



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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FEATURED IN THIS EDITION

A METHOD TO GENERATE ADDITIONAL VOLATILE STATES USING SINGLE-DOMAIN FERROELECTRIC FIELD-EFFECT TRANSISTOR

This work proposed a novel approach to generate the additional two volatile states with existing two non-volatile states using 1T Ferroelectric field-effect transistors (FeFETs). Researchers used the Ferroelectric FET calibrated to GlobalFoundries' 12nm node fully depleted silicon on insulator (FDSOI)-based technology.

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GRAPHENE-BASED ABSORBERS FOR HIGH-SPEED MODE-LOCKING IN LASER SYSTEMS

A recent study published in Scientific Reports looks at how graphene-based saturable absorbers can be added to silicon-on-insulator (SOI) platforms to support both passive and active mode-locking in lasers. The study also highlights the potential for further optimization through edge-coupled configurations, which could extend operational bandwidth and improve performance.

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INVESTIGATING THE EFFECTS OF IONIZING RADIATION ON C-V CHARACTERISTICS OF SOI-MOS CAPACITORS IN HARSH ENVIRONMENTAL CONDITIONS

It is concluded that C-V characteristic of SOI-MOS-C is a suitable tool for characterizing electronic devices in harsh environments, such as space applications, and SOI technology offers an alternative choice for radiation-hardened devices.

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FULLY DEPLETED SILICON-ON-INSULATOR MOSFET PH SENSOR WITH N/P-SI JUNCTION CHANNEL INDUCED SUPER-NERNSTIAN SENSITIVITY AND LOW POWER

A novel n/p-Si junction channel for double-gate fully depleted silicon-on-insulator (FDSOI) metal-oxide-semiconductor field-effect-transistor (MOSFET) sensor is engineered to significantly improve the pH detection sensitivity with low static power consumption.

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SOI ECOSYSTEM NEWS

X-FAB, SMART PHOTONICS AND EPIPHANY DESIGN DEMONSTRATE INP-ON-SILICON DESIGN FLOW FOR NEXT-GENERATION OPTICAL TRANSCEIVERS AT OFC

Through the co-optimization of SOI, InP, and Micro-Transfer-Printing (MTP) technologies, the new platform aims to address customer requirements for high-speed data rates and energy efficiency in high-volume manufacturing of optical transceivers.

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HOW SOITEC ENGINEERS SUBSTRATES FOR CLOUD AND EDGE AI

In this new EE Times Europe feature, René Jonker, EVP of Cloud and AI at Soitec, discusses how the company's advanced substrate technologies, including SmartSiC™ and FD-SOI, are helping to meet the performance, power, and scalability demands of next-generation AI systems.

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INDUSTRIAL 300 MM WAFER PROCESSED SPIN QUBITS IN NATURAL SILICON/SILICON-GERMANIUM

In this work, researchers demonstrated the operation of electric dipole spin resonance (EDSR) qubits in a natural Si/SiGe heterostructure, fully manufactured by an industrial 300 mm semiconductor wafer process line, with a cobalt micromagnet control module incorporated through monolithic integration.

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ON-CHIP SUPERCONDUCTING NANOWIRE SINGLE-PHOTON DETECTORS INTEGRATED WITH PUMP REJECTION FOR ENTANGLEMENT CHARACTERIZATION

Researchers explored the integration of superconducting nanowire single-photon detectors (SNSPDs) with passive pump rejection filters, achieved by cascaded silicon Bragg gratings, on a single substrate. It is noted that the study may offer a promising approach toward the construction of large-scale quantum photonic systems.

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COMPOUND SEMICONDUCTOR

GREATWALL TAPS NAVITAS FOR 2.5KW AI DATACENTRE POWER SUPPLY

GreatWall in China is to use the GaNSense power devices from Navitas Semiconductors for a 2.5kW high power density DC-DC converter for AI datacentres. The quarter brick 2.5kW DC-DC converter has a power density of 92.36W/cm³, eight times higher than the output power of traditional silicon designs.

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STMICROELECTRONICS AND INNOSCIENCE SIGN GAN TECHNOLOGY DEVELOPMENT AND MANUFACTURING AGREEMENT

The two companies have agreed on a joint development initiative on GaN power technology, to advance the promising future of GaN power for consumer electronics, datacenters, automotive and industrial power systems and many more applications in the coming years.

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GAN MISHEMTS IN RF PAS EXHIBIT A STABLE OPERATING RANGE

In a breakthrough at the IEEE International Reliability Physics Symposium (IRPS) 2025, imec demonstrated that, despite their positive bias (on-state) instability, GaN MISHEMTs (Metal-Insulator-Semiconductor High Electron Mobility Transistors) can maintain consistent performance when operating within a well-defined range.

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ENHANCING GAN DIODE PERFORMANCE WITH P-OXIDES

École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland has reported significant improvement in p-oxide/gallium nitride (GaN) heterojunction (HJ) PiN bipolar diodes by inserting a crystalline p-type lithium-doped nickel oxide (p-LiNiO) layer between the drift layer and high-hole-density p-type amorphous nickel oxide layer.

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SEMI BLOG

SEMI'S 4TH ANNUAL STARTUPS FOR SUSTAINABLE SEMICONDUCTORS (S3) PROGRAM IS ACCEPTING APPLICATIONS

The SEMI Startups for Sustainable Semiconductors Program connects promising climate technology startups with many of the industry's largest Corporate Venture Capital (CVC) firms. For startups interested in applying their solutions to improving sustainable practices within the semiconductor industry, the call for applications is open until May 1. Finalists will pitch their solutions to an audience at this year's SEMICON West, taking place from October 7-9 in Phoenix, Arizona.

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SEMI NEWS HIGHLIGHT

EUROPEAN CHIPS SKILLS ACADEMY LAUNCHES ECS SUMMER SCHOOL 2025 TO INSPIRE FUTURE ELECTRONICS TALENT

The five-day event themed 'Fascinating Electronics for a Cool World' is designed to inspire and attract new talent to Europe's electronic components and systems sector. This year's session will take place at the Budapest University of Technology and Economics in Hungary from August 24-29, 2025. The program will feature interactive workshops, expert-led discussions, networking sessions, and practical insights into cutting-edge microelectronics and semiconductor technologies. Students enrolled in STEM-related fields from universities across the EU or associated countries are invited to apply until 30 April 2025.

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