

# Product Specification

Product Model: Nickel-Metal Hydride Battery

Product Type: J-2/3AA600

Draw up: Technical Department

Date: 2010-11-18





**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 <sub>1</sub> =20±5°C (See Note 1)
	hour	16	
Fast Charge	mA	600 (1C)	- ΔV=0~5mV/cell , Timer Cutoff=120%nominal capacity , Temp.Cutoff=55°C, dT/dt=0.8°C/min, T <sub>1</sub> =20±5°C
	hour	1.2 approx (See Note 2)	
Trickle Charge	mA	(0.03C)~(0.05C)	T <sub>1</sub> =20±5°C
Standard discharge	mA	120 (0.2C)	T <sub>1</sub> = 20±5°C Humidity: Max.85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	°C	-20~25	Within 1 year*
		-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.

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**4、 PERFORMANCE**

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

Ambient Temperature :  $20\pm 5^{\circ}\text{C}$

Relative Humidity :  $65\pm 20\%$

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	$\geq 600$	Standard Charge/ Discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V	$\geq 1.25$	Within 1 hour after standard charge	
Internal Impedance	m $\Omega$	$\leq 35$	Upon fully charged(1KHz)	
High Rate Discharge(1C)	min	$\geq 51$	Standard Charge, 1 hour rest before discharge by 1C to 1.0V/cell	up to 3 cycles are allowed
Charge Retention	mAh	$\geq 360$ (60%)	Standard Charge,Storage: 28 days Standard Discharge	$T_1=20\pm 5^{\circ}\text{C}$
IEC Cycle Life	Cycle	$\geq 500$	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.	

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**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<sub>1</sub>: 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 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3 h.			

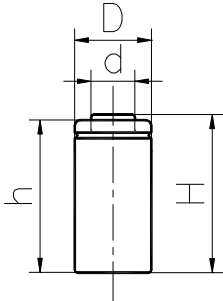
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# JJJ Battery Co.,LTD.

**MODEL No:** J-2/3AA600

**Description:** 600 mAh SIZE NI-MH AA

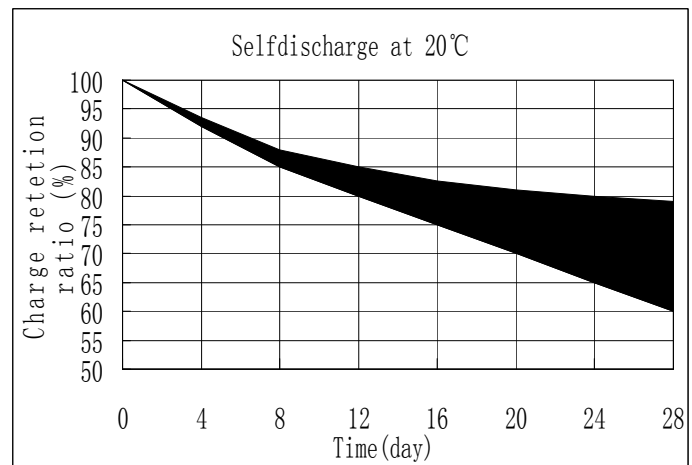
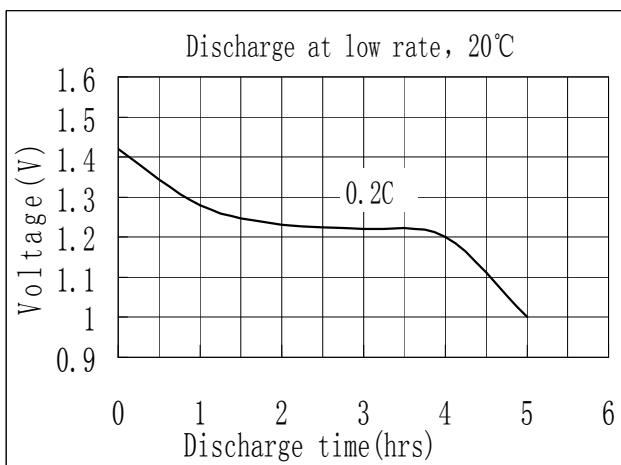
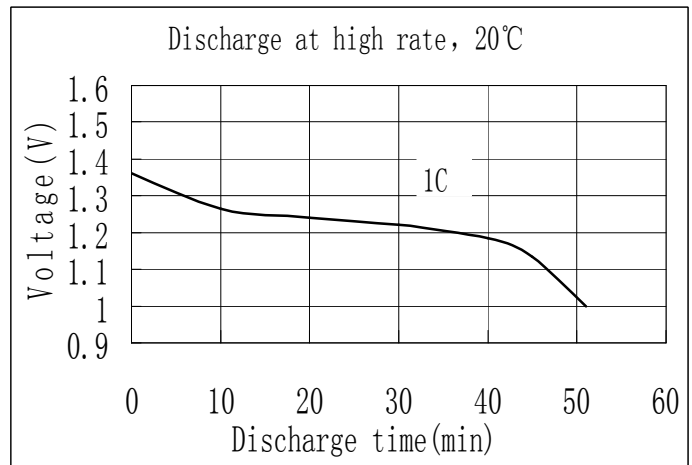
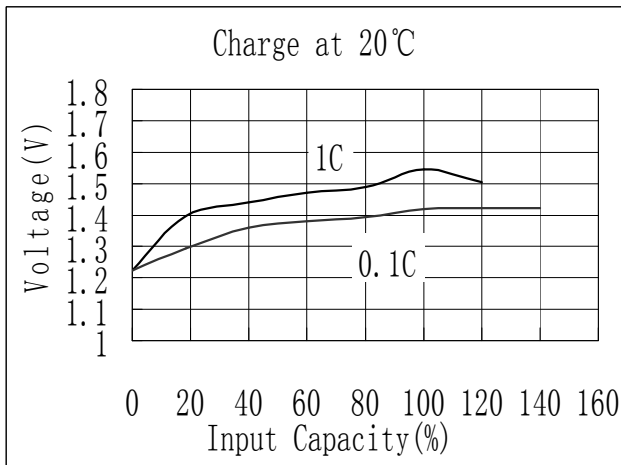


Dimensions(without Tube) (mm)

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°C~45°C Fast: 10°C~45°C
	Discharge	-20°C~60°C
	Storage	-20°C~55°C
Internal Impedance(mΩ) (After Charge)		≤ 35
Weight		13.0 g



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