



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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FEATURED IN THIS EDITION

RC-EFFECTS ON THE OXIDE OF SOI MOSFET UNDER OFF-STATE TDDB DEGRADATION: RF CHARACTERIZATION AND MODELING

This study presents an RF modeling and parameter extraction methodology that allows for representing the input impedance of **PD-SOI** MOSFETs. The devices were fabricated by Global Foundries over a high resistivity substrate in a mature **RF-SOI** 45 nm technology.

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ULTRABROADBAND HIGH-RESOLUTION SILICON RF-PHOTONIC BEAMFORMER

This paper proposed a novel switched optical delay line beamformer architecture that is capable of achieving the desired maximum resolution and provides broadband operation simultaneously. The concept is demonstrated by means of a compact delay line Silicon Photonic chip manufactured in **SOI** technology by Advanced Micro Foundry.

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SI/SIO2 SILICON-ON-INSULATOR BASED SCAFFOLD FOR INTERFACING WITH CEREBRAL ORGANOIDs

Using industry standard semiconductor fabrication techniques, this study presented a method of manufacturing thin, porous, scalable silicon scaffolds as a structure to support multi-electrode arrays. The rectangular test scaffolds are produced on bare **SOI** wafer with overall dimensions of 2.4×2.4 mm².

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SILICON MICRORESONATOR ARRAYS: A COMPREHENSIVE STUDY ON FABRICATION TECHNIQUES AND PH-CONTROLLED STRESS-INDUCED VARIATIONS IN CANTILEVER STIFFNESS

An optimized fabrication process for Silicon microcantilever arrays for biomolecular detection is outlined in this study. The microfabrication is carried out on a 7–2-500 Silicon-On-Insulator (**SOI**) substrate, 100 mm in diameter.

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SOI ECOSYSTEM NEWS

INFINEON AND WORKSPORT COLLABORATE TO REDUCE WEIGHT AND COST OF PORTABLE POWER STATIONS WITH GAN

Enabled by Infineon's GaN transistors, the power converters will be lighter and smaller in size with reduced system costs. In addition, Infineon will support Worksport in the optimization of circuits and layout design to further reduce size and increase power density.

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A NOVEL ENHANCEMENT-MODE GALLIUM NITRIDE P-CHANNEL METAL INSULATOR SEMICONDUCTOR FIELD-EFFECT TRANSISTOR WITH A BURIED BACK GATE FOR GALLIUM NITRIDE SINGLE-CHIP COMPLEMENTARY LOGIC CIRCUITS

A novel enhancement-mode gallium nitride (GaN) p-MISFET with a buried back gate (BBG) is proposed in this study to improve the gate-to-channel modulation capability of a high drain current.

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NANOTRONICS CFO EXPLAINS USING AI TO PRODUCE MORE CHIPS FOR AI

By focusing on the development of energy-efficient compound semiconductors and utilizing advanced technologies, Nanotronics is helping to shape the future of the semiconductor industry and promote sustainable practices in the tech sector.

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SILICON PHOTONICS-BASED HIGH-ENERGY PASSIVELY Q-SWITCHED LASER

In integrated photonics, the very property of tight mode confinement that enables a small form factor becomes an impediment to high-energy applications owing to small optical mode cross-sections. This paper demonstrates a high-energy silicon photonics-based passively Q-switched laser with a compact footprint using a rare-earth gain-based large-mode-area waveguide.

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COMPOUND SEMICONDUCTOR

XIAOMI CUKTECH 30W GAN CHARGER FOR IPHONES COSTS ONLY \$3

Recently, Xiaomi's Cuktech (formerly ZMI) launched a 20W GaN charger for iPhones. Just a few days later, the brand has released yet another power adapter again for Apple smartphones and tablets. The newer model is almost identical to the older one, but it outputs more wattage (30W).

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HKUST UNVEILS LART: A GAME-CHANGER IN DATA COMMUNICATIONS

HKUST researchers introduce LART, a revolutionary integration technique for III-V compound semiconductor devices and silicon. This breakthrough promises faster, more efficient data transmission, potentially transforming digital connectivity.

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UK GOVERNMENT TO INVEST £26.8M INTO SEMICONDUCTOR PROJECTS

The UK Department for Science, Innovation and Technology has invested in two new research hubs in Southampton and Bristol to boost research in silicon photonics and compound semiconductors. Each will receive £11 million.

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RESEARCHERS SPEARHEAD BREAKTHROUGH IN GALLIUM OXIDE SEMICONDUCTOR

After rigorous experimentation and optimization, the team successfully incorporated tin to enhance and modulate the conductivity of the semiconductor, resulting in superior quality ultra-wide bandgap compound semiconductors and fabricated two-terminal devices. A significant aspect of this research lies in the use of a sapphire substrate instead of the common gallium oxide substrates.

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SEMI BLOG

D2S CEO AKI FUJIMURA: CURVY DESIGN'S TIME HAS COME

Aki Fujimura, CEO of D2S and an expert on curvilinear (aka curvy) chip design, recently discussed with Bob Smith, Executive Director of the ESD Alliance, why curvy designs will lead to smaller, faster and more power efficient devices.

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SEMI NEWS HIGHLIGHT

GLOBAL SEMICONDUCTOR INDUSTRY – DRIVING TO \$1 TRILLION AND BEYOND TOGETHER

Ajit Manocha, President and CEO of SEMI, is optimistic that the industry will reach \$1 trillion around the end of this decade. Fast-growing demand for a diverse range of disruptive technologies and emerging applications – from AI, autonomous and electric vehicles, and high-performance computing to 6G and autonomous machines – will fuel this historic expansion.

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EVENTS



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