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To Improve Performance and Efficiency of Battery by Novel Pulse Current Charging Method

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Abstract: *In this paper, a novel method of pulse current charging is developed for solving these problems. The decline in the capacity of Li-ion battery is associated with a progressive change in the nature of the positive active material, i.e., from low crystallinity in the precursor material to a more defined crystallinity in the cycled mass. This behavior reduces both the available surface area and the reactivity of the active. The partial charge phase is implemented in a pulse discharge profile, typically comprising the alternation between work and rest (idle) phases. The partial charge current, duration, and minimum/maximum cell voltage achieved during the partial phase are investigated, highlighting the effects on the overall battery performance. Based on this understanding, the fast-charging principle of the battery was analyzed in this paper, and the depolarization pulse fast charging method and the high current decline fast charging method were studied, so as to provide a reference for the people interested in the topic.*

Keywords: Ramp Generator, MOSFET, Discharge Circuit, ZCD, PWM Generator, Microcontroller

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