GP Batteries

Model No.:**GP13A**

1. APPLICABILITY

This specification is applicable to GP Super Alkaline Cell, GP13A (No mercury added).

2. GENERAL

2.1	Type designation	: LR20(IEC/JIS) / 13A(ANSI)
2.2	Nominal voltage	: 1.5V
2.3	Shape and dimension	: Refer to Drawing 1.
2.4	Typical weight	: 140g
2.5	Warranty period	: 10 years
2.6	Jacket	: Foil jacket
2.7	Operating temperature	: -18°C~50°C (Recommended temperature 10°C~25°C)
2.8	Storage temperature	: Not exceed 30°C (Recommended)

3. APPEARANCE

The battery shall be visually inspected by unaided eye 30cm away from battery. The battery shall be no dirt, scratch or deformation detrimental to practical service in appearance.

4. CELL VOLTAGE

Unless otherwise stated, all measurements are to be performed at a

Standard Environment of **20 ± 2°C**

55 ± 20% RH.

All samples are normalized for 8 hours at least at the above environment prior to measurement. The digital voltmeter (DCM) is with the precision of 1mV (internal resistance not less than 1 Megohm). The load resistance of the total circuit is accurate within ±0.5% of the specified value.

4.1 Open circuit voltage and closed circuit voltage (Load resistance 1.0Ω, 0.3S)

		OCV(V)	CCV(V)
Initial	Min	1.57	1.30
	Normal	1.60	1.38
Stored 1 year	Min	1.55	1.20
	Normal	1.57	1.30

4.2 Service output

Load		600mA	2.2Ω	2.2Ω
Test mode		2h/d	1h/d	4m/15m, 8h/d
End voltage		0.9V	0.8V	0.9V
Unit		h	h	h
Applications		Portable stereo	Toy	Portable lighting
Initial	MAD	15.0	22.5	21.0
	Normal	16.5	24.5	22.5
Stored 1 year	MAD	14.0	20.5	20.0
	Normal	15.5	23.0	22.0

s : second m: minute h: hour d: day

Remark:
1) The initial discharge test shall commence within 30 days of manufacture. During stored period, the cells shall be stored under 20±2°C, RH 55±20% conditions.
2) Lot release service output test is conducted by 2.2Ω continuous discharging to 0.9volt. The batteries shall not leak during the service life test before the end voltage reached.
3) MAD：minimum average duration-our guarantee discharge value
4) Normal：normal data, it's our normal daily value, batteries discharge value are on this as base to be upper or lower.

5. ELECTROLYTE LEAKAGE

1 Over discharge leakage test
Test conditions: 20±2°C & RH 55±20%, 2.2Ω continuous discharge 48h.
Number of test samples: 9 batteries
Requirement: No visible leakage; No explosion.

2 High temperature leakage test
Test conditions: store 20 days under 60±2°C, then store 4~24h under standard environment.
Number of test samples: 24 batteries
Requirement: No visible leakage; No explosion.

Model No.:**GP13A**

6. QUALITY ASSURANCE

DESCRIPTION	SAMPLING PLAN
Battery dimensions	0.65% (Note 3)
Appearance	1.0% (Note 3)
Off load voltage	0.65% (Note 3)
On load voltage	1.0% (Note 3)
Service output	Note 1 (Note 3)
Leakage 5.1	Note 2
Leakage 5.2	Note 2

Note 1: Acceptance / rejection in accordance with IEC publication 60086-1 (2021), Sub-clause 5.3.

1) Test eight 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 eight 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: Sample size : n=20
Judgement : Ac=0, Re=1

Note 3: AQL General Inspection level II, single sampling plan.

Model No.:**GP13A**

7. SECURITY CHARACTERISTICS

1. User Drop Test

   This test simulates the situation when a battery is accidentally dropped.

   Test conditions: Undischarged test batteries shall be dropped from a height of 1 m onto a concrete surface. Each test battery shall be dropped six times, twice in each of the three axes. The test batteries shall be stored for 1 h afterwards.

   Number of test sets: 5 batteries

   Requirement: No fire, No explosion.

2. Short circuit explosion proof characteristics

   This test simulates an external short circuit of a battery during daily handling of batteries.

   Test conditions : Positive and negative terminals of an undischarged battery shall be connected directly. The circuit shall be completed for 24 h or until the battery case temperature has returned to ambient. The resistance of the inter connecting circuitry shall not exceed 0.1Ω.

   Number of test samples : 5 batteries

   Requirement : No fire or explosion; Leakage is allowable.

3. Incorrect installation

   This test simulates incorrect installation of a battery in a series application.

   Test conditions : 4 undischarged batteries are used per test. 3 batteries are placed correctly in series; the 4th battery is reversed with respect to polarity. The circuit is maintained until venting occurs or the reversed battery temperature has returned to ambient.

   Number of test sets : 5 (20 batteries)

   Requirement : No fire or explosion; Leakage is allowable.

Model No.:**GP13A**

8. PACKAGING

Packaging shall be a form agreed by both parties.

Precaution & Handling

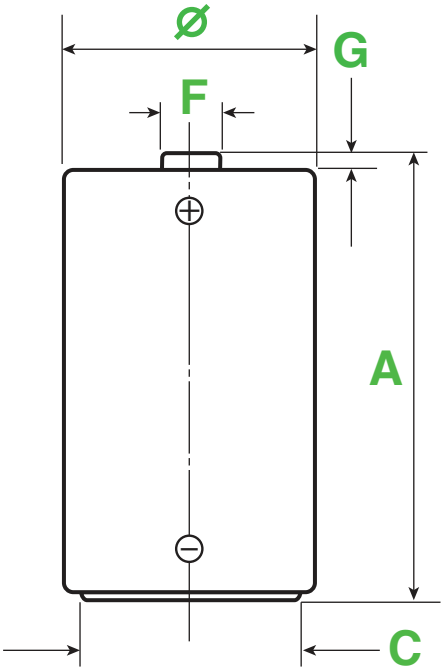
1. Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.
2. Keep away from children. If swallowed, contact a physician at once.
3. Do not mix 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 above 30°C.
3. Do not keep batteries at relative humidity above 75%.

Model No.:**GP13A**

Drawing 1



/	min	max
Ø	32.3	34.2
A	59.3	61.5
C	18.0	-
F	-	9.5
G	1.5	-

Dimension : mm

Model No.:**GP13A**