

## LITHIUM - Coin Type

Coin type lithium batteries are high energy, high reliability batteries for a variety of applications. The full 3 volts in these high energy density batteries is about twice that of conventional dry batteries.

Panasonic coin type lithium batteries are available in two types: poly-carbonmonofluoride lithium batteries (BR series) for uses that require extended reliability and safety, and manganese dioxide lithium batteries (CR series) for uses that require high voltage and strong load pulse characteristics.



The CR Lithium primary coin cells contain Perchlorate over the limit specified by the state legislature of California and are therefore subject to requirements in the California Code of Regulations, title 22, division 4.5: Chapter 33 – Best Management Practices for Perchlorate Materials.

### Features:

- High voltage of 3 volts - twice that of conventional dry batteries
- Extremely small self-discharge for long service and shelf life
- A wide operational temperature range
- Compact and lightweight; extremely high energy density per unit weight
- Very safe (poly-carbonmonofluoride lithium)
- Extremely strong load pulse characteristics (manganese dioxide lithium)
- Operating temperature range:

BR Coin Cells: -30°C ~ +80°C

CR Coin Cells: -30°C ~ +60°C

### Applications:

- Calculators
- Cameras
- Compact, low power consuming cordless applications
- Electronic translators
- Electronic watches (digital and analog)
- Memory back-up in all types of devices (with tab terminals)

**Technical Data - Table 1 - (CF)n/LI: Poly-Carbon Monofluoride (BR)**

| Model No.              | Electrical Characteristics (20°C) |                         | Standard Load         | Dimensions    |             |            | Tab Configurations |
|------------------------|-----------------------------------|-------------------------|-----------------------|---------------|-------------|------------|--------------------|
|                        | Nominal Voltage (V)               | *Nominal Capacity (mAh) | Continuous Drain (mA) | Diameter (mm) | Height (mm) | Weight (g) |                    |
| <a href="#">BR1220</a> | 3                                 | 35                      | 0.03                  | 12.5          | 2.00        | 0.7        |                    |
| <a href="#">BR1225</a> | 3                                 | 48                      | 0.03                  | 12.5          | 2.50        | 0.8        |                    |
| <a href="#">BR1632</a> | 3                                 | 120                     | 0.03                  | 16.0          | 3.20        | 1.5        |                    |
| <a href="#">BR2032</a> | 3                                 | 190                     | 0.03                  | 20.0          | 3.20        | 2.5        |                    |
| <a href="#">BR2325</a> | 3                                 | 165                     | 0.03                  | 23.0          | 2.50        | 3.2        |                    |
| <a href="#">BR2330</a> | 3                                 | 255                     | 0.03                  | 23.0          | 3.00        | 3.2        |                    |
| <a href="#">BR3032</a> | 3                                 | 500                     | 0.03                  | 30.0          | 3.20        | 5.5        |                    |

\* Nominal capacity shown is based on standard drain and cut off voltage down to 2.0V at 20°C.

**Technical Data - Table 2 - MnO<sub>2</sub>/LI:Manganese Dioxide (CR)**

| Model No.              | Electrical Characteristics (20°C) |                         | Standard Load         | Dimensions    |             |            | Tab Configurations |
|------------------------|-----------------------------------|-------------------------|-----------------------|---------------|-------------|------------|--------------------|
|                        | Nominal Voltage (V)               | *Nominal Capacity (mAh) | Continuous Drain (mA) | Diameter (mm) | Height (mm) | Weight (g) |                    |
| <a href="#">CR1025</a> | 3                                 | 30                      | 0.10                  | 10.0          | 2.50        | 0.7        |                    |
| <a href="#">CR1216</a> | 3                                 | 25                      | 0.10                  | 12.5          | 1.60        | 0.7        |                    |

|                        |   |      |      |      |      |      |  |
|------------------------|---|------|------|------|------|------|--|
| <a href="#">CR1220</a> | 3 | 35   | 0.10 | 12.5 | 2.00 | 1.2  |  |
| <a href="#">CR1612</a> | 3 | 40   | 0.10 | 16.0 | 1.20 | 0.8  |  |
| <a href="#">CR1616</a> | 3 | 55   | 0.10 | 16.0 | 1.60 | 1.2  |  |
| <a href="#">CR1620</a> | 3 | 75   | 0.10 | 16.0 | 2.00 | 1.3  |  |
| <a href="#">CR1632</a> | 3 | 140  | 0.10 | 16.0 | 3.20 | 1.8  |  |
| <a href="#">CR2016</a> | 3 | 90   | 0.10 | 20.0 | 1.60 | 1.6  |  |
| <a href="#">CR2025</a> | 3 | 165  | 0.20 | 20.0 | 2.50 | 2.3  |  |
| <a href="#">CR2032</a> | 3 | 225  | 0.20 | 20.0 | 3.20 | 2.9  |  |
| <a href="#">CR2330</a> | 3 | 265  | 0.20 | 23.0 | 3.00 | 3.8  |  |
| <a href="#">CR2354</a> | 3 | 560  | 0.20 | 23.0 | 5.40 | 5.8  |  |
| <a href="#">CR2412</a> | 3 | 100  | 0.20 | 24.5 | 1.20 | 2.0  |  |
| <a href="#">CR2450</a> | 3 | 620  | 0.20 | 24.5 | 5.00 | 6.3  |  |
| <a href="#">CR2477</a> | 3 | 1000 | 0.20 | 24.5 | 7.70 | 10.5 |  |
| <a href="#">CR3032</a> | 3 | 500  | 0.20 | 30.0 | 3.20 | 6.8  |  |

\* Nominal capacity shown is based on standard drain and cut off voltage down to 2.0V at 20°C.

Note: Cells are available in assorted tab configurations.

Consult your local regional office for additional information.

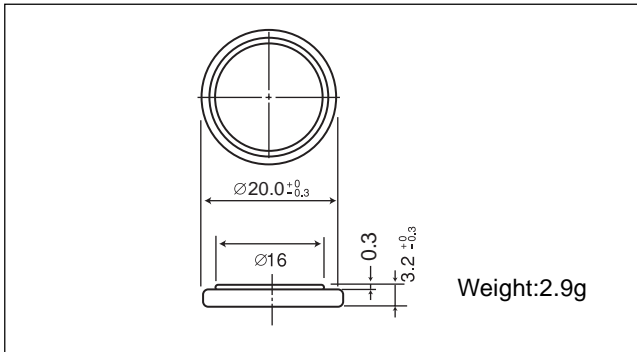
### Technical Data - Table 3 - Coin Cell Tab Configurations (BR Series)

| Model No.                   | Tab Description Drawing  |  |
|-----------------------------|--|--|
| <a href="#">BR1225/1HC</a>  | 2 pin, horizontal mount, through hole, (with insulation wrap)    |  |
| <a href="#">BR1225/1VC</a>  | 2 pin, vertical mount, through hole, (with insulation wrap)      |  |
| <a href="#">BR1632/1HF</a>  | 2 pin, horizontal mount, through hole, (with insulation wrap)    |  |
| <a href="#">BR2032/1GU</a>  | 3 pin, horizontal mount, through hole, (without insulation wrap) |  |
| <a href="#">BR2032/1HE</a>  | 2 pin, horizontal mount, through hole, (without insulation wrap) |  |
| <a href="#">BR2032/1VB</a>  | 2 pin, vertical mount, through hole, (without insulation wrap)   |  |
| <a href="#">BR2032/1F2</a>  | 2 pin, flat mount, (with insulation wrap)                        |  |
| <a href="#">BR2325/1HC</a>  | 2 pin, horizontal mount, through hole, (with insulation wrap)    |  |
| <a href="#">BR2325/1HB</a>  | 2 pin, horizontal mount, through hole, (without insulation wrap) |  |
| <a href="#">BR2325/1VC</a>  | 2 pin, vertical mount, through hole, (without insulation wrap)   |  |
| <a href="#">BR2325/1HG</a>  | 2 pin, horizontal mount, through hole, (without insulation wrap) |  |
| <a href="#">BR2325/1VG</a>  | 2 pin, vertical mount, through hole, (without insulation wrap)   |  |
| <a href="#">BR2330/1HE</a>  | 2 pin, horizontal mount, through hole, (without insulation wrap) |  |
| <a href="#">BR2330/1VC</a>  | 2 pin, vertical mount, through hole, (with insulation wrap)      |  |
| <a href="#">BR2330/1GVF</a> | 3 pin, vertical mount, through hole, (with insulation wrap)      |  |

# Manganese Dioxide Lithium Coin Batteries: Individual Specifications

## CR2032

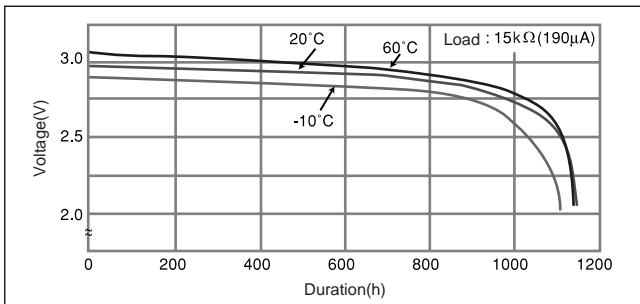
### □ Dimensions(mm)



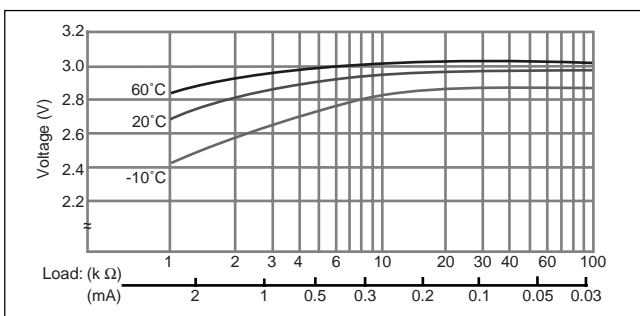
### □ Specification

|                               |           |
|-------------------------------|-----------|
| Nominal voltage (V)           | 3         |
| Nominal capacity (mAh)        | 225       |
| Continuous standard load (mA) | 0.2       |
| Operating temperature (C)     | -30 ~ +60 |

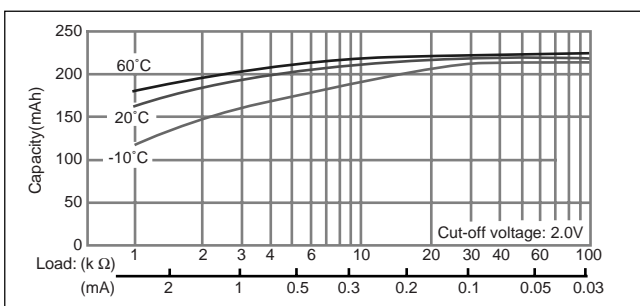
### □ Temperature Characteristics



### □ Operating voltage vs. load resistance (voltage at 50% discharge depth)

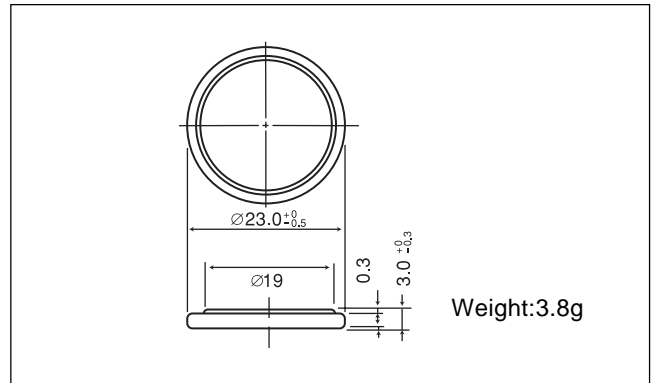


### □ Capacity vs. load resistance



## CR2330

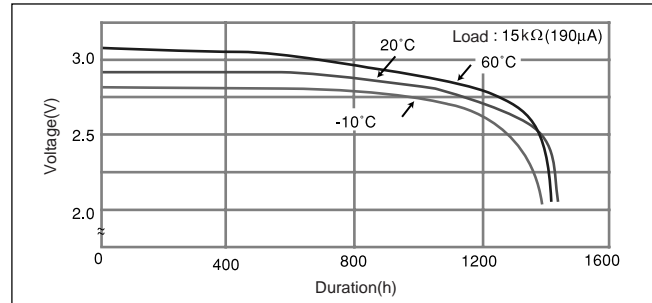
### □ Dimensions(mm)



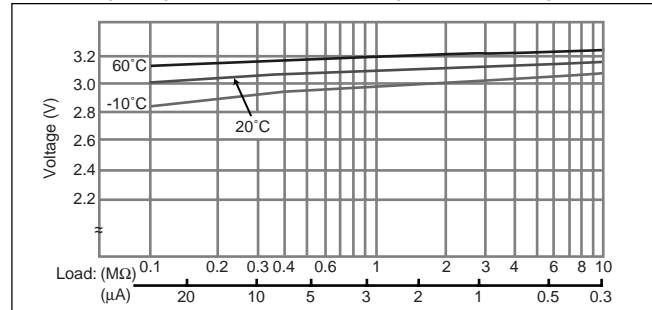
### □ Specification

|                               |           |
|-------------------------------|-----------|
| Nominal voltage (V)           | 3         |
| Nominal capacity (mAh)        | 265       |
| Continuous standard load (mA) | 0.2       |
| Operating temperature (C)     | -30 ~ +60 |

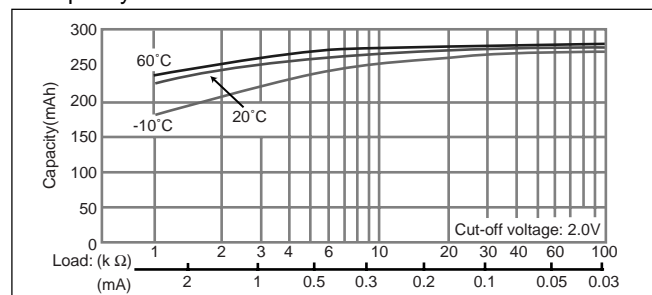
### □ Temperature Characteristics



### □ Operating voltage vs. load resistance (voltage at 50% discharge depth)



### □ Capacity vs. load resistance



# Coin Type Lithium Batteries

## Manganese Dioxide Lithium Batteries (CR Series)

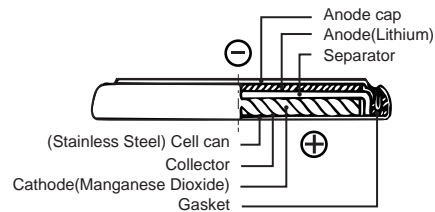


### Features

As with the BR series of coin-type lithium batteries, these batteries feature a high energy density, and they were developed and commercialized via Panasonic's extensive experience and battery technology. These batteries have proven to be especially useful in equipment requiring relatively high currents.

### Construction

Cutaway view



### Applications

- Calculators
- Cameras
- Compact, low power consuming cordless appliances
- Electronic watches (digital and analog)
- Memory backup
- IC card



**Note:** Always confirm that the battery to be used is suitable for the intended application before purchase and/or use.

### General Specifications

| Model No. | Electrical Characteristics (20°C) |                         |                       | Dimensions (mm) |        | Weight (g) | JIS    | IEC    |
|-----------|-----------------------------------|-------------------------|-----------------------|-----------------|--------|------------|--------|--------|
|           | Nominal Voltage (V)               | *Nominal Capacity (mAh) | Continuous Drain (mA) | Diameter        | Height |            |        |        |
| CR1025    | 3                                 | 30                      | 0.1                   | 10.0            | 2.5    | 0.7        | CR1025 | CR1025 |
| CR1216    | 3                                 | 25                      | 0.1                   | 12.5            | 1.6    | 0.7        | CR1216 | CR1216 |
| CR1220    | 3                                 | 35                      | 0.1                   | 12.5            | 2.0    | 1.2        | CR1220 | CR1220 |
| CR1612    | 3                                 | 41                      | 0.1                   | 16.0            | 1.2    | 0.8        | CR1620 | -      |
| CR1616    | 3                                 | 55                      | 0.1                   | 16.0            | 1.6    | 1.2        | CR1616 | CR1616 |
| CR1620    | 3                                 | 75                      | 0.1                   | 16.0            | 2.0    | 1.3        | -      | CR1620 |
| CR1632    | 3                                 | 140                     | 0.1                   | 16.0            | 3.2    | 1.8        | -      | -      |
| CR2012    | 3                                 | 55                      | 0.1                   | 20.0            | 1.2    | 1.4        | CR2012 | CR2012 |
| CR2016    | 3                                 | 90                      | 0.1                   | 20.0            | 1.6    | 1.6        | CR2016 | CR2016 |
| CR2025    | 3                                 | 165                     | 0.2                   | 20.0            | 2.5    | 2.3        | CR2025 | CR2025 |
| CR2032    | 3                                 | 225                     | 0.2                   | 20.0            | 3.2    | 2.9        | CR2032 | CR2032 |
| CR2330    | 3                                 | 265                     | 0.2                   | 23.0            | 3.0    | 3.8        | CR2330 | CR2330 |
| CR2354    | 3                                 | 560                     | 0.2                   | 23.0            | 5.4    | 5.8        | CR2354 | CR2354 |
| CR2412    | 3                                 | 100                     | 0.2                   | 24.5            | 1.2    | 2.0        | -      | -      |
| CR2450    | 3                                 | 620                     | 0.2                   | 24.5            | 5.0    | 6.3        | CR2450 | CR2450 |
| CR2477    | 3                                 | 1000                    | 0.2                   | 24.5            | 7.7    | 10.5       | -      | -      |
| CR3032    | 3                                 | 500                     | 0.2                   | 30.0            | 3.2    | 6.8        | -      | CR3032 |

\* Nominal capacity shown above is based on standard drain and cut off voltage down to 2.0V at 20°C

# Poly-carbonmonofluoride (BR Series) and Manganese Dioxide (CR Series)

## COIN CELL TAB CONFIGURATIONS

| Model Number   | Tab Type             |                         | Configuration Diagram No. |
|----------------|----------------------|-------------------------|---------------------------|
|                | With Insulation Wrap | Without Insulation Wrap |                           |
| <b>BR TYPE</b> |                      |                         |                           |
| BR1220         | /1HF                 | /1HE                    | 1                         |
| BR1220         | /1VC                 | /1VB                    | 2                         |
| BR1225         | /1HC                 | /1HB                    | 3                         |
| BR1225         | /1VC                 |                         | 4                         |
| BR1632         | /1HF                 |                         | 5                         |
| BR2032         | /1HM                 |                         | 6                         |
| BR2032         |                      | /1HG                    | 7                         |
| BR2032         | /1HS                 | /1HSE                   | 8                         |
| BR2032         | /1GUF                | /1GU                    | 9                         |
| BR2032         | /1HF                 | /1HE                    | 10                        |
| BR2032         |                      | /1VB                    | 11                        |
| BR2032         | /1GVF                | /1GV                    | 12                        |
| BR2032         | /1F4                 |                         | 13                        |
| BR2032         | /1F2                 |                         | 14                        |
| BR2325         | /1HC                 | /1HB                    | 15                        |
| BR2325         | /1VC                 |                         | 16                        |
| BR2325         |                      | /1HG                    | 17                        |
| BR2325         | /2HC                 |                         | 18                        |
| BR2325         |                      | /1VG                    | 19                        |
| BR2330         | /1HF                 | /1HE                    | 20                        |
| BR2330         | /1GUF                | /1GU                    | 21                        |
| BR2330         | /1VC                 | /1VB                    | 22                        |
| BR2330         | /1GVF                | /1GV                    | 23                        |
| BR2330         | /1F3                 |                         | 24                        |
| BR2330         | /1F4C                |                         | 25                        |
| BR3032         | /1VC                 |                         | 26                        |
| BR3032         | /1F2                 |                         | 27                        |

| Model Number   | Tab Type             |                         | Configuration Diagram No. |
|----------------|----------------------|-------------------------|---------------------------|
|                | With Insulation Wrap | Without Insulation Wrap |                           |
| <b>CR TYPE</b> |                      |                         |                           |
| CR1220         | /1HF                 | /1HE                    | 1                         |
| CR1220         | /1VC                 | /1VB                    | 2                         |
| CR1616         |                      | /1F2                    | 28                        |
| CR1632         | /1HF                 |                         | 29                        |
| CR2016         | /1F2                 |                         | 6                         |
| CR2025         | /1F2                 |                         | 30                        |
| CR2032         |                      | /1HU3                   | 31                        |
| CR2032         | /1VS1                |                         | 32                        |
| CR2032         |                      | /1HG                    | 8                         |
| CR2032         | /1HS                 | /1HSE                   | 9                         |
| CR2032         | /1GUF                | /1GU                    | 10                        |
| CR2032         | /1HF                 | /1HE                    | 11                        |
| CR2032         |                      | /1VB                    | 12                        |
| CR2032         | /1GVF                | /1GV                    | 13                        |
| CR2032         | /1F4                 |                         | 14                        |
| CR2032         | /1F2                 |                         | 15                        |
| CR2330         | /1HF                 | /1HE                    | 20                        |
| CR2330         | /1GUF                | /1GU                    | 21                        |
| CR2330         | /1VC                 | /1VB                    | 22                        |
| CR2330         | /1GVF                | /1GV                    | 23                        |
| CR2330         | /1F3                 |                         | 24                        |
| CR2330         | /1F4C                |                         | 25                        |
| CR2354         | /1HF                 | /1HE                    | 33                        |
| CR2354         | /1GUF                | /1GU                    | 34                        |
| CR2354         | /1VC                 | /1VB                    | 35                        |
| CR2477         | /1VC                 | /1VB                    | 36                        |
| CR2477         | /1HF                 | /1HE                    | 37                        |
| CR2450         | /H1A                 |                         | 38                        |
| CR2450         | /G1A                 |                         | 39                        |
| CR3032         | /1VC                 |                         | 26                        |
| CR3032         | /1F2                 |                         | 27                        |

**Note:** Refer to page 60 for BR "A" (High Temp) Tab configurations. Please contact Panasonic for requests on custom Tab configurations. Minimum order requirements may apply.