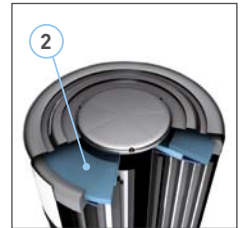


## LITHIUM-ION / NNP + HRL TECHNOLOGY

A perfect combination of high energy density (e.g. NNP technology), safety (e.g. PSS and HRL technology) and long-life shows what is possible with Lithium-Ion battery technology from Panasonic. Excellent battery safety on one hand, and superior battery performance on the other: this is what Panasonic stands for.

### LI-ION • 3D ILLUSTRATION

- |                                                 |                                   |
|-------------------------------------------------|-----------------------------------|
| 1 Positive pole                                 | 5 Insulator                       |
| 2 Positive Temperature Coefficient Device (PTC) | 6 Cathode                         |
| 3 Gasket                                        | 7 Anode                           |
| 4 Collector                                     | 8 Negative pole (cell can)        |
|                                                 | 9 Separator                       |
|                                                 | 10 Current Interrupt Device (CID) |
|                                                 | 11 Exhaust gas hole               |

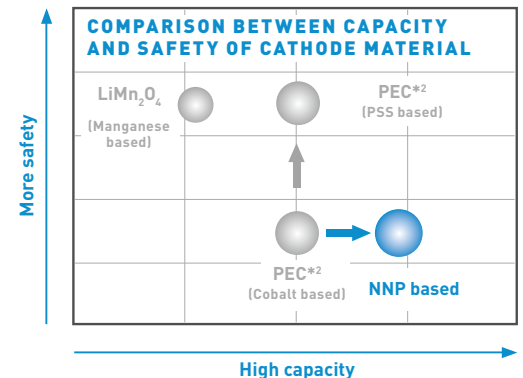


### Nickel Oxide Based New Platform (NNP)

This new Lithium-Ion battery technology contains on one side a unique high capacity Nickel based positive electrode and on the other side a material and processing technology. The latter prevents deformation of the Alloy-based negative electrode when subjected to repeated charge and discharge. This is what our **Nickel Oxide Based New Platform (NNP)** stands for.\*1

#### Characteristics of the Panasonic NNP technology:

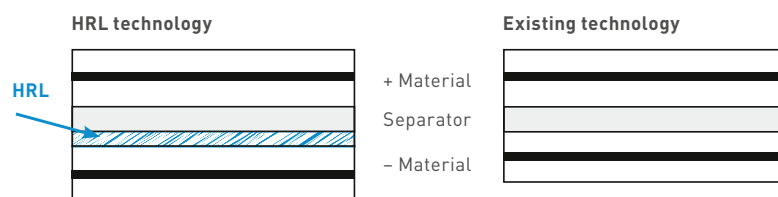
- Good cycle life performance
- High energy density
- The new Nickel positive electrode excels in durability in actual use and charge retention
- Low self-discharge
- Long storage reliability through reduced metal elution



### Heat Resistance Layer (HRL)

Nowadays all electronic devices getting more powerful, sophisticated and feature-laden and therefore require more robust and safer batteries. Increasing energy-density, however, raises the risk of overheating and ignition due to internal short-circuiting. Panasonic deploys the **Heat Resistance Layer (HRL)** technology to improve the safety of Lithium-Ion batteries significantly. This heat resistance layer consists of an insulating metal oxide on the surface of the electrodes which prevents the battery from overheating if an internal short-circuit occurs.

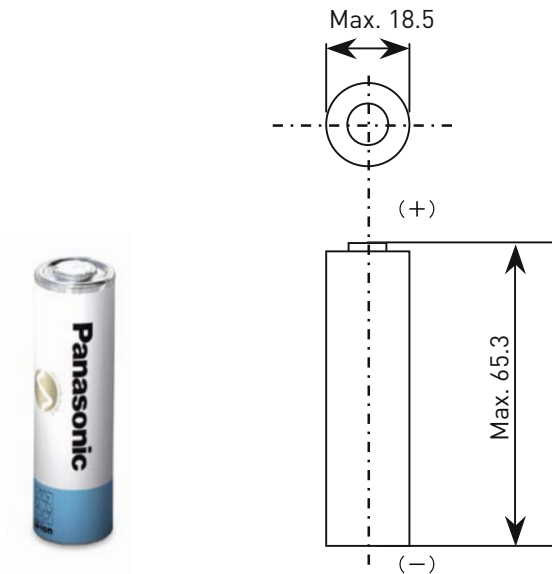
**Safety is the base for everything. Higher energy can be established based on safety technology.**



\*1 Panasonic Lithium-Ion cells must always be equipped with a safety unit.

\*2 PEC: Panasonic Energy Company.

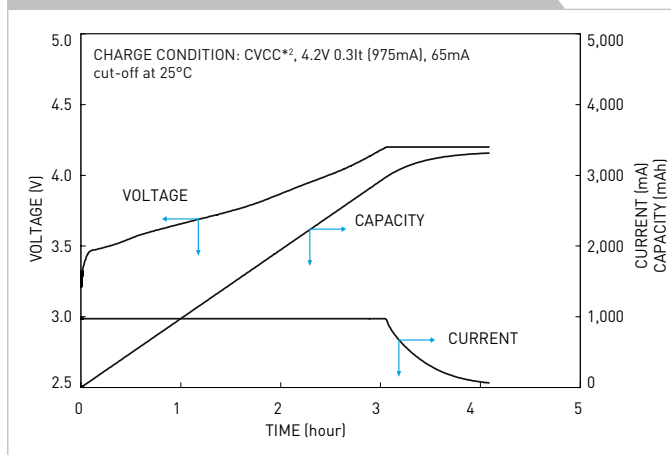
### DIMENSIONS (MM)



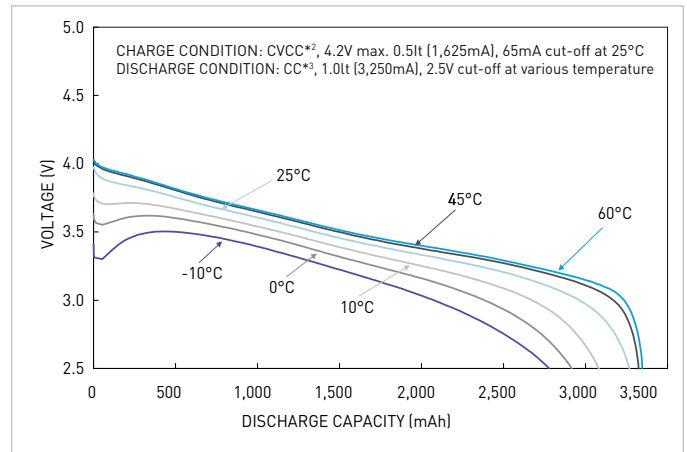
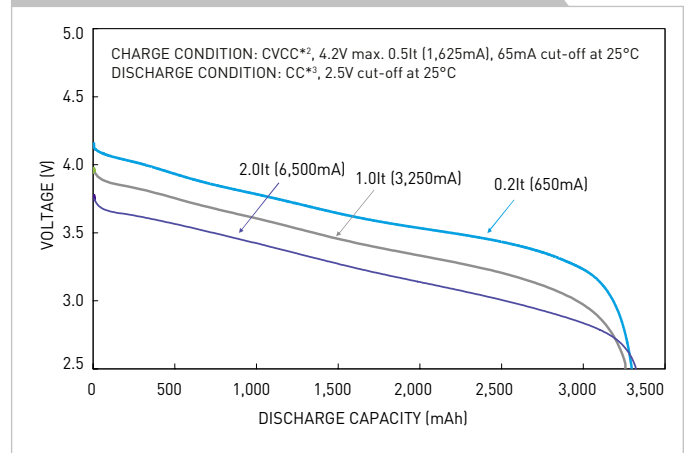
### SPECIFICATIONS

Model number	NCR-18650B
Nominal voltage (V)	3.6
Nominal capacity* <sup>1</sup> - Minimum (mAh)	3,250
Nominal capacity* <sup>1</sup> - Typical (mAh)	3,350
Dimensions - Diameter (mm)	18.5
Dimensions - Height (mm)	65.3
Approx. weight (g)	47.5

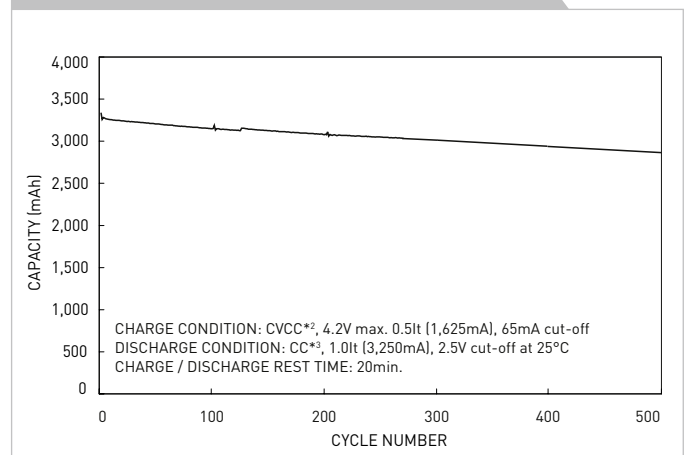
### TYPICAL CHARGE CHARACTERISTICS



### TYPICAL DISCHARGE CHARACTERISTICS



### TYPICAL CYCLE CHARACTERISTICS



\*<sup>1</sup> Charge: Constant Voltage / Constant Current, 4.2V, max. 1,625mA, 65mA cut-off; Discharge: Constant Current, 650mA, 2.5V cut-off; Temperature: 25°C

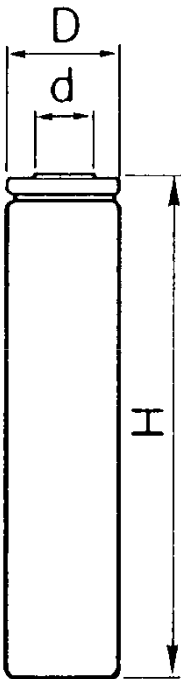
\*<sup>2</sup> CVCC: Constant Voltage / Constant Current \*<sup>3</sup> CC: Constant Current

### Notice to Readers

We are unable to support single cell business or accept orders from consumers. We design Lithium-Ion battery packs including a suitable safety unit device based on the technical specification of the customer. Due to the need for careful review when selecting Lithium-Ion battery solutions please contact your local Panasonic Sales Office. In order to avoid a lack of supply please check the battery availability with your Panasonic sales team before design-in.

## Cell Type NCR18650B

### Specifications

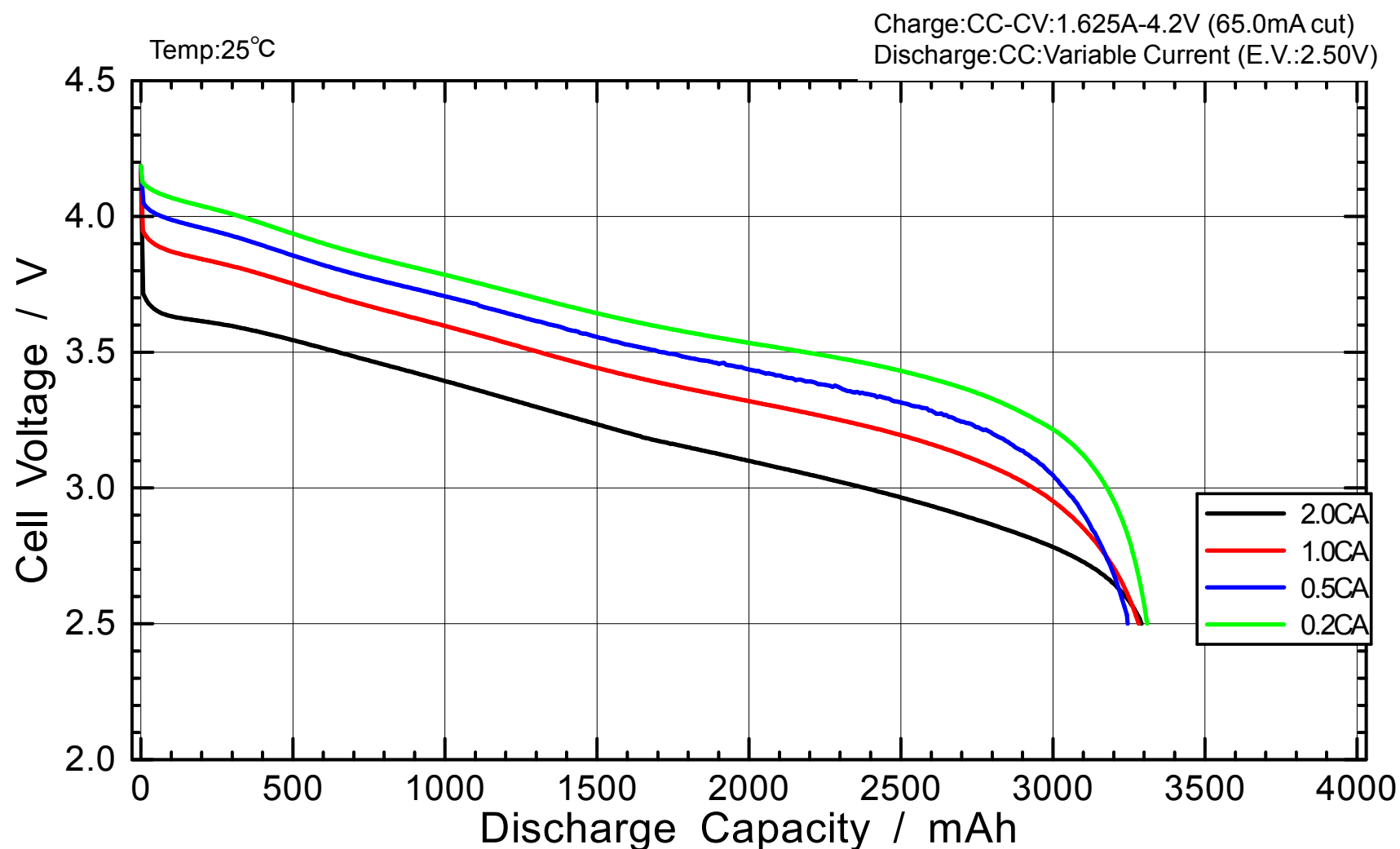


Dimensions(Typ.) of Bare Cell	H	64.93mm
	D	18.2mm
	d	7.9mm

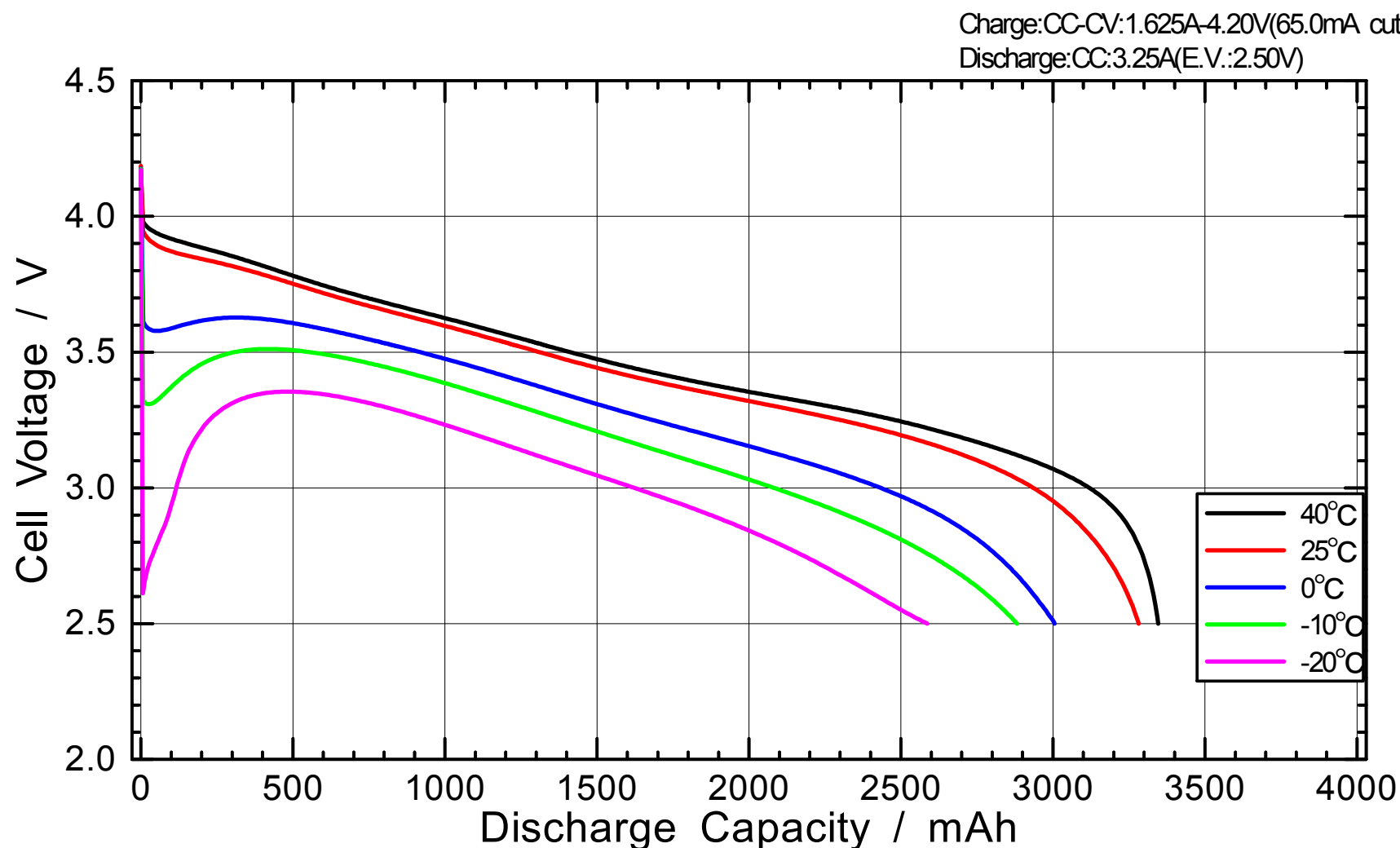
Discharged State after Assembling

Rated Capacity (at 20°C)		Min.3200mAh
Nominal Capacity (at 25°C)	Min.3250mAh	
	Typ.3350mAh	
Nominal Voltage		3.6V
Charging Method		Constant Current -Constant Voltage
Charging Voltage		4.2V
Charging Current		Std.1625mA
Charging Time		4.0hrs.
Ambient Temperature	Charge	+10~+45°C
	Discharge	-20~+60°C
	Storage	-20~+50°C
Weight (Max.)		47.5g
Dimensions (Max.) Maximum size without tube	(D)	18.25mm
	(H)	65.10mm
Volumetric Energy Density		676Wh/l
Gravimetric Energy Density		243Wh/kg

## Discharge Rate Characteristics for NCR18650B



## Discharge Temperature Characteristics for NCR18650B



## Charge Characteristics for NCR18650B

