



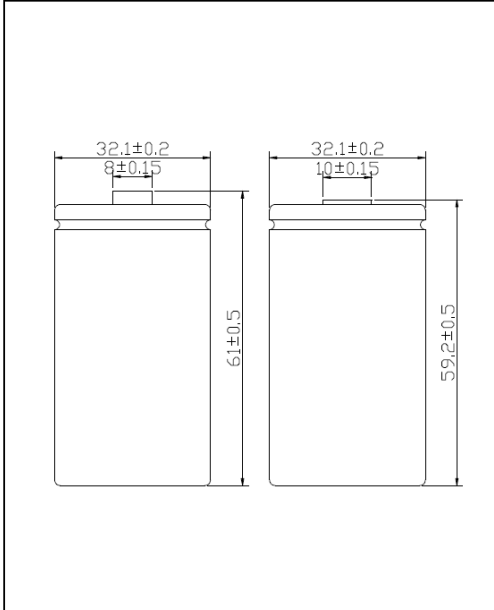
SPECIFICATIONS

Sealed Rechargeable Nickel Cadmium Ni-CD 4000mAh D

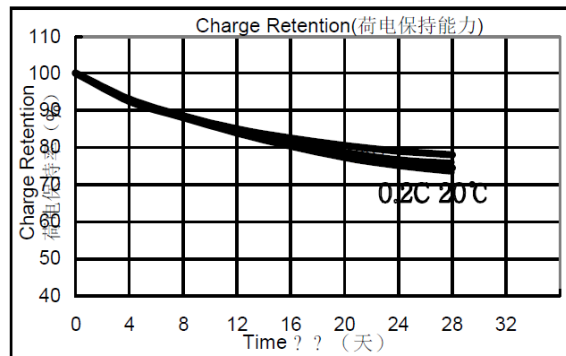
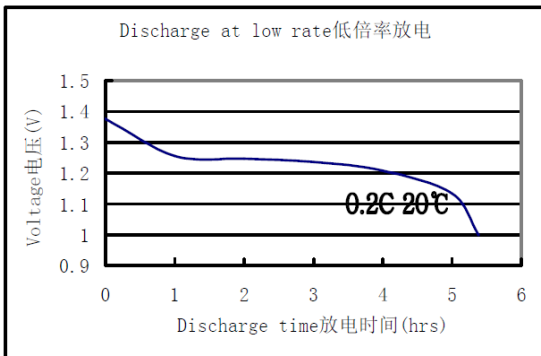
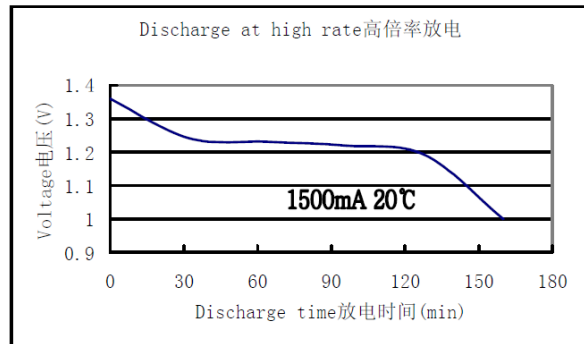
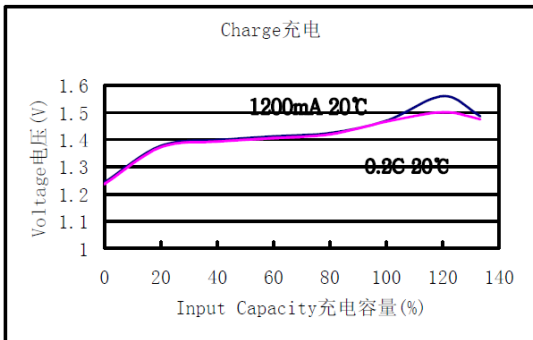
MODEL No: NCD4000

Description: 4000mAh D SIZE NI-Cd

Specification



Nominal Capacity		4000 mAh	
Nominal Voltage		1.2 V	
Charge current	Standard	400mA	
	Quick	800mA	
	Fast	1200mA	
Charge time	Standard	14~16 Hrs	
	Quick	6.0 Hrs	
	Fast	4Hrs	
Ambient Temperature	Charge	Standard	0°C~35°C
		Quick	10°C~35°C
		Fast	10°C~35°C
	Discharge		-30°C~60°C
Storage		-30°C~35°C	
Internal Impedance(mΩ) (Upon fully charge)		Max ≤ 15	
Weight		115g	





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2. PERFORMANCE

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

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

Relative Humidity: $65 \pm 20\%$

Test Item	Test Conditions				Requirements
(1)Standard Charge	Charge is conducted continuously for 16 hours at the constant current of 400mA(0.1C) after pre-discharge at the constant current of 800mA (0.2C) up to a cut-off voltage of 1.0V/cell				
(2)Open-circuit Voltage	Voltage between terminals of the charged battery specified in item (1) is measured after rest for 1 hour				$\geq 1.25\text{V}$
(3)Capacity (0.2C)	Capacity of the charged battery specified in item (1) is measured at 800mA (0.2C) up to a cut-off voltage of 1.0V after rest for 15 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.				$\geq 4000\text{mAh}$
(4)High rate discharge(1500mA)	Discharge time of the charged battery specified in item (1) is measured at 1500mA up to a cut-off voltage of 1.0V after rest for 15 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.				$\geq 144\text{minutes}$
(5)Fast charge (1200mA)	Charge: 1200mA \times 4 hours (charging Cut off $= -\Delta V = 5 \sim 10\text{mV/cell}$ or Temp.Cut off= 50°C)				
(6)Trickle charge current	132mA(0.033C) \sim 200 mA (0.05C)				
(7)Charge retention	Capacity of the charged battery specified in item (1) is measured at 800mA(0.2C) up to a cut-off voltage of 1.0V after rest for 28 days at 20°C .				$\geq 70\%$
(8)IEC Cycle life (IEC61951-1 (2003) 7.4.1.1)	Cycle No	Charge	Rest	Discharge	≥ 500
	1	0.1C \times 16h	None	0.25C \times 140min	
	2-48	0.25C \times 190min	None	0.25C \times 140min	
	49	0.25C \times 190min	None	0.25C to 1.0v	
	50	0.1C \times 16h	1-4h	0.2C to 1.0v	
Cycles 1 to so shall be repeated until the discharge duration on any 50 th cycle becomes less than 3h					
(9)Accelerated cycle life	Charge: 1200mA \times 4 hours (charging Cut off $= -\Delta V = 5 \sim 10\text{mV/cell}$ or Temp.Cut off= 50°C) ;Discharge: 1500mA to 1.0V/cell,end-of:70% nominal capacity				≥ 400
(10)Safety valve operation	Forced discharge is conducted for 60 minutes at a constant current of 4000mA(1C) after pre-discharge at a constant current of 800mA(0.2C) up to 0V				Leakage, No explode or disrupt
(11)Leakage	Fully charged at 1200mA for 4.0 hour stand for 14 days				No leakage nor deformation



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Ni-CD 4000mAh D

(12) Vibration Resistance	Charge the battery 0.1C 16hrs, then leave for 24hrs, check Battery before/after vibration, Amplitude 1.5mm Vibration 4500 CPM Any direction for 60mins.	Change of voltage should be under 0.02V/cell, Change of impedance should be under 5 milli-ohm/cell
(13) Impact Resistance	Charge the battery 0.1C 16hrs Then leave for 24hrs, check bat-before/after dropped, Height 50cm Wooden board(thickness 30mm) Direction not specified, 3 times.	Change of voltage should be under 0.02V/cell Change of impedance should be under 5 milli-ohm/cell

3. EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

4. 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 cell/battery may result.
- (5) Do not incinerate or mutilate the cell/battery.
- (6) Do not solder directly to the cell/battery.
- (7) The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.
- (8) Store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.