Method to Detect Internal Defects of Tantalum Capacitors to Decrease Failures of the Equipment

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Abstract. Failures of tantalum chip capacitors as a part of the equipment is a rather widespread phenomenon. Many of the failures studied are caused by internal defects, which are not revealed by standard methods of rejection. During research work, design and manufacturing techniques of tantalum chip capacitors were considered, and the main defects leading to the analyzed cases of refusals were established. Based on the analysis of the defects, one of the methods of their identification at the stage of incoming inspection and additional tests was allocated. To assess operational effectiveness of the presented method, tests on a number of lots of tantalum chip capacitors were carried out. By the results of testing, it was established that the considered way of rejection allows allocating potentially unreliable lot from total quantity, and revealing capacitors having the latent defects as well.

Keywords: tantalum chip capacitors, failure, internal defects, pulse current, tests