

Kensuke Ota / Toshiba Memory Corporation

"Device Challenges and Opportunities for ReRAM"

The resistive random access memory (ReRAM) has attracted much attention since its discovery. Because of the simple structure, ReRAM is considered as potential candidates for future non-volatile memory applications. There are two types of resistive switching phenomena; filamentary switching and non-filamentary switching. Furthermore, filamentary switching can be classified into oxygen based RAM (OxRAM) where the filament is composed of oxygen vacancies, and conductive bridge RAM (CBRAM) utilizing the redox reaction of metal ions. Device challenges are different between these types of switching phenomena. In this tutorial, pros and cons of each type of ReRAM on performances and reliabilities are reviewed on the basis of the switching mechanisms.

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