This work is devoted to the investigation of a spin polarization in ferromagnetic semiconductor $Ga_{1-x}Mn_xAs$ with a broad nominal concentration of manganese ions using one method of the ultrafast laser spectroscopy – the time-resolved Kerr rotation. At first, the experimental setup was optimized for the investigation of the dynamics of spin polarized charge carriers in semiconductors which were photo-generated by circularly polarized laser pulses. It was observed that the measured signal is induced by spin-polarized electrons. Due to a small thickness of the investigated ferromagnetic films the measured signal probably monitored the dynamics of fotogenerated electrons in GaAs substrate. Nevertheless, the measured data show that the electron spin dynamics in the substrate is significantly influenced by proximity effect due to the deposited ferromagnetic layer.