

**DYNACAP – Double Layer Capacitor**

**DB Series**

Has a total withstand voltage rating of 5.5V. Utilizing ELNA's unique flat spring technology, which enhances the reliability of the internal coin cells, this series is ideal for a wide range of applications from consumer appliances to sophisticated instrumentation.



**Construction and Dimensions**

| CAP (F) | ∅D x L (mm) |
|---------|-------------|
| 0.047   | 13.5 x 7.5  |
| 0.1     |             |
| 0.22    |             |
| 0.33    |             |
| 0.47    | 21.5 x 8.0  |
| 1.0     |             |

Unit: mm

| Specifications                      | Performance  |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
|-------------------------------------|--|---|------------------------------|-----------------------|---|---------------------|---|-----|-------------------------|-----|----|----|----|----|----|
| Temperature range (°C)              | -25 to +70   |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Capacitance tolerance (%)           | -20 to +80   |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Internal resistance at 1KHz         | <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Capacitance (F)</th> <th>0.047</th> <th>0.1</th> <th>0.22</th> <th>0.33</th> <th>0.47</th> <th>1.0</th> </tr> </thead> <tbody> <tr> <td>Internal resistance (Ω)</td> <td>120</td> <td>75</td> <td>75</td> <td>75</td> <td>30</td> <td>30</td> </tr> </tbody> </table>   | Capacitance (F)                           | 0.047                        | 0.1                   | 0.22                                      | 0.33                | 0.47  | 1.0 | Internal resistance (Ω) | 120 | 75 | 75 | 75 | 30 | 30 |
|                                     | Capacitance (F)  | 0.047                                     | 0.1                          | 0.22                  | 0.33                                      | 0.47                | 1.0   |     |                         |     |    |    |    |    |    |
| Internal resistance (Ω)             | 120  | 75  | 75                           | 75                    | 30  | 30                  |   |     |                         |     |    |    |    |    |    |
| Stability at low & high temperature | <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Change in capacitance</td> <td style="text-align: center;">Within ±30% of value at 20°C</td> </tr> <tr> <td>Internal resistance</td> <td style="text-align: center;">Less than five times of the value at 20°C</td> </tr> </table>  | Change in capacitance                     | Within ±30% of value at 20°C | Internal resistance   | Less than five times of the value at 20°C |                     |   |     |                         |     |    |    |    |    |    |
|                                     | Change in capacitance  | Within ±30% of value at 20°C              |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Internal resistance                 | Less than five times of the value at 20°C  |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Endurance (70°C)                    | <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Test time</td> <td style="text-align: center;">1000 hrs</td> </tr> <tr> <td>Change in capacitance</td> <td style="text-align: center;">Within ±30% of the initial measured value</td> </tr> <tr> <td>Internal resistance</td> <td style="text-align: center;">Within four times the initial specified value</td> </tr> </table> | Test time                                 | 1000 hrs                     | Change in capacitance | Within ±30% of the initial measured value | Internal resistance | Within four times the initial specified value |     |                         |     |    |    |    |    |    |
|                                     | Test time  | 1000 hrs                                  |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
|                                     | Change in capacitance  | Within ±30% of the initial measured value |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Internal resistance                 | Within four times the initial specified value  |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |
| Max. storage temp. (70°C)           | Test time 1000hrs. Same as Endurance   |   |                              |                       |   |                     |   |     |                         |     |    |    |    |    |    |

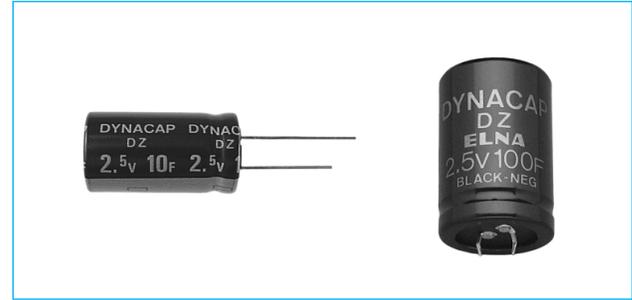
**Standard Ratings**

| ELNA Part No. | Rated Volt (V) | Capacitance (F) | Internal Resistance (Ω) |
|---------------|----------------|-----------------|-------------------------|
| DB-5R5D473    | 5.5            | 0.047           | ≤120                    |
| DB-5R5D104    | 5.5            | 0.1             | ≤75                     |
| DB-5R5D224    | 5.5            | 0.22            | ≤75                     |
| DB-5R5D334    | 5.5            | 0.33            | ≤75                     |
| DB-5R5D474    | 5.5            | 0.47            | ≤30                     |
| DB-5R5D105    | 5.5            | 1.0             | ≤30                     |

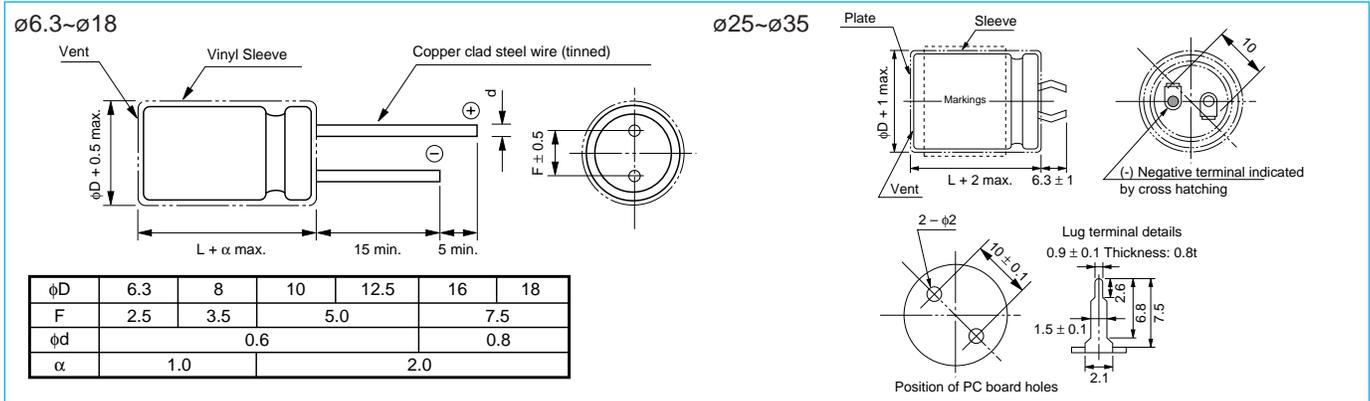
**DYNACAP – Double Layer Capacitor**

**DZ Series**

The DZ Series is an entirely new type of high current capacitor that has extremely low internal resistance (only 10% of standard double layer caps), capable of undergoing virtually unlimited charge/discharge cycles with no deterioration. With capacitance ranging from 1.0 to 100F and internal resistance from  $\leq 0.08$  to 1.0 ohms, they are ideal for CMOS backup, or they can function as a simple power supply.



**Construction and Dimensions**



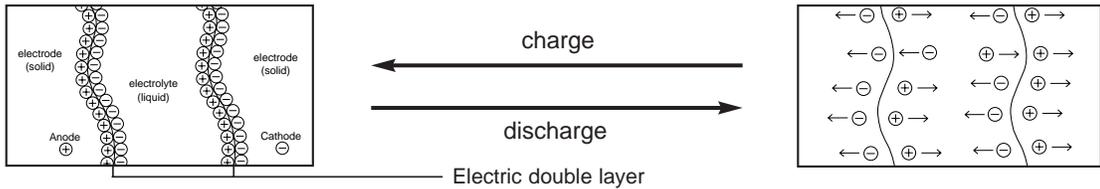
| Specifications                      | Performance   |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
|-------------------------------------|---|---|------------------------------|-----------------------------------|---|---------------------|---|-----|-------------------------|-----|-----|-----|-----|------|------|
| Temperature range (°C)              | -40 to +70  |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Capacitance tolerance (%)           | -20 to +80  |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Internal resistance at 1KHz         | <table border="1"> <tr> <td>Capacitance (F)</td> <td>1.0</td> <td>3.3</td> <td>4.7</td> <td>10</td> <td>50</td> <td>100</td> </tr> <tr> <td>Internal resistance (Ω)</td> <td>1.0</td> <td>0.3</td> <td>0.2</td> <td>0.1</td> <td>0.08</td> <td>0.08</td> </tr> </table> | Capacitance (F)                           | 1.0                          | 3.3                               | 4.7                                       | 10                  | 50  | 100 | Internal resistance (Ω) | 1.0 | 0.3 | 0.2 | 0.1 | 0.08 | 0.08 |
|                                     | Capacitance (F)   | 1.0                                       | 3.3                          | 4.7                               | 10  | 50                  | 100   |     |                         |     |     |     |     |      |      |
| Internal resistance (Ω)             | 1.0   | 0.3                                       | 0.2                          | 0.1                               | 0.08                                      | 0.08                |   |     |                         |     |     |     |     |      |      |
| Stability at low & high temperature | <table border="1"> <tr> <td>Change in capacitance (-25 to 70°C)</td> <td>Within ±30% of value at 20°C</td> </tr> <tr> <td>Internal resistance (-40 to 70°C)</td> <td>Less than five times of the value at 20°C</td> </tr> </table>                                      | Change in capacitance (-25 to 70°C)       | Within ±30% of value at 20°C | Internal resistance (-40 to 70°C) | Less than five times of the value at 20°C |                     |   |     |                         |     |     |     |     |      |      |
|                                     | Change in capacitance (-25 to 70°C)   | Within ±30% of value at 20°C              |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Internal resistance (-40 to 70°C)   | Less than five times of the value at 20°C   |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Endurance (70°C)                    | <table border="1"> <tr> <td>Test time</td> <td>1000 hrs</td> </tr> <tr> <td>Change in capacitance</td> <td>Within ±30% of the initial measured value</td> </tr> <tr> <td>Internal resistance</td> <td>Within four times the initial specified value</td> </tr> </table> | Test time                                 | 1000 hrs                     | Change in capacitance             | Within ±30% of the initial measured value | Internal resistance | Within four times the initial specified value |     |                         |     |     |     |     |      |      |
|                                     | Test time   | 1000 hrs                                  |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
|                                     | Change in capacitance   | Within ±30% of the initial measured value |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Internal resistance                 | Within four times the initial specified value   |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |
| Max. storage temp. (70°C)           | Test time 1000hrs. Same as Endurance  |   |                              |                                   |   |                     |   |     |                         |     |     |     |     |      |      |

**Standard Ratings**

| ELNA Parts No. | Rated Volt (V) | Capacitance (F) | Internal Resistance (Ω) | φD x L (mm)  |
|----------------|----------------|-----------------|-------------------------|--------------|
| DZ-2R5D105     | 2.5            | 1.0             | ≤1.00                   | φ8.0 x 22.0  |
| DZ-2R5D335     | 2.5            | 3.3             | ≤0.30                   | φ12.5 x 23.0 |
| DZ-2R5D475     | 2.5            | 4.7             | ≤0.20                   | φ12.5 x 31.5 |
| DZ-2R5D106     | 2.5            | 10              | ≤0.10                   | φ18.0 x 35.0 |
| DZ-2R5D506     | 2.5            | 50              | ≤0.08                   | φ25.0 x 40.0 |
| DZ-2R5D107     | 2.5            | 100             | ≤0.08                   | φ35.0 x 50.0 |

# DYNACAP – Double Layer Capacitor

DynaCap, double layer capacitor is miniaturized and large-capacity capacitor operated by making use of an electric double layer formed between a solid phase and liquid phase.

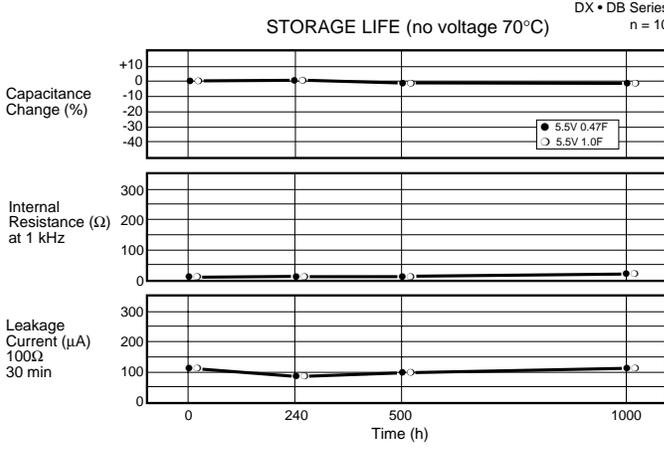
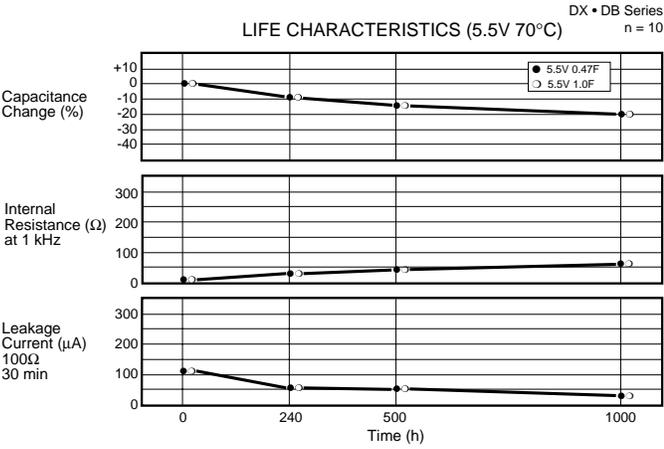
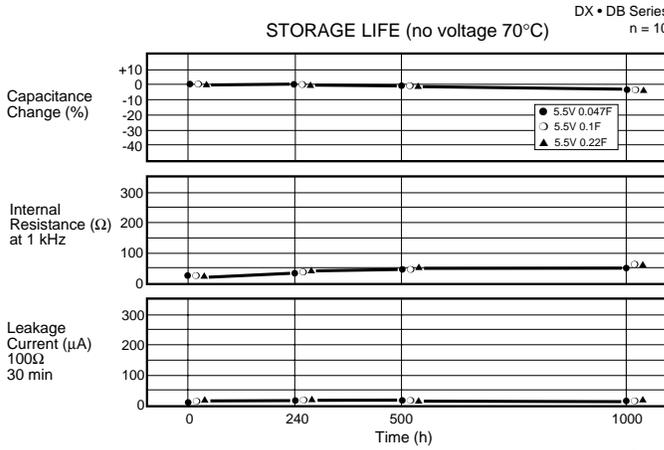
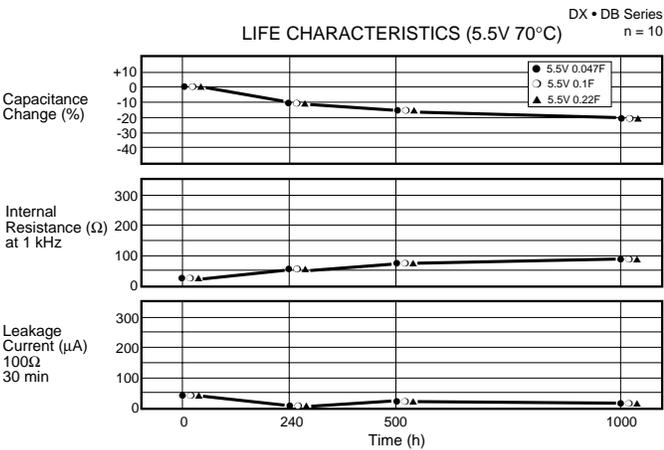
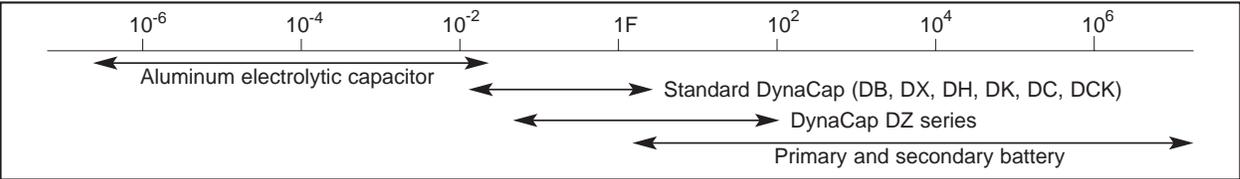


**Comparison to secondary battery**

- This capacitor can be charged and discharged efficiently and quickly at high currents. (no chemical reaction)
- There is no limit for the number of charge and discharge cycles.
- It has wide operating temperature. (from -40° to 70°C)
- It does not contain heavy metals (toxic material) like Ni, Cd, Pb.
- It does not need control circuit for charge-discharge.

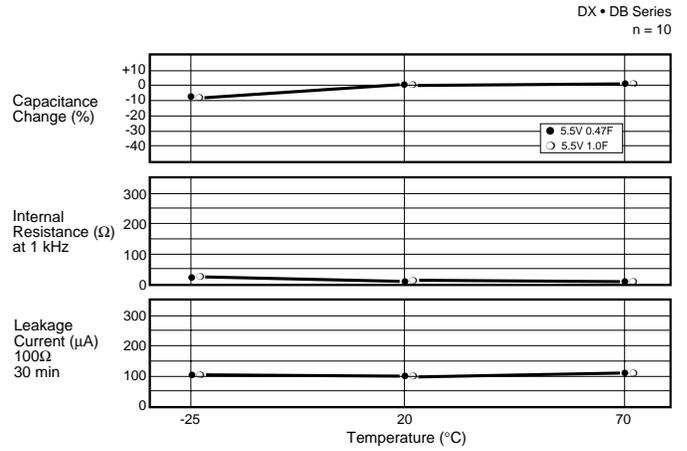
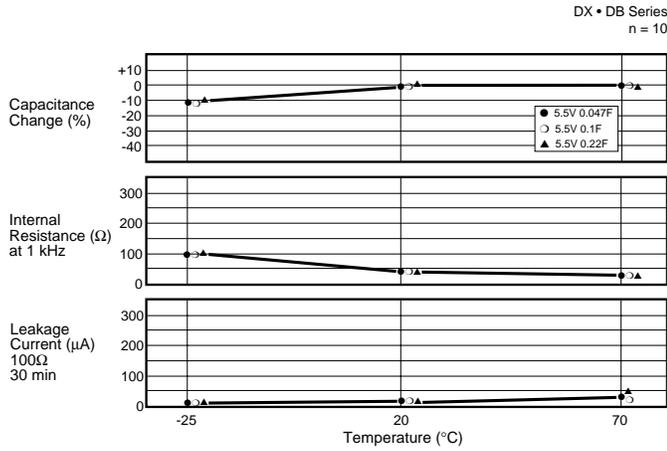
The large surface area of activated carbon (1800-2500 m/g) permits storage of a large amount of electric discharge.

(This is about 1000 times larger than aluminum electrolytic capacitor!)

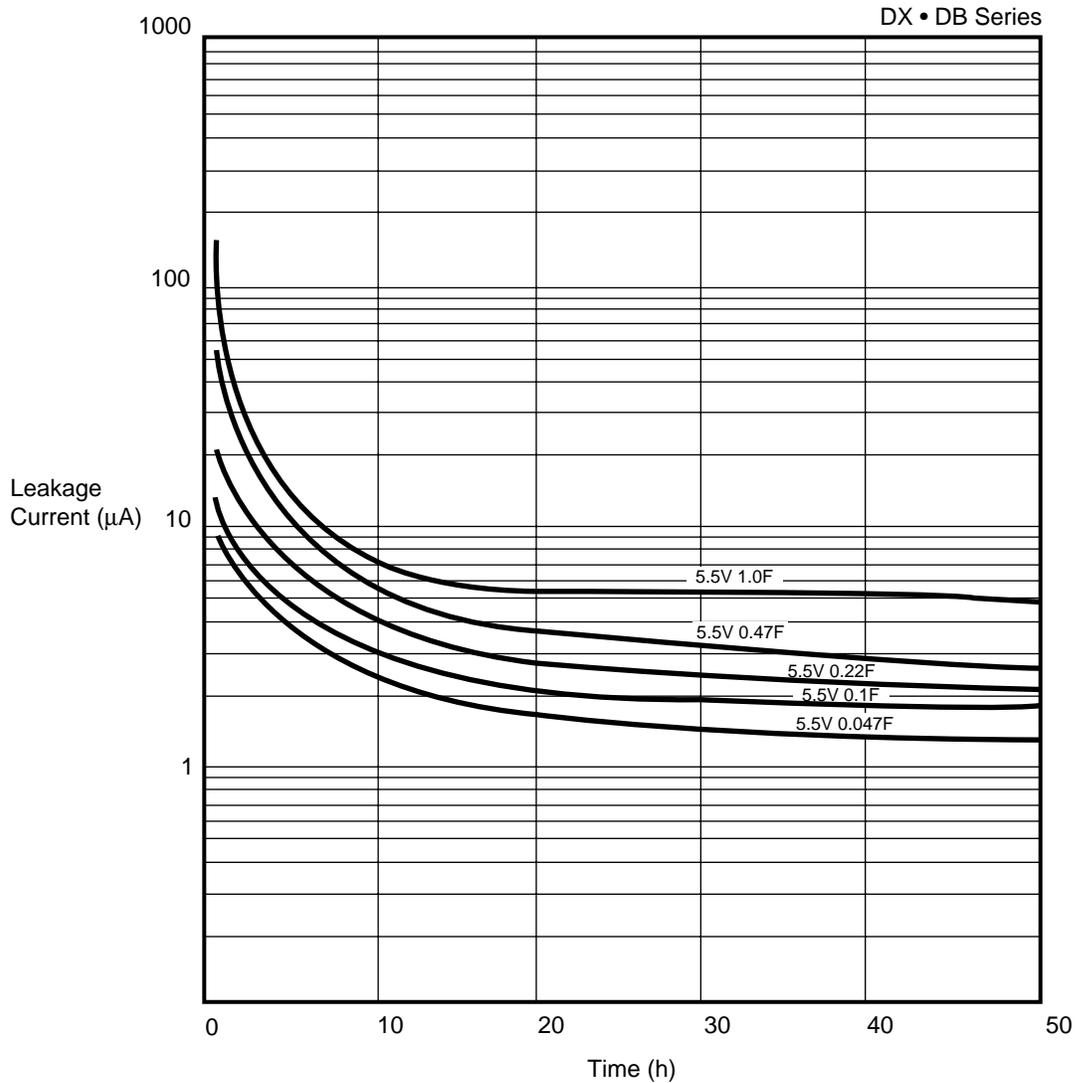


Technical Data

**TEMPERATURE CHARACTERISTICS**



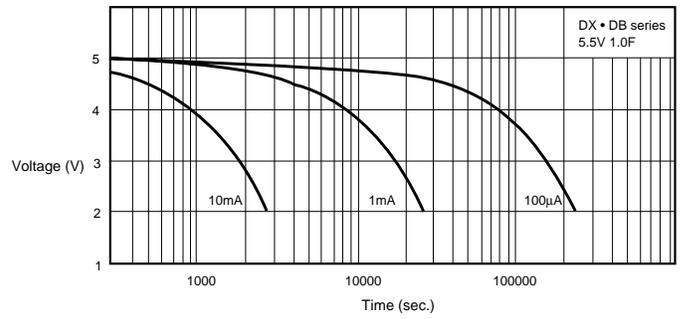
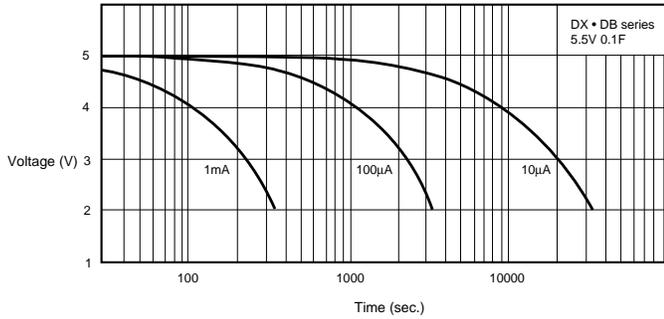
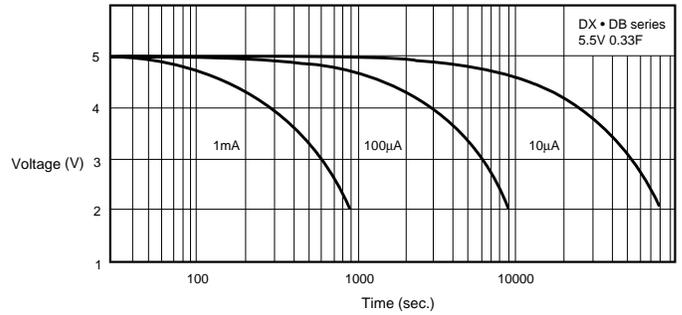
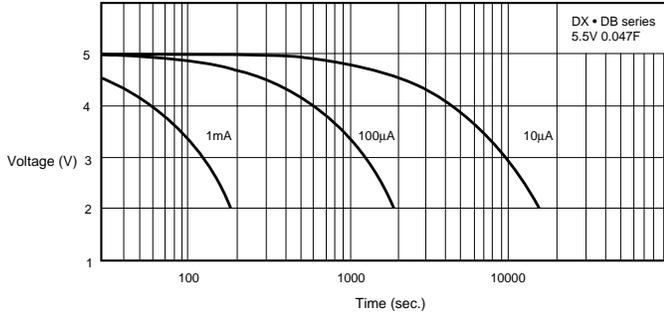
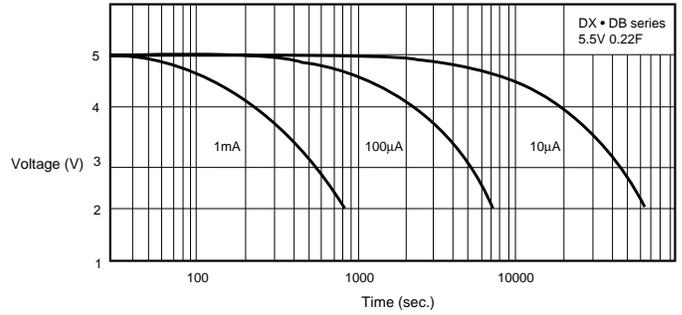
**LONG TERM CHARGING CURRENT CHARACTERISTICS**



Technical Data

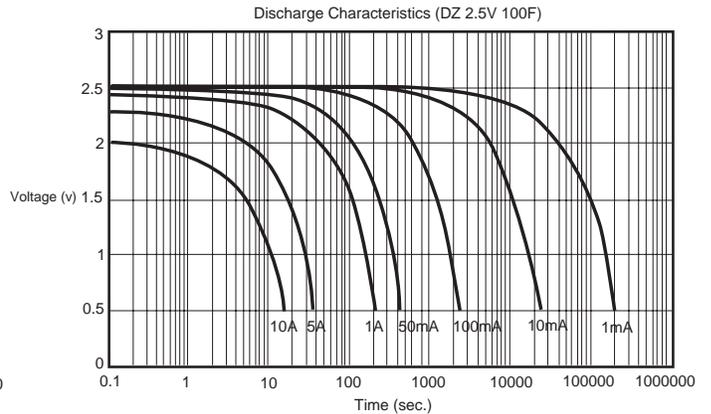
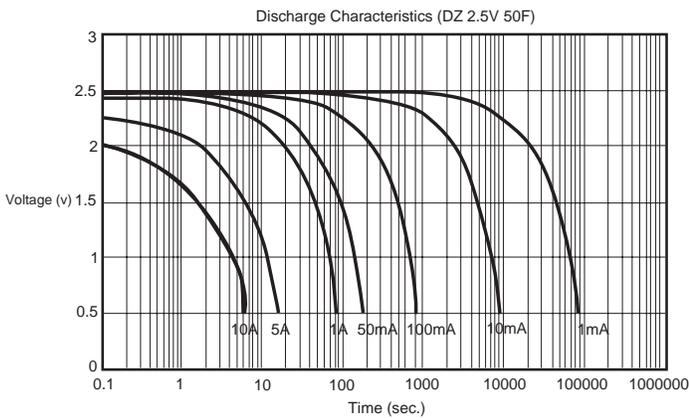
**CONSTANT CURRENT DISCHARGE DX • DB SERIES**

Charging voltage : 5.0V  
 Charging time : 30 min.  
 Temperature : room temp.



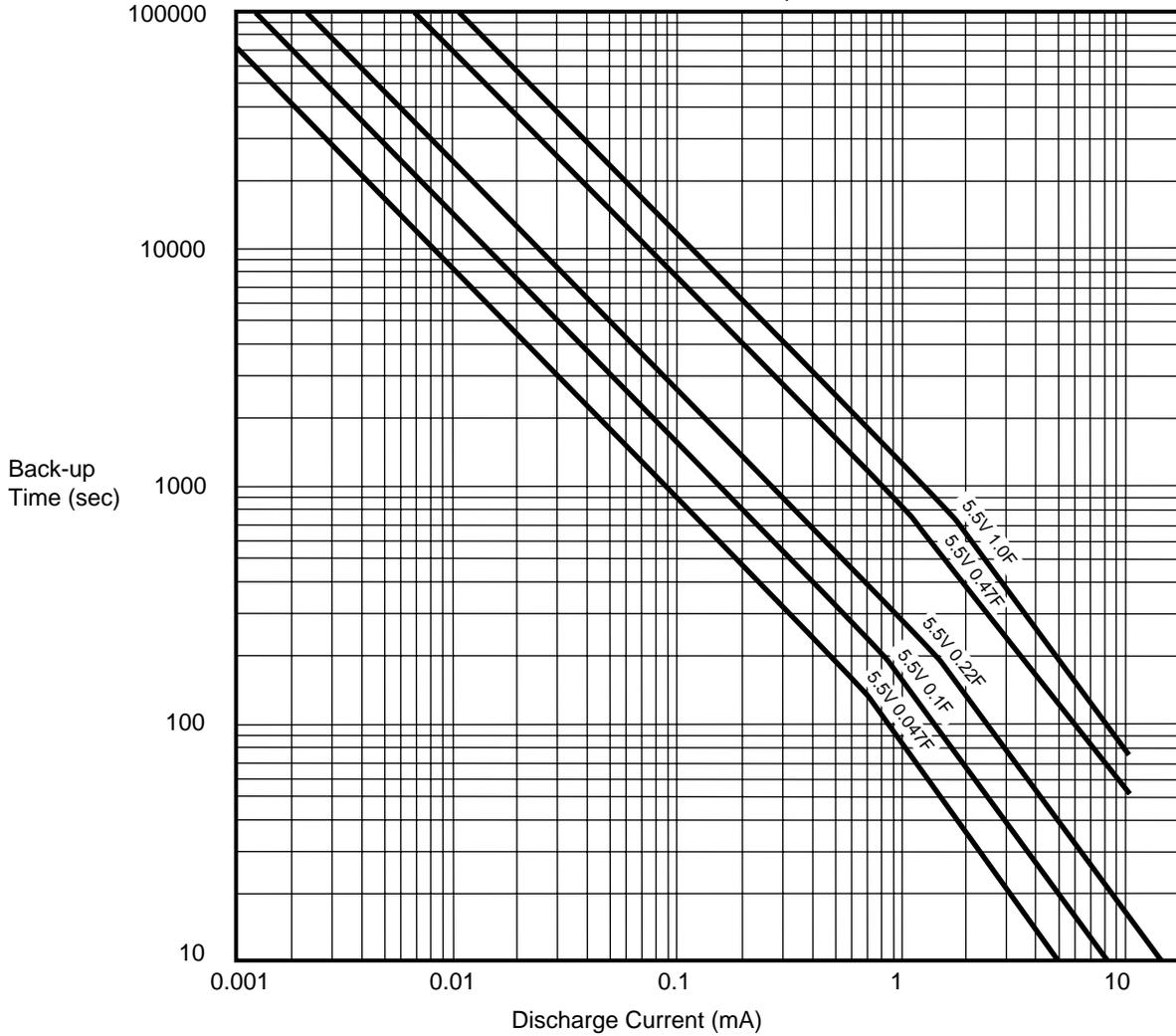
**CONSTANT CURRENT DISCHARGE DZ SERIES**

Charging voltage : 2.5V  
 Temperature : room temp.



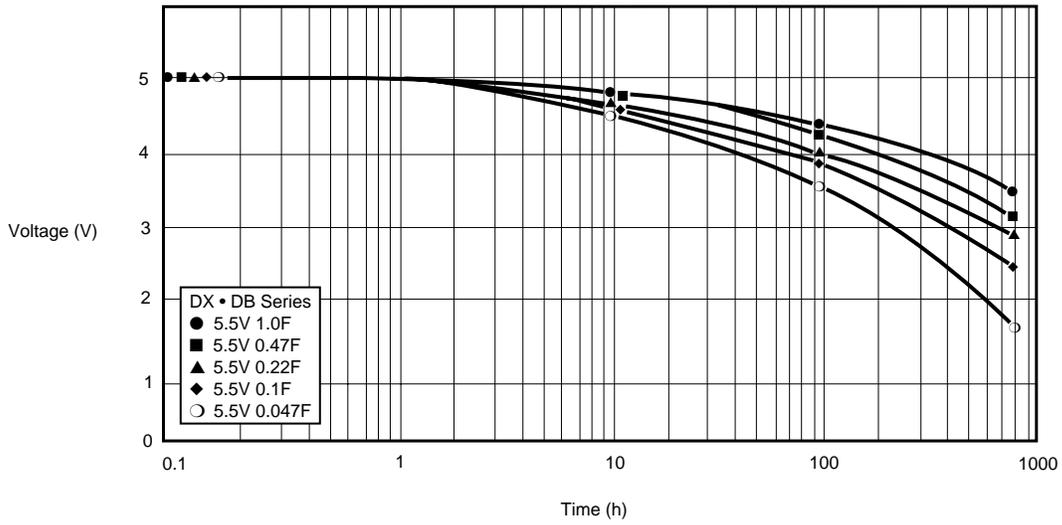
CONSTANT CURRENT DISCHARGE DX • DB TIME

5.0V → 3.5V Minimum Back-up Time



SELF DISCHARGE DX • DB SERIES

at 25°C



SELF DISCHARGE DZ SERIES

at 25°C

2.5V 1.0F (φ8.0 x 22.0/)

