



Passive Component Reliability Workshop

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Course Summary

The Passive Component Reliability Workshop course will be presented in three sessions covering Tantalum & Electrolytic Capacitors (**Dr. Yuri Freeman, Kemet**), MLCC & EMI filters (**John Marshall, AVX**) and SuperCapacitors, Film & Thin film capacitors (**Chris Reynolds, AVX**). Students will gain an understanding of capacitor construction and how performance characteristics are affected by time, temperature, voltage and frequency. End applications are discussed along with reliability expectations, common failure modes and de-rating methods for increased lifetime performance. Processing guidelines are presented and the availability and use of simulation models is shown.

The Inductor performance, reliability and selection session will be taught by (**Scott Harris, Vanguard Electronics**). This course will outline the basics of magnetics from an RF and power inductor and transformers point of view. Material performance, core types and properties along with wire types, winding techniques and patterns are shown relative to their impact upon performance. Reliability predictions and levels are discussed along with a preview of emerging technologies and device simulation techniques.

Resistor theory, performance & reliability will be taught by (**XXXXXXX - Company**). Resistor types and materials will be discussed relative to component performance. Device characteristics and performance relative to time, temperature, frequency and power are discussed. Heat transfer means and noise characteristics outlined. Reliability expectations and recommended applications are given.



Instructor Bios



Dr. Yuri Freeman is the Director of Advanced Research in the Tantalum (Ta) business unit and a member of the Advanced Technology Group at KEMET Electronics. Dr. Freeman received his PhD in Solid State Physics from Kharkov Technical University in Ukraine. Prior to KEMET, he worked as a principal scientist at Elitan, the largest producer in the Soviet Union of Ta and Niobium (Nb) capacitors, and at Vishay Sprague in the USA. He has published more than 30 papers and received 26 patents in the field of physics and technology of Ta and Nb-based capacitors. He is also the winner of the Anders Gustaf Ekeberg Tantalum Prize, awarded annually for outstanding contribution to the advancement of the knowledge and understanding of the metallic element tantalum (Ta), for his 2018 book 'Tantalum and Niobium-Based Capacitors'.