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论文

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基于ARM的嵌入式系统的可靠性强化试验定量分析评估

姚金勇, 姜同敏

北京航空航天大学 工程系统工程系, 北京 100083

Evaluation and Analysis of Reliability of ARM Based Embedded Systems Tested by Reliability Enhancement Test

YAO Jin-yong, JIANG Tong-min

Department of System Engineering of Engineering Technology, Beijing University of Aeronautics and Astronautics, Beijing 100083, China

摘要

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摘要 针对可靠性强化试验难以定量计算产品可靠性指标的问题,采用应力强度模型和数理统计理论,提出一种通过强化试验数据计算产品外场可靠度的工程适用方法。在对某基于ARM微处理器的嵌入式系统进行可靠性强化试验的基础上,采用该方法计算出产品在振动环境条件下的外场可靠度。提出的方法能够对改进产品可靠性起指导作用。

关键词: 可靠性试验 可靠性强化试验 可靠度 可靠性评估

Abstract: Reliability Enhancement Test(RET) can not directly produce a meaningful reliability parameter through the test results due to the limitation of its methodology. This paper develops an engineering suitable approach for evaluating the reliability of the outfield products, which adopts the vibration stress-strength model and the theoretical statistic approach. On the basis of the RET results of a set of ARM micro processor based embedded system, the reliability of the system in the field vibration environment is calculated by means of the derived method, which proves that the approach can be a guidance to improve the reliability of products.

Keywords: reliability test RET reliable degree reliability evaluation

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