

# **Primary Lithium Batteries Cylindrical type (CR series Long life)**

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**Panasonic Energy Co., Ltd.**

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# Primary Lithium Batteries Cylindrical type (CR series Long life)

## Superior discharge characteristic and long-life

### ■ Value Proposition

- 1) long-term reliability suitable for outdoor devices which are difficult to maintain, such as battery replacement.
- 2) Suitable for various IoT devices by excellent high-rate discharge characteristics
- 3) Superior high temperature(85°C) characteristics which enable to control automotive equipment under severe conditions.

### ■ Panasonic Original Technique

- 1) Suppresses to increase internal resistance during long term usage and enables to use stably for a long time
- 2) Secures safety by built-in protection elements and enables to offer battery packs of multiple battery cells in parallel.

Benchmark				Applications	Schedule
Item \ Product	Panasonic CR series Long life type	CR series standard type	ER lithium batteries	• Smart meters • Security devices • Fire alarms • Automotive electric components • Medical devices etc.	Mass production
Expected life	+++ 10-15 years	+ -5 years	+++ 10-15 years		
Operating temperature range	+++ Max 85°C	++ Max70°C	+++ Max85°C		
Safety	++	++~+	+Risk of poisonous gas		

# Before

## Primary Lithium Batteries Cylindrical type (CR series Standard)

Excellent high-rate characteristic  
Available for consumer market



Unable to use for long term

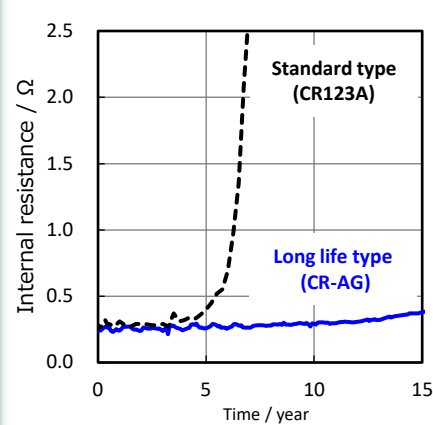
Insufficient environmental  
resistance characteristic



# After

## Primary Lithium Batteries Cylindrical type (CR series Long life)

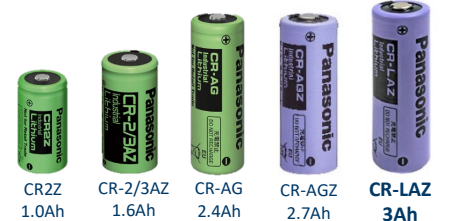
Suppresses to increase internal impedance during long term usage and achieves long life



### Discharging Condition

Storage temperature: 20°C  
Base load : 300kΩ(=10μA)

### Reliability for 15 years



### Reliability for 10 years

Excellent discharge characteristic  
at low temperatures!

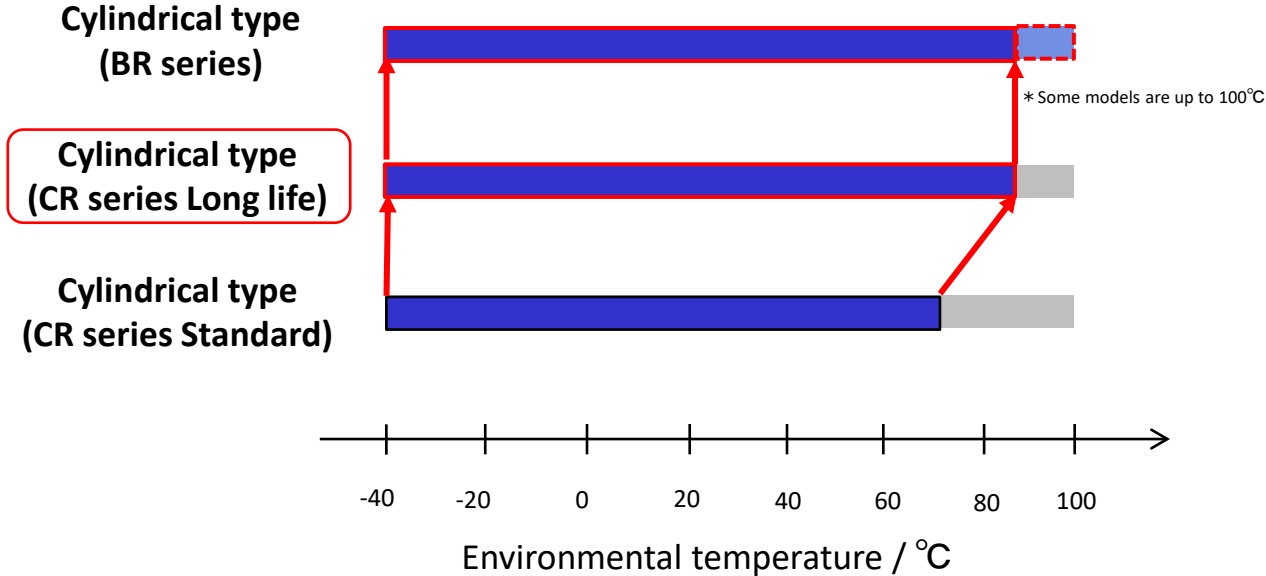
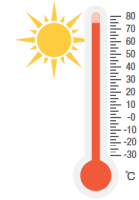


Achieves excellent discharge characteristic and long term usage

Enables to use under severe conditions by excellent discharge characteristic  
at low temperatures

# Feature1 : Enables to use in a wide temperature range

Enable to use not only for long term but also at high temperatures required for automotive applications

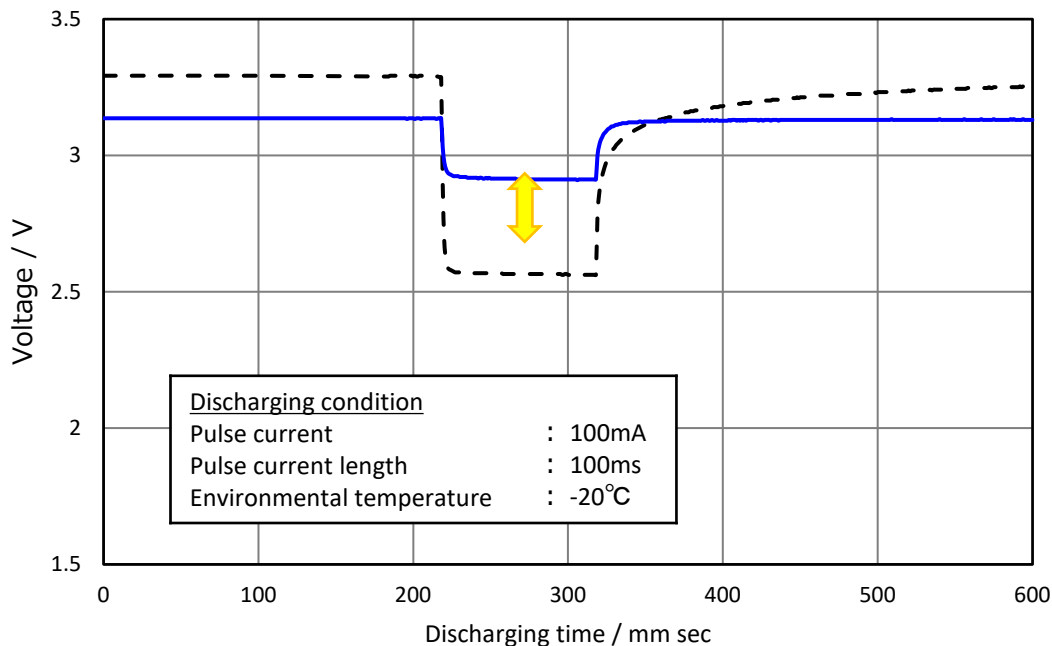


# Feature2 : Excellent discharge characteristic at low temperatures

## Suppresses voltage drop during discharging under low temperatures and achieves stable discharge characteristics



Pulse load discharge characteristics at low temperatures (-20°C)



— CR-AG

- - - BR-AG



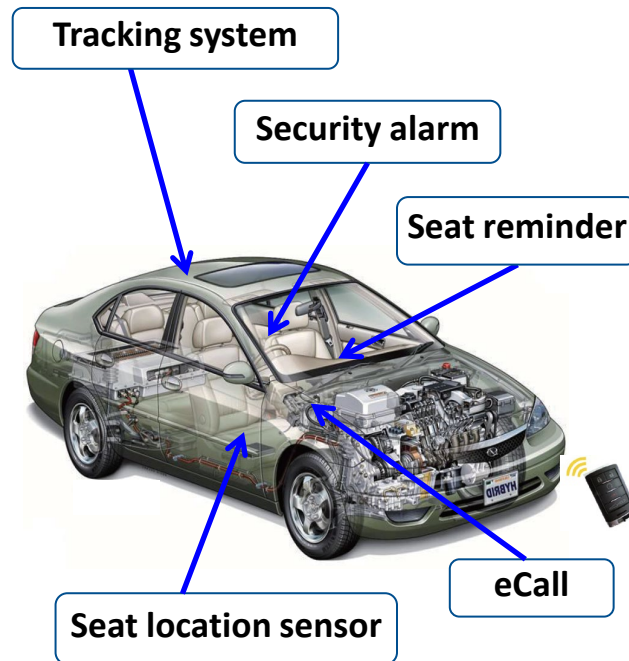
# Primary Lithium Batteries Cylindrical type (CR series Long life) Lineup

## Line up

Series	Model	Nominal voltage (V)	Nominal capacity (mAh)	Continuous drain (mA)	Diameter (mm)	Width (mm)	Height (mm)	Mass about (g)	Operating temperature range (°C)	
BR	BR-1/2AA	3	1000	2.5	14.5	-	25.5	8	-40 ~ 100	
	BR-2/3A	3	1200	2.5	17.0	-	33.5	13	-40 ~ 85	
	BR-2/3AG	3	1450	2.5	17.0	-	33.5	13	-40 ~ 85	
	BR-A	3	1800	2.5	17.0	-	45.5	18	-40 ~ 85	
	BR-AG	3	2200	2.5	17.0	-	45.5	18	-40 ~ 85	
	BR-C	3	5000	5.0	26.0	-	50.5	41	-40 ~ 85	
CR	Long life type	CR-2/3AZ	3	1600	2.5	17.0	-	33.5	16	-40 ~ 85
		CR-AAK	3	1650	100	14.5	-	50.5	18	-40 ~ 85
		CR-AAU	3	1800	2.5	14.5	-	50.5	18	-40 ~ 85
		CR-AG	3	2400	2.5	17.0	-	45.5	22	-40 ~ 85
		CR-AGZ	3	2700	2.5	17.0	-	45.5	23	-40 ~ 85
		CR2U	3	1000	2.5	15.6	-	27.0	11	-40 ~ 85
		CR2Z	3	1000	2.5	15.6	-	27.0	11	-40 ~ 85
	CR-2/3AU	3	1600	2.5	17.0	-	33.5	16	-40 ~ 85	
	Standard type	2CR5	6	1550	20	34.0	17.0	45.0	38	-40 ~ 70
		CR-P2	6	1550	20	35.0	19.5	36.0	37	-40 ~ 70
CR123A		3	1550	20	17.0	-	34.5	16	-40 ~ 70	
CR2		3	850	20	15.6	-	27.0	11	-40 ~ 70	

NEW

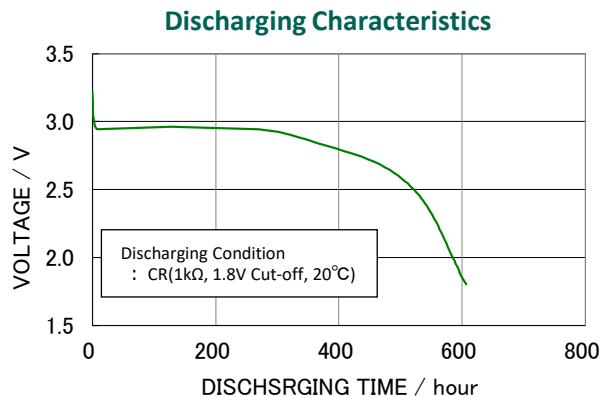
## Applications



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## Feature

- Enables to use for automotive and outdoor devices by excellent high temperature (85°C) characteristics, high rate discharge characteristics at low temperatures
- Achieve reliability for long term used outdoor installation device and applications are difficult to replace batteries
- Suitable for wireless communication devices by excellent high-rate discharge characteristics



## Specification

NEW

<b>Model</b>		CR-2/3AU
<b>Nominal voltage</b>		3V
<b>Nominal capacity</b>		1600mAh
<b>Continuous drain</b>		2.5mA
<b>Maximum Continuous Discharging Current</b>		3A
<b>Size*1</b>	<b>Diameter(Max)</b>	17.0mm
	<b>Height (Max)</b>	33.5mm
<b>Mass*1</b>		Approx.16.0g
<b>Operating temperature range</b>		-40°C~+85°C

\*1: Without tabs

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