

# Lithium-ion Battery



## Basic Characteristics

Nominal Capacity	120 mAh (0.2 C discharge)
Minimum Capacity	110 mAh (0.2 C discharge)
Charging Voltage	4.2 V
Nominal Voltage	3.6 V
Standard Charge	Method : CC / CV (constant current / constant voltage) Current : 0.5 C Voltage : 4.2 V End Current : 0.02 C
Maximum Charge Current	1 C
Maximum Discharge Current	2 C
End of Discharge Voltage	2.75 V
Weight	Approximately 5.2 g
Operating Temperature	Charge : -20°C to 45°C Discharge : -20°C to 60°C
Storage Temperature	-5°C to 35°C
Appearance	There shall be no such defect as scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of the cell

Note: 1 C = 1 Capacity

## Technical Requirements

### Testing Conditions (Unless Otherwise Specified)

Temperature : 20 ±1°C  
Relative humidity : ≤ 75 ±5% RH  
Atmosphere pressure : 1 atm  
Accuracy of voltmeters and ammeters used in the test is equal to or better than the grade 0.5

# Lithium-ion Battery

## Electrical Characteristics

Item	Testing Instruction	Requirements
Charge Condition	Charge the battery with constant current 0.5 C to 4.2 V and then charge at constant voltage 4.2 V until the current decays to 0.02 C during the constant voltage stage	-
Nominal Capacity	Within one hour after the charge according to 2.2.1, discharge at 0.2 C until 2.75 V cut-off voltage	Capacity $\geq$ nominal capacity
1 C discharge	With in 1 hour after the charge according to 2.2.1, discharge at constant current 1 C until 2.75 V cut-off voltage. If the discharge duration does not reach specified value, the test may be repeated up to three times in total	$\geq$ 90% of the nominal capacity
Cycle Life	After the charge according to 2.2.1, the battery stays for 1 hour. At 25 $\pm$ 5°C, discharge the battery at constant current 0.5 C until 2.75 V cut-off voltage. Then the battery stays for 1 hour. A cycle defined as one charge and discharge. This charge and discharge circle shall be repeated 500 times	The capacity at 500th cycle $\geq$ 80% of the nominal capacity
Electricity Preservation	After the charge according to 2.2.1, the battery stays at 20 $\pm$ 5°C for 28 days and then discharge at 0.2 C to 2.75 V cut-off	The discharge capacity 80% of the nominal capacity
High Temperature Performance	After the charge according to 2.2.1, store the testing cells at 60 $\pm$ 2°C for 4 hours. Then discharge at 1 C until 2.75 V cut-off voltage	The discharge capacity 90% of the nominal capacity
Low Temperature Performance	After the charge according to 2.2.1, store the testing cells at -20 $\pm$ 2°C for 16 to 24 hours. Then discharge at 0.2 C until 2.75 V cut-off voltage	The discharge capacity 60% of the nominal capacity
Short-circuit	After the charge at 2.2.1, short circuit the cathode and anode. Stop testing when battery temperature decays to about 10°C from the maximum temperature	No fire, no explosion
Overcharge	Put the testing batteries connecting with thermocouple in ventilated cabinet, connect the cathode and anode to a power supply with CC / CV (constant current / constant voltage) function. Adjust the current to 3 C and voltage to 4.6 V. Then charge the battery at 3 C until the limit voltage reaches 4.6 V. The charging continued for 8 hrs	No fire, no explosion