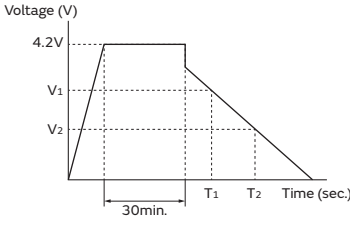
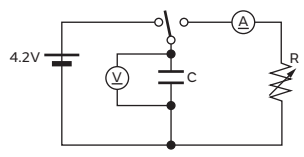


Spec and Test Methods

Item	Validation Method	Specification																												
Operating Temperature	—	-40°C to 85°C																												
Nominal Capacitance	<p><Discharge Method> 1. Charge capacitor for 30min. at 4.2V. Charge current: 500mA 2. Then discharge.</p> <p>Voltage (V)</p>  <p>V1: 80% of 4.2V V2: 40% of 4.2V T1: Time with voltage V1 T2: Time with voltage V2 I: Discharge current: 100mA</p> <p><Applying Formula> $C = \frac{I \times (T_2 - T_1)}{V_1 - V_2}$</p> <p><Test Circuit></p> 	Please refer to Lineup list.																												
ESR	<p><Impedance Method> Measured at AC1kHz. Charge Current: 10mA</p>	Please refer to Lineup list.																												
Leakage Current @96hrs	<p>Temperature: 25°C±2°C Charge Voltage: 4.2V Charge Time: 96hrs Charge up to 4.2V and keep the voltage. Measure the current value after 96hrs from the time capacitor voltage reaches 4.2V.</p>	Less than or equal to 5µA at 96hrs.																												
Temperature Characteristics	-40°C to 85°C	<p>Capacitance</p> <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Capacitance change vs.25°C</th> </tr> </thead> <tbody> <tr> <td>85 (max.)</td> <td>±10%</td> </tr> <tr> <td>70 (Ref)</td> <td>±10%</td> </tr> <tr> <td>40 (Ref)</td> <td>±10%</td> </tr> <tr> <td>25</td> <td>Standard value</td> </tr> <tr> <td>0 (Ref)</td> <td>-20/+10%</td> </tr> <tr> <td>-40 (min.)</td> <td>-35/+10%</td> </tr> </tbody> </table> <p>ESR (@1kHz)</p> <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>ESR change vs.25°C</th> </tr> </thead> <tbody> <tr> <td>85 (max.)</td> <td>Less than std value</td> </tr> <tr> <td>70 (Ref)</td> <td>Less than std value</td> </tr> <tr> <td>40 (Ref)</td> <td>Less than std value</td> </tr> <tr> <td>25</td> <td>Standard value</td> </tr> <tr> <td>0 (Ref)</td> <td>+100% max.</td> </tr> <tr> <td>-40 (min.)</td> <td>+1000% max.</td> </tr> </tbody> </table>	Temperature (°C)	Capacitance change vs.25°C	85 (max.)	±10%	70 (Ref)	±10%	40 (Ref)	±10%	25	Standard value	0 (Ref)	-20/+10%	-40 (min.)	-35/+10%	Temperature (°C)	ESR change vs.25°C	85 (max.)	Less than std value	70 (Ref)	Less than std value	40 (Ref)	Less than std value	25	Standard value	0 (Ref)	+100% max.	-40 (min.)	+1000% max.
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High Temperature Loading	<p>85°C±2°C 1000hrs+24hrs/-0hrs Applying 4.2V Charge and Discharge Current: 500mA max. Characteristics are measured at 25°C. Allow device to sit for 2hrs min. at 25°C prior to measurement. Connect two balance resistors (4.7kΩ or less) in parallel with each capacitor.</p>	<p>Capacitance change: Over 70% of initial value ESR @1kHz: Under 150% of initial value</p>																												