



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

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\$5.4M FOR NEXT GENERATION FD-SOI BEAMFORMING TRANSCEIVER

Sivers Semiconductors has been awarded a major chip development project to develop a next generation highly-integrated millimetre wave beamforming transceiver. The programme will run until the end of 2026 and will use the 22nm 22FDX **FD-SOI** process at GlobalFoundries.

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TEMPERATURE-DEPENDENT ELECTRONIC TRANSPORT IN RECONFIGURABLE TRANSISTORS BASED ON GE ON SOI AND STRAINED SOI PLATFORMS

Integrating Ge onto **SOI** should enhance the drive currents and switching speeds of transistors. In this study, researchers investigated two different advanced Ge- on **SOI** transistor platforms in terms of temperature-dependent gating capabilities.

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DESIGN AND STUDY OF A NOVEL P-TYPE JUNCTIONLESS FET FOR HIGH PERFORMANCE OF CMOS INVERTER

The junctionless field effect transistor (JLFET) is one of the effective ways to improve the performance of PMOS devices. In this study, a novel p-type JLFET based on partially depleted silicon-on-insulator (**PD-SOI**) is proposed and studied for the first time.

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COMPARATIVE STUDY OF A MICRODOSIMETRIC BIOLOGICAL WEIGHTING FUNCTION FOR RBE₁₀ MODELING IN PARTICLE THERAPY WITH A SOLID STATE SOI MICRODOSIMETER

This study shows that the **SOI** microdosimeter is a valuable tool that can be utilized for quick and accurate experimental derivation of the d(y) spectra, which can then be convoluted with the weighting function of the V79-RBE₁₀ biological weighting function (BWF) model to derive RBE₁₀.

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SOI ECOSYSTEM NEWS

FIRST FULL WAFER-SCALE FABRICATION OF ELECTRICALLY-PUMPED GAAS-BASED NANO-RIDGE LASERS ON 300 MM SILICON WAFERS

Imec has announced a significant milestone in silicon photonics with the successful demonstration of electrically-driven GaAs-based multi-quantum-well nano-ridge laser diodes fully, monolithically fabricated on 300 mm silicon wafers in its CMOS pilot prototyping line.

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FIRST SCN DEPOSITION USING PEALD

The new Atomic Layer Deposition (ALD) R&D represents the first successful demonstration of scandium nitride (ScN) deposition using plasma-enhanced atomic layer deposition (PEALD) on silicon, sapphire, and magnesium oxide substrates under UHP conditions.

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MOTE₂ PHOTODETECTOR FOR INTEGRATED LITHIUM NIOBATE PHOTONICS

The integration of the MoTe₂ photodetector and micro-ring resonator on the thin film lithium niobate platform enables the measurement of the resonator's quality factor, providing a promising scalable solution for the full realization of on-chip integrated photonic devices.

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RESEARCH ON ENVELOPE PROFILE OF LITHIUM NIOBATE ON INSULATOR STEPPED-MODE SPOT SIZE CONVERTER

To enhance the end-face coupling efficiency of lithium niobate on insulator (LNOI) chips, in conjunction with current device fabrication processes, a stepped spot size converter based on a special outer envelope profile has been proposed and investigated.

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COMPOUND SEMICONDUCTOR

INDICHIP SEMIS TO BUILD \$1.4B SiC FAB

India's Indichip Semiconductors has signed an agreement with the government of Andhra Pradesh to construct what is described as 'India's first private semiconductor manufacturing facility'. The proposed SiC fab will launch with a production capacity of 10,000 wafers per month, rising to 50,000 wafers per month within two to three years.

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MACOM UNVEILS FIVE-YEAR, \$345M PLAN TO EXPAND 100MM GAN AND GAAS PRODUCTION AND INTRODUCE 150MM GAN

MACOM Technology Solutions Inc has announced a long-term capital investment plan comprising up to \$345m over five years to modernize its wafer fabrication facilities in Lowell, Massachusetts, and Durham, North Carolina, creating up to 350 manufacturing jobs and nearly 60 construction jobs across both states.

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RESEARCHERS DEVELOP TECH FOR FUTURE FAST-CHARGING STATIONS

Fraunhofer ISE and partners have developed a SiC-based medium voltage system technology for fast charging stations that will enable peak loads of several megawatts in the future. The technology, which uses efficient SiC semiconductors and higher voltages, leads to lower material use and lower costs for fast charging stations.

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200MM SINGLE CRYSTAL FOR VERTICAL GAN TRANSISTORS

It is reported that researchers at Osaka University and Toyoda Gosei fabricated a 200mm multi-point seed (MPS) substrate and succeeded in growing hexagonal GaN crystals with a diagonal length of just under 200mm on the substrate.

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SEMI BLOG

III-V: A NEW ERA OF TECHNOLOGICAL ADVANCES

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. A recurring theme throughout the event was the profound impact III-V materials will have, as they poised to become a corner stone of virtually every emerging technological advancement.

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SEMI NEWS HIGHLIGHT

ELECTRONIC SYSTEM DESIGN INDUSTRY POSTS \$5.1 BILLION IN REVENUE IN Q3 2024

Electronic System Design (ESD) industry revenue increased 8.8% to \$5,114.5 million in the third quarter of 2024 from the \$4,702.4 million registered in the third quarter of 2023, the ESD Alliance, a SEMI Technology Community, announced in its latest Electronic Design Market Data (EDMD) report. The four-quarter moving average, which compares the most recent four quarters to the prior four, rose 13.7%.

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