

Scaling Technology and Reliability Aspects of a PRAM Cell for Storage Class Memory

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ABSTRACT

This paper reviews the scaling technology and key reliability issues of associated with high performance and high density phase change random access memory (PRAM) as a promising candidate for storage class memory (SCM). SCM requires the properties of high read/write performances and superior reliabilities. However, it is restricted by peculiar properties of phase change memory cell such as trade-off relation between speed and data retention, cycling endurance failure by phase segregation and resistance drift phenomenon by structural relaxation of amorphous phase. In this paper, we first demonstrate a PRAM cell scalable to 10nm technology node and several suggestions to overcome the reliability issues are introduced with recent experimental results.