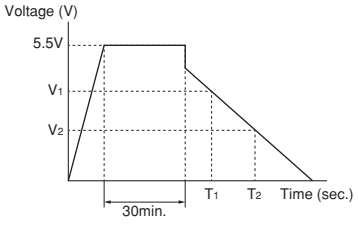
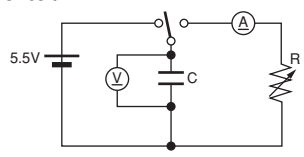
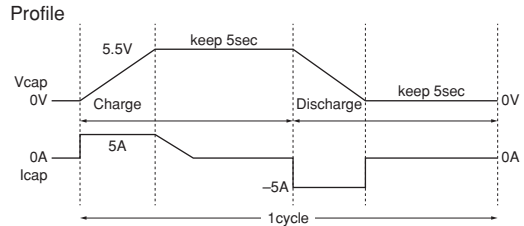


Item	Validation Method	Specification																					
Operating Temperature	—	-40°C to 70°C																					
Nominal Capacitance	<p>&lt;Discharge Method&gt;            1. Charge capacitor for 30min at 5.5V.            Charge current: 500mA            2. Then discharge.</p> <p>Voltage (V)</p>  <p>V1: 80% of 5.5V            V2: 40% of 5.5V            T1: Time with voltage V1            T2: Time with voltage V2            I: Discharge current: 100mA</p> <p>&lt;Applying Formula&gt;  <math display="block">C = \frac{I \times (T_2 - T_1)}{V_1 - V_2}</math></p> <p>&lt;Test Circuit&gt;</p> 	Please refer to Lineup list.																					
ESR	<p>&lt;Impedance Method&gt;            Measured at AC1kHz.            Charge Current: 10mA</p>	Please refer to Lineup list.																					
Leakage Current @96hrs	<p>Temperature: 25°C±2°C            Charge Voltage: 5.5V            Charge Time: 96hrs            Charge up to 5.5V and keep the voltage. Measure the current value after 96hrs from the time capacitor voltage reaches 5.5V.</p>	Less than or equal to 10µA at 96hrs.																					
Temperature Characteristics	-40°C to 70°C	<p>Temperature Characteristics</p> <table border="1"> <thead> <tr> <th></th> <th>ESR@1kHz</th> <th>Capacitance</th> </tr> </thead> <tbody> <tr> <td>70°C</td> <td>Less than std value</td> <td>±10%</td> </tr> <tr> <td>40°C</td> <td>Less than std value</td> <td>±10%</td> </tr> <tr> <td>25°C</td> <td>Standard value</td> <td>Standard value</td> </tr> <tr> <td>0°C</td> <td>+40% max.</td> <td>±10%</td> </tr> <tr> <td>-20°C</td> <td>+80% max.</td> <td>±10%</td> </tr> <tr> <td>-40°C</td> <td>+200% max.</td> <td>±10%</td> </tr> </tbody> </table>		ESR@1kHz	Capacitance	70°C	Less than std value	±10%	40°C	Less than std value	±10%	25°C	Standard value	Standard value	0°C	+40% max.	±10%	-20°C	+80% max.	±10%	-40°C	+200% max.	±10%
	ESR@1kHz	Capacitance																					
70°C	Less than std value	±10%																					
40°C	Less than std value	±10%																					
25°C	Standard value	Standard value																					
0°C	+40% max.	±10%																					
-20°C	+80% max.	±10%																					
-40°C	+200% max.	±10%																					
Charge-Discharge Cycle Test	<p>Charge Voltage: 5.5V            Charge Current: 5A            Discharge Current: 5A            Test Temperature: 25°C±2°C            Cycle Number: 50,000 times</p> <p>Profile</p> 	<p>Capacitance Change:            · Over 50% of initial value            ESR Change(@1kHz):            · Under 200% of initial value</p>																					
High Temperature Loading	<p>Charge Voltage: 4.2V            Test Temperature: 70°C+0°C/-3°C            Duration: 1000hrs+24/-0hrs            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 Change(@1kHz):            · Under 140% of initial value</p>																					