**Degradation of High-Voltage / High-Current Power Semiconductor Modules for Trains**

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Various electronic equipment including traction converters are installed in railway vehicles. It is important to improve the reliability of each element constituting the equipment. Failure of power semiconductors used in devices such as traction converters may have an adverse effect on vehicle operation. In order to address this problem, researches on quantitative estimates of aged degradation have been conducted to obtain basic data used for maintenance and renewal of the devices. Degradation of the gate turn-off thyristor (GTO) was estimated on the electrical characteristics of semiconductors. Thermal resistance is important when evaluating aged degradation of devices composed of multiple materials such as an insulated gate bipolar transistor (IGBT) module. However, degradation estimate was challenging due to difficulty in calculating thermal resistance precisely, which in turn prevented meaningful comparison with given specifications. In this paper, we report on the method of a thermal resistance test for degradation of IGBT modules (3300 Volts/1200 Amperes) by quantitative examinations and degradation estimates.