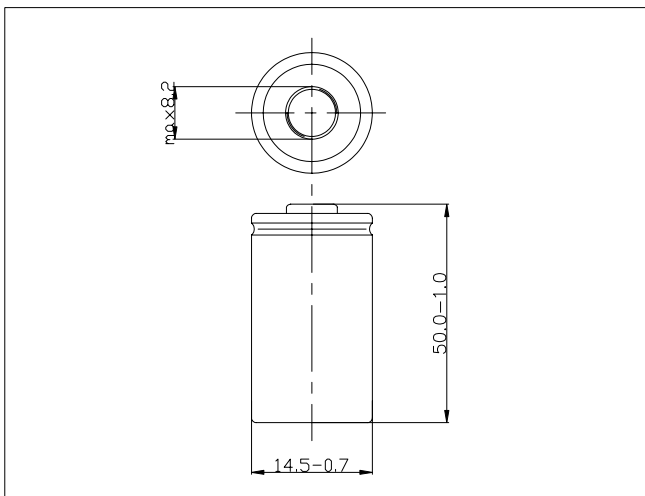


TYSONIC TY-AA2000

单颗电池规格 Specifications of single cell

| | | | |
|-------------------------------------|----------------------|---------------------------------|---------------|
| 标称电压 Nominal voltage | | 1.2V | |
| 容量 Capacity | 0.2C 放电 Discharge | 0.5C 放电 Discharge | |
| | 最小 Minimum | 300min | 118min |
| | 典型 Typical | 310min | 122min |
| 尺寸 Dimensions | 直径 Diameter | mm 14.5 ^{-0.7} | |
| | 高 Height | 50.0 ^{-1.0} | |
| 大约重量 Weight(Approximately) | | 克 gram 28.4 | |
| 电阻 Internal Impedance At 1000 Hz | | 35mΩ(Max) (充电后 After Charge) | |
| 充电 Charge | 标准 Standard | 200mA(0.1C)×15hrs | |
| | 快速 Rapid | 1000mA(0.5C)×2.1hrs | |
| 环境温度 Ambient temperature | 充电 Charge | 标准 standard | 0°C to 40°C |
| | | 快速 Rapid | 0°C to 40°C |
| | 放电 Discharge | | -20°C to 50°C |
| | 贮藏 Storage | | -20°C to 30°C |

单颗电池尺寸包括 PVC (Dimensions with tube)

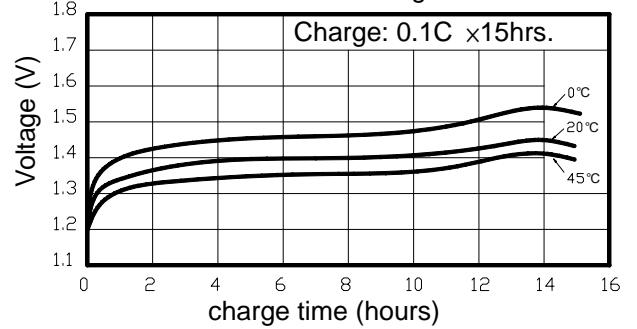


备注 Note:

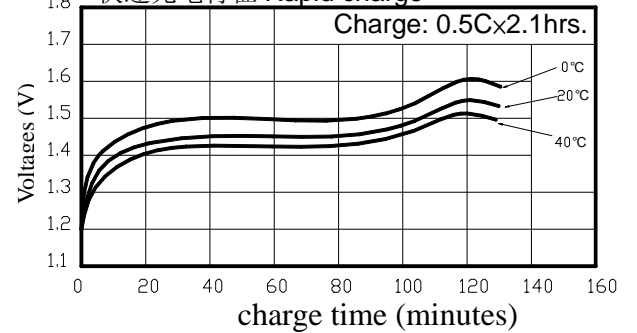
1. 标称容量是指 20°C 时 0.2C 放电容量
Nominal capacity, rated at 0.2C 20°C.
2. 容量只作为参考
Average capacity, for reference only.
3. 重量和内阻也作为参考
Weight and internal impedance are For reference.
4. 寿命测试依照 IEC 标准
Standard according as IEC of test cycle life.

典型特征 Typical characteristics

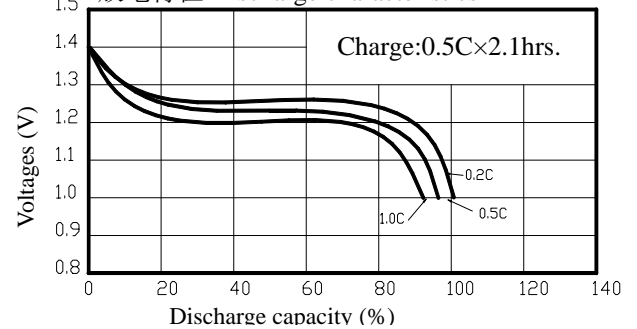
标准充电特征 Standard charge



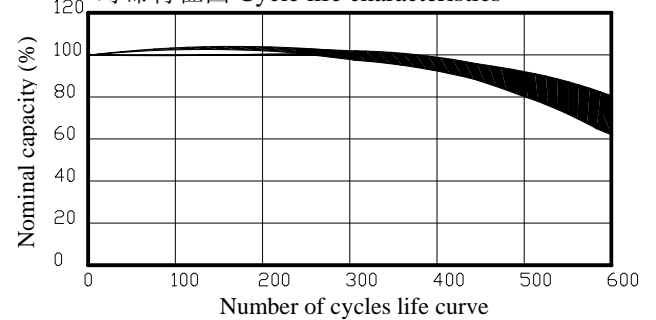
快速充电特征 Rapid charge



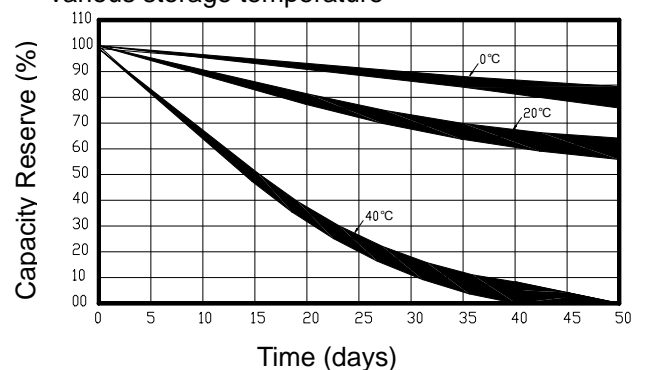
放电特征 Discharge characteristics



寿命特征图 Cycle life characteristics



Ni-MH 圆柱型电池在不同的温度荷电保持曲线图
Charge retention curves of Ni-MH cylindrical cell At various storage temperature



BAO TONG USA INC. dba TYSONIC BATTERIES

1. PREFACE

The specification is suitable for the performance of NI-MH rechargeable battery produced by **Bao Tong USA Inc. dba TYSONIC BATTERIES**.

2. MODEL

TY-AA2000

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 | 310 | Standard Charge/Discharge |
| Nominal Capacity | mAh | 2000 | Standard Charge/Discharge |
| Minimum Capacity | min | 300 | Standard Charge/ Discharge |
| Standard Charge | mA | 200(0.1C) | Ta=0~40°C |
| | hour | 15 | |
| Fast Charge | mA | 400(0.2C)~1000(0.5C) with charge termination control | - $\Delta V=5\text{mV/cell}$ Timer cutoff=110%input capacity Temp. cutoff=40~45°C $dT/dt=0.8^\circ\text{C}/\text{min}(0.5 \text{ to } 1.0\text{C});$ 0.8~1°C/min(1C) |
| | hour | 6.0 approx.(0.2C) 2.1 approx (0.5C) | |
| Trickle Charge | mA | 100(0.05C)~200(0.1C) | Ta=0~40°C |
| Discharge Cut-off Voltage | V | 1.0 | Unit cell |
| Maximum Discharging Current | mA | 1000(0.5C) | Ta =0~50°C 1.0v cut off |
| Storage Temperature | °C | -20~+25(within 1 year) -20~+30(within 3 month) -20~+40(within 1 month) -20~+50(within 1 week) | * |
| Typical Weight | g | 28.4approx | * |

5. PERFORMANCE

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

Relative Humidity: $65 \pm 20\%$

Standard Charge/Discharge Conditions:

Charge: $200 \text{ mA}(0.1\text{C}) \times 15\text{hrs}$

Discharge: $400\text{mA}(0.2\text{C})$ to 1.0V/cell

| Test | Unit | Specification | Condition | Remarks |
|----------------------------|-------|---|--|---|
| Capacity | min | 300 | Standard Charge / Discharge | Up to 3 cycles are allowed |
| Open circuit Voltage (OCV) | V | 1.25 | Within 1 hr after standard charge | Unit cell |
| Internal Impedance (Ri) | mΩ | 35 | Upon fully charge at 1kHz | * |
| High Rate Discharge (0.5C) | min | 118 | Standard Charge/rest 30min discharge at 0.5C to 1.0V | Up to 3 cycles are allowed |
| High Rate Discharge (2.0C) | min | N/A | Standard Charge/rest 30min discharge at 2.0C to 0.9V | Up to 3 cycles are allowed |
| Low Temperature Discharge | min | 240 | Standard Charge, Storage:24hrs at 0±2°C 0.2C discharge at 0±2°C | 1.0V/cell Cut-off |
| Overcharge | N/A | No conspicuous deformation and/or leakage | 0.1C charge for 48hrs | * |
| Charge reserve | min | 180min | Standard charge Storage: 28 days Standard discharge (0.2C) | 1.0V/cell Cut-off |
| IEC Cycle Life Test | Cycle | 500 | IEC61951-2(2003)7.4.1.1 | * |
| Humidity | N/A | No leakage | Standard charged, stand for 14 days at 33 ±3°C and 80±5% of relative humidity | * |
| External Short Circuit | N/A | No fire and no explosion | After standard charge, short-circuit the cell at 20°C ±5°C 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 | 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 | ΔV<0.02V/cell ΔRi<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 | * |