

An Integrated Tailoring Method for Thermal Cycling Tests of Spacecraft Electronics

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Abstract : Thermal tests of electronic units are critically important for the reliability validation and performance demonstration of the spacecraft hard-wares. The tailoring equation in MIL-STD-1540 is based on fatigue of solder date. In the present paper, a new test condition tailoring expression is proposed to fit different thermo-mechanical fatigue and different subsystems, by introducing an integrated evaluating method for the fatigue acceleration exponent. The validate test has been accomplished and the data has been analyzed and compared with that from the MIL-STD-1540 tailoring equations. The results are encouraging and reasonable.

Keywords : thermal cycling test, thermal fatigue, tailoring equation, test condition planning

Conference Title : ICRSSE 2018 : International Conference on Reliability, Safety and Security Engineering

Conference Location : Paris, France

Conference Dates : August 27-28, 2018