



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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POLARIZATION INDEPENDENT SILICON MICRO ANTENNA BASED ON A SUBWAVELENGTH METAMATERIAL

An innovative approach to design polarization-insensitive micro antennas targeting free-space coupling and optical phased array applications is reported here. A 500-nm SOI platform is chosen to ensure the best antenna performance.

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SI-BASED QUANTUM DOTS FOR SPIN QUBITS PUSHES FORWARD

A successful validation of a commercial CMOS process for silicon-based quantum technologies for spin qubits was completed by Equal1 on GlobalFoundries' 22FDX fully depleted silicon-on-insulator (FD-SOI) process technologies.

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AI AT THE SPEED OF LIGHT: HOW SILICON PHOTONICS ARE REINVENTING HARDWARE

A recent study published in the *IEEE* Journal of Selected Topics in Quantum Electronics introduces an AI acceleration platform built on photonic integrated circuits (PICs). The fabrication started with silicon-on-insulator (SOI) wafers that have a 400 nm-thick silicon layer.

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AN ENERGY EFFICIENT MEMORY CELL FOR QUANTUM AND NEUROMORPHIC COMPUTING AT LOW TEMPERATURES

Researchers successfully demonstrated a single transistor memory cell Cryogenic Capacitorless Random Access Memory (C2RAM) based on FDSOI technology. The logic and analog capabilities of C2RAM, combined with the high scalability of FDSOI technology, offer significant potential for high-density memory applications at cryogenic temperatures.

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SOI ECOSYSTEM NEWS

IQE AND X-FAB SIGN JOINT DEVELOPMENT AGREEMENT FOR GAN POWER

With an initial two-year scope of work, the agreement will leverage IQE's GaN epitaxy design and process expertise, along with X-FAB's proven technology development and device fabrication capabilities to offer an optimized technology-substrate combination for automotive, data center and consumer applications.

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INFINEON LAUNCHES WORLD'S FIRST INDUSTRIAL GAN TRANSISTOR PRODUCT FAMILY WITH INTEGRATED SCHOTTKY DIODE

The product family of medium-voltage CoolGaN™ Transistors G5 with integrated Schottky diode increases the performance of power systems by reducing undesired deadtime losses, thereby further increasing overall system efficiency. Additionally, the integrated solution simplifies the power stage design and reduces BOM cost.

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UNCOVERING THE INFLUENCE OF NITRIDATION ON THE DISLOCATION DENSITY AT ATOMISTIC SCALE IN III-NITRIDES MOCVD/MOVPE EPITAXY PROCESS

A successful demonstration has been carried out to replicate the MOCVD epitaxy experiment of III-V nitrides on Si (111) substrates, employing atomistic simulation to assess the effects of NH3 pre-flow duration, or nitridation time.

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TRANSFER OF DIAMOND THIN FILMS USING SMART CUT™ TECHNOLOGY

Researchers in France reported the successful transfer of diamond films using the Smart Cut™ transfer technique. To achieve this, process sequence is adapted by incorporating a hot implantation and a metallic bonding.

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COMPOUND SEMICONDUCTOR

POLAR LICENSES RENESAS GAN-ON-SI TECHNOLOGY FOR US PRODUCTION

Polar and Renesas will collaborate to scale the commercial production of GaN devices, expanding their use across critical industries, including automotive, data centres, consumer electronics, industrial applications, and aerospace and defence markets.

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GIGADEVICE DRIVES DIGITAL POWER IN JOINT LAB WITH NAVITAS

The lab will target the use of the Navitas gallium nitride (GaN) chips with the GigaDevice microcontrollers in areas such as AI datacentres, consumer power supplies and even electric vehicles. The move highlights a way to tackle the challenge of designing with GaN chips, which need more complex control algorithms.

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WAFER BONDING OF GAAS AND SIC VIA THIN AU FILM AT ROOM TEMPERATURE

Using surface-activated bonding (SAB), GaAs and SiC were successfully bonded, with a strength comparable to bulk fracture. These results highlight the potential of SAB with thin Au films as a promising approach for improving thermal management in high-power semiconductor laser devices.

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GAN HEMT HITS 85.2% PAE RECORD AT 2.45GHZ

Japan-based Fujitsu Ltd has reported gallium nitride (GaN) high-electron-mobility transistors on free-standing GaN substrates operating at 2.45GHz in the industrial, scientific & medical reserved band with 85.2% power-added efficiency and 89.0% drain efficiency.

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SEMI BLOG

SEMI WASHINGTON FLY-IN PRESENTS UNIFIED VOICE OF SEMICONDUCTOR SUPPLY CHAIN ON KEY ISSUES

While influencing policy changes will not occur instantaneously, the SEMI Washington Fly-In bolstered the SEMI Global Advocacy team's ongoing efforts to educate officials on the nuances and critical importance of the complete semiconductor supply chain. Additionally, the discussions emphasized the policy modifications that will have the greatest impact in helping the industry continue its lasting legacy of innovation that improves the quality of life for people in the U.S. and around the world.

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SEMI NEWS HIGHLIGHT

SEMI SILICON PHOTONICS INDUSTRY ALLIANCE LAUNCHES THREE SPECIAL INTEREST GROUPS TO LAY OUT A TECHNOLOGY ROADMAP

Silicon photonics has become a key technology driving the development of AI due to its advantages in high-speed data transmission, high bandwidth, low power consumption, and high integration. However, it still faces challenges in manufacturing processes, packaging and testing to meet the rapidly increasing demand for data transmission. To overcome these challenges, SEMI SiPhIA established three Special Interest Groups to accelerate breakthroughs and commercialization of silicon photonics technology.

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