Revision：4.2

Product Specification

Product Model: Nickel-Metal Hydride Battery

Product Type: J-2/3AA600

Draw up： Technical Department

Date： 2010-11-18

JJJ®

1、 SCOPE

This specification governs the performance of the following **JJJ** Nickel-Metal Hydride cylindrical cell and its stack-up battery.

JJJ Model：2/3AA600

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	
Minimum Capacity	mAh	600	Standard Charge/Discharge	
Nominal Capacity	mAh	600	Standard Charge/Discharge	
Standard Charge	mA	60 (0.1C)	T_1=20±5℃(See Note 1)	
	hour	16		
Fast Charge	mA	600 (1C)	-Δ V=0~5mV/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	120 (0.2C)	T_1= 20±5℃ Humidity：Max.85%	
Discharge Cut-off Voltage	V/cell	1.0		
Storage Temperature	℃	-20~25	Within 1 year*	State：30% charge ， Max Humidity：85%
		-20~35	Within 6 months	
		-20~45	Within 1 month	
		-20~55	Within 1 week	
Typical Weight	Gram	13.0	unit cell	

*To keep the best performance for those not used for a long time,we recommend to charge the cells/batteries at least 30% after discharge entirely 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： 60 mA(0.1C)× 16 hours
Discharge： 120 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
Capacity	mAh	≥ 600	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	≥ 360 (60%)	Standard Charge,Storage： 28 days Standard Discharge	T_1=20±5℃
IEC Cycle Life	Cycle	≥500	IEC61951-2(2003)7.4.1.1	see Note 3
Leakage		No leakage nor deformation	Fully charged at : 60 mA for 48 hrs	
Vibration Resistance		Change of voltage should be less than 0.02V/cell,Change of impedance should be less than 5 milli-ohm/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 5 milli-ohm/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.

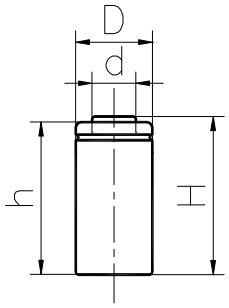
[2] Approximate charge time from discharged state, for reference only.

[3] IEC61951-2(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.			

JJJ Battery Co.,LTD.

MODEL No: J-2/3AA600 **Description:** 600 mAh SIZE NI-MH AA

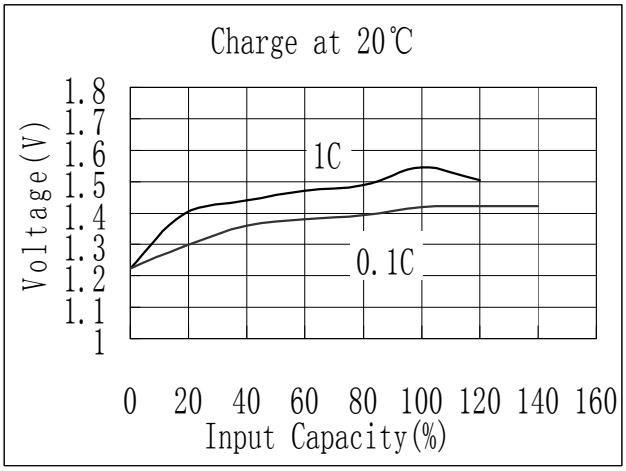


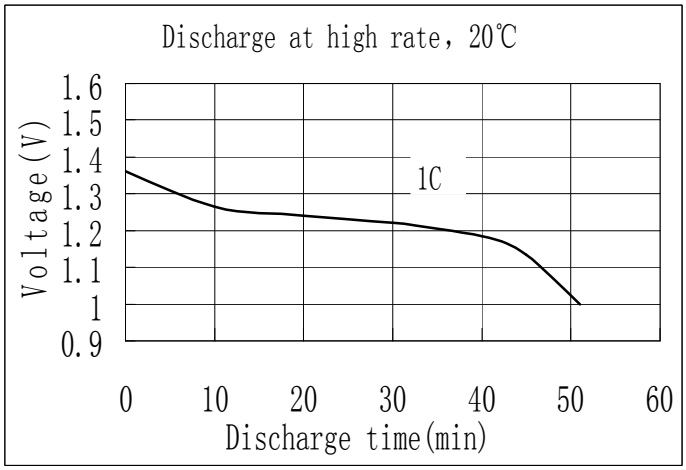
Dimensions(without Tube) (mm)

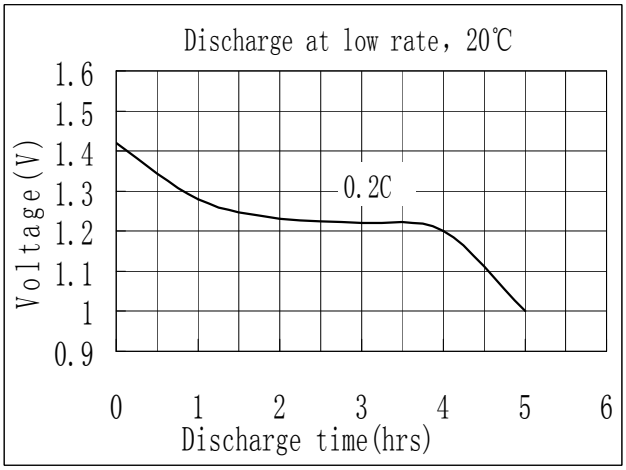
D	13.90±0.10
d	8.10±0.08
H	28.10±0.50
h	27.50±0.50

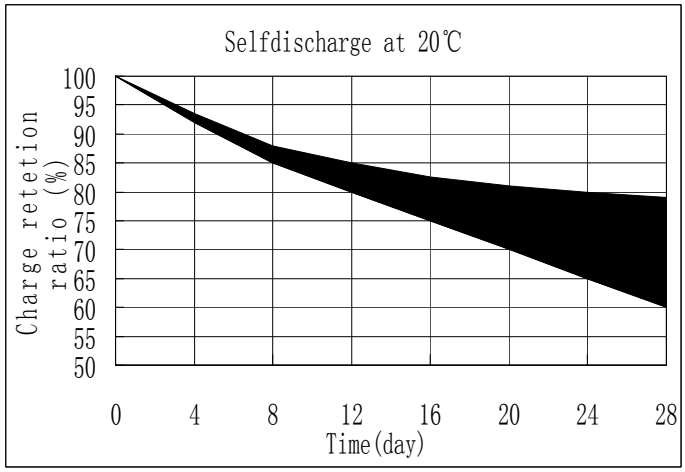
Specification

Nominal Capacity			600 mAh
Nominal Voltage			1.2 V
Charge current		Standard	60 mA
		Fast	600 mA
Charge time		Standard	16 Hrs
		Fast	1.2 Hrs
Ambient Temperature	Charge	Standard	0℃~45℃
		Fast	10℃~45℃
	Discharge		-20℃~60℃
	Storage		-20℃~55℃
Internal Impedance(mΩ) (After Charge)			≤ 35
Weight			13.0 g









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

JIANGMEN JJJ BATTERY CO.,LTD.