



DARE I80X

STATUS

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OUTLINE

- ▶ DAREI80X overview
- ▶ DAREI80X vs. DAREI80U
- ▶ Libraries
- ▶ IP
- ▶ Future work

DARE I 80X OVERVIEW

- ▶ New radiation-hardened mixed-signal library package
 - Space applications
 - High density and low power (non-ELT)
 - XFAB 0.18 μ m (XH018)
 - TID tolerance >100 krad
 - Isolated triple-well devices
 - High-Vt and low-Vt transistors
 - **High-voltage BCD devices**
 - **Non-volatile memory**

DARE I 80X VS. DARE I 80U

	DARE I 80U	DARE I 80X
Technology	UMC 0.18 μ m	XFAB 0.18 μ m (HV)
Supply range	1.8V/3.3V \pm 10%	1.8V/3.3V \pm 10%
Temperature range	-55°C ~ 125°C	-55°C ~ 125°C
TID tolerance	> 1 Mrad	> 100 krad
Raw gate density	25 kGates/mm²	59 kGates/mm²
Core cells	130	86
I/O cells	83	48
SRAM	Single/dual-port SRAM compiler	5 dual-port blocks



DARE I 80X LIBRARIES

- ▶ CORE standard cell library
 - Standard combinational cells (variable LET_{th})
 - SET-hardened combinational cells (LET_{th} > 60 MeV.cm²/mg)
 - SEU-hardened sequential cells (LET_{th} > 60 MeV.cm²/mg)
 - P&R cells

- Two compatible implementations
 - Low-power core library
 - High-speed core library (low-V_t)

- Status: Ready – to be released in 2015' Q1

DARE I80X LIBRARIES

▶ I/O library

- 3.3V and 5V-tolerant digital I/Os
 - SET-hardened inputs
- 3.3V and high-voltage analog I/Os
- Status: under development – to be released in 2015' Q1

▶ SRAM blocks

- 5 dual-port SRAM
- MBU insensitive
 - SEU immune when used with an EDAC
- Status: under development – to be released in 2015' Q1

DARE I80X IP

▶ SET-hardened mixed-signal blocks

- PLLs
- Bandgaps
- Oscillators
- ADC/DAC
- Linear regulators
- Other analog auxiliary blocks (comparators, PGAs, ...)

- Status: under development – available in 2015' Q1



FUTURE WORK

- ▶ Test vehicle chip design in 2015
- ▶ Radiation tests in 2015



QUESTIONS?

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