

Reliability of IGBT-based power devices in the viewpoint of applications in future power supply systems

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Summary

IGBT-based high-voltage power devices will be key components for future renewable energy base of the society. Windmills in the range up to 10 MW use converters with IGBTs. HVDC systems with IGBT-based voltage source converters have the advantage of a lower level of harmonics, less efforts for filters and more possibilities for control. The power devices need a lifetime expectation of several ten years. The lifetime is determined by the reliability of the packaging technology. IGBTs are offered packaged in presspacks and modules. The presentation will have the focus on IGBT high power modules. Accelerated power cycling tests for to determine the end-of-life at given conditions and their results are shown. models to calculate the lifetime, and actual work in research for systems with increased reliability.

Keywords: Reliability, IGBT, power devices, power supply systems