Presentation Proposal
CMSE 2024
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Live Conference

Title: The Benefits of Using High-Reliability Polymer Tantalum Capacitors

Presentation Outline:

With the release of MIL-PRF-32700 for polymer tantalum capacitors, it represents a milestone in the adoption of high-reliability polymer tantalum capacitors in military, defense, and aerospace applications. High-reliability polymer tantalum capacitors continue to set new benchmarks for performance over their manganese dioxide (MnO_2) predecessors. The advancements in polymer electrolyte formulations have enabled these capacitors to offer superior characteristics, including lower equivalent series resistance (ESR), enhanced thermal stability, and higher ripple current capabilities. These improvements not only enhance the efficiency and longevity of electronic systems but also reduce the risk of failure in critical applications, making polymer tantalum capacitors an increasingly preferred choice for designers and engineers seeking to push the boundaries of what's possible in electronics design.

In this presentation, we will provide some manufacturing insights and revisit the technology and processes that go into making a capacitor meet high-reliability standards required by mission critical applications in the defense and aerospace industry. While electrical screening plays a role, creating a robust, high-quality part requires an approach that starts with different mindset on the design of the capacitor itself. We will also reflect on the new reliability assessment method, how it differs from Weibull screening, and why KEMET is including our patented simulated breakdown screening (SBDS) as standard procedure for parts built according to MIL-PRF-32700.

KEMET's T580/T581 series is set to be qualified to the new MIL-PRF standard and incorporates advancements KEMET has made as a result of 25 years of manufacturing polymer tantalum capacitors. This qualification is a testament to the series' ability to meet the rigorous demands of military applications, offers an easier adoption of these high-reliability capacitors in military projects, and reinforces KEMET's commitment to providing solutions that meet the highest standards of performance and reliability.

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