Panasonic
INDUSTRY

The ultimate generation of safe and reliable lithium-ion cell
The new NCR18650BD-Improved

Maximum safety and superior performance
Stable performance over a range of discharge rate
Low self discharge
High reliability and long life
No need for State of Health (SOH) check*
High energy density and cost efficiency

**In case of 4.15V charge at the beginning*

Reduced human risk and damage risk positions your applications as smarter and safer choice

Higher cost effectiveness in terms of electronic and charging system as SOH check is not required

Safe 'Fit and Forget' solution

Panasonic's new NCR18650BD-Improved is suitable for a wide range of applications offering unbeatable performances, cycle life and safety. It demonstrates stable performance over a wide range of discharge rate and temperature.

By being charged at 4.15V from the start, the improved BD cells do not need State of Health (SOH) check neither a reduction in the charging voltage. Therefore, the application of this cell gives you an edge in the cost reduction related to electronic and charging system.

NCR18650BD-Improved: Mobility Application

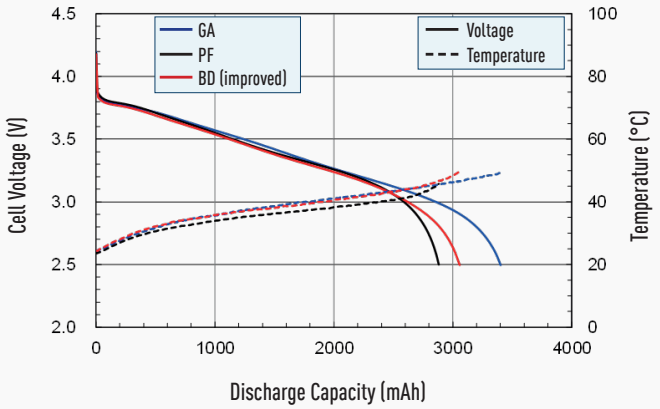
Panasonic has various line-up of cylindrical cell for motive application.

Model		NCR18650PF	NCR18650BD (improved)		NCR18650GA
			Use Case 1	Use Case 2	
Feature		Standard	High Energy / Long Life	High Energy / Long Life	High Energy
Nominal Voltage (V)		3.6	3.6	3.6	3.6
Rated Capacity (mAh) at 20°C		2700	2910	2980	3300
Capacity (mAh) at 25°C	min	2750	2935	3030	3350
	typ.	2900	3080	3180	3450
Energy (Wh)	typ.	10.4	11.1	11.4	12.4
Standard Charge		0.5C-4.2V*	0.3C-4.15V 0.5C @ 25°C-45°C	0.3C-4.2V *	0.5C-4.2V *
Cycle Life		●●●◐	●●●●●	●●●●	●●●
Life End Control		Reduce charge from 4.2V to 4.15V by SOH 70%	No Need	Reduce charge from 4.2V to 4.15V by SOH 70%	Reduce charge from 4.2V to 4.15V by SOH 70%
Max. Cont. Discharge Current (A)		8	8	8	8
Discharge End Voltage (V)		2.5	2.5	2.5	2.5
Impedance / Resistance (mΩ)	AC (1kHz) SOC50%	24	24	24	24
	DC (0.1-1It) SOC50%	44	44	44	44
Capacity (mAh) at 25°C	Diameter	18.5	18.5	18.5	18.5
	Height	65.3	65.3	65.3	65.3
Weight (g) (max.) (with tube)		48	49.5	49.5	49.5
Energy density (without tube)	Volumetric (Wh/l)	577	613	630	698
	Gravimetric (Wh/kg)	203	211	217	240

**Need life end control (reduce charge from 4.2V to 4.15V by SOH 70%)*

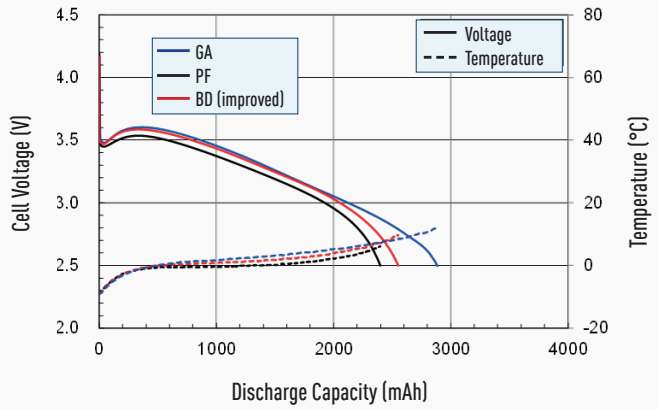
Discharge characteristics for mobility application

Stable performance over a wide range of discharge rate and temperature



Charge: CC-CV:0.3C-4.2V(1/50C cut) at 25°C (BD) or 0.5C-4.2V(1/50C cut) at 25°C (GA, PF)
Discharge: CC: 2C to 2.5V at 25°C

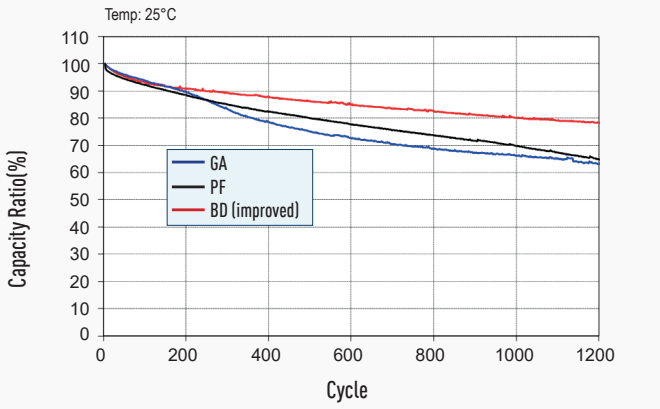
2C at 25°C



Charge: CC-CV:0.3C-4.2V(1/50C cut) at 25°C (BD) or 0.5C-4.2V(1/50C cut) at 25°C (GA, PF)
Discharge: CC: 1C to 2.5V at -10°C

1C at -10°C

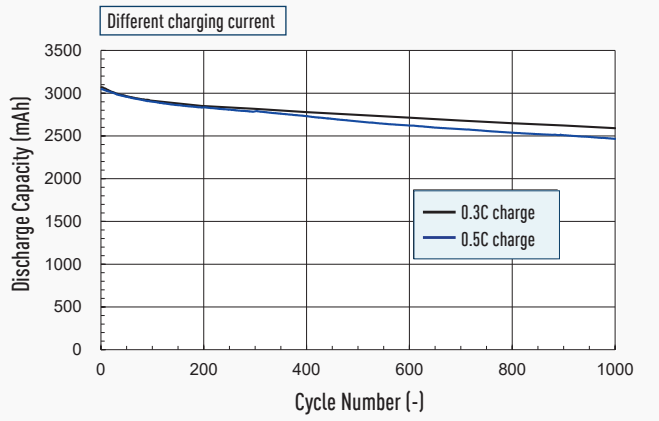
Charging and discharging over 1500 cycles



Charge: CC:CV: 0.3C-4.2V(1/50C cut)
Discharge: CC:1C to 2.85V

Cycle life performance of 18650BD-Improved, 18650GA and 18650PF

NCR18650BD-Improved especially shows excellent cycle performance.



Charge: CC-CV: 0.3C or 0.5V-4.2V(1/50C cut) at 25°C
Discharge: CC:1C to 2.85V at at 25°C

Cycle characteristics of NCR18650BD-Improved

Lower charging current makes cycle performance better.

NCR18650BD-Improved: Overview of Technical Specifications

Capacity: 3080mAh (0.2It@25°C)

- Higher vs NCR-18650PF @ 4.2VHigher vs NCR-18650GA @4.2V after 400 cycles @1It Discharge Current
- Higher vs NCR-18650GA @4.2V after 400 cycles @1It Discharge Current

Charging and Discharging

- Charging Current: Up to 0.5C, Impact limited to 200mAh loss (vs 0.3C) after 1000 cycles
- Discharge: 8A Type

Cycle Performance: 1500 cycles > 81% Initial Capacity (1It@25°C)

- 5% more vs NCR-18650PF
- Remaining Capacity after 1500 cycles + 600mAh vs NCR-18650GA

Low Temperature Performance: 2200mAh (1It@-20°C)

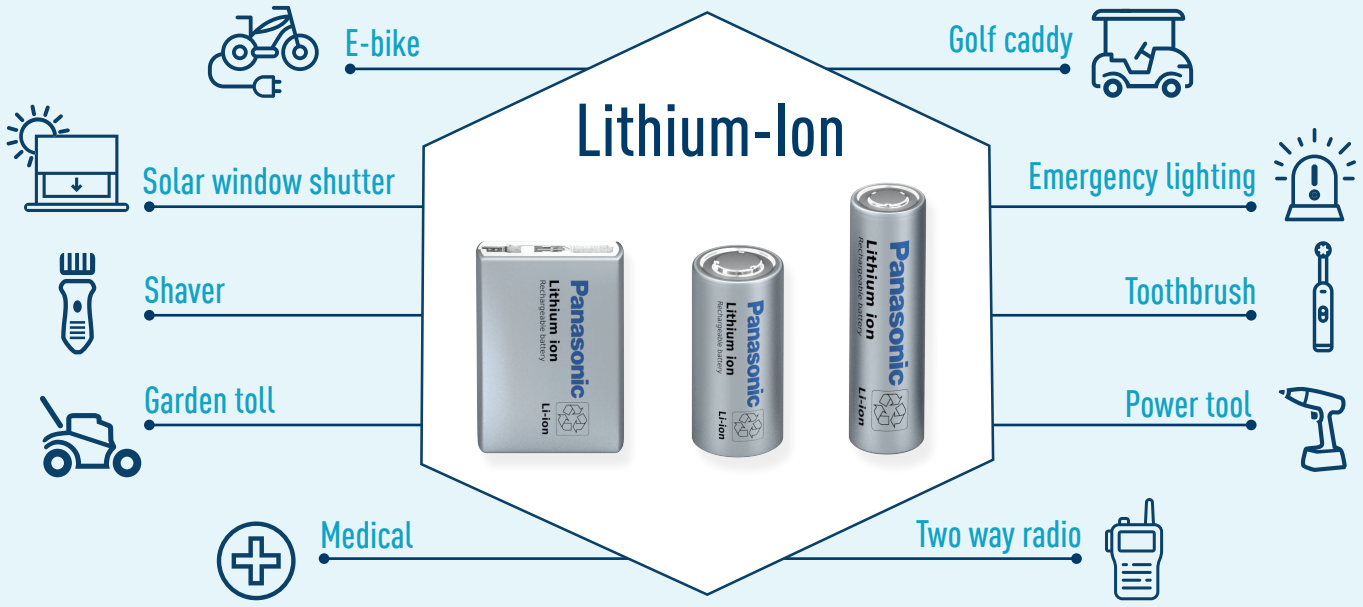
- 71% vs Initial Capacity @25°C

Safety: No Need to check SOH or control Charging Voltage*

- Cheaper Charging system for same safety level vs NCR-18650PF or NCR-18650GA @4.2V

** Please refer to page 1*

Application areas



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