



CERRO POWER SHENZHEN CERRO POWER COMPANY LTD

CERRO POWER BATTERY

Model : 23A

**Alkaline Zinc-Manganese Button Cells
Assembled Pack**

Technical Specifications

Spec Ref : CP-23A

Version : 2008-A0

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1. Scope of Applications

This technical specification of 23A applies to the alkaline zinc-manganese assembled battery manufactured by SHENZHEN CERRO POWER COMPANY LTD

1. 1 Model

Sunjing: 23A; Duracell: MS21/MN21; Eveready:A23;

Varta:V23GA; China:LR23/L1028/23A

1. 2 Reference standards of inner individual button cells

IEC 60086-1(2000-11)—Primary Batteries—Part 1: General

IEC 60086-5(2000-07)—Primary Batteries—Part 5: Safety of batteries with aqueous electrolyte

2. Chemical Formula

Zinc—Manganese Dioxide (Alkaline Electrolyte) (+) Zn|KOH|MnO₂(-)

3. Nominal Voltage : 12.0 volt

4. Average Weight : 7.90 g

5. Nominal Capacity 50 mAh

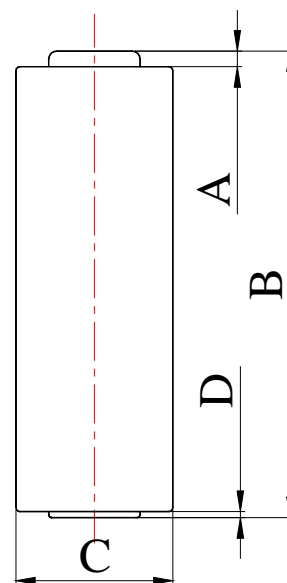
55mAh (Conditions : At 20±2°C using 20kΩ resistor, discharge current less than 0.10mA, discharge 24 hours a day continuously, End Voltage 6.0V)

6. Battery dimensions

Dimensions	Data range
A (Protruding dimensions of positive terminal)	Min=0.60 mm
B (Total Battery Height H)	28.00 ±0.40 mm
C (Battery Outer Diameter Φ)	10.05 ±0.10 mm
D (Protruding dimensions of negative terminal)	Min=0.10 mm

Battery Max Size: Φ10.15X28.40 mm

Battery Min Size: Φ9.95X27.60 mm



7. Battery Properties

(Conditions : Precision of loaded resistance $\pm 0.5\%$, Test time 0.2-1 sec , testing temperature $20\pm 2^{\circ}\text{C}$)

Battery Type	Open Voltage (V)	Load 2k Ω Voltage (V)	Inspection standards
New Battery (within 30 days)	≥ 12.30	≥ 11.70	MIL-STD-105E, Class II Double Sampling AQL=0.25
Normal storage for 12 months	≥ 12.10	≥ 11.50	
Normal storage for 24 months	≥ 12.00	≥ 11.25	

Remarks : Please refer to clause 12 for the definition of normal storage.

8. Output (Discharge)

(Conditions : Precision of load resistance $\pm 0.5\%$, test temperature $20\pm 2^{\circ}\text{C}$, humidity 40%~75%, test new battery within 30 days of receipt)

Discharge conditions			Min Average discharge time	
Discharge load standards	Discharge time daily	End Voltage	New Battery	Store at room temperature for 12 months
1 k Ω	24 hr	9.00 volt	120 min	110 min
	24 hr	7.20 volt	160 min	140 min
20 k Ω	24 hr	9.00 volt	85 hr	75 hr
	24 hr	7.20 volt	120 hr	115 hr

Inspection standards : 1) Test 9 pcs of batteries for each testing conditions;

- 2) Average discharge time needs to be equal to or greater than the prescribed value of average discharge time, and the quantity of battery with discharge time less than the prescribed value cannot be greater than one, so the discharge time of battery can be regarded as compliance with standards;
- 3) If the above conditions cannot be met, testing can be conducted again;

9. Safety properties—short circuit externally

Item	Conditions	Duration	Requirements	Inspection Standards
Over-discharge	Discharge to 3.0V, or after discharge completed, discharge again for 24 hours		No explosion	N=9,Ac=0,Re=1
Short circuit of positive and negative terminals	Temperature : 20—60°C Humidity : 40--90%	24 小时	No explosion	N=9,Ac=0,Re=1

10. Battery Labeling

The outer surface of the battery will be labeled with the following contents :

- (1) Model : A23 L1028
- (2) Country of origin, manufacturer name EUNICELL;
- (3) Battery warnings will be printed on outer jacket;
- (4) Battery polarity will be marked, “+” means positive terminal, and with red circle sheet at the positive terminal; “-” means the negative terminal, and with black circle sheet at the negative terminal;
- (5) Production date marked on inner box or card.

11. Notes

- (1) Please do not recharge batteries. This will lead to battery leakage, danger and cause damage to the charging apparatus;
- (2) Install battery with correct polarity or else the battery will be short-circuited;
- (3) Please do not short circuit batteries, heat, put into fire or dismantle the battery by yourself;
- (4) Do not discharge strongly the batteries. This may lead to battery leakage or cause danger;
- (5) Please do not mix new and old batteries when in use and also try not to use different brands of batteries at the same time;
- (6) Please remove those used batteries from the product and avoid over-discharge

batteries. This may lead to battery leakage which cause damage to the product.

- (7) Please do not solder the batteries. This may lead to damage to batteries.
- (8) Batteries should be kept away from the reach of children to avoid swallowing by children.
- (9) Do not dismantle the individual button cells inside the assembled battery by yourself.

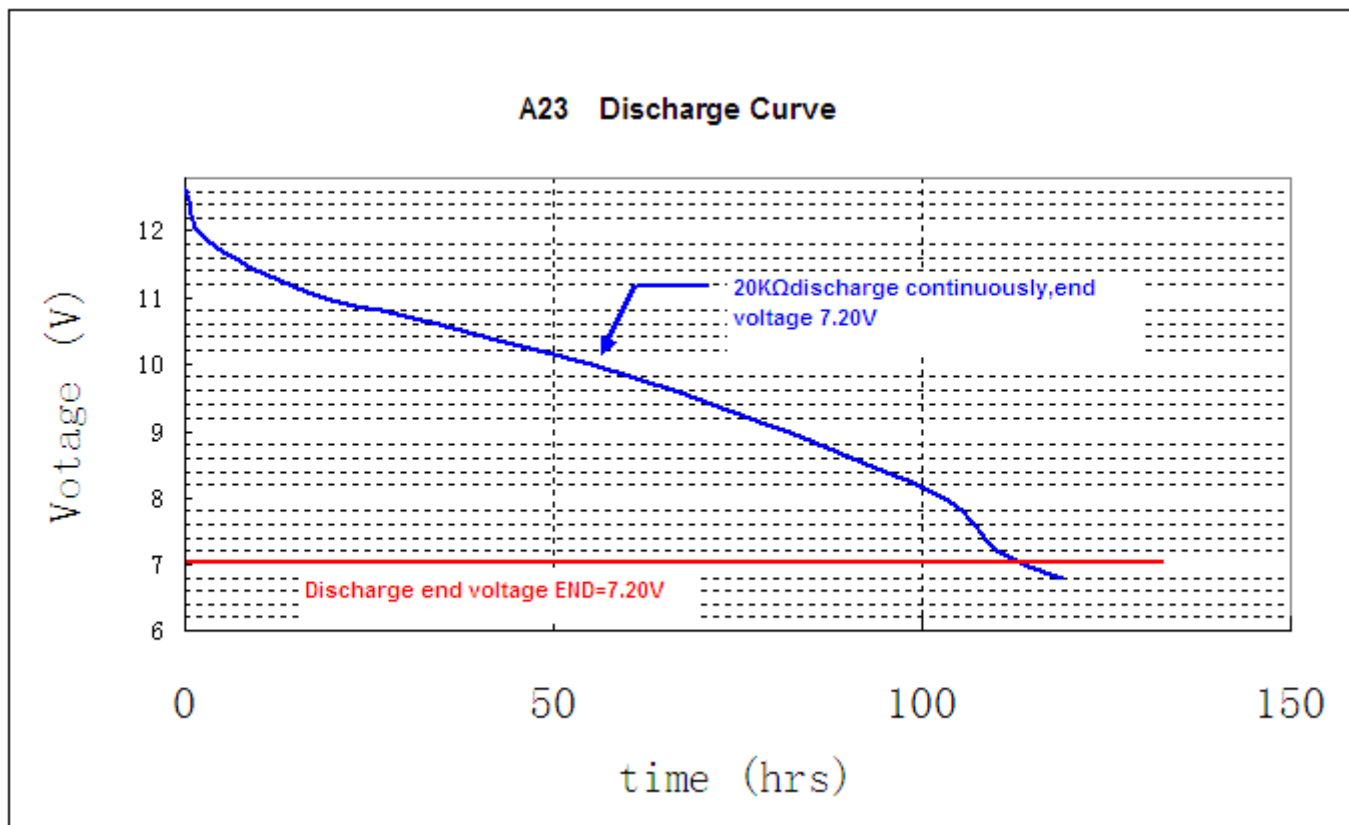
12. Battery Storage

- (1) Under room temperature and suitable environment, storage can be 2 years.
(Temperature $20\pm 2^{\circ}\text{C}$, Humidity $55\%\pm 20\%$)
- (2) After 1 year of storage, battery can retain capacity of over 92%;
- (3) After 2 years of storage, battery can retain capacity of over 82%.

13. Discharge curves

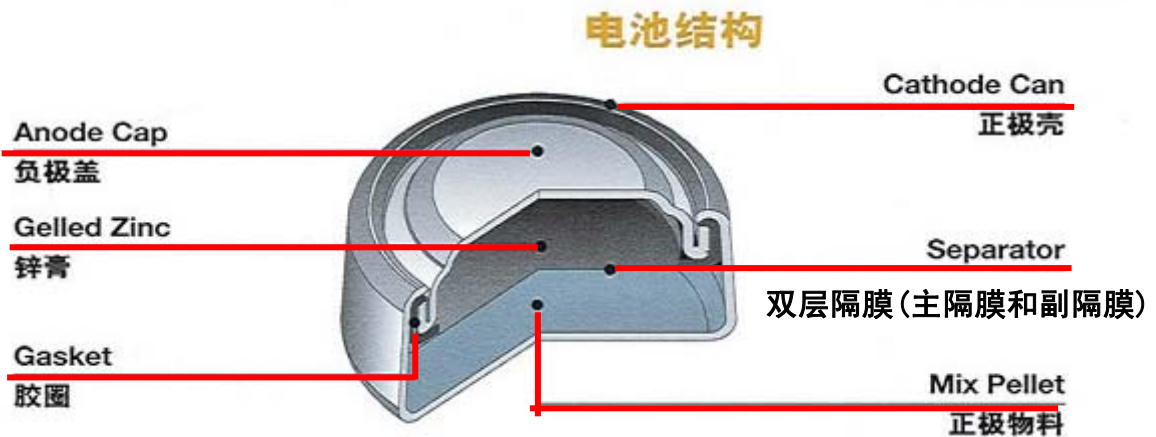
(Discharge test conditions $20\pm 2^{\circ}\text{C}$, Humidity $55\%\pm 20\%$)

Discharge method : Use $20\text{k}\Omega$ resistance , precision of resistance $\pm 0.5\%$, assembled the batteries and then discharge continuously 24 hors a day, discharge curve as follows :



14. Battery Structure

14. 1 Inner Individual Button Cells

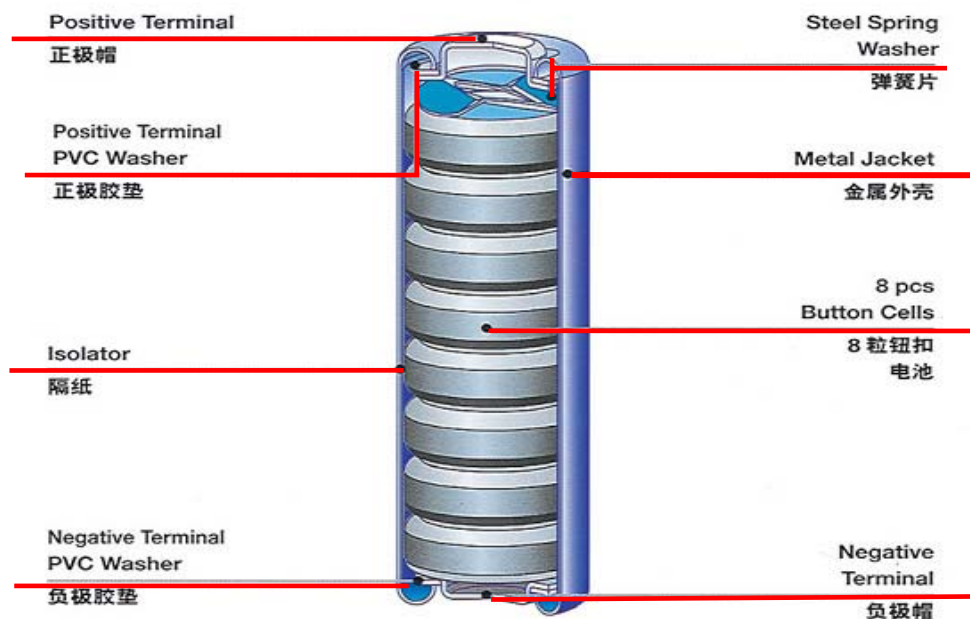


- 1) Positive can : Imported double glare plated iron;
- 2) Negative cap : Imported iron with pre-plated copper nickel;
- 3) Separator : double layer separator, using high grade Japan material, with the addition of imported glass paper as supplementary separator, so as to make sure can be applicable to large and small current output and extend the battery shelf life.

14. 2 Structure of Assembled battery

STRUCTURAL DIAGRAM OF A23 BATTERY

A23 电池结构图



- 1) Positive can : using imported iron and colour printed environmentally;
- 2) Battery contact plates using imported stainless steel, with hexagonal shape so as to make sure good contact between individual button cells and the safety of assembled battery pack;
- 3) Separator : make use of environmentally friendly black PET materials, so as to protect battery from high humidity and external radiations;
- 4) Positive and negative terminals : make use of imported iron;

15. Declarations :

We declare that the contents in this technical specifications comply with the relevant industry standards of the People's Republic of China while at the same time, satisfy the RoHS standards of Europe. Please note that the technical data are at the leading position in the battery industry.

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