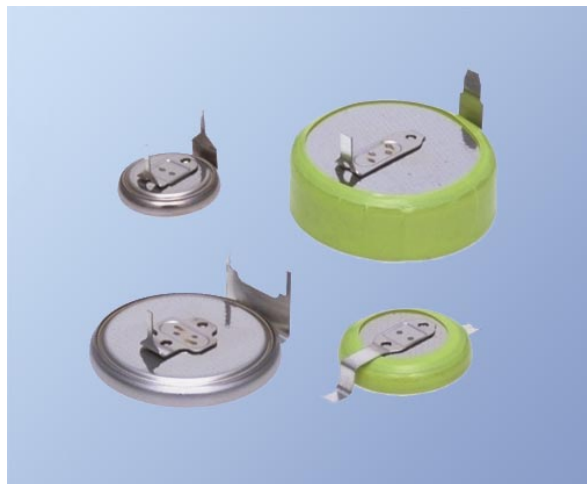


PANASONIC COIN TYPE HIGH OPERATING TEMPERATURE LITHIUM BATTERIES

Coin type poly carbonmonofluoride (BR series "A" Type) lithium batteries for high temperature usage



Panasonic

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Overview

We have successfully extended the temperature limits at which coin type poly carbonmonofluoride lithium batteries can be used from the current 85°C to 150°C (185°F to 302°F) by replacing the material for the gaskets and separators employed in these coin type lithium batteries with a special engineering plastic and by incorporating an electrolyte with a high boiling point.

Features

- **Wider operating temperature range**
The polyolefin plastic used in the past as the material for the gaskets and separators has been replaced with a new specially engineered plastic, and an electrolyte with a high boiling point has been adopted. These innovations have made it possible to use the new batteries at a temperature range extending from -40°C to 150°C (-40°F to 302°F) (-40°C to 125°C with model BR2477A).
- **Excellent storage properties with less self-deterioration**
Since these batteries are made of lithium, their self-deterioration can be described as average. However, the self-deterioration has been reduced by using chemically stable materials and excellent preparation and sealing technology. The self-deterioration rate over the course of one year at room temperature for Panasonic's high temperature coin type lithium batteries has thus been cut to approximately 0.5%. This makes it possible to meet the demand for a storage period of 10 or more years at room temperature.

- **Outstanding resistance to electrolyte leakage**

The organic electrolyte used for lithium batteries has very low creeping characteristics. The characteristics of this electrolyte and Panasonic's topnotch sealing technology combine to produce outstanding resistance to electrolyte leakage.

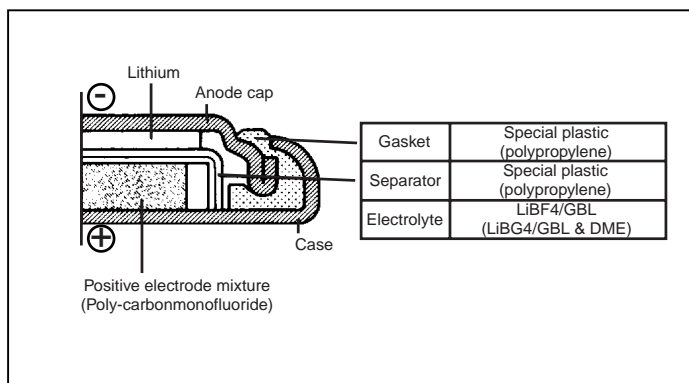
- **Approved under UL standards**

All of Panasonic's coin type lithium batteries have been approved by UL (Underwriters Laboratories Inc.) of the U.S.

Applications

- Back-up power supplies in office automation equipment, factory automation equipment, home electrical appliances, etc.
- Power supplies for automotive electrical parts
- Power supplies for gas meters
- Power supplies for RF transponders

Cutaway view



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Specification Table

Model No.	JIS	IEC	Electrical characteristics 20°C (68°F)			Dimensions (Max.)		Approx. weight g (oz)
			Nominal voltage (V)	Nominal *1 capacity (mAh)	Continuous drain	Diameter mm(inch)	Height mm(inch)	
					Standard (mA)			
BR1225A *2	---	---	3	48	0.03	12.5 (0.49)	2.50 (0.10)	0.8 (0.03)
BR1632A	---	---	3	120	0.03	16.0 (0.63)	3.20 (0.13)	1.5 (0.05)
BR2330A	---	---	3	255	0.03	23.0 (0.91)	3.00 (0.12)	3.2 (0.11)
BR2477A	---	---	3	1000	0.03	24.5 (0.96)	7.00 (0.30)	8.0 (0.28)

* 1 Nominal capacity shown above is based on standard drain and cut off voltage down to 2.0 V at 20°C (68°F)

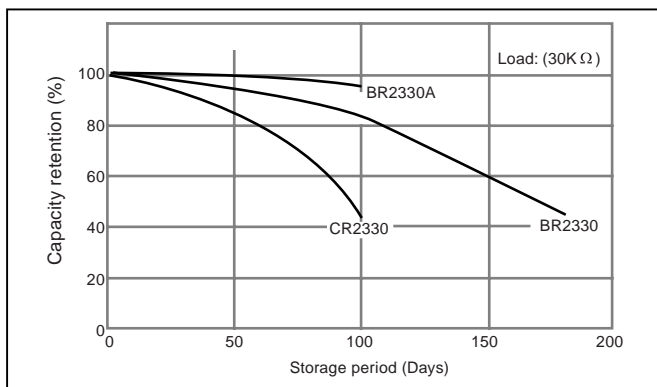
* 2 Under Development

Model No. (with tabs)	P.V.C. Cover		Figure No.	Characteristics		Product Availability	
	With P.V.C.	Without P.V.C.		Nominal Voltage (V)	Nominal capacity (mAh)	Standard	Special
BR1225A	Under development: Please contact Panasonic for details.			3	48		
BR1632A/FA	⊗		1	3	120	⊗	
BR1632A/GA		⊗	2	3	120	⊗	
BR1632A/HA	⊗		3	3	120	⊗	
BR1632A/HB		⊗	4	3	120	⊗	
BR1632A/VA	⊗		5	3	120	⊗	
BR2330A/FA	⊗		6	3	255	⊗	
BR2330A/GA		⊗	7	3	255	⊗	
BR2330A/HD	⊗		8	3	255	⊗	
BR2330A/VA	⊗		9	3	255	⊗	
BR2477A/FB	⊗		10	3	1000	⊗	
BR2477A/GA	⊗		11	3	1000	⊗	
BR2477A/HB	⊗		12	3	1000	⊗	
BR2477A/HC		⊗	13	3	1000	⊗	
BR2477A/VA	⊗		14	3	1000	⊗	

Other terminal configurations may be available. Please contact Panasonic for details

Characteristics

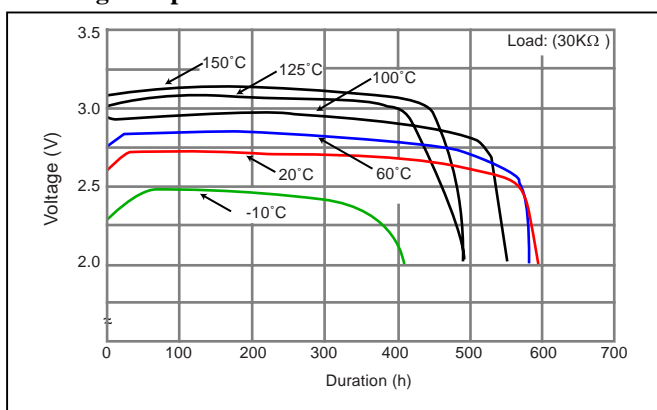
Storage Characteristics (100°C (212°F))



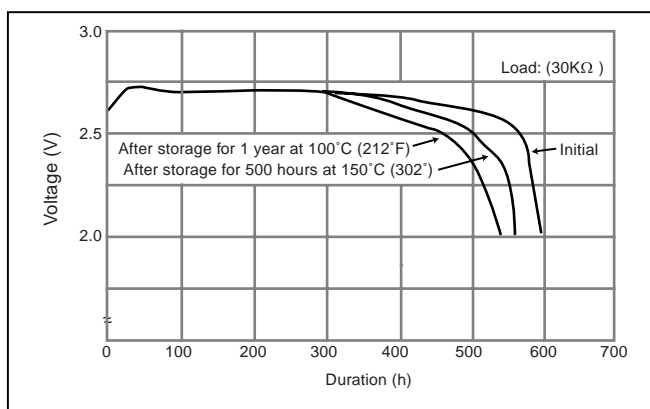
Model No.	Operating Temperature
BR1225A Series	-40°C to 150°C (-40°F to 302°F)
BR1632A Series	-40°C to 150°C (-40°F to 302°F)
BR2330A Series	-40°C to 150°C (-40°F to 302°F)
BR2477A Series	-40°C to 125°C (-40°F to 257°F)

BR1225A

Discharge temperature characteristics-BR1225A

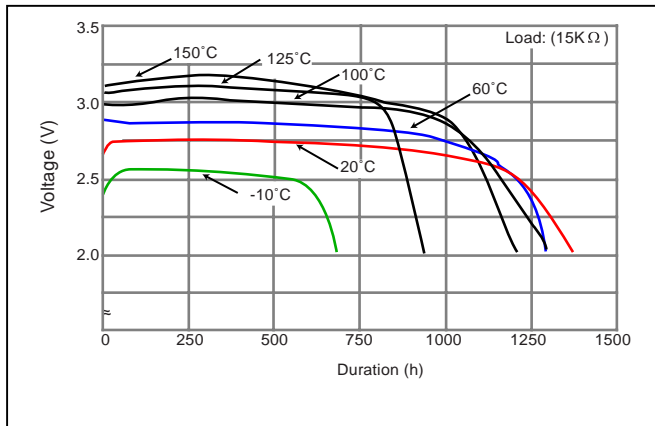


Storage Characteristics (100°C (212°F))

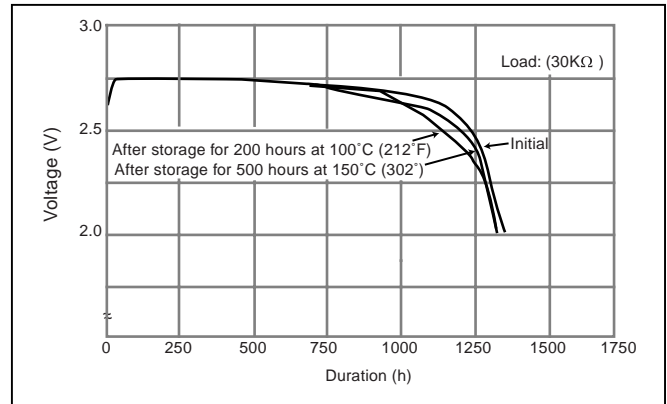


BR1632A

Discharge temperature characteristics

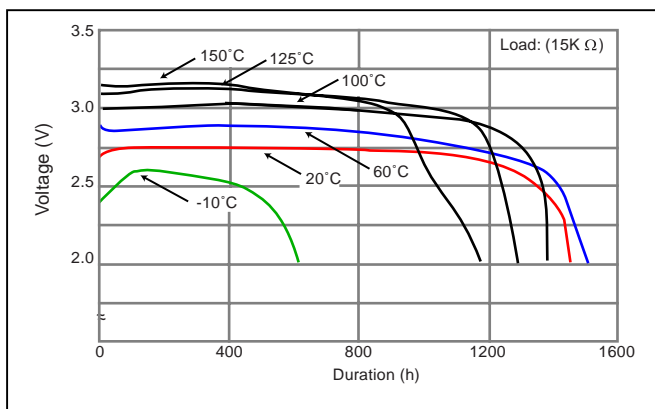


Storage Characteristics

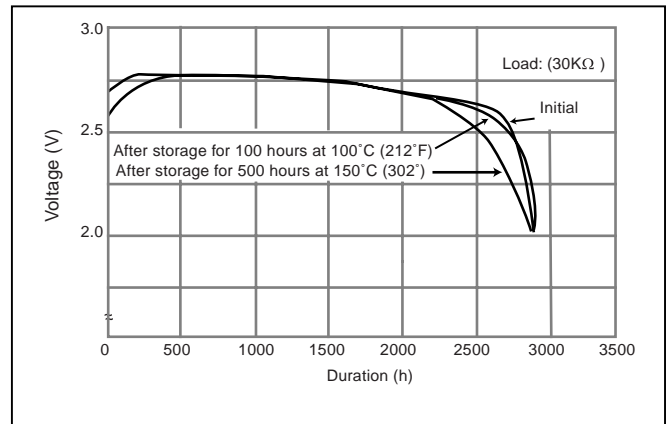


BR2330A

Discharge temperature characteristics

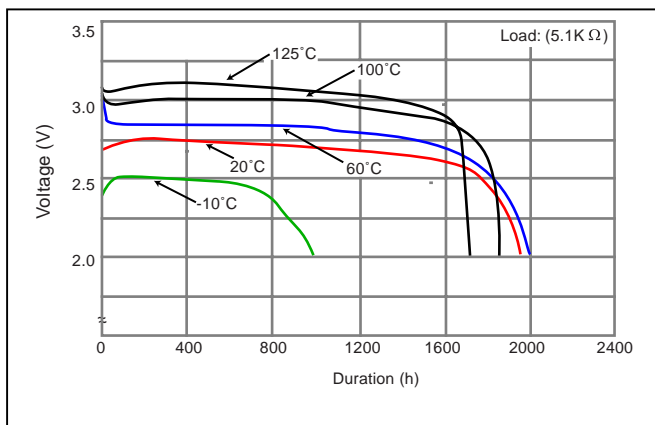


Storage Characteristics

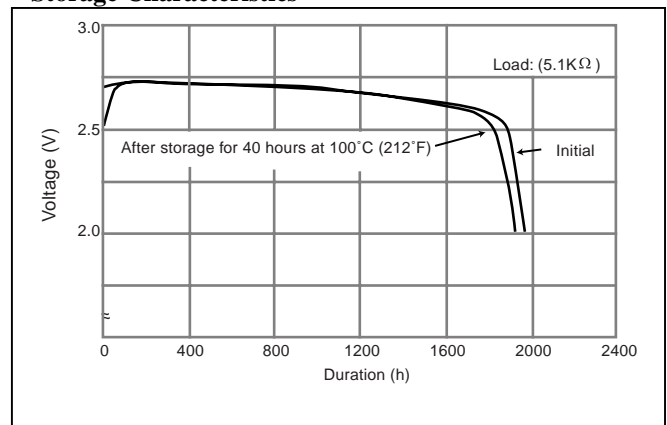


BR2477A

Discharge temperature characteristics



Storage Characteristics



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Model No.	Dimension/mm (inch)	Model No.	Dimensions / mm (inch)
BR1632A/FA	<p>①</p>	BR1632A/GA	<p>②</p>
BR1632A/HA	<p>③</p>	BR1632A/HB	<p>④</p>
BR1632A/VA	<p>⑤</p>	BR2330A/FA	<p>⑥</p>
BR2330A/GA	<p>⑦</p>	BR2330A/HD	<p>⑧</p>
BR2330A/VA	<p>⑨</p>	BR2477A/FB	<p>⑩</p>

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Model No.	Dimension/mm (inch)	Model No.	Dimensions / mm (inch)
BR2477A/GA	<p>⑪</p> <p>25±1 P.V.C. Cover (Fresh Green) 24.5±0.3 7.7 5.1±1 3.5±0.5 8.4±0.4 7.7 13.1±0.5 0.2±0.1 10.2 0.75±0.2</p>	BR2477A/HB	<p>⑫</p> <p>P.V.C. Cover 24.5(0.96) 8.4(0.33) 7.7(0.30) 13.1(0.52) 20.5±1 0.2 2.8(0.11) 3.5(0.14) 1.8(0.07) 3.5(0.14) 0.81±0.04 0.008</p>
BR2477A/HC	<p>⑬</p> <p>24.5(0.96) 8.4(0.33) 7.7(0.30) 13.1(0.52) 20.5±1 0.2 2.8(0.11) 3.5(0.14) 1.8(0.07) 3.5(0.14) 0.81±0.04 0.008</p>	BR2477A/VA	<p>⑭</p> <p>P.V.C. Cover 24.5(0.96) 7.7(0.31) 1.0(0.04) 5.0(0.20) 2.8(0.11) 4.0(0.16) 1.8(0.07) 9.2±0.5(0.36±0.02) 8.4(0.33) 0.2(0.008)</p>

PRECAUTIONS

Precautions for handling coin type lithium batteries

Please observe the following precautions to keep batteries in good condition.

Precautions for storage

- Avoid storing batteries at unusually high or low temperatures.
- Store batteries in a low-humidity location with little temperature variation. If batteries are stored in a humid place, moisture may condense on them, exerting an adverse influence on their electrical characteristics.
- Keep batteries away from direct sunlight.

Handling precautions

- When measuring the battery voltage, use an instrument with an internal resistance of 10 M Ω or higher.
- Before loading batteries in equipment, check that the terminals are clean and not deformed; if dirty, clean and dry the terminals before loading batteries.
- Batteries of different types or grades have different characteristics even when they have the same size and shape. Carefully check the labels on batteries when replacing.
- Lithium batteries show a high voltage even when only a slight capacity is remaining, which can be misunderstood as having sufficient capacity available. When any one out of two or more batteries in use together is exhausted, replace all batteries at the same time, even if they still show a high voltage.
- When mounting batteries with terminals onto a printed circuit board, etc. by dipping in a soldering bath, limit the dipping time to 5 seconds or less; dipping for a longer time may exert an adverse influence on the electrical characteristics such as voltage and capacity. Use extreme caution not to drop batteries into the soldering bath during the dipping; if dropped, batteries may rupture due to abrupt heating.

- Avoid direct soldering to batteries. Also, do not use reflow soldering.
- Avoid inserting batteries into antistatic materials or wrapping the board mounted with batteries in conductive sheets, which may cause a voltage drop or consumption of the capacity.
- Do not put two or more batteries loosely in a bag or container; external shorting between batteries may cause voltage drop or consumption of the capacity.
- When two or more batteries are used in series, inversion of polarity may occur in a battery near the end of its life. This indicates that the battery has become exhausted first. This is not an abnormal condition.
- If a voltage drop due to shorting, even momentarily, occurs in lithium batteries, it takes a period of time for the voltage to recover. In such a situation, use caution not to check the voltage of the battery before sufficient recovery time, or it may lead to a misjudgment that the battery is defective.

Precautions in equipment design

- For mounting batteries, avoid high-temperature locations and protect them from foreign materials.
- When a battery and another power source are to be used together in the equipment circuit, design the circuit so as not to allow a current from the other power source to flow into the battery.
- If lead wires and connection terminals such as tab terminals are needed for batteries, Panasonic can supply external terminals (connectors, etc.) on request.
- For the contact point on power supply terminals, use nickel-plated iron, nickel-plated stainless steel or higher grade materials.
- For ensuring stable contact, apply a contact pressure of 2N~10N (approx. 200~1000 gf).

NOTICE TO READERS

It is the responsibility of each user to ensure that each battery application system is adequately designed safe and compatible with all conditions encountered during use, and in conformance with existing standards and requirements. Any circuits contained herein are illustrative only and each user must ensure that each circuit is safe and otherwise completely appropriate for the desired application.

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