



## Electronics Supply Chain Weekly Digest

Important Disclosures in the Appendix

A weekly collection of news summaries, survey results and channel insights, and report summaries from Edgewater Research

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**DATAPOINT OF THE WEEK:** TSMC has told major equipment suppliers to delay delivery of high-end machines due to the company growing increasingly nervous about customer demand, according to Reuters citing sources. The instructions by TSMC are aimed at controlling costs and reflecting the company’s growing caution about the outlook for demand.

### Reports published this week:

[Memory Market Insights – September 2023](#)

### Key Takeaways:

1. CY23 DRAM bit demand growth unchanged at +5-7% Y/Y, yet seasonal increase in PC/smartphone builds (and thus DRAM orders) being blurred by stronger orders due to PC/mobile OEM inventory buffering, thus CY23 DRAM shipments to outpace end demand.
2. Forecasting C4Q23 D4 32GB/64GB RDIMM ASPs flat/up slightly Q/Q to/slightly below \$50/\$95, assuming supplier/s hold a firmer line and/or attempt to slightly increase ASPs Q/Q yet buyer/s largely expect current quarter volume pull-in offers that command ~\$3-5 ASP concession from our baseline ASP forecasts this quarter to be pulled as ongoing D4 WSPM cuts lowers on-hand DOI.
3. C3Q23 D5 32GB/64GB RDIMM ASPs remain fluid as ASPs currently range as wide as \$5-10+ depending on supplier/buyer; yet supplier/s pushing for ASP increase ceding market share QTD; adjusting our C4Q23 D5 32GB/64GB ASPs to flattish at ~\$75/\$145.
4. Forecasting CY23 NAND bit demand growth to +7-12% Y/Y due to improved PC/mobile orders/inventory buffering; CY23 NAND bit production growth forecasts unchanged at negative ~2-5% Y/Y, while additional WSPM cuts likely to hit C1H24 output.
5. Initial CY24 NAND bit demand growth forecast of +12-17% Y/Y, driven by recovery in DC/eSSD demand while PC/mobile inventory build throughout C2H23 likely to weigh on C1H24 demand; CY24 NAND bit production forecast of flat/up Y/Y to remain fluid.

Server DRAM Average Contract Price Forecasts - DDR4 32GB/64GB RDIMMs

	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
<b>DDR4 32GB</b>												
Price	\$72	\$69	\$62	\$58	\$54	\$50	\$50	\$49	\$49	\$49	\$49	\$50
Qtr Avg.			<b>\$68</b>			<b>\$54</b>			<b>\$49</b>			<b>\$49</b>
M/M	-7%	-5%	-9%	-8%	-7%	-6%	-2%	-2%	0%	0%	1%	2%
Q/Q			<b>-19.9%</b>			<b>-20.6%</b>			<b>-9.3%</b>			<b>1.1%</b>
Y/Y	<b>-49%</b>	<b>-50%</b>	<b>-54%</b>	<b>-58%</b>	<b>-61%</b>	<b>-62%</b>	<b>-59%</b>	<b>-58%</b>	<b>-51%</b>	<b>-46%</b>	<b>-42%</b>	<b>-35%</b>
<b>DDR4 64GB</b>												
Price	\$138	\$131	\$119	\$110	\$102	\$97	\$96	\$94	\$94	\$94	\$95	\$97
Qtr Avg.			<b>\$130</b>			<b>\$103</b>			<b>\$94</b>			<b>\$95</b>
M/M	-7%	-5%	-10%	-8%	-7%	-5%	-2%	-2%	0%	0%	1%	2%
Q/Q			<b>-20.4%</b>			<b>-20.4%</b>			<b>-8.5%</b>			<b>1.1%</b>
Y/Y	<b>-50%</b>	<b>-52%</b>	<b>-57%</b>	<b>-60%</b>	<b>-62%</b>	<b>-63%</b>	<b>-60%</b>	<b>-58%</b>	<b>-51%</b>	<b>-46%</b>	<b>-42%</b>	<b>-35%</b>

Source: Edgewater Research Estimates

## Auto/Transportation

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**BMW** – BMW has abandoned plans to charge customers subscription fees for heated seats. The automaker will go back to offering heated seats and wheels as optional equipment, rather than outfitting its vehicles with the hardware and charging consumers later, Pieter Nota, BMW's head of sales and marketing, told Autocar.

**China** – From Sep 1 to Sep 10 retail sales of passenger car sales totaled 439,000 units, an increase of 14% Y/Y and unchanged from the same period last month. For the same period, xEV retail sales in China totaled 172,000 units up 40% Y/Y and up 9% vs. the same period last month.

**EV** – Gartner forecasts EV shipments globally to increase 34.5% in 2023 followed by 19% in 2024. Gartner forecasts that shipments of all-electric vehicles (EVs) – cars, buses, vans, and heavy trucks – will total 18.5 million units in 2024, with electric car shipments representing 97% of total EV shipments next year. Globally BEVs are forecasted to grow from 9m to 11m units in 2023 while PHEVs are forecasted to grow from 3m to 4m units.

**Europe** – The European Commission launched an investigation on Wednesday into whether to impose punitive tariffs to protect European Union producers against cheaper Chinese electric vehicle (EV) imports it says are benefiting from state subsidies. The Commission will have up to 13 months to assess whether to impose tariffs above the standard 10% EU rate for cars in its highest-profile case against China since an EU probe into Chinese solar panels narrowly avoided a trade war a decade ago. The European Commission said China's share of EVs sold in Europe has risen to 8% and could reach 15% in 2025, noting prices are typically 20% below EU-made models. The Commission will have up to 13 months to assess whether to impose tariffs above the standard 10% EU rate for cars

**Germany** – Imports of Chinese vehicles and parts to Germany jumped 75% in the first half of the year while trade the other way slumped, according to a study by the German

Economic Institute (IW). Chinese vehicles however still accounted for 1.5% of total sales in the country. Cars made in China by non-Chinese brands, such as the all-electric iX3 from Germany's BMW, also contributed to the rise in imports. It also shows exports of German vehicles and parts to the world's second-largest economy slumped 21% in the first half of the year, accounting for three-quarters of the total decline in exports to China of over 8%.

**SAIC** – Chinese SAIC Motor said it expects to sell more than 1.2 million units overseas in 2023 and the company has initiated a site search for vehicle manufacturing in Europe. The company said YTD it has sold 733k units overseas. The company sold 1M units overseas in 2022, making it the first Chinese OEM to reach the 1M threshold.

**US Auto Dealer** – US auto dealer sentiment in the US held mostly steady in 3Q vs. 2Q says Cox Automotive. The Q3 current market index was 45, still below the threshold of 50, indicating that more dealers see the current auto market as weak than see the market as strong with franchise dealers more positive than independent. The 3-month market outlook index declined in Q3, falling from 47 to 45, indicating more dealers feel the market will be weak, not strong, in the months ahead. Interest rates, the overall economy, and market conditions weigh heavily on dealers, according to the survey. Compared to one year ago, electric vehicle (EV) sales are seen as worse for both franchised and independent dealers, though the change is not statistically significant.

**UAW** – UAW has dialed back its pay-increase demand in negotiations with the Big Three US automakers. Recently offered proposals that include a mid-30% wage increase, down from the initial demand of 40%+. OEMs have made offers that feature mid-teen percentage pay increases. UAW concession was flagged as the first notable sign of progress, though the two sides are still very far apart on pay. Big Three proposals do not address two of the UAW's key demands in terms of pensions/post-retirement benefits and elimination of two-tier systems.

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**UAW** – After failing to reach a deal by Thursday's midnight deadline, the United Auto Workers union called for a strike against each of the Big Three automakers. However, the plan calls for initial action at only one plant per firm, targeting high-profit models (Ford Broncos, Jeep Wranglers, and Chevy Colorado pickups). Union threatening wider stoppages depending on negotiation progress. Recall UAW is demanding a wage increase of ~36% over four years (along with calls for other benefits) while the latest automakers' wage offers were in the 17.5-20% range for 4 1/2 years.

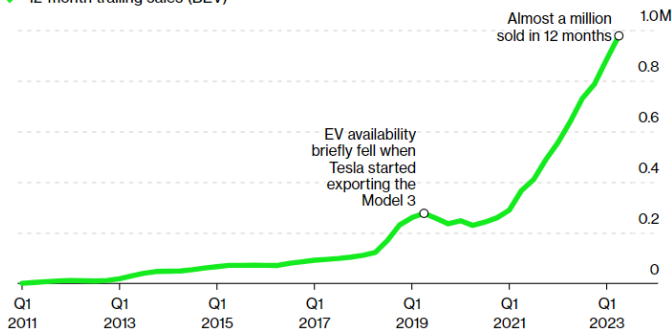
**US Auto sales** – US Census Bureau reported US broad retail sales increased 0.6% M/M in August and 2.5% Y/Y. Auto sales were flat M/M on a seasonally adjusted basis and up 7% Y/Y.

**US EV sales** – According to data from Bloomberg EV sales in the US have exceeded 7% of total in 1H23. The report adds that the pace of sales has reached 1M vehicles over the last twelve months ending June-23.

#### Million-Per-Year Milestone for Electric Cars

A rolling view of 12-month US sales

12-month trailing sales (BEV)



Source: BloombergNEF  
Note: Does not include plug-in hybrids.

**VW** – VW is cutting back planned staffing at its all-electric plant in Germany and adjusting shift work due to “market conditions”. The factory is VW Group's largest EV plant in Europe with an annual production capacity of 300,000 vehicles. It builds full-electric cars on the automaker's MEB platform including the VW ID3, Audi Q4 e-tron, and Cupra Born. Lackluster economic growth as well as higher energy, living, and borrowing costs in Europe have weighed on

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demand for its ID fleet of EVs. Orders from corporate clients — which account for around 70 percent of the IDs built at the plant — have been plummeting since a federal subsidy for battery-powered company vehicles expired this month, says Automotive News Europe.

## Industrial

**Japan Machine Orders** – Orders for Japanese machine tools declined 1.1% in July or more than the 0.9% expected, a sign that manufacturers are more cautious with investments. Orders from manufacturers fell 5.3% in July, the largest decline in eight months, due to weak demand for computers from industries including electric machinery, auto, and chemicals. Orders from "core" service-sector firms excluding shipping and electric utilities grew 1.3%.

**3M** – 3M on Wednesday warned of a slow growth environment in 2024 and forecast weakness in its electronics and consumer segments for the current and following quarter. The company expects sales in the current quarter to be between \$7.9B-\$8B compared to previous guidance of \$8B.

## Distribution and EMS

**Future Electronics** – Taiwanese semiconductor distributor WT Microelectronics announced plans to acquire 100% of Future Electronics for \$3.8B. The transaction will boost WT Microelectronics' reach and provide geographic diversification, given WT Microelectronics has no presence in the Americas and EMEA.

## Semiconductors

**Diodes** – Diodes Inc. announced an expansion of its automotive-compliant low dropout (LDO) voltage regulators with two new series both having 300mA max output current and 320mV dropout voltage for xEVs supporting hardware electronics.

**GlobalFoundries** – GlobalFoundries announced it has opened its new \$4B fab in Singapore. The new facility is expected to have a capacity of 450k 300mm wafers by 2025.

**Intel** – Intel plans to sell a roughly 10% stake in its IMS Nanofabrication business to TSMC, the company said Tuesday morning. Intel back in June announced plans to sell a roughly 20% stake in that business to Bain Capital Special Situations. Intel will keep its majority ownership of IMS and operate it as a standalone subsidiary. The deal with TSMC is expected to close in the fourth quarter. TSMC said its board approved the acquisition of the 10% stake in IMS for an amount not exceeding \$432.8 million.

**Intel** – Intel has expanded its FPGA line-up with cost-optimized offerings, open-sourced the official release of its software stack, and added a free RISC-V processor design, among other updates. The new lines include Agilix 3 family for board and system level management and 5 series family which reportedly offer better performance per watt than rival FPGAs thanks to the better optimization with Intel 7 for edge AI applications.

**Microchip** – Microchip is partnering with Intelligent Hardware Korea (IHWK) to develop a computing platform for neurotechnology devices in the field of programmable neuromorphic devices. Microchip is assisting via its Silicon Storage Technology by providing an evaluation system for neuromorphic memory solutions. The technology evaluation kit is designed to enable IHWK to demonstrate the absolute power efficiency of its neuromorphic computing platform for running inferencing algorithms at the edge. The end goal is to create an ultra-low-power analog processing unit (APU) for applications such as generative AI models, autonomous cars, medical diagnosis, voice processing, security/surveillance and drones.

**Semi Packaging** – In light of the fact that Chinese foundries can still obtain used equipment and consumables for process technology upgrades despite the US ban, the US could target advanced packaging for sanctions next, according to industry sources in Taiwan says DigiTimes.

**Semi Equipment** – Global fab equipment spending for front end facilities in 2023 is expected to decline 15% Y/Y to \$84B

before rebounding 15% Y/Y to \$97B in 2024 says SEMI. The increase in 2024 is expected to be driven by a strengthening in end demand following the inventory correction in 2023 and demand for HPC and memory. Foundry spending is forecasted to increase 5% in 2024 and memory is expected to increase 65% following a 49% decline in 2023 says SEMI.

**Sensata** – Sensata has launched two Gigavac GTM400 and GTM500 bidirectional contactors for applications up to 1500 Vdc and 400A and 500A. The new contactors are ideal for high-power applications that require reliable switching and DC circuit protection like energy storage systems, DC fast charging stations, and heavy-duty vehicles.

**Qualcomm** – Qualcomm announced it has signed a new deal with Apple to supply 5G modem chips until at least 2026. Qualcomm had an existing deal that expired in 2024.

**Qualcomm** – Manchester United said late Tuesday it has expanded its partnership with Qualcomm to make the semiconductor company's Snapdragon brand the new shirt partner of the football club. The brand will be displayed on the front of the club's shirt, starting in the 2024/2025 season, the club said. The deal will cost £60M per year.

**TSMC** – TSMC has formed a silicon photonics R&D team of 200 engineers to work with Nvidia and Broadcom to target optimization of silicon photonic optical components with silicon ASICs in a module for AI optical transmission applications. TSMC is reportedly working with those two customers on these technologies spanning 45nm to 7nm with production potentially targeting 2025.

**TSMC** – Reports in Asia suggest TSMC is becoming more and more determined to use Japan as an overseas production base amid ongoing problems with its new factory in Arizona. The operation in Arizona is having difficulties recruiting talent and applications for 500 Taiwanese workers were blocked by the local union, leaving TSMC frustrated. In contrast, the factory in Kyushu's Kumamoto Prefecture is expected to put into production mature processes in 2024 as scheduled. As a result, reports suggest TSMC is considering expanding its operations in Japan by building a second factory in the country.

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## Consumer

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**Apple** – Apple introduced its next generation of iPhones. The company unveiled four new models, keeping pace with the past few generations: the iPhone 15, 15 Plus, 15 Pro and 15 Pro Max. Like last year, the entry-level models start at \$799. The Pro version will remain \$999, but the Pro Max will now begin at \$1,199 — up \$100 from last year's installment. The new models. The new features include new materials like titanium, camera updates and improved performance. Apple also unveiled a new version of its smartwatch and updated AirPods.

**Apple** – China has not issued a ban on the purchase and use of foreign phone brands, the Chinese foreign ministry said on Wednesday, in response to media reports that said some government agencies and firms had told staff to stop using Apple's iPhones at work. "China has not issued laws, regulations or policy documents that prohibit the purchase and use of foreign brand phones such as Apple's," foreign ministry spokesperson Mao Ning told a regular press briefing when asked about the reports. "But recently we did notice a lot of media exposure of security incidents related to Apple's phones. The Chinese government attaches great importance to information and cyber security and treats both domestic and foreign companies as equals," she added.

**China Mobile** – China mobile shipments declined 16% M/M in July, or worse than seasonality of -9%, according to data from China MIIT. On a Y/Y basis, mobile shipments declined 7% despite a year ago comp of -30%. 5G shipments as percent of total increased by 3 points to 81%.

**Google Chromebooks** – Google plans to extend the lifespan of Chromebook laptops by increasing software support for 10 years. Currently newer models have eight years of support while older models have five. The changes are expected to apply retroactively to models release since 2021. The move will likely extend the replacement cycle for Chromebooks.

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## APPENDIX

*We Nik Todorov, Dennis Reed, and Sean Muir hereby certify that the views expressed in this research report accurately reflect our personal views about any or all of the subject securities referred to in this research report. We certify that no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report. The analyst(s) responsible for the preparation of this report have no ownership stake in this company. Edgewater Research Company provides no investment banking services on this or any company*

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