

ABSTRACT OF THE DISCLOSURE

A method of detecting, by a nonvolatile memory system, a defective memory cell block from among memory cell blocks, includes performing, after performing an erase operation, a read operation on at least some memory cells included in a target memory cell block based on an off-cell detection voltage that is different from a read reference voltage that distinguishes an off-cell on which no data is written from an on-cell on which data is written; counting a number of hard off-cells having a higher threshold voltage than the off-cell detection voltage from among the memory cells based on a result of performing the read operation; and identifying whether the target memory cell block is a defective memory cell block based on the number of counted hard off-cells.

FIG. 9