

## Frequently Asked Questions T521 High Voltage Polymer Tantalum Series

### 1. What is the KEMET T521 Series capacitor?

KEMET's new T521 Series capacitor is a surface mount polymer tantalum capacitor that has been designed to deliver low ESR, high capacitance and high volumetric efficiency in applications of up to 25V. Prior to the release of the T521 Series, polymer tantalum capacitors were limited to application voltages of less than 20V. The introduction of the T521 Series has now expanded the voltage range of polymer tantalum capacitors allowing designers the option of using this technology on higher voltage applications such as 20-24V inputs on power-supplies.

### 2. What advantage does the T521 Series offer over the currently used surface mount tantalum capacitor technology used for 20V to 25V applications?

The T521 Series offers a number of advantages over traditional MnO<sub>2</sub> surface mount tantalum technology. The T521 Series offers an ESR value that is half that of the lowest ESR MnO<sub>2</sub> product for the same capacitance and targeted application voltage. The lower ESR translates into a higher capacitance retention at higher frequencies and a potential reduction in piece count. In addition, the T521 Series offers a benign failure mode in the unlikely event of a short circuit failure. Also, the improvement in recommended voltage derating (as compared to MnO<sub>2</sub>) translates into a lower voltage rating need for the T521 Series vs an MnO<sub>2</sub> tantalum chip capacitor which will often translate into a smaller case size or lower profile design.

### 3. What is the operating temperature range for this series?

The T521 Series is suitable for working environments from -55°C to 125°C.

### 4. What are the recommended derating guidelines for this series?

Voltage and Temperature Derating is a practice that is often recommended by capacitor manufacturers. The intent is to minimize failure rates and optimize reliability. The device can be used at rated voltage with an expected fallout rate of 0.1% to 1.0% per 1000 hours.

**VOLTAGE DERATING:** For optimal performance, a voltage derating of approximately 30% is recommended for the T521 series (35V x 70% ≈ 25V) for continuous duty. Short voltage transients within the rated voltage of the device are permissible for short periods of time with no negative impact on performance.

**TEMPERATURE DERATING:** The T521 series requires no temperature derating up to 105°C. For application environments operating above 105°C, a linear voltage derating from 1.0x rated voltage at 105°C to .67x rated voltage at 125°C is recommended.

### 5. Are these components available as RoHS-Compliant?

Yes, KEMET offers this series in a RoHS-Compliant version as standard. To receive RoHS-Compliant product, orders should be entered with a 100% Sn (Tin) termination finish. See the product specification sheet for details on designating termination finish.

**6. What makes the T521 Series a reliable component up to 25V?**

The T521 series includes a new generation of material sets that demonstrate stable performance and reliability at elevated voltages. In addition, changes in the manufacturing process were also implemented to ensure the robustness of the T521 Series up to 35V.

**7. Is this a "Sole Source" item?**

At the time of this release, no other manufacturers had announced the release of a polymer tantalum chip capacitor rated above 25V.

**8. Does KEMET offer reliability data at rated conditions?**

Yes. Reliability data is available upon request.

**9. Are samples available?**

Yes, contact your local KEMET Sales Representative for details.

**10. What termination finishes are available with the T521 Series?**

This series is available in two termination finishes; 100% Tin (order with a "T" suffix) and Sn/Pb (tin/lead) (order with an "H" suffix).

**11. What is the lead time for this series?**

Current lead times are from six to ten weeks for mass production quantities.

**12. What packaging options are available?**

The T521 series is available in tape and reel packaging. You can order this product in 7" or 13" reels.

**13. What are the target markets for this series?**

This series is suitable for most applications targeting 20V to 25V input needs. Some potential market segments include automotive, industrial, telecomm infrastructure, avionics and military.

**14. Is the physical appearance of these devices different?**

The T521 series is molded in a yellow epoxy case identical to other products associated with KEMET Ta products.

**15. Is this series capable of meeting the J-Std-020C reflow requirements for Pb-Free board mounting?**

Yes. The T521 series can be used in Pb-Free board mount conditions with peak temperatures up to 260°C as defined by J-Std-020C.

**16. Are there special handling needs for the T521 Series?**





The T521 series passes MSL 3 (Moisture Sensitivity Level) of J-Std-020C. Product will be shipped in moisture barrier packages and should be stored in normal climate controlled conditions prior to board mounting. Once board mounted, there are no further restrictions on moisture exposure.

**17. Is an automotive grade option available for the T521 Series?**

Due to strong demand from the automotive industry, Kemet has recently begun AEC Q200 qualification testing of the T521 Series. Completion of all testing is expected within the first quarter of 2009.