NI-MH BATTERY
DELIVERY SPECIFICATIONS

APPROVAL SHEET

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PRESENTED TO:

MODEL NO.: 1/2 D350 L5 (6.0V 1/2D3500mAh)

TOTAL PAGES: 4 pages including this cover page

PREPARED BY: Engineering Dept

DATE: November 12, 2015

CHECKED & APPROVED BY:

Ovonic Battery Company

1. Scope

This specification governs the performance of the following Nickel-Metal Hydride cylindrical battery cell 6.0V 1/2D3500mAh.

model: 1/2D350 L5

Cell size:D.

The data involving the nominal voltage and the approximate weight of the battery pack.

2. Ratings

Description	Unit	Specification	Conditions
Nominal Voltage	V	6.0	Unit pack
Nominal Capacity	mAh	3500	Standard charging / discharging
Minimal Capacity	mAh	3300	Standard charging / discharging
Standard Charge	mA	350 (0.1C)	Ta=0-45℃
	hrs	16	
Rapid Charge	mA	1750(0.5C)	-△V=40~50mv, or Timer cut-off=120% input capacity Temp. cut-off=45~50℃, Ta=10~40℃ dT / dt=0.6℃/ min
	minute	144approx.	
Trickle Charge	mA	175(0.05C)	Ta=0~45℃
Discharge Cut-Off Voltage	V	5.0	Less than 1.0C discharge
		4.5	1.0~2.0C discharge
Maximum Continuous Discharge Current	mA	7000 (2.0C)	Ta= -20~50℃
Storage (Percent 40-60 charged state)	℃	-20-40	Less than 30 days
		-20-30	Less than 90 days
		-20-25	Less than 360 days
	%	65±20	Relative humidity
Typical Weight	g	380	Approx.

3. Performance

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

Relative humidity : 65+20% RH

Ambient Temperature (Ta) : 20+5℃

***Notes: Standard charge / discharge condition

Charge: 350 mA (0.1C) x 16 hrs

Discharge:700 mA (0.2C) to 5.0V/Pack

***The batteries must be standard discharged before charging

***Battery test vide infra:

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	≥3300	Standard Charge / Discharge	Up to 3 cycles allowed
Open Circuit Voltage (OCV)	V	≥6.25	Within 1 hr after standard charge	Unit cell
Internal Impedance (Ri)	mΩ	≤80	Upon fully charge (1 Khz)	Unit cell
High Rate(1.0C) Discharge	min	≥54	Standard charge, 1 hr rest before discharge	Dischargecut-off voltage5.0V

Over discharge Over charge	N/A	No leakage nor explosion	350mA (0.1C) charge 1 month	
Charge Retention	mAh	≥2100(60%)	Standard charge, storage for 28 days at 20℃, standard discharge	
	mAh	≥2100(60%)	Standard charge, storage for 7 days at 40℃, standard discharge	
IEC Cycles Test	cycle	≥500	IEC 61951-2 (2003) 7.4.1.1	
Short Circuit	N/A	Deformation &leakagemay occur but no explosion	After standard charge, short circuit for 1 hr (lead wire = 2.0mm^2 x 20mm)	
Vibration Resistance	N/A	△V<0.1V △Ω<25mΩ No fire No explosion	Charge at 0.1C for 16 hrs, then leave for 24 hrs. Check battery before/after vibration。 Amplitude: 1.5mm, Vibration: 3000CPM any direction for 60 minutes	
Impact Resistance	N/A	△V<0.25V △Ω<25mΩ No fire No explosion	Charge at 0.1C for 16 hrs, then leave for 30 minutes. Drop cells three times from a height of 0.5 meter onto a concrete floor. Drop along each direction of the 3 mutually perpendicular axes.	

4. Configurations, Dimensions And Markings

Please refer to the related drawing.

5. External Appearance

The cell / battery shall be free from cracks, scars, breakage, rust, discoloration, leakage and deformation.

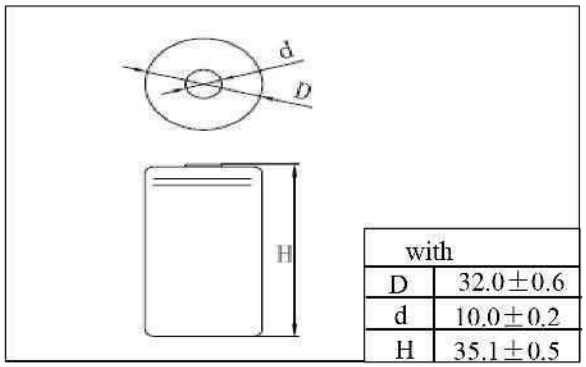
6. Warranty

The quality guarantee period for our products is one year.

7. Cautions

1. Reverse charging is not acceptable.
2. Charge before use.
3. Do not charge / discharge with more than the specified current.
4. Do not short circuit the cell / battery.
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 to adverse conditions, like extreme temperature, deep cycling, excessive overcharge /over-discharge.
8. Store the cell / battery in a cool dry place.
9. Keep away from children. If swallowed, contact a physician at once.

Dimensions (mm)

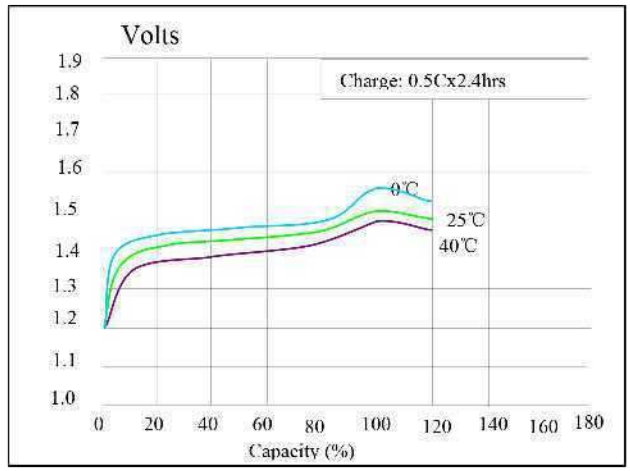


with	
D	32.0±0.6
d	10.0±0.2
H	35.1±0.5

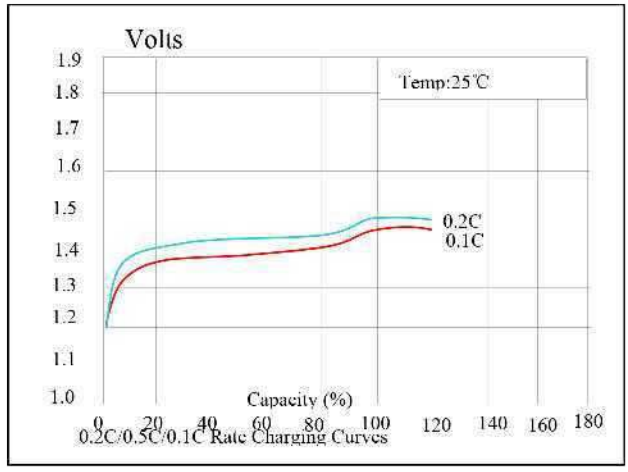
Nominal Voltage:	1.2V
Nominal Capacity:	3500 mAh
Minimal Capacity:	3300 mAh
Standard Charge:	350 mA, 16hrs
Rapid Charge:1750 mA,2.4 (control required)	
Continuous Discharge :	less than 7000mA
Final Discharge Voltage : 0.9 V	
Weight:	75g (Approx)
Service Life:	≥ 500 cycles
(according to IEC discharge characteristics standard)	
Internal Resistance:	12mΩ (Approx)
Ambient Temperature: Standard charge:	0 ~ 45℃
Rapid charge:	10~ 40℃
Discharge:	-20 ~ 50℃
Store: (65+20% RH) Less than 30 days:	-20 ~40℃
Less than 90 days:	-20 ~30℃
Less than360 days:	-20 ~25℃

Note:

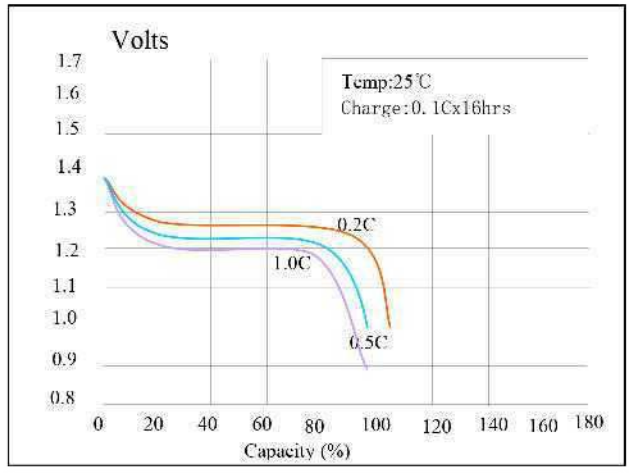
1. After charge at 0.1C for 16hrs and discharge at 0.2C to 1.0V at 25℃
2. Control required: 1) - ΔV: 0~ 5mV
   2) dT / dt: 0.6℃/ min
   3) Tco: 45℃ ~ 50℃



0.5C Rate Charging Curves



0.2C/0.5C/0.1C Rate Charging Curves



0.2C/0.5C/1.0C Rate Discharging Curves