

# **Coin type Primary Lithium Batteries High Temperature Resistance**

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**Panasonic Energy Co., Ltd.**

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# Coin type Primary Lithium Batteries High Temperature Resistance

## High performance available under severe conditions

### ■ Value Proposition

- 1) Enables to use for automotive applications under severe conditions
- 2) Stable output for a long time by technologies preventing swollen batteries
- 3) Wide lineup of sizes and operating temperatures

### ■ Panasonic Original Technique

- 1) Original negative electrode surface treatment technology to maintain high voltage under low temperatures
- 2) Maintains the sealing property inside battery by heat-resistant gasket
- 3) Prevents gas evolution at high temperatures by original electrolyte formulation

Panasonic  
Only

Benchmark					Application	Schedule
Item \ Product	Panasonic CR coin type for high temperature	Panasonic CR standard battery	Panasonic BR battery	A company CR battery for high temperature	<ul style="list-style-type: none"> <li>• TPMS</li> <li>• ETC</li> <li>• Automotive electric components</li> <li>• IoT applications using outdoor etc.</li> </ul>	<div style="border: 2px solid black; padding: 10px; text-align: center;"> <h3>Mass Production</h3> </div>
High temperature storage	○ 125°C	× 85°C	◎ 125°C	○125°C (短期)		
Discharge characteristics under low temperatures	◎ -40°C	△ -30°C	○ -40°C	○-40°C		
Material price	○	◎	△	○		

# Before

## CR series Coin type Primary Lithium Batteries

Limited operating temperature range  
(-30°C~85°C)



Insufficient performance  
required for automotive  
applications



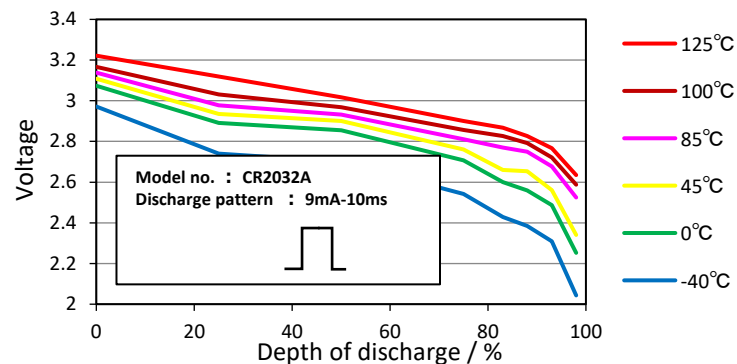
# After

## CR series Coin type Primary Lithium Batteries High Temperature Resistance

2032/2050 size : -40~125°C

2450 size : -40~105°C (Under development of 125°C product)

◎ Enables to use from low to high temperatures

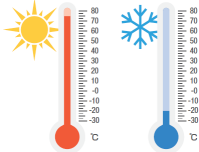


◎ Heat-resistant technology by original electrolyte formulation

◎ Highly improved low temperature characteristics by surface treatment technology of negative electrode

# Comparison of Coin type Primary Lithium Batteries temperature range **Panasonic ENERGY**

## Coin-type primary lithium batteries for high temperature enable to operate from low to high temperatures required for automotive applications

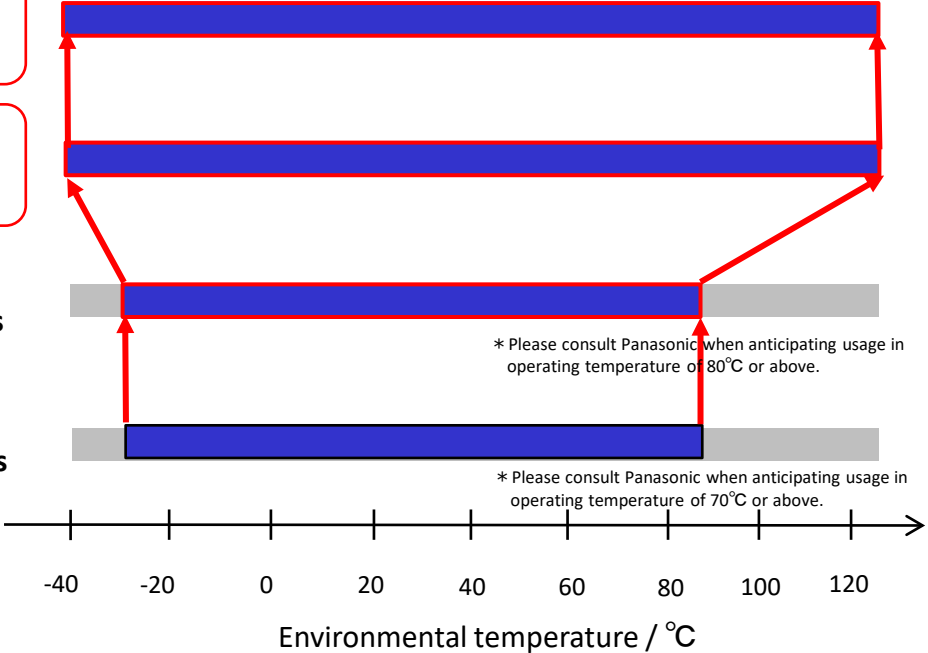


**BR series Coin-type Primary Lithium Batteries for High Temperature**

**CR series Coin-type Primary Lithium Batteries for High Temperature**

**BR series Coin-type Primary Lithium Batteries**

**CR series Coin-type Primary Lithium Batteries**



# Comparison of Coin-type Primary Lithium Batteries High Temperature Resistance

		BR Series	CR Series
Material	Positive electrode	Poly-carbonmonofluoride (CF) <sub>n</sub>	Manganese dioxide MnO <sub>2</sub>
	Negative electrode	Lithium	
	Electrolyte	Organic electrolyte	
Characteristic	Discharge capacity	BR ≒ CR	
	Sustaining voltage during discharge	BR < CR (∼50%DOD : Higher)	
	Load characteristic	BR < CR (∼50%DOD : Better)	
	Long-term usage	(Stable) BR > CR	
	Storage characteristic (Storage deterioration)		
	<60°C	(Stable) BR ≧ CR	
	> 60°C	(Stable) BR > CR	
Merit		Achieves long-term usage and excellent storage characteristics under high temperature.	CR maintains high voltage during discharge and achieve excellent discharge characteristic

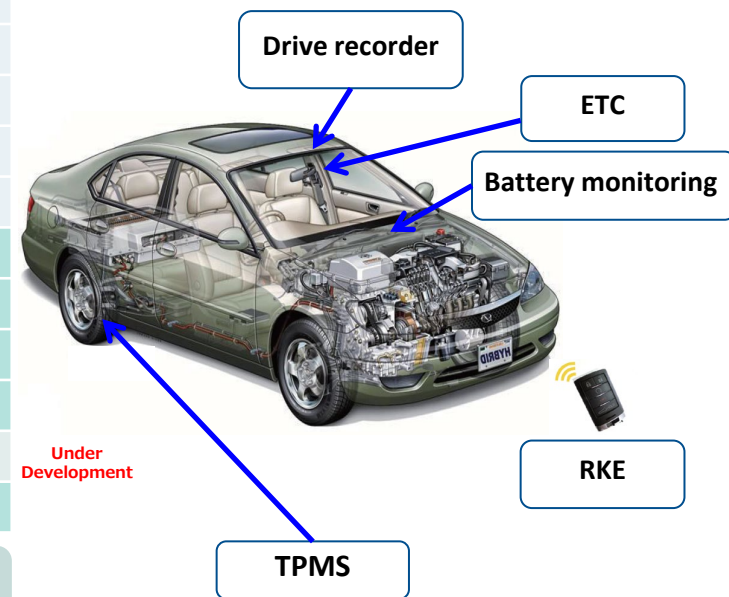
# Lineup of Coin type Primary Lithium Batteries High Temperature Resistance

## Lineup

Model No.	Nominal voltage (V)	Nominal capacity (mAh)	Continuous drain (mA)	Diameter (mm)	Height (mm)	Mass 約 (g)	Operating temperature range (°C)
BR1225A	3	48	0.03	12.5	2.5	0.8	-40 ~ 125
BR1632A	3	120	0.03	16.0	3.2	1.5	-40 ~ 125
BR2330A	3	255	0.03	23.0	3.0	3.2	-40 ~ 125
BR2450A	3	550	0.03	24.5	5.0	4.9	-40 ~ 125
BR2477A	3	1000	0.03	24.5	7.7	7.9	-40 ~ 125
CR2032A	3	210	0.2	20.0	3.2	3.0	-40 ~ 125
CR2032B	3	210	0.2	20.0	3.2	3.0	-40 ~ 120
CR2050A	3	345	0.2	20.0	5.0	4.1	-40 ~ 125
CR2050B2	3	345	0.2	20.0	5.0	4.1	-40 ~ 120
<b>CR2450A</b>	<b>3</b>	<b>550</b>	<b>0.2</b>	<b>24.5</b>	<b>5.0</b>	<b>6.2</b>	<b>-40 ~ 125</b>
CR2450B	3	560	0.2	24.5	5.0	6.2	-40 ~ 105

NEW

## Applications



Underdevelopment of CR series 2450 size 125°C product

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