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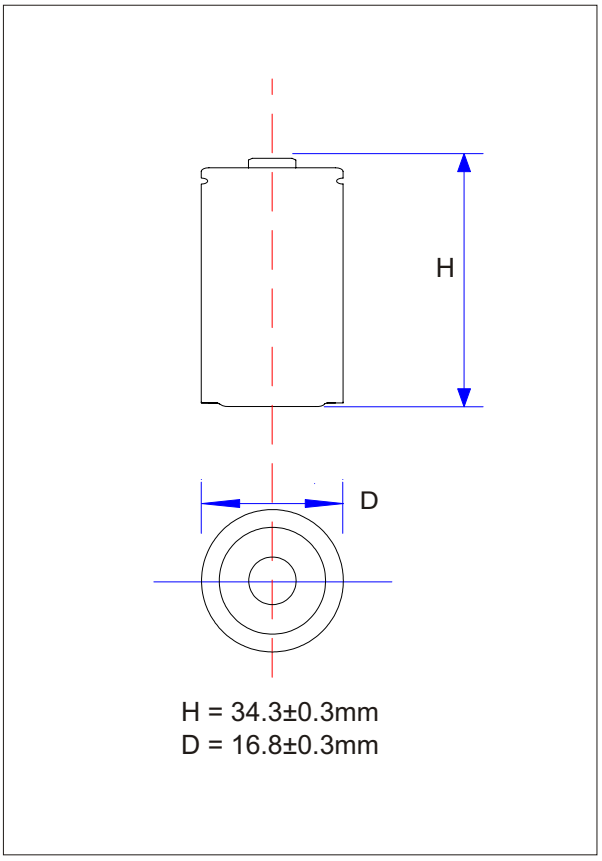
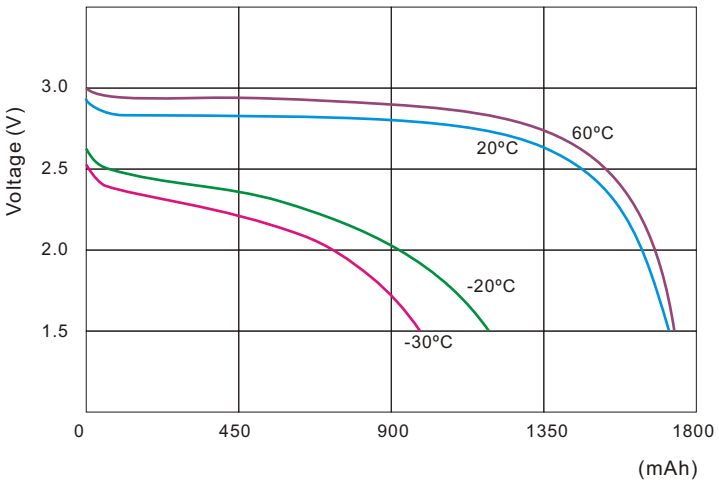
CR123A Specification

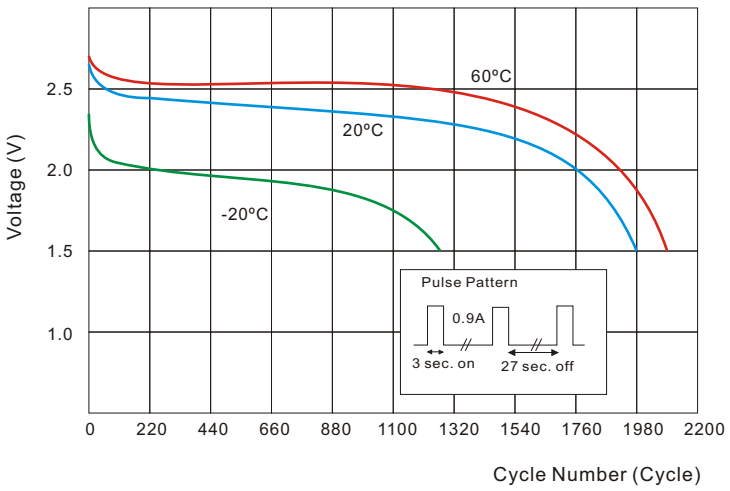
Lithium Manganese Dioxide Battery
(Li / MnO2) 3V,1600mAh



Temperature Characteristics (20mA)

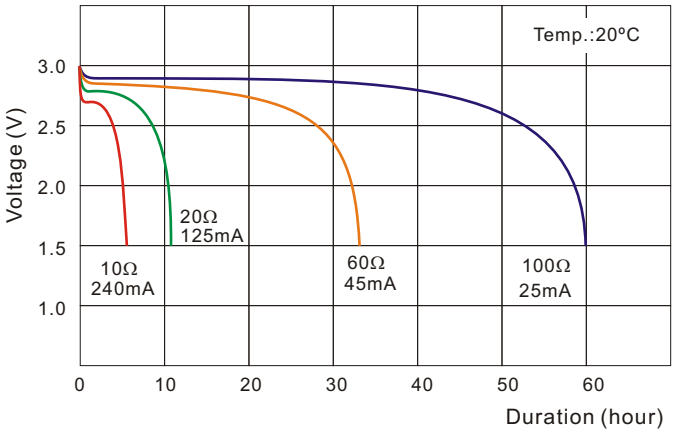


Pulse Discharge Characteristics



Nominal Voltage		3V
Nominal Capacity (mAh) (Base on standard drain and cutoff voltage down to 1.5V at 20°C)		1600mAh
Standard Discharge Current		20mA
Weight		16.3g
Maximum Dimension	Diameter	16.8±0.3mm
	Height	34.3±0.3mm
Max. Discharge Current	Continuous	1200mA
	Pulse	3000mA
Operating Temperature Range		-30°C - 60°C
Cut-off Voltage		1.5V

Typical Discharge Characteristics



**Note: The data in this document are for descriptive purposes only and subject to change without prior notice.

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1. Model Number	: CR-123A
2. Nominal Voltage	: 3 V
3. Nominal Capacity	: 1600 mAh (Nominal capacity is based on standard drain and cutoff Voltage down to 2.0V at 20℃)
4. Standard Discharge Current	: 20 mA
5. Max. Continuous Discharge Current	: 1200 mA (at 20℃)
6. Construction	
6.1 Appearance, Dimensions	: There shall be no noticeable deformation. The dimensions shall be according to the attached drawings.
6.2 Weight	: Approx. 16.3g
7. Performance	
7.1 Open Circuit Voltage	: Min. 3 V
7.2 Duration 1. (at 20±2℃)	
7.2.1 Pulse Discharge Conditions	: Population Mean ≥ 1900 cycles
Pulse Current	: 900 mA
One Cycle	: 3 seconds on, 27 seconds off
Cut Off V.	: 1.5 V
7.3 Duration 2. (at -20±2℃)	
7.3.1 Pulse Discharge Conditions	: Population Mean ≥ 1200 cycles
Pulse Current	: 900 mA
One Cycle	: 3 seconds on, 27 seconds off
Cut off V.	: 1.5 V
7.4 Vibration Resistance	: Deterioration of performance shall not occur.
7.5 Temperature Range	: Discharge -30 to 60℃ Storage -10 to 30℃
7.6 Leakage Resistance	: The battery shall not show leakage or salting which harms performance.
8. PTC (Positive Temperature Coefficient) Device Performance	
8.1 Appearance	: There shall be no noticeable deformation and/or scratches.
8.2 Resistance (for reference)	: The resistance shall be between 10 to 70 mΩ (no load). When 5 A flows, the resistance shall be more than 10 Ω before 80 seconds.

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9. Test Conditions, Measuring Instruments and Measuring Methods

9.1 Test Conditions : If not otherwise specified,
Temperature : 25±5℃
Humidity : 65±10%

9.2 Measuring Instruments

i) Volt Meter : Internal Impedance : More than 1MΩ
Accuracy : Less than 0.25%

ii) Battery Impedance Meter : Sine wave A,C,method ; 1 kHz 0.1mA
(National Digital milliohm Meter [VP-2811A])

iii) Caliper : Accuracy ; less than 0.25% by JIS

iv) Balance : Sensitivity ; More than 100 mg

v) Ohm Meter : Sine wave A.C.method ; 1 kHz 0.1mA
(National Digital milliohm Meter [VP-2811A])

9.3 Measuring Method

i) Outer Dimensions : This shall be measured with the caliper described in Item 9.2 iii).

ii) Weight : This shall be measured with the balance described in Item 9.2 iv).

iii) Appearance : Deformation or tarnish shall be visually checked.

iv) Open Circuit Voltage : This shall be measured with the volt meter described in Item 9.2 i).

v) Operating Time (Duration) : Operating time shall be measured with cycles until terminal voltage reaches the specified cut-off voltage.

vi) Battery Impedance : This shall be measured by the meter described in Item 9.2 ii).

vii) Vibration Resistance : Amplitude ; 2 mm
Number of Vibrations : 1000 rpm.
Directions ; X,Y,Z
Time ; 30 minutes in each direction

viii) Leakage Resistance : Heat cycle test
Leakage, appearance and outer dimensions shall be checked after 10 cycles according to MIL-STD-202E-106D.
The battery shall be kept in a dry place. It should not show any dew point when stored in this condition.

ix) PTC Device Performance : This shall be measured with the instrument described in Item 9.2 v).

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10. Precautions for use

1) A battery shall not be stored at temperatures in excess of 40℃. Storage at less than 30℃ is recommended. Storage at less than -40℃ can deform the plastic parts and may cause a leakage. To prevent self-discharge caused by corrosion, or decrease of insulation, humidity during storage shall be less than 70%.
2) The battery has an explosion resistant construction. But the following cautions should be taken because combustible materials such as lithium metal and organic electrolyte are contained in the battery.
   * Do not short circuit.
   * Do not dispose in fire.
   * Do not charge.
   * Do not disassemble.
3) Keep away from heat source of flame.
4) The battery shall not be washed by ultrasonic wave washer.

11. Warning

Fire and burn hazard. Do not recharge, short circuit, over discharge, crush, disassemble, heat above 80ºC or incinerate. Keep battery far away from children put them in orginal package until ready to use. Dispose of used bateries promptly.

12. Warranty

The period of warranty of our batteries are one year from the date of shipment under proper storage conditons or usage. Minamoto guarantees replacement in case the batteries are found to be defective due to manufacturing process instead of the customer abuse and misuse.

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