

## Wireless charging application notes



### 1. What are polymer aluminum electrolytic capacitors?

Murata's polymer capacitors are solid-state layered film polymer aluminum capacitors (ECAS series). They have **low noise**, **low ripple noise** and **high reliability**. Additionally, there is no DC bias characteristic for capacitance and the temperature characteristic is stable. This contributes to reducing the number of parts as well as the size of the circuit board area.

### 2. What is required of wireless charging?

More smartphones today are using wireless charging, and so there is an increasing need for rapid charging capable of charging devices quicker. However, the larger current required of rapid charging can generate noise, requiring even greater performance.

### 3. Issues with wireless charging

- Suppression of noise generated by the larger current required for rapid charging
- Mobile communication that is more reliable (Tx and Rx, etc.)
- Pleasant charging (low noise)

### 4. Benefits of using Murata's ECAS series products

Murata's ECAS series products deliver the performance required to solve these issues.

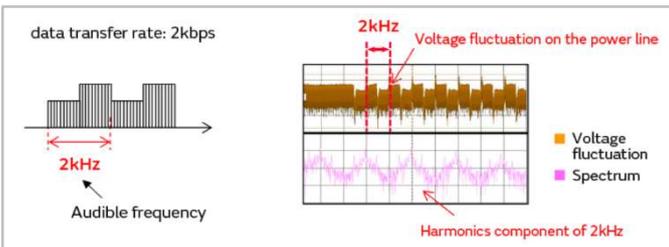
#### ① Low noise

Conventional capacitor



Audible frequency :  
20~20kHz

Dissonant noise :  
2k~4kHz



Data in the 2 kHz range is repeatedly sent during wireless charging, which can sound like noise to us.

#### ECAS Series

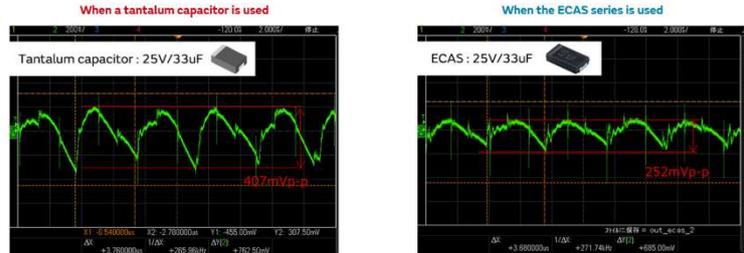
Since there is no machine vibration due to the piezoelectric



effect on the ECAS series, acoustic noise is extremely low compared to MLCC, solving obnoxious noise issues.

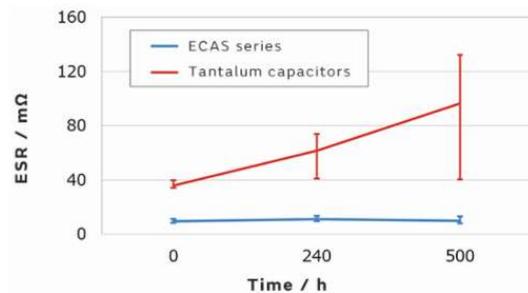
### ② Low ripple noise

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



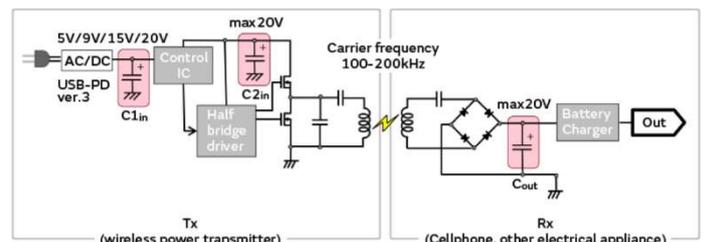
### ③ High reliability

The ECAS has more stable reliability compared to tantalum capacitors, which contributes to stable set operation.



### 5. Example of applied circuit

They can be applied on circuits in the diagram below.



The following ECAS series products were used in the above circuit.

V_line	Cap	Recommendation parts: ECAS
5V/9V/15V/20V Depend on USB-PD	C1in	ECASD31E156M040KAO (25V/15uF/40mD/1.5mm_t)
Max 20V	C2in	ECASD31E226M040KAO (25V/22uF/40mD/1.5mm_t) ECASD41E336M040KAO (25V/33uF/40mD/2.0mm_t)
Max 20V Depend on App	Cout	ECAS series (25-16V)*uF/**mD/1.5mm_t)

### 【Technical Support】

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

Technical Support: Please see our website.

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