

## Asymmetric Ferroelectric Tunneling Element (AFTE) and Applications for Non-Volatile Random Access Memory

### **Disclosure Number**

200401416

### **Technology Summary**

AFTE is based on the polarization dependence of tunneling resistance of tunneling barrier formed by ferroelectric material between two dissimilar electrodes. This device can be used as a basis of compact 1R type non-volatile random access memory (AFTE-RAM). The advantages include extremely simple architecture (1R, as opposed to 1T 1C or 2T 2C architectures for conventional non-volatile ferroelectric RAM), which greatly minimizes the number of the fabrication steps, ultimate scalability (down to ~10 nm size as limited by the ferroelectric stability) and fast access times generic for all ferroelectric memories.

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