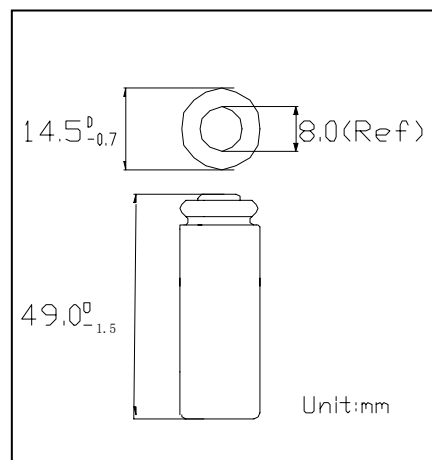


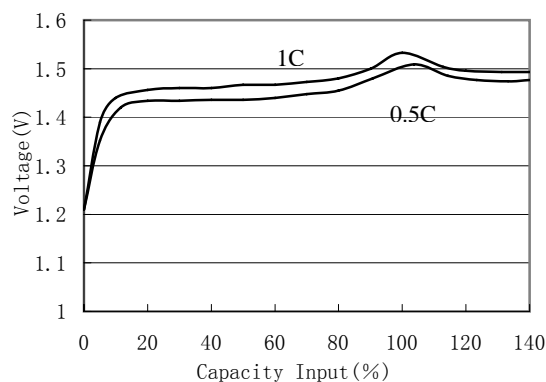
## Data Sheet

### Type: Sealed Rechargeable Nickel Metal Hydride Cylindrical Cell

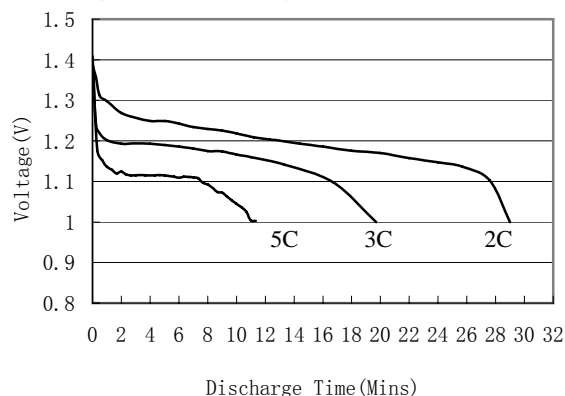
Model No.	: LH140-2A49M
Nominal Dimension (with sleeve)	: $\phi = 14.5^{0}_{-0.7}$ mm H = $49.0^{0}_{-1.5}$ mm
Application	: Discharge current 1.0A ~ 15.0A
Nominal Voltage	: 1.2V
Norminal Capacity	: Minimum: 1400mAh : Typical: 1465mAh
Charging Condition	: 140mA for 16hrs at 20°C
Fast Charge	: up to 1400mA(1C) with charge termination control. Recommended control parameter: - $\Delta V$ : 0-5mV dT/dt : 0.8-1°C TCO : 40~45°C Timer : 105% nominal input
Service Life	: > 500 cycles (IEC standard)
Continuous Overcharge	: 140mA maximum current for a year No conspicuous deformation and/or leakage.
Weight	: 28g (ref)
Internal Resistance	: $\leq 20m\Omega$ (upon fully charged )
Max. Charging Voltage	: 1.5V at 140mA charging
Ambient Temperature	: Standard Charging : 0°C to 45°C
Range	: Fast Charging : 10°C to 40°C : Discharging : -20°C to 60°C : Permanent charge : 0°C to 45°C : Storage ( 6 month ) : -20°C to 35°C : Storage (1month) : -20°C to 45°C : Storage (1week) : -20°C to 55°C



Fast Charge (Charge Control required)



High Rate Discharge



\* The information (subject to change without prior notice) contained in this document is for reference only and should not be used as a basis for product guarantee or warranty. For applications other than those described here, please consult your nearest Sales and Marketing Office or Distributors.



## 1. CHARACTERISTICS

Unless special stated, tests should be carried out within one month of delivery.

Ambient conditions:

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

Relative Humidity:  $65 \pm 20\% \text{RH}$

Notes: 1) Standard charge/discharge condition

Charge:  $140\text{mA}(0.1\text{C}) \times 16\text{hours}$

Discharge:  $280\text{mA}(0.2\text{C})$  to  $1.0\text{V}$

2) Except special explaining, the battery shall not leakage and PVC shall not breakage during the test.

Test Items	Test Conditions	Requirements	Remark
Capacity	Standard Charge and Discharge	Discharge Capacity: $\geq 1400 \text{ mAh}$	up to three cycles are allowed
Internal Impedance (Ri)	Measure the impedance of battery by applying AC with frequency of 1000HZ for not less than 1 hour and not more than 4 hours after standard charge	$\leq 20\text{m}\Omega$	
Open-circuit Voltage (OCV)	Voltage between the battery terminals shall be measured within 1 hour after standard charge	$\geq 1.25 \text{ V/cell}$	
IEC cycle life	IEC61951-2/2011/7.5.1.2 See Remark 1	$\geq 500$ cycles	
Self- discharge	Standard charged , stored for 28 days at standard ambient temperature	Discharge Capacity: $\geq 60\%$ original capacity	
Over-charge	Charge at $140 \text{ mA}$ ( $0.1 \text{ C}$ ) for 1 year.	No leakage, nor disrupt, nor burst.	
Vibration resistance	Standard charge. Then leave for 24 hours, check cell before/after vibration. Amplitude: $1.5\text{mm}$ Vibration: $3000\text{CPM}$	Change of voltage: $\Delta V < 0.02\text{V/cell}$ Change of internal impedance $\Delta R_i < 5\text{m}\Omega / \text{cell}$	any direction for 60mins
Safety	The Reverse-charge is conducted for 60 minutes at current of $1\text{C}$ after pre-discharge at $0.2\text{C}$ current to $0\text{V}$	The battery shall not explode, but leakage & deformation are acceptable	
Drop resistance	After standard charge, rest 24 hours, check battery before/after drop: Height: $100 \text{ cm}$ Thickness of wooden board: $30 \text{ mm}$	Change of voltage: $\Delta V < 0.02\text{V/cell}$ Change of internal impedance: $\Delta R < 5\text{m}\Omega / \text{cell}$ No breakage except impact point for PVC sleeves	Direction is not specified, Test for 3 times
Short Circuit	After standard charge specified in Item (1), short circuit for 1hour (leading wire= $0.75\text{mm}^2 \times 20\text{mm}$ )	The battery shall not explode, but leakage & deformation are acceptable	

**\*REMARK:****1.Cycle life test: IEC61951-2/7.5.1.2**

Cycle No.	Charge	rest	Discharge
1	0.1C×16hours	0	0.25C×2hours 20mins
2~48	0.25C×3hours 10mins	0	0.25 C×2hours 20mins
49	0.25 C×3hours 10mins	0	0.25C to 1.0V/cell
50	0.1 C×16hours	1~4hours	0.20C to 1.0V/cell
Repeat 1 to 50 cycles ,until the discharge time of any 50th cycle is less than 3hours			

**2.COSMETIC**

Batteries should be without any flaw、stain、discoloration or leakage and deformation.

**3.WARNING:**

- 3.1 Do not dispose of cell into fire or dismantled under any condition.
- 3.2 Do not mix different cell types and capacities in the same battery assembly.
- 3.3 Charge and discharge under specified ambient temperature recommend to specification
- 3.4 Short circuit leading to cell venting must be avoided.
- 3.5 Never solder onto cell directly.
- 3.6 Cell reversal should be avoided.

**4.CAUTION:**

- 4.1 Use batteries in extreme condition may affect the service life, such as: extreme temperature 、deep cycle、extreme overcharge and over discharge.
- 4.2 Batteries should be stored in a cool, dry place.
- 4.3 Once problems be found, stop using, send batteries to local agent.

**5. STORAGE:**

- 5.1 It is strongly recommended to stored Ni-MH batteries and cells in the temperature range from -20°C to 35°C, and in low humidity and no corrosive gas environment, to maintain a reasonably high capacity recovery level.
- 5.2 Avoid storage higher (e.g. 35°C), lower temperature than -20°C, or higher humidity which would result in deterioration or damage to the cells and batteries such as follows:
  - . Permanent capacity loss.
  - . Electrolyte leakage resulted from the expansion or shrinkage of organic material inside the cells.
  - . Rust of metal parts.
- 5.3 Up to three full cycles of charge/discharge after long-term storage may need to obtain highest capacity.
- 5.4 Recommended every three months to do a battery release-charging.

**6. REFERENCE:**

Please contact us if there is any question on using the batteries.