



Quarterly Space Products Newsletter from National Semiconductor

Welcome to the National Semiconductor Space Products quarterly newsletter. With over 30 years experience as an aerospace supplier, National Semiconductor is aggressively pursuing the space market with the lowest power high performance mixed signal and analog solutions.

Gigasample ADC for Wideband Satellite Communications – Space Qualified

The [ADC10D1000QML](#) from National's PowerWise® family is the latest high speed ADC that National has added to its growing portfolio of Giga Speed Data Converters for space applications that includes the [ADC08D1000QML](#) (8-bit, sampling rate 1GSPS dual channel or 2 GSPS single channel, **SMD 5962F0520601VZC**) and the [ADC08D1520QML](#) (8-bit, sampling rate of 1.5 GSPS in dual channel or 3 GSPS single channel, **SMD 5962F0721401VZC**). The ADC10D1000QML is a low-power high-performance CMOS analog-to-digital converter that digitizes signals at 10-bit resolution at sampling rates of up to 1.0 GSPS in dual channel mode or 2.0 GSPS in single channel mode. The ADC10D1000 achieves excellent accuracy and dynamic performance while consuming a typical 1.45 Watts/channel of power. This space grade, Radiation Tolerant part is immune to a single event latch-up level of greater than 120MeV and a total dose (TID) of 100 Krad (Si). The [ADC10D1000QML](#) is currently shipping in a hermetic 376 column thermally enhanced CCGA package rated over the temperature range of 55°C to +125°C.

High Speed ADC for Narrow-Band Satellite Communications – Space Qualified

National Semiconductor is currently shipping in production a space qualified 14-bit 155 MSPS Analog-to-Digital converter (ADC) for narrow-band communications. The [ADC14155QML](#) has a large input bandwidth of 1.1 GHz which makes it ideal for high IF receivers by providing an excellent Spurious Free Dynamic Range (SFDR) in the higher Nyquist zones. The [ADC14155QML](#) is currently shipping in a 48 lead ceramic quad flat pack, consumes only 960mW of power with a TID rating of 100 Krad and is SEL immune to 120MeV.

Very Low Power 12-bit ADC and DAC for Attitude and Orbit Control Systems – QMLV Certified

National Semiconductor Hi-Rel Operations is proud to announce the release of two QMLV certified data converters from National's PowerWise® family. The [ADC128S102QML](#) (**SMD 5962R0722701VZA**) is a 2.3mW, 8-channel, 12-bit ADC that can be addressed through an SPI port and operates from 50 KSPS to 1 MSPS. The serialized digital outputs reduce board traces and the integrated 8-channel input MUX allows for one ADC to digitize 8 inputs. To complement the [ADC128S102QML](#) National Semiconductor has released low power rail-to-rail output DAC. The [DAC121S101QML](#) (**SMD 5962R0722601VZA**) is a 12-bit DAC which consumes only 0.64mW of power with serialized digital inputs through an SPI. The [ADC128S102QML](#) and [DAC121S101QML](#) are both qualified to a TID rating of 100 Krad and SEL immune to 120MeV.

LMP2012, Dual, High Precision, Rail-to-Rail Output Operational Amplifier - QMLV Certified

The [LMP2012QML](#) (**SMD 5962L062601VZA**) offers unprecedented accuracy and stability in space-saving miniature packaging that can be used with the above mentioned General Purpose ADC and DAC for Attitude and Orbit Control Systems and other 2.7V-5V applications requiring precision and long term stability. The amplifier is ultra stable over time and temperature. It has excellent CMRR and PSRR ratings, and does not exhibit 1/f voltage and current noise increase that plagues traditional amplifiers. Other benefits of the LMP2012 are 30mV rail-to-rail output, a low supply current of 930 µA, and wide gain-bandwidth product of 3 MHz. The product is QMLV certified and qualified to a TID rating of 50 Krads.

New ELDRS Free BiPolar Products

National is committed to increasing its [ELDRS](#) free BiPolar products portfolio that includes low dose rate testing on every wafer. Recently National has introduced the [ELDRS](#) free versions of the LM158A, LM111, and LM193A, LM7171. All [ELDRS](#) free products can be ordered by their unique low dose rate certified SMD number.

Accelerate your Space application development with complete evaluation systems

Evaluation boards with hermetic packaged products are available to reduce your development time and allow quick evaluation and design-in of our new space qualified products. For a complete list of our evaluation platforms to support the development of applications for our newly release data converter products visit <http://www.national.com/space> (Design Tab)

Radiation Update

National has just concluded Proton testing on ADC08D1520WGRQV and observed no upsets at 200 MeV. Please contact National at HiRelMarketing@nsc.com to get a copy of the test report.

Visit <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=4638625&isnumber=4638598>

to download the Low dose rate test results for the ELDRS-free LM124, LM39 and LM193 that was published in the 2008 IEEE Radiation Effects Data Workshop Record.

New Space Solutions Brochure

Download National's Space Solutions brochure from

http://www.national.com/vcm/NSC_Content/Files/en_US/Documents/national_space_solutions.pdf

to learn about the latest developments to National growing portfolio of Space products.

New Space Website at www.national.com

Visit the new Space website to learn the latest updates about National's space products at

<http://www.national.com/space>

Please contact HiRelMarketing@nsc.com for more information on the topics above.

