



# GP Batteries

## Product Specification

Model No.: GP23AF (ULTRA version)

Document Number: BQS2264

Revision: 2

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## 1. SCOPE

This specification covers the requirements for primary manganese dioxide mercury & lead free button cell.

GP Model:GP23AF (ULTRA version)

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## 2. RATINGS

Description	Unit	Specification	Conditions																								
Description		Mercury and Lead free Alkaline Button Cell																									
Nominal Voltage	V	1.2	Digital multimeter																								
Nominal Dimension	mm	OD 10.22 X Ht 28.5	micrometer, caliper, projector																								
Application		Calculator, hearing aid, electronic toy																									
Average Weight	gram	7.5	digital balance																								
Date Code		Unless otherwise specified, each cell will carry a numeric year code and an alphabetical month code	Format in YM, <table border="1"> <tr> <td>Jan-14</td> <td>Feb-14</td> <td>Mar-14</td> <td>Apr-14</td> <td>May-14</td> <td>Jun-14</td> </tr> <tr> <td>41</td> <td>42</td> <td>43</td> <td>44</td> <td>45</td> <td>46</td> </tr> <tr> <td>Jul-14</td> <td>Aug-14</td> <td>Sep-14</td> <td>Oct-14</td> <td>Nov-14</td> <td>Dec-14</td> </tr> <tr> <td>47</td> <td>48</td> <td>49</td> <td>40</td> <td>4Y</td> <td>4Z</td> </tr> </table>	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	41	42	43	44	45	46	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	47	48	49	40	4Y	4Z
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41	42	43	44	45	46																						
Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14																						
47	48	49	40	4Y	4Z																						
Nominal Service Life	hr	≥ 90 (at 20 k ohm Load)	cut-off 6.0V																								
Nominal Capacity	mAh	≥ 46 (at 20 k ohm Load)	cut-off 6.0V																								
Storage Temperature	°C	10~25 and never exceed 30	10% loss for 20 days storage at 60°C																								
Storage Humidity	%RH	55±20																									
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	$\geq 90$	20 K ohm load, cut-off voltage 6.0V Eight batteries discharged to the end voltage, calculate the average without the exclusion of any result. No battery permit to go below 80% of the service hours specified in the table. Only 1 retest is allowed for each lot tested.	
Open Circuit Voltage (OCV)	V	$\geq 12$	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	$\geq 10.4$	Load resistor 1.6k ohm for 0.1 to 2 seconds	digital multimeter
Leakage		No leakage	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

### 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

GP Warranty that the specified battery satisfies the performances specified in this specification for 24 months after shipment from our factory. Not less than 90% of the service capacity within first year. Not less than 85% of the service capacity within second year storage at  $20 \pm 2^\circ\text{C}$   $55 \pm 20\% \text{RH}$ .

### 7. Precautions, Handling and Storage

- 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.
- Do not over-discharge, take out the batteries immediately from device when discharging finishing.
- Keep away from children. If swallowed, contact a physician at once.
- Do not mix GP batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
- Do not short circuit batteries, permanent damage to batteries may result.
- Do not incinerate or mutilate batteries, may burst or release toxic material.
- Do not solder directly to cells or batteries.
- Store batteries in a cool dry place.
- If find any noise, excessive temperature or leakage from a battery, please stop its use.
- When not using a battery, disconnect it from the device.
- Do not mix new batteries in use with semi-used batteries.

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- When find battery power down during use, please switch off the device and take batteries out.
- Never put a battery into water or seawater.