

Application Note for Energy Harvesting System



1. Description

Murata's small energy device (UMA series) can be charged/discharged with wide input/output range. In addition, the leakage current is very low. These features enable you to create small and high efficient harvesting systems.

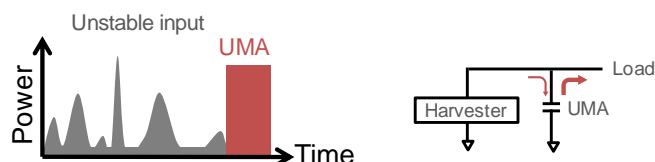


Fig. 1 Operation image

2. Benefits

(1)Very low leakage current

UMA series can be charged even at low current of several microamperes. Therefore it can be used even with a low-power generator. In addition, very low leakage current characteristic minimizes the loss of the stored energy and allows long time use. (Leakage current: UMAC : about 200nA、UMAL : about 500nA)

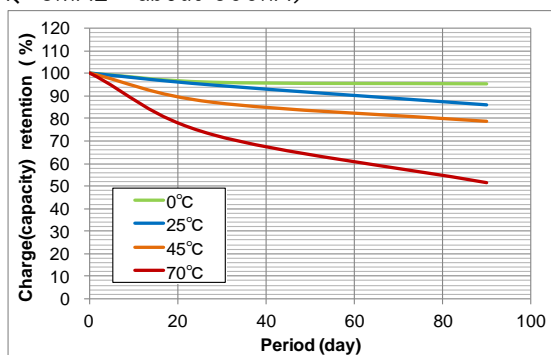


Fig. 2 Capacity retention (e.g: UMAC040130A003TA01)

(2)Flat voltage characteristic of 2.3V

UMA series is optimum for operation of low-power consumption ICs because it has stable discharge characteristic of 2.3V. Furthermore, circuit design can be simplified because its output voltage is also stable.

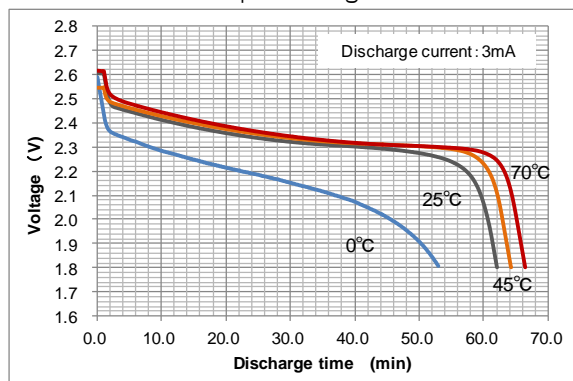


Fig. 3 Discharge temperature characteristic
(e.g: UMAC040130A003TA01)

(3)Short standby time

Because UMA series is charged to the battery voltage in much shorter time than capacitors, standby time can be reduced.

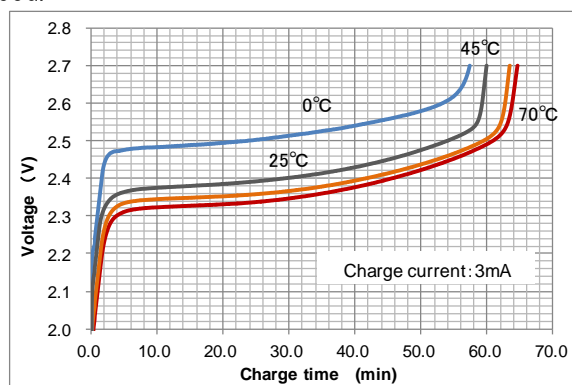


Fig. 4 Charge temperature characteristic
(e.g: UMAC040130A003TA01)

(4)High input-output characteristics

The current rate of UMA series is 10 times higher than conventional lithium ion batteries. It eliminates the use of peak assist device such as a capacitor and can contribute to simplify your harvesting system.

3. Product Lineup

◆ Recommended product

Cylinder type (UMAC)	
Part number	UMAC040130A003TA01
Nominal voltage/ Charge voltage / Cut-off voltage	2.3V / 2.7V / 1.8V
Nominal capacity / ESR	3mAh / 800mΩ
Max. discharge current	30mA (10 C)
Size / Weight	φ4 x 12 mm / 0.29g

◆ Higher capacity product

Thin laminate type (UMAL)	
Part number	UMAL361421B024TA01
Nominal voltage/ Charge voltage / Cut-off voltage	2.3V / 2.7V / 1.8V
Nominal capacity / ESR	24mAh / 100mΩ
Max. discharge current	240mA (10 C)
Size / Weight	21 x 14 x 3.6 mm / 1.3g

4. Technical Support

Sample

➤ Please contact Murata sales or distributors.

Technical support

➤ Please access our website for more details.

<http://www.murata.com/en-global/products/smallenergydevice/uma>



If you have any question, please contact your local Murata sales representative.