

Data Sheet for TY-9V-250MAH

System	Sealed rechargeable Ni-MH Battery
Type	LH025-H7C
Specification	AAAAA×7
Nominal voltage	8.4V
Dimension (including shrink sleeve/label)	
Length, L	48.5 (±0.5mm)
Width, W	26.5 (±0.5mm)
Thickness, T	15.7 (±0.5mm)
Weight approx.	40g(for reference only)
Capacity (20°C, 0.2 C to 7.00V)	
Typical	260 mAh(for reference only)
Min.	250 mAh
Max. discharge current (continuous)	750 mA
Charging conditions (20°C)	
Standard charge	25 mA15 hrs
Quick charge*	75 mA 5hrs
Fast charge*	up to 250 mA
(dT/dt**, -ΔV controlled***)	
Max. overcharge current	25 mA (up to 100hrs)
Permanent charge	8 mA to 12 mA

*ask for special info.

**0.8-1 °C /min

***-ΔV≤5mV/cell

Operation temperatures (recommended)

Storage	-20 °C to +35 °C
Discharge	-20 °C to +60 °C
Standard charge	0 °C to +45 °C
Fast charge	+10 °C to +40 °C
Permanent charge	-10 °C to +35 °C

1. CHARACTERISTICS

Test Items	Test Conditions	Requirements
(0) Standard test conditions	Measurements shall be carried out at $20 \pm 5^{\circ}\text{C}$ and relative humidity of $65 \pm 20\%$ unless otherwise specified. Accuracy of voltmeters and ammeters to be used in testing shall be equal to or better than the grade 0.5.	
(1) Standard charge	Charge shall be conducted continuously at the constant current of 0.1 It for 15 hours, after Pre-discharge at the constant current of 0.2 It until the end voltage of 1.0V/cell	
(2) Fast charge	Charge shall be conducted continuously at the constant current of 1.0It until termination by $-\Delta V=5\text{mV/cell}$ or charge capacity limited of 1.2 It, after Pre-discharge mentioned in Item (1).	
(3) Open-circuit voltage (OCV)	Voltage between the battery terminals shall be measured within 14 days after standard charge specified in Item (1).	OCV: $\geq 1.25\text{ V}$
(4) Capacity	Discharge duration of the charged battery specified in Item (1) shall be measured at 0.2 It until the end voltage of 1.0V/cell, after rest for 1 hour. If the discharge duration does not reach the specified value, the test may be repeated up to three times in total.	Discharge time: ≥ 300 minutes
(5) Capacity high-rate discharge	Discharge duration of the charged battery specified in Item (2) shall be measured at 1.0 It until the end voltage of 1.0V/cell, after rest for 1 hour. If the discharge duration does not reach the specified value, the test may be repeated up to three times in total.	Discharge time: ≥ 50 minutes
(6) IEC cycle life	IEC61951-2/2001 See Remark 1	≥ 500 cycles
(7) Over-charge	Charge at 0.1 It for 48 hours. Then Rest for 1 hour, and discharge duration shall be measured at 0.2 It until the end voltage of 1.0V/cell.	No leakage, no disrupt, no burst. Discharge time: ≥ 300 minutes
(8) Over - discharge	Discharge shall be conducted with constant load resistor equal to 0.2It for 24 hours after capacity test specified in Item (4) and discharge duration of the charged battery specified in Item (1) is measured at 0.2 It up to the end voltage of 1.0V/cell	Discharge time: ≥ 240 minutes
(9) Temperature	1) Discharge shall be conducted at 1.0It until the end voltage of 1.0V/cell for the battery stored for 3 hours under the following temperature, after the fast charge specified in Item(2) at 20°C . a) discharge temperature 0°C b) discharge temperature 20°C c) discharge temperature 40°C	Discharge time: ≥ 40 minutes ≥ 50 minutes ≥ 45 minutes

	<p>2) Discharge shall be conducted at 1.0It until the end voltage of 1.0V/cell for the battery stored for 3 hours under 20°C</p> <p>the fast charge specified in Item (2) at the following temperature</p> <p>a) charge temperature 10°C</p> <p>b) charge temperature 20°C</p> <p>c) charge temperature 40°C</p>	<p>Discharge time:</p> <p>≥50 minutes</p> <p>≥50 minutes</p> <p>≥45minutes</p>
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Test Items	Test Conditions	Requirements
(10) Self-discharge	The charged battery specified in Item (1) shall be stored for 28 days at 20°C and then the duration of discharge at 0.2 It until the end voltage of 1.0V/cell shall be measured.	Discharge time: ≥210minutes
(11) Storage	The capacity test specified in Item (4) shall be conducted after storage of either the charged status battery or the discharged battery specified in Item (1), for 30 days at 20°C. Then discharge duration of the charged battery specified in Item (2) shall be measured at 1.0 It until the end voltage of 1.0V/cell.	Discharge time: ≥300 minutes
(12) Drop test	The battery shall be subjected to a drop from the height of 100 cm to an oak board more than 20 mm thick, the test shall be carried out 3 times for each direction of the battery axis. Then after 30 mins, the resistance and voltage shall be measured. The capacity test specified in Item (4) shall be conducted too.	<p>1. The battery shall not explode. Electrolyte leakage and deformation of battery are acceptable.</p> <p>2. Discharge time: ≥300 minutes</p>
(13) Safety	<p>Safety vent operation</p> <p>The Reverse-charge is conducted for 60 minutes at the constant current of 1.0 It after pre-discharge at the constant current of 0.2 It up to the end voltage of 0V/Cell.</p>	<p>Safety vent shall operate.</p> <p>The battery shall not explode. Electrolyte leakage and deformation of battery are acceptable</p>

***REMARK:** 1. Cycle life: IEC61951-2(2001)

Cycles	Charge	rest	Discharge
1	0.1I _t × 16hrs	0	0.25 I _t × 2hrs 20mins
2~48	0.25 I _t × 3hrs 10mins	0	0.25 I _t × 2hrs 20mins
49	0.25 I _t × 3hrs 10mins	0	0.25 I _t to 1.0V/cell
50	0.1 I _t × 16hrs	1~4h	0.20 I _t to 1.0V/cell
Repeat 1 to 50 cycles, until the discharge time of a 50 th cycle is less than 3hrs			

2. COSMETIC

Batteries should be without any flaw、 stain、 discoloration or electrolyte leakage and deformation.

3. NOTE:

3.1 Do not dispose of cell into fire or dismantled under any condition.

3.2 Do not mix different cell types and capacities in the same battery assembly.

3.3 Charge and discharge under specified ambient temperature recommend to TYSONIC specification

3.4 Short circuit leading to cell venting must be avoided.

3.5 Never solder onto cell directly.

3.6 Cell reversal should be avoided.

3.7 Use batteries in extreme condition may affect the service life, such as: extreme temperature 、 deep cycle、 extreme overcharge and over discharge.

3.8 Batteries should be stored in a cool, dry place

3.9 Once problems be found, stop using, send batteries to local agent.

4. STORAGE:

4.1 It is strongly recommended to stored Ni-MH batteries and cells in the 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.

4.2 Avoid storage higher (e.g. 35°C), lower temperature than -20°C , or higher humidity which would result in deterioration or damage to the cells and batteries such as follows:

- . Permanent capacity loss
- . Electrolyte leakage resulted from the expansion or shrinkage of organic material inside the cells.
- . Rust of metal parts.

4.3 Up to three full cycles of charge/discharge after long-term storage may need to obtain highest capacity.

5. REFERENCE:

Please refer to our responsible division in charge as below if any question on using batteries.