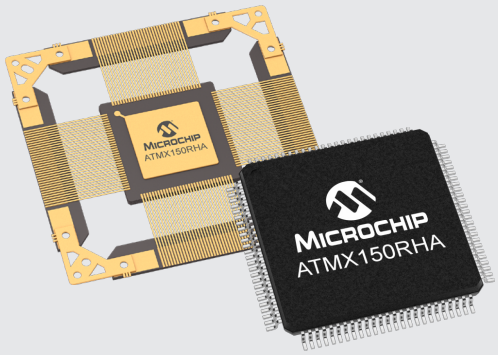
ATMX150RHA
Digital and Mixed-Signal Rad-Hard ASICs

Summary

ATMX150RHA is a mixed-signal ASIC offer that provides high-performance and high-density solutions for aerospace and defense applications.

With a set of qualified analog IPs, such as voltage regulators, voltage reference and monitoring device, clock synthetiser and signal conditioning, ATMX150RHA eases the design of mixed-signal ASICs. ATMX150RHA covers a digital offer and extends it up to 22 million gates. The availability of a 5V to 1.8V regulator and the 5V tolerant IO permits easy re-targeting of obsolete or end-of-life ASICs with 5V core supply.

In addition, the Physical Design Kit (PDK) enables you to develop your own analog blocks and use the Microchip Space Multi-Project Wafer (SMPW) foundry services.



Fully designed, assembled, tested and qualified in Europe since 1985, Microchip's offering of Rad-Hard Digital Application-Specific Integrated Circuits (ASICs) is one of the most attractive and competitive on the market for the most critical applications.

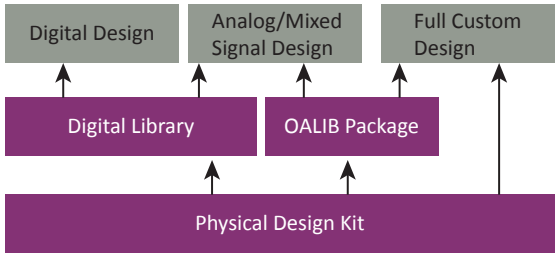
The ATMX150RHA is the technology supporting our SAMRH71 and SAMRH707 radiation hardened Microcontroller (MCU).

ATMX150RHA ASICs are available in several quality assurance grades, such as Mil-Prf 38535 QML-Q and QML-V and ESCC 9000. ESCC DS: 9202/083 and SMD: 5962-20B01.

Features

ATMX150RHA is manufactured on a 150 nm, five-metal-layer and thick-metal-layer SOI CMOS process intended for use with a supply voltage of 1.8V for core and 2.5/3.3/5V for periphery.

- Comprehensive library of standard logic & I/O cells
- Memory cells compiled (ROM, SRAM, DPRAM, and Register File Memory)
- 450 MHz PLL (PLL400MRHA)
- Up to 22 usable Mgates (equivalent NAND2)
- Operating voltage 1.8±0.15V for the core and 5±0.5V, 3.3±0.3V, 2.5±0.2V for the periphery
- High voltage possibilities (LDMOS transistors up to 25V characterized)
- High-speed LVDS buffers 655 Mbps in compliance with the TIA/EIA-644-A standard
- PCI buffers
- This ASIC patform is supported by a combination of state-of-the-art third-party and proprietary design tools from Synopsys®, Mentor® and Cadence®
- Robust and flexible design flow: These tools collectively form the reference tool flows for both the front and back ends



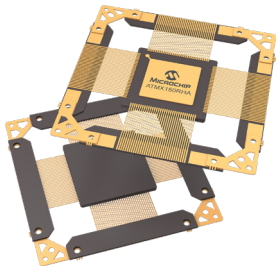
Guaranteed Radiation Performance

Parameter	Radiation Hardness Assurance
TID Total Ionizing Dose	100 krads(Si) with 2.5V to 3.3V I/Os 50 krads(Si) with 5V & HV I/Os
SEU Single Event Upset	Hardened DFF: < 1e-12 errors/bit/day Virage Memories with ECC: < 2e-9 errors/bit/day
SEL Single Event Latch-up	Standard results: LETth > 78 MeV.cm²/mg With Deep Trench isolation LETth > 95 MeV. cm²/mg

Advanced Packaging

Microchip proposes advanced multi-layers low-noise CQFP and CCGA packages, with isolated power and ground planes. CQFP are available with up to 352 leads and CLGA/CCGA up to 896 lands/columns. In addition to the packages listed below, Microchip offers custom packages development and plastic package.

Package	Leads/Columns
CQFP	Up to 352
CLGA/CCGA	349-472-625-896



Catalog of Qualified Analog Blocks

Microchip proposes a catalog of analog IPs qualified that can be delivered with a datasheet and Qualpack. The analog IPs consist of voltage regulators, a voltage reference and monitoring device, clock synthetiser and signal conditioning IPs.

The qualification includes:

- Electrical characterization
- TID and SEE characterization
- HTOL tests

For more details and a complete list of available analog blocks, please contact the Microchip technical center that supports you in your area.

IP block	Features
PLL400MRHA	40-450 MHz PLL
ADC12RHA	ADC 12-bit 1 Msps
DAC12RHA	DAC 12-bit 1 Msps
MUX8RHA	8-channel analog multiplexer, bandwidth 10 MHz
OSCRC10MRHA	Programmable 4/8/10/12 MHZ RC oscillator, ±1% frequency variation over temperature
OSCRC32KRHA	32 kHz RC oscillator
BG1V2RHA	1.215V Bandgap voltage reference, max temp. coef 90 ppm/°C
REG200RHA	Linear voltage regulator from 3-5.5V to 1.8V, 200 mA
POR18RHA	Power On Reset 1.8V

Space Multi-Project Wafer

The Physical Design Kit (PDK) enables customers to develop their own analog blocks and use the Microchip Space Multi-Project Wafer (SMPW) foundry services These SMPWs are used to embark, at low cost, customer analog test chips intended for evaluating analog-sensitive areas from the final ASIC. Microchip offers probe/packaging/assembly/test services as well as qualification services (reliability, TID, SEE, etc.). Any questions related to SMPW service can be addressed to your Microchip technical center.

FPGA to ASIC Conversion in Obsolescence Management

The availability of a 5V to 1.8V regulator and the 5V tolerant IO permits easy re-targeting of obsolete or end-of-life ASICs and FPGA with 5V core supply. Microchip's ASIC solution allows you to port your FPGA design into an ASIC in record time using our pin-compatible package and FPGA conversion framework without compromising any performance and long requalification time of your system.

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