

EV Power Semiconductor Market Forecasts to 2034 – Global Analysis By Semiconductor Material (Silicon, Silicon Carbide, Gallium Nitride, and Other Semiconductor Materials), Device Type, Voltage Class, Vehicle Type, Application, Propulsion Architecture, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global EV Power Semiconductor Market is accounted for \$12.0 billion in 2026 and is expected to reach \$64.1 billion by 2034 growing at a CAGR of 23.3% during the forecast period. EV power semiconductors are electronic components that control and convert electrical power in electric vehicles, enabling efficient operation of traction inverters, chargers, and other systems. The market encompasses semiconductor materials including silicon, silicon carbide, gallium nitride, and other materials. These devices serve traction inverter, on-board charger, DC-DC converter, battery management system, charging infrastructure, electric power steering, and thermal management system applications across battery electric vehicles, plug-in hybrid electric vehicles, hybrid electric vehicles, and fuel cell electric vehicles. Growing EV adoption, increasing power requirements, and efficiency demands are key drivers of market expansion.

Market Dynamics:

Driver:

Rapid growth in electric vehicle production and adoption

The accelerating global transition to electric vehicles is a primary driver for the EV power semiconductor market. Electric vehicles require significantly more power

semiconductors than conventional vehicles, controlling power flow between battery, motor, and charging systems. Each EV contains multiple power semiconductor devices. Silicon carbide devices are increasingly adopted for higher efficiency and power density. As EV production scales globally, demand for power semiconductors expands dramatically, supporting sustained market growth.

Restraint:

High costs of silicon carbide and gallium nitride devices

The significant cost premium of silicon carbide and gallium nitride devices compared to silicon alternatives represents a major restraint for the market. Wide-bandgap semiconductors cost more to produce due to complex manufacturing processes. Substrate costs remain high for SiC. While total system costs may be lower, upfront component costs are higher. These cost barriers may constrain adoption, particularly in cost-sensitive vehicle segments.

Opportunity:

Transition from 400V to 800V vehicle architectures

The industry transition from 400V to 800V vehicle architectures presents significant opportunities for EV power semiconductor market expansion. Higher voltage architectures enable faster charging and improved efficiency. 800V systems require silicon carbide devices for efficient power conversion. Growing adoption of 800V platforms by premium automakers drives demand for advanced power semiconductors. As 800V architecture adoption expands, new market opportunities emerge.

Threat:

Competition from established and emerging semiconductor suppliers

Intense competition from established power semiconductor suppliers and emerging entrants poses significant threats to market growth. Major semiconductor companies are investing heavily in EV power devices. New entrants from China and other regions are expanding capacity. Price competition may pressure margins. This competition may affect market share and profitability.

Covid-19 Impact:

The COVID-19 pandemic had a mixed impact on the EV power semiconductor market. Supply chain disruptions affected semiconductor availability. However, the pandemic

accelerated the transition to electric mobility. Government stimulus packages included EV incentives and charging infrastructure investment. Post-pandemic, continued EV adoption and semiconductor demand have supported market growth.

The Silicon Carbide segment is expected to be the largest during the forecast period

The Silicon Carbide segment is expected to account for the largest market share during the forecast period, driven by superior efficiency, high-temperature capability, and growing adoption in EV traction inverters. SiC devices offer significant efficiency improvements over silicon, extending EV range. The segment benefits from declining SiC device costs and increasing production capacity. As EV manufacturers adopt SiC for main traction inverters, this material maintains the largest semiconductor material segment share.

The 800V Architecture segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the 800V Architecture segment is predicted to witness the highest growth rate, fueled by the need for faster charging, improved efficiency, and growing adoption of 800V platforms by premium and mainstream automakers. 800V architectures enable ultra-fast charging and improved performance. The segment benefits from SiC device adoption enabling efficient high-voltage operation. As 800V platform adoption expands, this architecture delivers the fastest propulsion architecture segment growth.

Region with largest share:

During the forecast period, the Asia-Pacific region is expected to hold the largest market share, supported by concentrated EV production, strong automotive semiconductor industry, and significant investment in EV and semiconductor manufacturing. China leads global EV production and power semiconductor demand. Japan and South Korea maintain strong semiconductor industry positions. The region's automotive and electronics ecosystem provides competitive advantages. With leadership in EV production, Asia Pacific maintains its dominant market position.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by continued EV production growth, expanding semiconductor manufacturing, and increasing adoption of SiC devices across China, Japan, South Korea, and India. The region's large and growing EV market creates substantial demand for power semiconductors. Government initiatives supporting EV adoption and semiconductor production accelerate growth. As EV adoption and semiconductor capacity expand, Asia Pacific delivers the fastest EV power semiconductor market growth globally.

Key players in the market

Some of the key players in EV Power Semiconductor Market include Infineon Technologies AG, Wolfspeed, Inc., STMicroelectronics N.V., onsemi, Mitsubishi Electric Corporation, Renesas Electronics Corporation, ROHM Co., Ltd., Toshiba Electronic Devices & Storage Corporation, Nexperia B.V., Texas Instruments Incorporated, Vishay Intertechnology, Inc., Microchip Technology Inc., Fuji Electric Co., Ltd., and Littelfuse, Inc.

Key Developments:

In September 2026, Infineon Technologies partnered with Eaton to supply silicon carbide (SiC) power devices for Eaton's Medium-Voltage Solid-State Transformer (MVSST) 2.0 platform, optimizing 800V DC high-voltage architectures for energy infrastructure and AI data centers.

In September 2026, onsemi introduced its Embedded Power Platform (EPP) delivering up to 3–5 times higher power density, with automaker Subaru initiating technical evaluation for next-generation electric vehicle powertrains.

In September 2026, ROHM Semiconductor announced that its silicon carbide power semiconductor solutions were integrated into BMW's "Neue Klasse" electric vehicle powertrain platform to drive traction inverter efficiency.

In June 2026, Mitsubishi Electric began shipping samples of its 5th-generation trench SiC-MOSFET bare dies, achieving an approximate 25% reduction in on-resistance to enhance inverter efficiency in electric and hybrid vehicle traction drives.

Semiconductor Materials Covered:

Silicon

Silicon Carbide

Gallium Nitride

Other Semiconductor Materials

Device Types Covered:

MOSFETs

IGBTs

Diodes

Power Modules

Power ICs

SiC MOSFETs

SiC Diodes

Voltage Classes Covered:

Low Voltage

Medium Voltage

High Voltage

Vehicle Types Covered:

Battery Electric Vehicles

Plug-In Hybrid Electric Vehicles

Hybrid Electric Vehicles

Fuel Cell Electric Vehicles

Applications Covered:

Traction Inverter

On-Board Charger

DC-DC Converter

Battery Management System

Charging Infrastructure

Electric Power Steering

Thermal Management Systems

Propulsion Architectures Covered:

400V Architecture

800V Architecture

Above 800V Architecture

End Users Covered:

Passenger Vehicle Manufacturers

Commercial Vehicle Manufacturers

Electric Two-Wheeler Manufacturers

Charging Infrastructure Providers

Automotive Tier-1 Suppliers

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY SEMICONDUCTOR MATERIAL

- 5.1 Silicon
- 5.2 Silicon Carbide
- 5.3 Gallium Nitride
- 5.4 Other Semiconductor Materials

6 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY DEVICE TYPE

- 6.1 MOSFETs
- 6.2 IGBTs
- 6.3 Diodes
- 6.4 Power Modules
- 6.5 Power ICs
- 6.6 SiC MOSFETs
- 6.7 SiC Diodes

7 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY VOLTAGE CLASS

- 7.1 Low Voltage
- 7.2 Medium Voltage
- 7.3 High Voltage

8 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY VEHICLE TYPE

- 8.1 Battery Electric Vehicles
- 8.2 Plug-In Hybrid Electric Vehicles
- 8.3 Hybrid Electric Vehicles
- 8.4 Fuel Cell Electric Vehicles

9 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY APPLICATION

- 9.1 Traction Inverter
- 9.2 On-Board Charger

- 9.3 DC-DC Converter
- 9.4 Battery Management System
- 9.5 Charging Infrastructure
- 9.6 Electric Power Steering
- 9.7 Thermal Management Systems

10 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY PROPULSION ARCHITECTURE

- 10.1 400V Architecture
- 10.2 800V Architecture
- 10.3 Above 800V Architecture

11 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY END USER

- 11.1 Passenger Vehicle Manufacturers
- 11.2 Commercial Vehicle Manufacturers
- 11.3 Electric Two-Wheeler Manufacturers
- 11.4 Charging Infrastructure Providers
- 11.5 Automotive Tier-1 Suppliers

12 GLOBAL EV POWER SEMICONDUCTOR MARKET, BY GEOGRAPHY

- 12.1 North America
 - 12.1.1 United States
 - 12.1.2 Canada
 - 12.1.3 Mexico
- 12.2 Europe
 - 12.2.1 United Kingdom
 - 12.2.2 Germany
 - 12.2.3 France
 - 12.2.4 Italy
 - 12.2.5 Spain
 - 12.2.6 Netherlands
 - 12.2.7 Belgium
 - 12.2.8 Sweden
 - 12.2.9 Switzerland
 - 12.2.10 Poland
 - 12.2.11 Rest of Europe

12.3 Asia Pacific

12.3.1 China

12.3.2 Japan

12.3.3 India

12.3.4 South Korea

12.3.5 Australia

12.3.6 Indonesia

12.3.7 Thailand

12.3.8 Malaysia

12.3.9 Singapore

12.3.10 Vietnam

12.3.11 Rest of Asia Pacific

12.4 South America

12.4.1 Brazil

12.4.2 Argentina

12.4.3 Colombia

12.4.4 Chile

12.4.5 Peru

12.4.6 Rest of South America

12.5 Rest of the World (RoW)

12.5.1 Middle East

12.5.1.1 Saudi Arabia

12.5.1.2 United Arab Emirates

12.5.1.3 Qatar

12.5.1.4 Israel

12.5.1.5 Rest of Middle East

12.5.2 Africa

12.5.2.1 South Africa

12.5.2.2 Egypt

12.5.2.3 Morocco

12.5.2.4 Rest of Africa

13 STRATEGIC MARKET INTELLIGENCE

13.1 Industry Value Network and Supply Chain Assessment

13.2 White-Space and Opportunity Mapping

13.3 Product Evolution and Market Life Cycle Analysis

13.4 Channel, Distributor, and Go-to-Market Assessment

14 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 14.1 Mergers and Acquisitions
- 14.2 Partnerships, Alliances, and Joint Ventures
- 14.3 New Product Launches and Certifications
- 14.4 Capacity Expansion and Investments
- 14.5 Other Strategic Initiatives

15 COMPANY PROFILES

- 15.1 Infineon Technologies AG
- 15.2 Wolfspeed, Inc.
- 15.3 STMicroelectronics N.V.
- 15.4 onsemi
- 15.5 Mitsubishi Electric Corporation
- 15.6 Renesas Electronics Corporation
- 15.7 ROHM Co., Ltd.
- 15.8 Toshiba Electronic Devices & Storage Corporation
- 15.9 Nexperia B.V.
- 15.10 Texas Instruments Incorporated
- 15.11 Vishay Intertechnology, Inc.
- 15.12 Microchip Technology Inc.
- 15.13 Fuji Electric Co., Ltd.
- 15.14 Littelfuse, Inc.

List of Tables

Table 1 Global EV Power Semiconductor Market Outlook, By Region (2023–2034) (\$MN)

Table 2 Global EV Power Semiconductor Market Outlook, By Semiconductor Material (2023–2034) (\$MN)

Table 3 Global EV Power Semiconductor Market Outlook, By Silicon (2023–2034) (\$MN)

Table 4 Global EV Power Semiconductor Market Outlook, By Silicon Carbide (2023–2034) (\$MN)

Table 5 Global EV Power Semiconductor Market Outlook, By Gallium Nitride (2023–2034) (\$MN)

Table 6 Global EV Power Semiconductor Market Outlook, By Other Semiconductor Materials (2023–2034) (\$MN)

Table 7 Global EV Power Semiconductor Market Outlook, By Device Type (2023–2034) (\$MN)

Table 8 Global EV Power Semiconductor Market Outlook, By MOSFETs (2023–2034) (\$MN)

Table 9 Global EV Power Semiconductor Market Outlook, By IGBTs (2023–2034) (\$MN)

Table 10 Global EV Power Semiconductor Market Outlook, By Diodes (2023–2034) (\$MN)

Table 11 Global EV Power Semiconductor Market Outlook, By Power Modules (2023–2034) (\$MN)

Table 12 Global EV Power Semiconductor Market Outlook, By Power ICs (2023–2034) (\$MN)

Table 13 Global EV Power Semiconductor Market Outlook, By SiC MOSFETs (2023–2034) (\$MN)

Table 14 Global EV Power Semiconductor Market Outlook, By SiC Diodes (2023–2034) (\$MN)

Table 15 Global EV Power Semiconductor Market Outlook, By Voltage Class (2023–2034) (\$MN)

Table 16 Global EV Power Semiconductor Market Outlook, By Low Voltage (2023–2034) (\$MN)

Table 17 Global EV Power Semiconductor Market Outlook, By Medium Voltage (2023–2034) (\$MN)

Table 18 Global EV Power Semiconductor Market Outlook, By High Voltage (2023–2034) (\$MN)

Table 19 Global EV Power Semiconductor Market Outlook, By Vehicle Type (2023–2034) (\$MN)

Table 20 Global EV Power Semiconductor Market Outlook, By Battery Electric Vehicles (2023–2034) (\$MN)

Table 21 Global EV Power Semiconductor Market Outlook, By Plug-In Hybrid Electric Vehicles (2023–2034) (\$MN)

Table 22 Global EV Power Semiconductor Market Outlook, By Hybrid Electric Vehicles (2023–2034) (\$MN)

Table 23 Global EV Power Semiconductor Market Outlook, By Fuel Cell Electric Vehicles (2023–2034) (\$MN)

Table 24 Global EV Power Semiconductor Market Outlook, By Application (2023–2034) (\$MN)

Table 25 Global EV Power Semiconductor Market Outlook, By Traction Inverter (2023–2034) (\$MN)

Table 26 Global EV Power Semiconductor Market Outlook, By On-Board Charger (2023–2034) (\$MN)

Table 27 Global EV Power Semiconductor Market Outlook, By DC-DC Converter

(2023–2034) (\$MN)

Table 28 Global EV Power Semiconductor Market Outlook, By Battery Management System (2023–2034) (\$MN)

Table 29 Global EV Power Semiconductor Market Outlook, By Charging Infrastructure (2023–2034) (\$MN)

Table 30 Global EV Power Semiconductor Market Outlook, By Electric Power Steering (2023–2034) (\$MN)

Table 31 Global EV Power Semiconductor Market Outlook, By Thermal Management Systems (2023–2034) (\$MN)

Table 32 Global EV Power Semiconductor Market Outlook, By Propulsion Architecture (2023–2034) (\$MN)

Table 33 Global EV Power Semiconductor Market Outlook, By 400V Architecture (2023–2034) (\$MN)

Table 34 Global EV Power Semiconductor Market Outlook, By 800V Architecture (2023–2034) (\$MN)

Table 35 Global EV Power Semiconductor Market Outlook, By Above 800V Architecture (2023–2034) (\$MN)

Table 36 Global EV Power Semiconductor Market Outlook, By End User (2023–2034) (\$MN)

Table 37 Global EV Power Semiconductor Market Outlook, By Passenger Vehicle Manufacturers (2023–2034) (\$MN)

Table 38 Global EV Power Semiconductor Market Outlook, By Commercial Vehicle Manufacturers (2023–2034) (\$MN)

Table 39 Global EV Power Semiconductor Market Outlook, By Electric Two-Wheeler Manufacturers (2023–2034) (\$MN)

Table 40 Global EV Power Semiconductor Market Outlook, By Charging Infrastructure Providers (2023–2034) (\$MN)

Table 41 Global EV Power Semiconductor Market Outlook, By Automotive Tier-1 Suppliers (2023–2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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