比亚迪股份有限公司
BYD COMPANY LIMITED

SPECIFICATION FOR

HIGH TEMPERATURE NI-CD CELL

APPROVAL SHEET

TO	:	Steki-Impex Kft
BYD MODEL NO	:	D-D4000H
CUSTOMER APPROVED P/N	:	
DATE OF SUBMISSION	:	20-Mar-13
ATTACHMENT	:	SPECIFICATION
TOTAL NO. OF PAGES	:	**5**
SPECIFICATION NO	:	S-DD4000H01
VERSION NO	:	**1.0**

Drawn	***ZONGQIANG-LU***	
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(with company chop)

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1. APPLICATION

This specification applies to the Ni -Cd batteries.

Model : D-D4000H

2. CELL AND TYPE

2.1 Cell : Sealed Ni －Cd Cylindrical Cell.

2.2 Type : D-D4000H

2.3 Size type: D

2.4 IEC type: /

3. RATINGS

3.1 Nominal voltage : 1.2 V

3.2 Nominal capacity : 4000 mAh/0.2CmA

3.3 Typical weight : 125 g (unit cell)*

"*":Battery weight is only for reference.

3.4 Standard charge : 400 mA(0.1C)×15hours

3.5 Rapid charge : 2000 mA×2.5hours(Max.)

3.6 Trickle charge : 200 mA(0.05C)×48hours

3.7 Discharge cut-off voltage : 1.0 V(0.2CmA)

3.8 Temperature range for operation (Humidity: Max. 85%)

Charge 5～ +70℃ (Note 2)

Discharge 5～ +70℃ (Note 2)

3.9 Temperature range for storage (Humidity: Max. 85%)

Within 2 years －2 0～+35℃ (Note 3)

Within 6 months －2 0～+55℃

Within a month －2 0～+60℃

3.10 Storage duration before use: Less than 6 months from batteries received to start with charging.

Note1: Rated capacity figures are based on single cell performance.

Note2: Max continuous temperature is 50℃, more than 50℃ for charge and discharge occasionally is accepted.

Note3: We recommend cells or batteries are charged and discharged at least once every 6 months.

Note4. Never over discharge the battery.

Note5: If there are any conflict between specification and other standards, please use the specification as the final standard.

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4. PERFORMANCE

4.1 TEST CONDITIONS

The test is carried out with new batteries.(within a month after delivery)

Ambient conditions

Temperature : +20±5℃

Humidity : 65±20%

Standard charge :400mA(0.1C)×15hrs

Standard discharge :0.2C to 1.0V

4.2 TEST METHOD & PERFORMANCE

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	≥4000	Standard charge/discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	Voltage (V)	≥1.25	After 1 hour standard charge	
Internal impedance	mΩ/cell	≤10	Upon fully charge (1KHz)	
High rate discharge(1C)	minute	≥48(3200mAh)	Standard charge before discharge	End Voltage is 1.0V/Cell
Discharge time after overcharge	hour	⩾4.25	200 mA(0.05C) charge 28days,then discharge at 0.2C to 1.0V	Ambient TEMP 25℃±2℃
Charge Retention	mAh	≥2800	standard charge; storage: 28 days Standard discharge	
Leakage		No leakage nor deformation	Fully charge at 2000 mA(0.5C), then storage 14 days	
IEC Permanent Charge Test	hr	3.75(Cycle No.2&3) 2.50(Cycle No.8&9)	IEC61951-1(2003)7.4.2.3	See Note 6

4.3 Humidity

The cells shall not leak during the 14 days when it is submitted to the condition of a temberature of 33±3℃ and a relative humidity of 80±5% (salting is allowed).

4.4 Vibration

Cells shall be mechanically and electrically normal after vibration which has an amplitude of 4mm(0.1575 inches) a frequency of 1000 cycles per minute, which should be continued in any directions during 60 minutes

4.5 Shock

Cells shall be mechanically and electrically normal after being subjected to a drop from a height of 450mm (17.716inches) onto an oak board in a voluntary axis respectively 3 times.

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4.6 Short

Cells shall not explode after 1 hour short-circuit test.

4.7 Incorrect polarity charging

Cells shall not explode after 5 hour of incorrect polarity charing at 0.5 CmA.

5. PRECAUTION

5.1 We recommend you to set the cut-off voltage at 1.0V/cell.

5.2 If the cut-off voltage is above 1.1V/cell, cells may be underutilized resulting insufficient use of the available capacity.

5.3 If it is below 1.0V/cell, cells may have over-discharged or reverse charged.

5.4 Do not detect -△V for first 5 minutes of charging.

5.5 The cells shall be delivered in discharged condition, Before testing or using, the cells shall be correctly charged in accordance with this specifications.

6. WARNING

6.1 Avoid direct soldering onto cells.

6.2 Observe correct polarity when connecting.

6.3 Do not charge with more than our specified current.

6.4 Use only within the specified working temperature range.

6.5 Do not subject cells or batteries to mechanical shock.

6.6 Do not mix cells of different manufacture,capacity,size or type within a battery.

6.7 Seek medical advice immediately if a cell or battery has been swallowed.

6.8 When disposing of secondary cells or batteries ,keep cells or batteries of different electro-chemical systems separate from each oter.

6.9 Do not maintain secondary cells and batteries on charge when not in use.

7. DANGER!

7.1 Avoid throwing cells into a fire or attempting to disassemble them. As the electrolyte inside is strong alkaline and can damage skin and clothes.

7.2 Avoid short circuiting. It may be leakage.

Note 6:

IEC61951-1(2003) 7.4.2.3 Permanent Charge Endurance Test

Cycle No.	Ambient Temperature	Charge	Discharge	Requirement
1	40℃	0.05C x 48hrs	0.2C to 1.0V/cell	N/A
2~3	40℃	0.05C x 24hrs	0.2C to 1.0V/cell	Discharge Time:3.75hrs
4	70℃	0.05C x 60days	0.2C to 1.0V/cell	N/A
5~6	70℃	0.05C x 60days	0.2C to 1.0V/cell	N/A
7	40℃	0.05C x 48hrs	0.2C to 1.0V/cell	N/A
8~9	40℃	0.05C x 24hrs	0.2C to 1.0V/cell	Discharge Time:2.50hrs

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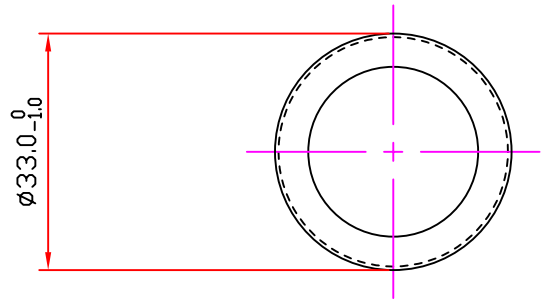
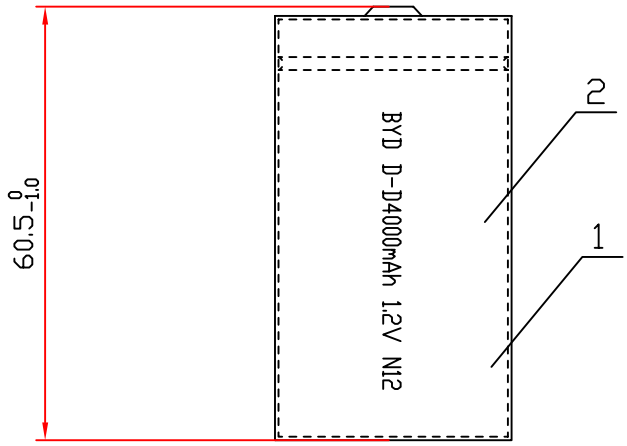
PART NO.:D-D4000H SAMPLE NO.:





DATE CODE:

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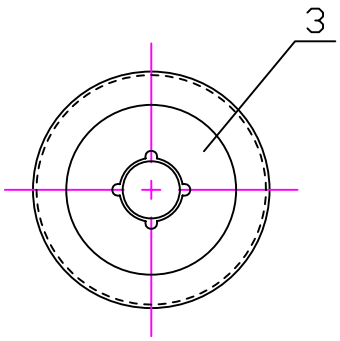
Year(2013) Week(12)



NO.	NAME	SIZE	QTY	NOTE	SAP NO
3	WASHER	D	1	WHITE	413877
2	PVC	51X70	1	WHITE	400854
1	CELL	D	1	NI-CD	

比亚迪股份有限公司
BYD COMPANY LIMITED

DRAWN	ZONGQIANG-LU	DATE	2013/03/20
CHECKD	GUOQING-LI	DATE	2013/03/20
APPROVED	ZHENGYI-HUANG	DATE	2013/03/20
SCALE		UNIT	MM