

**FILE NAME: SPECIFICATIONS OF
SEALED NICKEL CADMIUM
BATTERIES**

MODEL: DS23/43 SC1800mAh

Specification No. : S/0873-1

EDITION: A0

DATE: 2011-12-21

EDITION	AMENDMENT		DATE OF ISSUE
A 0			2011-12-21
Drawn	Checked	Reviewed	Approved

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1. SCOPE

The specifications governs the performance of the following Nickel-Cadmium Cylindrical cell and its battery pack. (Refer to the attached figure 1)

Rated capacity: **1800mAh**

Designation: **DS 23/43 SC** ($D: 23.0^{+0}_{-1.0}$ mm $H: 42.5^{+0}_{-1.0}$ mm)

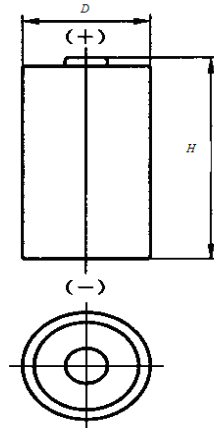


Figure 1- Jacketed cylindrical cells

2. DATA OF BATTERY PACK

The data of battery pack, including voltage and weight, is almost equivalent to the multiple numbers of the relevant single cells.

Example: Battery pack consisting three single cells

Nominal voltage of single cell = 1.2V

Nominal voltage of battery pack = 1.2V×3 = 3.6V

3. RATINGS

Table 1 - Ratings of the cells

Description	Unit	Specification	Conditions
Nominal Voltage	V/Cell	1.2	Single cell
Rated Capacity	mAh	1800	Standard Charge/Discharge

4. PERFORMANCE

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

Ambient Temperature: 20±5°C

Relative Humidity: 65±20%

Standard Charge/Discharge Conditions:

Preparative: Prior to charging, the cell shall be discharged by **360mA** (0.2I_tA) to 1.0V

Charge: **180mA** (0.1I_tA) ×16hours

Stand in charged condition:1~4h

Discharge: 360mA (0.2I_A) to 1.0V/Cell

Table 2 - Performance and test methods^b

Test Item	Unit	Specification	Test Conditions	Remarks	
Discharge performance	20 °C ^a	h	≥5	Standard Charge/Discharge	/
		min	≥54	After Standard Charge, stored for 1~4h, then discharged by 1800mA (1.0I _A) to 0.9V.	/
	-18°C	h	≥3	After Standard Charge, stored for 16~24h in -18±2°C, then discharged by 360mA (0.2I _A) to 1.0V in -18±2°C.	/
Charge (capacity) retention	h/min	≥3h15min	After Standard Charge, stored on open circuit for a period of 28days, then discharged by 360mA (0.2I _A) to 1.0V.	/	
Endurance in cycles	cycle	≥1800	Appendix-table 3	/	
Permanent charge endurance	h	≥3	Appendix-table 4	/	
Over charge	h	≥5	Charge: 180mA (0.1I _A) for 28d; Storage: 1~4h Discharge: 360mA (0.2I _A) to 1.0V	/	
Safety device operation	Not disrupt or burst		Undergo a forced discharge at constant current 360mA (0.2I _A) to 0V. Then discharged by 1800mA (1.0I _A) for 60min.	/	
Storage ^A	hour	≥5	Stored on open circuit for 12 months. Then standard charge/discharge.	/	
Internal resistance	mΩ	≤12	Within 1~4h after standard Charge (1000Hz)	/	
Weight	g	44 (approx)	/	Reference	
Vibration	No leakage, no fire, no explosion		IEC 62133 2002 4.2.2	/	
Free fall	No fire, no explosion		IEC 62133 2002 4.3.3	/	

a) Five cycles is permitted b) Unless otherwise stated, the cell shall be discharged by 360mA (0.2I_A) to 1.0V before test.
Notice: Test conditions is drawn according to IEC 61951-1 2006; Please refer to the related description of the standard.

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 nor deformation.

7. 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) Prevent short circuit, do not incinerate or disassemble the cell/battery.
- (5) Do not solder directly to the cell/battery for a long time.

(6) The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.

(7) Store the cell/battery in a cool and dry place. Always discharge batteries before assemble or solder.

(8) Always discharge batteries before bulk storage or shipment.

(9) Do not mix batteries of different types and capacities.

Appendix

A) Endurance in cycles

Prior to the endurance on cycle test ,the cell shall be discharged at **360mA**(0.2I_tA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 3.

Table 3 Endurance in cycles

Cycle number	Charge	Stand in charged condition	Discharge
1	0.1I _t A for 16h	none	0.25I _t A for 2h20min
2~48	0.25I _t A for 3h10min	none	0.25I _t A for 2h20min
49	0.25I _t A for 3h10min	none	0.25I _t A to 1.0V
50	0.1I _t A for 16h	1h~4h	0.20I _t A to 1.0V ^a

a) Cycles 1 to 50 shall be repeated until the discharge duration on any 50th Cycle becomes less than 3h or the cell voltage drops below 1.0V during 1~48th cycle.

B) Permanent charge endurance

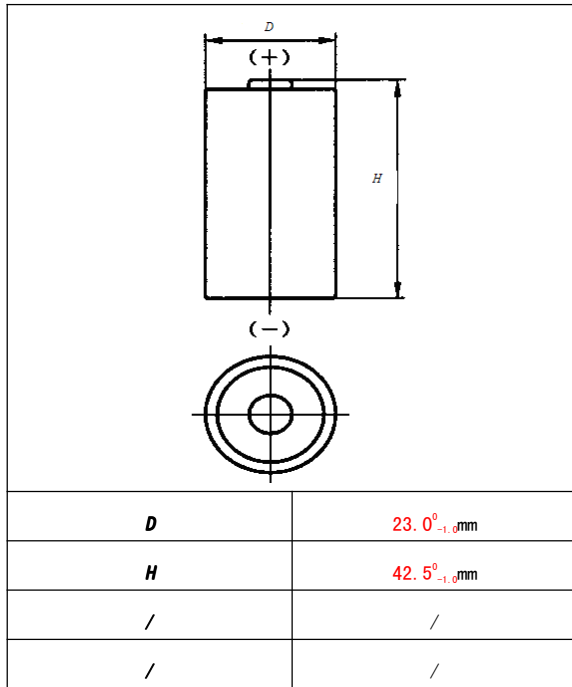
Prior to the endurance on cycle test ,the cell shall be discharged at **360mA**(0.2I_tA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 4.

Table 4 Permanent charge endurance

Cycle number	Charge	Discharge ^a
1	0.051I _t A for 91days	0.2I _t A to 1.0V
2	0.051I _t A for 91days	0.2I _t A to 1.0V
3	0.051I _t A for 91days	0.2I _t A to 1.0V
4	0.051I _t A for 91days	0.2I _t A to 1.0V

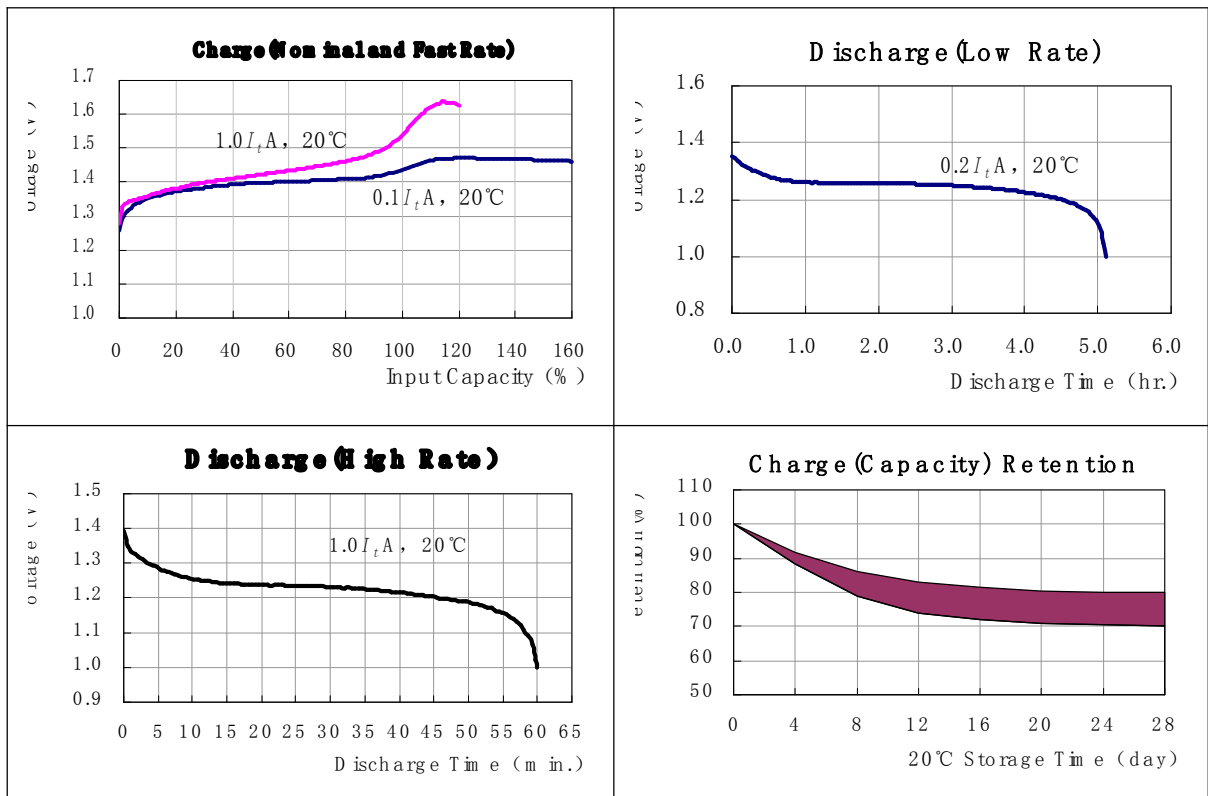
a) The discharge is carried out immediately upon completion of discharge.

Base Data:



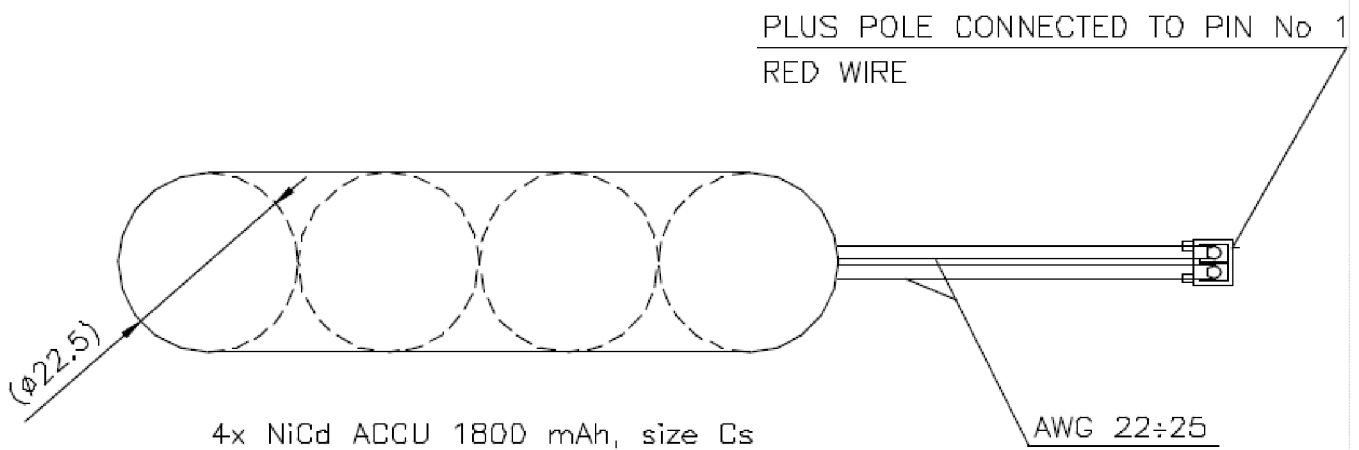
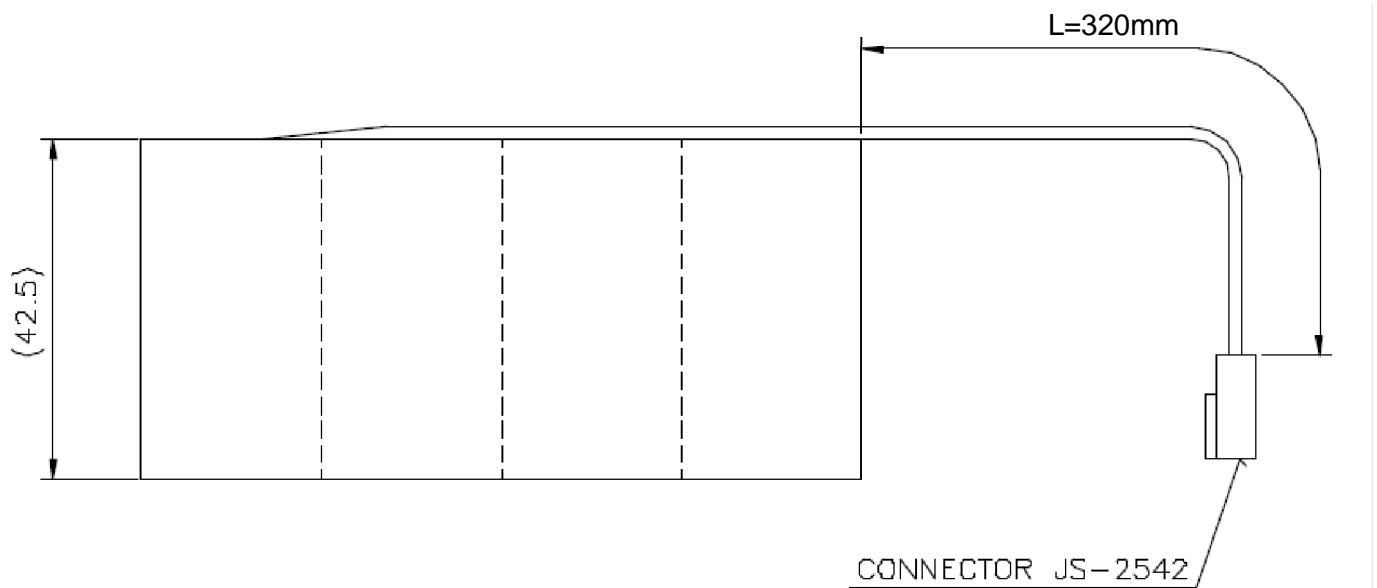
Nominal voltage		1.2V		
Capacity comparison (mAh)		0.2I _t A	1.0I _t A	
		1800	1620	
Weight (g)		44		
Internal Impedance at 1000Hz (After Charge; mΩ)		≤12		
Charge current	Standard	180mA		
	Rapid	/		
Charge time	Standard	16h		
	Rapid	72min, plus 2h by 0.1I _t A		
Temperature	Ambient	charge	Standard	0~+35°C
			Rapid	+10~+35°C
	Discharge		-20~+45°C	
	Storage		-20~+35°C	

Electrical Performance:



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Battery pack 4,8V / 1800mAh



CONNECTOR ASSEMBLY : 1 Pc HOUSING JS-2542-H (2 POLES)
2 Pcs TERMINAL JS-2542-T

MANUFACTURER : JIUH SHIUH PRECISION INDUSTRY CO., LTD.

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