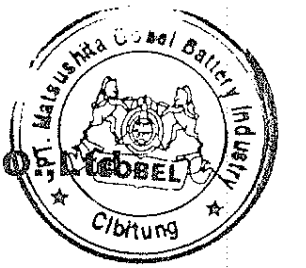
DELIVERY SPECIFICATION

COIN TYPE LITHIUM BATTERY

MODEL : CR 2032L



MATSUSHITA ELECTRIC INDUSTRIAL CO.,Ltd

MATSUSHITA BATTERY INDUSTRIAL CO.,Ltd

PT. MATSUSHITA GOBEL BATTERY INDUSTRY

S P E C I F I C A T I O N

Lithium Battery CR2032L [Li/Mn02]

1.	Model No	:	CR 2032L
2.	Nominal Voltage	:	3 V
3.	Nominal Capacity	:	225mAh
4.	Approx. Weight	:	2.9 g
5.	Dimensions	:	Shown in Figure
6.	Terminal	:	+ Case, - Cap
7.	Characteristics	:	
	1) Off Load Voltage	:	Shown in Table
	2) Internal Resistance	:	Shown in Table
	3) Discharge Duration	:	Shown in Table
	4) Temperature Range	:	-30°C to +60°C

Please contact us if you use the battery consecutively at high temperature.

5) Leakage :

Battery shall be tested under the leakage test condition (shown in Figure).
After conducting 42-time cycles test, there should be no sign of electrolyte leakage. It is checked with naked eyes.

8. Appearance :

Any dirt, scratch or deformation which cause any trouble at usage, does not show on the battery.

9. Marking :

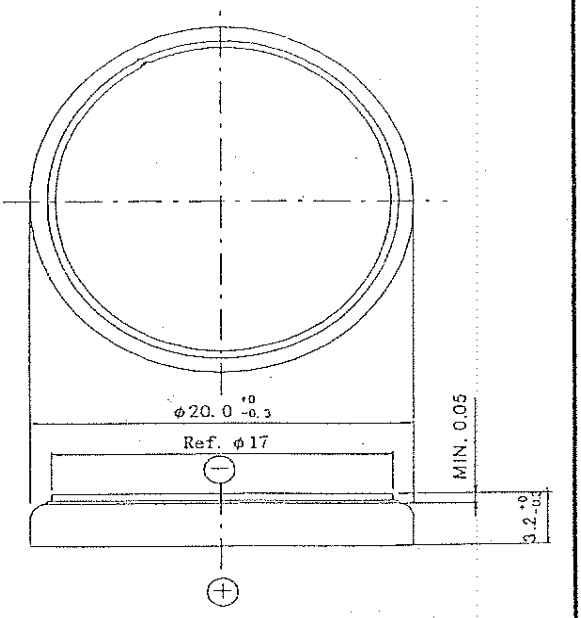
1)	Model No	:	CR 2032
2)	Nominal Voltage	:	3V
3)	Polarity	:	+
4)	Manufacturer	:	Panasonic

10. Precautions in using :

See another sheet

The evaluation should be tested at 20°C

Dimensions



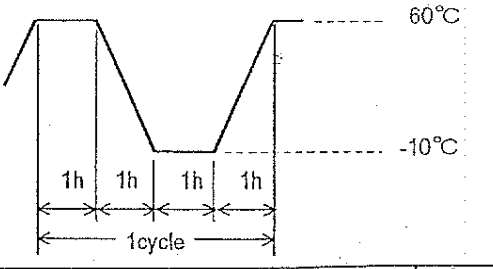
Terminal Material

+ : Stainless steel / Ni Plated

- : Stainless steel / Ni Plated

* The dimensions without tolerance have only reference value.

Leakage test condition



Table

Item	Method		Load	Initial	After 1 Year	After 3 Year	60°C 100 days
Off - Load Voltage		min		3.1 V	3.1 V	3.1 V	3.1 V
Internal Resistance	Sine wave alternating current method, 1kHz	max		20 Ω	———	———	———
Discharge duration	Continuous discharge (End Point 2.5V)	standard	15 k Ω	1183h	1133h	1087h	1041h
		min		1041h	1019h	978h	936h

7		
6		
5		
4		
3		
2		
1		

	13-3231-10-03
MODEL NUMBER PANASONIC LITHIUM BATTERY CR - 2032L	SCALE 5 : 1

1/1

Unit : mm

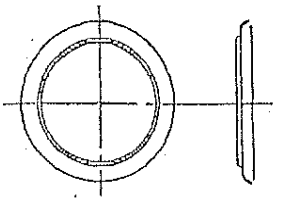
Sym.	Date of Revision	Remarks
3		
2		
1		

Date of stiqulation :		Describe by	Checked by	Approved by
JULY - 2000				

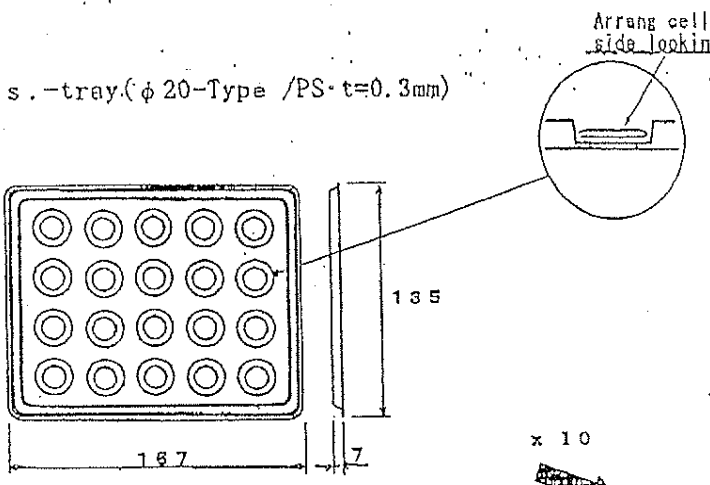
Lithium battery with tab : CR 2032L type
Tray containing 20 pcs. x middle (Shrink Packing) 200 pcs. x packaging case containing 4,000 pcs (Packaging specifications)

Designed by	Checked by	Approved by
B. Tanaka		

1 — Product CR 2032L



2 — 2 0 p c s . -tray.(ϕ 20-Type /PS- t=0.3mm)

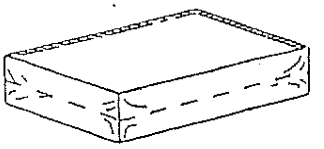


x 10

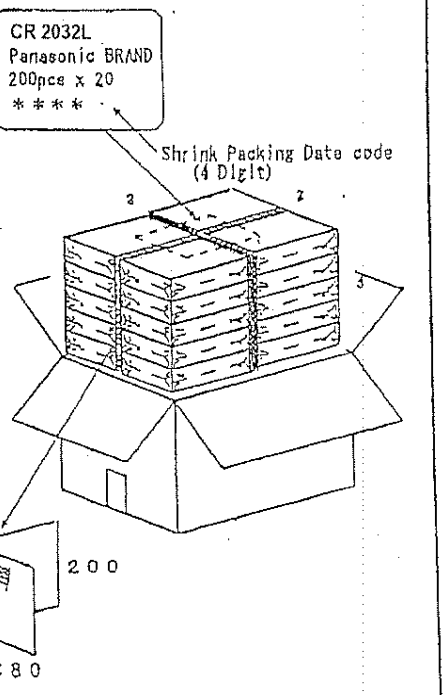
Empty tray as lid(ϕ 20 type) 1pc.

10-stack piling

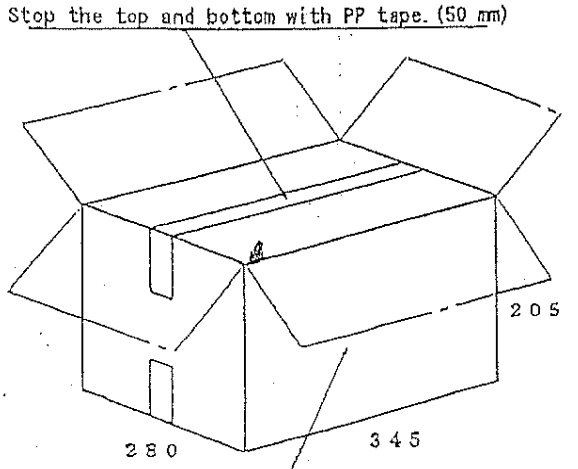
3 — 2 0 0 p c s . -middle(Shrink Packing)
(Polypropylen/15 μ m)

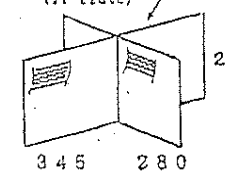


x 20



4 — 4, 0 0 0pcs. -corrugated board case
[A type AB flute make](K180:S:K180)

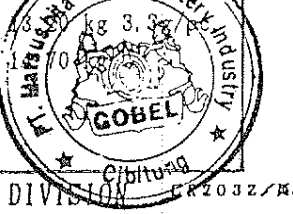




Case marking
Indication(inner dimensions)

Packing List

External dimensions
295 x 360 x 237mm
Volume : 0.025 [illegible]
Net : [illegible] kg 3.3[illegible]
Gross : 1[illegible]70



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Beware of Antistatic Conductive Materials

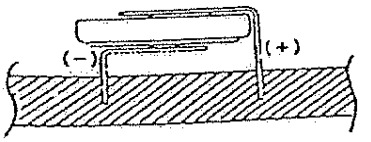
Whenever terminal-mounted backup batteries or coin-type lithium batteries contact conductive materials,they discharge. Measures to semiconductor parts from static damage have been implemented in plants that use such Ics and LSIs. A number of protective materials are presently being used, and all contain blends of carbon, aluminum and other metals that make them conduct.

Antistatic conductive materials include packing bags, trays, mats, sheets, film and resin cases. Sheets, for Example, have a resistance of 10^3 to 10^6 Ω, which means that when they contact the positive and negative terminals of a battery, they will discharge the battery.

In a lithium battery, a current flow of several μA to several mA reduces its voltage and electrical capacity. We recommend constant attention when using batteries around protective materials.

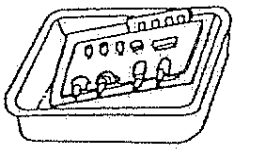
Examples.

A terminal-mounted battery with its terminals inserted into a conductive mat is completely discharged after several days.



Conductive mat

A PCB-mounted battery is completely discharged by contact with the conductive resin case.

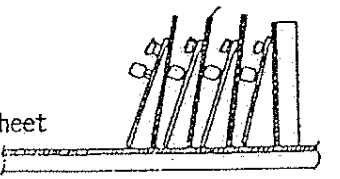


Conductive resin case

PCB-mounted batteries are discharged by contact with spacers and conductive rubber sheets.

Spacer

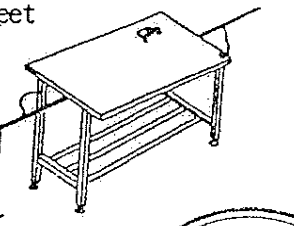
Conductive rubber sheet



Batteries left on a work bench with positive and negative terminals in direct contact with the grounded rubber sheet cover are completely discharged.

Ground wire

Conductive sheet



For More information, Please make contact with your local dealer.

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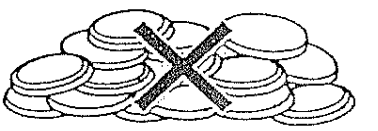
Battery Safety Practices

Avoid danger when handling batteries

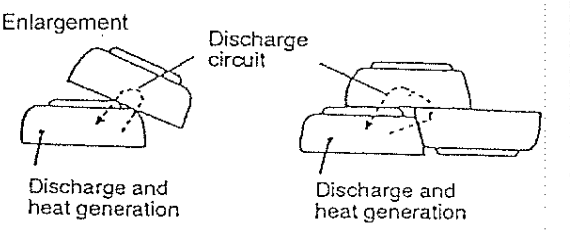
Lithium batteries contain volatile materials such as lithium, organic solvents and other chemical ingredients. Incorrect handling of lithium batteries may result in heat generation, fire or explosion, with the risk of personal injury or damage. To prevent accidents when handling batteries, be sure to observe the following precautions.

1. **Do not stack or jumble batteries**
   Avoid contact between positive (+) and negative (-) battery poles, and contact with other metal surfaces,as this can cause short circuit with intense current flows and heat. Stacking or jumbling batteries, as shown at right,may cause short circuits,heat generation, fire or explosion.

Example of stacked and jumbled batteries



* Contact between battery poles may form a discharge circuit and lead to heat generation, fire or explotion.



2. **Do not dispose of batteries in fire**
   Disposal of batteries in fire is extremely dangerous with a risk of explosion and violent flaring.

3. **Do not heat batteries**
   When lithium batteries are heated above 100°C (212°F), the resin used in seals, separators and other parts may be damage, causing electrolyte leaks and internal short circuits which may lead to fire or explosion.

4. **Do not solder directly onto batteries**
   Heat from soldering may damage seals, separators and other parts, causing electrolyte leaks and internal short circuit which may lead to fire or explosion.

5. **Do not recharge batteries**
   Attemping to recharge batteries may result in internal generation of gases, which may lead to swelling, fire or explosion.

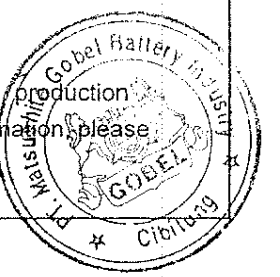
6. **Do not disasemble batteries**
   Do not disasemble lithium batteries as this can generate a gas that mat irritate the throat.Lithium may also react with moisture to generate heat and fire.

7. **Do not deform batteries**
   When extreme pressure is applied to batteries, seals may be deformed or damaged, causing electrolyte leaks or internal short circuits. This may lead to the risk of heat generation, fire or explosion.

8. **Do not mix different types of batteries**
   For some applications, mixing different types of batteries, or new and old batteries, can cause over discharge due to differences in voltage and electrical capacities. This may lead to the risk of swelling or explosion.

9. **Insert batteries correctly**
   Depending on the application device, incorrect insertion of batteries, with positive (+) and negative (-) poles reversed, may result circuit and the risk of heat generation, fire or explosion.

Please ensure the above precautions are strictly observed by related division including production departments, sales departments and external subcontractors. For additional details and information, please contact our sales representatives.



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Maintaining Better Battery Contact

Preventing Accidental Memory Erasure

Coin-type Lithium batteries are widely used for memory backup purposes. However, There have been an increasing number of cases of accidental memory erasure due to inadequate battery contact.
To Prevent Unexpected memory erasure, consider the following tips for proper use.

<Long-term Continuous Battery Use>

- Use a battery with solderable tab terminals, so that the battery can be permanently seoldered to terminal pads on the circuit board (Fig.1).
- If the battery requires periodic replacement, use a battery holder (Fig.2) or a battery with in-line lead connectors (Fig.3).
  The battery holder ca be adjusted to suit any Matsushita lithium battery (Fig.2).

<Batteries Requiring Short-Term Periodic Replacement --- Using batteries wihout solderable tab terminals or lead connectors>

- Use gold- or nickel-plated steel or stainless-steel strips for battery terminal contacts. Teminals made of gold-plated phosphor bronze will ensure contact with long-term stability.
- Y-shaped teminals (double contacts) for both the anode and cathode offer very stable contact (fig.4).
  Each contact on the Y-shaped terminals requires a minimum contact pressure of 2~10N (approximately 200~1000gf) (fig.5).
- To guard against momentary contact failures of a few milliseconds in duration, use the tantalum capacitor-diode-resistor circuit shown in fig.6.

* Do not touch the contact surfaces of the battery with bare hands, as this will increase the contact resistance and impair proper contact.

Figures 1 through 6 show example of how to ensure poper battery contact.

Fig-1 (Soldered)

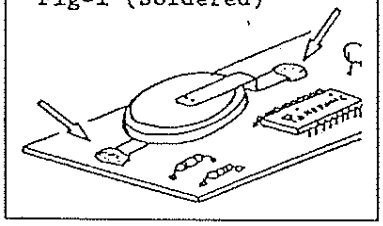


Fig-2

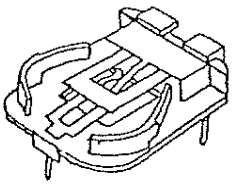


Fig-3

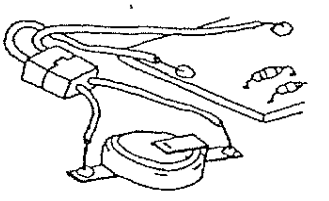


Fig-4

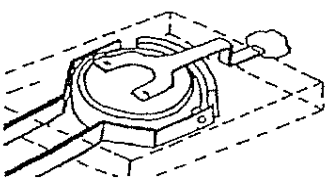


Fig-5 (Contact pressure)

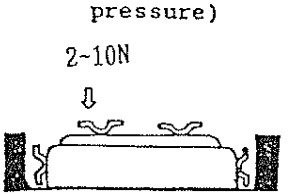
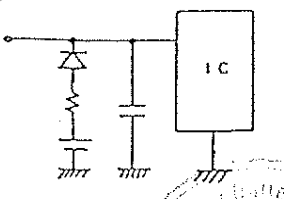


Fig-6



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