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Characteristics of GaAs PCSS Triggered by Laser Diode array

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Photoconductive semiconductor switches (PCSS) have an excellent performance in the field of pulse power, especially the one made of GaAs does. Since PCSS can be operated in non-linear mode, laser diodes, which are small in size, low-cost and easy to be driven compared to traditional laser devices, can be used to trigger it in low power. In this condition, pulse width of the radiation is always larger than the delay time, thus, it is more important to investigate the influences of laser power than energy. In this paper, an array of laser diodes which emits laser pulse with a dominant wavelength of 905nm and an optical fiber with 7 branches are used to trigger a semi-insulating GaAs PCSS. By changing the driving current and the quantity of fiber branches that connected to LDs, power of laser pulse is changing in a range of 45-1250W. It's found that the power of LDs largely influences the output characteristics of the PCSS. The related experiment results are presented, and further discussions are given in this paper.

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