

Press Release

X-FAB first to market with 110 nm BCD-on-SOI foundry solution

Next generation automotive-grade process for high digital content applications

Tessenderlo, Belgium – June 1, 2023

X-FAB Silicon Foundries SE, the leading analog/mixed-signal and specialty foundry, has built on its prominent position in BCD-on-SOI technology, by being the first foundry to introduce a 110 nm solution. The new XT011 BCD-on-SOI platform reflects the growing need for greater digital integration and processing capabilities within analog applications. It brings together the appealing attributes associated with both SOI and DTI, so that high-density digital logic and analog functionality can be more easily incorporated in a single chip compared to traditional bulk BCD.

By moving to a lower process node, the X-FAB XT011 offering provides double the standard cell library density of its established XT018 180 nm BCD-on-SOI semiconductor platform. It also takes up 35% less area for SONOS embedded flash implementations. Ultra-low on-resistance ($R_{ds(on)}$) high-voltage N-channel device performance is another important property (with a greater than 25% improvement on the XT018 process). The thermal performance has been enhanced significantly, which means that high-current applications can be better addressed – matching what would normally be expected of a bulk BCD process.

Enabling the delivery of AEC-Q100 Grade 0 compliant design implementations, this new BCD-on-SOI technology is highly robust. An operating temperature range of -40°C to 175°C is covered. Elevated levels of resilience to EMI are exhibited too. With no parasitic bipolar effects being witnessed, the risk of latch-ups occurring can be eliminated – thereby assuring the highest degrees of operational reliability.



A comprehensive process design kit (PDK) provided by X-FAB for XT011 as well as a broad array of IP elements, such as SRAM, ROM, SONOS-based flash and embedded EEPROM, are available. Thanks to this, customers will have all the means they need to achieve 'first-time-right' designs – which will translate into quicker time to market.

The XT011 process is primarily targeted at next-generation automotive applications that require an increased level of data processing capabilities. In addition, it will provide a path to a smaller geometry for existing industrial and medical products.

"X-FAB is already widely known as the go-to foundry for BCD-on-SOI technology, and being the first to transition to 110 nm further highlights our unmatched expertise in this field," states Joerg Doblaski, CTO of X-FAB. "Through this next generation automotive-grade process, we are providing customers the foundation they require for producing more sophisticated, highly integrated smart analog products."

Devices using the new XT011 110 nm BCD-on-SOI semiconductor process will be fabricated at X-FAB's facility in Corbeil-Essonnes, near Paris. Volume production will commence in the second half of 2023.

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Acronyms

BCD - Bipolar CMOS-DMOS

CMOS - Complementary Metal Oxide

DTI - Deep Trench Isolation

EEPROM - Electrically Erasable Programmable Read-Only Memory

EMI – Electromagnetic Interference

ROM – Read-Only Memory

SOI - Silicon-on-Insulator

SONOS - Silicon Oxide Nitride Oxide Silicon

SRAM - Static Random Access Memory

About X-FAB

X-FAB is the leading analog/mixed-signal and MEMS foundry group manufacturing silicon wafers for automotive, industrial, consumer, medical and other applications. Its customers worldwide benefit from the highest quality standards, manufacturing excellence and innovative solutions by using X-FAB's modular CMOS and SOI processes in geometries ranging from 1.0 μm to 110 nm, and its special silicon carbide and MEMS long-lifetime processes. X-FAB's analog-digital integrated circuits (mixed-signal ICs), sensors and micro-electro-mechanical systems (MEMS) are manufactured at six production facilities in Germany, France, Malaysia and the U.S. X-FAB employs about 4,200 people worldwide. Learn more at xfab.com.

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