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CONTROL OF PARAMETERS OF BIPOLAR PULSE CURRENTS IN THE LOAD OF SEMICONDUCTOR ELECTRIC DISCHARGE INSTALLATIONS WITH RESERVOIR CAPACITOR

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Abstract

The method for regulating the parameters of discharge pulse currents (reducing their duration and increasing the amplitude and rate of current rise) of semiconductor electro-discharge

installations with voltage feedback in order to intensify the dynamic force action on their technological load is proposed. The method is based on the use of two pairs of charge and discharge semiconductor (thyristor) switches, which allow to form a bipolar pulsed current in the load and implement the overlay of subsequent capacitor charge to its previous discharge by varying the switching time of the corresponding pairs of charge thyristors. On the basis of performed analysis of the interrelated transients in the branched electrical circuit with variable structure in such installations the dependences of increasing ratios of the charge voltage, charge and discharge currents of the capacitor on the overlap ratio capacitors charge and discharge for different charging circuit Q values are determined. References 15, figures 5.

Key words: capacitor charge, capacitor discharge, bipolar pulse, Q-factor, charge voltage, pulse current, discharge duration, voltage feedback.

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