

GP Batteries

Product Specifications

Model No.:GP15AU

Document Number: U003

Revision:12

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1. APPLICABILITY

This specification is applicable to GP Ultra Alkaline Cell, GP15AU(No mercury added).

2. GENERAL

| | | |
|-----|---------------------|-----------------------------|
| 2.1 | Type designation | : LR6 (IEC/JIS), 15A (ANSI) |
| 2.2 | Nominal voltage | : 1.5V |
| 2.3 | Shape and dimension | : Refer to Drawing 1. |
| 2.4 | Typical weight | : 23g |
| 2.5 | Warranty period | : 36 months |
| 2.6 | Jacket | : Foil jacket |

3. APPEARANCE

There shall be no dirt, scratch or deformation detrimental to practical service in appearance.

4. CELL VOLTAGE

4.1 Test method

| | |
|--------------------|--|
| Method of sampling | : MIL-STD-105E level II single sampling normal inspection. |
| Voltmeter | : Digital Voltmeter (DVM) with the precision of 1mV (internal resistance not less than 1 Megohm) |
| Test temperature | : 20±2°C |

4.2 Off Load Voltage

| At shipping | 12 months after manufactured |
|-------------|------------------------------|
| Above 1.50V | Above 1.45V |

4.3 On Load Voltage

| Initial | 12 months after manufactured |
|-------------|------------------------------|
| Above 1.45V | Above 1.4V |

Load resistance : 3.9 ohm ± 0.5% (measure time : 0.3 seconds)

5. SERVICE OUTPUT

5.1 Test method

- (1) The resistance of external discharge circuit shall be as specified plus or minus 0.5%.
- (2) The duration of discharge time periods shall be as specified plus or minus 1%.
- (3) Storage shall be at 20±2°C, 65±20%RH and discharge tests shall be at 20±2°C, 65±20%RH.

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5.2 Service Life

| | Test Mode | Application | Standard | Initial (Nominal) | Initial (Minimum) | 12 months storage at 20°C (Nominal) |
|------------------------------|--|---|----------|----------------------|----------------------|---|
| Service life at 20±2°C | 43Ω 24H/D (EPV=0.9V) | Transistor radios | IEC/ANSI | 90H | 88H | 89H |
| | 3.9Ω 1H/D (EPV=0.8V) | Motor/toy | IEC/ANSI | 7.5H | 7.2H | 7.0H |
| | 10Ω 1H/D (EPV=0.9V) | Tape recorders | IEC/ANSI | 19.5H | 18.8H | 18.0H |
| | 24Ω 15s/M, 8h/D (EPV=0.9V) | Remote control | IEC | 44H | 42H | 41H |
| | 1.5mW/0.65mW , 2s/28S, 5M/H, 1H/D (EPV=1.05V) | Digital Camera | IEC | 65 cycles | 55 cycles | 30 cycles |
| | 250mA 1H/D (EDV:0.9V) | Electronic Games, Compact Disks & Mini Disks | ANSI | 6.8H | 7.5H | 5.9H |
| | 1000mA 10s on, 50s off 1H/D (EPV=0.9V) | Photo flash | IEC/ANSI | 450cycles | 380cycles | 300cycles |
| | 1000mA 24H/D (EPV=0.9V) | Digital Camera | ANSI | 50M | 38M | 30M |
| | 10Ω continuous (EPV=0.9V) | Reference test | | | 19.5H | 18.5H |

M: minute H: hour D: day EPV: end point voltage

*The initial discharge test shall commence within 30 days of manufacture. During this period, the cells shall be stored under room temperature conditions.
(20±2°C and 65±20% relative humidity)

5.3 Operating temperature: -20°C to 54°C (65±20%RH)

5.4 Storage temperature: -30°C to 45°C (65±20%RH)

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6. ELECTROLYTE LEAKAGE

| | Test Items | Test Conditions | Requirements |
|-----|----------------------|--|--|
| 6.1 | Arrival at warehouse | Within two months after shipping | There shall be no leakage observed with naked eye and no bulging or deformation of batteries in excess of dimensions on shown in the Drawing 1 |
| 6.2 | Long term storage | After storing for 12 months at $20 \pm 15^{\circ}\text{C}$, $65 \pm 20\% \text{RH}$ | |
| 6.3 | High Temperature | Test specimens shall be kept standing at $45 \pm 2^{\circ}\text{C}$ and below 70% RH or less for 30 days | |
| 6.4 | Over-discharge | 10 Ohm continuously discharge down to 0.6V at $20 \pm 2^{\circ}\text{C}$, $65 \pm 20\% \text{RH}$ | |

7. QUALITY ASSURANCE

| DESCRIPTION | SAMPLING PLAN |
|--------------------|--------------------|
| Battery dimensions | 0.65% (Note 5) |
| Appearance | 1.0% (Note 5) |
| Off load voltage | 0.65% (Note 5) |
| On load voltage | 1.0% (Note 5) |
| Service output | Note 1 (Note 5) |
| Leakage 6.1 | 0.65% (Note 2 & 5) |
| 6.2 | Note 3 |
| 6.3 | Note 4 |
| 6.4 | Note 4 |

Note 1 : Acceptance / rejection in accordance with IEC publication 60086-1 (2011), Sub-clause 5.3.

- 1) Test nine batteries.
- 2) Calculate the average without the exclusion of any result.
- 3) If this average is equal to or greater than the specified figure and no more than one battery has a service output of less than 80% of the specified figure, the batteries are considered to conform for service output.
- 4) If this average is less than the specified figure and/or more than one battery has a service output of less than 80% of the specified figure, repeat the test on another sample of nine batteries and calculate the average as previously.
- 5) If the average of this second test is equal to or greater than the specified figure and no more than one battery has a service output of less than 80% of the specified figure, the batteries are considered to conform for service output.
- 6) If the average of second test is less than the specified figure and/or more than one battery has a service output of less than 80% of the specified figure, the batteries are considered not to conform and no further testing is permitted.

Note 2: Leakage on arrival at warehouse is within two months after shipping.

Note 3: Sample size : n=20

Judgement : Ac=1 Re=2

Note 4: Sample size : n=20

Judgement : Ac=0, Re=1

Note 5: AQL General Inspection level II, single sampling plan.

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8. PACKAGING

Packaging shall be a form agreed by both parties.

Precaution & Handling

1. 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.
2. Keep away from children. If swallowed, contact a physician at once.
3. Do not mix GP batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
4. Do not short circuit batteries, permanent damage to batteries may result.
5. Do not incinerate or mutilate batteries, may burst or release toxic material.
6. Do not solder directly to cells or batteries.
7. Store batteries in a cool dry place.
8. If find any noise, excessive temperature or leakage from a battery, please stop its use.
9. When not using a battery, disconnect it from the device.
10. Do not mix new batteries in use with semi-used batteries.
11. When find battery power down during use, please switch off the device and take batteries out.
12. Never put a battery into water or seawater.
13. Do not recharge batteries.

Storage

1. Store in a cool, dry place before use.
2. Do not keep batteries at temperature of 45°C or above.
3. Do not keep batteries at relative humidity of 75% or above.

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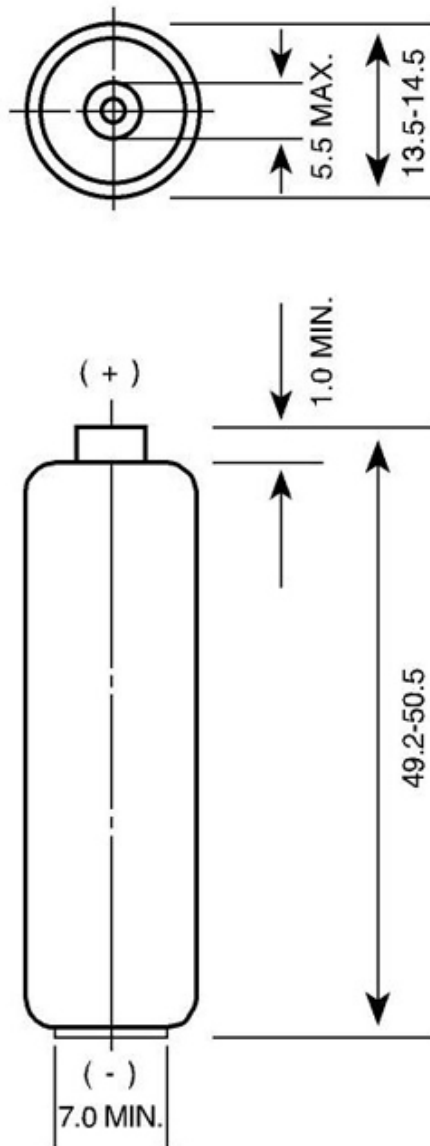
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Drawing 1



Unit: mm