Enhanced Capacitor

The great development potential of polymer dielectric capacitors in harsh environments urgently requires enhancing capacitive performance at high temperatures. However, the exponentially increased conduction loss at high temperature and high field results in a drastic drop in energy density and charge-discharge efficiency. Here, a bilayer ...

Nature Materials - Electrostatic capacitors can enable ultrafast energy storage and release, but advances in energy density and efficiency need to be made. Here, by doping equimolar Zr, Hf and...

This paper introduces an all-digital CMOS enhanced capacitor-type pulse-varying (shrinking) mechanism designed to improve resolution for low-cost wide-range time-to-digital converters (TDCs). The mechanism utilizes a size-ratioed MOS capacitor coupled with homogeneous gates within the delay line, functioning as a pulse-varying cell to achieve time ...

Request PDF | Enhanced Capacitor Voltage Balancing and DC Bias Suppression Methods for Three-Level Dual-Active-Bridge Converters | Three-level dual active bridge (DAB) converters based on neutral ...

In this work, a novel high entropy perovskite oxide (1- x) (Na 0.2 Bi 0.2 Ba 0.2 Sr 0.2 Ca 0.2)TiO 3 - x NaNbO 3 (abbreviated as (1- x)NBBSCT- x NN, x = 0, 0.05, 0.1, 0.15, and 0.2) was designed to improve temperature dielectric stability and energy storage performance by combining relaxor and antiferroelectric characteristics.

A PI control loop is adopted to adjust the duty cycle of switches to realize the DBS. Therefore, the voltage imbalance and dc bias can be eliminated simultaneously by the proposed methods. Experiment results show the improvement of proposed methods in terms of capacitor voltage ripple, dynamic results, and correct DBS.

High-temperature resistance and ultra-fast discharging of materials are among the hot topics in the development of pulsed power systems. It remains a significant challenge for dielectric materials to meet the requirements of storing more ...

As a new type of energy storage device, carbon-based redox-enhanced supercapacitors (RE ...

Web: https://roomme.pt