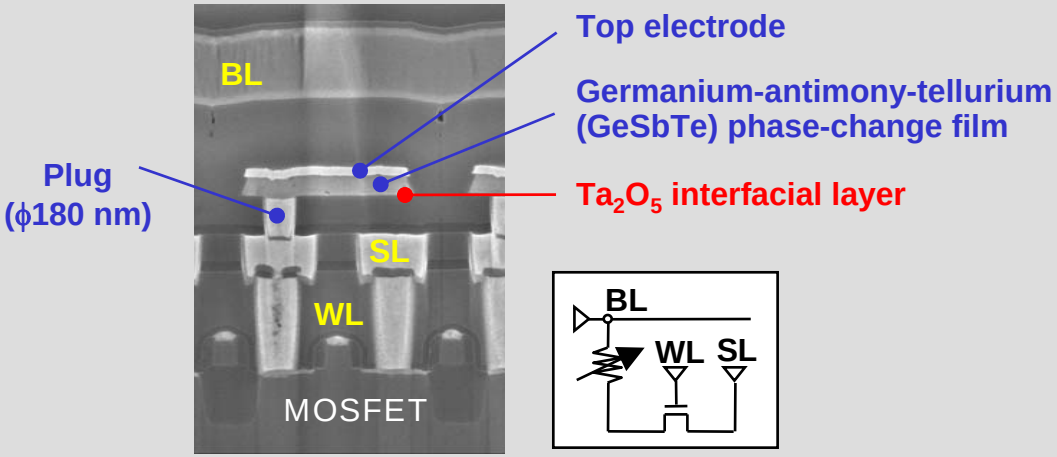
2006/12/11 Release http://www.hitachi.com/New/cnews/061211.html

Development of phase-change memory cell technology enabling low-power operation and stable fabrication

– New memory cell structure employing Ta_2O_5 interfacial layer –

Cross-section of a prototype phase-change memory cell fabricated with standard 0.13 µm logic process



Hitachi, Ltd. and Renesas Technology Corp. have announced the development of a new cell technology that will enable stable fabrication of phase-change memory while maintaining low-power operation performance. The newly developed cell technology involves forming an interfacial layer of tantalum pent-oxide (Ta_2O_5) between the plug that connects to a MOS transistor and the phase-change film, and optimizing the thickness of the interfacial layer. In prototype phase-change memory cells fabricated using this structure, programming operation has been verified with a current of 100 μA at a power supply voltage of 1.5 V. In addition, the excellent adhesion between the Ta_2O_5 interfacial layer and phase-change film has the potential to provide enhanced stability in memory cell fabrication.

Results of this research were presented at the IEEE 2006 International Electron Devices Meeting held from 11th – 13th December 2006, in San Francisco, U.S.A.