

# Derating and Technology in Polymer Tantalum Capacitors

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Derating, decreasing application voltage in comparison to rated voltage, reduces stress on the dielectric and thus improves capacitor reliability at harsh application conditions. As an example, voltage derating is commonly used at application temperatures exceeding 85°C. Derating 10%-20% of Polymer Tantalum capacitors at temperatures below 85°C was recommended by the manufacturer shortly after these capacitors were introduced to the market due to high and unstable dc leakage in early products. Even higher derating of Polymer Tantalum capacitors is now under discussion to allow usage of less expensive commercial type capacitors in mission critical applications. This presentation will cover negative effects of high derating, first of all radical loss in volumetric efficiency CV/cc, which is key advantage of tantalum capacitors in comparison to other major types of capacitors. Advance KEMET technology and screening technique allowing reliable applications of Polymer Tantalum capacitors with low/no derating will be also under discussion. These capacitors combine high reliability with high volumetric and weight efficiency and are most beneficial in space applications.