From The Editors

Hello and welcome to the second edition of Microsemi's Space Newsletter. This edition brings you the latest news on Microsemi's comprehensive range of components and systems for space applications – from discrete transistors, point-of-load power converters, and hybrids, to FPGAs, ASICs and power management systems for space use. We hope you find the content useful, and we request that you pass the newsletter to your colleagues who are not already on our mailing list. Instructions for registering to receive this quarterly newsletter are included at the end. Please provide the editors with your feedback and suggestions on how we can make the content of this newsletter more useful to you and your teams.

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Articles in this edition

Microsemi's High Reliability Customers Win with ASIC Advantage, Inc. Acquisition

Microsemi's acquisition of ASIC Advantage, Inc. (AAI) of Sunnyvale, California, a fabless semiconductor company with standard and custom mixed-signal products, is very positive news for Microsemi customers in high reliability applications. AAI comes with a strong reputation as a quality supplier with a demonstrated ability to apply its wide-breadth of process knowledge and design expertise to create robust solutions for these markets.

AAI has made its mark by using its expertise to enable application of commercially available processes with their proprietary design libraries to design and deliver both standard and custom products. AAI has excelled at delivering solutions with winning price and delivery. It has created radiation tolerant designs that pass accumulated total ionizing dose (200kRad(Si)) and low dose rate (ELDRS) testing, as well as demonstrating strong immunity to latch-up and other single event effects (SEE). Additionally, AAI has successfully demonstrated custom solutions for high temperature applications (such as down-hole drilling for oil exploration and production) operable to temperatures in excess of 200°C.

AAI now brings its depth of mixed-signal design expertise to Microsemi, enhancing our ability to address standard and custom design requirements for high reliability applications. Custom based product examples include digital and mixed-signal ASICs for space applications. Standard product examples include a 14-bit DAC, 8-Channel Source Drivers, and a Quad RS485 Transceiver. This expertise combined with Microsemi's strong existing design and fabrication infrastructure offers expanded options and solutions for our space customers.
http://www.asicadvantage.com/

FPGAs Provide Viable Alternative to ASICs in High-Volume Space Applications

FPGAs Cost Effective at High Volumes

Designers of high-volume space applications now have another technology choice that can eliminate the cost and schedule risk of using mask-programmed ASICs. Designers of space systems that may consume a few hundred or more identical parts sometimes choose ASICs for digital logic integration. However the lower unit-cost of space ASICs is offset by the long fabrication time, large non-recurring engineering (NRE) charges, and the risk of schedule and cost over-runs if the ASIC design is not right first time or requires additional functions because of changes in requirements. The Space Products Team at Microsemi SOC Group has recently initiated a program which reduces the cost of space FPGAs at high volume, providing a cost-effective alternative to ASICs that preserves the flexibility and fast design turn-around time of FPGAs. By streamlining business processes and limiting participation to factory-programmed parts with a minimum number of parts per design, we are able to provide reduced pricing to the point where the economic viability of FPGAs becomes compelling at quantities in the high hundreds and even low thousands of units. The business terms and conditions which apply in these cases are more favorable to customers than terms associated with ASICs, and are intended to preserve the intrinsic flexibility associated with FPGAs. Contact your Microsemi sales representative or regional sales manager for further information.
http://www.microsemi.com/soc/company/contact/default.aspx

Qualified Radiation-Hard MOSFETs are now available from Microsemi

Devices Qualified to DLA Slash-Sheets Ease Supply Constraints

Microsemi High Rel Group (HRG) now has available Rad-Hard MOSFET's that are DLA qualified. Qualifications for our first generation (Gen 1) have completed the first phase of our plan to be a major supplier of Rad-Hard components for use in Space applications and any environment where radiation exposure is critical to reliable performance. Additional sources of Rad-Hard MOSFET's are desperately needed in a market that has until now been dominated by one supplier. Microsemi will be providing equivalent product into this market as qualified parts to the following DLA Slash Sheets: /601, /603, /614, /615, /630. Products on these slash sheets are considered first generation Rad-Hard MOSFETs for the Microsemi High Rel Group.

A second generation product line of Rad-Hard MOSFETs is currently in development. These products will be qualified to slash sheets: /697, /698, /703, /712, /713, /732, /733, /746, /753.

Additional Qualifications will be available for 2012 and 2013. In all there are 28 part numbers now qualified and 60 additional part numbers to be qualified over the next 18 months. For more information on existing qualifications go to:
http://www.microsemi.com/en/sites/default/files/datasheets/High-Rel_Rad-Hard_Semi.pdf or contact Al Ortega at: Al.Ortega@microsemi.com

RTAX-DSP User Training

Designing with RTAX-DSP is a 1-day course that introduces the RTAX-DSP space-flight FPGA family. This class describes the specific architectural features of the family including the embedded radiation-tolerant multiply-accumulate Math Blocks which provide a dramatic increase in device performance and utilization when implementing arithmetic functions such as those encountered in DSP algorithms. IP for implementing DSP functions and techniques for improving design performance are introduced. Time permitting, optional hands-on lab exercises can be included to reinforce the topics presented.

Some of the skills that you can expect to get out of this course include, but are not limited to:

- Understanding of the RTAX-DSP FPGA family architecture details including logic modules, Memory Blocks, Math Blocks, Clock Conditioning Circuitry and I/Os
- Understanding of different DSP design flows available in Microsemi software toolset

- Techniques to optimize RTAX-DSP designs for utilization and performance

Class content can be modified to accommodate user design flows and requirements. Email training@actel.com or contact your local Microsemi FAEs to schedule a training session at your site:
http://www.microsemi.com/soc/company/contact/default.aspx

Customers can attend this training session either physically in our Training Facility or remotely. Training sessions at customers' facilities are also possible if the number of attendees is large enough. Please alert your Microsemi contact person or send an e-mail to training@actel.com if you wish to organize a session at your facility.

New prototyping option available for RTAX4000S and RTAX-DSP Space-flight FPGAs

Aldec, Inc. has recently added reprogrammable prototyping solutions for Microsemi's RTAX4000S as well as both RTAX2000D & RTAX4000D. This is in keeping with Aldec's goal of offering a prototyping solution for all Microsemi radiation-tolerant antifuse FPGAs. All solutions offer RTAX footprint compatible prototyping boards. Optional netlist conversion software is also available.

Hundreds of Aldec's adapter boards have been shipped. This has allowed scores of companies in the space-flight systems design realm world-wide to save money and cut time to market.

Aldec has been supplying digital hardware design engineers with innovative solutions for over 25 years. For more information, please visit http://www.aldec.com/products/RTAX or contact sales@aldec.com

The Aldec prototyping adaptors are excellent for proof of concept and algorithm development of RTAX-S and RTAX-DSP FPGAs. For final in-system timing validation, Microsemi continues to support RT-PROTO devices, which are pin-compatible with flight parts and are tested across the full military temperature range, but do not have Mil Std 883 screening or hermeticity testing.

Off-The-Shelf Radiation Hardened Power Supply

Microsemi Power Management Group brings custom expertise to COTS power supplies

Microsemi Power Management Group (PMG-P) is pleased to announce the introduction of a new line of high-reliability "NON-HYBRID" standard isolated dc-dc converters (SA50-120 Series). The new SA50-120 series offers a wide input (+86Vdc to +158Vdc) operating range multi-output power module, with inherent component and radiation hardened reliability. The highly efficient SA50-120 series provides a full output power de-rating to 50 Watts and two options of radiation survival. A designed-in radiation capability provides >100K Rads (Si) Total Ionizing Dose with alternative options of Single Event Effects immunity to >80 MeV•cm2/mg Heavy Ions or immunity up to 39MeV•cm2/mg Heavy Ions (LET). The fully qualified SA50-120 series is scheduled for production release in the fall of 2011. For further details please contact Eric Bagdasarian at Microsemi PMG-P Eric.Bagdasarian@microsemi.com

Visit Microsemi at RADECS 2011

Microsemi exhibiting and presenting at RADECS 2011, in Seville, Spain

Microsemi will be presenting results of Single Event Transient characterization and mitigation in 65nm test structures at the Radiation Effects on Components and Systems (RADECS) conference in Seville, Spain Sept. 20-23. In addition, attendees will have the opportunity to visit the Microsemi booth in the industrial exhibit area, where subject matter experts will be available to discuss FPGAs, MOSFETs and power components for space applications.

Recent Product Notifications

Product Change Notifications and Customer Notifications on Microsemi Space FPGAs

One Product Change Notification and two Customer Notifications have recently been published to Microsemi space customers of record. GIDEP advisories have also been published on these topics. You can view the notifications at the following location:
http://www.microsemi.com/soc/support/notifications/default.aspx

Product Change Notifications are posted at the top of the page, which is where you will find the RT ProASIC3 notification, PCN1111. Customer Notifications are published on the lower part of the page, so scroll down to find the

two recent notifications on RTSX-SU and RTAX-S, CN1102 and CN1103. There is also a link where you may register to receive future notifications and product updates.

Microsemi Space Forum

Proceedings from the most recent Space Forum events, held in Los Angeles (December 2, 2010), Noordwijk (April 5, 2011), Moscow (April 7, 2011), Bangalore (July 12, 2011) and Ahmedabad (July 14, 2011) are now posted on the Microsemi SOC Group web site at http://www.microsemi.com/soc/asf/postconference/welcome.aspx

We're working on the scheduling for the next events, so check the Space Forum website for news. If you have comments or questions on Microsemi Space Forum, please contact Ken.O'Neill@microsemi.com or Minh.U.Nguyen@microsemi.com

Register to Receive Microsemi Space Brief

If you enjoyed reading this newsletter and found the content useful, please pass it to your business colleagues who have not received it. If you are receiving this newsletter from a colleague, you can register to receive your own personal copy, delivered directly to your inbox. Follow this link. The first 25 people to register will receive a flashing bouncy ball from Microsemi, just like the ones we distributed at the NSREC and MAPLD conferences.

If you have comments or questions on the content of this news letter, please contact the editors at the email addresses provided above.