



PRESS RELEASE

X-FAB Introduces New Low-Power eFlash Block Optimized for Energy Harvesting & IoT Devices

Based on its highly reliable automotive-grade 180 nanometer platform it offers the industry's lowest power NVM solution for use in harsh environments

Erfurt, Germany – December 19, 2017

X-FAB today announced the availability of two new Non-Volatile Memory (NVM) IP solutions - a low power embedded Flash (eFlash) IP block and a NVRAM compiler. Both are based on the company's proprietary 180 nm XH018 mixed-signal CMOS technology and are targeted at applications requiring high reliability and field re-programmability while operating at low power and in harsh environments.

The 128-kbit eFlash, which is available as an 8 k x 16-bit IP block is based on Silicon-Oxide-Nitride-Oxide-Silicon (SONOS) Flash technology. X-FAB has built up extensive experience and manufacturing excellence in integrating SONOS memories with conventional CMOS processes, ensuring high levels of data reliability. The IP block has been designed for low power mixed-signal applications and features a deep power down stand-by mode consuming a maximum of only 50 nA.

The new [X-FAB eFlash IP block](#) is targeted at replacing standalone NVM memories and embedded One-Time-Programmable (OTP) memories in low power applications, enabling onsite program code updates. This means that it is highly suited to energy harvesting and remotely located Internet-of-Things (IoT) devices, where power constraints and harsh environments need to be dealt with, but field re-programmability must be offered at a low cost.

X-FAB has rigorously qualified the eFlash IP block to comply with the AEC-Q100 standard, so that it offers engineers an automotive-grade solution capable of operating across a temperature range of -40 °C to 125 °C. The SONOS technology enables reliable operation of the IP block when combined with high-voltage (HV) options ranging from 6 to 45 V. This is made possible by the NMOS, PMOS and DMOS transistors available with X-FAB's 180 nm XH018 process. High field reliability is enabled with a number of test modes explicitly designed to test individual memory bit cell currents and achieve 0 PPM in the field. Finally, special test modes have been designed into the IP to optimize production testing and minimize test time and cost.

With this latest release, X-FAB's complements its existing NVM portfolio with this very low power option. Other available Flash blocks address automotive applications up to 175 °C in read operation.



Combining the fast read/write speeds of a conventional SRAM with the non-volatility of an EEPROM, the **NVRAM** compiler facilitates generating and integrating memories from 1-kbits to 16-kbits in a wide range of applications requiring fail-safe memories. The contents of the SRAM can be backed up to the EEPROM memory resource in the event of a power failure. This proves to be a highly desirable feature for safety-critical applications - such as smart meters, industrial control devices or data transfer systems. The NVRAMs can be re-programmed up to 100,000 times at 35 °C and up to 10,000 times at 175 °C. NVRAM blocks generated by the compiler can retain data for up to 20 years without battery power in high temperature environments (125 °C). Innovations in the test logic integrated with the NVRAM reduce the test time by avoiding time-consuming measurements for low currents, thereby reducing production test costs.

Thomas Ramsch, Director NVM Development at X-FAB, sums up the benefits as follows: “The combination of different NVM options with high-voltage features and low-leakage properties at a low mask count make the XH018 process a highly effective, reliable and cost-efficient solution for emerging energy harvesting and IoT devices. With the introduction of these readily available silicon-qualified NVM IP, we are enabling designers to focus on bringing their products to market faster and cheaper”.

Availability

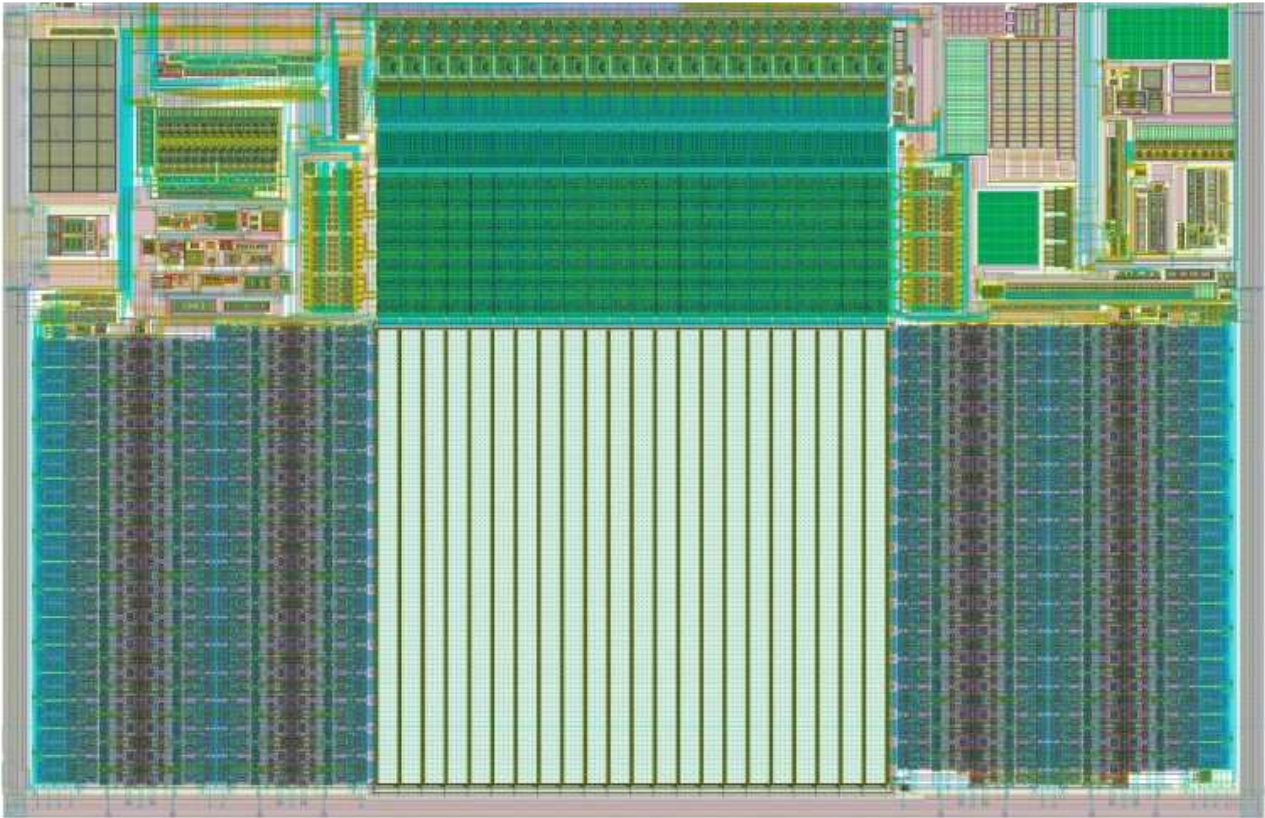
Both the eFlash IP block and the NVRAM compiler are immediately available via X-FAB's XH018 process for new designs. The two NVM options are based on the SONOS principle and only require two additional mask layers, making it a very cost-effective solution. X-FAB also offers wafer-level test for these IP blocks.

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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 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

www.xfab.com



Very low power eFlash IP block

X-FAB Press Contact

Thomas Hartung

VP Sales & Marketing

+49-361-427-6160

Thomas.Hartung@xfab.com