

18.4 × 65 mm
50 g

Samsung · released 2011

NMC

ENERGY · 240 WH/KG

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IDENTITY

Manufacturer	Samsung
Model	ICR18650-32A
Format	18650
Chemistry	NMC
Year released	2011
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	12 Wh
Specific energy	240 Wh/kg
Volumetric density	694.29 Wh/L
Power density (mass)	480 W/kg
Power density (volume)	1,389 W/L
Capacity ranking	#7 of 169 18650s

C-RATE CONVERSION · 3,200 MAH

C-RATE	CURRENT	THEORETICAL RUNTIME
0.2C	0.64 A	5h 00m
0.5C	1.6 A	2h 00m
1C	3.2 A	1h 00m
2C	6.4 A	30m

Highlighted row is closest to the rated 6.4 A continuous discharge.

PHYSICAL

Diameter	18.4 mm
Length	65 mm
Weight	50 g

ELECTRICAL

Rated capacity	3,200 mAh
Nominal voltage	3.75 V
Max charge voltage	4.35 V
Discharge cutoff	2.8 V
Energy	12 Wh
Internal resistance	100 mΩ
Max continuous discharge	6.4 A (datasheet)
Discharge C-rate	2C
Standard charge current	1,600 mA
Typical charge time	2 h
Standard discharge	640mA

CHARGING

RATE	CURRENT	ESTIMATED TIME TO FULL
0.5C	1,600 mA	~2h 00m
1C	3,200 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	11.3 V	13 V	9	9.6 Ah	108 Wh
7S	26.3 V	30.4 V	21	9.6 Ah	252 Wh
10S	37.5 V	43.5 V	30	9.6 Ah	360 Wh
13S	48.8 V	56.6 V	39	9.6 Ah	468 Wh
14S	52.5 V	60.9 V	42	9.6 Ah	504 Wh

EXAMPLE PACKS

7S2P 24V ebike / small pack 14 cells · 26.3 V 6,400 mAh · 168 Wh 13 A max · ≈0.7 kg cells	13S4P 48V ebike standard 52 cells · 48.8 V 12,800 mAh · 624 Wh 26 A max · ≈2.6 kg cells	16S4P DIY powerwall 64 cells · 60 V 12,800 mAh · 768 Wh 26 A max · ≈3.2 kg cells	4S6P Power tool replacement 24 cells · 15 V 19,200 mAh · 288 Wh 38 A max · ≈1.2 kg cells
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SIMILAR CELLS

Same format and chemistry, within ± 500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
Samsung ICR18650-32A (this cell)	3,200	6.4 A	12	50 g	240
LG LGEBMJ11865	3,500	10 A	12.7	—	—
LG LGDBMJ11865	3,500	10 A	12.7	49 g	259
LG LGABF1L1865	3,350	4.9 A	12.2	49 g	248
LG LGGBF1L1865	3,350	4.9 A	12.2	—	—
Panasonic NCR18650B	3,350	4 A	12.1	47.5 g	254

HANDLING & SAFETY

- Never charge above 4.35V 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-icr18650-32a
Manufacturer datasheet	http://gamma.spb.ru/media/pdf/liion-lipolymer-lifepo4-akkumuly...
Full cell database	cellsaviors.com/cell-database