



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

SOI MARKET & TECHNOLOGY SYMPOSIUM

15 EXPERT SPEAKERS | APPLICATION BREAKTHROUGHS
SEMICON WEST | SAN FRANCISCO | JULY 13

HEAR THE LATEST & NETWORK WITH THE LEADERS IN THE INDUSTRY:

- VOICE
- SOTEC
- GLOBALFOUNDRIES
- SYNOPSYS
- CEA-LETI
- NXP
- STMICROELECTRONICS
- DOLFIN
- UC SAN DIEGO
- and more



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FEATURED IN THIS EDITION

A FIN-LDMOS WITH BULK ELECTRON ACCUMULATION EFFECT

A thin **Silicon-On-Insulator (SOI)** LDMOS with ultralow Specific On-Resistance ($R_{on,sp}$) is proposed, and the physical mechanism is investigated by Sentaurus. It features a FIN gate and an extended superjunction trench gate to obtain a Bulk Electron Accumulation (BEA) effect.

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ULTRA-LOW-POWER COMPACT NEURON CIRCUIT WITH TUNABLE SPIKING FREQUENCY AND HIGH ROBUSTNESS IN 22 NM FDSOI

In an effort to design biologically plausible spiking neuron circuits while restricting power consumption, the research proposed a new subthreshold Leaky Integrate-and-Fire (LIF) neuron circuit designed using **22 nm FDSOI technology**. In this circuit, problems of large leakage currents and device mismatch are effectively reduced by deploying the back-gate terminal of FDSOI technology for a tunable design.

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OPTICALLY TRANSPARENT AND THERMALLY EFFICIENT 2D MOS₂ HEATERS INTEGRATED WITH SILICON MICRORING RESONATORS

Thermal tuning of the optical refractive index in the waveguides to control light phase accumulation is essential in **photonic-integrated systems** and applications. This work presents a new concept of using optically transparent 2D semiconductors (e.g., MoS₂) for realizing highly efficient waveguide-integrated heaters operating at telecom wavelengths.

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A MICRO-HOTPLATE-BASED OVEN-CONTROLLED SYSTEM USED TO IMPROVE THE FREQUENCY STABILITY OF MEMS RESONATORS

This paper introduces a chip-level oven-controlled system for improving the temperature stability of MEMS resonators. The resonator is transduced by **AlN** film, and its temperature is monitored by temperature-sensing resistors on both sides.

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SOI ECOSYSTEM NEWS

ST TEAMS FOR \$3.2BN 200MM SIC FAB IN CHINA

STMicroelectronics is to create a joint venture in China with Sanan Optoelectronics for high-volume **silicon carbide** devices built on 200mm wafers. The joint venture fab in Chongqing will only supply ST to support demand for in China for car electrification and industrial power and energy applications and will use ST's 200mm process technology, where it has a development deal with Soitec in France.

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GLOBALFOUNDRIES AND STMICROELECTRONICS FINALIZE AGREEMENT FOR NEW 300MM SEMICONDUCTOR MANUFACTURING FACILITY IN FRANCE

GlobalFoundries and STMicroelectronics recently announced the conclusion of the agreement to create a new, jointly-operated, high-volume semiconductor manufacturing facility in Crolles, France. Jean-Marc Chery, President and CEO of STMicroelectronics said that which will further reinforce the European and French **FD-SOI ecosystem**, building more capacity for European and global customers in complex, advanced technologies for key end-markets.

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VERISILICON OBTAINS BLUETOOTH 5.3 CERTIFICATION FOR BLE SOLUTION

VeriSilicon's complete BLE solution is based on **22nm FD-SOI process node**, and its receiver sensitivity of RF transceiver IP reaches -96dBm or below, while the transmitter delivers a maximum transmitting power of +10dBm.

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X-FAB LEADS €48M SILICON PHOTONICS EFFORT

X-FAB has been selected to lead a €48 million project to commercialize silicon photonics technology. "The photonixFAB project aims to empower photonics innovation by SMEs and large entities by providing low-barrier access to both low-loss silicon nitride and silicon-on-insulator based photonics platforms with indium phosphide and lithium niobate heterogenous integration capabilities," X-FAB announced.

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SEMI NEWS HIGHLIGHT

APPLYING AI IN FAB TECHNOLOGY CO-OPTIMIZATION

Robert Smith, executive director of the ESD Alliance, recently spoke with Babak A. Taheri, Ph.D., the CEO of Silvaco, a well-established global technology provider of TCAD, semiconductor IP and EDA solutions, about the challenges of tuning and optimizing semiconductor manufacturing processes and how AI might be applied to reduce time and costs.

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BUILDING THE WORKFORCE TO POWER THE SEMICONDUCTOR REVOLUTION

The need for talent continues to grow as more semiconductor fabs are scheduled to come online and a generation of workers approach retirement. Developing the skilled talent pool needed to sustain an industry that is forecast to reach \$1 trillion by 2030 will be a key theme at SEMICON West, which returns to San Francisco July 11-13 to address critical challenges confronting the global microelectronics industry.

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EVENTS



FLEX CONFERENCE PROGRAM & ACTIVITIES

Date: July 11–13, 2023
Location: Moscone Center, San Francisco, CA

FLEX Conference & Exhibition is the annual premier industry event focused on flexible hybrid electronics, hybrid electronics, printed electronics, and advanced packaging innovations. FLEX will introduce new ways of combining solid state devices and system interconnection through heterogeneous integration and advanced packaging.

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SEMICON CHINA

Date: Jun 29- July 1, 2023
Location: Shanghai New International Expo Centre (SNIEC), China

SEMICON China connects you to the world's fastest-growing and most dynamic microelectronics market, and gives you the platform to showcase your products, technologies, and brand in front of the most qualified audience of industry professionals in China.

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SOI MARKETS & TECH SYMPOSIUM

Date: July 13, 2023
Location: Moscone Center, San Francisco, US

This is a single day event exploring applications, design and success stories for SOI wafers used in RF, Edge IOT, Automotive and design and manufacturing updates. Industry experts will provide updates on FD-SOI and RF-SOI and their complete ecosystems. Open forum opportunities will allow engagement time with experts and all speakers from the fabless, foundry and EDA/IP communities. Anyone needing an update or considering the benefits which SOI technology brings to semiconductor performance should attend.

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