

# 6-CNF Series

VRLA Battery For Energy Storage

6-CNF-150



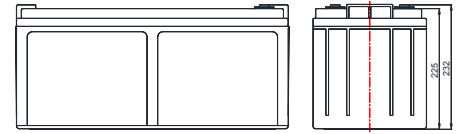
## Main Applications

- ▶ Renewable energy (wind & solar ) storage system
- ▶ Peak shifting of electrical power system
- ▶ Frequency regulation and load following service
- ▶ Smart-grid & micro-grid sites
- ▶ Off-grid & bad-grid sites

## Benefits

- ▶ Extra long life design, design life is 20 years
- ▶ Superior deep cycling performance
- ▶ Lifetime maintenance free, Low annual operating cost, reduced TCO
- ▶ High potential fuel savings when used with hybrid genset applications

## Dimensions



## Technical Parameters

|  |  |
|--|--|
| Nominal Voltage                                    | 12 V   |
| Capacity   | 150 Ah @ 10hr to 1.80V per cell @ 25°C (77°F)  |
| Weight   | 59.3 kg (130.73 lbs)   |
| Dimensions   | Length: 511 mm<br>Width: 212 mm<br>Height: 225 mm<br>Total height: 232 mm                              |
| Internal Resistance (full charged)                 | Approx. 3.1 mΩ @ 25°C(77°F)  |
| Short- circuit Current                             | 930 A(5sec)  |
| Self Discharge @25°C(77°F)                         | Less than 4% after 30 days storage   |
| Operating Temperature Range                        | Discharge: -40°C~50°C(-40°F~122°F)<br>Charge: -20°C~45°C(-4°F~113°F)<br>Storage:-20°C~40°C(-4°F~104°F) |
| Recommended Operating Temperature                  | 15°C~25°C (59°F~77°F)  |
| Maximum Charging Current                           | 30 A   |
| Charging Voltage @25°C(77°F)                       | Float: 2.25 V/cell, Temps coefficient -3 mV/°C<br>Equalize: 2.35 V/cell<br>Cycle:2.40 V/cell           |
| Terminal   | M8   |
| Container Materials                                | ABS/ABS V0 (Optional)  |
| Capacity Affected by Temperature(C <sub>10</sub> ) | 105% @ 40°C(104°F)<br>85% @ 0°C(32°F)<br>60% @ -20°C(-4°F)   |
| Design Life @25°C(77°F)                            | 20 years   |

## Attain Certificate

- ISO9001
- ISO14001
- ISO18001

## Technical Features

- ▶ Adopt lead- carbon technology
- ▶ Special gel electrolyte without flowing to avoid acid stratification and can prolong service life
- ▶ Excellent charging and discharging ability in low current
- ▶ Exquisite design for premium quality, high reliability and stability

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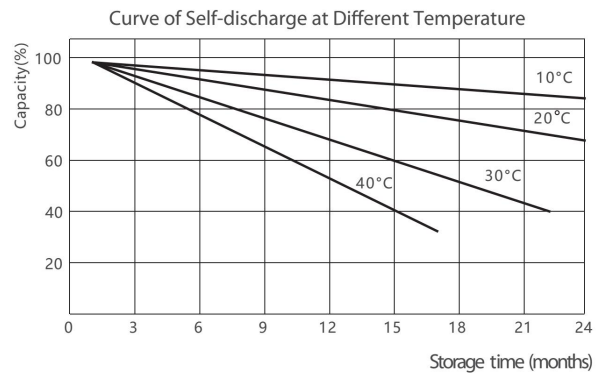
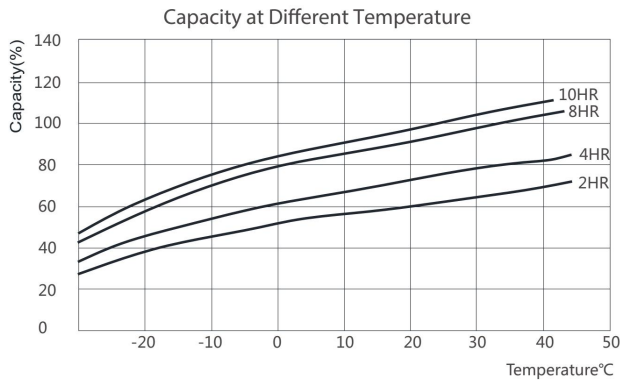
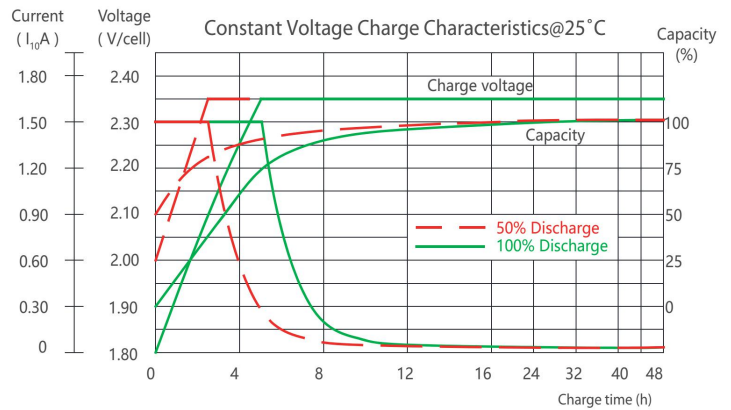
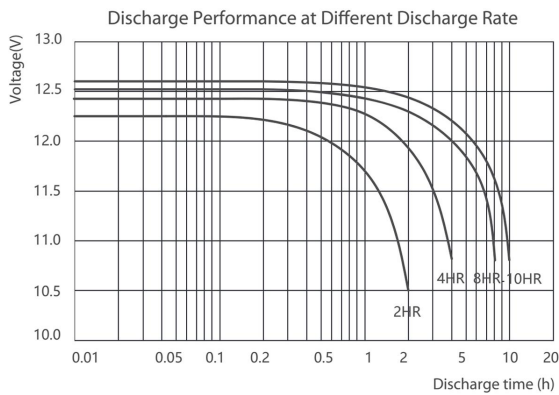
## Constant Current Discharge Characteristics Unit: A (25°C, 77°F)

| F.V/Time   | 15min | 30min | 1hr  | 2hr  | 3hr  | 4hr  | 5hr  | 6hr  | 8hr  | 10hr | 20hr |
|------------|-------|-------|------|------|------|------|------|------|------|------|------|
| 1.85V/cell | 197   | 126   | 81.8 | 49.0 | 36.6 | 29.4 | 24.6 | 21.7 | 17.6 | 14.9 | 7.85 |
| 1.80V/cell | 214   | 134   | 84.1 | 50.9 | 37.9 | 30.2 | 25.4 | 22.3 | 18.0 | 15.3 | 8.01 |
| 1.75V/cell | 224   | 141   | 87.2 | 52.4 | 38.8 | 30.9 | 25.9 | 22.7 | 18.3 | 15.5 | 8.12 |
| 1.70V/cell | 234   | 146   | 89.9 | 53.8 | 39.6 | 31.5 | 26.4 | 23.0 | 18.6 | 15.7 | 8.21 |
| 1.67V/cell | 239   | 151   | 92.1 | 54.9 | 40.3 | 32.0 | 26.7 | 23.3 | 18.8 | 15.8 | 8.29 |
| 1.60V/cell | 249   | 157   | 94.1 | 56.0 | 40.9 | 32.4 | 27.0 | 23.6 | 19.0 | 15.9 | 8.35 |

## Constant Power Discharge Characteristics Unit: W/cell (25°C, 77°F)

| F.V/Time   | 15min | 30min | 1hr | 2hr  | 3hr  | 4hr  | 5hr  | 6hr  | 8hr  | 10hr | 20hr |
|------------|-------|-------|-----|------|------|------|------|------|------|------|------|
| 1.85V/cell | 371   | 242   | 158 | 96.6 | 72.3 | 58.3 | 49.1 | 43.4 | 35.2 | 30.0 | 15.8 |
| 1.80V/cell | 401   | 255   | 162 | 100  | 74.7 | 59.8 | 50.2 | 44.3 | 35.9 | 30.5 | 16.1 |
| 1.75V/cell | 420   | 267   | 168 | 103  | 76.2 | 61.0 | 51.1 | 45.0 | 36.4 | 30.8 | 16.2 |
| 1.70V/cell | 436   | 276   | 172 | 105  | 77.6 | 62.0 | 51.8 | 45.6 | 36.8 | 31.0 | 16.4 |
| 1.67V/cell | 443   | 285   | 176 | 107  | 78.8 | 62.8 | 52.5 | 46.1 | 37.1 | 31.3 | 16.5 |
| 1.60V/cell | 458   | 292   | 179 | 108  | 79.6 | 63.4 | 52.9 | 46.5 | 37.4 | 31.4 | 16.6 |

## Performance Curve



### \*Declaration:

This information is generally descriptive only and is not intended to make or imply any representation, guarantee or warranty with respect to any cells and batteries. Cell and battery designs/specifications are subject to modification without notice. Contact CHINASHOTO for the latest information.

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