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Heavy Pulse Currents LTT Switch Unit

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The results of research of heavy pulse current switches built on Light Triggered Thyristors (LTT) and pulsed diodes are presented. Transients in a semi-conductor switch are analyzed at a capacitor discharge in a Pulse Forming Network (PFN), which incorporates an inductor and crowbar diodes. Maximal currents for a semi-conductor structure, at which thermo-generation peaks appear on oscillograms of forward voltage drop, have been determined. The switch-on process of LTT has been investigated and the need for application of speed-up R-C circuits for a fast and stable transition of the LTT semiconductor structure to the conducting state has been shown. The current switching into the crowbar diodes and pulse over-voltage generation at a reverse recovery of LTTs has been analyzed, and the snubbers for suppression of these over-voltages have been chosen. The results of testing performed at switching of a pulse current up to 100 kA with a voltage up to 6 kV confirm the validity of the accepted technical solutions.

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