New Release

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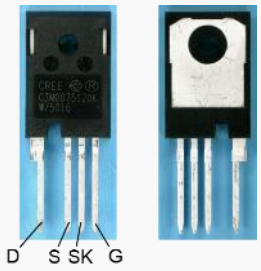
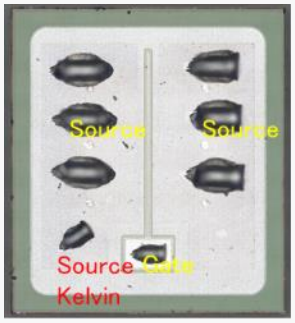
WOLFSPEED C3M0075120K 1,200V SiC MOSFET SHORT CIRCUIT ROBUSTNESS ANALYSIS REPORT

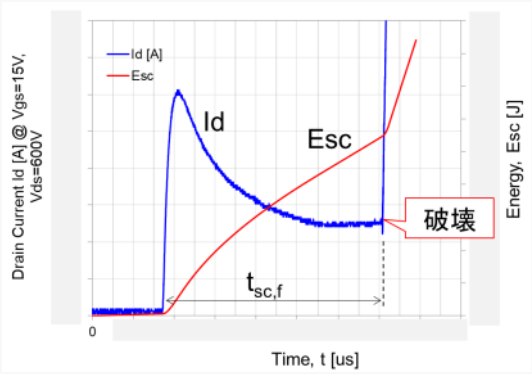
February 2020. The short-circuit (SC) capability of power transistors, especially SiC power MOSFETs, is one of the most critical reliability-related specifications. Compared to Si-based IGBTs, the size of the SiC transistor is smaller. This leads to significant reduction in SC endurance time (tsc).



Package



Die image



Drain current waveform and short-circuit energy (Esc)

Abstract

This is the first published short-circuit robustness analysis report that examines the correlation between short circuit robustness and the physical structure of the C3M0075120K device, which the 3rd gen. of Wolfspeed.

The report includes:

- Identification of the mechanisms limiting short-circuit capability, measurements, physical analysis results, and extraction of the critical temperature (Tj(crit)) at the onset of failure.
- Comparison of short-circuit robustness with 2nd gen 1200V SiC MOSFETs.
- Examination of the differences in semiconductor structure, process, and their effect on short circuit robustness.
- **Use value of the evaluation results in this report**
- The minimum response time of the short-circuit protection circuit can be estimated.
- The internal device temperature can be estimated by performing electrothermal SPICE simulation using measured short-circuit drain current waveform and endurance time ($t_{sc,f}$).

Report price: $5,000

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