

PECPL

SPECIFICATION	
Manganese dioxide Lithium Battery	
Ordering Code :	CR-2032L/BN
Model Code :	CR2032
Customer PN :	C0-AA14-001-2032

Approved by
Division/Department
Name
Title
Signature/date


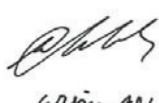

ISSUED

Jan,31,2017

PT. Panasonic Gobel Energy Indonesia

Date of Issued : Jan,31,2017

PT. Panasonic Gobel Energy Indonesia

Approved	Checked	Drafted
 K. Ponomarev	 W. S. N.	 D. S. N.

Revision history		
No.	Date	Revision
1	Jan,31,2017	Issued
2		
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1. Applicable range

This specification applies to manganese dioxide lithium batteries which are delivered from PT. Panasonic Gobel Energy Indonesia

2. Nominal specification

- 2.1. Model code (bare cell) CR2032
- 2.2. Nominal voltage 3V
- 2.3. Nominal capacity 225 mAh
- 2.4. Operation temperature From -30 to 60 °C
(Please consult Panasonic in case continuous high-temperature usage conditions)
- 2.5. Storage Condition Temperature : 5°C to 35°C, Humidity : 45~85%RH
(Recommendable)
- 2.6. Mass Refer to drawing 1
- 2.7. Dimension Refer to drawing 1
- 2.8. Battery composition Lithium primary battery composed of cathode from manganese dioxide anode from lithium and electrolyte from organic solvent and lithium salt. Both cathode and anode outer shells are made of Stainless Steel with Ni plating on surface

3. Battery characteristics

Table 1. CR2032 characteristics

	Items	Test method	Temperature		initial	After 1 year in room temperature
1	Open circuit voltage	Voltage between terminals (Min)	20 +/- 2°C		3.1V	3.1V
2	Internal resistance	1kHz sine wave method (Max.)	20 +/- 2°C		20Ω	-
3	Discharge duration	Continuous discharge (Std.)	20 +/- 2°C	Load : 15kΩ cut offV : 2.0V	1183h	1133h
		Continuous discharge (Min.)			1041h	1019h

4. Indication

4.1. Below items are indicated on battery or its package

Model code CR2032
Nominal voltage 3V
Plus polarity +
Manufacturer or its brand : Panasonic
Production country and Classification Made in Indonesia

(Design of indication can be changed without notice)

4.2. Production date

Stated on minus side of battery

First digit: End digit of dominical year; Second digit; Month (October=O, November=Y, December=Z)

Example : 3Z (December/2013)

4.3. UL

This battery is certificate by UL and listed on file number MH12210

4.4 Production Site

PT. Panasonic Gobel Energy Indonesia, Jl. Teuku Umar Km. 44, Cikarang Barat Bekasi, Jawa Barat Indonesia

4.5 RoHS comply

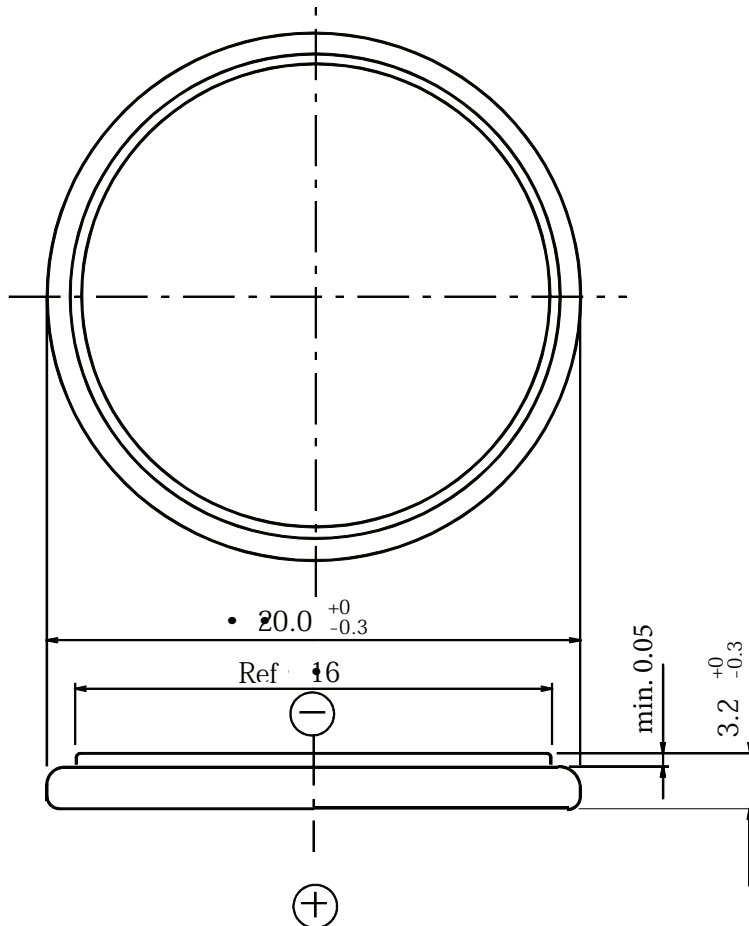
The battery herein complies with EU battery directive (2006/66/EC).

Since the batteries shall comply with EU battery directive (2006/66/EC), RoHS directive does not cover batteries. However, this battery does not use the Six substances restricted by RoHS directive.

Therefore, each content of Six restricted substances is less than the maximum amount regulated by RoHS.

Drawing 1. Dimensions

Ordering code : CR2032



Terminal : Plus terminal material : Nickel plated stainless steel
Minus terminal material : Nickel plated stainless steel

Mass : Approx. 2.9 g

5. Test condition and performance

5.1. External dimensions

Measure the battery dimensions with caliper described in item 6.3.(1) herein without making short-circuit.

Dimensions shall be confirmed with drawing 1 herein.

5.2. Open circuit voltage

Measure the open circuit voltage with the voltage meter described in item 6.3.(2) herein after keeping the battery for 2 hours at least in measurement environment. Open circuit voltage shall conform to table 1 herein.

5.3 Internal resistance

Measure the internal resistance with the resistance meter described in item 6.3.(3) herein after keeping the battery for 2 hours at least in measurement environment. Internal resistance shall conform to table 1 herein.

5.4. Discharge duration

Discharge the battery with the load resistance specified in table 1 herein after keeping the battery in measurement environment for 8 hours at least. The discharge duration is determined as an operation time that the operation voltage reaches to the cut off voltage specified in the table 1 herein.

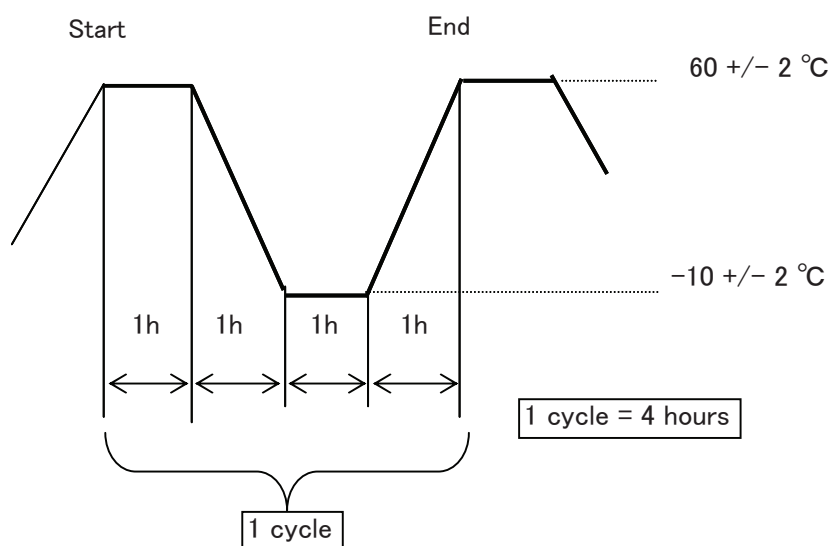
Discharge duration shall conform to table 1 herein.

5.5. Anti-leakage

Appearance check after 42 cycles of thermal cycle by the condition showing below. Battery shall not have deformation or leakage.

* This test shall be started from high temperature (60°C) position.

* No humidifying to ambient temperature and humidity.



5.6. Storage characteristics

(1) Open circuit voltage

After storage term described on table 1 herein, keep the battery for 4 hours at least in measurement environment, then measure the open circuit voltage with the voltage meter described in item 6.3.(2) herein.

Open circuit voltage shall conform to table 1 herein.

(2) Internal resistance

After storage term described on table 1 herein, keep the battery for 4 hours at least in measurement environment, then measure the internal resistance with the resistance meter described in item 6.3.(3) herein. Internal resistance shall conform to table 1

(3) Discharge duration

After storage term described on table 1 herein, keep the battery for 8 hours at least in measurement environment, then discharge the battery with the load resistance specified in table 1 herein. The discharge duration is determined as an operation time that the operation voltage reaches to the cut off voltage specified in the table 1 herein.

Discharge duration shall conform to values described in table 1 herein.

5.7. Appearance

No deformation, bruise and stain which cause practical interference.

6. Test conditions

- 6.1. Initial test Initial test must be started within 2 months from delivery.
- 6.2. Temperature and humidity Unless otherwise specified, test should be carried out in room temperature (20 \pm 15 $^{\circ}$ C) and room humidity (65 \pm 20%RH).

6.3. Measuring equipment's

(1) Dimension

Micrometer defined by JIS B7502 or equivalent or more accurate one must be used for dimension measurement.

For one digit decimals tolerance, caliper with 0.05mm accuracy which is defined JIS B7507 or higher accuracy equipment must be used.

(2) Voltage

Voltage meter defined by JIS C1102 class 0.2 or higher, and more than 10Mohm impedance must be used.

(3) Internal resistance

It should be measured by sinusoidal current method (1kHz). Measurement should be finished within 5 seconds.

(As a general rule, Agilent Technologies LCRmeter 4263B or equivalent should be used.)

(4) Load resistance includes all resistance of discharge circuit, and its tolerance shall be less than 0.5%.

(5) Appearance check is observed by visual evaluation.

7. Revision and modification of this specification

Revision and modification must be carried out after the prior mutual agreement.

All accidents or issues caused by any events that are neither defined nor described in this specification, mutual discussion shall take place for the resolution.

8. Important Notes (Warranty)

- 1) The batteries are warranted to conform to the description contained in this specifications for a period of twelve **【12】** months from the ex-factory date and any claim by customer (apparatus manufacturer or distributor) must be made within such period. During that warranty period, if the batteries are proved to become defective, non-defective and conforming batteries will be supplied in due course at sole expense of Panasonic upon Panasonic's own determination that this is apparently caused by negligence of Panasonic.
- 2) Confirm and assure the matching and reliability of batteries on actual set or unit application with customer's responsibility.
- 3) Panasonic shall not warrant or be responsible in any case where customer fails to carry out proper handling, operating, installation, testing, service and checkout of the batteries and/or to follow the instruction, cautions, warnings, notes provided in this specifications, or other Panasonic's reasonable instructions or advise.
- 4) Panasonic will not be held responsible for any issues caused by modifications to the battery taken place after that the battery is delivered to the customer end.
The battery shall not be resoled to any other parties.
- 5) This product specification will be validated assuming that it is accepted when it is not returned within six months from the date of issue.