Netsol Unveils First Standalone MRAM Using 28nm Process, Shares the Outlook for Standalone MRAM at 2023 MRAM Forum

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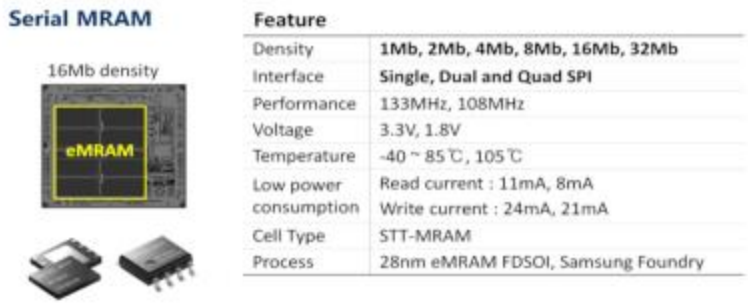
At the 2023 MRAM Forum, a key event by the IEEE Magnetics Society tied to the IEDM conference, Mr. Noh, Chief Technology Officer at Netsol, provided an overview of the company's advancements in MRAM technology.

Mr. Noh introduced Netsol's development of its first standalone MRAM, created using 28nm eMRAM technology from Samsung Foundry. He presented the technical characteristics of the product, focusing on its data retention, endurance, resistance to magnetic interference and quality, which have been validated through extensive testing.

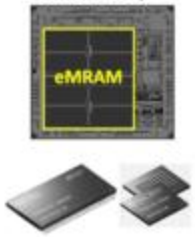
He spotlighted the Serial MRAM's adaptability to several SPI interfaces and its remarkably small die size. Mr. Noh pointed out its range of densities from 1Mb to 32Mb and operation speeds of up to 133MHz, achieved with a design optimized for lowest power consumption.



Additionally, Mr. Noh introduced the company's asynchronous parallel interface MRAM, which offers quick access times and supports a page mode function for enhanced performance.

Parallel MRAM

16Mb density



Feature	
Density	**1Mb, 2Mb, 4Mb, 8Mb, 16Mb, 32Mb, 64Mb**
Interface	**Asynchronous** - page mode for enhanced performance
Performance	Read/Write cycle time : 70ns/240ns
Voltage	3.3V, 1.8V
Temperature	-40 ~ 85℃
Low power consumption	Read current : 12mA, 9mA Write current : 15mA, 14mA
Cell Type	STT-MRAM
Process	28nm eMRAM FDSOI, Samsung Foundry

Addressing the critical aspect of magnetic immunity, Mr. Noh conveyed confidence in the robustness of STT-MRAM against strong magnetic fields. This characteristic is crucial for the integrity and longevity of memory storage, particularly in environments with potential magnetic disruption.

Looking ahead, Mr. Noh shared Netsol's perspective on the future of standalone MRAM features and its compatibility with existing memory interfaces. While there are challenges to integrating DRAM functionality with STT-MRAM, alternative configurations need to be considered to optimize performance. Netsol is continuing to explore the potential of MRAM to meet the growing needs for high performance and high density in memory storage solutions.

Mr. Noh revealed Netsol's ongoing project: a 14nm Flash-like MRAM boasting high densities ranging from 128Mb to 1Gb, targeted specifically for the automotive application and expected to be released in the beginning of 2026. .

Mr. Noh's talk at the MRAM Forum showed Netsol's commitment to advancing MRAM technology and its potential in the market.

Netsol MRAM Roadmap

Product			2023	2024	2025	2026
STT-MRAM	SPI(nvRAM)	1Mb~32Mb	28nm			
	PPI(nvRAM)	1Mb~64Mb	28nm			
	SPI(Flash-like)	U/C(128Mb~1Gb)				14nm
	OPI(Flash-like)	U/C(128Mb~1Gb)				14nm
SRAM	Asynchronous Fast	1Mb~32Mb		55nm		

This was a sponsored post by Netsol

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MRAM production
STT-MRAM
Posted: Jan 10,2024 by Ron Mertens