

ABSTRACT OF THE DISCLOSURE

A semiconductor memory module includes a volatile memory device, a nonvolatile memory device, data buffers, and a controller. The controller outputs first data read from the volatile memory device or the nonvolatile memory device to an external device through the data buffers, and writes second data received from the external device through the data buffers in the volatile memory device or the nonvolatile memory device. The controller performs a failover operation depending on a failover request that includes fail information indicating a position of a failed data buffer among the data buffers. In the failover operation, the controller conveys third data associated with the failed data buffer to the external device through a failover data buffer among the data buffers.

FIG. 2