Revision：4.0

Product Specification

Product Model: Nickel-Cadmium Battery

Product Type: J-2/3AA400

Draw up： Technical Department

Date： 11/28/2007

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1、 SCOPE

This specification governs the performance of the following Nickel-Cadmium cylindrical cell and its stack-up battery.

Model： 2/3AA400

Cell Size：2/3AAcrew cut(13.9±0.1×28.1±0.5)mm

2 、DATA OF STACK UP BATTERIES

All data involve voltage and weight of stack-up batteries are equal to the value of unit cell multiplied by the number of unit cell which consisted in the stack-up batteries.

Example ： Stack-up batteries consisting three unit cells

Nominal voltage of unit cell=1.2V

Nominal voltage of stack-up batteries =1.2V×3=3.6V

3、 RATINGS

Description	Unit	Specification	Condition
Nominal Voltage	V/cell	1.2	Unit cell or stack-up batteries
Nominal Capacity	mAh	400	Standard Charge/Discharge
Standard Charge	mA	40 (0.1C)	T_1=20±5℃(See Note 1)
	hour	14~16	
Fast Charge	mA	400 (1C)	-△V=0~15mV/cell , Timer Cutoff=120%nominal capacity , Temp.Cutoff=55℃, dT/dt=0.8℃/min，T_1=20±5℃
	hour	1.2 approx (See Note 2)	
Trickle Charge	mA	(0.03C)~(0.05C)	T_1=20±5℃
Standard discharge	mA	80 (0.2C)	T_1= 20±5℃ Humidity：Max85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	℃	-20~30(Within 1 year)*	Discharged state Humidity：Max85%
		-20~40(Within 6 months)	
		-20~50(Within 1 month)	
		-20~60(Within 1 week)	
Typical Weight	Gram	10.5	unit cell

*To keep the best performance for those not used for a long time,we recommend to charge and discharge the cells/batteries at least once in every 6 months.

4、 PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions：

Ambient Temperature ： 20±5℃

Relative Humidity ： 65±20%

Notes： Standard Charge/Discharge conditions：

Charge： 40 mA(0.1C)× 14 hours

Discharge： 80 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
Capacity	mAh	≥ 400	Standard Charge / discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V	≥ 1.25	Within l hour after standard charge	
Internal Impedance	mΩ	≤ 35	Upon fully charged(lKHz)	
High Rate Discharge(1C)	min	≥ 51	Standard Charge, l hour rest before discharge by 1C to 1.0V/cell	up to 3 cycles are allowed
Charge Retention	mAh	≥ 260（65%)	Standard Charge,Storage：28 days,Standard Discharge	T_1=20±5℃
IEC Cycle Life	Cycle	≥500	IEC61951-1(2003)7.4.1.1	see Note 3
Leakage		No leakage nor deformation	Fully charged at 40 mA for 28 days	
Vibration Resistance		Change of voltage should be less than 0.02V/cell,change of impedance should be less than 5milliohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after vibration,amplitude 1.5mm,vibration 3000 CPM,any direction for 60mins.	
Impact Resistance		Change of voltage should be less than 0.02V/cell,change of impedance should be less than 5milliohm/cell	Charge the battery at 0.1C for 14hrs,then leave for 24hrs,check battery before/after dropped,height 50 cm wooden board(thickness 30mm)direction not specified,3 times.	

5、CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

6、EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage or deformation.

7、WARRANTY

One year limited warranty against workmanship and material defects.

8、CAUTION

[1]Reverse charging is not acceptable.

[2]Charge before use. The cells/batteries are delivered in an uncharged state.

[3]Do not charge/discharge with more than our specified current.

[4]Do not short circuit the cell/battery Permanent damage to the cells/batteries may result.

[5]Do not incinerate or mutilate the cells/batteries.

[6]Do not solder directly to the cells/batteries.

[7]The expected life may be reduced if the cells/batteries are subjected to adverse conditions as: extreme temperature, deep cycling, excessive overcharge/ over-discharge.

[8]Store the cells/batteries in a cool dry place. Always discharge batteries before packing.

Notes：

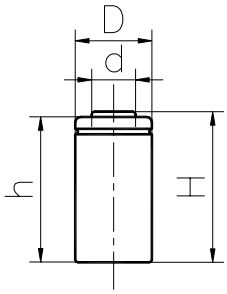
(1) T_1: Ambient Temperature.

(2) Approximate charge time from discharged state, for reference only.

(3) IEC61951-1(2003)7.4.1.1 Cycle Life:

Cycle No.	Charge	Rest	Discharge
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25C×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V/cell
50	0.1C×16h	1-4h	0.2C to 1.0V/cell
Cycle l to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 h.			

MODEL No: J-2/3AA400 **Description:** 400 mAh SIZE NI-Cd AA

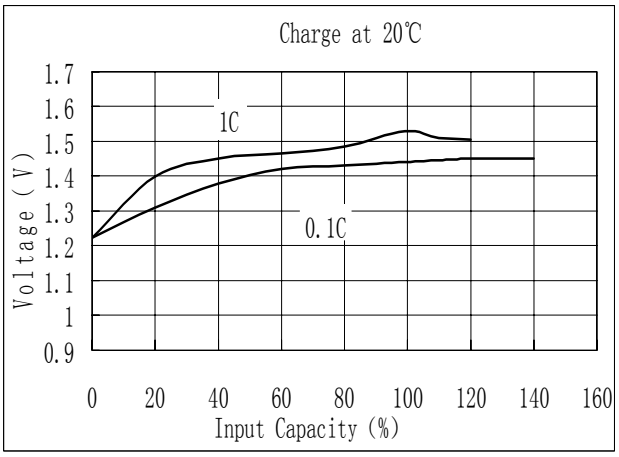


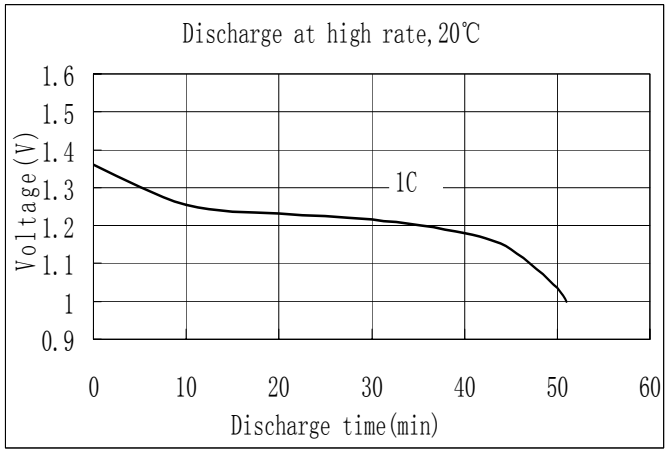
Dimensions(without Tube) (mm)

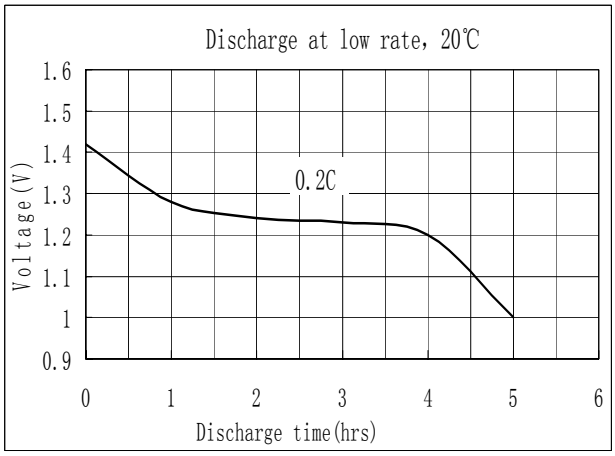
D	13.90±0.10
d	8.10±0.08
H	28.10±0.50
h	27.50±0.50

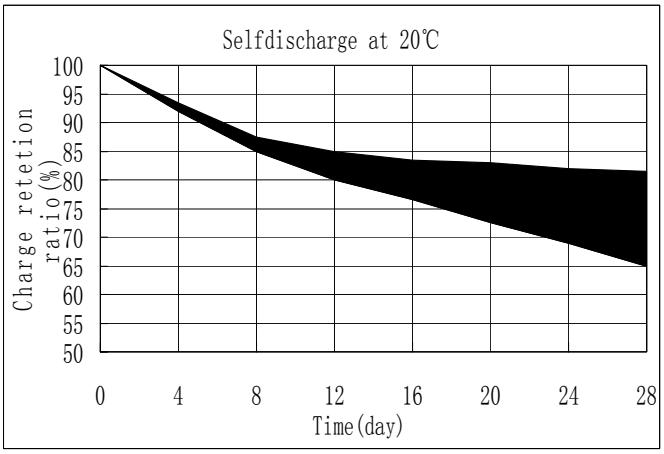
Specification

Nominal Capacity			400 mAh
Nominal Voltage			1.2 V
Charge current		Standard	40 mA
		Fast	400 mA
Charge time		Standard	14~16 Hrs
		Fast	1.2 Hrs
Ambient Temperature	Charge	Standard	0℃~45℃
		Fast	10℃~45℃
	Discharge		-30℃~60℃
	Storage		-20℃~60℃
Internal Impedance(mΩ) (After Charge)			≤ 35
Weight			10.5 g









Reserves the right to alter or amend the design,model and specification without prior notice.