3D Plus – LVDS Product family

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Data Transmission for Space System

Today, LVDS, naturally High Speed, Low Power and Anti Noise, is a workhorse technology extensively used in Commercial and Industrial market:

Space Systems requirements:

- High reliability
- Radiation Tolerance
- Smaller board area

To answer the demand, 3D Plus is working for a solution:

- **Radiation Tolerance**, at least:

  Total Dose: > 50 KRad(Si)

  SEL Threshold: > 60Mev-cm2/mg

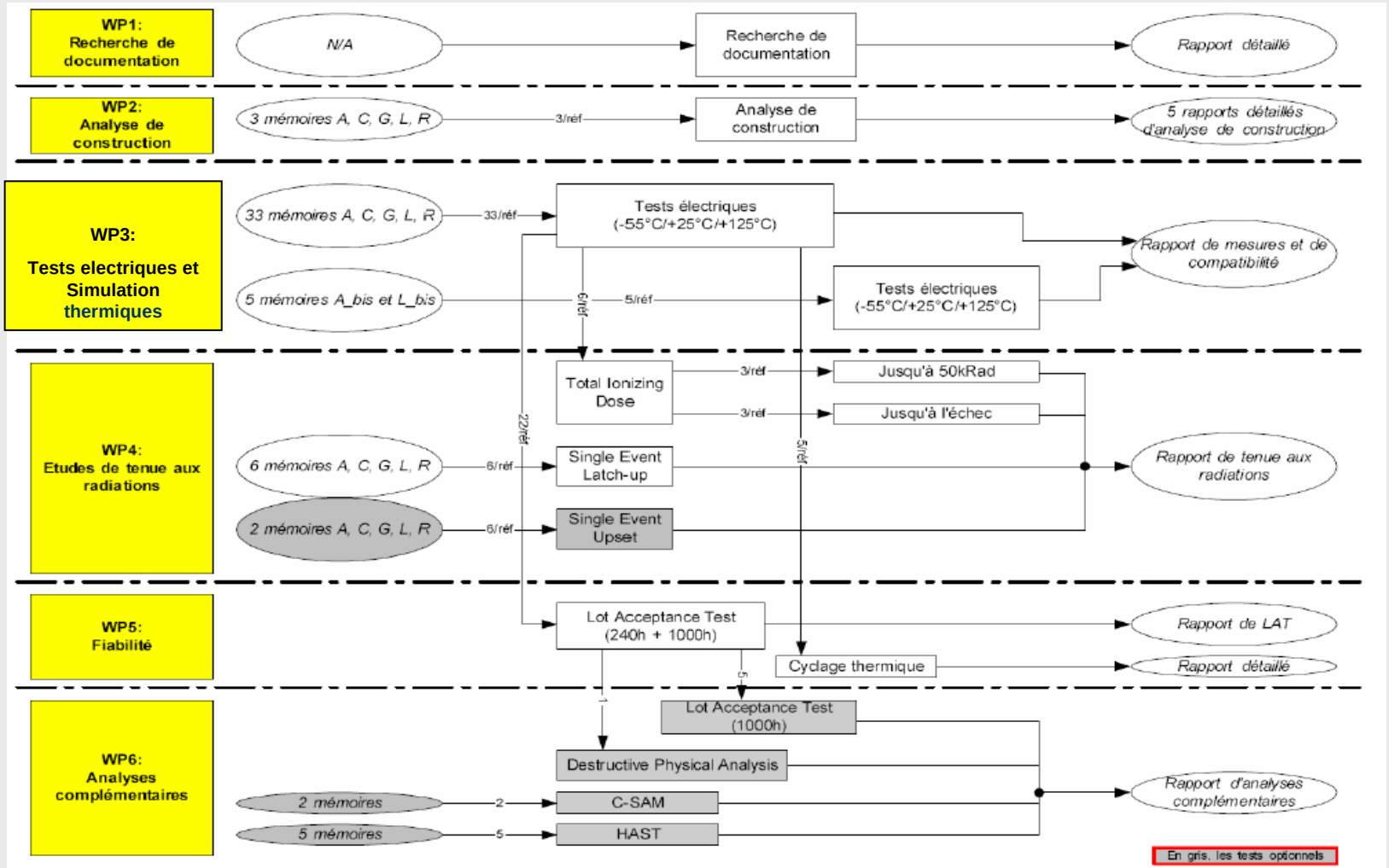
- **High reliability**:

  Basic component available from commercial market without ITAR restriction should be well qualified and screening for Hi-Rel system;

- **Space saving**:

  Manufacturing under PID 3300-0546-6 qualified stacking technology

3D Plus Qualification flow



SEL Evaluation

11 lots from different manufacturers had been SEL evaluated:

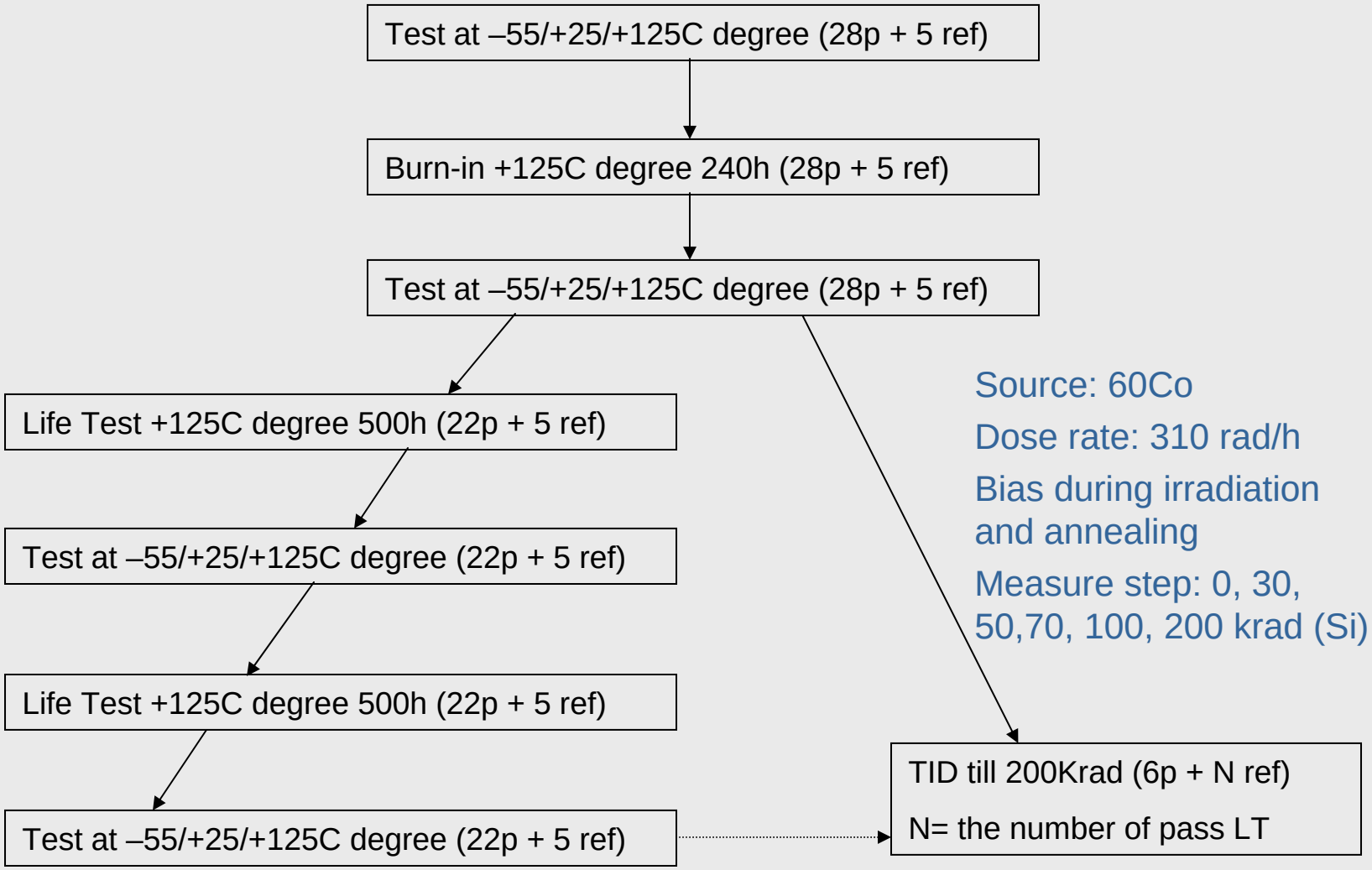
The test performed at U.C.L (Université Catholique de Louvain) on December 08th ,2010. Fourteen delidded samples were irradiated. Test condition:

The characteristics of the ion beams used during the test are described hereunder.

IRRADIATION FACILITIES	
Heavy Ions used :	$^{132}Xe^{26+}$
Vacuum :	1.3 E-4 mbar
Flux range :	from $2,1.10^3$ to $15,1.10^3$ ions/(cm².s)
Fluence range :	from $1,6.10^6$ to 1.10^7 ions/cm²
Particle angle :	0°, 33°
Uniformity beam (UCL) :	Diameter 2,5 cm +/- 30%
Dosimetry (UCL) :	Scintillation detector, Faraday cups

Result: Only one manufacturer Driver and Receiver pass LET = 80.72 MeV.cm²/mg with a total fluence 1E+7 p/cm² at a particle angle of 33°

TID Test



Source: 60Co

Dose rate: 310 rad/h

Bias during irradiation and annealing

Measure step: 0, 30, 50,70, 100, 200 krad (Si)

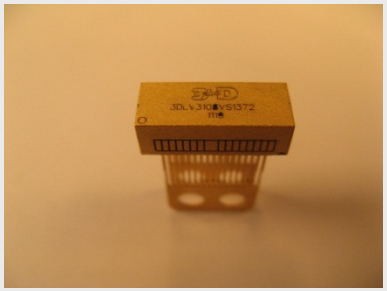
Result: The lot, which passed 80MeV.cm²/mg, also passed 100krad(si)

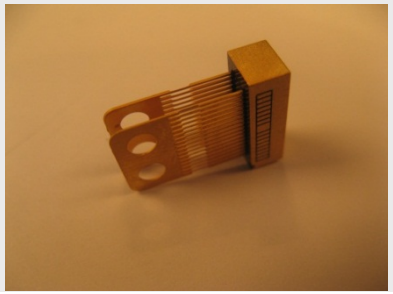
Preliminary Features and Planning

- 3.3 V power supply
- >400 Mbps (200 MHz) switching rates
- ±450 mV differential signalling
- Compatible with IEEE 1596.3 SCI LVDS standard
- Conforms to ANSI/TIA/EIA-644 LVDS standard
- Variable Temperature range
  - 0°C to 70°C
  - -40°C to +85°C
  - -55°C to +125°C
- Available specific screening flows for high reliability applications

Year / Type	Current Generation	2011				2012			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Driver/Receiver/ Dr+Re	**x 4; x8; x16; x32**								
Serializer/ deserializer	**x 8**								

With 3D System-In-Package(SiP) technology,
will provide more integrated solution:
Ex: Cold Sparing, Termination Resistor





Thanks for your attention

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« Innovating for More Electronics in Less Space »

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