In this article, we consider an optimal execution problem with fixed time horizon and bounded transaction rate, which is more natural in practice. We show that, different from traditional stochastic control or singular control problems, this problem is of the stochastic bang-bang control type. Under some parameter settings we show that the optimal control does not involve buy action, and the optimal value function is the viscosity solution to the associated Hamilton-Jacobi-Bellman equation. We further show that the optimal policy is unique, and provide a numerical example to explore the form of the optimal control.