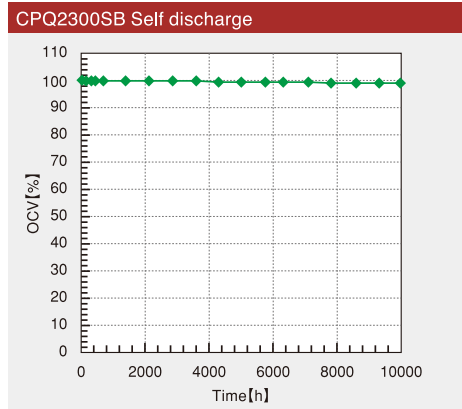
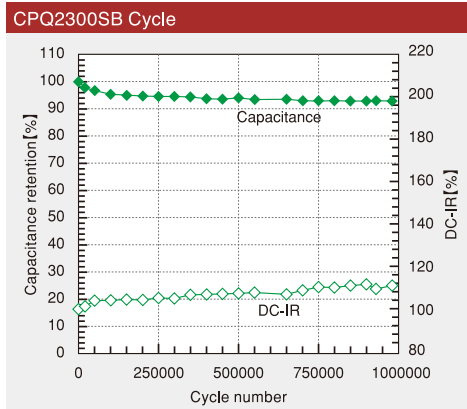


# ULTIMO Lithium Ion Capacitor

Cell

- Higher operating voltage (3.8V) ● High power (1000A discharge-able), High energy density (40Wh/L)
- Rapid charge/discharge-able with high current (> 100A) ● High durability (> a million cycles)
- Wide operating temperature range (-30°C ~ 70°C)
- Very small self discharge (< 5% voltage in 10000 hours)
- Theoretically high safety (No thermal runaway at positive electrode)



## Comparison with other Energy Storage Devices

|                              | Lithium Ion Capacitor           | Electrical Double Layer Capacitor | Lithium Ion Battery                      | Lead Acid Battery                       |
|------------------------------|---------------------------------|-----------------------------------|--|---|
| Energy density               | Medium (Higher at high current) | Low                               | Very high                                | High                                    |
| Power density                | High                            | High                              | Low (not good for rapid charge)          | Very low                                |
| Rapid charge/discharge       | in seconds                      | in seconds                        | in hours<br>(Needs a charge control)     | in hours<br>(Needs a refreshing charge) |
| Internal resistance          | Low                             | Low                               | High                                     | Very high                               |
| Low temperature performance  | Good                            | Good                              | Very bad                                 | Bad                                     |
| High temperature performance | Very good (up to 70°C)          | Good (up to 60°C)                 | Very bad (up to 40°C)                    | Very bad                                |
| Self discharge               | Small                           | Big                               | Small                                    | Big                                     |
| Maintenance                  | Maintenance free                | Maintenance free                  | Frequent replace required                | Frequently replace required             |
| Lifetime (float / cycling)   | Long                            | Long                              | Relatively short                         | Short (sudden death occurs)             |
| Safety and flammability      | High, flammable                 | High, flammable                   | Low, flammable (Self heat up / igniting) | High, not flammable                     |
| Application                  | Very high power (Medium energy) | Very high power (Lower energy)    | Medium power (High energy)               | Low power (High energy)                 |

## Fundamental Characteristics

|                             |  | Laminated            |                    | Prismatic            |                     | Conditions   |
|-----------------------------|--|----------------------|--------------------|----------------------|---------------------|--|
|                             |  | CLQ1100S1B           | CLE2100S1B         | CPQ2300SB            | CPP3300SC           |  |
| Rated Voltage               |  | 3.8V to 2.2V         |                    |                      |                     |  |
| Initial characteristics     | Capacitance  | 1100F *1             | 2100F *2           | 2300F *3             | 3300F *3            | Ambient temperature: 25°C<br>Discharge current at: 5A(*1)/2A(*2)/10A(*3)   |
|                             | DC-IR  | 1.2 mΩ *1            | 6.2 mΩ *2          | 0.7 mΩ *1            | 1.0 mΩ *1           | Ambient temperature: 25°C<br>Discharge current at: 100A(*1)/10A(*2)  |
|                             | Gravimetric energy density                         | 10Wh/kg              | 24Wh/kg            | 8Wh/kg               | 14Wh/kg             |  |
|                             | Volumetric energy density                          | 20Wh/L               | 40Wh/L             | 14Wh/L               | 20Wh/L              |  |
|                             | Gravimetric power density                          | 14kW/kg              | 4kW/kg             | 8kW/kg               | 8kW/kg              | With maximum discharge current   |
|                             | Volumetric power density                           | 27kW/L               | 6kW/L              | 14kW/L               | 12kW/L              | With maximum discharge current   |
|                             | Maximum discharge current                          | 800A                 | 200A               | 1200A                | 1100A               | Discharge current can be continue for 1 second   |
| Temperature characteristics | Lowest temperature in the temperature range        | 70% *1               | 70% *2             | 70% *3               | 75% *3              | Discharge current at: 5A(*1)/2A(*2)/10A(*3)  |
|                             | Highest temperature in the temperature range       | 100% *1              | 100% *2            | 100% *3              | 100% *3             | Discharge current at: 5A(*1)/2A(*2)/10A(*3)  |
| Self discharge              | Voltage drop after 10,000h stored                  | < 5%                 | < 5%               | < 5%                 | < 5%                | Ambient temperature: 25°C<br>Initial voltage: 3.0V   |
| Cycle durability            | Cycle counts required to 80% capacitance retention | > 1,000,000 cycles*1 | > 300,000 cycles*2 | > 1,000,000 cycles*3 | > 500,000 cycles*3  | Ambient temperature: 25°C<br>Cycling current: 100A(*1)/50A(*2)/200A(*3)<br>Condition: Constant current, continuous |
| Operating temperature range |  | -30°C ~ 70°C         | -20°C ~ 70°C       | -30°C ~ 70°C         | -30°C ~ 70°C        |  |
| Dimensions in mm            |  | 180 × 126 × 5.3      | 180 × 121 × 5.1    | 150.2 × 93.2 × 15.8  | 150.2 × 93.2 × 15.8 | Without terminal tabs and fixing studs   |
| Weight                      |  | 0.14kg               | 0.11kg             | 0.36kg               | 0.32kg              |  |

\* The contents of this catalog are subject to change without notice.

Contact