# High voltage pulse energy storage element

What is the voltage gain of a pulse generator?
charging voltage of the pulse generator is only 28 V. And the voltage gain can reach 357. Compared with ref. ,due to the lack of further theo-retical analysis and optimised design of the boost part in ref. ,the output waveform distortion of the single module is serious,and the flat top has disappeared.

What is high-voltage square-wave nanosecond pulse generator?
Abstract: High-voltage square-wave nanosecond pulse generator has a broad application prospect in the fields of atmosphericn low-temperature plasma, biomedicine and power equipment detection. Pulse forming line is an effective way to realize high-voltage square-wave nanosecond pulse output.

Why is inductor used as a secondary energy storage element?
It is mentioned in refs. [18-20]that the inductor is used as the secondary energy storage element to discharge pulses on the load through the cooperative action of the switch. The pulse amplitude obtained on the load will be higher than that on the primary energy storage unit so as to get a higher voltage gain.

What type of power supply is used in vitlt?
The DCcharging po-wer supply is KA6003D (KORAD,60 V). The load uses thick film non-inductive resistors with a very low stray inductance. All transmission lines used are double-layer shielded lines,with the aim of reducing spatial interference between lines. Nano-crystalline materials with high initial permeability are used as the core of VITLT.

How does vitlt generate a double voltage boost?
Pulse on the primary side with amplitude of 1 kV,pulse width and rise time of 10 and 3.2 ns are generated using the pulse forming part. Voltage on the secondary side of the VITLT becomes 2 kV. The pulse width and rise time are 10.8 and 3.5 ns,respectively. From the amplitude of the pulse voltage,VITLT can achieve a double voltage boost.

Does vitlt boost a short nanosecond pulse?
Comparing both the pulse rise time and width,there is not much differ-ence,which means that the loss of a high-frequency compo-nent of the pulse is very small after the VITLT boost. The single-module experiment verifies the topology prin-ciple and the boost effect of VITLT on a short nanosecond pulse.

Schematic of the basic operating principle and main components of pulse generators. A high-voltage DC power supply energy to a transmission line that acts as capacitive energy storage element. Microstrip or coaxial transmission lines are typically used. Two photoconductive semiconductor switches (PCSS) are integrated in the transmission lines ...

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By utilizing inverter, resonance, 10-stage step boost, rectification and output in series, a high power repetitive power supply has been designed and tested which can transform 300V DC. to 100kV DC and charge the capacitor to 100kV repetitively. The Marx generator consists of 16 stages with integrated folder configuration.

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Energy storage capacitor banks supply pulsed power in all manner of high-current applications, including shockless compression and fusion.As the technology behind capacitor banks advances with more precise switching and higher energy density, fast discharge capacitors can reliably support more advanced applications.. The energy storage capacitors ...

Considering the above requirements, there are several basic concepts that can be used for high-voltage pulse generation. The key idea is that energy is collected from some primary energy source of low voltage, stored temporarily in a relatively long time and then rapidly released from storage and converted in high-voltage pulses of the desirable pulsed power, as ...

Each module is designed to minimize parasitic parameters and provide high voltage and current slew rates to the gas discharge tube. The limit parameters of one module are as follows: a maximum output voltage of 1100 V and a maximum pre-pulse energy in the storage capacity of 9.0 mJ. A laboratory model of the power supply, based on six modules ...

A pulsed high-voltage generator has been developed using semiconductor opening switch (SOS). It is based on inductive-energy-statorage scheme, and it has been developed for applications ...

First, the proposed HVUPPM utilizes a short-circuit secondary side transformer (SSST) as an intermediate energy storage component and generates high-voltage nanosecond pulses based on inductive energy storage. Analyzed the impact of parasitic parameters on waveforms and ...

TESLA klystrons require high voltage pulses of up to 120 kV with a pulse power of up to 16.8 MW. The pulse length is 1.6 ms with a repetition rate of 5 Hz, 10 % of the klystrons are working a ...

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First, the proposed HVUPPM utilizes a short-circuit secondary side transformer (SSST) as an intermediate energy storage component and generates high-voltage nanosecond pulses based on inductive energy storage. Analyzed the impact of parasitic parameters on waveforms and verified the analysis results through simulation. Secondly, in order to ...

In the article, a new type boost high-voltage nanosecond pulse generator is proposed. The distributed inductance of the transmission line is utilised as the energy storage unit and cooperated with the variable impedance transmission line transformer to generate nanosecond pulses with extremely high-voltage gain. What"s more, the isolation ...

A topology based on a linear transformer driver (LTD) generator is becoming widespread in the field of generating high-energy electrical pulses. Examples include the ...

In this paper, a new type of boost pulse-forming line generator is proposed. Combining the advantage of a short pulse generated by the transmission line and the principle of inductance boost, transmission lines are used as secondary inductive energy storage units to generate a high-voltage gain pulse. In addition, the application of ...

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