

Surface Mount Wet Tantalum Capacitor Technology

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Tantalum capacitors are used in a multitude of applications and markets. Wet tantalum capacitors are used in high reliability applications operating in extreme conditions and harsh environments. Wet Tantalum technology is characterized as extremely robust in the face of harsh application conditions, and offering high capacitance (up to 72,000uF) and high voltage (up to 125V) in a single device. There have been many advances in wet tantalum capacitor technology over the years. Recent advancements have been made, both electrically and mechanically, with respect to performance. There have also been developments in form factors, addressing new needs in ongoing applications, as well as new applications in new markets. In this presentation, we will review the advantages of wet tantalum capacitors, as well as the applications and new advances in technology.

There are several advantages of wet tantalum capacitors over solid tantalum capacitors, aluminum electrolytic capacitors, as well as ceramic capacitors. As with all other capacitors, these advantages lead to a very specific “sweet” spot or focused area of applications where the wet tantalum capacitor is the best and preferred choice. Because of the wet system, they enjoy the ability to hit higher voltages than solid technology and tantalum has the best volumetric efficiency. Wets don’t dry out like aluminums, so they are perfect for long life. Historically, wets have only been available with through hole technology.

Surface mount technology has been in use for years and engineers have asked for wets to be available in a surface mount termination configuration. Our first offering was the M34 and M35 over-molded surface mount product. The advantage here is that the parts are still hermetic, the capacitor is still the original design. While this over molding approach provides an SMD solution, it was not volumetrically efficient. With advances in packaging, we have pioneered a small footprint, hermetic surface mount package for wet tantalum technology which is now commercially available. This technology was recently evaluated and approved for space applications by NASA.

Vishay’s T22 series of SMD wet tantalum capacitors represent a true SMD solution. This pioneering advancement is an industry first and is now available in rated voltages from 50 VDC to 125 VDC with values ranging from 68uF at 50V to 10uF at 125V. It’s robust design makes it an ideal choice for avionics (both commercial and MIL), military and aerospace applications. It features a small case size of 0.35” x 0.28” x 0.29” tall. It is fully reflow capable. In this presentation, we will show the performance advantages of these capacitors and the surface mount capability for wets at Vishay..