



EVERGREEN (C.P.) USA INC.

TEL: (650) 952-8091 FAX: (650) 952-3629 E-MAIL: sales@evergreencpusa.com

SPECIFICATIONS
Sealed Rechargeable Nickel Cadmium
NI-CD C 3000mAh

1. SCOPE

The specifications govern the performance of the following Nickel-Cadmium Cylindrical cell and its battery pack. (Refer to the attached figure 1)

Rated capacity: **3000mAh**

Designation: NCC3000 **KR 26/50 (C)** (D: $25.8^{0}_{-1.0}$ mm H: $50.0^{0}_{-2.0}$ mm)



Figure 1- Jacketed cylindrical cells

2. DATA OF BATTERY PACK

The data of battery pack, including voltage and weight, is almost equivalent to the multiple numbers of the relevant single cells.

Example: Battery pack consisting three single cells

Nominal voltage of single cell = 1.2V

Nominal voltage of battery pack = 1.2V×3 = 3.6V

3. RATINGS

Table 1 - Ratings of the cells

| Description | Unit | Specification | Conditions |
|-----------------|--------|---------------|---------------------------|
| Nominal Voltage | V/Cell | 1.2 | Single cell |
| Rated Capacity | mAh | 3000 | Standard Charge/Discharge |

4. PERFORMANCE

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

Ambient Temperature: 20±5°C

Relative Humidity: 65±20%

Standard Charge/Discharge Conditions:



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Preparative: Prior to charging, the cell shall be discharged by 600mA (0.2I_tA) to 1.0V

Charge: 300mA (0.1I_tA)×16hours

Stand in charged condition:1~4h

Discharge: 600mA (0.2I_tA) to 1.0V/Cell

Table 2 – Performance and test methods^b

| Test Item | Unit | Specification | Test Conditions | Remarks | |
|-----------------------------|-----------------------------------|---------------|--|---|---|
| Discharge performance | 20 ℃ ^a | h | ≥5 | Standard Charge/Discharge | / |
| | | min | ≥54 | After Standard Charge, stored for 1~4h, then discharged by 3000mA (1.0I _t A) to 0.9V. | / |
| | -18℃ | h | ≥3 | After Standard Charge, stored for 16~24h in -18±2℃, then discharged by 600mA (0.2I _t A) to 1.0V in -18±2℃. | / |
| Charge (capacity) retention | h/min | ≥3h15min | After Standard Charge, stored on open circuit for a period of 28days, then discharged by 600mA (0.2I _t A) to 1.0V. | / | |
| Endurance in cycles | cycle | ≥500 | Appendix-table 3 | / | |
| Permanent charge endurance | h | ≥3 | Appendix-table 4 | / | |
| Over charge | h | ≥5 | Charge:300mA (0.1I _t A) for 28d; Storage: 1~4h Discharge:600mA (0.2I _t A) to 1.0V | / | |
| Safety device operation | Not disrupt or burst | | Undergo a forced discharge at constant current 600mA (0.2I _t A) to 0V. Then discharged by 3000mA (1.0I _t A) for 60min. | / | |
| Storage ^A | hour | ≥5 | Stored on open circuit for 12 months. Then standard charge/discharge. | / | |
| Internal resistance | mΩ | ≤15 | Within 1~4h after standard Charge (1000Hz) | / | |
| Weight | g | 68 (approx) | / | Reference | |
| Vibration | No leakage, no fire, no explosion | | IEC 62133 2002 4.2.2 | / | |
| Free fall | No fire, no explosion | | IEC 62133 2002 4.3.3 | / | |

a) Five cycles is permitted b) Unless otherwise stated, the cell shall be discharged by 600mA (0.2I_tA) to 1.0V before test.

Notice: Test conditions is drawn according to IEC 61951-1 2003; Please refer to the related description of the standard.

5. CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

6. EXTERNAL APPEARANCE

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

7. CAUTION

(1) Reverse charging is not acceptable.



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- (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) Prevent short circuit, do not incinerate or disassemble the cell/battery.
- (5) Do not solder directly to the cell/battery for a long time.
- (6) The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, and excessive overcharge/ over-discharge.
- (7) Store the cell/battery in a cool and dry place. Always discharge batteries before assemble or solder.
- (8) Always discharge batteries before bulk storage or shipment.
- (9) Do not mix batteries of different types and capacities.

Appendix

A) Endurance in cycles

Prior to the endurance on cycle test, the cell shall be discharged at 600mA (0.2I_tA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 3.

Table 3 Endurance in cycles

| Cycle number | Charge | Stand in charged condition | Discharge |
|--------------|----------------------------------|----------------------------|---|
| 1 | 0.1I _t A for 16h | none | 0.25I _t A for 2h20min |
| 2~48 | 0.25I _t A for 3h10min | none | 0.25I _t A for 2h20min |
| 49 | 0.25I _t A for 3h10min | none | 0.25I _t A to 1.0V |
| 50 | 0.1I _t A for 16h | 1h~4h | 0.20I _t A to 1.0V ^a |

a) Cycles 1 to 50 shall be repeated until the discharge duration on any 50th Cycle becomes less than 3h or the cell voltage drops below 1.0V during 1~48th cycle.

B) Permanent charge endurance

Prior to the endurance on cycle test, the cell shall be discharged at 600mA (0.2I_tA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 4.

Table 4 Permanent charge endurance

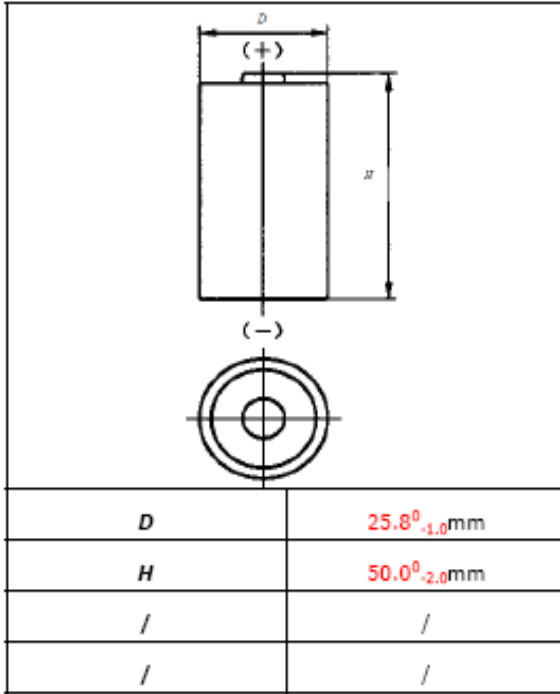
| Cycle number | Charge | Discharge ^a |
|--------------|----------------------------------|-----------------------------|
| 1 | 0.051I _t A for 91days | 0.2I _t A to 1.0V |
| 2 | 0.051I _t A for 91days | 0.2I _t A to 1.0V |
| 3 | 0.051I _t A for 91days | 0.2I _t A to 1.0V |
| 4 | 0.051I _t A for 91days | 0.2I _t A to 1.0V |

a) The discharge is carried out immediately upon completion of discharge.



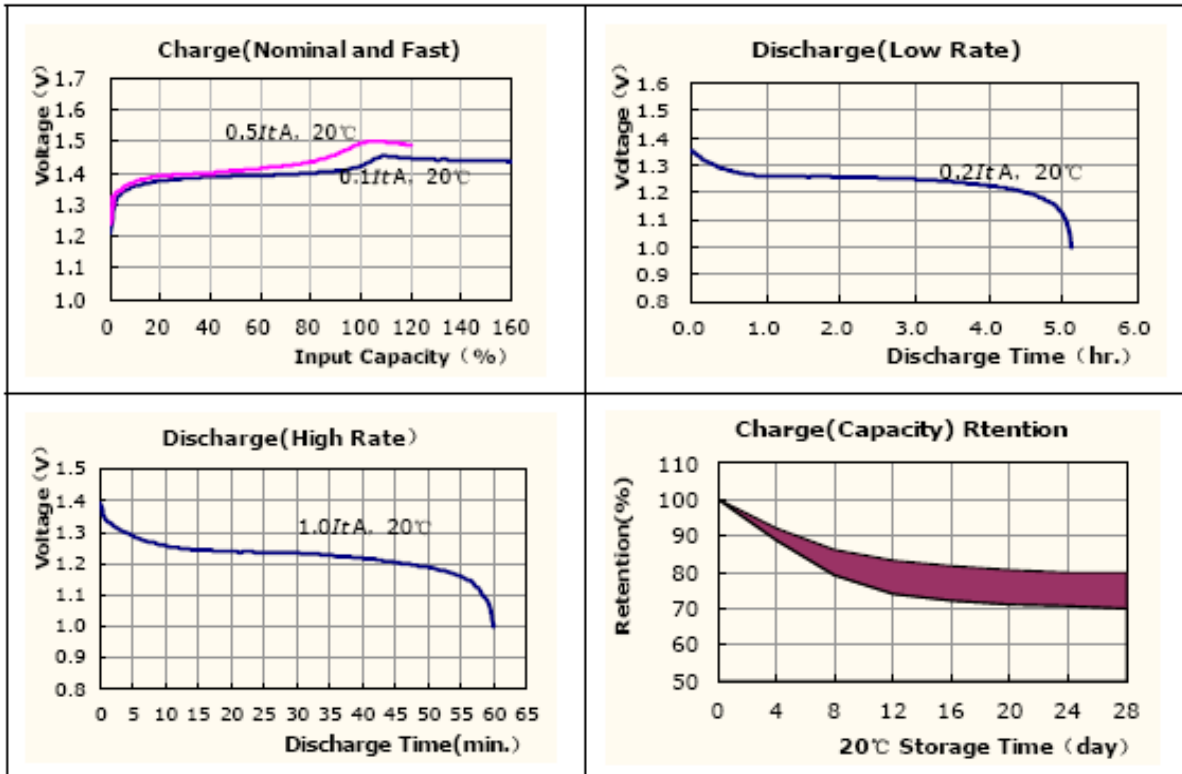
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Basic Data:



| | | | |
|--|-----------|---------------------|---------------------|
| Nominal voltage | | 1.2V | |
| Capacity comparison (mAh) | | 0.2I _t A | 1.0I _t A |
| | | 3000 | 2700 |
| Weight (g) | | 68 | |
| Internal Impedance at 1000Hz (After Charge; mΩ) | | ≤15 | |
| Charge current | Standard | 300mA | |
| | Rapid | / | |
| Charge time | Standard | 16h | |
| | Rapid | / | |
| Temperature Ambient | Charge | Standard | 0~+45℃ |
| | | Rapid | +10~+45℃ |
| | Discharge | | -20~+60℃ |
| | Storage | | -20~+35℃ |

Electrical Performance:



NOTICE: Manufacturer reserves the right to alter or amend the design, model and specification without prior notice.

