Project Summary:

Initial Assessment of Electronic Assembly

DfR Solutions was asked to perform an initial reliability assessment of an electronic assembly used in a DVD player. This operating environment is marked by minimal temperature changes and no vibration concerns. A thorough analysis of the components, board, solder joints, and connectors was completed. Design improvements were recommended to include component stress analysis, opting for NiPaAu finish where possible, moving capacitors adjacent to hot components, and analyzing contamination levels. A design for manufacturability assessment was also performed and the areas of wave solder profile and copper feature to board edge clearance could be improved. Overall, the assembly is on track to provide robust reliability for its desired lifetime of three years.

Keywords: components, printed board, interconnects, solder joints, connectors, surface, insertion mount, power cycling, active, passive, derating, tin whiskering, fine pitch, x-ray fluorescence spectroscopy, XRF, temperature rating, lifetime rating, applied voltage, ripple current rating, applied ripple current, liquid electrolyte, equivalence series resistance, ESR, insulated thermocouple, flex cracking, thermal shock, accelerated aging, flash memory device, heat sinking, jumpers, MELF diode, fuses, voiding, plated through-hole fatigue, PTH, conductive anodic filament formation, CAF, electrochemical migration, ECM, flux residues, no-clean process, finite element analysis, fretting corrosion, high contact forces, copper trace distances, laminate fracture, solder bridging, warpage, humidity, radial component insertion, reflow profile, cool down, cross sectional analysis, depanelization, DfM

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