

# RH1020B radiation-hardened FPGA

## FEATURES AND CAPABILITIES

The RH1020B radiation-hardened field-programmable gate array is a fully guaranteed device targeted for use in military and space applications. It is fabricated using BAE Systems' rad-hard 0.8 $\mu$  epitaxial bulk complementary metal-oxide semiconductor process. The process architecture offers gate array flexibility, high performance, and fast design implementation through user programming.

Though it takes six months from the date of design submission for a traditional application-specific integrated circuit to be produced and delivered, customers can modify their FPGA chip designs up to the day before we deliver them. BAE Systems has achieved full DoD Qualified Manufacturer List (QML) certification, assuring that quality management, procedures, processes, and controls are in place from wafer fabrication through final test. The RH1280B also is in this family of radiation-hardened FPGAs.

84-lead ceramic quad flatpack

Significantly greater densities than discrete logic devices

Design library with more than 500 macro functions

Single-module sequential functions

Wide-input combinatorial functions

Up to two high-speed, low-skew clock networks

Two in-circuit diagnostic probe pins support speed analysis to 50 MHz

Non-volatile, user-programmable devices

Unique in-system diagnostic and verification capability with silicon explorer

Standard microcircuit drawing #5962F90965

QML-compliant part

Capacity

- 3,000 system gates
- 2,000 gate array equivalent gates
- 6,000 PLD-equivalent gates
- 50 TTL-equivalent packages
- 20 20-pin PAL-equivalent packages

Logic modules

- 0 S-modules
- 547 C-modules

Flip-flops (maximum)

- 273

Routing resources

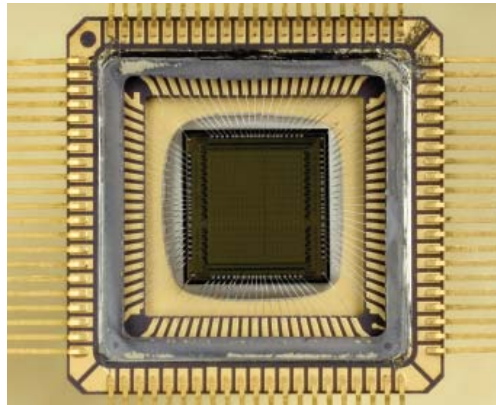
- 22 horizontal tracks/channel
- 13 vertical tracks/channel
- 186,000 PLICE antifuse elements

User I/Os (maximum)

- 69

Radiation levels

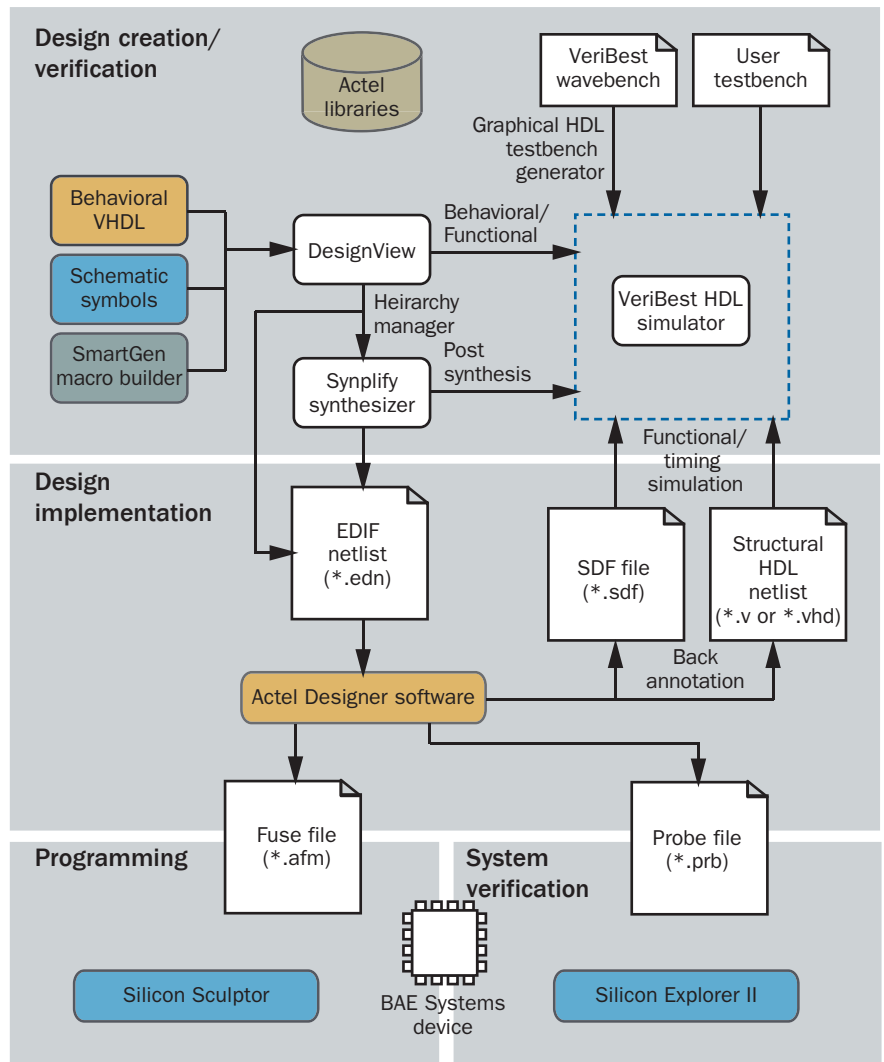
- Total dose: 300 Krad (Si)
- Low single-event upset susceptibility
- High-dose rate survivability
- Latchup immunity guaranteed



**BAE SYSTEMS' RH1020B WITH ACTEL DESIGNER SOFTWARE**

Brings together silicon, synthesis, and simulation to create a complete and integrated design environment for designing BAE Systems FPGAs.

- Integrated development environment including simulation, synthesis, and place-and-route tools for designs fewer than 50k gates.
- Increased design simulation limit to 400k gates with unlimited synthesis, allowing designers to move up as their skills and density requirements increase.
- Includes simulation up to 400k gates and place-and-route tools. Ideal for ASIC designers who are starting to use FPGAs in their designs, but have already invested in synthesis tools.



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