Illustrative render generated from published specifications

21.7 × 70.8 mm
70 g

Amprius INR21700-50Q

Live page & updates

Amprius · released 2025

21700 | NMC

MOOCH-TESTED · 50 A

5,000 mAh	50 A	3.6 V	18 Wh
CAPACITY	MOOCH CONTINUOUS	NOMINAL · 2.5 – 4.2 V	ENERGY · 257.14 WH/KG

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

Top tier for both capacity and discharge. One of the best all-around 21700 cells.

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	Good balance of capacity for range and discharge for hills. Works well in most ebike packs.
Car audio	Enough discharge to handle amplifier bursts without voltage sag.
High-drain vaping	Above the 25A Mooch CDR threshold. Suitable for regulated and mechanical mods.
Flashlights	High capacity means long runtime. Great for everyday carry and extended use.
Power tools	Sufficient discharge and capacity for most power tool packs.

IDENTITY

Manufacturer	**Amprius**
Model	**INR21700-50Q**
Format	**21700**
Chemistry	**NMC**
Year released	**2025**
Terminal	**Flat top**
Protection	**Unprotected**

OPERATING TEMPERATURE

Charging	**0°C to 45°C**
Discharging	**-20°C to 80°C**

ENERGY & POWER DENSITY

Energy	**18 Wh**
Specific energy	**257.14 Wh/kg**
Volumetric density	**687.43 Wh/L**
Power density (mass)	**2,571 W/kg**
Power density (volume)	**6,874 W/L**
Capacity ranking	**#19 of 72 21700s**

PHYSICAL

Diameter	**21.7 mm**
Length	**70.8 mm**
Weight	**70 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	**5 mΩ**
Max continuous discharge	**50 A (mooch)**
Discharge C-rate	**10C**
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
2C	10 A	30m
3C	15 A	20m
5C	25 A	12m
8C	40 A	7m 30s

10C	**50 A**	**6m**

Highlighted row is closest to the rated 50 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

100 A max · ≈0.98 kg cells

13S4P

48V ebike standard

52 cells · 46.8 V

20,000 mAh · 936 Wh

200 A max · ≈3.64 kg cells

16S4P

DIY powerwall

64 cells · 57.6 V

20,000 mAh · 1,152 Wh

200 A max · ≈4.48 kg cells

4S6P

Power tool replacement

24 cells · 14.4 V

30,000 mAh · 432 Wh

300 A max · ≈1.68 kg cells

SIMILAR CELLS

Same format and chemistry, within ±500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
Amprius INR21700-50Q (this cell)	**5,000**	**50 A**	**18**	**70 g**	**257**
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/amprius-inr21700-50q
Manufacturer datasheet	https://amprius.com/documents/Amprius_Product_Catalog.pdf
Independent test (Mooch)	https://www.e-cigarette-forum.com/threads/bench-test-results-a...
Full cell database	cellsaviors.com/cell-database