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Welcome to Microsemi's Space Brief quarterly newsletter. In this edition, highlights include information pertaining to our new radiation testing facility, announcing our new SB30-100 family of DC-DC converters, our recent Space industry news and an update on the events Microsemi is attending and organizing throughout the year. We hope you find our newsletter useful and encourage you to pass this edition to your colleagues. Instructions for registering to receive this quarterly space brief are included at the end of the newsletter.

Recent Product News

Radiation Services New Facility

Microsemi has purchased a new dual-hemisphere Cobalt-60 Low-Dose-Rate gamma irradiator with simultaneous 10mRAD/s and 100mRAD/s capability. Capacity will be 288 components (MOSFETs, BJTs, Diodes, etc. in any package combination) in the 100mRAD/s hemisphere and 288 components in the 10mRAD/s hemisphere (576 total) with up to 24 simultaneous and independent bias settings per hemisphere (48 total) with each individual bias voltage being continuously variable from 0V to +/-1200V. The plan is to perform Low Dose Rate on all discrete Rad-Hard lots and to meet the rated RHA level with ELDR testing. For IC, hybrid and module testing, functional test platforms will fully integrate into either hemisphere. Full commissioning is scheduled for May 1, 2013. This testing equipment will greatly enhance Microsemi's capability to provide the highest possible level of confidence to our customers.

Recent Product Updates and Notifications

Microsemi Upgrading Radiation-Tolerant Products

At the Space Parts Working Group event in April, Microsemi presented information about upgrades to its heritage line of linear ICs, which are still commonly used by power supply designers to meet today's needs for higher radiation total dose (TID) survivability and low dose radiation tolerance (ELDRs). The product line includes PWM controllers, linear voltage regulators, op amps and interface circuits. Through process enhancements, these new devices are guaranteed to meet specifications after being exposed to these radiation effects. The SGR1846 current mode PWM controller is available for sampling now and will be in production Q3 2013. The SGR1845, another PWM controller, will be available for sampling later this quarter, followed by our SGR137 negative voltage regulator. Initially, parts will be screened per Microsemi's internal S-level flow. Activities are underway to offer the family as QML-V listed products.

For more information on new SG linear IC's please email Dorian.Crugnale@microsemi.com or contact a local Microsemi sales representative by going to: <http://www.microsemi.com/products/0>.

EPC presents Microsemi GaN FETs at GOMACTech

Microsemi and EPC presented a paper on radiation-hardened Gallium Nitride (GaN) FETs in a DC-DC converter product. The paper presented shows the fabrication process used by EPC and how parts can be designed into a variety of power supply applications. Typical data on TID and SEE radiation performance is also presented. When used in an isolated DC-DC converter Microsemi GaN FETs can improve efficiency performance by as much as 6 percent depending on load conditions.

Microsemi is developing a line of radiation-hardened Gallium Nitride FET products for use in Space and Military applications. Hermetic Microsemi GaN products are now available for sampling in 40V & 100V BVdss values. At 40V, the max Rds (on) is 4milli-ohms and at 100V the Max Rds (on) is 7 milliohm. Gate charge figures for these products are lower by a factor of 10-15 when compared to similar Radiation-Hardened MOSFETs currently used in power supply applications.

Typical gate charge figures are shown in the chart below.

Microsemi Part Numbers:

PART NO	VOLTAGE	CURRENT	PEAK	RDS(ON)(mΩ)	Qg	FOM- Qg
MGN2915	40V	33A	150A	4	11.6	46.4
MGN2914	40V	10A	40A	16	3	48
MGN2905	60V	25A	100A	7	10	70
MGN2909	60V	6A	25A	30	2.4	72
MGN2901	100V	25A	100A	7	10.5	73.5
MGN2907	100V	6A	25A	30	2.7	81
MGN2911	150V	12A	40A	25	6.7	167.5
MGN2913	150V	3A	12A	100	1.7	170
MGN2910	200V	12A	40A	25	7.5	187.5
MGN2912	200V	3A	12A	100	1.9	190

Data source from Al Ortega for more information please email al.ortega@microsemi.com

To view this paper presented at the GOMACTech conference please visit :
<http://www.microsemi.com/details/66-the-38th-annual-gomactech-conference>

Space Industry News

ESCCON - European Space Components Conference

Microsemi attended the ESCCON conference hosted by the Space Components Steering Board of the European Space Components Coordination (ESCC) in Noordwijk, Netherlands on March 12-14. This was a highly technical workshop that covered the definitions of policy and strategy directions for space components. The conference is an international forum and is open to all specialists involved in the development, selection, procurement and use of EEE (Electrical, Electronic and Electromechanical) components in space systems. To see the presentations given at this conference please visit <https://escies.org/webdocument/showArticle?id=962&groupid=6>.

Single Event Effect Symposium & Military Aerospace Programmable Logic Devices Conference

Microsemi exhibited at the Single Event Effect (SEE) Symposium and Military Aerospace Programmable Logic Devices (MAPLD) combined Conference on April 9 - 12, 2013 in San Diego, CA. The SEE portion of the conference addressed all aspects of single-event effects in microelectronic and photonic devices, circuits and systems. The MAPLD portion explored the use of programmable logic devices in aerospace and military applications. Microsemi presented a paper on 'Microsemi Space FPGAs Qualification and Reliability Update,' emphasizing our commitment to provide the space community with the highest quality and reliability products. For further information and proceedings of the conference, go to:

http://radhome.gsfc.nasa.gov/radhome/see_mapld/ and to view our paper please visit: <http://www.microsemi.com/details/67-the-single-event-effect-see-symposium-and-military-aerospace-programmable-logic-devices-mapld-co>

SPWG - Space Parts Working Group

The Space Parts Working Group event was held April 23rd and 24th in Torrance, California. This event is an unclassified, international forum for providing information to the aerospace industry and for resolving problems with high-reliability electronic piece parts for space applications.

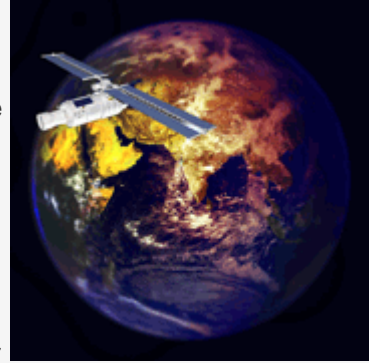
It was well attended this year by Space professionals eager to hear how they might remain competitive in today's turbulent market. With nearly 30 component suppliers presenting product line updates, as well as industry experts addressing issues such as pending export control regulations, hermeticity and counterfeiting to name just a few, there were topics of interest for almost everyone in the space industry.

Microsemi had two key speakers during the event; Director of Engineering, Patrick Franks and Director of Business Development, Jim Larrauri. They presented the SB30-100 family of DC-DC converters and unveiled an upgrade to the heritage line of linear ICs. They also noted that QML class Q qualification is in progress for Microsemi's Radiation Tolerant FPGA line, with the expected completion in mid-2013. We would like to take this opportunity to thank those of you who also attended our sponsored luncheon during the Space Parts Working Group event.

To view this paper presented at the SPWG conference please visit: <http://www.microsemi.com/details/68-space-parts-working-group-spwg>

ISRO to launch 58 missions over 5 years

The Indian Space Research Organization (ISRO) plans to launch 58 space missions including a Mars orbiter and a mission to the moon, an exclusive satellite to keep round-the-clock watch around the country and deploy 500 transponders in the next five years. The Space Agency also plans to deploy its own version of the global positioning system by putting into orbit a constellation of seven satellites which will form the Indian Regional Navigational Satellite System. According to the 12th five year plan approved by the cabinet, ISRO plans to add 400 transponders to the existing 187 to meet the growing demand from DTH operators, satellite mobile communications and new generation broadband VSAT systems. It is also designing a special “eye-in-the-sky” Geo Imaging Satellite or GISAT to be placed 36,000 Km above to maintain vigil and assist state authorities to tackle natural disasters, floods and forest fires and keep a watch over the country’s sensitive borders.



ISRO has really embarked at a rapid pace on building new programs and providing navigation applications useful in civil aviation and strategic sectors. This journey has almost taken them over 40 years to accomplish. Most recently India attained the milestone of 25 years of successful operations of Earth Observation services by the Indian Remote Sensing Satellite. Microsemi was part of the celebrations at the ISRS Symposium for Indian Remote Sensing Satellites (IRS) as one of the key sponsors. Microsemi has always believed ISRO to be one of their strategic customers in Asia and have extensively invested in time and resources towards the Indian space community and committed to do so for the future.

Upcoming Appearances and Events

NSREC - Nuclear and Space Radiation Effects Conference

Microsemi will be participating in the IEEE Nuclear and Space Radiation Effects Conference July 8th-12th, 2013 in San Francisco, California at the Hyatt Regency. This conference will feature a technical program consisting of eight to ten technical sessions of contributed papers describing the latest observations in radiation effects, a short course on radiation effects offered on July 8th, a radiation effects data workshop, and an industrial exhibit. Microsemi will be exhibiting at the NSREC and Microsemi representatives will be available during exhibition hours on Tuesday, July 9th from 9:30am - 4:00pm and Wednesday, July 10th from 9:30am - 12:00 noon. Please stop by and visit us at Booth 213. For further information visit: <http://www.nsrec.com/>

RADECS - Radiation Effects on Components and Systems

Microsemi will be participating in the Radiation Effects on Components and Systems (RADECS) conference and exhibition in Oxford, UK on September 23th - 27th. The conference is held to promote basic and applied science and more specifically research in the field of radiation and its effects on materials, components and systems. Microsemi representatives will be available during exhibition hours to provide information across the wide array of Microsemi products. Please stop by and visit us at Booth 14. For further information visit: <http://www.radecs2013.com/>

Microsemi Commitment to Space

Space Forums

Microsemi will be holding a series of Space Forums during 2013. These invitation only interactive forums will address the company's latest space solutions, technology roadmaps and statistical reliability data, and more.

The current Space Forum schedule includes:

Space Forum India - July 30 & August 1, 2013

Microsemi's Space Forum in India will be held on July 30th at the Courtyard Marriott Hotel, in Ahmedabad and the Leela Palace Kempinski Hotel in Bangalore on August 1st. The first Microsemi Space Forum was held in 2006 and the number of attendees has grown at each event. At Space Forum India 2013 we will provide a comprehensive view of the space market, showcase Microsemi's space offerings and to assist our customers with understanding the benefits. The agenda will be packed with informative presentations illustrating the depth and breadth of our portfolio and also from its leading industry partners Aldec and Synopsys.

Registration has just opened for this upcoming space forum, please go to: <http://www.microsemi.com/form/27-microsemi-space-forum-india-2013> or for more information, contact spaceforum@microsemi.com.

Space Forum Europe & Russia - November 2013

Following the tremendous success of several Space Forums held in Europe and Russia over the years, Microsemi continues to demonstrate its ongoing commitment to our space partners in this region by continuing this user group experience again in 2013. Microsemi is scheduling a European Space Forum in Noordwijk, Netherlands and we will also be holding a Space Forum, in Moscow, Russia in November. These innovative space forums will address key industry challenges and highlight Microsemi's vast expertise and portfolio in digital, power and mixed signal technologies.

We look forward to seeing you there. Watch out for our next quarterly newsletter for registration information.

Space Technical Seminars

In response to global customer demand, Microsemi will be scheduling customer-specific space technical seminars in your area within the next several months. Each technical seminar will be designed to meet your specific needs and time constraints (a minimum of 4 hours is optimum). Topics can range from a general update on our product portfolio and capabilities to a detailed technical review of a specific product.

If you are interested in discussing an on-site event, please contact a local Microsemi sales representative by going to: <http://www.microsemi.com/products/0>.

Or contact Siobhan Dolan: Vice President Worldwide Business Development, Aerospace.

Email: sdolan@microsemi.com Phone: +353 65 6869111

Register to receive Microsemi Space Brief

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Follow this link: <http://www.microsemi.com/soc/interact/default.aspx?p=E402>

For more information on how Microsemi is serving the space market, please visit our brochure at: [Microsemi Space Solutions Brochure](#) and our Space webpage at: <http://www.microsemi.com/applications/space>