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Application of current charged pulse forming lines for generation of high voltage nanosecond pulses

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Pulse forming networks (PFN) and charging lines are widely used in pulse power techniques for high voltage pulses generation and shaping. Usually PFN should be precharged to the double voltage (energy is stored in electric field) and is used in combination with high voltage closing switch. A lot of theoretical and experimental researches with different types of PFN-based circuit design have been made.

Alternative circuit design with current charged PFN (energy is stored in magnetic field) in combination with fast opening switches is described. The main benefits of new approach are nanosecond and subnanosecond rise/fall times as well as high voltage output pulse generation with using of low voltage power supplies only. Therefore, compact and effective pulse generators can be made. As an example, the description and output pulse oscillograms of square-like high voltage pulse generator are presented.

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