

For immediate release

TAIYO YUDEN Commercializes world's first 0603-size four-terminal multilayer ceramic capacitor

Reduced ESL to support high-speed driven ICs, also contributing to footprint reduction



TOKYO, December 22, 2017—TAIYO YUDEN CO., LTD. has announced the launch of the world's first 0603-size multilayer ceramic capacitor with a four-terminal structure JLK063PBJ225MM-F (0.6×0.3×0.5 mm, with height as the maximum value).

Four-terminal multilayer ceramic capacitors, which have a lower ESL than popular two-terminal multilayer ceramic capacitors, can reduce impedance in the high-frequency range and contribute to the stable operation of ICs that are driven at high speed. On this occasion, we have realized the world's first four-terminal structure for 0603-size multilayer ceramic capacitors, contributing to a reduction in the footprint of low-ESL multilayer ceramic capacitors through downsizing from our conventional 1005-size products. This product is to be used as a decoupling capacitor for smartphones and wearable devices.

Production of this multilayer ceramic capacitor will commence at the company's Tamamura Plant (Tamamura-machi, Sawa-gun, Gunma Prefecture, Japan) from January 2018 at a production rate of 5 million units per month, with a sample price of 15 yen per unit.

Technology Background

Multilayer ceramic capacitors are placed near ICs mounted in smartphones or wearable devices for the purpose of decoupling. As devices increase in functionality, the speed of ICs incorporated in them has also increased, requiring decoupling capacitors with a lower ESL placed around such ICs to ensure their stable operation. Furthermore, increases in the number of features have called for a smaller footprint for parts, with growing demand for smaller electronic components to be incorporated in the devices.

Multilayer ceramic capacitors tend to have a higher impedance, and deteriorate in performance in the high-frequency range owing to influence of the ESL. Although TAIYO YUDEN has commercialized low-ESL multilayer ceramic capacitors to solve this issue, the 1005 size was the smallest of our conventional low-ESL multilayer ceramic capacitors. On this occasion, we have realized a four-terminal structure in the 0603-size by optimizing the internal structure and sophisticating the multilayering technique.

This structure can prevent deterioration in performance even in the high-frequency range, thus contributing to the stable operation of ICs that are driven at high speed.

Moving forward, we will continue to make our multilayer ceramic capacitors even smaller and thinner, as well as enhance their capacitance in response to market demand.

■ Application

Decoupling application for devices that require a reduced footprint, such as smartphones and wearable devices.

■ The characteristics of the 0603-size four-terminal multilayer ceramic capacitor are as shown below.

| Part number | Capacitance | Temperature characteristics | Rated voltage | Length [mm] | Width [mm] | Thickness [mm] max. |
|------------------|-------------|-----------------------------|---------------|----------------|----------------|---------------------|
| JLK063PBJ225MM-F | 2.2 μ F | X5R | 6.3V | 0.6 \pm 0.09 | 0.3 \pm 0.09 | 0.5 |