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Inline characterization strategies for the development and the monitoring of new memories in semiconductor environment

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Abstract

The first generation of resistive memory based of phase-change materials (Phase Change Memory or PCM) is already in production for standalone market [1] and is being qualified for the automotive market, which is highly demanding in terms of reliability standards [2]. The next generations of these non-volatile memories are the subject of intense international research driven by industry requirements. The development of phase change materials is concurrent to the recent but ramping research on selector materials (Ovonic Threshold Switching or OTS) that allow for 3D integration [3]. To master the composition and the structural properties of PCM and OTS materials is a keystone of the improvement of the performances and reliability of memory devices, and will become even more crucial for advanced technology nodes, 28 nm and beyond [4-8]. This paper highlights some inline characterization strategies built to support the development and the monitoring of PCM and OTS materials along the integration path.

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