



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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DESIGN OF A MICRO-ELECTRO MECHANICAL SYSTEM QUAD MASS GYROSCOPE WITH COMPLIANT MECHANICAL AMPLIFICATION

A novel mechanical amplification structure for a MEMS vibratory gyroscope is proposed with the aim of improving their sensitivity. The gyroscope was fabricated through gold–silicon bonding of a silicon on insulator (**SOI**) wafer and a Cap wafer.

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LOW-NOISE AMPLIFIER WITH BYPASS FOR 5G NEW RADIO FREQUENCY N77 BAND AND N79 BAND IN RADIO FREQUENCY SILICON ON INSULATOR COMPLEMENTARY METAL–OXIDE SEMICONDUCTOR TECHNOLOGY

This paper presents the design of a low-noise amplifier with a bypass mode for the n77/79 bands in 5G New Radio. The fabrication process utilized RF silicon on insulator (**SOI**) technology, known for its superior RF performance compared to bulk-CMOS processes.

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FMCW LIDAR WITH A COHERENT RECEIVER CHIP BASED ON 3 MM SOI PHOTONICS PLATFORM

A coherent receiver chip for FMCW LiDAR based on 3 μm **SOI** waveguide is firstly proposed. By utilizing the 3 μm SOI silicon photonics platform, it is possible to develop monolithic chips that integrates on chip laser sources, multi-channel coherent receivers, and beam scanning elements for LiDAR, thereby creating a fully integrated solution for LiDAR systems.

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ARBE ANNOUNCES THE AVAILABILITY OF PRODUCTION INTENT CHIPSET FOR MASS MANUFACTURING OF PERCEPTION RADARS

The Perception Radar Chipset also includes the industry's strongest processor chip, which allows the processing of massive amounts of raw data in real time with unparalleled computational abilities. The chips are manufactured with the most advanced 22 nm **FD-SOI** (Fully Depleted Silicon-on-Insulator) process.

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SOI ECOSYSTEM NEWS

INFINEON STRENGTHENS MULTI-SOURCING STRATEGY IN NEW SUPPLIER AGREEMENT WITH SK SILTRON CSS FOR SiC WAFERS

Under the agreement, SK Siltron CSS will provide Infineon with competitive and high-quality 150-millimeter SiC wafers, supporting the production of SiC semiconductors. In a subsequent phase, SK Siltron CSS will play an important role in assisting Infineon's transition to a 200-millimeter wafer diameter.

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HIGH-SPEED AND ENERGY-EFFICIENT NON-VOLATILE SILICON PHOTONIC MEMORY BASED ON HETEROGENEOUSLY INTEGRATED MEMRESONATOR

In this study, researchers have demonstrated a nonvolatile III–V-on-silicon memresonator used for programmable photonic memory operating at record low switching energy (0.15–0.36 pJ), sub-nanosecond switching times enabling high-speed, energy-efficient in-memory computing within silicon photonic neural networks.

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REDUCTION OF SELF-HEATING EFFECTS IN GAN HEMT VIA H-BN PASSIVATION AND LIFT-OFF TRANSFER TO DIAMOND SUBSTRATE: A SIMULATION STUDY

This study indicates that h-BN integration in GaN HEMT as a top heat spreader and a release layer for transfer to diamond substrate can be a promising solution to reduce self-heating effects and extend the device lifetime and reliability.

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A MULTI-OBJECTIVE GENETIC ALGORITHM APPROACH FOR SILICON PHOTONICS DESIGN

A multi-objective genetic algorithm approach is formulated to optimize the design of silicon-photonics complex circuits with contradicting performance metrics and no closed-form expression for the circuit performance.

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SEMI BLOG

DATA STANDARDS IN SEMICONDUCTOR TEST WILL KEEP MOORE'S LAW ALIVE

Moore's Law is decelerating, but that doesn't necessitate a slowdown in semiconductor advancements. Collaboration among industry stakeholders may be instrumental in continuing the demanding pace of Moore's Law for years to come. Integrating data analytics, ML and AI into semiconductor test processes is an important step in realizing this goal.

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SEMI NEWS HIGHLIGHT

SEMICONDUCTORS ACCELERATE THE ARTIFICIAL INTELLIGENCE REVOLUTION

The AI racecar has had an exhilarating journey for the past decade, from pattern recognition to today's generative AI tools such as GPT4 and Bard. While everyone is watching and marveling at the AI like they might a supercharged racecar, what is often overlooked is the semiconductor engine under the hood.

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