



PRESS RELEASE

X-FAB Unveils New Ultra-Low-Noise Transistors with Industry-Leading Performance Utilizing its 180 nm CMOS Platform

New XH018 transistors improve flicker noise up to a factor of 10 in order to target noise-sensitive applications

Erfurt, Germany – November 29, 2017

X-FAB, the leading More-than-Moore foundry, today announced the expansion of its low-noise transistor portfolio based on the company's proprietary 180 nm XH018 mixed-signal CMOS technology. Three new transistors are now available: a 1.8 V low-noise NMOS, a 3.3 V low-noise NMOS and a 3.3 V low-noise PMOS – all of which offer drastically reduced flicker noise compared to standard CMOS offerings.

These transistors are mainly designed for sensor deployments which require very low-noise signal amplification to achieve high signal-to-noise ratio (SNR). Among the key target applications are analog and digital microphone amplifiers, which are widely used in mobile phones and headsets, as well as implantable medical devices, such as pacemakers.

The new 1.8 V low-noise NMOS transistor introduced by X-FAB delivers an improvement factor of eight times lower flicker noise compared to the standard XH018 device. The new 3.3 V low-noise NMOS transistor gives up to ten times lower flicker noise, while the flicker noise for the 3.3 V low-noise PMOS transistor that complements it is halved for all drain currents.

Flicker noise, also known as $1/f$ noise, is the dominant noise at low frequencies, between 1 Hz to 1 MHz. For applications working in this spectrum, it is important that the flicker noise is kept to a minimal level.

Using the new complementary low-noise 3.3 V transistors makes it easier for designers to realize noise-critical designs, enabling them to achieve a high SNR - as required, for example, by digital amplifier ICs. Designers can also benefit from more accurate models which are supplied in the new BSIM4 format. With this, the chances for achieving first-time-right implementation of complex analog circuits are significantly improved.

Luigi Di Capua, Director Marketing at X-FAB, commented: "X-FAB has been setting the benchmark for low-noise performance in its 350 nm technology for many years. We are proud to now also offer industry-leading low-noise devices via our 180 nm XH018 platform. By adding just one extra mask layer, all three ultra-low-noise transistors can be incorporated into noise-sensitive circuit designs."



Availability

The new 180 nm low-noise CMOS transistors, integrated within the XH018 process design kit (PDK), are available immediately for new designs. Noise parameters are included within the device models to facilitate an accurate simulation of the noise behavior of a circuit, before it is actually implemented.

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About X-FAB Silicon Foundries

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 processes in geometries ranging from 1.0 to 0.13 μm , and its special BCD, SOI 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 more than 3,800 people worldwide. For more information, please visit

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