

Achieving High-Reliability Semiconductor Components Production in a Fully Outsourced Manufacturing Model

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ES Components became a full manufacturer of hermetic electronic components following the 2017 acquisition of the Vishay Siliconix hermetic JFETs, MOSFETs and Analog Switch products. Operating without in house process or test equipment, the company developed a distributed manufacturing system utilizing external fabrication, assembly, and test facilities, qualified for military, aerospace, and space applications

This paper outlines the engineering controls that enable consistent, traceable, and repeatable production across these partners. Key elements include structured die inventory management, governed process flows, documentation driven build control, and rigorous oversight of subcontracted operations. Validation methods such as baseline electrical characterization, correlation analysis, and process change assessment are described.

Case studies highlight the implementation of new test flows, assembly transitions, and corrective action processes supporting legacy hermetic components. The presentation provides a technical framework for organizations seeking to maintain high reliability manufacturing performance without owning semiconductor process equipment.