CSME 2026 Presentation Outline
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[title]

Using AEC-Q Semiconductors in Military and Aerospace Applications

The Changing Landscape of High-Reliability Electronics Market

For decades, military-grade (MIL) components defined the gold standard for reliability. Each part was *tested to rigorous military standards, such as MIL-STD-883, MIL-PRF-38535, MIL-STD-202, and the QPL* program, ensuring survivability in extreme conditions of shock, radiation, wide temperature ranges, and long lifetimes. Today, however, modern defense programs face new pressures:

- Rapid obsolescence of electronic components, including semiconductors, because the commercial market changes quickly and it "follows the money."
- Budget constraints and the drive toward cost-effective procurement.
- Demand for higher performance and integration, especially in advanced computing, AI, and radar systems (along with COTS concerns).
- Meeting size, weight and power consumption (SWAP) goals and requirements.
- Today's necessity of speed of response (OODA loop); plus, historically, the MIL/Aero "military industrial complex" is not "wired" for speed.

Comparison of MIL-STD-883 and AEC-Q100 qualification and testing standards.

A table will be presented that provides a clear comparison of the major qualification and screening requirements of MIL-STD-883 (for microelectronics) vs. AEC-Q100 (for automotive integrated circuits).

The Benefits of AEC-Q Devices

- Availability and cost efficiency
- Comparable environmental robustness
- Technology currency
- Established quality systems

AEC-Q Component Suitability in Mil/Aero Applications

- Ground-based radar and communications systems.
- Vehicle-mounted control electronics (military ground vehicles, UAVs).
- Power management and power conversion systems.
- Test and training equipment.
- Mission computing, vision systems, and AI processors.
- Newer and more compact designs.

Presentation Time: 15 mins.