



X-FAB 0.35, 0.18, 0.13 μ m PROTOTYPING AND VOLUME PRODUCTION

Picture Source: X-FAB

EUROPRACTICE-IC offers Multi-Project-Wafer and Volume Production services of X-FAB to academic institutions together with small and medium-sized enterprises.

Why EUROPRACTICE?

- ▶ Affordable and easy access to Prototyping and Small Volume Production services for academia and industry.
- ▶ MPW (Multi-Project-Wafer) runs for various technologies, including ASICs, Photonics, MEMS and GaN.
- ▶ Advanced packaging, system integration solutions and test services.

Why X-FAB?

- ▶ The world's leading foundry group for analog/mixed-signal semiconductor applications.
- ▶ Technologies ranging from 1.0 to 0.13 μ m mixed-signal CMOS, special SOI and MEMS long lifetime processes for automotive, industrial, medical and other applications.
- ▶ Six manufacturing sites in Germany, France, Malaysia and the USA.

Technology Highlights

XH035: Modular Mixed-Signal Technology with HV Extensions

This technology is based on a single poly triple metal 0.35 μ m drawn gate length process for digital applications. It features core and process modules such as low Vt, low leakage, embedded non-volatile memory and high voltage options, as well as standard or thick fourth layer of metal, double poly and MIM capacitors and high resistance polysilicon. MOS and bipolar transistors are also available.

World class low noise p-mos and n-mos transistors make this technology the first choice for applications requiring very low noise and high signal-to-noise ratios, for instance, for industrial, automotive and telecommunication products.

DMOS transistors are available for multiple operating voltages up to 100V. The 45V DMOS transistors come with a 45 percent lower on-resistance which can reduce the chip area by up to 40 percent, resulting in significant cost savings. The 3.3 V CMOS cores are compatible in design rules and transistor performance with state-of-the-art 0.35 μ m CMOS processes.

XH018: Modular Mixed-Signal HV CMOS Technology

Based upon the industrial standard single poly with up to six metal layers 0.18-micron drawn gate length Nwell process. It is the industry's first and only 0.18 micrometer technology to integrate high temperature (HT), high voltage (HV) and non-volatile memory (NVM) all in a single platform.

It is ideal for SoC applications in the automotive market such as control devices inside combustion engine compartments or electric engine housings with temperature range up to 175°C, as well as embedded high-voltage applications in the communications, consumer and industrial market.

XT018: Modular HV SOI CMOS Technology

It combines the benefit of SOI wafers with Deep Trench Isolation (DTI) and those of a state-of-the-art six metal layers 0.18-micron process. High voltage support up to 200V combined with range of Non-Volatile-Memory options. The XT018 platform is specifically designed for a next generation automotive, industrial and medical applications operating in the temperature range of -40 to 175 °C. Full PDK support for major EDA vendors, extensive device characterization and modeling, comprehensive analog, digital, and memory IPs.

XS018: Specialized Process for Fast Image Sensors

The optional available modules for 4 transistor cells, pinned photo diodes and the stitching capabilities make this technology ideal for large image sensor applications needing high frame rates as used for instance for medical and scientific X-ray cameras. The 3.3V core module allows a low mask count designs. The industrial standard single poly with up to six metal layers 0.18-micron drawn gate length N-well process can also be used for low power SOC application in the automotive, indus-

trial and medical markets. Comprehensive design rules, precise SPICE models, analog and digital libraries, IPs and development kits support the process for major EDA vendors.

XP018: Modular CMOS Power Management

Based upon the industrial standard single poly with up to six metal layers 0.18-micron drawn gate length N-well process, integrated with high voltage and Non-Volatile-Memory modules, the platform is engineered for applications needing an integrated solution and cost efficient process for high performance ICs. Targeted applications are switching applications, lightings, display, etc; operating in temperature range of -40 to 175 °C.

XR013: RF SOI CMOS Technology

The XR013 technology is a RF SOI (CMOS) 0.13 μm generation designed to serve RF applications. It features high-resistive 'trap-rich' SOI substrate (>3 kΩ-cm), low Ron*Coff switch NMOS transistor with minimum L = 0.22 μm, together with vertical parallel plate (VPP) capacitor and Metal-Insulator-Metal (MIM) capacitor.

Technology Details

XH035 3.3V/5V	XH018 1.8V/3.3V	XT018 1.8V/5V
<ul style="list-style-type: none"> 3 or 4 Metal layers, optional thick metal 5V or 18V dual gate for HV transistors Isolated MOS module, deep N-well and P-well Operating voltages 45V, 70V, 90V HR polysilicon up to 10 K ohm/sq MIM capacitor (1.25fF/μm²) Depletion NMOS Module Tiny EEPROM 	<ul style="list-style-type: none"> 4 or 6 Metal layers, thick metal layer Triple well isolated CMOS module 10V-45V HV CMOS transistors, 18V gate oxide HV Schottky Diodes Medium R, P-doped polysilicon 960 ohm/sq 1.8V low Vt module additional N-well, P-well MIM (1fF/μm²) or MIMH capacitor (2.3fF/μm²) Non volatile memory module for NVRAM and FLASH Support of photodiodes and SPAD 	<ul style="list-style-type: none"> 4 or 6 Metal layers, thick metal layer Deep trench isolation 10-200V HV transistors Subblock module 1.8V for 1.8V/5.0V PNP bipolar transistors 7.0V N-type protection diode (DPC) N-buried high voltage handle wafer diodes Top side handle wafer contact HR N-doped polysilicon resistor 6.3 ohm/sq MIM (1fF/μm²) or MIMH capacitor (2.3fF/μm²)
XS018 1.8V/ 3.3V	XP018 1.8V/5V	XR013
<ul style="list-style-type: none"> 4 or 6 Metal layers, thin metal layer 4T based CMOS imaging sensors Selection of pinned photo diodes 3.3V buried channel NMOS in pixel Selection of 3.3V low Vt NMOS in pixel MIM (1fF/μm²) or MIMH capacitor (2.3fF/μm²) 1k ohm/sq polysilicon resistor module Flat passivation for microlense or colour filtering, post process 	<ul style="list-style-type: none"> 4 or 6 Metal layers, thick metal layer 12V - 60V HV transistors Medium R P-doped polysilicon resistor 960 ohm/sq HR P-doped polysilicon resistor 6.7k ohm/sq MIM (1fF/μm²) or MIMH capacitor (2.3fF/μm²) Ready-to-use EEPROM memory block (SONOS based) 	<ul style="list-style-type: none"> 4 to 8 Metal Levels Hybrid Cu/Al, thick metal module 2.5V RF Switches 1.2V Low-noise, high gain, high linearity NFET options for LNA Low and high value diffusion, poly resistors RF capacitor: MIM (2.1 fF/mm²) HR P-doped polysilicon resistor 6.7k ohm/sq RF varactors Regular Vt 1.2V digital CMOS High-density high Vt 1.2V digital CMOS

www.europactice-ic.com

Visit our website for detailed specifications and information on additional services.

X-FAB Technologies

via imec: epxfab@imec.be

via Fraunhofer: virtual-asic@iis.fraunhofer.de

General Information

mpc@imec.be