

Aerospace and Defence MLCC - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

<https://marketpublishers.com/r/ACDE28ECE119EN.html>

Date: July 2024

Pages: 233

Price: US\$ 4,750.00 (Single User License)

ID: ACDE28ECE119EN

Abstracts

The Aerospace and Defence MLCC Market size is estimated at 1.09 billion USD in 2024, and is expected to reach 2.86 billion USD by 2029, growing at a CAGR of 21.39% during the forecast period (2024-2029).

Optimized avionic MLCC selection enhances aerospace and defense systems

The aerospace and defense industries are witnessing a rapid transformation with the increasing adoption of advanced avionics technologies, including AI, IoT, and 5G communications. These trends drive the need for MLCCs with higher capacitance, lower ESR, and improved reliability to support cutting-edge electronic systems in aircraft. Case sizes 0 201 and 0 402 MLCCs are popular for compact and lightweight electronic circuits in avionics. Their small form factor and high capacitance make them ideal for miniaturized devices, such as flight control systems, navigation systems, and communication equipment in UAVs and other small aircraft. The trend toward miniaturization and weight reduction in avionics drives the demand for case sizes 0 201 and 0 402 MLCCs.

Case sizes 0 603 and 1 005 MLCCs balance compactness and capacitance, making them versatile components in various avionic applications. They are commonly used in cockpit displays, sensor systems, and power distribution networks in manned and unmanned aerial vehicles. The increasing adoption of advanced avionics systems in modern aircraft enhances the demand for case sizes 0 603 and 1 005 MLCCs.

Case size 1 210 MLCCs offer higher capacitance values and are well-suited for power management, energy storage, and filtering applications in avionics. These larger-sized MLCCs are commonly utilized in critical avionic systems like radar systems, satellite communications, and advanced avionics control units. The evolving need for more powerful and sophisticated avionic technologies contributes to the demand for case sizes 1 210 and other MLCCs. The demand for UAVs and MAVs is growing, and MLCCs play a vital role in ensuring stable and efficient electronic components for successful operation.

The global aerospace and defense MLCC market thrives amid rising defense expenditures and geopolitical dynamics

The aerospace and defense MLCC market experiences robust growth globally. In Asia-Pacific, led by China and India, the segment generated USD 362.03 million in 2022, with a projected surge to USD 1.06 billion by 2028, showcasing a robust CAGR of 20.37% from 2023 to 2028. India, with a substantial INR 5.94 lakh crore budget for FY 2023-24, emphasizes MLCCs' pivotal role in advancing defense capabilities, particularly in unmanned aerial vehicles (UAVs).

Europe witnessed a noteworthy uptick in defense spending, reaching USD 116.05 million by 2021, reflecting a 3% increase from 2020 to 2021. Amid the Russia-Ukraine conflict in 2022, Europe reinforced its defense capabilities, resulting in a 14% surge in defense expenditures to USD 345 billion. MLCCs play a vital role in this context, ensuring signal integrity in military aircraft and defense systems and contributing to the sector's envisioned revenue target of USD 331.16 million by 2028.

North America, as the dominant force in global military expenditures, invests significantly in defense, with a cumulative expenditure of USD 912 billion in 2022. The aerospace and defense sector, particularly in the United States, contributes USD 391 billion to the economy, with MLCCs playing a pivotal role in ensuring the reliable operation of military aircraft and electronic warfare defense systems.

The Rest of the World, encompassing the Middle East, Africa, and South America, grapples with geopolitical challenges, terrorism threats, and increased defense spending. Across these regions, the aerospace and defense MLCC market reflects a convergence of economic dynamics, geopolitical influences, and defense priorities, with MLCCs emerging as critical components ensuring the reliability and efficiency of

aerospace and defense systems.

Global Aerospace and Defence MLCC Market Trends

Growing demand for improved surveillance solutions is propelling the market

The demand for MLCCs is rising in the aerospace and defense (A&D) sectors, especially in applications such as military aircraft and electronic warfare defense systems like UAVs. These industries require reliable power electronic systems that utilize components with specific functionalities. MLCCs are crucial in meeting these demands as they offer high reliability, optimal performance with a high-quality factor, effective EMI suppression, noise reduction, line filtering, energy storage capabilities, decoupling of high-frequency noise, and voltage regulation capabilities. MLCCs are critical in ensuring the dependable operation of UAVs and other aerospace and defense power electronic systems.

The production of UAVs experienced a significant 14% increase from 3.847 million in 2021 to 4.448 million in 2022. This growth has led to a substantial rise in the demand for MLCCs, particularly for UAVs, specifically for high-voltage power supply applications. MLCCs play critical roles in UAVs as power supply bypass capacitors, input/output filters in DC-DC converters, smoothing capacitors, and essential components in digital circuits and LCD modules. A&D companies are increasingly recognizing the value and significance of MLCCs in meeting their specific requirements and enhancing the performance of their systems.

Advancements in MLCCs, including smaller sizes and enhanced capabilities, have increased demand. This has led to the development of more capable autopilot systems and the expansion of real-time UAV applications facilitated by the compact integration of MLCCs without compromising functionality. Improved capabilities of MLCCs, such as high reliability and fast response times, have fueled the adoption of real-time UAV applications.

Growing geopolitical tensions and the modernization plans to replace aging military aircraft are propelling military spending

MLCCs are vital components in defense electronics, providing crucial energy storage and signal filtering capabilities. The demand for MLCCs is directly influenced by

fluctuations in defense spending, with increased spending driving higher demand, particularly in areas such as missile systems and defense communication equipment. However, the decline in defense spending during the COVID-19 pandemic negatively affected the MLCC market as the industry shifted focus to medical technology. As defense spending stabilizes, the demand for MLCCs in defense electronics is expected to rebound.

The COVID-19 pandemic had significant implications for defense electronics as global priorities shifted toward medical technology and laboratory test equipment. This led to a decline in demand for high-reliability defense electronics, requiring efforts to stabilize the high-voltage defense markets. The pandemic also adversely affected many defense vertical platforms, highlighting the importance of adaptability and resilience in the face of unexpected disruptions.

Between 2012 and 2016, government-imposed sequestering resulted in a stagnant defense market. However, a notable turnaround occurred from 2017 to 2019, with remarkable growth in specific narrow end-market areas such as aircraft and space electronics. However, the pandemic disrupted this growth trajectory in 2020, causing an 11% decline in defense electronics demand. The shift in the US leadership restrained defense spending through 2022. Nonetheless, 2023 was expected to bring new opportunities in the small and precise European markets for defense electronics, focused on missiles and missile defense systems.

Aerospace and Defence MLCC Industry Overview

The Aerospace and Defence MLCC Market is moderately consolidated, with the top five companies occupying 44.17%. The major players in this market are Murata Manufacturing Co., Ltd, Samsung Electro-Mechanics, Taiyo Yuden Co., Ltd, Walsin Technology Corporation and Yageo Corporation (sorted alphabetically).

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