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180nm CMOS Mixed-Signal Radiation Hard Library as base for a full ASIC supply chain

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In recent years the importance of mixed-signal ASIC supply for Space Applications in Europe has grown. Since there is a trend that Europe should be more independent from other worldwide sources in obtaining these components on the market. IMST is actually working together with TESAT Spacecom towards a mixed-signal library as part of an ESCC qualified ASIC supply chain. This paper presents the IP blocks of IMST which are developed using innovative design and radiation hardened techniques. These blocks are going to go through a program of evaluation and qualification tests. The radiation hardened library of IMST, called HARD Library (HARD= Hard Against Radiation Design is built from I/O cells for 3.3V and 5.0V supply voltages, reconfigurable multifunctional operational amplifier, voltage and current references, memory cells, data converters and other analog and digital IP blocks, which will be described in this paper. The HARD Library is based on the 180nm CMOS technology from XFAB, which is a modular mixed signal high voltage technology. It supports operation by negative supplies, which is one of the characteristics of the HARD Library elements. Another feature of this technology is offering different modules for low power, high temperature, high voltage and non volatile memory all in one platform. XFAB's 180nm CMOS technology is already tested with good results against radiation effects. In this paper first radiation test results of the IP blocks will be presented as well as scenarios about the design flow of the HARD Library. Since the project is still in progress, evaluation test results are not available yet. Finally the paper will show IMST´s capability to operate as a supplier for full space qualified ASIC's to the market, handling the full supply chain in one hand.

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