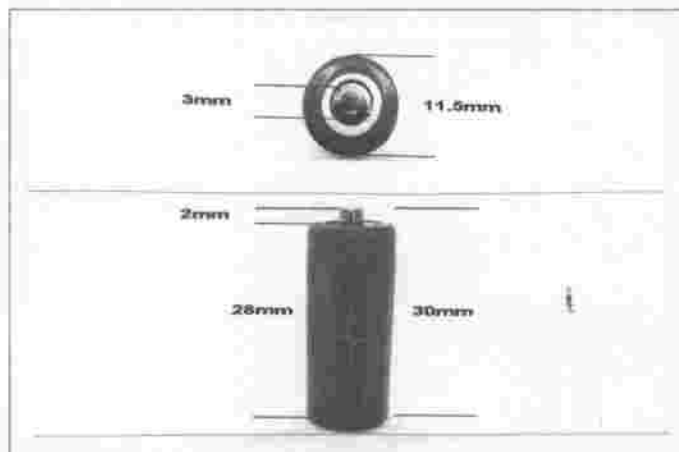


## 1. SPECIFICATIONS:

Type	Sealed Ni-MH Cylindrical Battery cell
Size	H2/3N500
Model	H2/3N
Nominal Voltage	1.2V
Nominal Capacity (20°C., 0.2CA discharge to 1.0V)	500 mAh
Typical Capacity:	520 mAh
Minimum Capacity:	480 mAh
Typical Internal Impedance(at 1 kHz )	Max: 35mΩ
Average Weight	9.60g
Dimensions(including PVC tube)	
Diameter(Φ) :	12.0 <sup>-0.7</sup> mm
Height(H)	29.0 <sup>-1.0</sup> 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 - Δ V controlled10mV )
Max Overcharge Current	0.1CA (50mA)(No longer than 100 h)
Trickle Current	15~25mA
Operating Temperature(reference only):	
Storage	-20°C ~ +35°C
Discharge:	-20°C ~ +60°C
Standard Charge	0°C ~ +45°C
Fast Charge	+10°C ~ +45°C



Approved by:

Documented by:

Date:

● Subject to be modified without prior notice

## 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: $65\pm 20\%$ 。 Parament measuring instruments: $\pm 1\%$ for voltage/current/capacity; $\pm 2^{\circ}\text{C}$ for temperature; $\pm 0.1\%$ for time.	
(1)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	$\geq 300$ 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	$\geq 54$ min
(6)Cycle Life	※for GB/T 22084.2-2008/IEC61951-2: 2003 (7.4.1.1) Endurance in cycles	$\geq 500$ cycles
(7)Overcharge	After(4) testing, The cell shall be charge ,in an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ ,at a constant current of 0.1CA for 48 h,After this charging operation ,the cell shall be stored , in an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ ,for not less then 1 h and not more then 4 h. The cell shall then be discharge ,at $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ at a constant current of 0.2CA to a final vottage of 1.0V.	$\geq 300$ min
(8)Over-Discharge Safety device operation	The cell shall undergo aforced discharge in an ambient temperature $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ ,at a constant current of 0.2CA, to a final volatge 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: $0^{\circ}\text{C}$ b)Discharging Temperature: $20^{\circ}\text{C}$ c)Discharging Temperature: $40^{\circ}\text{C}$	Discharging Time 50 min 54 min 50 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 $\geq 210$ 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 $\geq$ 240 min
(12)Mechanical test : bump test	1)The battery shall be subjected to drop from the height of 1 m to an oak board more than 1 cm thick,the test should be carried for 3 times at each direction of the battery axis.	Battery maintain electrical performance, allowing a mechanical deformation or injury
	2) The ability of the cell to withstand mechanical Shock shall be checked by means of bump test carried out in accordance with IEC 60068-2-29. After standard charge, The bump test shall be changed carried out in an ambient temperature of $20 \pm 5^{\circ}\text{C}$ , under the following conditions: -peak acceleration(A) 98m/s <sup>2</sup> (10gn) -corresponding duration to pulse(D) 16ms -corresponding velocity charge 1,00ms -number of bumps 1000 $\pm$ 10 When the bump test has been completed,each cell shall be stored for not less than 1 h and not more than 4 h in an ambient temperature of $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ,It shall then be discharge in the same ambient temperature with a constant current of 0.2CA to a final volatge of 1.0V	$\geq$ 300 min.

## 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 the 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 overhcharge 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  $25^{\circ}\text{C}$  ,and in low humidity and no corrosive gas environment,to maintain a reasonably high capacity recovery level.
- 2). Avoid storage higher (e.g. $35^{\circ}\text{C}$ ),lower temperature than  $-20^{\circ}\text{C}$  ,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.

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.

## ※GB/T 22084.2-2008/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

a) If the cell volatge drops below 1,0V,discharge may be discontinued.

b) It is permissible to allow sufficient open-circuit rest time after the completion of dis charge at cycle 50, so as to start cycle 51 at a convenient time. A similar procedure may be adopted at cycles 100,150,200,250,300,350,400 and 450.

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 such successive capacity cycles give a discharge duration of less than 3 h. The total number of cycles obtained when the test is completed shall be not less than 500

