

## General features for MPPV Series battery (OPzV)

- \* Tubular positive plate; separator with the combined application of porous rubber and porous PVC, separator is with a high porosity & good corrosion resistance. Gelled electrolyte technology.
- \* Computer designed lead, calcium tin alloy grid for high power density.
- \* Long service life, maintenance-free during the whole service life.
- \* Alloy (no antimony) and internal oxygen recombination ensure low gassing.
- \* High cyclic ability, no internal short circuits in the GEL structure.
- \* Easy to move and handle, easy using cable connectors or copper connectors in the battery connection..



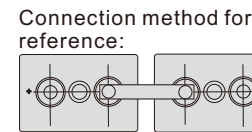
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**MPPV2-420 (2V420Ah)**

## Specifications

|                               |                                    |                    |
|-------------------------------|------------------------------------|--------------------|
| Nominal Voltage               |                                    | 2 V                |
| Rated capacity (10 hour rate) |                                    | 420 Ah             |
| Dimensions<br>(±3mm)          | Total Height<br>(Include terminal) | 506mm (19.9inches) |
|                               | Height                             | 470mm (18.5inches) |
|                               | Length                             | 145mm (5.71inches) |
|                               | Width                              | 206mm (8.11inches) |
| Approx weight (±5%)           |                                    | 32.0Kg (70.5lbs)   |

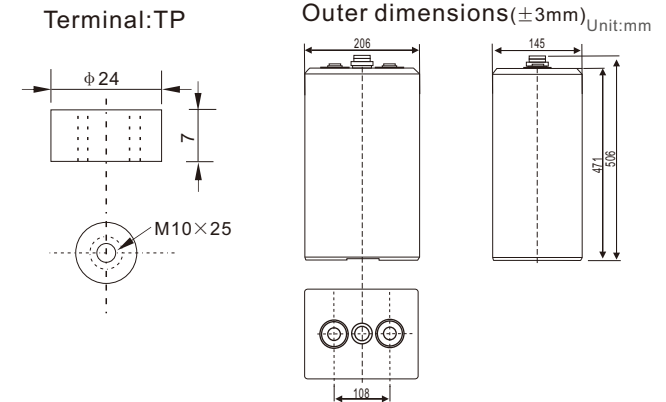
## Battery picture and construction



### Battery Construction

|              |                |                |              |          |
|--------------|----------------|----------------|--------------|----------|
| Component    | Positive plate | Negative plate | Container    | Cover    |
| Raw material | Lead dioxide   | Lead           | ABS          | ABS      |
| Component    | Electrolyte    | Separator      | Safety valve | Terminal |
| Raw material | Gelled acid    | PVC            | Rubber       | Copper   |

## Outer dimension and terminal



## Characteristics

|   |                                    |  |
|---|------------------------------------|--|
| Capacity<br>25°C(77°F)                                  | 10 hour rate(42A, 1.8V)            | 420Ah  |
|   | 3 hour rate(111A, 1.75V)           | 333Ah  |
|   | 1 hour rate(221A, 1.75V)           | 221Ah  |
| Internal Resistance                                     | Full charged battery at 25°C(77°F) | Approx 0.7 mΩ  |
| Capacity<br>affected<br>by Temperature<br>(10hour rate) | 40°C (104°F)                       | 103%   |
|   | 25°C (77°F)                        | 100%   |
|   | 0°C (32°F)                         | 85%  |
|   | -15°C (5°F)                        | 65%  |
| Remaining capacity<br>Self-Discharge<br>At 25°C(77°F)   | Capacity after 3 month storage     | 94%  |
|   | Capacity after 6 month storage     | 88%  |
|   | Capacity after 12 month storage    | 75%  |
| Terminal type   | TP (copper)                        |  |
| Max. Discharge current 25°C/(77°F)                      | 2100A (5Seconds)                   |  |
| Nominal operating temperature                           | 25°C ±5°C(77°F ±9°F)               |  |
| Operating<br>Temperature<br>Range                       | Discharge                          | -15°C ~50°C (5°F ~122°F)   |
|   | Charge                             | -10°C ~50°C (14°F ~122°F)  |
|   | Storage                            | -20°C ~50°C (-4°F ~122°F)  |
| Charge methods<br>(constant Voltage)<br>At 25°C(77°F)   | Cycle use                          | Initial Charging Current less than 105 A<br>Voltage 2.35-2.45V<br>Temperature compensation:-4mV/°C |
|   | Standby use                        | Voltage 2.25-2.30V<br>Temperature compensation:-3mV/°C   |

## Constant current discharge (25°C , 77 °F)

## Constant power discharge (25°C , 77 °F)

Unit:A

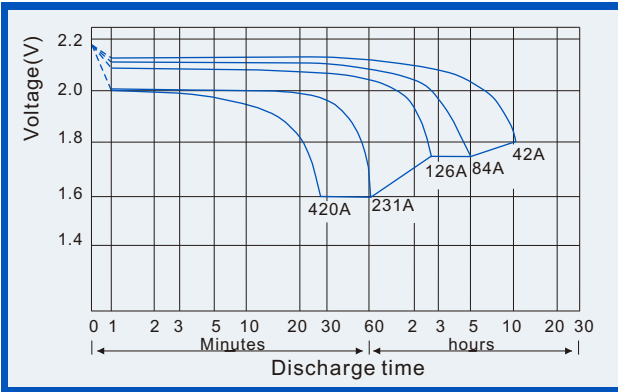
Unit:watts

### Constant Current(Amp) and Constant Power(Watt) Discharge Table at 25°C(77°F)

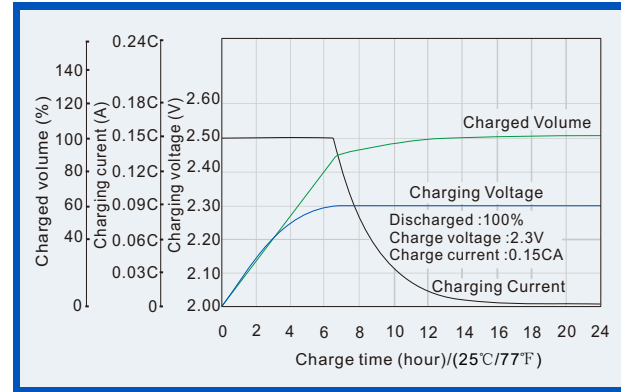
| Time  |   | 30min | 1h  | 2h  | 3h  | 5h  | 6h  | 8h  | 10h | 20h | 24h | 48h | 100h |
|-------|---|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 1.65V | A | 365   | 242 | 158 | 124 | 85  | 69  | 56  | 49  | 25  | 21  | 11  | 6    |
|       | W | 767   | 494 | 354 | 248 | 160 | 153 | 127 | 95  | 48  | 43  | 28  | 15   |
| 1.70V | A | 355   | 231 | 149 | 117 | 81  | 65  | 54  | 46  | 25  | 21  | 11  | 6    |
|       | W | 720   | 479 | 347 | 239 | 158 | 148 | 122 | 92  | 47  | 42  | 28  | 15   |
| 1.75V | A | 336   | 221 | 141 | 111 | 76  | 62  | 51  | 44  | 24  | 21  | 11  | 5    |
|       | W | 659   | 466 | 337 | 232 | 155 | 144 | 118 | 88  | 47  | 42  | 28  | 15   |
| 1.80V | A | 323   | 210 | 133 | 105 | 71  | 59  | 49  | 42  | 23  | 21  | 11  | 5    |
|       | W | 586   | 437 | 330 | 223 | 151 | 139 | 113 | 86  | 46  | 42  | 28  | 14   |
| 1.85V | A | 305   | 200 | 127 | 99  | 69  | 56  | 47  | 40  | 21  | 20  | 11  | 5    |
|       | W | 508   | 426 | 313 | 211 | 145 | 132 | 109 | 82  | 44  | 40  | 28  | 14   |

(Above characteristics data are average values obtained within three charge/discharge cycles, not the minimum values.)

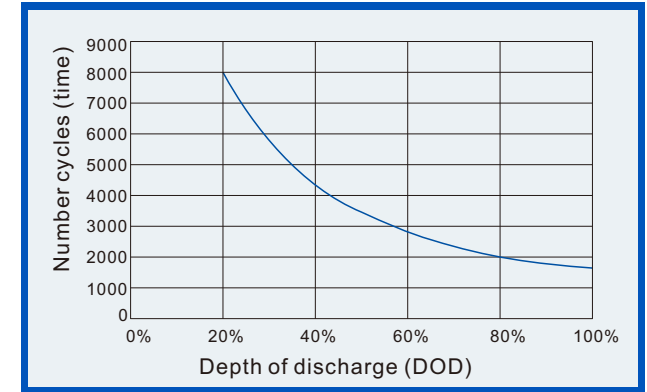
**Discharge characteristics (25°C, 77°F)**



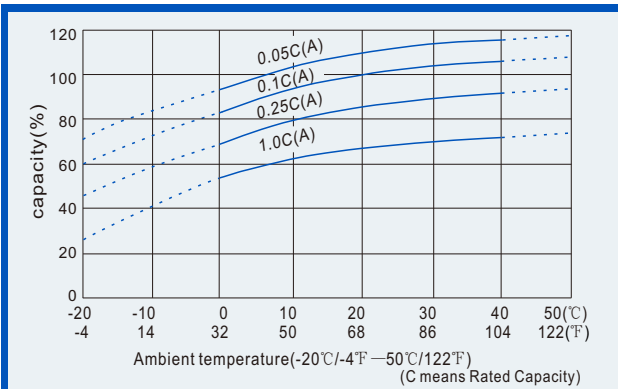
**Charge characteristics (25°C, 77°F)**



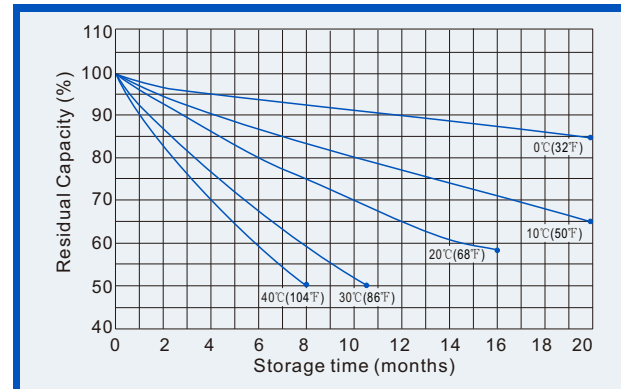
**Life characteristics of Cyclic Use (25°C, 77°F)**



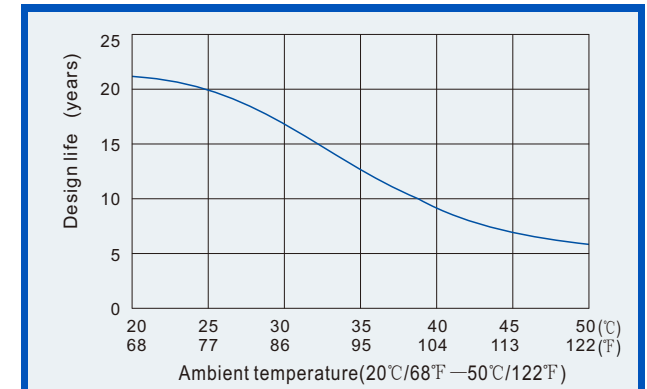
**Effect of Temperature on capacity**



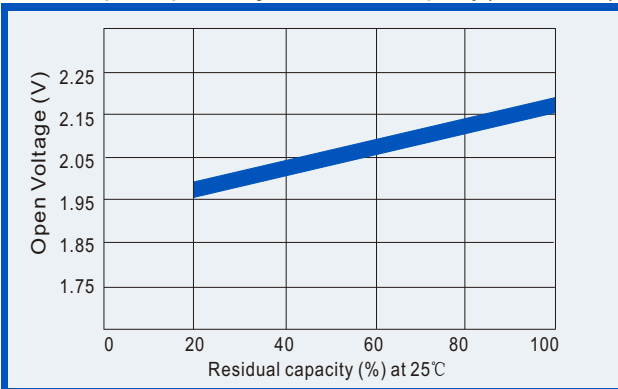
**Self-discharge characteristics (with full charging)**



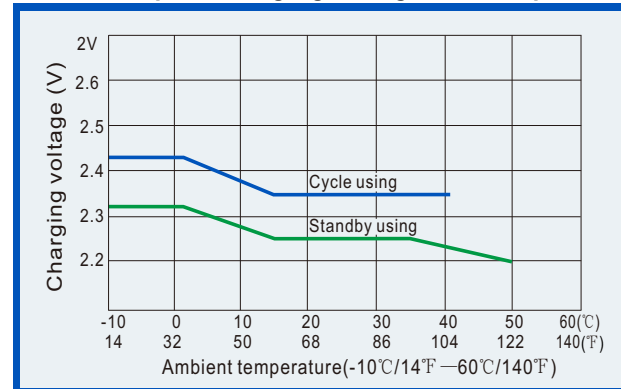
**Relationships for design life and temperature**



**Relationships for open voltage and remained capacity (for reference)**



**Relationship for charging voltage and temperature**



**Effect of temperature on capacity**

