

Application Note for High-Power Backup



1. Description

When you consider backup function in your product, Murata's supercapacitors (also known as EDLCs, Supercaps) are suitable for backup energy device (Fig. 1). Murata's supercapacitors can discharge in high power up to 10A. Therefore they can cover wide range of backup function that is from low power for long time to high power for short time. And you can design Murata's supercapacitors into your slim devices because of the thin thicknesses¹⁾. In addition, because supercapacitors have longer cycle life than batteries, they have potential for maintenance free.

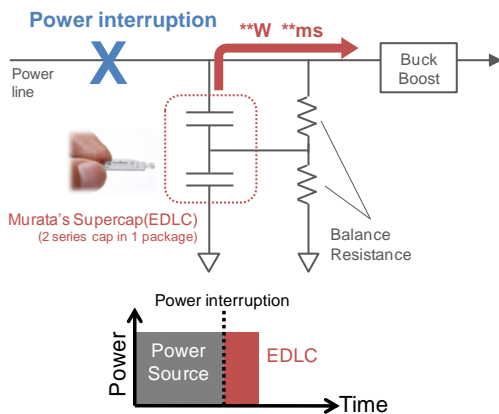


Fig. 1 Supercapacitor for backup

2. Customer's benefits and the applications

Table 1 Customer's benefits and the applications

Current Solutions	Benefits by using Murata Supercapacitor	Applications
Battery	<ul style="list-style-type: none"> ➢ Maintenance free ➢ Reduction in cost and product size 	<ul style="list-style-type: none"> ➢ SSD (Memory/system backup)^(*) ➢ Smart meter (RF/data/system backup)
Tantalum capacitor	<ul style="list-style-type: none"> ➢ Increase in backup duration by larger capacitance ➢ Reduction in total cost and product size 	<ul style="list-style-type: none"> ➢ Handy terminals (POS, scanner, printer, etc) (RF/data/system backup)
Aluminum capacitor	<ul style="list-style-type: none"> ➢ Increase in backup duration by larger capacitance ➢ Reduction in total cost and product size 	<ul style="list-style-type: none"> ➢ Mobile devices (Healthcare, Wearable, etc) (RF/data/system backup)
Cylinder type Supercap	<ul style="list-style-type: none"> ➢ Upgrade backup quality by higher power of Murata supercapacitor ➢ Reduction in product size 	<ul style="list-style-type: none"> ➢ PLC (Data/system backup)
Coin type Supercap	<ul style="list-style-type: none"> ➢ Upgrade backup quality by higher power of Murata supercapacitor 	<ul style="list-style-type: none"> ➢ ATM (Data/system backup) ➢ For various other backup functions

3. Products and Features

DMT series is recommended for high power / high energy backup applications. There are two products whose capacitances are 470mF and 220mF each (Table 2).

The following graphs show discharge behaviors in constant power from 4.2V of DMT series.(Fig.2)

It can discharge 140 ms in 10W and 420 ms in 5W until its

voltage decreases to 2V.

Table 2 DMT series lineup

Series	Part Number	Rated Voltage	Cap. [mF]	ESR [mohm]	L x W [mm]	t [mm]	Operating Temp. (°C)
DMT	General - Purpose Type	4.2V	220	300	21 x 14	2.2 (2.5Max)	-40 to 85
			470	130	21 x 14	3.5 (3.8Max)	

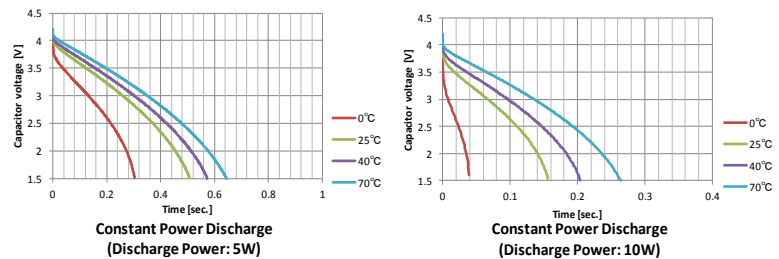


Fig. 2 Discharge performance of DMT series (P/N: DMT334R2S474M3DTA0)

DMH series is recommended for backup of thin devices (Table 3). show discharge behaviors in constant power from 4.5V of DMH series DMHA14R5V353M4ATA0 (Capacitance : 35 mF). It can discharge 220ms in 1W until its voltage decreases to 2V.

Table 3 DMH series lineup

Series	Part number	Rated voltage	Capacitance [mF]	ESR [mohm]	L x W [mm]	t [mm]	Operation temp. (°C)
DMH	Ultra-thin type	4.5V	35	300	20 x 20	0.4 Max	-40 to 85

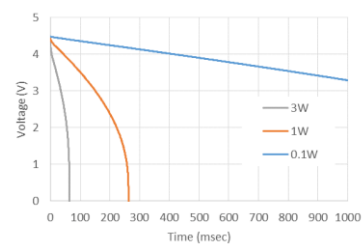


Fig. 3 Discharge performance of DMH series

4. Technical support

Murata can offer technical supports for your electrical design, mechanical design and reliability issue. Please feel free to ask Murata.

5. Reference documents

- 1) Supercapacitor(EDLC) Technical note (C2M1CXS-053)
- 2) Application note: Supercapacitor(EDLC) solution for Reliable Interim Power supply in SSDs (C2M1CXS-074), Backup system for PLC(C2M1CXS-149)
- 3) Web site

<http://www.murata.com/en-global/products/capacitor/edlc>

