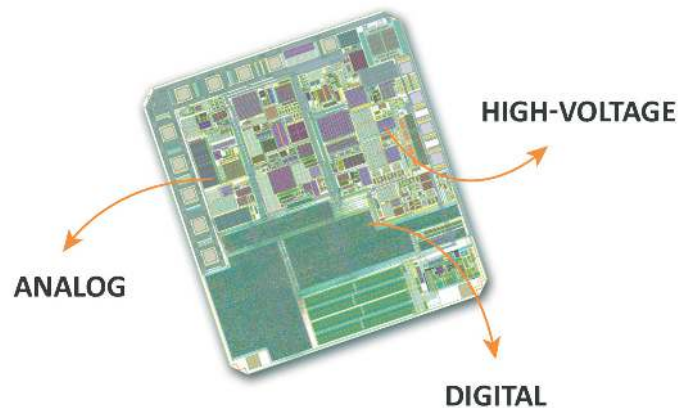


# Custom IC design services

## What makes us stand out

- Largest independent European design group
- Unique expertise in analog, digital, mixed-signal and high-voltage
- Extensive IP portfolio in (HV) CMOS, BCD, SOI
- Unique design and verification environment
- High complexity at low risk



## Main expertise areas



Sensor / MEMS



High-Voltage



Power / Battery



Low-Power



Communication



# Silicon proven IP

## SENSOR/MEMS INTERFACING

Accelerometer, gyroscope, wheatstone bridge, capacitive, inductive proximity, Hall, GMR, CMOS/CCD/TFT/X-ray imagers, fluxgate

## HIGH-VOLTAGE

High-side, low-side drivers, HV level shifters, gate drivers, power control, piezo drivers, neural interfacing, Class-D/AB/G/H amplifiers, HV switch arrays, floating switches, HV in standard CMOS (patented)

## ANALOG FRONT END (AFE)

Instrumentation amp, PGA, offset-compensation, low-noise amp, chopping/CDS, high-performance ADC (Delta-Sigma, SAR, Extended counting, Pipeline, ... ) & DAC

## ULTRA-LOW-POWER

Ultra-low-power AFE, low quiescent current PMU, active PVT monitoring and compensation, RFID, nano-amp clocks

## AUXILIARY CIRCUITS

On-chip temp measurement, POR, watchdog, reverse voltage & short circuit protection, OV/UV/OC/SC protection, temperature stable oscillators, precision Vref

## TECHNOLOGIES

28nm to 0.7u - TSMC, ON, Global Foundries, XFAB, UMC, SMIC, Tower Jazz, IBM, AMS, ...

## POWER MANAGEMENT AND DC-DC

Inductive DC-DC, SIMO (Single Input Multiple Output), charge pumps, PWM controllers, LDO, linear regulators, RF energy harvesting

## BATTERY MANAGEMENT

Wireless charging, Li-Ion, State-of-Charge/Health, bandgap, brownout detection, soft-start/inrush limitation

## RADIATION HARD CUSTOM IP

ADC, DAC, Vref, PLL, DC-DC

## CLOCK AND FREQUENCY

+/- 500 ppm on-chip clock (no external components), low-jitter PLL, DS fractional-N synthesis

## MICROCONTROLLERS

MSP430, ARM core, 8051, custom FSM

## MEMORY

OTP, MTP, Flash, EEPROM, RAM, ROM, NV-RAM

## COMMUNICATION PROTOCOLS

SPI, I2C, UART, RS485, HS / SW CAN, J1850, xDSL, LVDS, EPC Gen-2, OWI, PWM, SENT, LIN, OBD, PS15, 4-20mA

Further details on ICsense's silicon proven IP

[www.icsense.com/IP](http://www.icsense.com/IP)