

Accelerator boards' Application Note



1. What is a polymer aluminum electrolytic capacitor?

Murata's polymer capacitor has the feature of low ESR, low impedance, and large scale. Furthermore, there is no DC bias characteristic of capacitance, and since temperature characteristics are also stable, it excels in the Ripple absorption, smoothness, and the transient response performance.

Therefore, it is suitable for smoothing of input-output current of various power supply circuits, and the backup use over the load change of the CPU circumference. This contributes to reduction of the number of parts, or reduction of substrate area.

2. Performance required for accelerator boards

The data processing capability of computers and other information technology has been improving with the progression of the digital transformation (DX) and the increase in remote work. While IT devices had previously been used mainly to surf the web, nowadays, thin and lightweight devices that can be used to edit videos or work remotely are preferred by consumers, and the specs required in these devices have changed along with these preferences.

Meanwhile, deep learning and machine learning capabilities have also become indispensable at data centers, where large volumes of data must be processed at high speeds.

For these reasons, there is demand for IT devices to be both compact and capable of processing large volumes of data. With this demand, it has become important for accelerator boards to be capable of improving the processing power of IT devices.

3. Current accelerator board challenges

Because accelerator boards must be capable of decentralized high-speed processing, high-density ICs made possible by the latest semiconductor technology are being used, and there has been an increase in power supply circuits with lower voltages due to miniaturization and larger currents from the larger numbers of cells mounted.

To achieve these specifications, it is important to reduce power supply noise and for voltage be stable even with high loads (→① low ripple noise, ②voltage stability).

There are also concerns regarding heat buildup from the heat generated with the larger currents used. To counter this, the peripheral electronic components must match in height so that a large heat sink with good thermal efficiency can be mounted on the top surface of the high-density IC (→③ low-profile components).

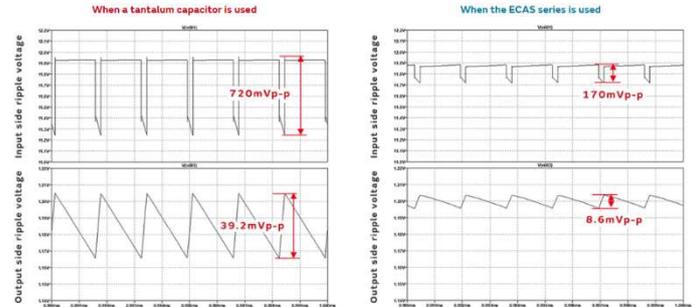
4. Roles of capacitors

As mentioned above, the current market trend is toward low voltage, high current accelerator boards. In addition to these specifications, accelerator boards must also have components with a high capacity, low ESR, and a low profile.

Feature of Murata's polymer aluminum electrolytic capacitor" ECAS series"

①Low ripple noise

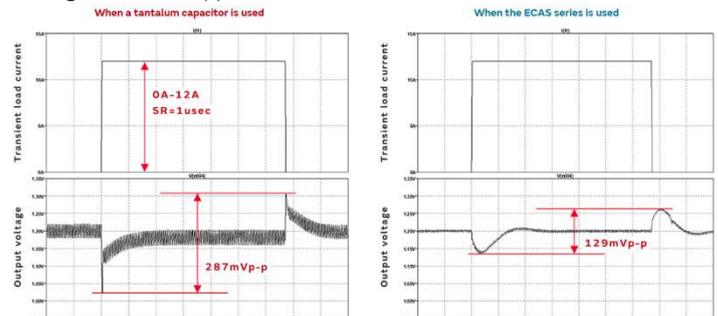
The ECAS series with its low ESR characteristics has excellent ripple noise suppression performance.



[Simulation Results]

②Voltage fluctuation stability with respect to load fluctuations

The ECAS series with its large capacitance characteristics features excellent stability with respect to load-side fluctuations in large-current applications.



[Simulation Results]

③Low profile

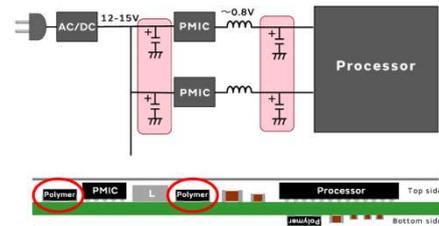


Figure of applied circuit

5. Benefits of replacing the current capacitor

Advantages of Replacing from MLCC

Since it has a large capacity and no voltage dependence, it reduces the number of components and reduces the size of the set.



【Technical Support】

Sample : Please contact your nearest sales office or authorized distributor.

Technical Support : Please visit the WEB page.

· [Application · Use case \(murata.com\)](#)

· Long-term Reliability Data etc. : [Polymer Aluminum Electrolytic Capacitors Site](#) (You must register as a my Murata member)

If you have any questions about the contents of this description, please contact our sales headquarters or the nearest sales office.