

Memristor Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2024 to 2032

<https://marketpublishers.com/r/MF37F6BE998EEN.html>

Date: November 2024

Pages: 200

Price: US\$ 4,850.00 (Single User License)

ID: MF37F6BE998EEN

Abstracts

The Global Memristor Market, valued at USD 205 million in 2023, is projected to experience rapid growth, with a 54.1% CAGR from 2024 to 2032. The surge in market demand is driven by breakthroughs in neuromorphic computing and artificial intelligence (AI), which benefit from the unique capabilities of memristors. These devices mimic the functionality of synapses in the human brain, allowing for faster processing and enhanced energy efficiency. Such features are crucial in industries like healthcare, automotive, and robotics, where performance and low power consumption are vital.

The market is categorized by memristor type, including molecular and ionic thin-film memristors, spintronics memristors, 3D memristors, and hybrid CMOS memristors. Among these, the molecular and ionic thin-film memristor segment is anticipated to reach USD 2 billion by 2032. These memristors use molecular or ionic materials, allowing for ultra-miniaturization, making them ideal for meeting the demands of Moore's Law. Their small size enables the creation of more densely packed circuits and memory cells, which is essential for the future of memory and computational systems. Additionally, they consume less power than traditional memristors, a key advantage in applications like edge computing, the Internet of Things (IoT), and mobile technologies.

On the technology front, the memristor market includes segments like CMOS integration, crossbar architecture, nanoionic memristors, and programmable metallization cells (PMCs). The fastest-growing segment is nanoionic memristors, expected to grow at a CAGR exceeding 57% between 2024 and 2032. These devices leverage the movement of metal cations within a solid electrolyte, enabling quick switching between resistive states. This ionic migration results in rapid switching times and low power consumption, making them highly appealing for non-volatile memory (NVM) applications and neuromorphic computing systems.

North America memristor market held a dominant share of 35% in 2023. The U.S., in particular, benefits from a robust network of top universities and research centers that lead advancements in materials science and electrical engineering. Substantial investment in research and development (R&D) is a key driver of innovation in memristor technology, fostering progress in applications ranging from AI and neuromorphic computing to next-generation memory solutions. Collaboration between academia and industry continues to play a crucial role in the commercialization of these advanced technologies.

Contents

Report Content

CHAPTER 1 METHODOLOGY & SCOPE

- 1.1 Market scope & definition
- 1.2 Base estimates & calculations
- 1.3 Forecast calculation
- 1.4 Data sources
 - 1.4.1 Primary
 - 1.4.2 Secondary
 - 1.4.2.1 Paid sources
 - 1.4.2.2 Public sources

CHAPTER 2 EXECUTIVE SUMMARY

- 2.1 Industry 360° synopsis, 2021-2032

CHAPTER 3 INDUSTRY INSIGHTS

- 3.1 Industry ecosystem analysis
 - 3.1.1 Factor affecting the value chain
 - 3.1.2 Profit margin analysis
 - 3.1.3 Disruptions
 - 3.1.4 Future outlook
 - 3.1.5 Manufacturers
 - 3.1.6 Distributors
- 3.2 Supplier landscape
- 3.3 Profit margin analysis
- 3.4 Key news & initiatives
- 3.5 Regulatory landscape
- 3.6 Impact forces
 - 3.6.1 Growth drivers
 - 3.6.1.1 Increasing demand for high-density, low-power memory solutions
 - 3.6.1.2 Advancements in neuromorphic computing and AI applications
 - 3.6.1.3 Rising adoption in Internet of Things devices
 - 3.6.1.4 Growing need for faster, more efficient data processing
 - 3.6.1.5 Expanding applications in automotive electronics and ADAS

- 3.6.2 Industry pitfalls & challenges
 - 3.6.2.1 Unclear commercialization roadmap
 - 3.6.2.2 Error rates and reliability issues
- 3.7 Growth potential analysis
- 3.8 Porter's analysis
- 3.9 PESTEL analysis

CHAPTER 4 COMPETITIVE LANDSCAPE, 2023

- 4.1 Introduction
- 4.2 Company market share analysis
- 4.3 Competitive positioning matrix
- 4.4 Strategic outlook matrix

CHAPTER 5 MARKET ESTIMATES & FORECAST, BY TYPE, 2021-2032 (USD MILLION & UNITS)

- 5.1 Key trends
- 5.2 Molecular and ionic thin-film memristors
- 5.3 Spintronics memristors
- 5.4 3D memristors
- 5.5 Hybrid CMOS memristors

CHAPTER 6 MARKET ESTIMATES & FORECAST, BY MATERIAL, 2021-2032 (USD MILLION & UNITS)

- 6.1 Key trends
- 6.2 Titanium dioxide memristors
- 6.3 Polymer memristors
- 6.4 Spintronic memristors (magnetic)
- 6.5 Ferroelectric memristors
- 6.6 Graphene oxide memristors
- 6.7 Metal oxide memristors (e.g., ZnO, HfO?)

CHAPTER 7 MARKET ESTIMATES & FORECAST, BY TECHNOLOGY, 2021-2032 (USD MILLION & UNITS)

- 7.1 Key trends
- 7.2 CMOS integration

- 7.3 Crossbar architecture
- 7.4 Nanoionic memristors
- 7.5 Programmable Metallization Cells (PMCs)

CHAPTER 8 MARKET ESTIMATES & FORECAST, BY END USE INDUSTRY, 2021-2032 (USD MILLION & UNITS)

- 8.1 Key trends
- 8.2 Consumer electronics
 - 8.2.1 Smartphones
 - 8.2.2 Tablets
 - 8.2.3 Laptops
 - 8.2.4 Wearable devices
- 8.3 IT and telecommunication
- 8.4 Automotive
 - 8.4.1 Advanced Driver Assistance Systems (ADAS)
 - 8.4.2 Autonomous vehicles
 - 8.4.3 In-Vehicle infotainment
- 8.5 Healthcare
 - 8.5.1 Medical imaging
 - 8.5.2 Wearable health devices
 - 8.5.3 Biomedical applications
- 8.6 Others

CHAPTER 9 MARKET ESTIMATES & FORECAST, BY REGION, 2021-2032 (USD MILLION & UNITS)

- 9.1 Key trends
- 9.2 North America
 - 9.2.1 U.S.
 - 9.2.2 Canada
- 9.3 Europe
 - 9.3.1 UK
 - 9.3.2 Germany
 - 9.3.3 France
 - 9.3.4 Italy
 - 9.3.5 Spain
 - 9.3.6 Rest of Europe
- 9.4 Asia Pacific

- 9.4.1 China
- 9.4.2 India
- 9.4.3 Japan
- 9.4.4 South Korea
- 9.4.5 ANZ
- 9.4.6 Rest of Asia Pacific
- 9.5 Latin America
 - 9.5.1 Brazil
 - 9.5.2 Mexico
 - 9.5.3 Rest of Latin America
- 9.6 MEA
 - 9.6.1 UAE
 - 9.6.2 South Africa
 - 9.6.3 Saudi Arabia
 - 9.6.4 Rest of MEA

CHAPTER 10 COMPANY PROFILES

- 10.1 Adesto Technology
- 10.2 Avalanche Technology Inc.
- 10.3 Crossbar Inc.
- 10.4 DS Memory Limited
- 10.5 Everspin Technologies Inc.
- 10.6 Fujitsu Ltd
- 10.7 Honeywell International Ltd
- 10.8 IBM Corporation
- 10.9 Intel Corporation
- 10.10 Knowm Inc.
- 10.11 Micron Technologies Inc.
- 10.12 Panasonic Corporation
- 10.13 Samsung Group
- 10.14 SK Hynix Inc.
- 10.15 Sony Corporation
- 10.16 ST Microelectronics NV
- 10.17 Toshiba Corp.
- 10.18 Weebit Nano Ltd
- 10.19 Western Digital Corporation

I would like to order

Product name: Memristor Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2024 to 2032

Product link: <https://marketpublishers.com/r/MF37F6BE998EEN.html>

Price: US\$ 4,850.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/MF37F6BE998EEN.html>