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## Effects of pulsed magnetic field on performances of semiconductor devices

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The electromagnetic launch system generates strong magnetic field radiation when discharging, which may degenerate or even destroy the function of semiconductor devices. Based on fundamental theory of Electromagnetics and Semiconductor Physics, this paper established magnetic injury effect model of typical semiconductor devices, such as diode, transistor and etc. The relation equations of magnetic induction density and these devices' output parameters, which involving forward voltage drop and electrode current, was obtained through the derived equations between magnetic induction density with semiconductor mobility and scattering rate. To test and verify the model, experiments was designed to study effects of pulsed magnetic field on characteristic parameters of typical semiconductor devices. In addition, the relation curve between magnetic flux density and these parameters was obtained in accordance with the experiment data. Finally, the equation of scattering rate was corrected according to the relation curve to improve the theoretical model, and the improved model approximately agreed with the experimental results.

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