

## Possibilities of Reliability. Made Easy

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### A Reputation for Engineering Excellence

Honeywell has established a reputation for excellence by continually meeting, and often exceeding, the most demanding quality and reliability requirements. Our mission is to exceed expectations and to maintain the highest quality and integrity standards for our products and services. Honeywell has delivered hundreds of thousands of Qualified Manufacturers List (QML) parts since first becoming QML qualified in 1990.

From that time through today, products, technologies and services are managed from concept through production with a formal phase-gate development and review process. Our quality standards include supplier management, traceability systems, operator certification, documentation control, in-line process controls, process qualification, ongoing reliability monitors and a robust eight-discipline corrective action system. To ensure ongoing effectiveness, Honeywell executive management reviews the quality management system on a regular basis.

Using a formal phase-gate development and review process, Honeywell assures the reliability of the Silicon on

Insulator Complementary Metal-Oxide Semiconductor (SOI CMOS) and products. This approach includes adhering to Honeywell's General Manufacturing Standards as well as the Defense Logistics Agency Qualified Manufacturers List (DLA QML) requirements for:

- Designing in reliability by establishing electrical rules based on wear out mechanism characterization performed on specially designed test structures (electromigration, time-dependent dielectric breakdown (TDDB), hot carriers, negative bias temperature instability, radiation)
- Utilizing a structured and controlled design process
- A statistically controlled wafer fabrication process with a continuous defect reduction process
- Individual wafer lot acceptance through process monitor testing (includes radiation testing)
- The use of characterized and qualified packages
- A thorough product testing program based on MIL-PRF-38535 and MIL-STD 883 specifications and standards

### Why Honeywell

To ensure every lot, wafer and part is tested and monitored to consistently deliver reliable products for the space and military markets, Honeywell adheres to strict high quality practices aligned with MIL-PRF-38535, a U.S. military specification that establishes the general performance and

verification requirements of single die integrated circuit device type electronic, and MIL-STD-883, a standard that establishes uniform methods, controls, and procedures for testing microelectronic devices suitable for use within military and aerospace electronic systems.

## **Qualification and Screening**

The test flow includes screening units with the defined flow (QML Class V and Q) and the appropriate periodic or lot conformance testing (Groups A, B, C, D, and E). Both the products and process technology are subject to period or lot based Technology Conformance Inspection (TCI) and Quality Conformance Inspection (QCI) tests, respectively. Accelerated life testing and Total Dose testing are performed routinely on each technology to maintain high reliability performance.

**Group A** - General Electrical Tests

**Group B** - Mechanical – Resistance to Solvents, Bond Strength, Die Shear, Solderability

**Group C** - Life Tests - 1000 hours at 125C or equivalent

**Group D** - Package Related Mechanical Tests - Physical Dimensions, Lead Integrity, Thermal Shock, Temp Cycle, Moisture Resistance, Seal, Mechanical Shock, Vibration, Acceleration, Salt Atmosphere, Internal Water Vapor, Adhesion of Lead Finish

**Group E** - Radiation Tests

Honeywell has demonstrated and has surpassed technology reliability requirements for critical components including total dose radiation performance, single event upset (SEU) radiation performance and very low failure levels.

## **Find out more**

Honeywell has a Global Network of Support Services. For additional general information on Microelectronics, please visit

<https://aerospace.honeywell.com/microelectronics> For more technical

inquiries about Honeywell's Microelectronics, please contact us at:

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