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Classical equivalent circuit characterization for a double-layer capacitor (Conference Paper)

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Abstract

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A supercapacitor or EDLC stores energy in the same way as parallel plate capacitor but in a more complicated nature. The non-ideal device can be represented by a simple equivalent circuit consists of a capacitor and a resistor components. The characterization of these components can be done by conducting transient analysis charge-discharge-cycle (CDC). This paper is reporting the findings of CDC procedures done on a commercial supercapacitor device with rated 2.7 V 350 F and 2.5 miliohms equivalent series resistance (ESR). Two procedures; a standard CDC and manufacturer recommended CDC were done and the results are discussed. The resulting capacitance values are close to the rated value although the ESR value is much higher than to the device datasheet. © 2017 IEEE.

SciVal Topic Prominence

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Prominence percentile: 98.744

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Engineering uncontrolled terms: Capacitance values | Charge-discharge cycle | Double layer capacitor | EDLC | Equivalent series resistance | Non ideals | Parallel plate capacitors | Rated values

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