

GP Batteries

Product Specification

Model No.: GP189F

Document Number: BQS2057

Revision: 0

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1. SCOPE

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

GP Model: GP189F

IEC: LR54

2. RATINGS

Description	Unit	Specification	Conditions																								
Description		Mercury & lead free Alkaline Button Cell																									
Nominal Voltage	V	1.5	Digital multimeter																								
Nominal Dimension	mm	OD 11.60 X Ht 3.05	micrometer, caliper, projector																								
Application		Watch(with alarm and lamp), Calculator, melody card, etc.																									
Average Weight	gram	1.0	digital balance																								
Shelf Life		Not less than 90% of the service capacity within first year storage at 20 ±2°C 55±20%RH																									
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>44</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	44	46	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	47	48	49	40	4Y	4Z
Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14																						
41	42	43	44	44	46																						
Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14																						
47	48	49	40	4Y	4Z																						
Nominal Service Life	hr	130 (at 3.9k ohm Load)	cut-off 1.0V																								
Average Service Capacity	mAh	44 (at 3.9k ohm Load)	cut-off 1.0V																								
Storage Temperature	°C	10~25°C and never exceed 30°C	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																									

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	≥ 130	3.9 K ohm load, cut-off voltage 1.0V 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	≥ 1.5	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	≥ 1.3	Load resistor 300 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

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 12 months after shipment from our factory. Not less than 90% of the service capacity within first 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.

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- Do not mix new batteries in use with semi-used batteries.
- When find battery power down during use, please switch off the device and take batteries out.
- Never put a battery into water or seawater.