

CERTIFICATE OF QUALITY

Manganese Dioxide Lithium Primary Battery

ITEM: CR2032

No. _____

ADMISSION

Date _____

Sign _____

September 8, 2004

FDK CORPORATION

FDK ENERGY CO., LTD.

SPECIFICATION OF PRODUCTS

TYPE : CR2032

FDK ENERGY CO., LTD.

QUALITY CONTROL DEPARTMENT

K. YAMASHITA
(GENERAL MANAGER)

5.2 On-load voltage(15k Ω , after 1 second)

Test temp.20°C

Initial	After 12 months storage at ordinary temp.
3.00 ~ 3.39 V	3.00 ~ 3.39 V

5.3 Service output(Continuous discharge at 15 k Ω)

Test temp.20°C

Initial (Minimum Average)	After 12 months storage at ordinary temp. (Minimum Average)
Above 1020 Hours	Above 1000 Hours

Notes: Discharge shall be tested in accordance with IEC publication (1987) 86-1,Sub-clause 8.8. End-point voltage is 2.5 V.

6. Leakage proof

No leakage of electrolyte that affects performance in actual use shall be found by visual check when the battery is subjected to the test of the following conditions.

- 1) Test temperature and humidity : $45 \pm 2^\circ\text{C}$, 70% or less
- 2) Test period : 30 days
- 3) Test method : Allow to stand

7. Test condition and apparatus

7.1 Voltmeter

The precision of the voltmeter shall be within $\pm 0.005\text{V}$ per volt, and the internal resistance shall be 10M Ω or more.

7.2 Load resistance

The resistance of all external circuits shall be included in the load resistance and the tolerance on load resistance shall be $\pm 0.5\%$. Furthermore, the specified allowance shall not be exceed as a result of heat evolution in a resistor due to discharge.

7.3 Apparatus for measuring dimensions

The vernier calipers having the minimum graduation of 0.05 mm specified in JIS B 7507 or at least the equivalent in precision shall be used for measuring the height. A micrometer or dial gauge at least equivalent in precision may be used.

The micrometer specified in JIS B 7502 or a dial gauge at least equivalent in precision may be used as the measuring the diameter.

7.4 Temperature and humidity

Unless otherwise specified, temperature shall be $20 \pm 2^\circ\text{C}$ and relative humidity shall be $65 \pm 20\%$.

7.5 Initiation of discharge

Discharge test shall be started after the battery has been allowed to keep at a temperature of $20 \pm 2^\circ\text{C}$ for at least 8 hrs.

7.6 End of discharge

It is the time at which the on-load voltage drops below the end-point voltage (2.5V).

8. Packaging

Packaging shall be a standard form of FDK CORPORATION.

9. Remark in handling

9.1 For use

- ① Use the battery only for the fixed equipments.
- ② Do not use the lithium battery with any other kinds of batteries.
- ③ Do not use together new and old batteries.
- ④ Do not short-circuit batteries.
- ⑤ Do not dispose of batteries in fire.
- ⑥ Do not overheat batteries.
- ⑦ Do not charge batteries.
- ⑧ Do not inset batteries in reverse. Observe the + and – markings on battery and equipment.
- ⑨ Do not dismantle batteries.
- ⑩ Do not weld or solder directly to batteries.
- ⑪ Do not deform batteries..

9.2 For transport and storage

- (1) Store batteries in well ventilated, dry and cool conditions not in high temperature and high humidity conditions.
- (2) Avoid storing or displaying batteries in direct sun or in places where they get exposed to rain.
- (3) Store unused batteries in their original packaging and keep them away from metal objects which may short-circuit them.
- (4) Do not stack battery cartons on top of each other exceeding a specified height.

Fig.1 Shape and Dimension

C R 2 0 3 2

Unit : mm

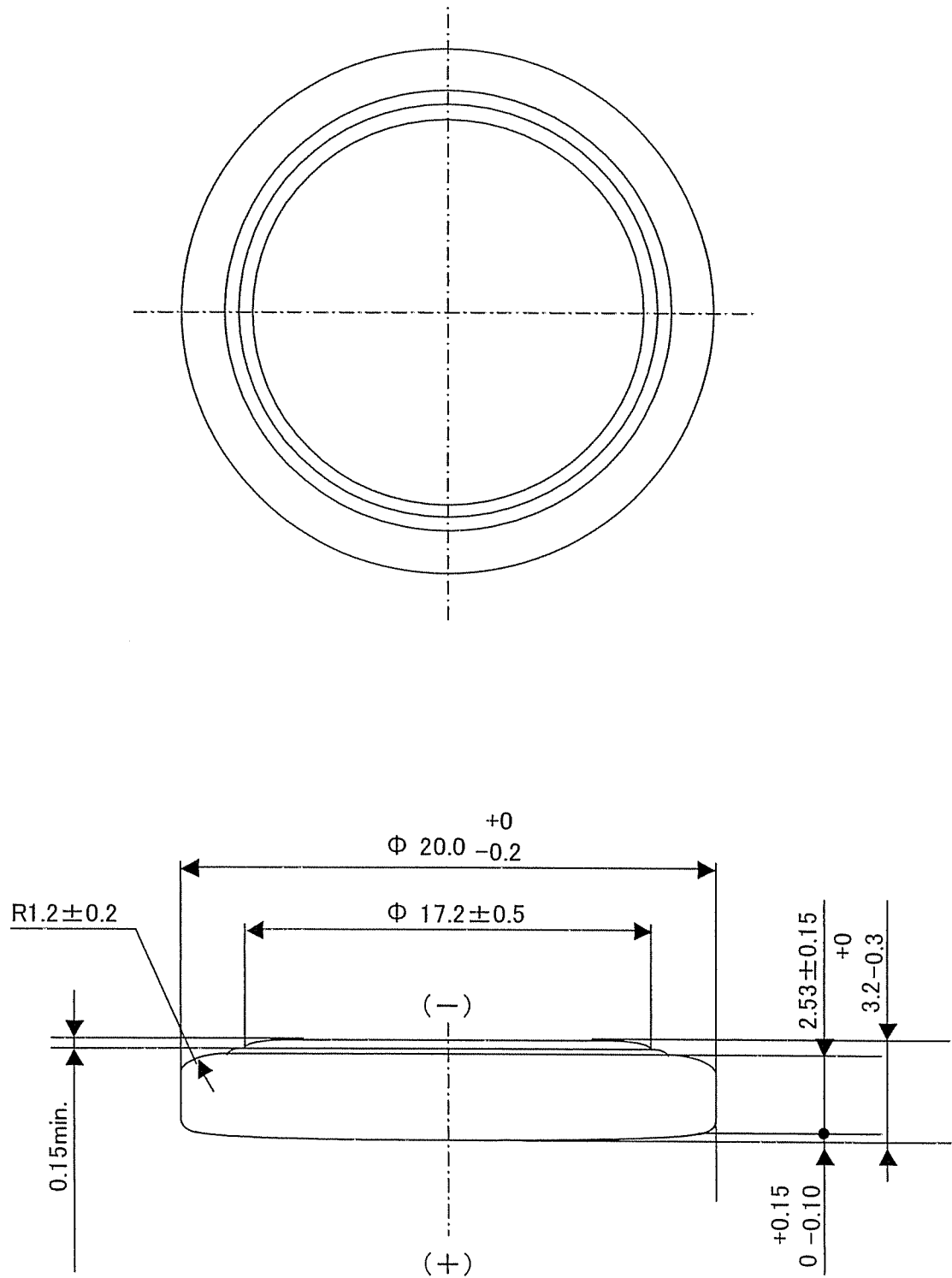


Fig.2 Marking of Positive can

