

日期 Date: 2014.07.13

文件编码 Document NO.

版本 Rev

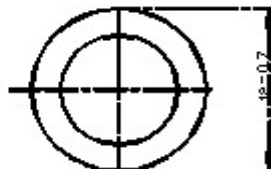
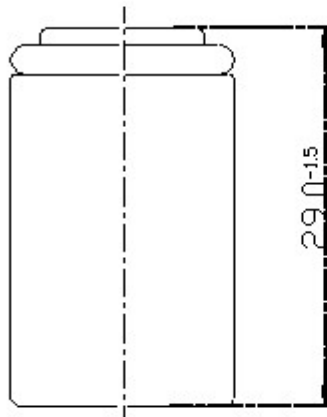
1

页 Page

共 4 页 第 1 页 page 1 of 4

1. SPECIFICATIONS:

Type	Sealed Ni-MH Cylindrical Battery cell
Size	H500 2/3N
Model	N
Nominal Voltage	1.2V
Nominal Capacity (20°C, 0.2CA discharge to 1.0V)	500 mAh
Typical Capacity	520 mAh
Minimum Capacity	450 mAh
Typical Internal Impedance(at 1 kHz)	$\leq 35m\Omega$
Average Weight	10.3g
Dimensions(including PVC tube)	
Diameter(Φ) :	$12.0^{+0.7}mm$
Height(H)	$29.0^{+1.5}mm$
Charging Method (20°C):	
Standard Charge:	Charge with 0.1CA(50 mA) for 14-16 h
Quick Charge:	Charge with 0.3CA (150 mA) for 4.5 h
Fast Charge:	Charge with 1.0CA (500mA) for 72 min (Under $-\Delta V$ controlled 10mV)
Max Overcharge Current	0.1CA (50mA)(No longer than 100 h)
Trickle Current	15~25mA
Operating Temperature(reference only):	
Storage	$-20^{\circ}C \sim +35^{\circ}C$
Discharge:	$-20^{\circ}C \sim +60^{\circ}C$
Standard Charge	$0^{\circ}C \sim +45^{\circ}C$
Fast Charge	$+10^{\circ}C \sim +45^{\circ}C$



日期 Date: 2014.07.13

文件编码 Document NO.

版本 Rev

1

页 Page

共 4 页 第 2 页 page 2 of 4

2,Performance

Testing Item	Testing Conditions	Standard
Standard Testing Condition	If not specially described, Temperature $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ Relative Humidity: $65\pm 20\%$ 。 Precision measuring instruments: $\pm 1\%$ for voltage/current/capacity; $\pm 2^{\circ}\text{C}$ for temperature; $\pm 0.1\%$ for time。	
Standard Charge	0.2CA discharge to 1.0V, then 0.1CA charge for 14-16 h (Constant Current)	
(2) Fast Charge	0.2CA discharge to 1.0V, then 1.0CA charge for 72 min (Under $-\Delta V$ controlled 10mV)	
(3) Open Circuit Voltage	Test within 14 days after standard charge	$\geq 1.25\text{V}$
(4) Nominal Capacity	Have 1-4 h of rest after standard charge, then 0.2CA discharge to 1.0V, 3 cycles permitted	≥ 300 min
(5) High Rate Discharging Capacity	Have 1-4 hours of rest after fast charge, Then 1.0CA discharge to 1.0V, 3 cycles permitted	≥ 54 min
(6) Cycle Life	1) 0.2CA Charge for 7.5 h, have 30 min rest, then 0.2CA discharge to 1.0V, for 3 cycles, then rest as following condition: 1.0CA charge for 1.2 hours, 30 min rest; 1.0CA discharge to 1.0V, 30 min rest.	60% nominal capacity can be attained at the 300th cycle
	2) ※for IEC61951-2: 2003(7.4.1.1)	≥ 500 cycles
(7) Overcharge	After (4) testing, 0.1CA charge for 48 h, check cell surface, 0.2CA discharge to 1.0V/cell.	No deformation or leakage can be found, and ≥ 270 min
(8) Over-Discharge Safety device operation	The cell shall under go a forced discharge in an ambient temperature $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, at a constant current of 0.2CA, to a final voltage of 0V. The current shall then be increased to 1.0CA and the forced discharge continued in the same ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, for 60min.	The cell shall not disrupt or burst, Leakage of electrolyte and deformation of the cell are acceptable
(9) Temperature	Fast charged as (2) under $20\pm 5^{\circ}\text{C}$, stored 3 hours, under following temperatures, then 1.0CA discharge to 1.0V: a) Discharging Temperature: 0°C b) Discharging Temperature: 20°C c) Discharging Temperature: 40°C	Discharging Time 45 min 50 min 45 min
(10) Charge (capacity) retention (Self-discharge)	After standard charge, stored for 28 days under $20\pm 5^{\circ}\text{C}$, then 0.2CA discharged to 1.0V	Discharging Time ≥ 190 min
(11) Storage	Standard Charged as (1) condition and stored for 12 months under $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, then tested as (4) condition	Discharging Time ≥ 240 min

日期 Date: 2014.07.13

文件编码 Document NO.	版本 Rev	1	页 Page	共 4 页 第 3 页 page 3 of 4
(12)Humidity	Standard charged and stored under RH of 65±20%.			No deformation or leakage found
(13)Vibration	Vibration in any direction at amplitude of 4 mm and A frequency of 1000 cycles per minute and continue for 60 min.			The battery shall conform electrical spec, mechanical deformation or damage is acceptable
(14)Drop	The battery shall be subjected to drop from the height of 100cm to an oak board more than 10mm thick, the test should be carried for 3 times at each direction of the battery axis.			
(15)Safety	(1)External short: Fast Charged and then short-circuited between terminals of the battery by the lead wire with the cross section area of 0.75 square millimeter.			The battery shall not explode, but electrolyte leakage or deformation of the battery is acceptable.
	(2)Over charge: Charge for 5 h at the constant current of 1.0C.			
	(3)Reverse charge: Reverse charge for 5 h at the constant current of 1.0C.			
	(4)Safety vent operation: The reverse-charge is conducted for 30 min at the constant current of 1.0CA.after pre-discharge at the constant current of 0.2CA up to the end voltage of 0V/Cell.			Safety vent shall Operate,The battery shall not explode, electrolyte leakage or deformation of the battery is acceptable.

3. Note:

- 1).Do not dispose of cell into fire or be dismantled under any condition.
- 2).Do not mix different cell types and capacities in the same battery assembly.
- 3).Charge and discharge under specified ambient temperature recommended to CT specification.
- 4).Short circuit leading to cell venting must be avoided .
- 5).Never solder onto cell directly.
- 6).Cell reversal should be avoided.
- 7).Use batteries in extreme condition may affect the service life, such as:extreme temperature, deep cycle, extreme overcharge and over discharge.
- 8).Batteries should be stored in a cool dry place.
- 9).Once problems be found, stop using , send batteries to local dealer.

4,Storage

- 1).It is strongly recommended to store Ni-MH batteries and cells in the temperature range from -20 to 25℃ ,and in low humidity and no corrosive gas environment, to maintain a reasonably high capacity recovery level.
- 2). Avoid storage higher (e.g.35℃),lower temperature than -20℃ ,or higher humidity which would result in deterioration or damage to the cells and batteries such as follows:

5, Permanent capacity loss

Electrolyte leakage resulted from the expansion or shrinkage of organic material inside the cells

6, Rust of metal parts

日期 Date: 2014.07.13

文件编码 Document NO.

版本 Rev

1

页 Page

共 4 页 第 4 页 page 4 of 4

7, Up to three full cycles of charge /discharge after long-termed storage may need to obtain highest capacity.

8. Quality assurance period: 12 months.

※IEC61951-2: 2003(7.4.1.1) Endurance in cycles

Cycle number	Charge	Stand in charged condition	Discharge
1	0.1CA (50mA) for 16 h	none	0.25CA (125mA) for 2 h 20 min
2-48	0.25CA (125mA) for 3 h 10 min	none	0.25CA (125mA) for 2 h 20 min
49	0.25CA (125mA) for 3 h 10 min	none	0.25CA (125mA) to 1.0 V
50	0.1CA (50 mA) for 16 h	1 h to 4 h	0.2CA (100mA) to 1.0 V

Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes Less than 3 h. At this stage, a repeat capacity measurement as specified for cycle 50 shall be carried out.

The endurance test is considered complete when two successive capacity measurement cycles give a discharge duration of less than 3h. The number of cycles obtained when the test is completed shall be not less than 500.

