

Possibilities of Performance. *Made Easy.*

Electronic requirements continue to drive greater functionality, lower power and increased reliability in radiation prone environments. This leads to complex electronic designs which require a flexible and easy to use design and development environment. Honeywell translates designs developed using field-programmable gate arrays (FPGAs) into high-reliability, radiation hardened and cost effective application-specific integrated circuits (ASICs).

A common design methodology is to develop in an FPGA environment and then convert to an ASIC for flight electronics. Benefits of an ASIC for flight are:

- Higher level of radiation hardness -Total Dose, single event upset (SEU), Dose Rate, Latch-up immune
- Space Class V Qualified Manufacturers List (QML) Qualified Technologies
- Superior Speed, Lower Power, and higher Density when comparing same technology node
- Pin-for-Pin Compatible for multiple FPGAs
- Not susceptible to loss of configuration and programming
- Reduced number of components - integration of multiple FPGA designs into a single ASIC
- LOWER COST for higher volume programs

Honeywell has an unparalleled depth of experience and an extensive history of translating designs from multiple FPGA suppliers. Honeywell has established a reputation for excellence through our continued long term support of the Space programs as well as by continually meeting our customer's most demanding specification requirements.

We work with you to map the FPGA design into the best technical solution. Some examples are shown in the table below.

FPGA	Migrates To ASIC
Actel/Micro Semi 1020	HX2000
Actel/Micro Semi 1280	HX2000
Actel/Micro Semi MX Series	HX2000
Actel/Micro Semi eX Series	HX2000/3000
Actel/Micro Semi SX Series	HX3000
Actel/Micro Semi RTX2000	HX5SA
Actel/Micro Semi RTX4000	HX5SA
Xilinx Spartan II	HX2000
Xilinx Virtex 2	HX5SA
Xilinx Virtex 4	HX5000
Xilinx Virtex 5 (5QV)	HX5000
Xilinx Virtex 6 and 7	HX5000
Altera Apex 20k	HX3000
Altera Flex Series	HX2000
Altera Stratix	HX5000
Atmel AT40 Series	HX2000

Pin-For-Pin Replacement Packages

Honeywell has access to a large selection of QML-certified packaging models to meet board specifications and reduce risk. To quickly meet development schedules, four package styles have been designed for pin-for-pin and dimensional equivalence of standard FPGA packages. Others can be created. These packages are Ceramic Quad Flat Packs (CQFP) and come in several configurations:

- 208 Lead CQFP - 175 Signal I/O
- 08 Lead CQFP - 172 Signal I/O
- 256 Lead CQFP - 214 Signal I/O
- 256 Lead CQFP - 229 Signal I/O

An integrated circuit solution for many space applications including:

- Processors
- Control and navigation
- Data conversion and data path processing
- Memory controllers
- Encoder/decoders

Benefits of an ASIC for flight are:

- Higher level of radiation hardness - Total Dose, single event upset (SEU), Dose Rate, Latch-up immune
- Space Class V Qualified Manufacturers List (QML) Qualified Technologies
- Superior Speed, Lower Power, and higher Density when comparing same technology node
- Pin-for-Pin Compatible for multiple FPGAs
- Not susceptible to loss of configuration and programming
- Reduced number of components - integration of multiple FPGA designs into a single ASIC
- LOWER COST for higher volume programs

Honeywell has a worldwide network to support design and delivery of radiation hardened semiconductors.

Please go to:

www.honeywellmicroelectronics.com

to contact a microelectronics sales or technical specialist.

Find out more

For additional general information on Microelectronics, please visit:

<https://aerospace.honeywell.com/microelectronics>

For more technical inquiries about Honeywell's Microelectronics, please contact us at:

MicroelectronicsTechnicalInquiries@honeywell.com

Honeywell Aerospace

Honeywell
1944 E. Sky Harbor Circle
Phoenix, AZ 85034
aerospace.honeywell.com

N61-1428-000-000
August 2015
© 2015 Honeywell International Inc.

The Honeywell logo is displayed in a bold, red, sans-serif font.