

Illustrative render generated from published specifications

18.5 × 65 mm  
43 g

Panasonic  
CGR18650A



Live page & updates

Panasonic

18650 NMC

|                                          |                                              |                                                 |                                                    |
|------------------------------------------|----------------------------------------------|-------------------------------------------------|----------------------------------------------------|
| <div>2,000 mAh</div> <div>CAPACITY</div> | <div>3.8 A</div> <div>RATED CONTINUOUS</div> | <div>3.6 V</div> <div>NOMINAL · 3 – 4.2 V</div> | <div>7.2 Wh</div> <div>ENERGY · 167.44 WH/KG</div> |
|------------------------------------------|----------------------------------------------|-------------------------------------------------|----------------------------------------------------|

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.

|                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>CAPACITY AMONG 18650S</div> <div>#127 of 169</div> <div><div></div></div> <div>Lowest in databaseHighest</div> <div>A mid-range 18650 cell. Solid for builds that don't need extreme capacity or discharge.</div> | <div>VOLTAGE OPERATING WINDOW</div> <div>1.2 V usable</div> <div><div></div></div> <div>Cutoff 3 VNominal 3.6 VMax 4.2 V</div> <div>Below nominal the cell sags fast under load; above it, the last of the capacity fills slowly on the constant-voltage taper.</div> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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       | Not enough discharge for ebike use. Voltage sag would be a problem 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       | Lower capacity means shorter runtime. Better cells are available for flashlight use.                |
| Power tools       | Not enough discharge or capacity for power tool use.                                                |

IDENTITY

|              |                                      |
|--------------|--------------------------------------|
| Manufacturer | Panasonic                            |
| Model        | CGR18650A                            |
| Format       | 18650                                |
| Chemistry    | NMC                                  |
| Wrap colour  | <div><div></div> Green (Light)</div> |
| Insulator    | <div><div></div> White</div>         |
| Terminal     | Flat top                             |
| Protection   | Unprotected                          |

ENERGY & POWER DENSITY

|                        |                    |
|------------------------|--------------------|
| Energy                 | 7.2 Wh             |
| Specific energy        | 167.44 Wh/kg       |
| Volumetric density     | 412.08 Wh/L        |
| Power density (mass)   | 318 W/kg           |
| Power density (volume) | 783 W/L            |
| Capacity ranking       | #127 of 169 18650s |

PHYSICAL

|          |         |
|----------|---------|
| Diameter | 18.5 mm |
| Length   | 65 mm   |
| Weight   | 43 g    |

ELECTRICAL

|                          |                   |
|--------------------------|-------------------|
| Rated capacity           | 2,000 mAh         |
| Nominal voltage          | 3.6 V             |
| Max charge voltage       | 4.2 V             |
| Discharge cutoff         | 3 V               |
| Energy                   | 7.2 Wh            |
| Max continuous discharge | 3.8 A (datasheet) |
| Discharge C-rate         | 1.9C              |
| Standard charge current  | 1,190 mA          |
| Typical charge time      | 1.7 h             |
| Standard discharge       | 370mA             |

C-RATE CONVERSION · 2,000 MAH

| C-RATE | CURRENT | THEORETICAL RUNTIME |
|--------|---------|---------------------|
| 0.2C   | 0.4 A   | 5h 00m              |
| 0.5C   | 1 A     | 2h 00m              |
| 1C     | 2 A     | 1h 00m              |

Highlighted row is closest to the rated 3.8 A continuous discharge.

CHARGING

| RATE     | CURRENT  | ESTIMATED TIME TO FULL |
|----------|----------|------------------------|
| 0.5C     | 1,000 mA | ~2h 00m                |
| Standard | 1,190 mA | ~1h 41m                |
| 1C       | 2,000 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           | 6 Ah     | 65 Wh  |
| 7S     | 25.2 V  | 29.4 V        | 21          | 6 Ah     | 151 Wh |
| 10S    | 36 V    | 42 V          | 30          | 6 Ah     | 216 Wh |
| 13S    | 46.8 V  | 54.6 V        | 39          | 6 Ah     | 281 Wh |
| 14S    | 50.4 V  | 58.8 V        | 42          | 6 Ah     | 302 Wh |

## EXAMPLE PACKS

|                                                                                                             |                                                                                                            |                                                                                                       |                                                                                                                |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>7S2P</b><br>24V ebike / small pack<br>14 cells · 25.2 V<br>4,000 mAh · 101 Wh<br>8 A max · ≈0.6 kg cells | <b>13S4P</b><br>48V ebike standard<br>52 cells · 46.8 V<br>8,000 mAh · 374 Wh<br>15 A max · ≈2.24 kg cells | <b>16S4P</b><br>DIY powerwall<br>64 cells · 57.6 V<br>8,000 mAh · 461 Wh<br>15 A max · ≈2.75 kg cells | <b>4S6P</b><br>Power tool replacement<br>24 cells · 14.4 V<br>12,000 mAh · 173 Wh<br>23 A max · ≈1.03 kg cells |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|

## SIMILAR CELLS

Same format and chemistry, within ±500 mAh.

| CELL                            | MAH   | CONTINUOUS | WH  | WEIGHT | WH/KG |
|---------------------------------|-------|------------|-----|--------|-------|
| Panasonic CGR18650A (this cell) | 2,000 | 3.8 A      | 7.2 | 43 g   | 167   |
| LG LGDBHE21865                  | 2,500 | 20 A       | 9.3 | 48 g   | 193   |
| Sanyo UR18650F                  | 2,500 | 5 A        | 9.3 | 47 g   | 197   |
| Sanyo UR18650FM                 | 2,500 | 5 A        | 9.3 | 47 g   | 197   |
| LG LGCP218650                   | 2,500 | —          | 9   | —      | —     |
| LG LGDBHE41865                  | 2,500 | 20 A       | 9   | 47 g   | 191   |

## HANDLING &amp; SAFETY

- Never charge above 4.2V or discharge below 3V.
- 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

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|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Cell Saviors page      | <a href="https://cellsaviors.com/cell-database/panasonic-cgr18650a">cellsaviors.com/cell-database/panasonic-cgr18650a</a>                         |
| Manufacturer datasheet | <a href="http://home.roboticlab.eu/_media/et/projects/tudengid11/panaso...">http://home.roboticlab.eu/_media/et/projects/tudengid11/panaso...</a> |
| Full cell database     | <a href="https://cellsaviors.com/cell-database">cellsaviors.com/cell-database</a>                                                                 |