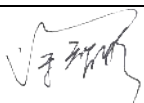



TECHNICAL SPECIFICATION
FOR
ALKALINE MANGANESE DIOXIDE BUTTON CELL
TYPE: LR1130H

Document No.	TMMQ/GPTD-BPS341	Effective date	2020-5-20
Edition	A00	Pages	Total 6 pages
Compiled	吴凤敏	Revision	
Auditing		Approved	

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1. Scope

This specification is applicable to the Alkaline Manganese Dioxide Button Cell LR1130H supplied by Guangdong TIANQIU Electronics Technology Co., Ltd.

2. Designations

2.1 Defining

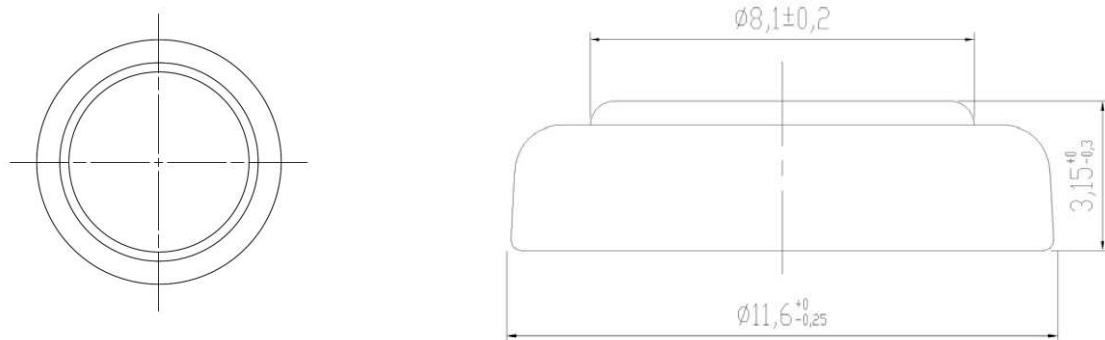
At the temperature of $20 \pm 2^\circ\text{C}$, loading at $1\text{k}\Omega$ continuous discharge, till the voltage down to 0.9V

3. Designations and Dimensions

3.1 Designations:

ALKALINE MANGANESE DIOXIDE BUTTON CELL LR1130H

3.2 Dimensions



4. Technical Specifications

Item	Characteristic
Nominal capacity	60mAh
Nominal voltage	1.5V
End point voltage	0.9V
Storage humidity	$60 \pm 15\% \text{RH}$ (no condensate)
Dimensions	maximum height:3.05mm Maximum diameter: $\Phi 11.6\text{mm}$
Approximate weight	1.14g (ONLY FOR REFERENCE)

5. Performance

5.1 Test conditions

Unless otherwise specified, the test conditions shall be, as a general rule, at the temperature of $20 \pm 2^\circ\text{C}$ and the relative humidity of $60 \pm 15\%$.

5.2 Electrical characteristics

NO.	Item	Test condition	Requirement
5.2.1	storage characteristics	Sampling plan: MIL-STD-105E, General Inspection Lever II, Single Sampling, AQL=0.4 Remark: On load voltage test method: 15KΩ/0.3s, The initial samples shall be tested within 30 days after delivery	Open Circuit Voltage(V) load voltage(V) Initial: ≥1.55 ≥1.50
5.2.2	Service output	Load resistance:15kΩ; Discharge method:24h/d continuously discharge; End point voltage 1.2V Remark: The initial samples shall be tested within 30 days after delivery.	Initial≥600hrs 12 months @ RT≥540hrs
		Load resistance:1kΩ; Discharge method:24h/d continuously discharge; End point voltage 0.9V Remark: The initial samples shall be tested within 30 days after delivery.	Initial≥48hrs 12 months @ RT≥43hrs
5.2.3	Short circuit test	Short circuit for 24hrs under 20±2℃	No explosion N=5, Ac=0, Re=1.

5.2.2&5.2.3 Acceptance test:

- 1) 9 pieces of battery will be tested for each discharging method.
- 2) The average discharging time from each discharging method shall be equal to or greater than the specified figure, and no more than one battery has a service output less than 80% of the specified figure.
- 3) One retest is allowed to confirm the results if the first test didn't meet the requirements.

5.3 Shelf life

One year after delivery under normal storage conditions.90% of the initial capacity will be maintained after one year storage.

6. Packing and Marking

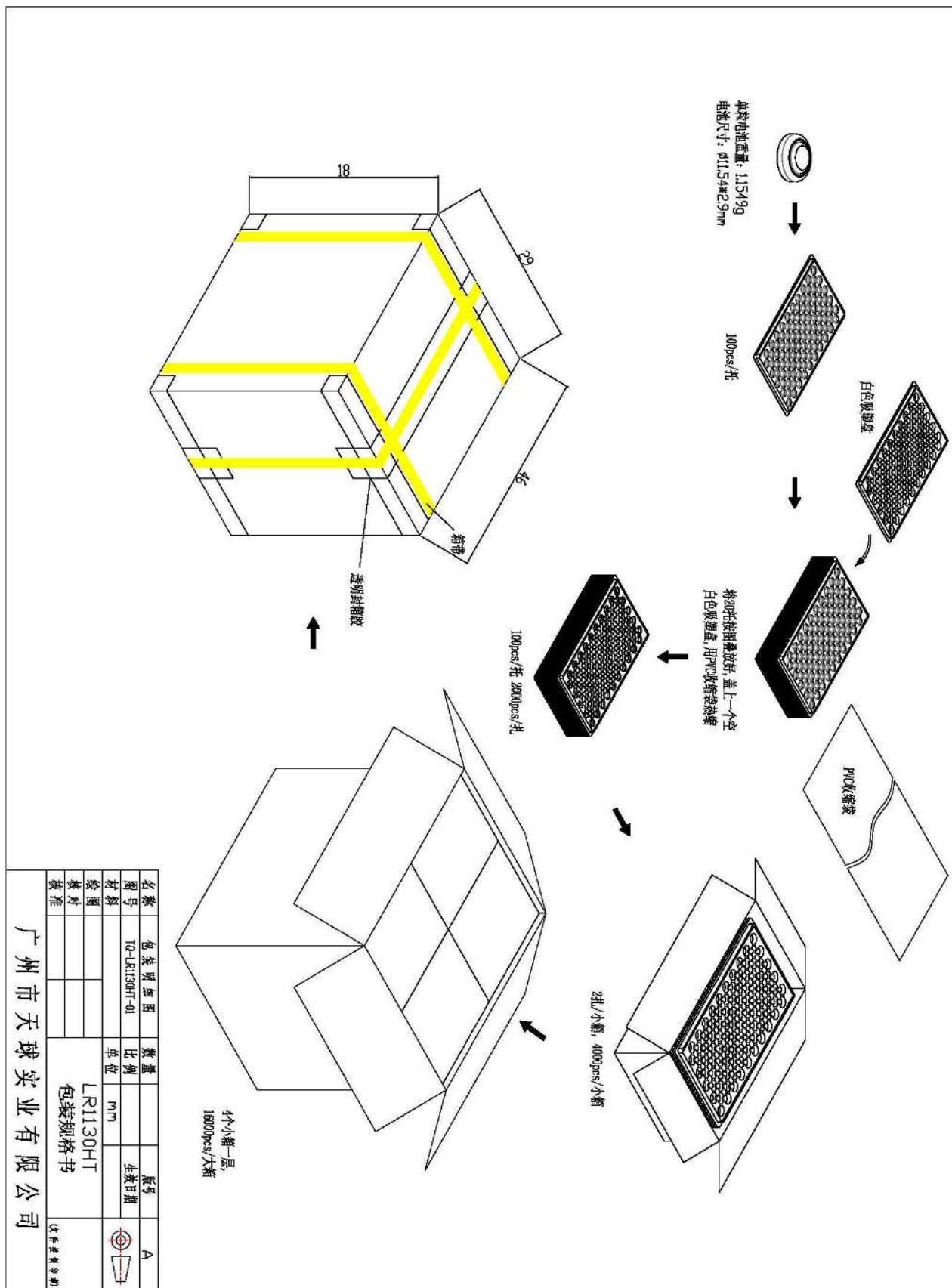
Any specific design and packing requirements will be accommodated as required. But as a general, the following markings will be printed, stamped or impressed on the body of the battery:

6.1 Marking

- 1) Designation: LR1130H
- 2) Type: Alkaline Cell
- 3) Polarity Marking:” + “and /or “-”.



6.2 Packing picture



7. Caution for Use

- 1) Since the battery is not designed to be charged, 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 “-” polarity in correct position, otherwise may cause the battery to be charged or over-discharged.
- 3) Short-circuiting, heating, disposing of in fire and disassembling the battery are prohibited.
- 4) Battery cannot be forced discharge, which lead to excess internal gas generation and, may result in bulging, leakage and explosion.
- 5) New and used batteries cannot be mix used at the same time, when replaced batteries, it is recommend to replace all and with the same brand type.
- 6) Exhausted batteries should be removed from compartment to prevent over-discharge, which cause leakage and damage to the device.
- 7) Direct soldering is not allowed, which will damage the battery.
- 8) Keep the battery out of the reach of children to prevent swallow, in case of accident should contact physician at once.
- 9) The battery should not be dismantled and deformed.

caution:

- » If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
- » If battery emits an odor, fever, discoloration, deformation or any abnormal phenomena appeared in the process of use/storage, removed the battery immediately from the device and dispose of the battery.

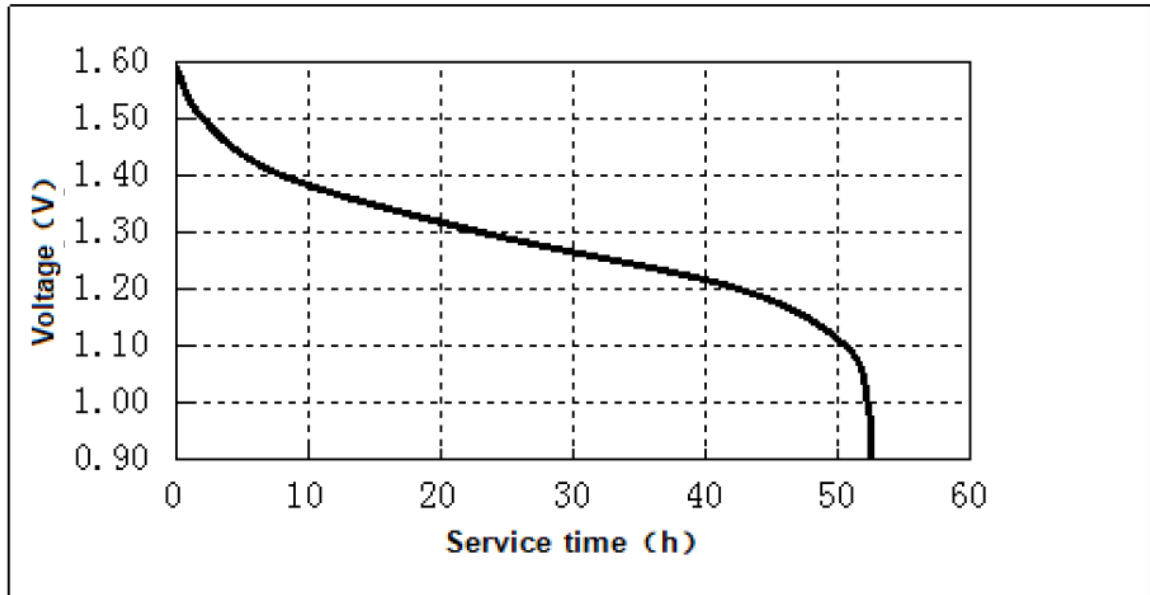
8. Referenced Standards

IEC 60086-1:2015 Primary Batteries –Part 1: General

IEC 60086-2:2015 Primary Batteries –Part 2: Physical and electrical specifications

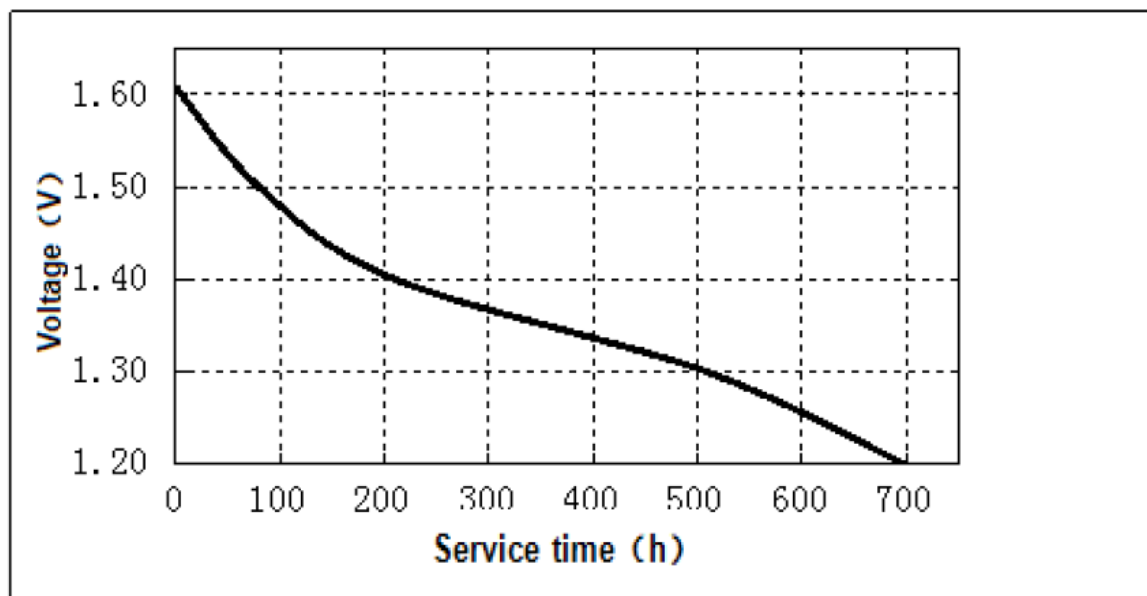
IEC 60086-3:2016 Primary Batteries –Part 3: Watch batteries

IEC 60086-5:2016 Primary Batteries –Part 5: Safety of batteries with aqueous electrolyte

9. Discharge Curves


Discharge method: 1K Ω , 24hours/day E.V 0.9V

Temperature: 20 \pm 2 $^{\circ}$ C



Discharge method: 15K Ω , 24hours/day E.V 1.2V

Temperature: 20 \pm 2 $^{\circ}$ C