

Project Summary:

Stress Analysis and Failure Prediction of LCD Keyfob

DfR Solutions was asked to perform stress analysis and failure prediction of keyfobs which were experiencing loss of segments due to LCD cracking when subjected to accelerated life testing. Finite element analysis was performed and found little difference between stresses of epoxy fill with and without voiding. Recommendations for design improvement included beveling the glass edge of the LCD and/or using a lower modulus (softer) epoxy fill to reduce cracking.

Keywords: segment, LCD, liquid crystal display, keyfob, accelerated life testing, cracking, crack propagation, epoxy, voiding, chipout, residual stresses, insufficient fill, surface damage, destructive analysis, void characterization, fracture strength, housing, increased mesh density, maximum principal stresses, ABS plastic