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RESEARCH ON TECHNOLOGY OF RELIABILITY DESIGN AND VERIFICATION OF SOLID-STATE POWER CONTROLLER IN ADVANCED SPACE INTELLIGENT POWER DISTRIBUTION SYSTEM

Abstract

The intelligent power distribution system with intelligent, high reliability, long life and other characteristics is an important component of the advanced space power Systems. The Solid-state power controller (SSPC) is its key unit. The research on Reliability Technology of SSPC is able to optimize the structure of distribution system, and disclose its lifetime variation, and provide Scientific reliability optimization design and validation criteria for intelligent power distribution system. Aiming at the application requirements of SSPC in intelligent power distribution system, this paper focus on such following problems: failure mode, fault diagnosis method, variation in the different loads and impact on the lifetime under failure impact. At the same time, based on the intelligent power distribution system, the accelerated life model and error distribution have been studied and the optimized reliability test verification measures have been put forward.

Key Words: Intelligent power distribution system, Fault Diagnosis, Failure impact, Accelerated life model