



FRAM Demonstrator with ASIC on PCB

NEXT GENERATION FERROELECTRIC RAM

INTERCONNECTS

HIGH-K DEVICES

NON-VOLATILE MEMORIES



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FERROELECTRIC RAM

Among the various emerging memory technologies the ferroelectric random access memory (FRAM) is a promising candidate for future ultralow power nonvolatile memory applications. Therefore, the Emerging Memory group (EME) at Fraunhofer IPMS business unit CNT investigates fully CMOS compatible, hafnium oxide based ferroelectrics. This lead free material system enables the manufacturing of cost efficient and power saving CMOS chips.

To accomplish the requirements of future embedded memories the key parameters retention, endurance and disturb characteristic in memory arrays need to be improved. For the investigation a demonstrator has been built, utilizing a 64 bit hafnium oxide based FRAM with a dedicated designed application-specific-integrated-circuit (ASIC). The system is accessed by an I²C interface.

ADVANTAGES

- CMOS compatible
- Non-volatile
- Lead free - no PZT
- Scalable
- Fast read/write operation (switching speed in ns range)
- Low power & low voltage
- 10-year storage capability
- 300 mm industrial standard conditions
- Customer wafer processing possible
- Long-standing experience in process characterization and development
- Electrical and reliability test on wafer level
- ISO 9001 certified

APPLICATIONS

- Low power NVM / Sensor datalogging
- Embedded NVM
- Neuromorphic Computing
- Cost efficient CMOS & RFID-tags

