

PROMISE, PROgrammable MIXed Signal ASIC Electronics Electrical Characterisation

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I. ABSTRACT

In the course of European union's Horizon 2020 research and innovation program PROMISE (grant agreement No 870358) IC experts from 7 European institutions (Thales Alenia Space ES & FR, IMEC, MENTA, ISD, INSTITUTO DE TELECOMUNICACOES and VTT) designed a set of Radiation hardened and reusable analogue, high voltage and digital IPs that can cover the most common functions for data acquisition, conditioning, processing and control. The XFAB XH018 0.18 μm Mixed Signal HV CMOS Technology was used. The portfolio of IPs are the following:

- Digital IPs: Standard digital cells ; Standard digital IOs; Non-Volatile Memory (NVM); Embedded Field Programmable Gate Array (eFPGA) core.
- Analog IPs: Analog to Digital Converter (ADC); Digital to Analog Converter (DAC); Phase Locked Loop (PLL); Low Drop Out (LDO) for digital core; BandGap (BG) with second order temperature compensation; Local Oscillator (LO) with no external component and consistent with CAN bus; Power On Reset (POR); High Voltage MOS transistors (HV).

The outcome of this project was a pilot circuit in order to perform Electrical and Radiation validation.



Figure 1 PROMISE Pilot Circuit Sample

The scope of this paper is to present the electrical characterisation of the IPs.