



SOI & ADVANCED SUBSTRATES NEWS
ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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FEATURED IN THIS EDITION

SOITEC, GLOBALFOUNDRIES ALLY FOR HIGH-PERFORMANCE RF-SOI SEMICONDUCTORS

Building on the longstanding relationship between the two companies, this commitment will ensure the supply of advanced RF-SOI engineered substrates required for 5G, 5G-Advanced, Wi-Fi, and other smart mobile device Radio Frequency Front-End modules.

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QUOBLY FORGES STRATEGIC COLLABORATION WITH STMICROELECTRONICS TO ACCELERATE ITS QUANTUM PROCESSOR MANUFACTURING FOR LARGE-SCALE QUANTUM COMPUTING SOLUTIONS

By leveraging STMicroelectronics' advanced FD-SOI semiconductor process technologies, this collaboration is set to make large-scale quantum computing feasible and cost-effective, positioning both companies at the forefront of next-generation computing technologies.

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LITHIUM NIOBATE ELECTRO-OPTICAL MODULATOR BASED ON ION-CUT WAFER SCALE HETEROGENEOUS BONDING ON PATTERNED SOI WAFERS

An electro-optic Mach–Zender modulator operating at the wavelength of 1550 nm is demonstrated by wafer-scale heterogeneous silicon-on-insulator (SOI)/TFLN integration, combining the merits of the excellent electro-optical properties of lithium niobate materials and the large-scale fabrication of SiPh.

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ULTRA-LARGE NONLINEAR PARAMETERS AND ALL-OPTICAL MODULATION OF A TRANSITION METAL DICHALCOGENIDES ON SILICON WAVEGUIDE

In this work, researchers integrated monolayer two-dimensional transition metal dichalcogenides into silicon-on-insulator (SOI) waveguides and dielectric-loaded surface plasmon polariton waveguides. Significantly, this study may enable novel ways for next-generation nonlinear all-optical modulation applications.

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SOI ECOSYSTEM NEWS

PROGRESS ON FAMES PILOT LINE FOR 10-NM AND 7-NM FD-SOI

At the IEDM conference in San Francisco, Jean-Rene Lequepeys, CTO and deputy director of CEA-Leti, gives us the background to the FAMES Pilot Line project, its objectives and how over 40 global partners are keen to evaluate the technology.

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SILICON PHOTONICS TO POWER NEXT-GEN AI DATA CENTRES

Soitec's René Jonker explains how advanced semiconductor materials and silicon photonics can enable more efficient data centres for AI applications. The company is addressing critical challenges in data centre scalability and energy efficiency, which helps to pave the way for next-generation AI applications.

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FABRICATION AND ELECTRICAL CHARACTERIZATION OF LOW-TEMPERATURE POLYSILICON FILMS FOR SENSOR APPLICATIONS

This work demonstrates, for the first time, the fabrication of a 200 nm polycrystalline silicon thin film through a metal-induced crystallization process mediated by an AlSiCu alloy at temperatures as low as 450 °C on top of silicon and polyimide (PI) substrates.

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IMPROVEMENT OF THE THERMAL PERFORMANCE OF THE GAN-ON-SI MICROWAVE HIGH-ELECTRON-MOBILITY TRANSISTORS BY INTRODUCING A GAN-ON-INSULATOR STRUCTURE

A GaN-on-insulator (GNOI) structure is proposed to enhance the heat dissipation ability of a GaN-on-Si HEMT. Electrothermal simulation was carried out to analyse the thermal performance of the GNOI-on-Si HEMTs with different insulator dielectrics, including SiO2, SiC, AlN, and diamond.

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COMPOUND SEMICONDUCTOR

ROHM AND TSMC COLLABORATE ON GAN FOR AUTOMOTIVE

The partnership will integrate ROHM's device development technology with TSMC's industry-leading GaN-on-silicon process technology to meet the growing demand for superior high-voltage and high-frequency properties over silicon for power devices.

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BOSCH GETS \$225M CHIPS FUNDING FOR US SIC FAB

Under the agreement, the United States would support Bosch's investment of \$1.9 billion to modernise its SiC manufacturing facility under the CHIPS and Science Act, enabling the company to produce chips on 200 mm wafers starting in 2026.

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VERTICAL GAN DIODE OFFERS SUPERIOR SURGE CURRENT CAPABILITY

Researchers from University of Science and Technology of China (USTC) have developed a 2 kV/0.45 mΩ·cm² vertical GaN PiN diode with a high surge energy density (E_{surge}) of 282 J/cm², which the team believes is one of the best among the state-of-the-art quasi- and fully-vertical GaN power diodes.

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FULLY VERTICAL GAN P-I-N DIODES ON SILICON

Researchers from France's Institute of Electronics, Microelectronics and Nanotechnology (IEMN) and Siltronic AG in Germany claim the first demonstration of high-current operation (above 10A) for vertical gallium nitride (GaN)-based devices on silicon (Si) substrates.

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SEMI BLOG

III-V: A NEW ERA OF TECHNOLOGICAL ADVANCES

The promise of new III-V technologies is generating significant excitement within the semiconductor industry. The III-V Summit, hosted by SEMI Europe in partnership with Photon Delta at SEMICON Europa, highlighted how III-V materials, combined with advanced packaging, are set to play a pivotal role in shaping next generation technologies.

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SEMI NEWS HIGHLIGHT

SEMICON KOREA 2025 TO SPOTLIGHT EDGE TECHNOLOGIES SHAPING THE AI ERA

SEMICON Korea 2025 will take place Feb. 19-21 in Seoul at the COEX. Themed Lead the Edge, the event will feature key topics such as cutting-edge chip manufacturing technology trends, sustainability, smart manufacturing, regional semiconductor investment programs, workforce development, and international R&D collaboration seminars. Registration is now open.

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EVENTS



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