

# GP Batteries

## PRODUCT SPECIFICATION

### Mercury and Lead Free Alkaline Battery

Model: GP357F

#### Revision History

Revision	Date	Initiator	Reason for Change
0	2007/7/2	JianLin Wen	New Issue
1	2012/06/05	John Wei	Change discharge time

Prepared By	Approved By
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Date: 2012/6/5	Date: 2012/6/5

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## 1. SCOPE

This specification covers the requirements for primary silver oxide button cell.

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IEC: SR44

## 2. RATINGS

Description	Unit	Specification	Conditions
Description		Silver Oxide Low Drain Button Cell	
Nominal Voltage	V	1.55	digital multimeter
Nominal Dimension	mm	OD 11.60 X Ht 5.40	micrometer, caliper, projector
Application		Analog watch, etc.	
Average Weight	gram	2.30	digital balance
Shelf Life		Not less than 90% of the service capacity within first year, Not less than 85% of the service capacity within second year storage at 20 ± 2 °C Max 85 %RH.	
Date Code		Unless otherwise specified, each cell will carry a numeric year code and an alphabetical month code	ie. 6A=Jan 2006 6F=June 2006
Nominal Service Life	hr	620 (at 6.8 k ohm Load)	cut-off 1.2V
Average Service Capacity	mAh	165(at 3.0 k ohm Load)	cut-off 1.2V
Storage Temperature	°C	10 to 25°C and never exceed 30°C	10% loss for 20 days storage at 60°C
Storage Humidity	RH%	40-80	
Testing temperature	°C	20 ±2	
Operation temperature	°C	0 to 45	

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## 3. PERFORMANCE

Unless otherwise stated, tested should be done within one month of delivery under the following conditions:

Test	Unit	Specification	Conditions	Remarks
Service life	hr	$\geq 620$	6.8 K ohm load, cut-off voltage 1.2V Eight batteries discharged to the end voltage, calculate the average without the exclusion of any result. No battery permit to go below 8% of the service hours specified in the table. Only 1 retest is allowed for each lot tested	
Open Circuit Voltage (OCV)	V	$\geq 1.55$	The open circuit voltage is measured on a digital voltmeter with input impedance of 1 mega ohm minimum.	digital multimeter
Close Circuit Voltage (CCV)	V	$\geq 1.3$	Load resistor 200 ohm for 0.1 to 2 seconds	digital multimeter
Leakage		No leakage nor deformation	When batteries are stored and discharge under the standard conditions given in this document, no electrolyte or other internal component shall surfaces of the battery	naked eye
External Short circuit	N/A	No fire and no explosion.	After standard discharge, short circuit the cell at $20 \pm 5^\circ\text{C}$ until the cell temperature returns to ambient temperature. (The resistance of the inter-connecting circuitry shall not exceed 0.1 ohm.)	

## 4. CONFIGURATIONS, DIMENSIONS AND MARKINGS

Please refer to its Data Sheet.

## 5. EXTERNAL APPEARANCE

The cell shall be free from cracks, scars, breakage, rust, discoloration, leakage and deformation.

## 6. WARRANTY

Not less than 90% of the service capacity within first year, Not less than 85% of the service capacity within second year storage at  $20 \pm 2^\circ\text{C}$  Max 85 %RH.

## 7. Precaution , Handling and Storage

- ÿ Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.
- ÿ Keep away from children. If swallowed, contact a physician at once.
- ÿ Do not mix GP batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
- ÿ Do not short circuit batteries, permanent damage to batteries may result.
- ÿ Do not incinerate or mutilate batteries, may burst or release toxic material.

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- ÿ Do not solder directly to cells or batteries.
- ÿ Store batteries in a cool dry place.
- ÿ If find any noise, excessive temperature or leakage from a battery, please stop its use.
- ÿ When not using a battery, disconnect it from the device.
- ÿ Do not mix new batteries in use with semi-used batteries.
- ÿ When find battery power down during use, please switch off the device and take batteries out.
- ÿ Never put a battery into water or seawater.