitronics was quoted as saying foreign chips have been chosen because Russian ones “do not meet technical requirements yet.”

The investor has plans to set up production on the premises of Element, an asset of Rostec, the government-owned umbrella company for technology development, and AFK Sistema, a large domestic private company. An inaugural production run is scheduled for the first six months of this year, followed, hopefully, by serial production on an as-ordered basis. Sitronics believes its future servers will be in demand across Russia’s telecom sector and government customers.

World Economic Round Up

The global economy, helped in part by improved outlooks in the US and Japan, will recover from a 3.5 percent fall in Gross Domestic Product (GDP) in 2020 with growth of 5.5 percent in 2021, up 0.3 percentage points compared with October's forecast. In an update to its flagship world economic outlook, the Washington DC-based IMF said the upgrade in global growth, while modest, reflected an increase in government spending to offset the worst effects of the pandemic and vaccination programmes that were being rolled out across richer nations.

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 2021

Future Horizons Events

- [Silicon Chip Industry Training Seminar](#) – London – March 2021
- [Industry Forecast Briefing](#), London – September 2021

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

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[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 2021

AND

INDUSTRY FORECAST BRIEFING

TUESDAY September 2021

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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