

# TECHNICAL SPECIFICATION

## FOR

### MANGANESE DIOXIDE LITHIUM BATTERY

### TYPE:CR2025

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### 1. Scope

This specification is applicable to the Manganese Dioxide Lithium Battery CR2025 supplied by Guangdong TIANQIU Electronics Technology Co. Ltd.

### 2. Designations

#### 2.1 Defining

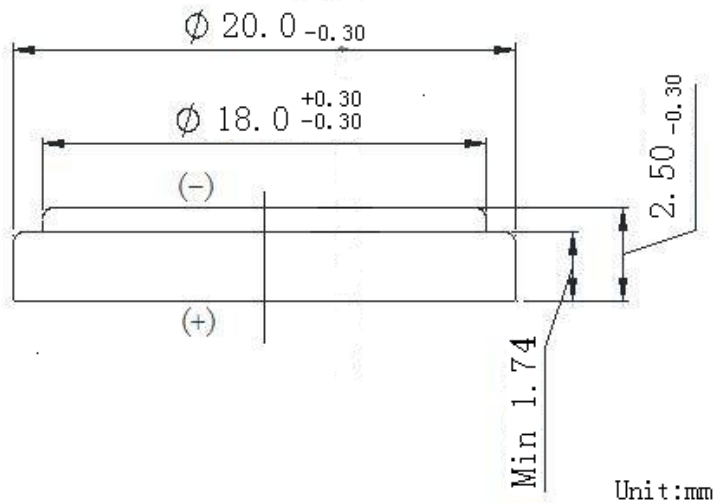
At the temperature of  $20 \pm 2^\circ\text{C}$ , loading at  $15\text{k}\Omega$  continuous discharge, till the voltage down to 2.0V

### 3. Designations and Dimensions

#### 3.1 Designations:

Manganese Dioxide Lithium Battery CR2025

#### 3.2 Dimensions



### 4. Product characteristic

Item	Characteristic
Nominal capacity	150mAh /0.45Wh
Nominal voltage	3.0V
Discharge Voltage	2.0 V
Suggested continuously discharge	0.2mA
Suggested maximum pulse curren	15mA
Service temperature	$-20\sim 60^\circ\text{C}$
Storage Temperature	$0^\circ\text{C}\sim 35^\circ\text{C}$
Storage humidity	45% ~ 75 % RH (no condensate)
Dimensions	maximum height:2.5mm Maximum diameter: $\Phi 20\text{mm}$

Average weight	Appx.2.4g (only for reference)
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## 5. Technical requirements

### 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 Level II, Single Sampling, AQL=0.4 Remark: Load voltage test method: $15\text{K}\Omega/1\text{S}$ , The initial samples shall be tested within 30 days after delivery	Open Circuit Voltage(V) load voltage(V) Initial: 3.10-3.50 3.0-3.40 12 months @ RT: 3.0-3.40 3.0-3.40
5.2.2	Service output	Load resistance: $15\text{k}\Omega$ ; Discharge method: 24h/d continuously discharge; End point voltage 2.0V Remark: The initial samples shall be tested within 30 days after delivery.	Initial $\geq 750\text{hrs}$ 12 months @ RT $\geq 720\text{hrs}$
5.2.3	Temperature characteristics	Load resistance: $15\text{k}\Omega$ ; Discharge method: 24 hrs/d continuously discharge; End point voltage 2.0V	$0\pm 2^{\circ}\text{C} \geq 650\text{hrs}$ $60\pm 2^{\circ}\text{C} \geq 735\text{hrs}$
5.2.4	Over-discharge	Continuously discharge: $15\text{K}\Omega$ , End point voltage 1.2V	No leakage, No deformation; N=9, Ac=0, Re=1
5.2.5	High temp. storage	$60^{\circ}\text{C}$ , RH below 70% for 30days	No leakage; N=40, Ac=0, Re=1
5.2.6	Short circuit test	The battery short circuit in $55^{\circ}\text{C}$ environment, When the battery shell after the temperature dropped to $55^{\circ}\text{C}$ continue to short circuit at least 1 hrs	No explosion, No fire ; N=5, Ac=0, Re=1.

#### 5.2.2&5.2.3 acceptance standard:

- 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 Expiration date

1 year storage in the conditions of GB/T 8897.1-2013, appendix E part

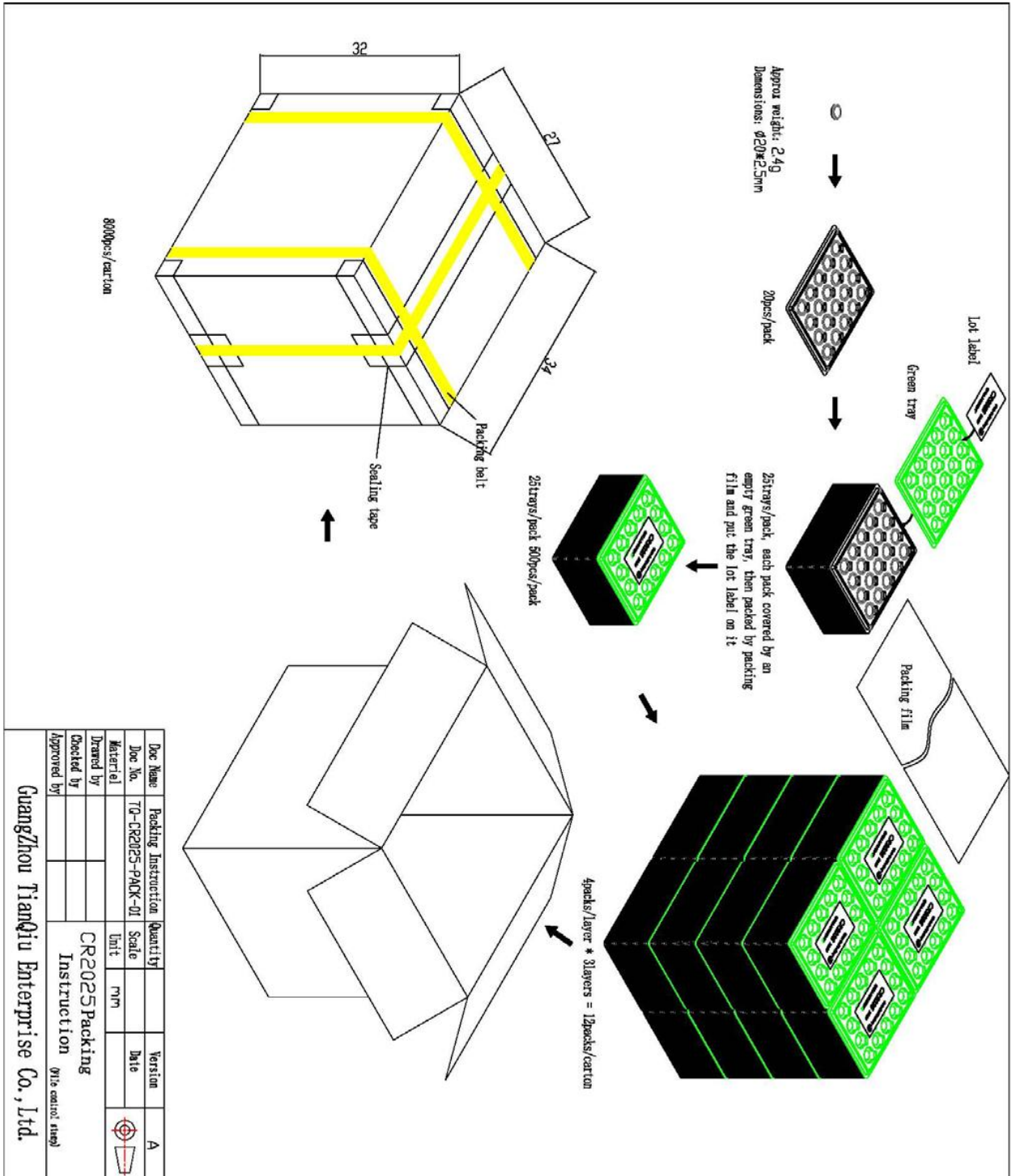
## 6. Packing and marking

### 6.1 Marking Design

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:



## 6.2 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.

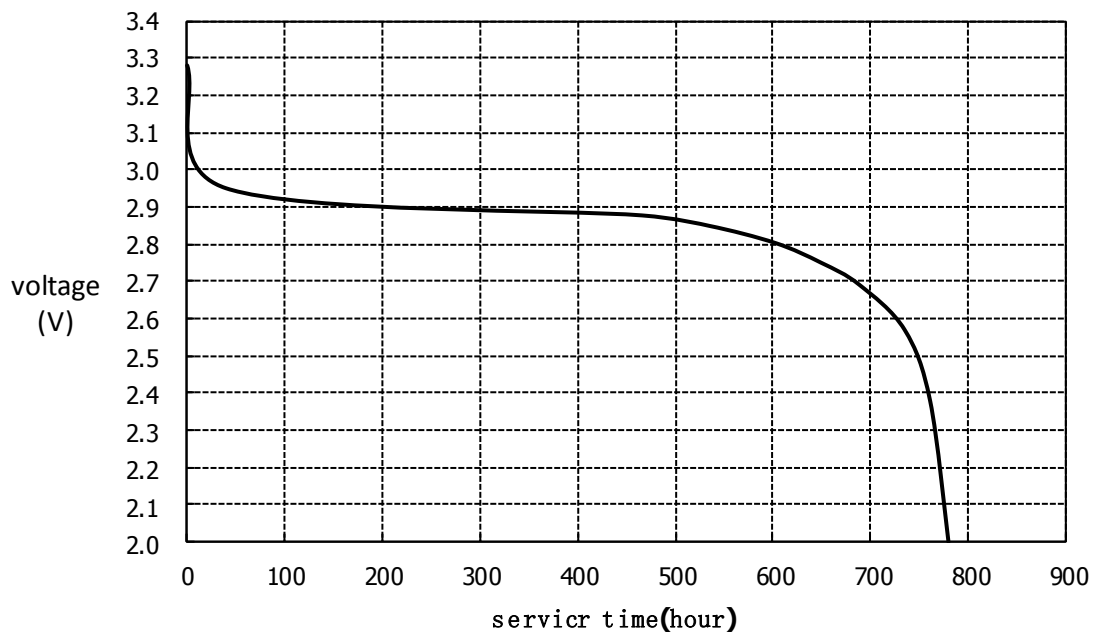
## 8. Referenced Standards

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

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

IEC 60086-4:2019 –Primary Batteries –Part 4: Safety of lithium batteries

## 9. Discharge Curves



Discharge method: 15K $\Omega$ , 24 hours/day EV 2.0V  
temperature of 20 $\pm$ 2 $^{\circ}$ C

