



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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Mark your calendars for the [SOI Market & Technology Symposium](#) on July 13!

FEATURED IN THIS EDITION

A 28 GHZ PHASED-ARRAY TRANSCEIVER FOR 5G APPLICATIONS IN 22 NM FD-SOI CMOS

Using 22 nm **FD-SOI** CMOS technology, the design and implementation of a 28 GHz phased array transceiver for 5G applications is presented in this paper. The transceiver consists of a four-channel phased array receiver and a four-channel phased array transmitter, both operating at 28 GHz.

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A MONOLITHICALLY INTEGRATED MICROCANTILEVER BIOSENSOR BASED ON PARTIALLY DEPLETED SOI CMOS TECHNOLOGY

A monolithically integrated aptasensor composed of a piezoresistive microcantilever array and an on-chip signal processing circuit is presented. The integrated microcantilever sensor makes full use of the high gauge factor of single-crystalline silicon to achieve low parasitic, latch-up, and leakage current in the **PD-SOI** CMOS.

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ENHANCED PERFORMANCE OF SOI MESFETS BY DISPLACEMENT OF GATE CONTACT AND APPLYING DOUBLE OXIDE PACKETS

A new efficient technique is used in silicon-on-insulator metal–semiconductor field-effect transistors (**SOI MESFETs**) to simultaneously increase the breakdown voltage and drain current and also improve the frequency parameters.

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A LOW-PHASE-NOISE 8 GHZ LINEAR-BAND SUB-MILLIMETER-WAVE PHASE-LOCKED LOOP IN 22 NM FD-SOI CMOS

A type II PLL with wide locking range operating in the sub-mm-wave frequency is implemented in the 22 nm **FD SOI** CMOS process. The frequency performance of the PLL is improved by the design of wideband quadrature VCO along with a wide locking range ILFD with PMOS input injection.

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SOI ECOSYSTEM NEWS

INFINEON AND FOXCONN PARTNERING ON SILICON CARBIDE FOR EVS

Both parties intend to jointly develop EV solutions with outstanding performance and efficiency based on Infineon's automotive system understanding, technical support and SiC product offerings combined with Foxconn's electronics design and manufacturing expertise and the capability of system-level integration.

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COMPARING THE THERMAL PERFORMANCE AND ENDURANCE OF RESISTIVE AND PIN SILICON MICROHEATERS FOR PHASE-CHANGE PHOTONIC APPLICATIONS

The heating efficiency, fabrication variability, and endurance of two promising heater designs were investigated, which can be easily integrated into silicon waveguides—a resistive microheater using n-doped silicon and one using a silicon p-type/intrinsic/n-type (PIN) junction.

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MICROFABRICATION OF DOUBLE PROOF-MASS SOI-BASED MATRYOSHKA-LIKE STRUCTURES FOR 3-AXIS MEMS ACCELEROMETERS

A novel multi-axis vibration MEMS sensor with capacitive open-loop operation that can be widely deployed in the structural monitoring systems was introduced. The devices were fabricated through an in-house process using a seven-mask dicing-free MEMS process on a 10 µm-thick SOI wafer.

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QUANTUM DOT LASERS DIRECTLY GROWN ON 300 MM SI WAFERS: PLANAR AND IN-POCKET

Edge-emitting lasers are demonstrated with high yield and reliable results ready for commercialization and scaled production, and efforts to make monolithically integrated lasing cavities grown on SOI wafers vertically aligned and coupled to SiN waveguides on the same chip show the potential for 300 mm-scale Si photonic integration with in-pocket direct MBE growth.

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SEMI NEWS HIGHLIGHT

MSTC 2023 PRESENTATION PREVIEW: SENSORS FOR IMPROVING AIR QUALITY

Dr. Sondra Hellstrom, a principal engineer at Bosch, sat down with Tim Brosnihan, executive director of SEMI MEMS & Sensors Industry Group (MSIG), to discuss her decarbonization work and preview her presentation – New Paradigms in Smart Environmental Sensing – at MEMS & Sensors Technical Congress (MSTC).

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NEW SEMICONDUCTOR INDUSTRY HIRING MILITARY EVENTS AIM TO HELP FILL TALENT GAP

To help semiconductor companies tap this important demographic as part of its VetWorks program, the SEMI Foundation is launching a series of Semiconductor Industry Hiring Military Hiring events around the country – the first later this month in Phoenix. Additional events will be announced in the coming weeks.

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EVENTS



SILICON CARBIDE WEBINAR SERIES

Date: Jun 6, 2023
Location: Zoom

SiC power chips are gaining significant market share. Join us online for the fourth webinar in the Silicon Carbide Series – Understanding SiC chip cost, the impact of defects, and the case of price parity with Si at the system level.

[Learn More](#)



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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