Specification Approval Sheet

Name : ALKALINE ZINC MANGANESE DIOXIDE BATTERY

Model : AKYGA AAA LR3

SPEC : 1.5V

Number: AAA LR3

Specification Modification Records

Modification Time	Descriptions	Issued Date	Approved By
	Release 1	2023-04-26	

Content

Any copies are invalid without our company's approval

Specification Approval sheet

1. **Scope**
   This specification defines the technical requirements for LR03-plus alkaline battery.
   Cross References: ATC IEC JIS GB(CHINA)
   LR03 LR03 AM-4 LR03
2. **Purpose**
   To assure that any LR03 battery manufactured or procured by Akyga will meet or exceed our customers expectations.
3. **Reference Document**
   IEC 60086-1:2000 ⋯***Primary Batteries-Part1:General***
   IEC 60086-2:2000 ⋯***Primary Batteries-Part2:Physical and Electrical Specification***
   GB/T 7112-1998 ⋯***Zinc-Manganese Dry Batteries of R03,R1,R6,R14and R20***
   Alkaline Zinc-Manganese Dry Batteries of LR03,LR1,LR6,LR14and LR20
4. **Chemical System**
   Alkaline Zinc-Manganese Dioxide (KOH Electrolyte)
   MERCURY AND CADMIUM ARE NOT ADDED IN BATTERY
5. **Nominal Voltage** : 1.5volt
6. **Weight** : approximate 11.5 g
7. **Jacket: Foil Label**
8. **Nominal Capacity**
   1100mah (Conditions: 75Ω discharge 4hours per day at 20±2℃, end point voltage 0.9v)

9. **Electrical Characteristics**

	Off-load Voltage(v)	On-load Voltage(v)	Short circuit Current(A)	Acceptance Standard
Initialwithin30 days	1.58	1.45	6.0	GB2828-87 commonly I sampling AQL=0.4
After 12months	1.55	1.40	5.0	

conditions: 3.9Ω±0.5% load resistance, measuring time 0.3 seconds, temperature at 20±2℃, the hairspring type ampere meter with ±0.5% accuracy (0.5level) shall be used.

10. Service Time（condition: test temp. 20±2℃, tested within 30 days after delivery）

Discharge Condition			IEC Standard	Average Minimum Discharge Time	
Discharge Load	Daily Discharge time	End Point Voltage(v)		Initial within30day	After 12mth at 20±2℃
75Ω	4h	0.9	44h	70h	65h
5.1Ω	4m/h-8h/d	0.9	130min	230min	215min
20Ω	1h	0.9	10.0h	18h	16.5h
3.6Ω	15sec/min	0.9	350cycles	600cycles	530cycles
3.9Ω	24h	0.9	/	140min	126min

Satisfaction standard: 9 pieces of battery will be tested for each discharging standard.
The result of the average discharging time from each discharging standard shall be equal to or more than the average minimum time requirement.

11. Electrolyte Leakage Proof Characteristics

Item	Condition	Period	Characteristics	Acceptance standard
Over-discharge leakage test	20Ω continuous discharge at temp. 20±2℃, Relative Humidity:60±15%RH	48hours	There shall be no deformation exceeding the specified dimensions, nor leakage recognized by human eye	N=9 Ac=0 Re=1
High temp. storage leakage test	At temp. 45±2℃, Relative Humidity: Less than 65% RH	90days		N=40 Ac=1 Re=2
	At temp.60±2℃ Relative Humidity: 90±5%RH	20 days		

12. Safety Characteristics

Item	Condition	Period	Characteristics	Acceptance standard
Short circuit test characteristics	Temp.: 20±2℃	24hours	There shall be no explosion * of battery	N=5 Ac=0 Re=1
Abusive test characteristics	At temp. 20±2℃, short circuit 4 pieces of battery in series, one of the 4 battery has to be connected with its polarity reversed	24hours		N=20 Ac=0 Re=1

* An instantaneous release wherein solid matter from any part of the battery is propelled to a distance greater than 25 cm away from the battery.

13. Caution for Use

(1) Since the battery is not manufactured for recharging, there are risks of electrolyte leakage or causing damage to the device if the battery is charged.
(2) The battery shall be installed with its "＋"and "－" in correct position.
(3) Short-circuiting, heating, disposing of into fire and disassembling the battery are prohibited.
(4) Avoid using old and new batteries together.

14. Shelf Life

5 years after delivery under proper storage condition.

15. Discharge Curves

a. 20Ω-24h/d 10Ω-1h/d(**Page 3**)
b. 75Ω-4h/d 5.1Ω-4m/h-8h/d(**Page 4**)

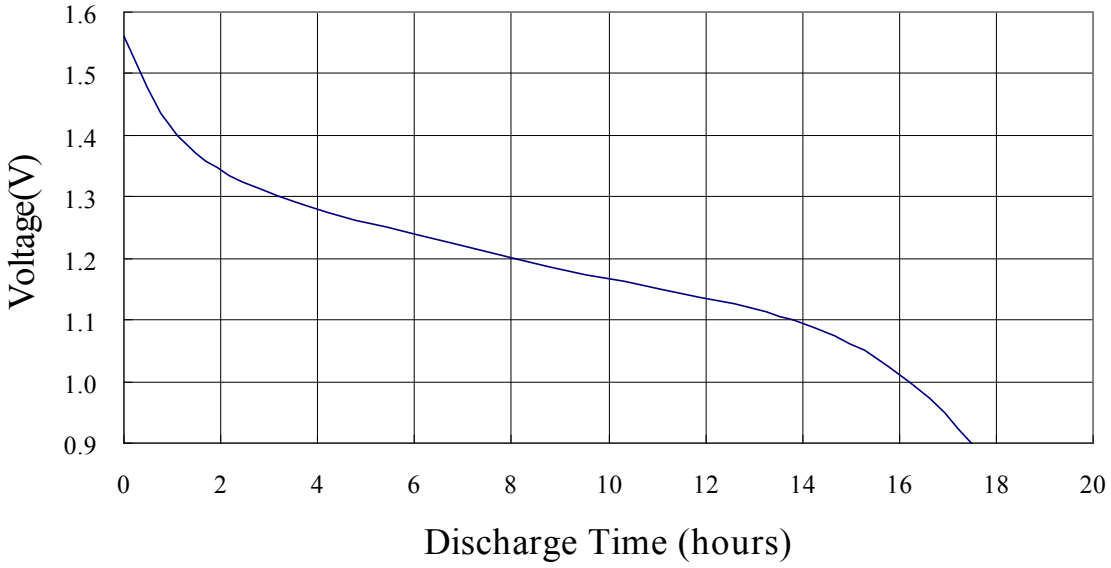
16. Expiry Period Marking:

a. Production date and shelf life 3 years marked on the finished cell.
b. For private, can mark according to customer's requirements.

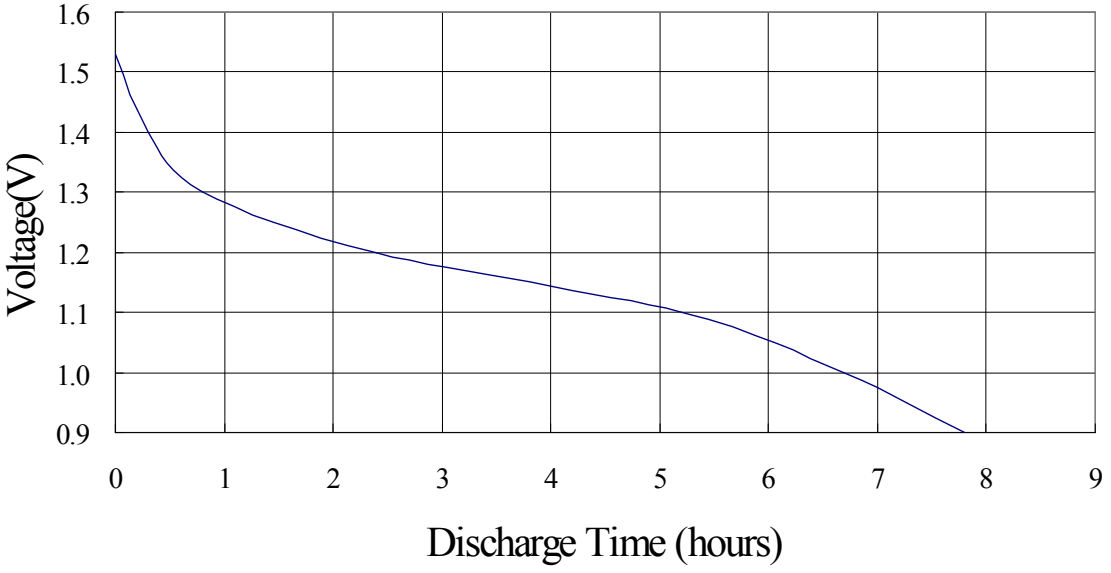
17. Battery Dimension(mm) Page 5

18. Battery Structure Page 5

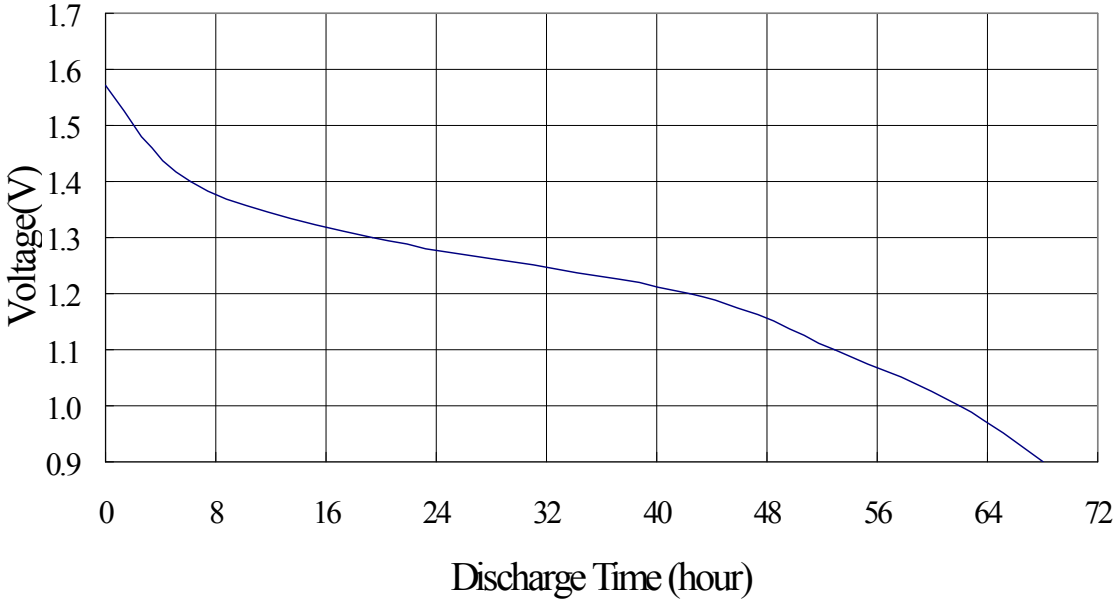
20Ω Continuous Discharge Curve



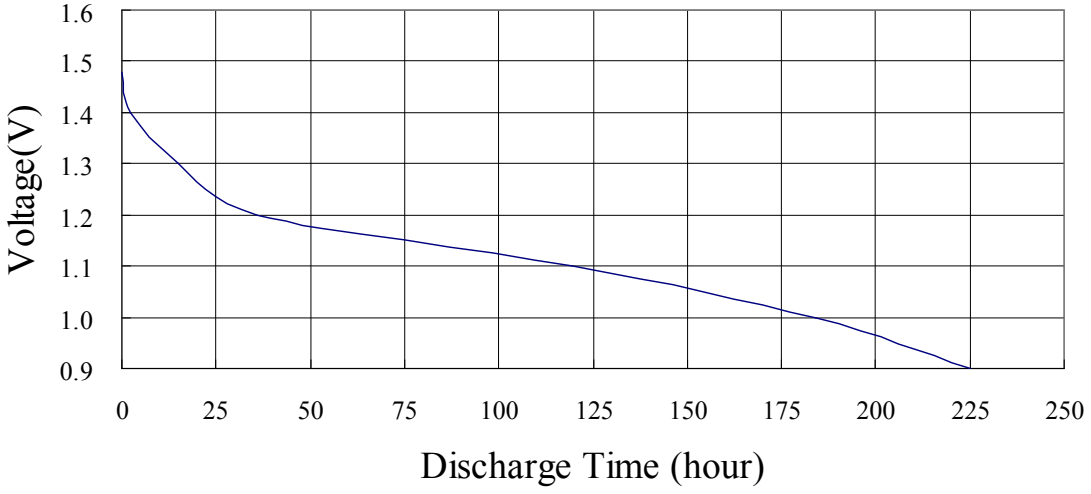
10Ω 1hour/day Discharge Curve



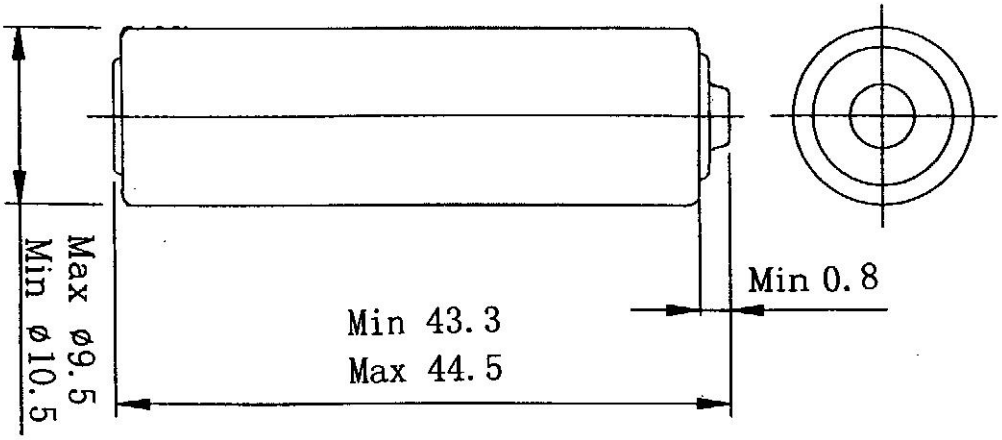
75Ω 4hour/day Discharge Curve



5.1Ω 4m/h-8h/day Discharge Curve



BATTERY DIMENSION



BATTERY STRUCTURE