FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

April 2019

Contents Page

Industry News By Company

New OptiMOS™ 6 40 V family: Impressive RDS(on) Combined With Superior Switching Performance

Munich, Germany – 14 March 2019 – Committed to set new technology standards in discrete power MOSFET technologies, Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) introduces its new OptiMOS™ 6 family. Based on Infineon´s thin wafer technology it enables significant performance benefits and will cover a wide voltage range. The new 40 V MOSFET family has been optimized for synchronous rectification in SMPS for servers, desktop PCs, wireless chargers, quick chargers, and ORing circuits. The new OptiMOS 6 family will be showcased at the APEC 2019 exhibition in Anaheim, CA.

Compared to the previous generation, the new OptiMOS 6 40 V delivers a 30 percent reduced on state resistance and improved figure of merits (Q g x R DS(on) down by 29 percent and Q gd x R DS(on) down by 46 percent). Hence, used in SMPS applications the devices are ideal for efficiency optimization over a wide range of output power, avoiding the trade-off between low and high load conditions.

Infineon Manufactures Industry's First True 1000 A voltage Regulator Solution For Next Generation AI and 5G Networking

Munich, Germany – 22 March 2019 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) extends its portfolio of high current system chipset solutions with the industry's first 16-phase digital PWM multiphase controller, the XDPE132G5C. The portfolio enables currents of 500 to 1000 A and higher for next generation CPUs, GPUs, FPGA and ASICs used in high-end artificial intelligence (AI) servers and 5G datacom applications.

As CPU current requirements increase to enable next generation AI and networking workloads, DC-DC voltage regulators (VR) need to deliver more than 500 A to the load. With a true 16-phase digital PWM engine and an improved advanced transient algorithm, the XDPE132G5C controller addresses these high phase count requirements. The true active current sharing between phases enables a reliable, compact and cost-saving design. Furthermore, there is no need for extra logic doubler ICs commonly utilized in today's high phase count markets.

Leading edge ASIC's and FPGA's in communication systems are requesting V out control of less than 1 mV steps. This is inherent in the XDPE132G5C, offering fine V out setting in 0.625 mV increments. In addition, it supports communication market auto-restart requirements with options to reduce remote site maintenance following power or system glitches.

ON Semiconductor Collaborates With NVIDIA On Cloud-Based Autonomous Vehicle Simulation

ON Semiconductor is leveraging its sophisticated image sensor modeling technology to provide real-time data to the NVIDIA DRIVE Constellation simulation platform. The open, cloud-based platform performs bit-accurate simulation for large-scale, hardware-in-the-loop testing and validation of autonomous vehicles.

ON Semiconductor's Image Sensor model receives both scene information and control signals from DRIVE Constellation to calculate and output a real-time image based on the inputs. It then transmits the simulated image back to DRIVE Constellation for processing.

ON Semi To Acquire Wi-Fi Chip Vendor Quantenna for $1 Billion

SAN FRANCISCO — ON Semiconductor has agreed to buy Wi-Fi chip vendor Quantenna Communications for just over $1 billion in cash.

The acquisition is expected to bolster ON Semi's connectivity chip portfolio, which today consists mainly of wireless RF transceivers supporting protocols such as Bluetooth, Sigfox, ZigBee, Threat, 6LoWPAN and others.

San Jose-based Quantenna was founded in 2006 by a team that included Andrea Goldsmith, Behrooz Rezvani and Farrokh Farrokhi. The company's Wi-Fi chipsets include both dynamic digital beamforming and wireless channel monitoring and optimization. Quantenna first appeared on the EE Times Silicon 60 list of emerging startups in 2009.

Keith Jackson, ON Semi's president and CEO, said Quantenna's Wi-Fi technologies and software expertise — combined with ON Semi's efficient power management — would bolster the company's ability to provide low-power connectivity technology for industrial and automotive applications.

China Start-Up Undercuts Samsung, Huawei Foldables

For a relatively unknown Chinese start-up, Royole has been attracting a lot of attention. The Shenzhen-based manufacturer of flexible displays stunned the smartphone industry last autumn when it beat giants Samsung Electronics and Huawei Technologies to launch the world's first commercialised foldable phone.

At last month's Mobile World Congress in Barcelona, Samsung and Huawei made all the noise with their $2,000 foldable phones. But it was only at Royole's stand that visitors had the chance to touch and play with the industry's most significant innovation in years. Samsung's Galaxy Fold and Huawei's Mate X, sleeker and significantly more costly than Royole's $1,300 FlexPai, were kept securely locked away in glass cases.

Royole is no technology giant. Just seven years old, it has never made a smartphone before. But late last year Royole began commercial production of the FlexPai in Shenzhen.

Samsung Says It's Shipping 28-nm Embedded MRAM

SAN FRANCISCO — Samsung announced commercial production of its first embedded MRAM (eMRAM) product based on its 28-nm FD-SOI process.

Samsung (Seoul) did not specify the foundry customer for the product. The company said that its eMRAM module can easily be inserted at the back end of its 28FDS process, requiring less dependence on the front end of the process for easy integration with existing logic technologies including bulk silicon, FinFET, and FD-SOI transistor.

Samsung also said that it plans to tape out a 1-Gb eMRAM test chip later this year.

Embedded MRAM is a promising candidate to replace embedded flash, which is facing insurmountable scaling challenges. MRAM is a non-volatile memory that offers high endurance, fast read/write times, and strong retention.

Industry News & Trends

Alpha and Omega Semiconductor Launches New 650V αGaN™ Product Family

SUNNYVALE, Calif.--(BUSINESS WIRE)--Alpha and Omega Semiconductor Limited (AOS) (Nasdaq: AOSL) a designer, developer and global supplier of a broad range of power semiconductors and power ICs, today introduced at the 2019 Applied Power Electronics Conference (APEC) in Anaheim, CA (held March 18th - 20th) the AONV070V65G1 Gallium Nitride (GaN) 650V transistor, the initial product in the new αGAN™ Technology platform. Due to the superior GaN technology properties, the AONV070V65G1 is ideally suited for high efficiency and high-density power supplies in the telecom, server, and consumer adapter markets. These high-efficiency server power supplies are needed to reduce cooling requirements, maximize rack area, and minimize the associated energy cost.

This 70mOhms pure enhancement mode device is manufactured on a fully qualified GaN-on-Si substrate technology that has > 50% smaller die area, 10X lower gate charge (Qg), and eliminates the undesirable body diode reverse recovery charge (Qrr) of traditional silicon MOSFET technology. For designers, the ease of use provided by the αGaN™ technology is enabled by the low on-state gate leakage that allows engineers the flexibility to drive the AONV070V65G1 with a selection of commercially available Si MOSFET gate drivers.

EVG Partners With NSI On Wafer-Level Heterogeneous Integration Of GaAs-On-Si For RF Front-End Modules

EV Group of St Florian, Austria – a supplier of wafer bonding and lithography equipment for semiconductor, micro-electro-mechanical systems (MEMS) and nanotechnology applications – has partnered with Chinese specialty foundry Ningbo Semiconductor International Corp (NSI) to develop what is said to be the first process technology platform for wafer-level heterogeneous integration of gallium arsenide (GaAs) on silicon for use in RF front-end module (FEM) manufacturing – reckoned to be a key milestone in developing next-generation, high-performance, ultra-compact RF front-end chipsets needed for 4G and 5G smartphones and other handsets.

As a joint venture subsidiary of Semiconductor Manufacturing International Corp (SMIC) with China IC Investment Fund, Ningbo Economic Development Zone Industrial Investment Company Ltd and other IC investment funds, NSI develops technology platforms for high-voltage analog, radio frequency and optoelectronics applications. Developments support customers in IC design and product development for applications in smart home, industrial and automotive electronics, new generations of radio communications, AR/VR/MR, and other specialty systems.

IQE Partners In DLINK Wireless Communications Project For 5G Infrastructure

Epiwafer foundry and substrate maker IQE plc of Cardiff, Wales, UK is participating in a new £850,000 research project DLINK - funded with over £850,000 from the UK Engineering and Physical Sciences Research Council (EPSRC) - that aims to put the UK at the forefront of the next generation of millimeter-wave wireless communications technology for 5G infrastructure.

The project addresses the challenge of ubiquitous wireless connectivity for 5G, and is a collaboration between Lancaster University and Glasgow University along with major industrial partners including BT, Nokia Bell Labs, IQE, Filtronic, Optocap and Teledyne e2v. The advisory board includes Intel. The project aims to provide 'fiber-in-air' communication links with unprecedented data rates and transmission distance by exploiting a thus-far unused D-band (151-174.8GHz) portion of the wireless communications spectrum. The D-band is particularly relevant for 5G because, being very wide, it enables the wireless transmission of high data rates – of around 45Gb/s.

DLINK's goal is to enable data transmission over distances of 1km using a novel transmitter with excellent ability to withstand the high attenuation from rain and other atmospheric conditions that can be problematic at that portion of the spectrum.

Avionics Group Certifies First Data Platform

A government-industry consortium promoting open software standards for military avionics continues to advance with the certification of a distribution framework intended to share data among avionics components in real time.

The data distribution platform developed by ADLINK Technology Inc. conforms with the emerging Future Airborne Capability Environment (FACE) avionics standard, the Open Group FACE consortium announced on March 27. The conformance certification specifically applies to the "edge computing" vendor's Java programing language application programming interface (API). The company's data distribution service dubbed Vortex also supports C++.

ADLINK's Java API, or application programming interface, is currently being used by an unnamed aerospace manufacturer to integrate avionics systems.

5G Needs More Memory To Compute

TORONTO – Today's cellphone networks aren't your dad's cellphone networks. In fact, 5G not only represents a vast leap in communications compared to the flip phone days of 3G, it's also going to be more memory hungry.

It makes sense when you think about how much computing power people are carrying around in their hands compared to even the early days of the Blackberry. Mobile networks are just as much about transmitting 4K video as they are talk and text. Connected devices not only include smartphones, but sensors, parking meters, smart cars, wearables, and utilities. Telecom infrastructure is now networking and compute

infrastructure—flash and DRAM are supplanting SRAM and TCAM, and there might be room for emerging memories, too.

East European News & Trends

Russian Web Server Developer Purchased By U.S. Investor

Nginx, a Russian developer of web servers, has been bought by F5 Networks, a U.S.-based provider of cloud and IT security solutions, Firrma.ru reported, citing The Bell. The American company had to shell out $670m in the deal, the source said.

An estimated 40% of global Internet servers and more than half of highly loaded servers are said to operate based on Nginx web servers.

The Nginx co-founders—Igor Sysoev who wrote his first code back in 2001 for the Rambler search engine, Maksim Konovalov and CEO and co-investor Gus Robertson—are now joining F5 as new employees.

VCs Seek Start-Ups With Global Potential

Pulsar Venture Capital, a Kazan-based Russian VC fund, is launching a new selection of projects for its fifth tech start-up acceleration program.

In this round, Pulsar and partners are ready to invest in a company up to $308K. Half of the amount will come from the fund itself, and the rest is expected from the government-owned Investment Venture Fund of the Republic of Tatarstan and others partners. Ten best projects will be eligible for investment after this selection round.

Russia Ranks Poorly On Digital Technologies Use By Business

Russia ranked 31st among the 33 economies included in a global Business Digitalization Ranking compiled by the Higher School of Economics (HSE), the U.S.-Russia Business Council (USRBC) reported.

The ranking evaluates economies' "adaptiveness to digital transformation," including the use of broadband Internet, cloud computing, electronic identification (RDIF) technologies, and enterprise resource planning (ERP) systems.

The HSE noted that 18% of Russian companies still had no broadband Internet access. Only 12% of Russian firms used online sales, 23% used cloud services, and only 6% used RDIF technologies.

80% Of Russian Companies Use AI—Industry Study

About 80% of Russian companies use artificial intelligence (AI) technologies. That's what the not-for-profit Russian Association for Electronic Communications (RAEC) found in its most recent study conducted in partnership with the Higher School of Economics and Microsoft.

Four focal sectors were picked for the study, including heavy industry (mechanical engineering and mineral extraction), telecom, finance, and logistics.

A reported 100 experts in AI were polled, and representatives of the picked sectors interviewed.

An estimated 58% of the polled specialists and industry experts believe that AI tech works best in optimizing business processes.

Other advantages include the development of new products and services, an increase in labor productivity, a boost in the quality of products and services, an improvement of customer service, and the customers' higher satisfaction.

Russian AI Developer Taken Over By UK Company

Streetbee, a Russian developer of artificial intelligence based solutions for image recognition, earlier this year was purchased by BeMyEye, a British company.

Following the closing of the deal, BeMyEye is now valued at an estimated 50 million euros. The prior Streetbee shareholders, including UltimateVC which invested in the Russian developer three years ago, have got an aggregate 20% in the merged company.

Russian Start-Up Technologies To Probe U.S. Market

A Russo-American accelerator called Starta Accelerator, which is part of the Starta Ventures group, has been mentoring 20 Russian and international technology start-ups as they participate in a three-month acceleration program in New York.

Starta's seventh round of enrolment brought together marketplaces, e-commerce players, real estate technology start-ups, fintech developers, retail companies and CBD product makers that use a broad range of technologies, including augmented reality (AR), blockchain, artificial intelligence (AI), and others.

AI backs Cancer Diagnostics

TeleMD, a Russian start-up, is developing a software platform that uses artificial intelligence (AI) for cancer diagnostics and prognostication.

Over the past few months the start-up has been focused on fine-tuning the platform's image recognition functionality for cancer diagnostics, and also on making the solution scalable for medical specialists from across disciplines to be able to analyze heterogeneous medical data.

Yandex And Hyundai Mobis Join Forces On Autonomous Cars

Yandex, Russia's NASDAQ-listed search giant, and Hyundai Mobis, one of the world's ten largest manufacturers of automotive components based in South Korea, announced plans to jointly develop control systems for Level 4 and Level 5 autonomous vehicles.

The partners stated in their joint memorandum of understanding (MOU) that the first stage of this collaboration between Yandex and Hyundai Mobis "is set to focus on developing a driverless prototype vehicle based on standard Hyundai or Kia production model cars.

In the future, the companies plan to build a new autonomous driving control system as an out-of-the-box solution intended for car manufacturers, car sharing services and taxi fleets.

World Economic Round Up

EU's economy performed worse than expected in the first three months of the year. Pundits predicted a 0.3 percent rise. The execs thought business conditions were at their worst for nearly six years, the quiz said. European finance ministers also fear the US putting tariffs on car imports from the euro zone. The bloc's shares and the euro tumbled in value. Growth concerns are likely to intensify if the industrial backdrop deteriorates further

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 – 10th June 2019
- Industry Forecast Briefing, London – 17th September 2019 2019

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 10th June 2019
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 17th September 2019

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

Follow Us On Twitter

For weekly semiconductor news and updates follow us on Twitter.