Semiconductor Memory For Automotive - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2026 - 2031)

Market Report | 2026-02-09 | 127 pages | Mordor Intelligence

AVAILABLE LICENSES:

- Single User License $4750.00
- Team License (1-7 Users) $5250.00
- Site License $6500.00
- Corporate License $8750.00

Report description:

Analysis of Semiconductor Memory Market For Automotive

The semiconductor memory market for automotive is expected to grow from USD 13.7 billion in 2025 to USD 16.29 billion in 2026 and is forecast to reach USD 38.77 billion by 2031 at 18.94% CAGR over 2026-2031. The surge is fueled by the shift toward software-defined vehicles, which bundle dozens of electronic functions into centralized compute domains, sharply increasing memory density and bandwidth requirements per car. Regulatory momentum behind Level 2+ driver assistance in China, the United States, and the European Union is accelerating demand for gigabyte-scale working memory that can meet functional-safety standards. Meanwhile, cost-optimized 3D NAND and upcoming MRAM options are expanding the addressable base of applications, letting automakers balance performance and bill-of-materials pressures more effectively. Intensifying supply-chain localization in the United States and Europe is also steering procurement strategies toward multi-sourced, automotive-qualified memory, reducing overreliance on any single region. Finally, premium vehicle programs are pioneering over-the-air software strategies that multiply flash capacity requirements and build a durable replacement cycle for next-generation modules.

Insights and Trends of Semiconductor Memory Market For Automotive

Software-Defined Vehicle Adoption

Automakers are transforming cars into rolling data centers that rely on continuous software updates and feature deployment.

Tesla's Hardware 4.0 showcases a significant leap in memory intensity by integrating multiple LPDDR5 stacks, which stream 12 camera feeds and radar inputs in real-time. Centralized designs slash the traditional network of more than 100 ECUs to a handful of high-performance domain controllers, raising installed DRAM from megabyte ranges to multi-gigabyte footprints. Luxury trims are already equipped with 32 GB of total memory, and mainstream models are expected to trend toward similar capacities by 2027. The upgrade path aligns with longer software maintenance cycles, ensuring recurring demand for high-bandwidth, AEC-Q100 Grade 1 modules.

Centralized/Zonal E-E Architecture

BMW's forthcoming iDrive generation demonstrates how zonal designs allocate memory resources efficiently, rather than assigning discrete modules to each subsystem. Consolidation eliminates duplication, reducing part counts by up to 30%. However, each surviving module must deliver higher throughput and withstand heavier thermal loads. The net effect is a shift in demand toward 64-bit-wide DRAM interfaces and faster access speeds, approaching 6 Gb/s, particularly in the infotainment and ADAS domains. Tier-1 suppliers are adapting by co-packaging memory and processors on high-density substrates, a trend that favors vendors with advanced capabilities at the 10 nm node and below. The architecture is rolling out first in premium nameplates but is expected to penetrate mass-market segments within four years.

Supply-Chain Volatility

The 2024 Taiwan earthquake exposed the fragility of geographically concentrated fabs, disrupting controller output and inflating lead times for Grade-1 memory by 20 weeks. Automotive lines, which account for under 10% of total wafer demand, often drop in supplier priority when shortages occur. OEMs are therefore dual-sourcing between South Korea and the United States, but qualification cycles extend this mitigation effort to at least 2026. Divergent export-control regimes and geopolitical uncertainty could shave 100-150 basis points off near-term growth.

Other drivers and restraints analyzed in the detailed report include:

Domain-Specific AI Accelerators in MCUsGrowing Memory Content per Level-2+ ADAS ECUHigh Automotive Selling Price (ASP) Premium

For complete list of drivers and restraints, kindly check the Table Of Contents.

Segment Analysis

Working memory dominated the semiconductor memory market, accounting for a 38.72% share in 2025, due to the high real-time processing loads in ADAS and infotainment units. Luxury EVs now integrate up to 32 GB of LPDDR5 for centralized compute clusters, while mass-market models are expected to trend toward 16 GB by 2027. Code storage remains stable as firmware footprints plateau around 8-16 GB, while data storage rockets at a 20.02% CAGR as vehicles harvest terabytes of sensor data for edge analytics. The semiconductor memory market size is tied to data storage, reinforcing long-term demand for high-capacity 3D NAND devices.

The outlook for working memory is further buoyed by the arrival of zonal architectures that standardize memory pools shared across safety, cockpit, and powertrain domains. This consolidation demands higher per-module performance, driving a pivot toward wide-I/O interfaces and built-in ECC engines. Suppliers offering dual-purpose DRAM-NAND combinations are poised to capture incremental market share among OEMs seeking to streamline their qualification pipelines. HBM-Lite concepts under evaluation could emerge after 2028 if thermal hurdles are resolved, potentially opening an adjacent revenue stream within the semiconductor memory market.

DRAM delivered 31.85% of 2025 revenue, maintaining its leading position in latency-critical workloads, such as sensor fusion and vehicle dynamics. Simultaneously, 3D NAND is advancing at a 19.25% growth pace, driven by declining cost-per-bit and broader AEC-Q100 coverage. Automotive-grade UFS 4.1 drives, which offer 4,200 MB/s read speeds, are emerging as the default storage solutions for data recorders and over-the-air firmware repositories.

NOR flash continues to fulfill boot and recovery tasks, but density limitations restrict its annual expansion. MRAM and other emerging NVMs are carving niche footholds in fail-safe logging and instant-on dashboards. The overarching dynamic is clear: DRAM feeds compute-intensive AI blocks, while 3D NAND underpins the escalating appetite for persistent storage, forming a complementary duo at the heart of the semiconductor memory market.

The Semiconductor Memory Market for Automotive Report is Segmented by Technology Role (Code Storage, Working Memory, and More), Memory Type (DRAM, NAND Flash, and More), Application (ADAS and Automated Driving, Digital Cockpit, and More), Vehicle Type (Passenger Cars, Light Commercial Vehicles, and More), and Geography (North America, South America, Europe, and More). The Market Forecasts are Provided in Terms of Value (USD).

Geography Analysis

Asia-Pacific led with 37.95% semiconductor memory market share in 2025 and is expected to broaden its lead at a 19.88% CAGR, buoyed by China's aggressive EV penetration targets and South Korea's manufacturing depth. China alone represents a significant share of regional volume but faces continuing headwinds from export-control measures on advanced nodes. South Korea leverages its vertically integrated champions, Samsung and SK Hynix, to secure long-term contracts with global Tier-1s, while Japan's close collaboration between memory fabs and automotive suppliers compresses qualification lead times.

North America ranks second, backed by USD 52 billion CHIPS Act subsidies aimed at reshoring semiconductor output, including dedicated automotive lines in Texas, Arizona, and Indiana. Tesla's vertically integrated model and Detroit's Ultium BEV platform are major off-takers, pushing domestic demand for Grade-1 LPDDR5-X and high-cycle SSDs. Canada and Mexico complement the region through battery-module assembly and cost-efficient electronics integration, respectively, fostering trilateral supply resiliency.

Europe is carving strategic autonomy via the EUR 43 billion European Chips Act, with consortia forming around German OEMs and memory makers to localize parts of the supply chain. The regulatory emphasis on ISO 26262 and ISO/SAE 21434 has elevated the demand for certified memory solutions. Meanwhile, the Middle East and Africa trail in absolute volume but are gaining traction through EV manufacturing incentives in the United Arab Emirates and South Africa, signaling an emerging frontier for the semiconductor memory market by the end of the decade.

List of Companies Covered in this Report:

Samsung Electronics Co., Ltd. Micron Technology, Inc. SK hynix Inc. Kioxia Holdings Corporation Infineon Technologies AG Renesas Electronics Corporation NXP Semiconductors N.V. Winbond Electronics Corporation Macronix International Co., Ltd. GigaDevice Semiconductor Inc. Integrated Silicon Solution, Inc. (ISSI) Everspin Technologies, Inc. Powerchip Technology Corporation Transcend Information, Inc. Kingston Technology Corporation Swissbit AG Virtium LLC Alliance Memory, Inc. AP Memory Technology Corp. Semiconductor Manufacturing International Corp. (SMIC) Tower Semiconductor Ltd. Yangtze Memory Technologies Co. (YMTC) Western Digital Corporation

Additional Benefits:

 The market estimate (ME) sheet in Excel format
 3 months of analyst support

Table of Contents:

Semiconductor Memory For Automotive - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2026 - 2031)

Market Report | 2026-02-09 | 127 pages | Mordor Intelligence

To place an Order with Scotts International:

- - Print this form
- - Complete the relevant blank fields and sign
- - Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User License	$4750.00
	Team License (1-7 Users)	$5250.00
	Site License	$6500.00
	Corporate License	$8750.00
	VAT	
	Total	

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*		Phone*	
First Name*		Last Name*	
Job title*			
Company Name*		EU Vat / Tax ID / NIP number*	
Address*		City*	
Zip Code*		Country*	
		Date	2026-02-27
		Signature