

Illustrative render generated from published specifications

21.5 × 70.85 mm
71 g

Samsung
INR21700-50GB



Live page & updates

Samsung

21700

NMC

MOOCH-TESTED · 9 A

5,000 mAh CAPACITY	9 A MOOCH CONTINUOUS	3.6 V NOMINAL · 2.5 – 4.2 V	18 Wh ENERGY · 253.52 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 21700S

#19 of 72

Lowest in database

Highest

More capacity than 75% of 21700 cells in our database, but lower discharge than average.

VOLTAGE OPERATING WINDOW

1.7 V usable

Cutoff 2.5 V

Nominal 3.6 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.

APPLICATION SUITABILITY

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

Powerwalls	High capacity means more stored energy per cell. Fewer cells needed for a given kWh target.
Ebike packs	Marginal. Check your motor's peak draw first. You might get voltage sag under load.
Car audio	Not enough discharge for car audio amplifiers. You need at least 15-20A continuous for most setups.
High-drain vaping	Below the 25A Mooch CDR threshold that high-drain vaping needs. Use a higher-drain cell.
Flashlights	High capacity means long runtime. Great for everyday carry and extended use.
Power tools	Not enough discharge or capacity for power tool use.

IDENTITY

Manufacturer	Samsung
Model	INR21700-50GB
Format	21700
Chemistry	NMC
Wrap colour	Green
Terminal	Button top
Protection	Unprotected

OPERATING TEMPERATURE

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

ENERGY & POWER DENSITY

Energy	18 Wh
Specific energy	253.52 Wh/kg
Volumetric density	699.79 Wh/L
Power density (mass)	456 W/kg
Power density (volume)	1,260 W/L
Capacity ranking	#19 of 72 21700s

PHYSICAL

Diameter	21.5 mm
Length	70.85 mm
Weight	71 g

ELECTRICAL

Rated capacity	5,000 mAh
Nominal voltage	3.6 V
Max charge voltage	4.2 V
Discharge cutoff	2.5 V
Energy	18 Wh
Internal resistance	14 mΩ
Max continuous discharge	9 A (mooch)
Discharge C-rate	1.8C
Standard charge current	2,450 mA
Typical charge time	2 h
Standard discharge	980mA
Cycle life	500 cycles

C-RATE CONVERSION · 5,000 MAH

C-RATE	CURRENT	THEORETICAL RUNTIME
0.2C	1 A	5h 00m
0.5C	2.5 A	2h 00m
1C	5 A	1h 00m

Highlighted row is closest to the rated 9 A continuous discharge.

CHARGING

RATE	CURRENT	ESTIMATED TIME TO FULL
0.5C	2,500 mA	~2h 00m

1C

5,000 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	10.8 V	12.6 V	9	15 Ah	162 Wh
7S	25.2 V	29.4 V	21	15 Ah	378 Wh
10S	36 V	42 V	30	15 Ah	540 Wh
13S	46.8 V	54.6 V	39	15 Ah	702 Wh
14S	50.4 V	58.8 V	42	15 Ah	756 Wh

EXAMPLE PACKS

7S2P 24V ebike / small pack 14 cells · 25.2 V 10,000 mAh · 252 Wh 18 A max · ≈0.99 kg cells	13S4P 48V ebike standard 52 cells · 46.8 V 20,000 mAh · 936 Wh 36 A max · ≈3.69 kg cells	16S4P DIY powerwall 64 cells · 57.6 V 20,000 mAh · 1,152 Wh 36 A max · ≈4.54 kg cells	4S6P Power tool replacement 24 cells · 14.4 V 30,000 mAh · 432 Wh 54 A max · ≈1.7 kg cells
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SIMILAR CELLS

Same format and chemistry, within ±500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
Samsung INR21700-50GB (this cell)	5,000	9 A	18	71 g	254
Linkdata 55P	5,500	40 A	19.8	—	—
Samsung INR21700-55E	5,490	10 A	19.8	74 g	267
BAK 53E	5,300	10 A	19.1	69 g	277
Samsung INR21700-53G	5,300	10 A	19.1	72 g	265
LG M50T	5,014	14 A	18.1	70 g	258

HANDLING & SAFETY

- Never charge above 4.2V or discharge below 2.5V.

- 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 Saviors page	cellsaviors.com/cell-database/samsung-inr21700-50gb
Independent test (Mooch)	https://www.e-cigarette-forum.com/threads/bench-test-results-s...
Full cell database	cellsaviors.com/cell-database