

## FOR IMMEDIATE RELEASE



Novocell Semiconductor  
Hermitage, PA 16148

Contact: Mike Compeau  
ph: 724-983-0600  
mike@novocellsemi.com

### ***Novocell Semiconductor announces the completion of Mil-Spec and Automotive IP qualifications and Rad-Hard tolerance***

#### **Firm's one time programmable non-volatile memory survives exposure to extremes of high temperature, radiation**

**August 10, 2012 - Hermitage, PA,** Novocell Semiconductor, Inc., the leading innovator in embedded, high reliability one-time programmable (OTP) antifuse non-volatile memory (NVM), has responded to the demands of their growing number of military, aerospace, and automotive industry customers, announcing today that their Smartbit™-based antifuse OTP memory designs have completed the rigorous exposure to long term high temperature exposure required for Military and Automotive applications, as well as survived extended exposure to radioactive Cobalt-60 necessary to establishing Rad-Hard (radiation hardened) status.

Within the past year, Novocell Semiconductor has extended the routine high temperature operating life (HTOL) temperature range to provide long term chip exposure at up to +150°C, and routinely performs the early life failure rate (ELFR) testing up to this same temperature, versus the lower industry standard of +125°C. ELFR qualification testing is performed to meet or exceed conditions specified within automotive specification AEC-Q100-005, and HTOL qualification testing is performed to meet or exceed conditions specified by industry standard JESD22-A108, automotive specification AEC-Q100-005, and military specification MIL-STD-883H-1005. In a number of cases, Novocell has been providing product qualification testing to confidential customers for critical applications at up to +175°C, to meet special application requirements. For high atmosphere, orbital, and space applications, as well as for nuclear military applications, Novocell NVM IP has been tested to demonstrate radiation tolerance to 100 KRad (Si) in accordance with MIL-STD 883 Test Method 1019.

"Novocell's OTP IP has performed admirably in our aerospace-targeted transceiver products," said Chuck Tabbert, Vice President of Ultra Communications, the 2005 spin-out of Peregrine Semiconductor. "We were not only impressed with the unique technology behind the IP, but have been very pleased with the high degree of reliability we see exhibited by the embedded NVM in actual products, even in some extraordinarily harsh environments."

As the semiconductor market has become more competitive, and increasing demands have been placed upon system-on-chip and fabless suppliers to increase reliability and decrease cost, Novocell's ultra-high reliability OTP NVM has garnered increased attention from a broadening range of industry chip designers. Requirements for highly reliable memory storage to meet needs for integrated sensing and monitoring, communications and entertainment, industrial automation and controls, and high level security and encryption, have grown exponentially in such segments like wireless communications, mobile and tablet computing, global positioning system (GPS) solutions, and automotive, military and aerospace applications.

"Driven by our desire to provide the highest reliability product, we have always had the most robust qualification testing program in our industry segment," said Walt Novosel, President of Novocell Semiconductor, "but we felt the increasing need from a number of our most important military and automotive customers to extend our reliability and durability testing still further. Our current test protocols and qualification methodologies clearly provide Novocell customers with the highest level of confidence available in our industry segment."

Market demand in demanding growth industries for highly reliable, permanent memory is now able to be met by customers by use of Novocell's standard CMOS process-compatible, embedded NVM IP, rather than resort to vulnerable technologies like EEPROM, metal fuse or polyfuse memory solutions. All Novocell products continue to be based on the exclusive Smartbit bit cell design and dynamic programming technology, and provide the highest level of programming and data storage reliability and security available in the antifuse OTP segment, particularly at low power, advanced process nodes. All five of Novocell's full line of embedded non-volatile memory products, Novobits™, Novobits SPX, NovoBytes™, NovoBytes MTP, and NovoHD™, are available to meet the rigors of the most demanding automotive, aerospace, and military applications.

**Novobits** – Novobits is a register-type architecture OTP, designed as a dense and highly reliable efuse replacement and available in sizes ranging from 8bits to 256bits. A special version of Novobits, Novobits SPX, is available specifically for analog trimming and calibration and includes convenience features like Serial mode I/O and a special Preview mode for data testing in analog mixed signal applications.

**NovoBytes** – NovoBytes is a ROM-style block array OTP offering access times under 8 nanoseconds and ability to program from standard IO voltage with <2.5 mA current, particularly well-suited to feature enablement and part configuration. NovoBytes is available from 8bits to 32Kbits in a choice of word sizes.

## PRESS RELEASE – page 2

**Novocell Semiconductor**  
Hermitage, PA 16148

**Contact: Mike Compeau**  
ph: 724-983-0600  
mike@novocellsemi.com

**NovoBytes MTP** – A special multi-time write version of NovoBytes, NovoBytes MTP was the industry’s first hybrid OTP/MTP solution to provide virtual multi-time write functionality in 2010, and is available off-the-shelf in 2x, 4x and 8x write versions, or may be customized in configurations to up to 1000x writes. NovoBytes MTP is available in densities from 8bits to 32Kbits, and has found rapid adoption within the mobile segment for its ability to effectively help customers better manage part reconfiguration and inventory optimization challenges in that fast changing market.

**NovoHD** – NovoHD is an ultra-high density ROM style OTP available in sizes up to 4Mbits for high capacity code storage, security, and feature enablement in low power, advanced node applications.

All Novocell NVM products are built on the uncontested Smartbit bit cell design technology and programming process, rely on only standard CMOS processes with no additional masks or post-process steps, and feature a unique High Voltage Generator that eliminates the need for a area-consuming external charge pump, requiring only the standard process I/O voltage to achieve oxide breakdown. The IP macros program each bit dynamically, while monitoring the programming process to completion which then triggers a logic DONE confirmation signal. No additional error correction circuitry, additional chip area for redundant bit inclusion, or other chip footprint waste is required.

Smartbit-based OTP NVM product IP is qualified at all major foundries, and the exclusive dynamic programming methodology makes Novocell OTP the most process independent and foundry independent antifuse NVM available, with the technology available and scalable all the way from the larger legacy .350µm process node to advanced nodes including 20nm and beyond.

### **About Novocell Semiconductor, Inc.**

Novocell Semiconductor, Inc. specializes in developing and delivering advanced non-volatile memory intellectual property (IP) to the semiconductor industry. Novocell is the only provider of NovoBytes MTP, the first OTP/multi-time write hybrid antifuse memory IP, and NovoHD, the highest density antifuse OTP NVM available. Novobits, Novobits SPX, NovoBytes, NovoBytes MTP, and NovoHD are the only antifuse memories proven to have zero tail bit failures within consumer, automotive, and military spec operating ranges as well as offer a guarantee of 30 years of data retention. For more information, please visit: [www.novocellsemi.com](http://www.novocellsemi.com).

### **About Novocell’s Smartbit™ OTP Technology**

Novocell's patented and uncontested Smartbit one-time programmable memory bit cell technology is used in all Novocell nonvolatile memory products. Smartbit-based products feature a unique High Voltage Generator that eliminates the need for a large external charge pump, require only the standard process I/O to achieve oxide breakdown, and are routinely and easily fabricated within fully standard CMOS processes without need for additional layers, masks, or processing steps. The Smartbit-based antifuse NVM products employ use of a dynamic voltage programming method that automatically senses when hard breakdown has been completed—indicating completion of bit cell programming—and triggers a logic DONE signal output, providing customers unequalled assurance that the programmed data is intact, all bit cells are programmed, and data stored within each macro will endure safely and securely for at least 30 years.

For more information on this announcement, contact Mike Compeau by email at [mike@novocellsemi.com](mailto:mike@novocellsemi.com), or call 724-983-0600.