

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 |

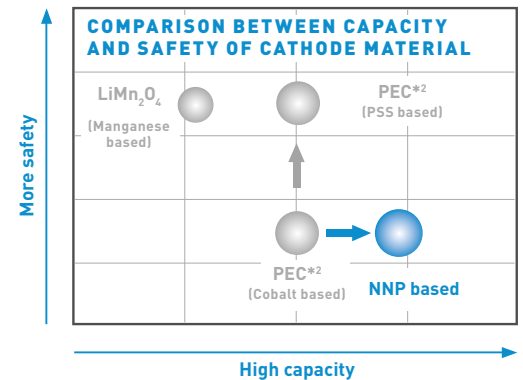


Nickel Oxide Based New Platform (NNP)

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:

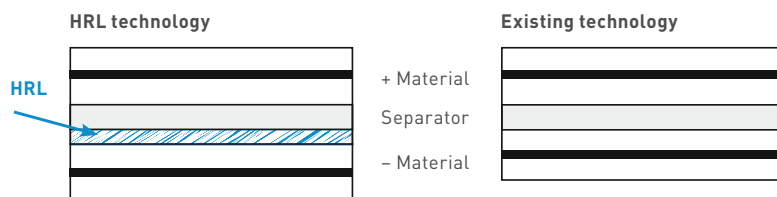
- Good cycle life performance
- High energy density
- The new Nickel positive electrode excels in durability in actual use and charge retention
- Low self-discharge
- Long storage reliability through reduced metal elution



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.

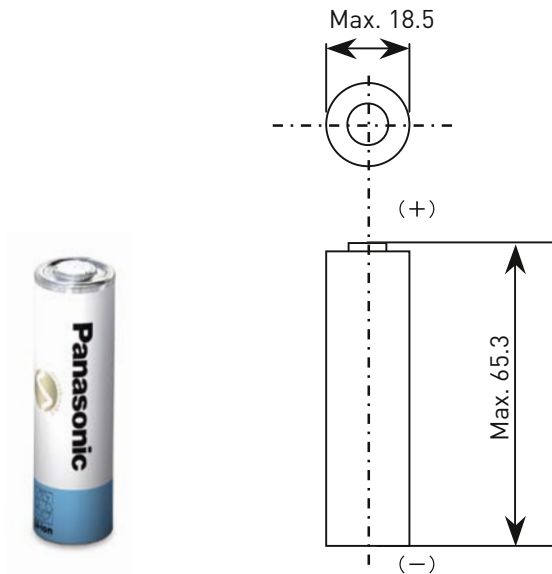
Safety is the base for everything. Higher energy can be established based on safety technology.



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

*2 PEC: Panasonic Energy Company.

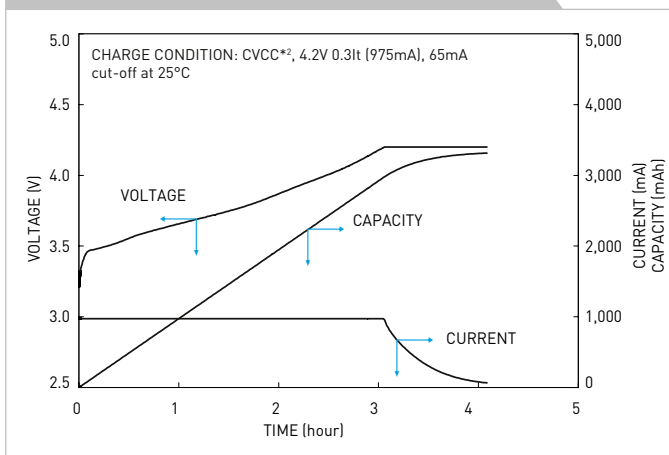
DIMENSIONS (MM)



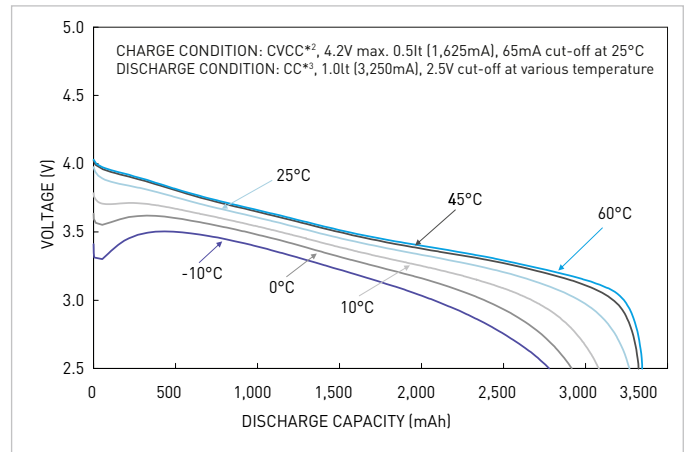
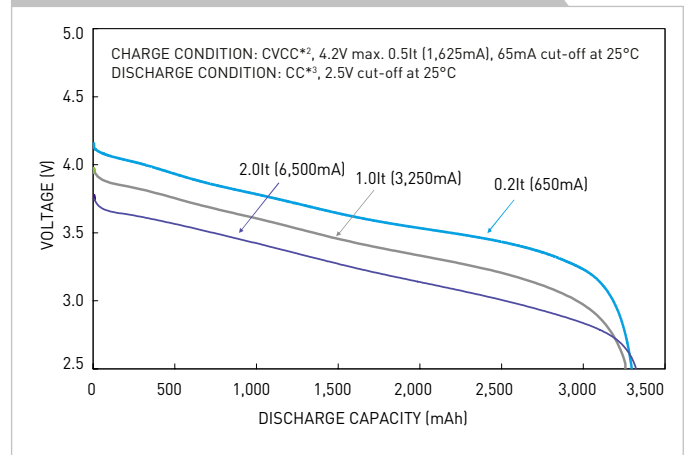
SPECIFICATIONS

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

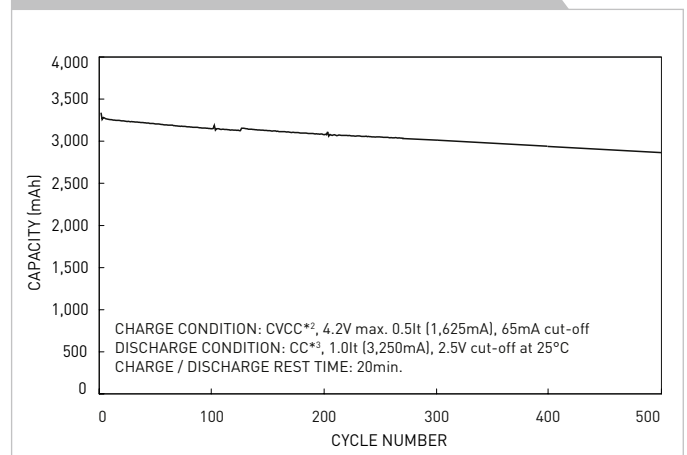
TYPICAL CHARGE CHARACTERISTICS



TYPICAL DISCHARGE CHARACTERISTICS



TYPICAL CYCLE CHARACTERISTICS



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

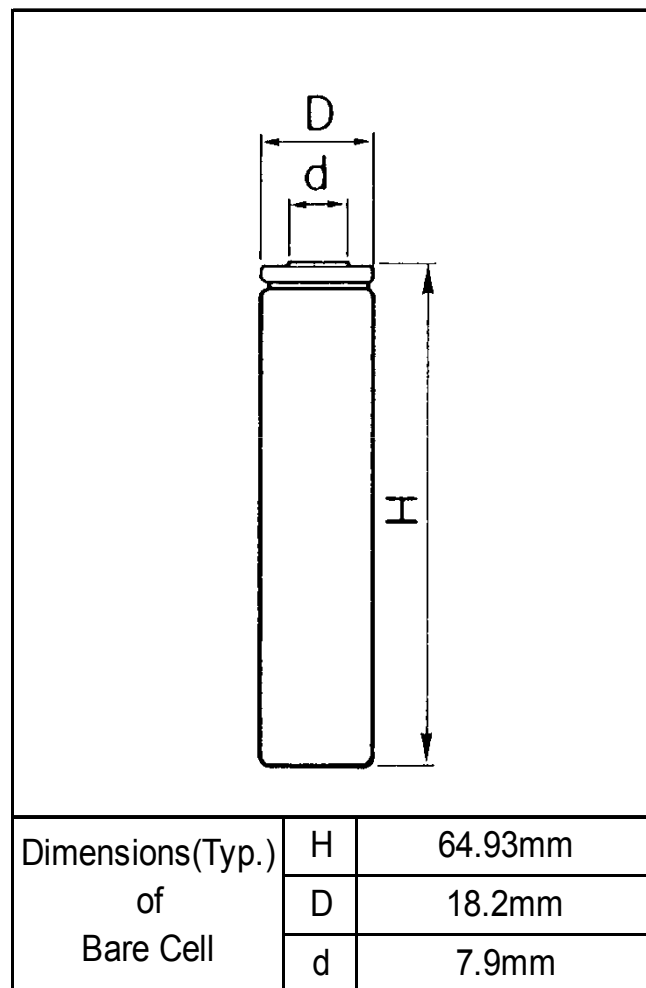
*² CVCC: Constant Voltage / Constant Current *³ CC: Constant Current

⚠ 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

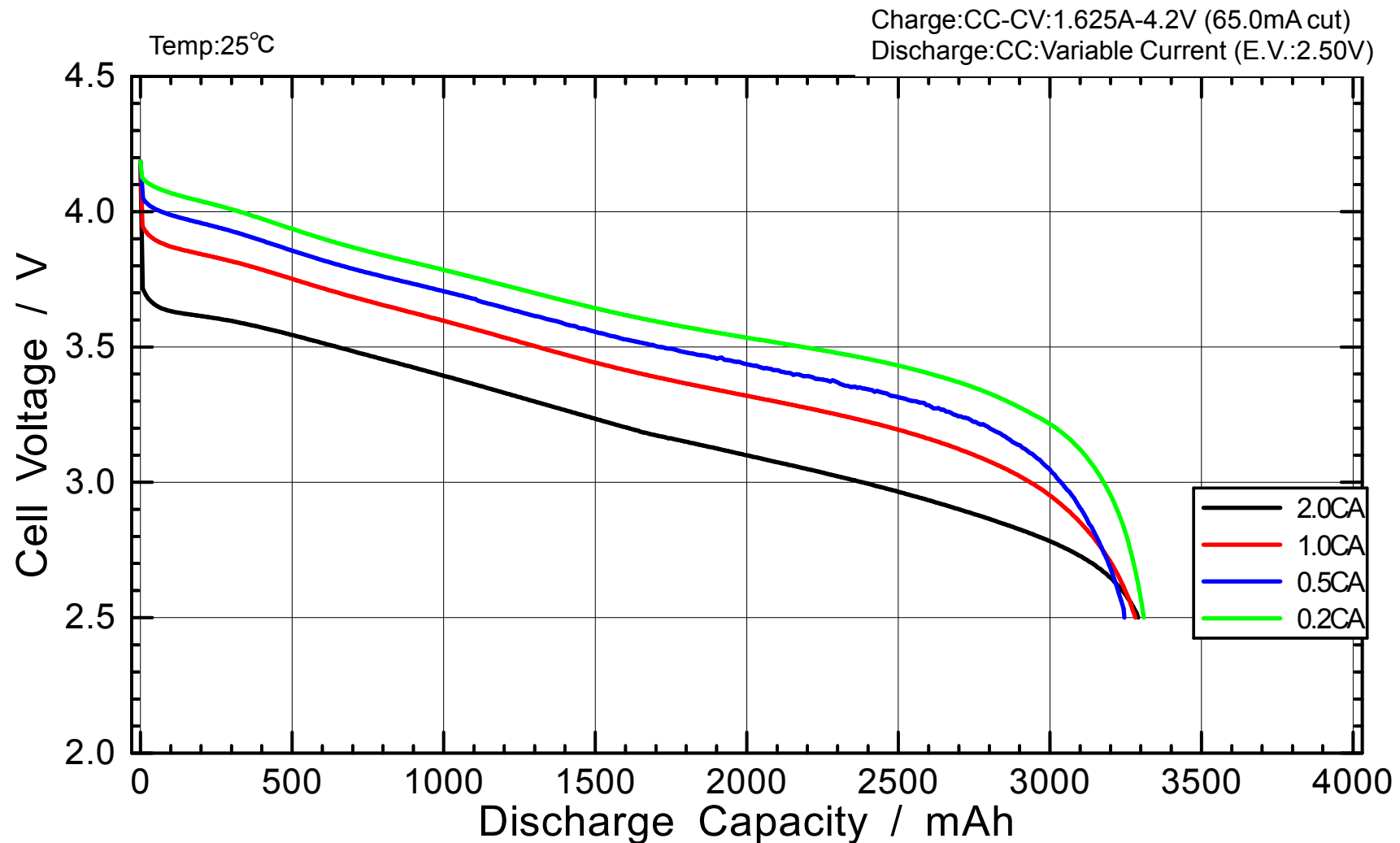
Specifications



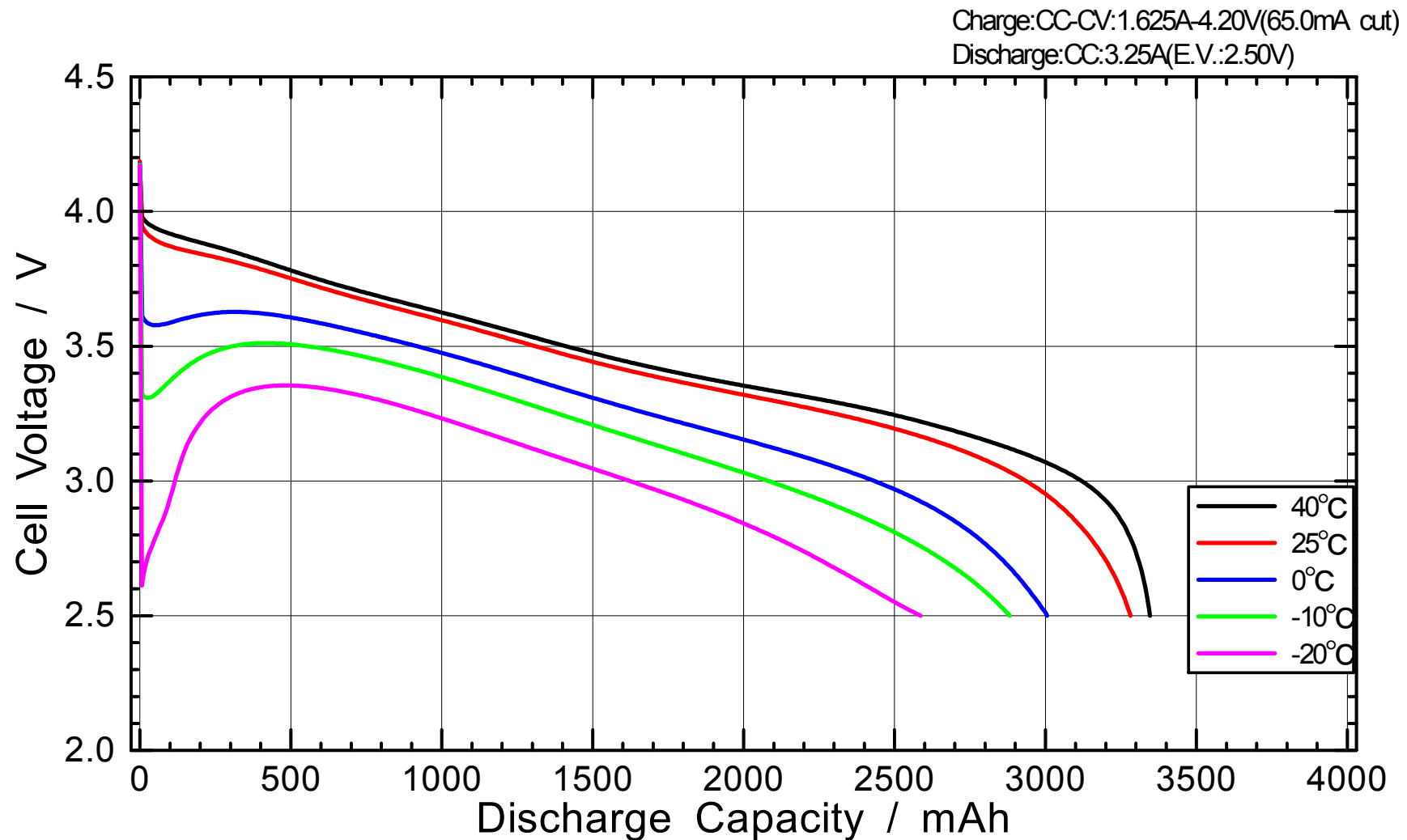
Discharged State after Assembling

| | | |
|--|-----------|---------------------------------------|
| 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

