



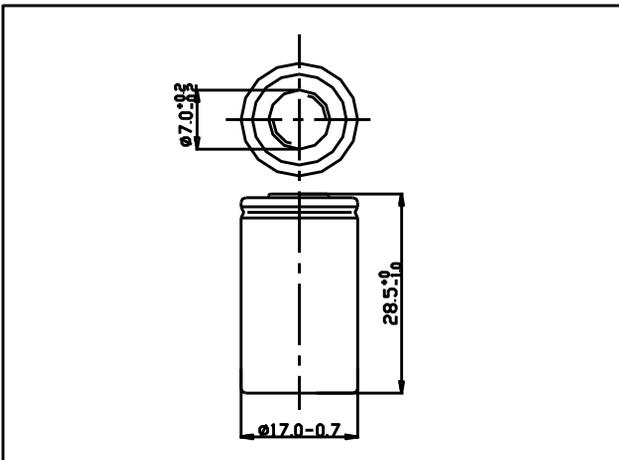
(Type): **LP28A1300P**

Specifications of single cell

Nominal voltage		1.2V	
Capacity	0.2C Discharge		
	Minimum	300min	
	Typical	315min	
Dimensions	mm		
	Diameter	17.0 ^{-0.7}	
	Height	28.5 ^{-1.0}	
Weight(Approximately)		gram 21.8	
Internal Impedance At 1000 Hz		14mW(Max) After Charge	
Charge	Standard	130mA(0.1C)x16hrs	
	Rapid	1300mA(1.0C)x1.1hrs	
Ambient temperature	Charge	standard	0 to 40
		Rapid	0 to 40
	Discharge		-20 to 50
	Storage		-20 to 30

PVC (Dimensions with tube)

(mm)

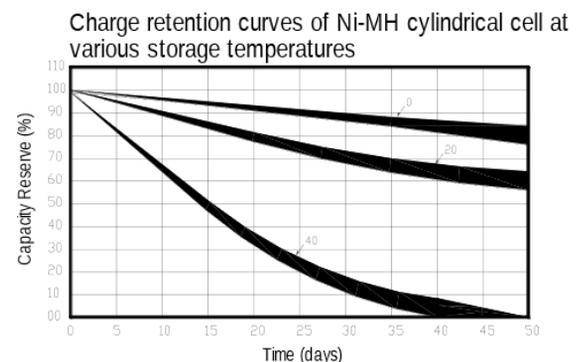
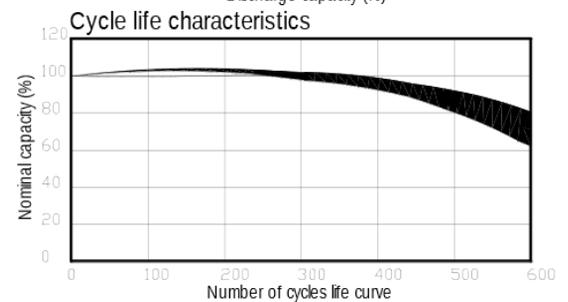
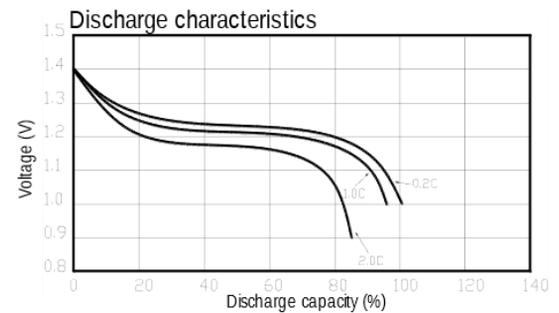
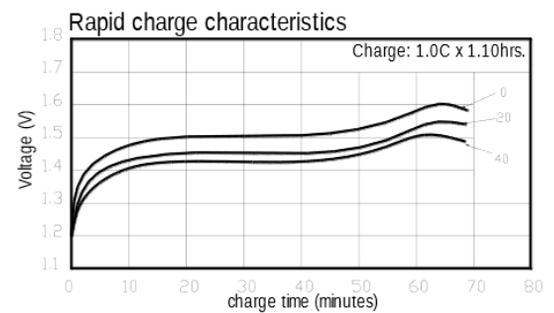
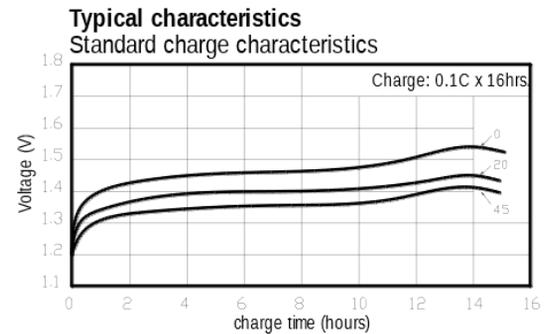


Note:

1. Nominal capacity, rated at 0.2 C 20
2. Average capacity, for reference only
3. Weight and internal impedance are for reference
4. Standard according as IEC of test cycle life

1. PREFACE

The specification is suitable for the performance of Ni-MH rechargeable battery





2. MODEL

LP28A1300P 1.2V

3. APPEARANCE

There shall be no such details as discoloration or electrolyte leakage or 0 voltage.

4. RATINGS

Description	Unit	Specification	Condition
Nominal Voltage	V	1.2	Unit cell
Typical Capacity	Min	315	Standard Charge/Discharge
Nominal Capacity	mAh	1300	Standard Charge/Discharge
Minimum Capacity	min	300	Standard Charge/ Discharge
Standard Charge	mA	130(0.1C)	Ta=0~40 (see note 1)
	hour	16	
Fast Charge	mA	260(0.2C)~1300(1.0C) with charge termination control	- V=5mV/cell Timer cutoff=110%input capacity Temp. cutoff=40~45 dT/dt=0.8 /min(0.5 to 1.0C); 0.8~1 /min(1C)
	hour	6.0 approx.(0.2C) 1.1 approx(1.0C)	
Trickle Charge	mA	26(0.02C)~65(0.05C)	Ta=0~40 (see note 1)
Discharge Cut-off Voltage	V	1.0	Unit cell
Maximum Discharging Current	A	6.5(5C)	Ta =0~50 0.8v/cell cut off
Storage Temperature		-20~+25(within 1 year) -20~+30(within 3 month) -20~+40(within 1 month) -20~+50(within 1 week)	*
Typical Weight	g	21.8 approx	*

5. PERFORMANCE

0.2C 1.0V 1

Before proceed the following tests, the cells should be discharged at 0.2C to 1.0V cutoff. Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient temperature: 20 ± 5

Relative Humidity: 65 ± 20%

Note Standard Charge/Discharge Conditions:

Charge: 1 30mA(0.1C)×16hrs

Discharge: 260mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Condition	Remarks
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Capacity	min	≥ 300	Standard Charge / Discharge	3 Up to 3 cycles are allowed
Open circuit Voltage (OCV)	V	≥ 1.25	1 Within 1 hr after standard charge	Unit cell
Internal Impedance (Ri)	m	≤ 14	1kHz Upon fully charge at 1kHz	*
High Rate Discharge (10.0C)	min	N/A	/ 30 10.0C0.8V/ Standard Charge/rest 30min discharge at 10.0C to 0.8V/cell	*
Low Temperature Discharge	min	≥ 240	0±2 24 0.2C Standard Charge, Storage:24hrs at 0±2 0.2C discharge at 0±2	1.0V/cell Cut-off
Overcharge	N/A	No conspicuous deformation and/or leakage	0.1C 48 0.1C charge for 48hrs	*
Charge Retention	min	≥ 180min	28 0.2C Standard charge Storage: 28 days Standard discharge (0.2C)	1.0V/cell Cut-off
IEC IEC Cycle Life Test	Cycle	≥ 500	IEC61951-2 ED3.0	*
Humidity	N/A	No leakage	33±3 80±5% 14 Standard charged, stand for 14 days at 33±3 and 80±5% of relative humidity	*
External Short Circuit	N/A	No fire and no explosion	20 ±5 0.75mm ² After standard charge, short-circuit the cell at 20 ± 5 until the cell temperature returns to ambient temperature.(cross section of the wire or connector should be more than 0.75mm ²)	*
Safety Device Operation	N/A	No explosion	0.2C 0V 1C 60 Forced discharge at 0.2C to a final voltage of 0V,then the current be increased to 1C and forced discharge continue for 60 min	Leakage of electrolyte and Deformation are acceptable
Free falling(drop)	N/A	V<0.02V/cell Ri<5%/cell	Charge at 0.1C for 16hrs,and then leave for 24hrs,check battery before / after drop Height: 50 cm Thickness of wooden board: 30mm Direction is not specified Test for 3 times	*

Notes:

1. Ta: Ambient temperature
2. Approximate charge time from discharged state, for reference only
3. 0.1C 16 10 0.2C 1.0V 10 0.2C 150



Please activate the battery once every 3 months according to the following method. Otherwise may cause the battery capacity attenuation, reducing the battery service life and so on.

Charge at 0.1C for 16 hrs, rest 10 min, then discharge with 0.2C to 1.0V/cell, rest 10 min, then charge at 0.2C to 150 min.

6. PRECAUTIONS TO ENSURE THE SAFETY ON BANDING BATTERY

1. Batteries should be charged to prior use.
2. When using a new battery for the first time or after long term storage, please fully charge the battery before use.
3. For charging methods please reference to our technical handbook.
4. Use the correct charger for Ni-Cd or Ni-MH batteries.
5. Do not reverse charge batteries.
6. Do not short circuit batteries, permanent damage to batteries may result.
7. Do not incinerate or mutilate the batteries as they may burst or release toxic substances.
8. Do not solder directly to cells or batteries.
9. Do not subject batteries to adverse condition such as extreme temperature, deep cycling and excessive overcharge/overdischarge.
10. Store batteries in a cool dry place.
11. Do not mix batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
12. Do not mix new batteries in use with semi-used batteries, overdischarge may occur.
13. Avoid batteries being used in an airtight compartment. Ventilation should be provided inside the battery compartment; otherwise batteries may generate hydrogen gas, which could cause an explosion if exposed to an ignition source.
14. When connecting a battery pack to a charger, ensure correct polarity.
15. If find any noise, excessive temperature or leakage from a battery, please stop its use.
16. When the battery is hot, please do not touch it and handle it, until it has cooled down.
17. Do not remove the outer sleeve from a battery pack nor cut into its housing.
18. When find battery power down during use, please switch off the device to avoid overdischarge.
19. When not using a battery, disconnect it from the device.
20. Unplug a battery by holding the connector itself and not by pulling at its cord.
21. After use, if the battery is hot, before recharging it, allow it to cool in a well-ventilated place out of direct sunlight.
22. Never put a battery into water or seawater.
23. During long term storage, battery should be charged and discharged once every 3 months.



24. Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.
25. Keep away from children. If swallowed, contact a physician at once.
26. Battery failure, may not be thrown away, please recycling
27. Storage or transport, please let the battery apart and fixed, to prevent external short circuit

7.: IEC61951-2 ED3.0

0.2 1tA 1.0V.

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5-

1	0.1C _i A for 16 h	None	0.25 C _i A for 2 h 20 min ²⁾
2 to 48	0.25 C _i A for 3 h 10 min	None	0.25 C _i A for 2 h 20 min ²⁾
49	0.25 C _i A for 3 h 10 min	None	0.25 C _i A to 1.0V
50	0.1 C _i A for 16 h	1h to 4h	0.2C ₅ A to 1.0V ¹⁾
ò 50 51 100,150,200,250,300,350,400and 450. ò 1.0V .			

1-50 50 3h 50.

3h 500

Append: IEC61951-2 ED3.0 Endurance in cycles

Before the endurance in cycles test, the cell shall be discharged at 0.2 1tA to a final voltage of 1.0V/cell. The following endurance test shall then be carried out, irrespective of cell designation, in an ambient temperature of 20°C±5°C. Charge and discharge shall be carried out at constant current throughout, using the conditions specified in table 5. Precautions shall be taken to prevent the cell-case temperature from rising above 35°C during the test, by providing a forced air draught if necessary.

NOTE: Actual cell temperature, not the ambient temperature, determines cell performance.

Table 5-Endurance in cycles

Cycle number	Charge	Stand in Charged condition	Discharge
1	0.1C _i A for 16 h	None	0.25 C _i A for 2 h 20 min ²⁾
2 to 48	0.25 C _i A for 3 h 10 min	None	0.25 C _i A for 2 h 20 min ²⁾
49	0.25 C _i A for 3 h 10 min	None	0.25 C _i A to 1.0V/cell
50	0.1 C _i A for 16 h	1h to 4h	0.2C ₅ A to 1.0V/cell
ò It is permissible to allow sufficient open-circuit rest time after the completion of discharge at cycle 50, so as to start cycle 51 at an exact two-week interval. A similar procedure may be adopted at cycles 100,150,200,250,300,350,400and 450.			
ò If cell discharge voltage drops below 1.0V/cell, discharge may be discontinued.			