

Technical Product Specification

Cat : Nickel Metal Hydride Rechargeable
(Low Self Discharge series)
Model no. : MH750AAA-LC
Revision : A

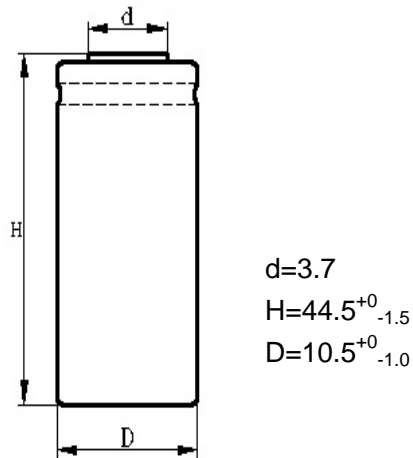
(1) Scope

This specification is applicable for Nickel Metal Hydride rechargeable battery, *Low Self Discharge type*, MH750AAA-LC.

(2) General information

| Characteristics | Specification | Remark | |
|-------------------------------------|--|--|---|
| Nominal Capacity | 750 mAh | 0.1C charge for 16 hrs 0.2C discharge till 1.0V | |
| Nominal Voltage | 1.2V | | |
| Charge current | Standard | 75mA | Temp: 0 ~ 40°C |
| | Fast | 375mA | Temp: 10 ~ 35°C |
| | Trickle | 0.03 ~ 0.05C | Temp: 0 ~ 40°C |
| Charge time | Standard | 16 hrs | |
| | Fast | 2.1 hrs | With proper charging control: -delta V = 5mV/cell DT/dt = 0.8~1°C/min |
| Standard discharge current | 150mA | Temp: -10 ~ 50°C 65 ± 20% RH | |
| Discharge cut-off Voltage | 1.0V / Cell | | |
| Max. discharge current | 2250mAh | | |
| Storage Temperature (°C) | 1 Year: -20 ~ 30°C | | |
| | 3 Months: -20 ~ 40°C | | |
| Internal Impedance (reference only) | 40 mΩ | Measure at 1k Hz | |
| Dimension | Diameter: 10.5 ⁺⁰ / _{-1.0} | | |
| | Height: 44.5 ⁺⁰ / _{-1.5} | | |
| Weight (for reference) | ~12.5 grams | | |

(3) Dimension



(4) Electrical Performance

Unless otherwise specified, tests should be conducted within one month of delivery under conditions of ambient temperature $20\pm 5^{\circ}\text{C}$ and relative humidity: $65\pm 20\%$

| Test Item | Test Conditions | Requirements |
|--|---|-------------------------|
| (1) Standard Charge | Charge for 16 hours at constant current of 0.1C after pre-discharge at the constant current of 0.2C until cut-off voltage of 1.0V | N/A |
| (2) Open-circuit Voltage | Voltage between terminals of the charged battery specified in item (1) is measured within 1 hour after standard charge | $\geq 1.25\text{V}$ |
| (3) Internal Impedance (reference only) | At 1k Hz internal impedance between terminals shall be measured within 1 hour after standard charge | $\sim 40\text{m}\Omega$ |
| (4) Capacity | Capacity of the charged battery specified in item (1) is measured by discharge the battery at 150mA until cut-off voltage of 1.0V after rest for 15 minutes. Up to 3 cycles is allowed. | $\geq 750\text{mAh}$ |
| (5) High Rate Discharge (0.5C) | Capacity of the charged battery specified in item (1) is measured by discharge the battery at 375mA until cut-off voltage of 1.0V after rest for 1 hour. Up to 3 cycles is allowed. | $\geq 637.5\text{mAh}$ |
| (6) Self discharge for 6 months storage | Standard charge as item# 1, store for 6 months at $15\sim 20^{\circ}\text{C}$, then capacity is measured with a discharge current of 375mA till 1.0V | $\geq 637.5\text{mAh}$ |
| (7) Self discharge for 12 months storage | Standard charge as item# 1, store for 12 months at $15\sim 20^{\circ}\text{C}$, then capacity is measured with a discharge current of 375mA till 1.0V | $\geq 600\text{mAh}$ |

| | | |
|---|---|---|
| (8) Leakage | After charging at 0.5C and storage for 14 days at room temperature | No leakage or deformation |
| (9) IEC cycle life | According to IEC61951-2 (2003) 7.4.1.1, see note 1 | ≥ 500 cycles |
| (10) Storage | Prior to this test, the cell should be discharged at a discharge current of 0.2C to cut off at 1.0V. The cell shall be stored on open circuit for 12 months. After completion of the storage period, standard capacity test shall be done. Up to five cycles are permitted. | ≥ 712.5mAh |
| (11) Charge recovery after over-discharging | Prior to this test, the cell should be discharged at a discharging current of 0.2C to a discharge cut-off voltage of 1.0V. Then combine the cell with a load of 1 Ohm and stored for 24 hours. After completion of the storage period, standard capacity test shall be done. Up to three cycles are permitted | ≥ 730mAh |
| (12) Vibration test | This means the endurance of the cell against vibrations. Frequency: 10 ~ 500Hz Vibration amplitude: 0.35mm peak or maximum 50m/s ² Axes of vibration: 3 mutually perpendicular axes Sweep cycles: 5 cycles Sweep speed: 1 octave per minute | No visible liquid leakage, venting or functional loss |
| (13) Drop test | This means endurance of the cell against drop. Height: 50cm Direction: not specified Surface: Wooden board 3cm thick No. of drops = 3 times | No visible liquid leakage, venting or functional loss |
| (14) Safety device operation | At ambient temperature of 20°C ± 5°C, discharge at 0.2C till 0V, increase the current to 1C for further 60 minutes | No explosion. But leakage or deformation is allowed |
| (15) Overcharging | The overcharge capacity is the discharge capacity of the cell measured with a discharge current of 0.2C within one hour after charging for 48 hours at 0.1C | ≥ 750mAh No leakage |

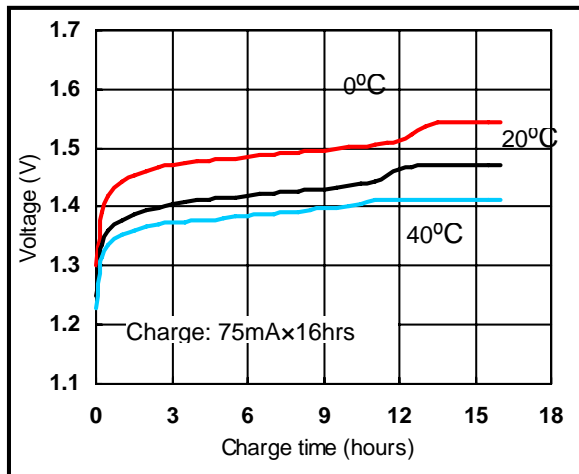
* Note 1: IEC61951-2 (2003) 7.4.1.1 Cycle life

| Cycle no | Charge | Rest | Discharge |
|----------|-----------------|------|----------------------|
| 1 | 0.1C X 16h | None | 0.25C X 2h20min |
| 2-48 | 0.25C X 3h10min | None | 0.25C X 2h20min |
| 49 | 0.25C X 3h10min | None | 0.25C to 1.0V / cell |
| 50 | 0.1C x 16h | 1-4h | 0.2C to 1.0V / cell |

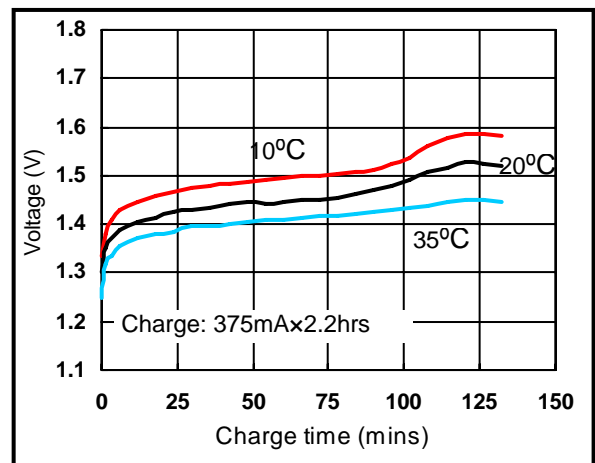
Cycles 1 to 50 shall be repeated until the discharge duration of any 50th cycles becomes less than 3hrs

(5) Typical characteristic curves

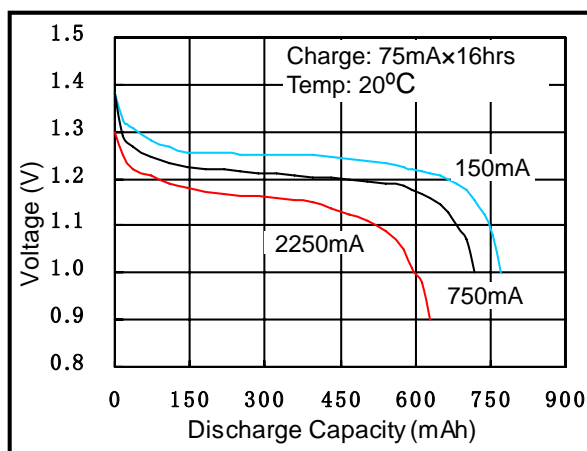
● Standard charge characteristics



● Fast charge characteristics



● Discharge characteristics



(6) Caution

- ✚ Do not reverse charge
- ✚ Charge before use. The cells/batteries are delivered in an uncharged state
- ✚ Do not charge/discharge at conditions outside our specified limits
- ✚ Do not short circuit the cell/battery. Permanent damage to the cell/battery may be resulted
- ✚ Do not incinerate or mutilate the cell/battery
- ✚ Do not solder directly to the cell/battery
- ✚ The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge
- ✚ Do not mix different cell types or capacities in the same battery assembly
- ✚ Store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.
- ✚ Once problems being found, stop using and contact our sales representative
- ✚ It is strongly recommended to store cells in temperature range from -20°C to 35°C, and in low humidity and no corrosive gas environment, to maintain a reasonably high capacity recovery level
- ✚ Avoid store at higher (e.g. 35°C), lower (-20°C), or higher humidity which would result in deterioration or damage to the cells as follows:
 - Permanent capacity loss
 - Electrolyte leakage resulted from expansion or shrinkage of organic material inside cells
 - Rust of metal parts
- ✚ Up to three cycles of charge/discharge after long-term storage may need to obtain highest capacity