

GP Batteries

Product Specifications

Model No.:CR2032

GP SKU# GPPBL2032207

R04

Page 1 of 5

1. SCOPE

This specification is applicable to GP Manganese Dioxide Lithium Primary Cell

2. GENERAL

Type Designation (IEC/JIS)	CR2032
Nominal Voltage	3V
Nominal Capacity (15k Ω to 2.0V at 20 $\pm$ 2 $^{\circ}$ C / RH 65% $\pm$ 10%)	230mAh
Typical Weight	3.0g
Maximum Discharge Current (5sec "ON" and 55sec "OFF")	10mA
Operating Temperature	-20 $^{\circ}$ C to 60 $^{\circ}$ C

3. APPEARANCE

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

The manufacturing date code shall be printed on the negative cap surface of the cell. Three alphanumeric letters "YYM" indicate the manufacturing date, the first 2 letters for its year and the third one for its month.

The year is indicated by its last 2 digits in the dominical year (A.D.). This part depends on customer requirement.

Example: 115 (May/2011).

Month	1	2	3	4	5	6	7	8	9	10	11	12
Code	1	2	3	4	5	6	7	8	9	O	Y	Z

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 $\pm$ 2 $^{\circ}$ C

4.2 Cell voltage

	Initial	12 months after manufactured
Off Load	3.0V ~ 3.5V	3.0V ~ 3.5V
On Load	Above 2.9V	Above 2.7V

Load resistance : 300 ohm $\pm$ 0.5% (measure time : 0.3 seconds)

The manufacturer reserves the right to alter or amend the design, model and specification without prior notice.

GP Batteries

Product Specifications

Model No.:CR2032

GP SKU# GPPBL2032207

R04

Page 2 of 5

5. SERVICE LIFE

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 $20\pm 2^{\circ}\text{C}$, $65\pm 10\%\text{RH}$ and discharge tests shall be at $20\pm 2^{\circ}\text{C}$, $65\pm 10\%\text{RH}$

5.2 Service life

	Test Mode	Initial (MAD)	12 months storage at 20°C (MAD)
Service life at $20\pm 2^{\circ}\text{C}$	15k Ω 24h/D (EPV=2.0V)	$\geq 1100\text{h}$	$\geq 1040\text{h}$

h: hour D: day EPV: end point voltage MAD: Minimum Average Duration

- Initial test: A test commencing within one month after delivery.
- Storage test: A test conducted after 12 months storage under the specified conditions after delivery.

6. ELECTROLYTE LEAKAGE

	Test Item	Test conditions	Requirement
6.1	Arrival at warehouse.	within one month after delivery	There shall be no leakage observed with the naked eye and no bulging or deformation of batteries in excess of dimensions shown in the drawing 1
6.2	Room temperature	After storing for 12 months at $20\pm 2^{\circ}\text{C}$, $65\pm 10\%\text{RH}$,	
6.3	High temperature	Test specimens shall be kept standing at $45\pm 2^{\circ}\text{C}$ and $60\pm 10\%\text{RH}$ for 30 days.	

GP Batteries

Product Specifications

Model No.:CR2032

GP SKU# GPPBL2032207

R04

Page 3 of 5

7. QUALITY ASSURANCE

DESCRIPTION	SAMPLING PLAN
Battery dimensions	1.0% (Note 5)
Appearance	1.5% (Note 5)
Off load voltage	0.65% (Note 5)
On Load Voltage	0.65% (Note 5)
Service output	Note 1 (Note 5)
Leakage 6.1	Note 4
6.2	Note 3
6.3	Note 4

Note 1 : Acceptance / rejection in accordance with IEC publication 60086-1 ed.12.0 (2015), 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: 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.

8. PACKAGING

Packaging shall be per manufacturer standard, unless otherwise agreed by both parties.

GP Batteries

Product Specifications

Model No.:CR2032

GP SKU# GPPBL2032207

R04

Page 4 of 5

9 WARRANTY

9.1 The manufacturer guarantees that the battery satisfies the performances in this specification for 12 months after shipment from our factory. When the battery fails to conform to the specification is found during this period and it is clearly caused by manufacturer, the manufacturer will be responsible with limited to supply free of charge battery as one to one replacement with delivery to the original PO shipping location.

9.2 The manufacturer does not have any responsibility for the problem caused in case of improper battery handling on operation, installation, test, service and inspection, or the Instruction and Precaution described in this specification have not been properly followed.

10. PRECAUTION & HANDLING

- 1) Do not disassemble or short-circuit batteries.
- 2) Do not recharge batteries.
- 3) Do not dispose of batteries in fire.
- 4) Do not allow metal objects to contact the battery terminals.
- 5) Do not mix with used or other battery type (such as alkaline with carbon zinc).
- 6) Do not solder the batteries directly. If soldering or welding connection to the battery is required, consult our engineer for proper methods.
- 7) Do not over-discharge batteries. Force discharging batteries by external power source in a series may cause explosion.
- 8) To install or remove batteries, follow the equipment manufacturer's instructions.
- 9) Keep battery away from small children. If swallowed, consult a physician at once.
- 10) Remove batteries from device when it is not in use.

11. Storage Conditions

- 1) Store in a cool, dry place before use.
- 2) Store batteries at temperature between 10°C to 25°C.
- 3) Store batteries at relative humidity between 40% to 75%.

GP Batteries

Product Specifications

Model No.: CR2032

GP SKU# GPPBL2032207

R04

Page 5 of 5

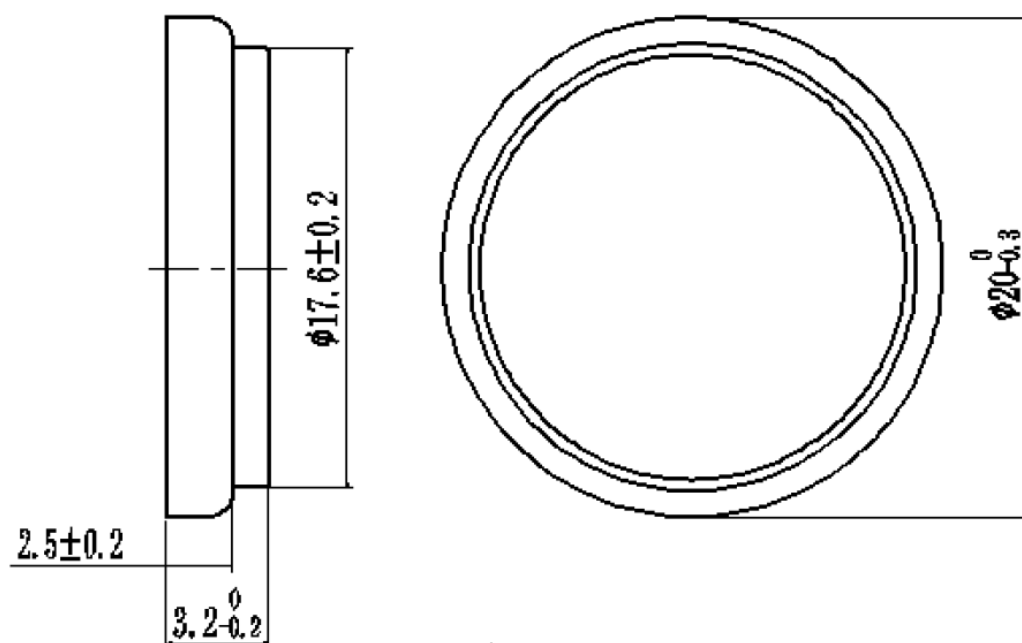
Drawing 1



DIMENSIONS:

+ve terminal material: SUS430

-ve terminal material: SUS430 with embossing



Unit: mm