

Abstract Submitted
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Thermal Analysis of Silicon-Carbide Power MOSFETs DMITRY PANIN, University of Utah, NASA LANGLEY RESEARCH CENTER COLLABORATION¹ — State-of-the-art, commercially available, Silicon-Carbide (SiC) Power MOSFETs were evaluated and tested for stability under different temperature, gate voltage, and drain voltage configurations. The operational characteristics of various outer space conditions, namely high elevated temperature and long accumulation time were simulated in order to prepare the transistors for space travel applications. Collected data showed that these transistors are quite temperature durable, requiring smaller heatsinks than traditional Si Power MOSFETs, making them a good candidate for spacecraft use, specifically for the PPU (Power Processing Unit) used to convert energy generated by a solar array for onboard high power electronics such as the ion drive, replacing conventional (Silicon) transistors which are less able to withstand high voltage & high current burst scenarios at elevated temperatures.

¹Internship collaboration

Dmitry Panin
University of Utah

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