



NO.10 NOV23
MEMPHIS
MEMORY
ESSENTIALS

Everything you need to know about the semiconductor memory industry, from legacy technologies to latest innovations.
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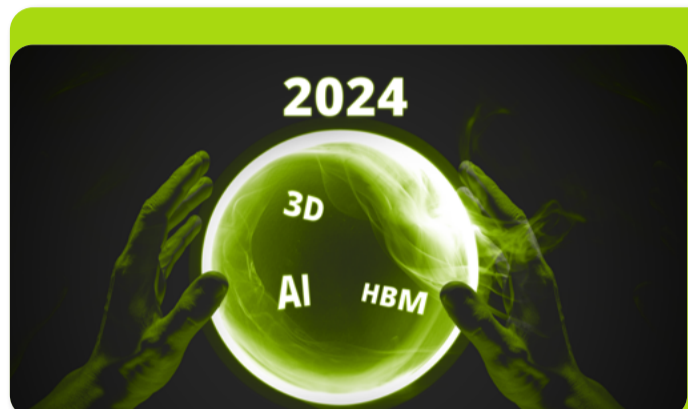
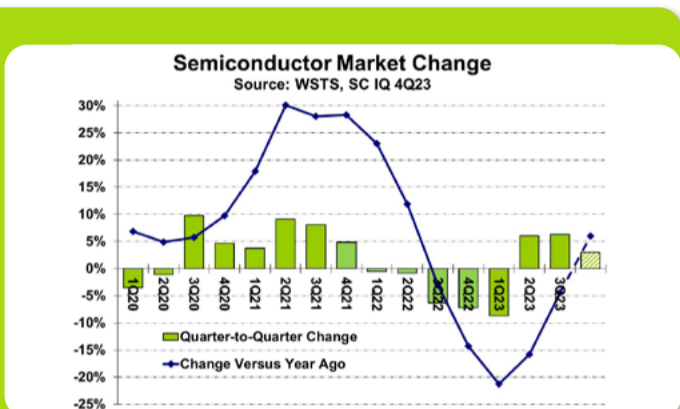
The Rocky Road to Memory

The race is on! 5 more weeks until the end of the year. It's been a rocky year for memory, with steep drops in prices and only narrow winding slopes upwards. However, the World Semiconductor Trade Statistics expects double-digit year-to-year growth for each quarter of 2024. With the strongest revenue growth coming from memory companies. That's not surprising seeing that among the 12 technology trends in 2024, three are directly related to memory and the role it plays as an enabler for AI applications and their further adoption.

Apart from High Bandwidth Memory and the latest advancements in LPDDR5, NAND and NOR flash are also high runners in many industrial and automotive applications.

As technologies advance, they get more complicated, and testing becomes a vital aspect in ensuring the quality and fitness of memory for a variety of target applications. This is where Neumonda's Rhinoc tester comes in. And we ask you all to keep your fingers crossed for the Elektra Awards this week where Neumonda is a finalist in the category Test Product of the Year.

And among all this, we are moving offices. Amidst a pile of boxes, we finalize this month's update and will greet you from brand new offices in December. Stay tuned, enjoy the read, and reach out with any questions you have on memory.



Global Semiconductor Market Set for Growth in 2024

The global semiconductor market is now experiencing a solid turnaround. WSTS revised its data for 2Q 2023 growth over 1Q 2023 to 6.0% from 4.2% previously. 3Q 2023 was up 6.3% from 2Q 2023. With its Semiconductor Intelligence forecast of 3% growth in 4Q 2023, the year-to-year growth in 4Q, 2023 will be a positive 6%. This will set the stage for double-digit year-to-year growth for each quarter of 2024.

For 2024, two of the key drivers of the semiconductor market are expected to recover: Smartphone and PC units both will increase 4% in 2024 following a drop of 5% and 14% respectively in 2023. Production of light vehicles should moderate to 3.7% growth in 2024. Consequently, WSTS expects the strongest revenue growth in 2024 from the memory companies (Samsung, SK Hynix, and Micron).

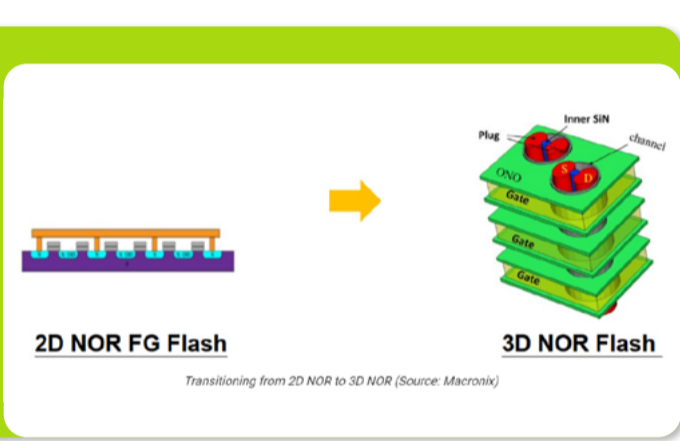
Read more [here](#).

Trendforce Predictions 2024

Is it really only a year ago that ChatGPT was introduced? And now generative AI applications are boosting the demand for AI servers to exceed 1.2 million units by the end of 2023. That's a year-over-year increase of 37.7%. Trendforce expects this number to grow 38% in 2024 and that AI servers will make up 12% of all server shipments.

HBM stands out as a critical DRAM product for AI. With the growing complexity of training models and applications, demand for HBM is expected to skyrocket. As the average unit price of HBM is several times higher than other DRAM products, it's projected that in 2024, HBM is poised for an annual growth rate of 172%.

These are just some of the trends that Trendforce sees for 2024. Read more [here](#).



Why NOR is Sexy Again?

When we talk about flash memory it's usually NAND, but there's also NOR flash. So what's the difference? And why do you need the two technologies?

NAND Flash has a much smaller cell size, much higher write and erase speeds, and comes in much higher capacity/density components than NOR Flash. But NOR Flash offers true random access coupled with much faster read speeds, thereby making it ideal for executing code. Also, NOR Flash is more reliable and better at retaining data than NAND Flash. Also, NOR has a simple SPI interface while NAND needs a complex controller, and most importantly, comes in automotive grade.

Read more [here](#).



EyeKnowHow Training: Opening the Black Box of Memory

DRAM might sound simple with its one bit, one capacitor structure, but in fact it has become a sophisticated technology that can resemble a "black box" where "magic" happens, but you don't really know how. If that's how you feel, we invite you to join the three-day intensive seminar Open the Black Box of Memory from **February 19 to 21 in Copenhagen** and **February 26 to 28 in Munich**. This is a rare opportunity to get insights from the experts behind EyeKnowHow and learn how to design successful products in the future in what easily passes as the best memory interface training.

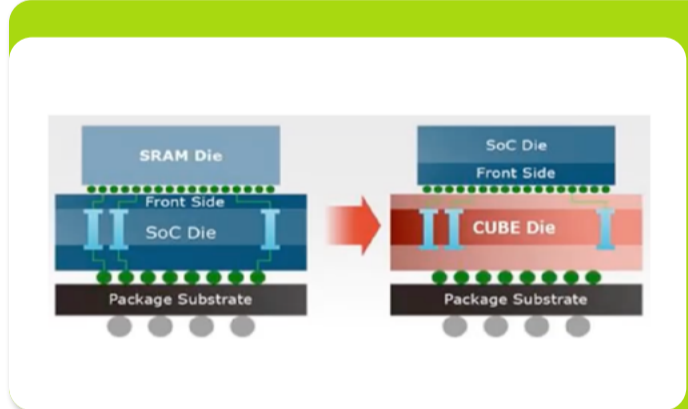
Best of all, you will get a 100 EUR discount when entering the promo code MEMPHIS with your registration. Check it out [here](#).



World's Fastest Mobile DRAM

SK hynix has started supplying customers with its latest 16 GB packages of Low Power Double Data Rate 5 Turbo (LPDDR5T)1, the fastest mobile DRAM available today that can transfer 9.6 gigabits per second. The LPDDR5T 16 GB package operates in the ultra-low voltage range of 1.01 to 1.12V set by the Joint Electron Device Engineering Council (JEDEC), and can process 77 GB of data per second, which is equivalent to transferring 15 full high-definition (FHD) movies in one second.

Read the full press release [here](#).



DRAM Choices are Getting More Complicated

Chipmakers are beginning to incorporate multiple types and flavors of DRAM in the same advanced package, setting the stage for increasingly distributed memory but significantly more complex designs.

Despite years of predictions that DRAM would be replaced by other types of memory, it remains an essential component in nearly all computing. Rather than fading away, its footprint is increasing, and so are the number of options. What are the driving factors?

Read all about it [here](#).



Fingers Crossed for the Elektra Awards

Have you heard the news? Neumonda has been shortlisted for an Elektra Award with its Neumonda Rhinoc DRAM tester. The team of course is convinced that the new tester will revolutionize memory testing. So keep your fingers crossed that the judges consider it as revolutionary as we all do and that the team takes home an award on Nov 29!

Read the full press release [here](#).



MEMPHIS Germany is on the Move

We are excited to announce that our MEMPHIS Headquarter in Germany is relocating to a new, modern office location. As of December 4, 2023, you can find us at:

Basler Str. 5
61352 Bad Homburg

The new office comes with state-of-the-art amenities and is centrally located close to the train station. You are welcome to come and visit when you are around!

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