

## Alkaline Manganese Button Cell L1028F (Safety Structure)

### 1、Scope

The specification is applicable to the “Vinnic” brand Alkaline Manganese Button Cell L1028F (Mercury free) supplied by CHUNG PAK BATTERY WORKS LTD.

### 2、Kind of Products Specified

Vinnic	IEC	ANSI	JIS	Others
L1028F	/	1811A	/	A23, MN21, V23GA, GP23A

### 3、Normative references

GB/T 8897.1-2013 Primary batteries –Part 1: General (IEC 60086-1:2015, MOD);

GB/T 8897.2-2013 Primary batteries –Part 2: Physical and electrical specifications (IEC 60086-2:2015, MOD);

GB/T 8897.3-2013 Primary batteries –Part 3: Watch batteries (IEC 60086-3:2016, MOD);

GB/T 8897.5-2013 Primary batteries –Part 5: Safety of batteries with aqueous electrolyte (IEC 60086-5:2011, IDT);

Conform to Directive 2006/66/EC.

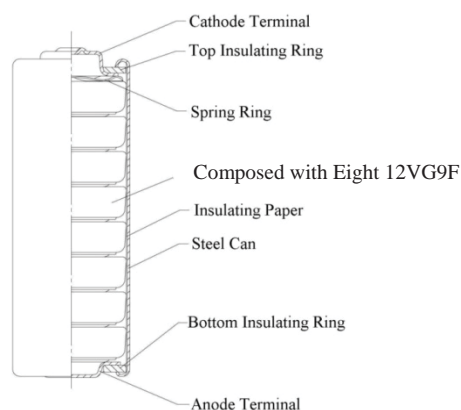
### 4、Chemical System

Zinc-Manganese Dioxide (Potassium Hydroxide Electrolyte)

### 5、Technical Specification

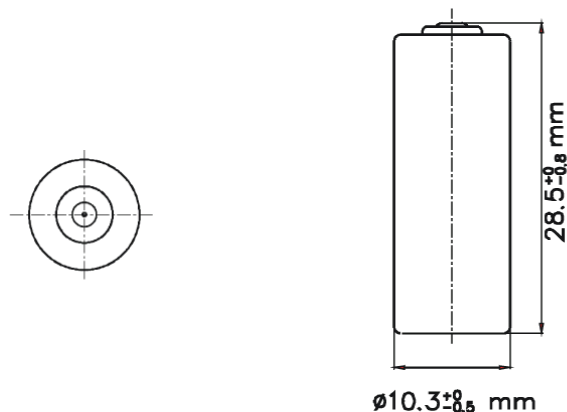
No.	Item	Characteristics		Remark
5.1	Model No.	L1028F		
5.2	Nominal Voltage	12.0V		
5.3	Nominal capacity (20±2℃)	54 mAh		Discharge at 20KΩ to 6.0V. The average discharging time of 9pcs batteries.
5.4	Typical Discharge Duration (20±2℃)	100 hrs		Discharge at 20KΩ to 6.0V. The average discharging time of 9pcs batteries.
		60 min		Discharge at 470Ω to 6.0V. The average discharging time of 9pcs batteries.
5.5	Dimension	Height (H)	28.5 <sup>+0</sup> <sub>-0.8</sub> mm	
		Diameter (Φ)	10.3 <sup>+0</sup> <sub>-0.5</sub> mm	
5.6	Average weight	8.10g		
5.7	Usage Temperature	0℃~40℃		
5.8	Storage Temperature	20±5℃		

5.9 The Drawing of Finished Battery :



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### 5.10 Outside Shape Dimensions and Terminals :



## 6 · Performance

### 6.1 Open-circuit Voltage :

Initial	$\cong 12.40$ V
After 12 Months Storage	$\cong 12.08$ V

### 6.2 Service Out-put :

Load Resistance	470 $\Omega$	20K $\Omega$
Discharge Method	Continuously	Continuously
End-point Voltage	6.0V	6.0V
Minimum Duration (Initial)	50 Min	95 Hrs
Minimum Duration (After 12 Months Storage)	40 Min	87 Hrs

Remark : The word " initial " is applicable to the products elapsed three months or less after production.

### 6.3 Resistance to leakage proof of High Temperature

Test Item	Condition	Period	Requirements
Resistance to leakage proof of High Temperature	Temp.: 45 $\pm$ 2 $^{\circ}$ C RH: Below 70%RH	30 days	No deformation and no external electrolyte leakage shall be observed.

### 6.4 Safety Characteristics

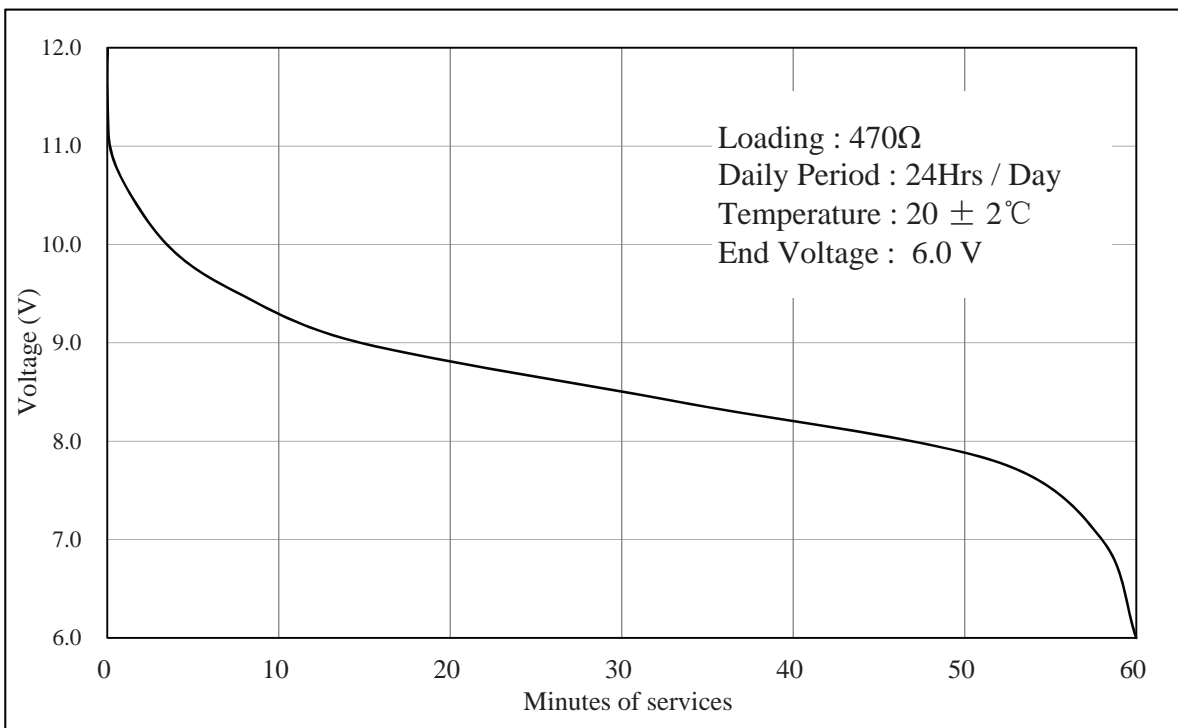
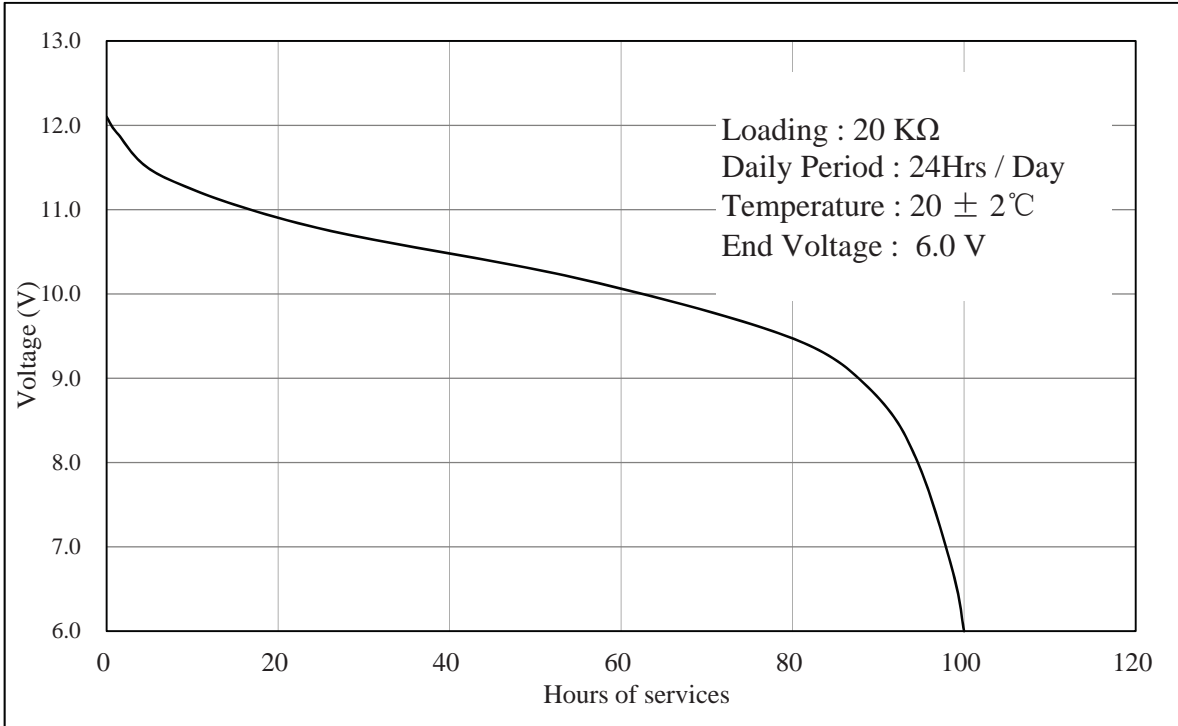
Test Item	Condition	Period	Requirements	Acceptance Standard
External Short Circuit	Temp.: 20 $\pm$ 5 $^{\circ}$ C	24 hrs	No explosion	N=10 Ac=0, Re=1

6.5 Storage life: 18 months. (Temperature: 20 $\pm$ 2 $^{\circ}$ C , Relative Humidity 55 $\pm$ 20% )

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### Appendix 2 : Discharge Characteristics

Standard Discharge Curve :



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Temperature Characteristic :

