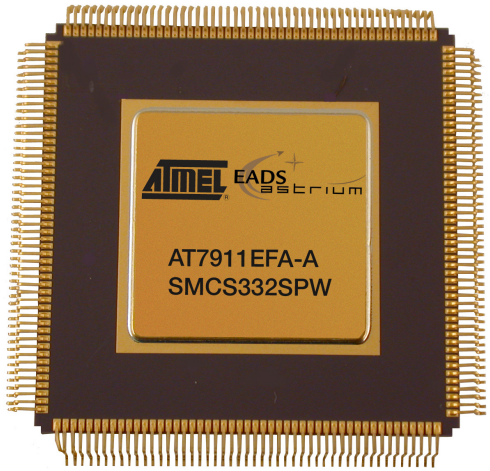
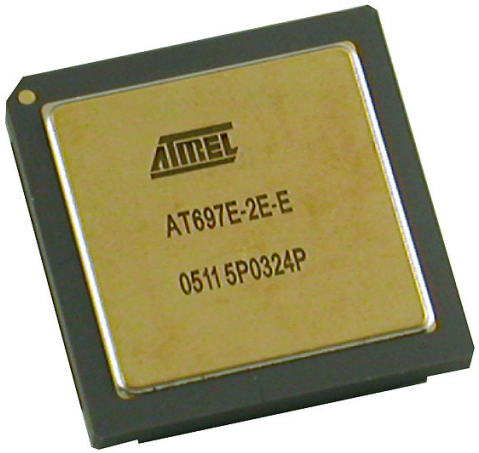
ATMEL SpaceWire products family





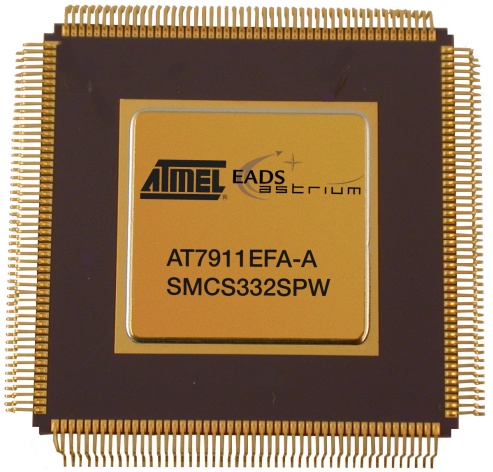
ATMEL SpaceWire products

- Standard ASICs
  - Design done by space customers under ESA contract
  - ATMEL ensure commercial aspects
  - -E / QML-Q / QML-V quality flows

- Full SpaceWire products family
  - SMCS (Scalable Multi-Channel Communication Subsystem)
    - AT7911E or SMCS332SpW : 3 SpW channels
    - AT7912E or SMCS116SpW : 1 SpW channel
    - Design made by EADS Astrium Gmbh
  - SpaceWire Router
    - AT7910E
    - Design made by Austrian Aerospace / University of Dundee
  - SpaceWire Remote Terminal Controller (RTC)
    - AT7913E
    - Design made by Saab Space

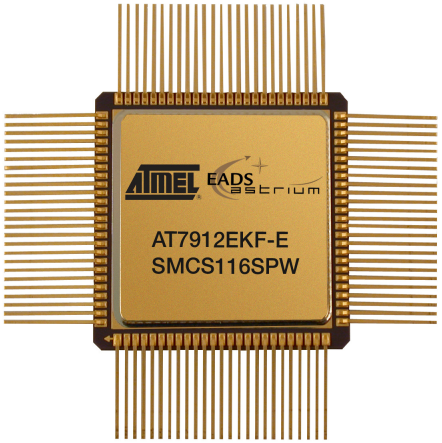
AT7911E - SMCS332SpW

- Interface between 3 SpW links and a CPU
- MQFPL 196 pins package
- Can operate at 5V or 3.3V
- Engineering models : Available
- Flights models : order entry open
- Relies on MG2RT radiation tolerant 0.5 µm technology
  - Total dose up to 50 Krad
  - No SEL at 70 MeV/mg/cm2
  - SEU hardened flip-flops



AT7912E – SMCS116SpW

- Interface between one SpW link and various other interfaces such as ADC/DAC, RAM, FIFO, GPIOs, UARTs
- Transparent SpW link & STUP supported
- MQFPF 100 pins package
- Can operate at 5V or 3.3V
- Engineering models : Available
- Flights models : order entry open
- Relies on MG2RT radiation tolerant CMOS 0.5 µm technology
  - Total dose tested up to 50 Krad
  - No SEL at 70 MeV/mg/cm2
  - SEU hardened flip-flops

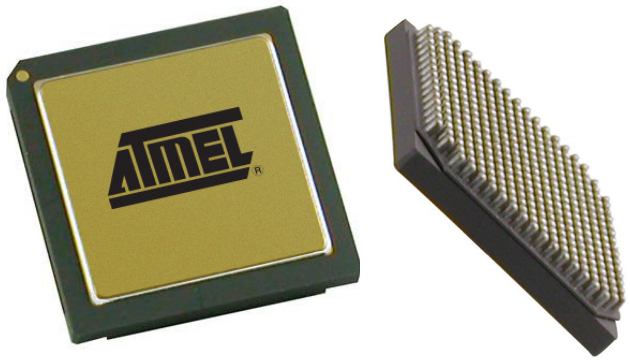


AT7910E – SpW Router

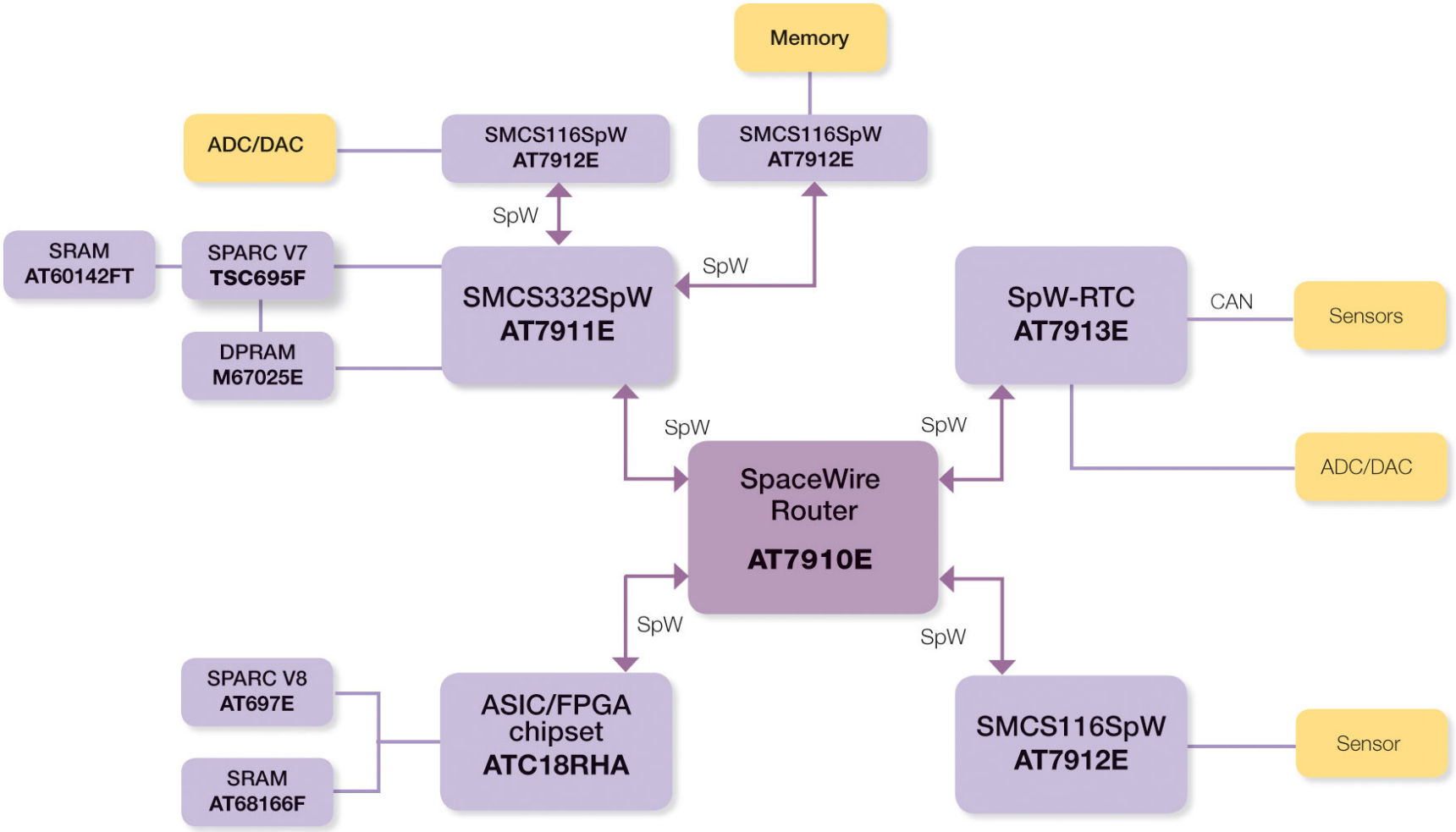
- 8 SpaceWire ports
- 2 external parallel ports
- 1 internal configuration port
- MQFPF 196 pins package
- 3.3V operating range
- Datasheet / user manuals : Q4 2007
- Engineering models : Q1 2008
- Flights models : order entry in Q1 2008
- Relies on MH1RT rad-hard 0.35 µm CMOS technology
  - Total dose tested up to 300 Krad
  - No SEL at 70 MeV/mg/cm2 - 125°C
  - SEU hardened flip-flops

AT7913E – SpaceWire RTC

- Bridge between the SpW network and a CAN bus
- Interfaces to ADC/DAC, RAM, FIFOs, GPIOs, UARTs
- Includes an embedded Sparc V8 LEON2-FT processor
  - Can contribute to instrument controller processing tasks
- MCGA 349 pins package
- 3.3V for the I/Os, 1.8V for the core
- Datasheet / user manuals : Q4 2007
- Engineering models : Q1 2008
- Flights models : order entry in Q2 2008
- Relies on ATC18RHA rad-hard 0.18 µm CMOS technology
  - Total dose tested up to 300 Krad
  - No SEL at 70 MeV/mg/cm2 - 125°C
  - SEU hardened flip-flops

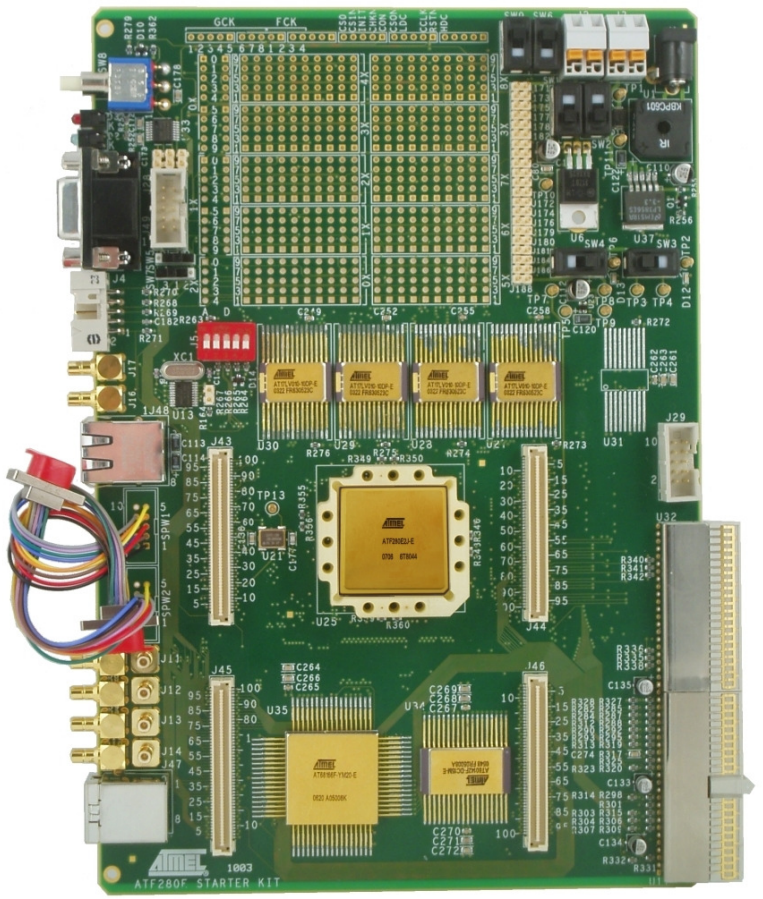


SpW network based on rad-hard products



ATF280E rad-hard reprogrammable FPGA

- Features
  - 280K equivalent ASIC gates
  - 115 Kbit embedded memory
  - Up to 308 I/Os
  - 8 dedicated LVDS buffers
  - No need for SEU mitigation
- 50 MHz clock speed
- Total dose up to 300 Krad
- MQFPF256 and MCGA472
- Mentor tools : Precision / Modelsim
- Atmel Place and Route tool
- Engineering models in Q1 2008
- Development board available



Conclusion

- ATMEL Rad-hard SpaceWire products available
  - SMCS now
  - SpaceWire Router and SpW-RTC soon
- Complements ATMEL rad-hard products family
  - Sparc processors
  - SRAM memories
  - Reprogrammable FPGAs
  - ASIC families
- Allows to build a complete rad-hard SpaceWire network

The end

Thank you for your attention !