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Study on the high-power semi-insulating GaAs PCSS with quantum well structure

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A high-power semi-insulating GaAs photoconductive semiconductor switch (PCSS) with quantum well structure was fabricated. The AlGaAs layer was deposited on the surface of the GaAs material, and the reflecting film and the antireflection film have been made on the surface of the GaAs and AlGaAs, respectively. When the prepared PCSS worked at a bias voltage of 9.8 kV and triggered by a laser pulse with an incident optical energy of 5.4 mJ, a wavelength of 1064 nm and an optical pulse width of 25 ns, the on-state resistance of the AlGaAs/GaAs PCSS was only 0.45 Ω , and the longevity of the AlGaAs/GaAs PCSS was larger than 106 shots. The results show that this structure reduces the on-state resistance and extends the longevity of the GaAs PCSS.

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