



Specification Approval Sheet

Name: Nickel Metal Hydride Battery

Model: 10514

SPEC: Ni-MH SCP 1.2V 5000mAh

Approved By	Checkup	Make
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2012-3-13	2012-3-13	2012-3-12

Customer Confirmation	Signature	Date
	Company Name :	
	Stamp :	

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Amendment Records

Revision	Description	Issued Date	Approved By
A0	New release	2012-3-12	



1 Application

This specification applies to the Nickel-Metal Hydrides Cylindrical Cell.

Model: Ni-MH SCP 1.2V 5000mAh

Cell type: SC

2 Ratings

Form1: Battery rated performance

No	Description	Specification	Conditions
1	Nominal voltage	1.2 V	
2	Nominal capacity	5000mAh	Standard Charge/Discharge
3	Minimum capacity	4600mAh	Standard Charge/Discharge
4	Standard charge	460mA (0.1C) × 16 hrs	Ta=0~40°C
5	Rapid charge	0.5C×2.1hrs approx.	-ΔV= 5mV/cell
6	Trickle charge	0.05C-0.1C	Ta=0~40°C
7	Standard discharge	920mA (0.2C)	Ta=0~60°C
8	Discharge cut-off voltage	1.0V	
9	Maximum discharging current	30A (Cut-off voltage 0.9V)	Discharge time ≥8.8min
10	Storage temperature	≤1 month -20°C~45°C	The best temperature range is 10°C-25°C
		≤3 months -20°C~40°C	
		≤1 year -20°C~30°C	
11	Typical weight(approximate)	69.0g	

3 Performance

3.1 Test conditions

Unless otherwise stated, tests should be done within one month after receipt under the following conditions

Ambient temperature ,Ta: 20±5°C and

Relative humidity: 65±20%

Notes: Standard charge/discharge conditions:

Charge: 0.1C × 16 hrs

Discharge: 0.2C to 1.0V/cell

3.2 Test method & performance

Form2: Test method & performance

No	Test	Conditions	Specification
1	Capacity	Standard charge/discharge	≥4600mAh
2	Internal impedance (Ri)	Upon fully charge(1000Hz)	≤6mΩ
3	Charge retention	Standard Charge, Storage: 28 days, Standard Discharge	≥60%
4	IEC cycle test	IEC 61951-1: 2003(see below note)	≥500 Cycle



Note:

Form3:IEC 61951-2: 2003 Cycle life test

Cycle number	Charge	Rest	Discharge
1	0.1C×16hrs	None	0.25C× 2hrs20mins
2-48	0.25C× 3hrs10mins	None	0.25C×2hrs20mins
49	0.25C× 3hrs10mins	None	0.25C× 1.0V/cell
50	0.1C×16hrs	1-4hr(s)	0.2C×1.0V/cell
Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3hrs			

Form4: Safety test

No	Test	Conditions	Specification
1	Leakage	Fully charged at 0.5C, Stand for 14 days	No leakage no deformation.
2	Overcharge	0.1C charge for 48 hrs	No leakage No explosion
3	External Short Circuit	After standard charge, short circuit the cell(s) at 20+/-5°Cuntil the cell(s) temperature returns to ambient temperature (The resistance of the inter-connecting circuitry shall not exceed 0.1ohm).	No fire and no explosion.
4	Vibration Resistance	Charge the battery 0.1C 16hrs, then leave for 24hrs, check battery before/after vibration, Amplitude: 1.5mm Vibration: 3000CPM Any direction for 60mins.	Change of voltage Should be under 0.02V/cell, Change of impedance should be under 5 milli-ohm/cell.
5	Impact Resistance	Charge the battery 0.1C 16hrs, then leave for 24hrs, check battery before/after dropped, Height: 100cm Wooden board (thickness 30mm) Direction not specified 3times.	Change of voltage should be under 0.02V/cell, Change of impedance should be under 5 milli-ohm/cell.

4 Assembly & dimension

As per attached drawing.

5 External appearance

The cell / battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

6 Warranty

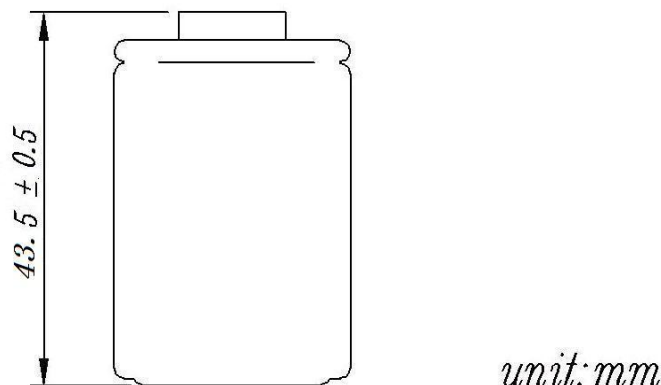
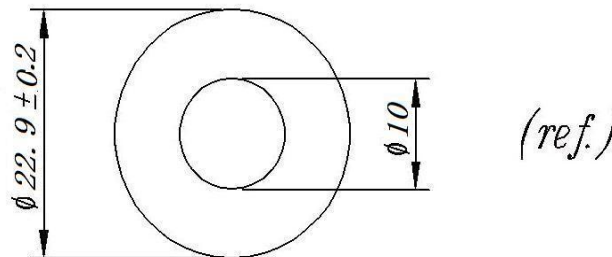
One year limited warranty against workmanship and material defects.

7 Caution

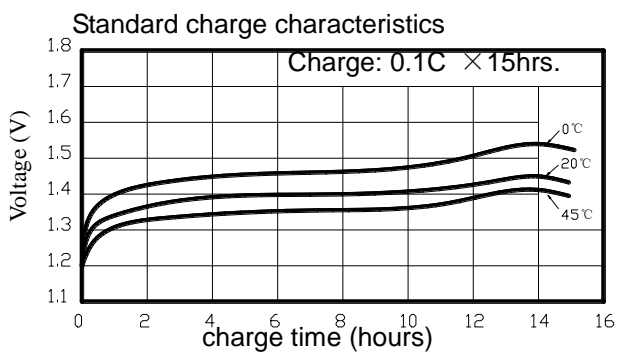
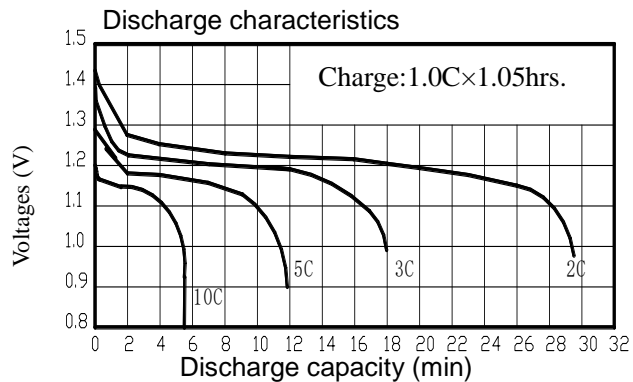
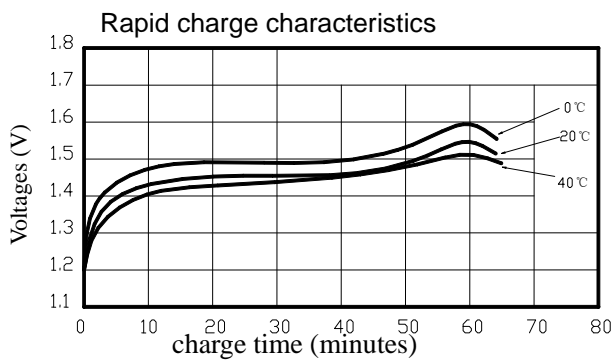
7.1 Reverse charging is not acceptable.

- 7.2 Charge before use. The cells / batteries are delivered in an uncharged state.
- 7.3 Do not charge / discharge with more than the specified current.
- 7.4 Do not short circuit the cell / battery. Permanent damage to the cell / battery may result.
- 7.5 Do not incinerate or mutilate the cell /battery.
- 7.6 Do not solder directly to the cell /battery.
- 7.7 The life expectancy may be reduced if the cell / battery are subjected to adverse conditions like: extreme temperature, deep cycling, excessive overcharge / over discharge.
- 7.8 Store the cell / battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.
- 7.9 For storage of cells/ batteries over three months, in order to prevent the degrading of the function of cells, cells /batteries should be at least charged and discharged once trimester.
- 7.10 Keep away from children. If swallowed, contact a physician at once.
- 7.11 Air ventilation should be provided in the plastic case of batteries, otherwise it may have a risk of accumulating gas(oxygen gas, hydrogen gas) generated inside the cell resulting in explosion triggered by fire sources (motors or switches).Airtight battery compartments are strongly discouraged.

8 Battery Drawing



9 Performance curve



Charge retention curves of Ni-MH cylindrical cell At various storage temperature

