Abstract: In this paper, nonlinear control techniques are developed to control parallel-plate micro electrostatic actuators in the presence of parasitics and parametric uncertainties. The movable plate of the micro actuator is actively controlled utilizing the measurements of internal charge and movable plate's displacement. A velocity observer is designed to estimate the velocity of the plate that is needed for the control algorithm since it is difficult to be measured practically. The proposed backstepping nonlinear control strategies are developed based on a Lyapunov–based analysis, which proves that the desired plate's displacement can be obtained accurately. The proposed nonlinear controllers are capable of controlling the movable plate beyond the pull-in limit in the presence of parametric uncertainties. Representative numerical simulations are presented to demonstrate the performance of the developed nonlinear control strategies in accurately tracking desired deflections of the movable plate within the entire capacitive gap. Finally, a comprehensive performance comparison is performed to examine the effectiveness of the control designs.