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Global New Energy Vehicle Power Chip Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global New Energy Vehicle Power Chip market size is expected to reach $ 17665 million by 2032, rising at a market growth of 20.1% CAGR during the forecast period (2026-2032).

New Energy Vehicle Power Chips are core semiconductor devices used in the power electronics systems of battery electric vehicles, plug-in hybrid electric vehicles, and extended-range electric vehicles, where they perform essential functions including power conversion, energy control, and electrical management. These chips are widely deployed in traction inverters, onboard chargers, DC/DC converters, auxiliary power supplies for battery management systems, electric compressors, electric power steering systems, and high-voltage power distribution units. They are designed to address the demanding requirements of new energy vehicles under high-voltage, high-current, and high-frequency operating conditions, helping improve energy conversion efficiency, reduce power loss and heat generation, enhance system compactness, and ensure automotive-grade reliability over long service cycles. The development of new energy vehicle power chips has closely followed the electrification of the automotive industry. Early generations were mainly based on silicon IGBT and MOSFET technologies for motor drive and basic power conversion, while the shift toward higher-voltage vehicle platforms, faster charging systems, and more efficient drivetrains has accelerated the adoption of advanced wide-bandgap semiconductor materials such as silicon carbide. As a result, the industry is moving toward higher efficiency, higher switching frequency, and smaller, lighter, and more integrated vehicle power systems. Upstream of this industry are key materials such as silicon wafers, silicon carbide substrates, epitaxial wafers, photoresists, masks, electronic gases, wet chemicals, and sputtering targets, together with supporting components including leadframes, bonding wires, package substrates, ceramic substrates, thermal interface materials, encapsulation resins, and

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connectors, as well as semiconductor manufacturing equipment and process technologies used in lithography, etching, ion implantation, thin-film deposition, dicing, packaging, and testing.In 2025, the global production capacity of new energy vehicle power chips is estimated at approximately 450 million units, while sales volume is expected to reach about 367 million units. The average selling price is around USD 13.1 per unit, and the gross profit margin of manufacturers is estimated to range from 30% to 40%.

The new energy vehicle power chip market is now moving from a phase driven mainly by electrification penetration into one shaped by higher-voltage architectures, platform upgrading, and parallel technology adoption. Traction inverters, onboard chargers, DC/DC converters, and high-voltage power distribution units remain the most important application areas. IGBTs still retain a broad base in mainstream vehicle platforms, while silicon carbide is accelerating its penetration in premium vehicles, 800V systems, and efficiency-focused architectures. As automakers continue to push for longer driving range, faster charging, better thermal performance, and improved vehicle efficiency, power chips are becoming more deeply integrated with e-drive systems, charging systems, and the overall vehicle electrical architecture. As a result, competition is shifting away from standalone device specifications toward system-level compatibility, automotive-grade reliability, supply assurance, and co-development capability with vehicle manufacturers.

Looking ahead, the market is likely to evolve toward higher-voltage platforms, more efficient topologies, greater packaging integration, and a more structured division of roles among different semiconductor materials. As 800V and higher-voltage systems expand into a wider range of vehicle segments, SiC is expected to gain further ground in high-voltage, high-power applications such as traction inverters. At the same time, GaN is beginning to show complementary potential in onboard chargers and auxiliary power systems, suggesting that the future of vehicle power chips will not be defined by one material replacing all others, but by IGBT, SiC, and GaN being deployed according to power level, cost target, and application requirement. In parallel, leading suppliers are investing in 200mm SiC manufacturing, advanced packaging, and vertically integrated supply chains, highlighting that long-term competitiveness will depend on manufacturing consistency, cost reduction, delivery capability, and the ability to work with OEMs on next-generation vehicle platforms.

At the same time, the market still faces meaningful constraints. Automotive power chips must meet extremely demanding standards in reliability, lifetime, consistency, and functional safety, which means qualification cycles are long and barriers to entry remain

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high. SiC offers strong advantages in efficiency and power density, but its broader adoption is still affected by substrate cost, manufacturing complexity, yield, and packaging economics, while IGBT continues to be highly competitive in cost-sensitive models and mature vehicle platforms. In addition, the market is influenced by fluctuations in vehicle demand, inventory corrections, price pressure, and the restructuring of global supply chains. This means suppliers must manage not only technology transitions, but also capacity utilization, customer relationships, regional manufacturing strategies, and supply resilience. Overall, the main growth drivers remain higher-voltage vehicles, faster charging, and efficiency optimization, while the key restraints lie in cost control, qualification timelines, and supply-chain maturity.

This report studies the global New Energy Vehicle Power Chip production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for New Energy Vehicle Power Chip and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of New Energy Vehicle Power Chip that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global New Energy Vehicle Power Chip total production and demand, 2021-2032, (K Units)

Global New Energy Vehicle Power Chip total production value, 2021-2032, (USD Million)

Global New Energy Vehicle Power Chip production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)

Global New Energy Vehicle Power Chip consumption by region & country, CAGR, 2021-2032 & (K Units)

U.S. VS China: New Energy Vehicle Power Chip domestic production, consumption, key domestic manufacturers and share

Global New Energy Vehicle Power Chip production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)

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Global New Energy Vehicle Power Chip production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

Global New Energy Vehicle Power Chip production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global New Energy Vehicle Power Chip market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include STMicroelectronics, Infineon, Wolfspeed, Rohm, onsemi, BYD Semiconductor, Microchip (Microsemi), Mitsubishi Electric (Vincotech), Semikron Danfoss, Fuji Electric, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World New Energy Vehicle Power Chip market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global New Energy Vehicle Power Chip Market, By Region:

United States

China

Europe

Japan

South Korea

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ASEAN

India

Rest of World

Global New Energy Vehicle Power Chip Market, Segmentation by Type:

SiC MOSFET Modules

SiC MOSFET Discretes

SiC Diode/SBD

Global New Energy Vehicle Power Chip Market, Segmentation by Wafer Size:

4-inch SiC Power Chip

6-inch SiC Power Chip

8-inch SiC Power Chip

Global New Energy Vehicle Power Chip Market, Segmentation by Voltage Range:

Below 650V SiC Power Chip

650V-1200V SiC Power Chip

Above 1200V SiC Power Chip

Global New Energy Vehicle Power Chip Market, Segmentation by Application:

Motor Drive

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Battery Management

Air Conditioning Drive

Others

Companies Profiled:

STMicroelectronics

Infineon

Wolfspeed

Rohm

onsemi

BYD Semiconductor

Microchip (Microsemi)

Mitsubishi Electric (Vincotech)

Semikron Danfoss

Fuji Electric

Navitas (GeneSiC)

Toshiba

Qorvo (UnitedSiC)

San'an Optoelectronics

Littelfuse (IXYS)

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CETC 55

WeEn Semiconductors

BASiC Semiconductor

SemiQ

Diodes Incorporated

SanRex

Alpha & Omega Semiconductor

Bosch

KEC Corporation

PANJIT Group

Nexperia

Vishay Intertechnology

Zhuzhou CRRC Times Electric

China Resources Microelectronics Limited

Key Questions Answered:

1. How big is the global New Energy Vehicle Power Chip market?
2. What is the demand of the global New Energy Vehicle Power Chip market?
3. What is the year over year growth of the global New Energy Vehicle Power Chip market?
4. What is the production and production value of the global New Energy Vehicle Power Chip market?
5. Who are the key producers in the global New Energy Vehicle Power Chip market?
6. What are the growth factors driving the market demand?

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Figure 70. Research Process and Data Source

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