

Project Summary:

Ceramic Capacitor Failure Investigation

DfR Solutions was asked to investigate the cause of failures in capacitors of a control board subjected to drop testing from a four foot height. The drop tested capacitors were subjected to potting and cross-sectioning, which showed significant flex cracking in almost all of the capacitors. The untested modules yielded no flex cracking. DfR Solutions recommended further investigation of changes in board thickness and alternative housing and support designs to inhibit damage from drop testing qualification. Also, switching to capacitors with flexible termination that allow greater deflection would alleviate the flex cracking damage caused by drop testing.

Keywords: control module, qualification testing, drop testing, capacitor cracking, excessive bending, untested, cross-sectioned, flex-cracking damage, shorting, manufacturing, depaneling process, design modifications, limit board flexure, strains