iCoupler Digital Isolation Technology Designed for Sophisticated Satellite Power Protection System

NORWOOD, Mass. -- (BUSINESS WIRE) -- Analog Devices, Inc. (ADI) is providing its highly integrated iCoupler® digital isolation solution to Siemens Aerospace for its PowerSCOE™ system, a sophisticated satellite power protection system that will shut down kilowatts of power within the satellite within microseconds in the case of an anomaly. Serving as the advanced technology group for Siemens AG, Siemens Aerospace designed the system with other applications in mind, such as smart grid power monitoring.

A satellite's power system is critical because any malfunction can seriously damage the spacecraft and derail the mission. "With each channel containing an auxiliary analog input and digital and analog output, the most difficult challenge was ensuring each of 100 channels were individually isolated from each other," said Alfred Fuchs, PowerSCOE project manager, Siemens Aerospace. "With over 100 analog and digital I/Os present, the PCB density we were looking for required a solution beyond traditional optocouplers and DC-to-DC converters. ADI's highly integrated iCoupler digital isolators proved crucial in making our next-generation PowerSCOE protection system viable."

Analog Devices' digital isolators with integrated, isolated isoPower® DC-to-DC converters are based on ADI's proprietary iCoupler technology. The isolator's integrated DC-to-DC converter provides up to 500 mW of regulated, isolated power at either 5.0 V from a 5.0 V input supply or 3.3 V from a 3.3 V or 5.0 V supply. The iCoupler chip-scale transformer technology is used to isolate four channels of logic signals as well as the power supply, eliminating the need for a separate, isolated DC-to-DC converter in low power, isolated designs. The result is fewer components, a smaller form factor and a more cost effective isolation solution compared to optocoupler-based and discrete solutions.

"Delivering 500 mW of isolated power in a small surface-mount package, iCoupler digital isolators enable customers with sophisticated instrumentation challenges, such as Siemens, to put more channels of isolation into space-constrained designs at reduced cost," said David Krakauer, product line manager, Analog Devices. "Using our highly integrated digital isolators, Siemens Aerospace designers were able to increase the number of isolated data ports in a single control module without increasing the size of the module, even though each port requires its own isolated power supply. The PowerSCOE protection board has 170 iCoupler devices. If the alternatives were used, such as optocouplers and separate, isolated DC-to-DC converters, the control module would be much larger than the current dimension of 380 mm x 470 mm."

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