Application Note for Energy Harvesting System

1. Description

Murata’s small Lithium ion secondary battery (CT04120) 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.

2. Benefits

(1) Very low leakage current
CT04120 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: Approximate 200nA)

(2) Flat voltage characteristic of 2.3V
CT04120 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.

(3) Short standby time
Because CT04120 is charged to the battery voltage in much shorter time than capacitors, standby time can be reduced.

(4) High input-output characteristics
The current rate of CT04120 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.

(5) Simplify the circuit
Charge IC is unnecessary for CT04120 and CV charge is possible for CT04120.

3. Product Lineup

<table>
<thead>
<tr>
<th>Product name</th>
<th>CT04120</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>2.7V</td>
<td>40</td>
</tr>
<tr>
<td>Charge Voltage</td>
<td>1.8V</td>
<td>8d</td>
</tr>
<tr>
<td>End of Discharge Voltage</td>
<td>3mA</td>
<td>F</td>
</tr>
<tr>
<td>Discharge capacity</td>
<td>1000mΩ</td>
<td>Operating temp</td>
</tr>
</tbody>
</table>

4. Support

Please access below URL or QR code about CT04120 detail

Fig. 1 Operation image

Fig. 2 Capacity retention

Fig. 3 Discharge temperature characteristic

Fig. 4 Charge temperature characteristic