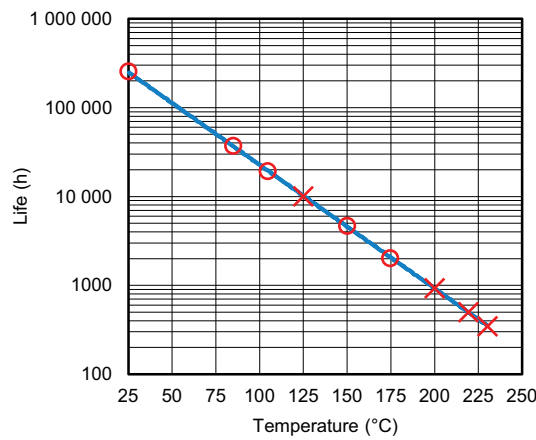




# Life Test Performance (Actual and Estimated) of Wet Tantalum Capacitors Over Temperature

By Mike Mosier

The majority of wet tantalum capacitors are designed for operation at the rated voltage from -55 °C to +85 °C, with voltage derating required for operation at higher temperatures. Historic data has been collected for 10 000 hours of life at rated voltage for +85 °C. There is also data available for 10 000 hours at the +125 °C derated voltage. Life testing for high temperature operation at +200 °C and even +230 °C has now extended the historic life estimation line. By adding a few more data points, and using the Excel FIT curve calculator, we are even able to reliably predict life at intermediate temperatures along the curve. As a result, we now have an estimated life at intermediate points within the high temperature operational area.



Wet Tantalum Capacitor  
Life vs. Temperature (Fitted Curve)

The data points “X” are fixed from ongoing reliability test data at +125 °C and above at the appropriate voltage derating. We also have extensive data for 10 000 hours at +85 °C at rated voltage. The “circled” data points are estimated from the fitted curve. As a reminder, any application above +85 °C should be at a derated voltage appropriate for the temperature.