

Illustrative render generated from published specifications

18.4 × 65 mm
44.5 g

Samsung
ICR18650-22P



Live page & updates

Samsung · released 2010

18650 NMC

2,150 mAh CAPACITY	10 A RATED CONTINUOUS	3.62 V NOMINAL · 2.8 – 4.2 V	7.78 Wh ENERGY · 174.83 WH/KG
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REFERENCE ONLY — NOT AN OFFICIAL DOCUMENT

This information is gathered from multiple sources, including manufacturer datasheets, independent third-party testing, and community contributions. Cell specifications vary between production batches and change over time, and no figure here is guaranteed to be correct or current. **Always consult the manufacturer's spec sheet directly.** Use this sheet for reference only — never as the sole basis for a safety-critical decision about charging, discharging, or assembling cells. The cell image is an illustrative render generated from published specifications, not a photograph.

CAPACITY AMONG 18650S #118 of 169 Lowest in database Highest Higher discharge than 80% of 18650 cells in our database. Great for high-drain builds.	VOLTAGE OPERATING WINDOW 1.4 V usable Cutoff 2.8 V Nominal 3.62 V Max 4.2 V Below nominal the cell sags fast under load; above it, the last of the capacity fills slowly on the constant-voltage taper.
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APPLICATION SUITABILITY

Rule-of-thumb ratings from this cell's capacity and continuous discharge. Check your own load before committing.

Powerwalls	Usable for powerwalls but lower capacity means you'll need more cells to hit your target kWh.
Ebike packs	Marginal. Check your motor's peak draw first. You might get voltage sag under load.
Car audio	Might work for smaller setups. Check your amp's peak current draw.
High-drain vaping	Below the 25A Mooch CDR threshold that high-drain vaping needs. Use a higher-drain cell.
Flashlights	Lower capacity means shorter runtime. Better cells are available for flashlight use.
Power tools	May work for lighter-duty tools. Check your tool's current requirements.

IDENTITY

Manufacturer	Samsung
Model	ICR18650-22P
Format	18650
Chemistry	NMC
Year released	2010
Wrap colour	Purple (Light)
Insulator	White
Terminal	Flat top
Protection	Unprotected

OPERATING TEMPERATURE

Charging	0°C to 45°C
Discharging	-20°C to 60°C

ENERGY & POWER DENSITY

Energy	7.78 Wh
Specific energy	174.83 Wh/kg
Volumetric density	450.13 Wh/L
Power density (mass)	813 W/kg
Power density (volume)	2,094 W/L
Capacity ranking	#118 of 169 18650s

PHYSICAL

Diameter	18.4 mm
Length	65 mm
Weight	44.5 g

ELECTRICAL

Rated capacity	2,150 mAh
Nominal voltage	3.62 V
Max charge voltage	4.2 V
Discharge cutoff	2.8 V
Energy	7.78 Wh
Internal resistance	35 mΩ
Max continuous discharge	10 A (datasheet)
Discharge C-rate	4.7C
Standard charge current	1,075 mA
Typical charge time	2 h
Standard discharge	430mA
Cycle life	300 cycles

C-RATE CONVERSION · 2,150 MAH

C-RATE	CURRENT	THEORETICAL RUNTIME
0.2C	0.43 A	5h 00m
0.5C	1.08 A	2h 00m
1C	2.15 A	1h 00m
2C	4.3 A	30m
3C	6.45 A	20m

Highlighted row is closest to the rated 10 A continuous discharge.

CHARGING

Rate	Current	Estimated Time to Full
0.5C	1,075 mA	~2h 00m
1C	2,150 mA	~1h 00m

Constant-current phase only. Real charge time runs longer because of the constant-voltage taper at the end.

SERIES PACK CONFIGURATIONS

Voltages calculated from this cell's own nominal and maximum charge voltage. The 3P columns show one common parallel count as a worked example — scale the parallel group to the capacity you need.

Series	Nominal	Fully Charged	Cells at 3P	Capacity	Energy
3S	10.9 V	12.6 V	9	6.4 Ah	70 Wh
7S	25.3 V	29.4 V	21	6.4 Ah	163 Wh
10S	36.2 V	42 V	30	6.4 Ah	233 Wh
13S	47.1 V	54.6 V	39	6.4 Ah	304 Wh
14S	50.7 V	58.8 V	42	6.4 Ah	327 Wh

EXAMPLE PACKS

7S2P 24V ebike / small pack 14 cells · 25.3 V 4,300 mAh · 109 Wh 20 A max · ≈0.62 kg cells	13S4P 48V ebike standard 52 cells · 47.1 V 8,600 mAh · 405 Wh 40 A max · ≈2.31 kg cells	16S4P DIY powerwall 64 cells · 57.9 V 8,600 mAh · 498 Wh 40 A max · ≈2.85 kg cells	4S6P Power tool replacement 24 cells · 14.5 V 12,900 mAh · 187 Wh 60 A max · ≈1.07 kg cells
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SIMILAR CELLS

Same format and chemistry, within ± 500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
Samsung ICR18650-22P (this cell)	2,150	10 A	7.78	44.5 g	175
Sanyo UR18650ZT	2,650	5.3 A	9.8	46 g	213
LG LGDB118650	2,600	—	9.8	—	—
LG LGDBB11865	2,600	—	9.8	—	—
Sanyo UR18650ZTA	2,620	5.8 A	9.7	48 g	202
BAK C18650CC	2,600	2 A	9.6	—	—

HANDLING & SAFETY

- Never charge above 4.2V or discharge below 2.8V.
- Store cells at around 3.6-3.8V (roughly 40-60% charge) for long-term storage.
- Don't mix cells with different capacities, chemistries, or states of charge in a pack.
- Inspect wraps before use. A torn wrap can cause a short circuit.
- Always use a BMS or balance charger appropriate for your pack configuration.
- Keep cells away from metal objects, keys, and coins. A short across the terminals can cause fire.

SOURCES & FURTHER READING

Cell Savors page	cellsaviors.com/cell-database/samsung-icr18650-22p
Manufacturer datasheet	https://www.dnkpowers.com/wp-content/uploads/2018/04/Samsung-IC...
Full cell database	cellsaviors.com/cell-database