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National Semiconductor TruTherm Technology

Pinpoint-accurate temperature readings for microprocessors

After launching the patented TruTerm Technology, back in 2005, National Semiconductor Corporation (NSC) launched a series of advanced high-precision, remote-diode temperature sensors that are based on this beta compensation technology. More precisely, the TruTherm technology solves the problem of inaccurate remote temperature readings determined by variations in the internal diodes in deep sub-micron microprocessors, microcontrollers, application-specific integrated circuits (ASICs) and field-programmable gate arrays (FPGAs). If you didn't know, incorrect remote temperature readings can determine a dramatic increase of the acoustic noise and a general decrease of the system's optimal functioning. Therefore, National's TruTherm thermal management products are said to improve the accuracy of temperature readings, enabling designers to attain higher performance and efficiency in their applications, while lowering cooling-fan speed, reducing acoustic noise and extending system life. These sensors are especially designed for applications such as mobile and desktop workstations and servers powered by high-performance microprocessors manufactured on 65 and 90 nm (nanometer) processes. "Thermal management is becoming increasingly important in today's electronics applications, which are growing more complex while also shrinking in size. Accurately monitoring temperature in computing products and complex cores is key to ensuring protection against malfunction or failure due to excessive heat," said Susie Inouye, research director and principal analyst with market research firm Databeans. "Thermal management technology such as National's TruTherm products allows designers to successfully monitor these complex cores that are designed on very small sub-micron geometries and continue to push the limits of heat dissipation."