

Japan Automotive Electronics and Software Market Assessment, By Components [Electronic Control Units (ECU)/Domain Control Units (DCU), Sensors, Software, Power Electronics, Harness Systems, Other Electronics Components], By With-In Vehicle Application [Advance Driver Assistance Systems (ADAS), Powertrain, Infotainment, Safety Systems, Others], By Sales Channel [OEM, Aftermarket], By Vehicle Type [Internal Combustion Engine (ICE), Hybrid Vehicle, Electric Vehicle (EV)], By Region, Opportunities and Forecast, FY2017-FY2031

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Abstracts

The Japan Automotive Electronics and Software Market size was valued at USD 29.9 billion in FY2023 which is expected to reach USD 61.93 billion in FY2031 with a CAGR of 9.53% for the forecast period between FY2024 and FY2031. Japan Automotive Electronics and Software market form an important segment of the Japan automotive industry, and its automotive industry stood as the fourth largest automotive market in FY2023. The market is driven by innovation and diversification wherein manufacturers are constantly reinventing to provide the end consumers with high end, and dependable automotive electronic and software systems. This shift has revolutionized the driving experience, offering improved safety, enhanced performance, and greater comfort. Additionally, technological advancements, declining costs of electronic sensors, and regulatory requirements have driven the adoption of Automotive Electronics and Software. Additionally, consumer demand for technologically advanced vehicles has pushed automakers to incorporate electronic systems into their models. Overall, the rise

of automotive electronic and software systems has transformed the industry and elevated the driving experience to new heights.

Automotive Electronics Help Keep Emissions in Vehicle Check

Japan is aiming to achieve a 50% reduction in emissions compared to FY2001 levels by the year FY2036. Japan's approach is designed to leverage the strengths of its domestic auto industry by maintaining the production of hybrid, plug-in hybrid, and other internal combustion vehicles for the foreseeable future.

One of the ways advanced electronic systems in automobiles can help keep carbon emissions in check is through the implementation of efficient powertrain technologies. Electric vehicles, for example, produce zero tailpipe emissions and can significantly reduce the carbon footprint associated with transportation. Additionally, advanced electronic systems can optimize vehicle performance, enhance energy management, and enable regenerative braking, further improving energy efficiency and reducing emissions.

Toyota has emerged as a prominent player in the Japan automotive industry, thanks to its leadership in hybrid technology. The iconic Prius model serves as a prime example of Toyota's expertise in integrating both an electric motor and a gasoline engine, seamlessly transitioning between the two to provide an optimized and fuel-efficient driving experience.

Growing Trend of Autonomous, Connected, Electric, and Smart-Shared-Mobility

The demand for connected features and infotainment systems in vehicles is increasing rapidly. Consumers expect features like smartphone integration, navigation systems, voice commands, and wireless connectivity. This trend has driven the integration of advanced electronic systems that enable seamless connectivity and enhanced entertainment options. In a significant development, Japan became the pioneer in FY2022 by granting approval for Level 3 partial self-driving capability on a passenger car, specifically the Honda Legend .

Events like CAR-ELE Japan is an annual event held in Japan that provides a platform for national and international exhibitors to showcase their latest offerings in the automotive electronics market. The exhibition focuses on a wide range of technological advancements and innovations in areas such as automotive connectivity, electric mobility, autonomous driving, and safety features which serve as a significant trade

show in the automobile sector. Overall, the market dynamics and enthusiasm for cutting-edge technology are shaping the Japan Automotive Electronics and Software Market.

Government Focus on Advanced System, Automation and EV

Government of Japan is playing a crucial role in the automotive electronics and software market by establishing regulations, policies, and standards that shape the industry. They are responsible for ensuring the safety, efficiency, and sustainability of vehicles, as well as promoting innovation and competitiveness. Starting in April FY2024, Japan will permit the deployment of highly autonomous 'level-4' self-driving vehicles for transportation and delivery purposes. This groundbreaking decision sets the stage for the future deployment of advanced vehicles like robotaxis and self-driving shuttle buses in Japan. Hence such initiatives from the government of Japan are expected to support market growth.

The rise of Electric Vehicles Drives the Market

Electric vehicles rely heavily on advanced electronic components and software for their operation, and the increasing adoption of EVs has driven the demand for automotive electronics, particularly in areas such as electric powertrains, regenerative braking systems, and energy management systems. Furthermore, the integration of electric vehicles with emerging technologies like artificial intelligence (AI) and the Internet of Things (IoT) further drives the demand for advanced automotive electronics.

Despite the rapid growth and popularity of electric vehicles (EVs) globally, Battery-powered electric vehicles and plug-in hybrids (phevs) accounted for just 2% of FY2023 total automotive sales in Japan. And none of the Japanese automakers made it into the global top 20 EV makers based on vehicles sold. This is a cause for concern considering the significant increase in battery-powered vehicle sales, which saw an 80% growth in the first three-quarters of FY2023 compared to the previous year, indicating the strong momentum of the EV market.

BYD, the leading Chinese manufacturer of new energy vehicles (NEVs), entered the Japanese market in January FY2024 by launching its electric vehicles (EVs) for sale. The inaugural model introduced in Japan is the BYD Atto 3, marking the company's entry into the EV segment in the country. Hence, the surging production of EVs across Japan is expected to boost market growth.

Japan Uses Semiconductor Technology to Lead in Automotive Electronics

Recognizing the potential growth in the Japanese EV sector, Taiwanese companies are seeking strategic partnerships with Japan to enhance their capabilities in producing electric vehicles. This partnership aims to leverage Taiwan's expertise in semiconductor manufacturing to drive innovation and develop advanced technologies for Japan automotive electronics and software market. While Taiwan's auto market is relatively small compared to Japan's, which is the fourth-largest auto market globally in 2022, Taiwanese companies are leveraging their success in the semiconductor industry as a source of inspiration.

For instance, United Microelectronics Corp . (UMC), the world's third-largest contract chipmaker, announced in April that it will collaborate with Toyota Motor group on power semiconductor devices used in EVs. This will drive the demand for automotive electronics and software products in Japan.

Impact of COVID-19

The COVID-19 pandemic had a significant impact on the Japan automotive market. The measures implemented to control the spread of the virus, such as lockdowns and travel restrictions, led to a sharp decline in demand for automobiles. The supply chain was disrupted as a result of the shut of manufacturing plants during the tenure also causing production delays. Japan Automobile Dealers Association and Japan Light Motor Vehicle and Motorcycle Association indicate that new car sales in Japan declined 5.6% in FY2023 compared to the previous year.

Despite the lows, the Japanese new vehicle market showed signs of recovery in March 2023, with sales increasing by 12 % to 572,494 units compared to 512,862 units in the same period last year. This complements the growth in Japan automotive electronics market. The positive recovery in the Japanese new automotive electronics market in March 2023 can be attributed to the improved supply of semiconductors, which allowed key vehicle manufacturers to fulfil their substantial order backlogs. Additionally, the outlook for the domestic economy had brightened, with consumers benefiting from favorable government policies and wage increases.

Impact of Russia-Ukraine War

Russia Ukraine war disrupted oil and gas supplies and highlighted the vulnerabilities of relying heavily on fossil fuels for energy. This situation has prompted many countries to explore alternative energy sources and technologies. There is a growing demand for

economical hybrid and battery-powered vehicles that lower carbon emissions and mitigate the impact of fluctuating fuel prices.

This adds to an existing supply chain issue brought about by the prevailing semiconductor shortage. Some of the key components of semiconductors such as purified neon gas and palladium metal used in semiconductors are sourced from both countries. Despite the supply chain challenges like the chip shortage, the Japan automotive electronics industry remains one of Japan's most prominent domestic industries and is ranked as fourth largest globally in FY2023. Toshiba Electronic Devices & Storage Corporation and Japan Semiconductor Corporation have collaborated to create an advanced analog platform with embedded non-volatile memory (eNVM) specifically designed for automotive applications. Analog integrated circuits (ICs), such as motor driver ICs, are utilized in various automotive functions. As the automotive industry shifts towards electric vehicles and the adoption of advanced driver assistance systems (ADAS) increases, the demand for analog ICs is projected to steadily rise.

Key Players Landscape and Outlook

Key players are heavily investing in R&D and diversifying the features their automobile offers to attract more customers. Automotive manufacturers are exploring alternative suppliers for semiconductors and electronic components, both domestically and internationally. This helps reduce dependence on a single source and ensures a more stable supply chain. To get an edge over the competitors, automotive manufacturers are collaborating with software and electronics manufacturers to provide Hi-Tech solutions.

For instance, Denso Corporation and United Semiconductor Japan (USJC), a subsidiary of United Microelectronics Corporation, entered into a collaboration in April FY2023. The collaboration aims to produce power semiconductors at USJC's 300mm wafer fab to meet the increasing demand in the automotive market. This LiDAR for detecting surrounding vehicles and road shapes, a Locator Telescopic Camera for environment detection, a Spatial Information Service Electronic Control Unit (SIS ECU) for accurate vehicle positioning, and Advanced Drive System Electronic Control Unit (ADS ECU) and Advanced Drive Extension Electronic Control Unit (ADX ECU) for high-speed information processing. These products also support over-the-air software updates, enhancing the functionality and performance of Advanced Drive even after the vehicles have been sold.

Contents

1. RESEARCH METHODOLOGY

2. PROJECT SCOPE & DEFINITIONS

3. IMPACT OF COVID-19 ON THE JAPAN AUTOMOTIVE ELECTRONICS AND SOFTWARE MARKET

4. IMPACT OF RUSSIA-UKRAINE WAR

5. EXECUTIVE SUMMARY

6. VOICE OF CUSTOMER

6.1. Market Awareness and Product Information

6.2. Factors Considered in Purchase Decision

6.2.1. Customization Options

6.2.2. Vehicle Compatibility and Integration

6.2.3. Warranty and Support

6.2.4. Government Safety and Security Standards Compliance

6.2.5. After-Sale Service

6.2.6. Promotional Offers and Discounts

6.2.7. Brand Recognition and Awareness

7. JAPAN AUTOMOTIVE ELECTRONICS AND SOFTWARE MARKET OUTLOOK, FY2017-FY2031

7.1. Market Size & Forecast

7.1.1. By Value

7.2. By Components

7.2.1. Electronic Control Units/Domain Control Units (ECU/DCU)

7.2.2. Sensors

7.2.3. Software

7.2.3.1. Functions

7.2.3.2. Operating Systems

7.2.3.3. Middleware

7.2.4. Power Electronics

7.2.5. Harness System

- 7.2.5.1. High Voltage Harness (HV)
- 7.2.5.2. Low Voltage Harness (LV)
- 7.2.6. Other Electronic Components (controls, switches, displays, etc.)
- 7.3. By With-in Vehicle Application
 - 7.3.1. ADAS
 - 7.3.2. Powertrain
 - 7.3.3. Infotainment
 - 7.3.4. Safety Systems
 - 7.3.5. Others
- 7.4. By Sales Channel
 - 7.4.1. OEM
 - 7.4.2. Aftermarket
- 7.5. By Vehicle Type
 - 7.5.1. ICE
 - 7.5.2. Hybrid
 - 7.5.3. EV
- 7.6. By Region
 - 7.6.1. North
 - 7.6.2. Central
 - 7.6.3. South
- 7.7. By Company Market Share (%), 2022

8. MARKET MAPPING, 2022

- 8.1. By Component
- 8.2. By With-in Vehicle Application
- 8.3. By Sales Channel
- 8.4. By Vehicle Type
- 8.5. By Region

9. MACRO ENVIRONMENT AND INDUSTRY STRUCTURE

- 9.1. Supply Demand Analysis
- 9.2. Import Export Analysis – Volume and Value
- 9.3. Supply/Value Chain Analysis
- 9.4. PESTEL Analysis
 - 9.4.1. Political Factors
 - 9.4.2. Economic System
 - 9.4.3. Social Implications

- 9.4.4. Technological Advancements
- 9.4.5. Environmental Impacts
- 9.4.6. Legal Compliances and Regulatory Policies (Statutory Bodies Included)
- 9.5. Porter's Five Forces Analysis
 - 9.5.1. Supplier Power
 - 9.5.2. Buyer Power
 - 9.5.3. Substitution Threat
 - 9.5.4. Threat from New Entrant
 - 9.5.5. Competitive Rivalry

10. MARKET DYNAMICS

- 10.1. Growth Drivers
- 10.2. Growth Inhibitors (Challenges, Restraints)

11. KEY PLAYERS LANDSCAPE

- 11.1. Competition Matrix of Top Five Market Leaders
- 11.2. Market Revenue Analysis of Top Five Market Leaders (in %, FY2023)
- 11.3. Mergers and Acquisitions/Joint Ventures (If Applicable)
- 11.4. SWOT Analysis (For Five Market Players)
- 11.5. Patent Analysis (If Applicable)

12. PRICING ANALYSIS

13. CASE STUDIES

14. KEY PLAYERS OUTLOOK

- 14.1. Mobileye Inc.
 - 14.1.1. Company Details
 - 14.1.2. Key Management Personnel
 - 14.1.3. Products & Services
 - 14.1.4. Financials (As reported)
 - 14.1.5. Key Market Focus & Geographical Presence
 - 14.1.6. Recent Developments
- 14.2. Denso Corporation
- 14.3. Continental AG
- 14.4. ZF Friedrichshafen AG

14.5. Toyota Motor Corporation

14.6. Honda Motor Co., Ltd.

14.7. Magna International

14.8. Bosch Limited

14.9. Hitachi Astemo, Ltd.

14.10. Mitsubishi Electric

14.11. Aisin Corporation

14.12. Valeo S.A.

*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

15. STRATEGIC RECOMMENDATIONS

16. ABOUT US & DISCLAIMER

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