



## 2. Ratings

Nominal Voltage		4.5V
Temperature Range for operation	Standard Temperature	20 $\square$ ±2 $\square$
	Special Temperature	30 $\square$ ±2 $\square$
	High temperature	45 $\square$ ±2 $\square$
Humidity Range for Storage	Standard Humidity	45%~75%
	Special Humidity	35%~65%
Approx weight		175g

## 3. Electrical Characteristics

Battery status	Off-load voltage (V)	On-load voltage (V)	Short circuit current (A)	Acceptance Standard
Initial within (30days)	4.750	4.30	9	GB2828.1-2003 commonly sampling AQL=0.4
After 12 months	4.65	4.00	6	

Conditions:20 $\Omega$ ±0.5% load resistance, measuring time 0.3 seconds, temperature at 20 $\square$ ±2 $\square$ , the hair spring type ampere meter with ±0.5% accuracy ( 0.5level) shall be used.

## 4. Service Time

Discharge condition			I Standard	Average minimum discharge time	
Discharge load( $\Omega$ )	Daily discharge	End voltage (V)		Initial within 30 days	After 12months under 20 $\square$ ±2 $\square$
3.9 $\Omega$	24h/d	2.7		170 min	
20 $\Omega$	1h/d	2.7	12 h	23 h	21 h
220 $\Omega$	4h/d	2.7	300 h	350 h	330 h

Capacitance:     mAH (S.T. 25 mA constant-current discharge to 2.7 V)

(Inspect standard: discharge 9 sample-batteries for each condition. It passes when average discharge time is no less than Rated Time and the quantity of the batteries which the value is under 80% of Rated Value is no more than one)

## 5. Anti-leakage characteristic

Item	Condition	Period	Characteristics	Inspect standard
Over-discharge characteristics	20Ω±2Ω, 65±20%RH 6.8Ωcontinuous discharges at temp. 20±2Ω, relative humidity 65%±20%RH	48h	no deformation exceeding the specified dimensions nor visible leakage	N=10 Ac=1 Re=2
	At temp. 60±2Ω, relative humidity 70%RH	30 days		N=40 Ac=1 Re=2
Storage characteristics	At room temp.	12 month		

## 6. Storage life

Under room temp and suitable environment, its shelf time is 2 years

## 7. Discharge Curves

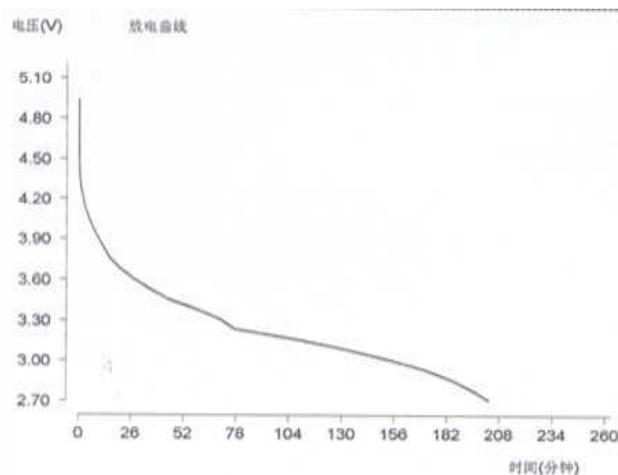
### 3LR12

Temperature: 20±2

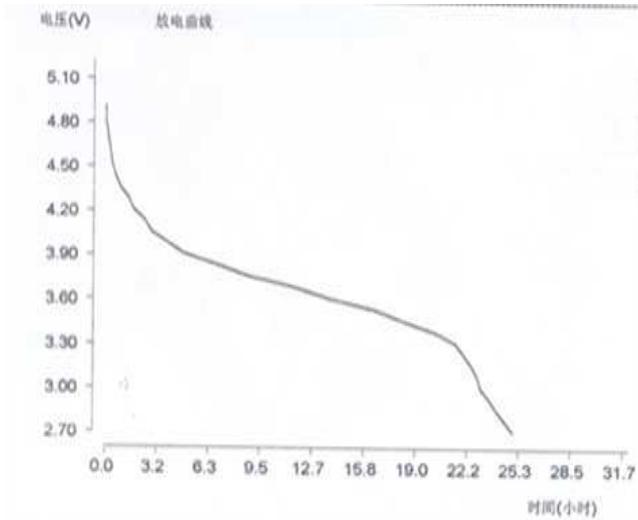
End-Point Voltage: 2.70 V

a) Load Resistance: 3.9Ω Discharge Pattern: 24h/day

Minimum Duration: 170minture

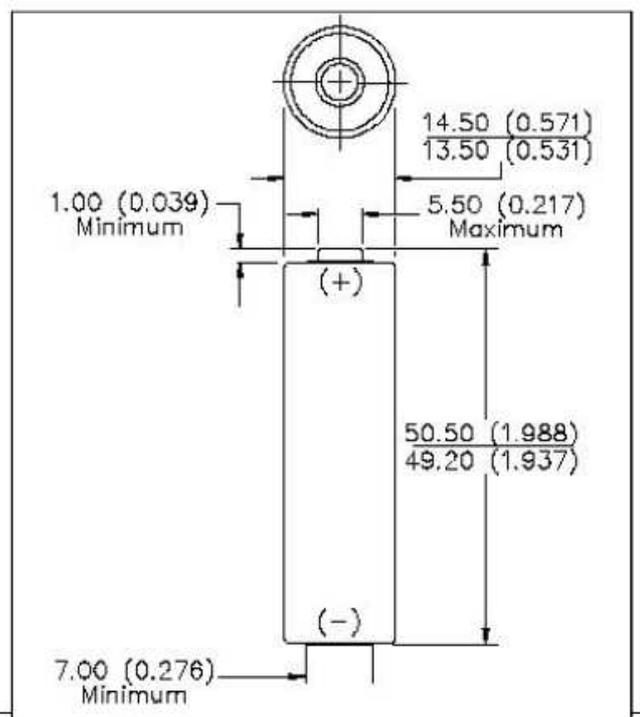
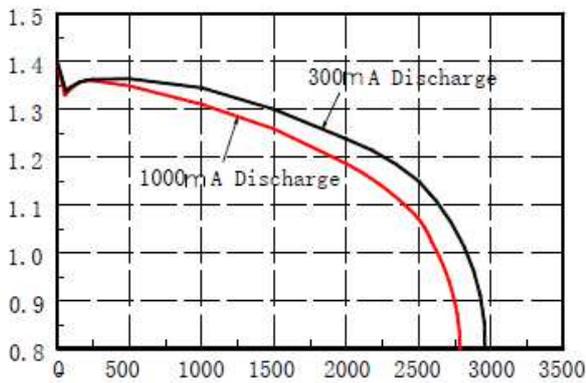


b) Load Resistance: 20Ω      Discharge Pattern: 1h/day  
 Minimum Duration: 23 hours



Discharge Curve discharge to 0.8V

Dimension (Bare cell) mm



## 8. Cautions in use

To ensure proper use of the battery please read the manual carefully before using it.

- Handling
- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with used or other different make, type, model batteries.
- Keep out of the reach of children.
- Storage
- Store the battery in a cool, dry and well-ventilated area.
- Disposal Regulations vary for different countries.
- Dispose of in accordance with local regulations.

## 9. Battery operation instruction

### 9.1 Discharging current

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the over sized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

### 9.2 Electric discharge temperature

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated.

### 9.3 Storing the Batteries

The battery should store in the product specification book stipulation temperature range. If has surpasses above for six months the long time storage, the discharge capacity will decrease sharply

## 10. Other Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as discharge, ambient temperature, are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. Please change the battery in time.