

### General features for MPa Series (AGM) battery

- \* Stable quality & high reliability.
- \* Unique construction and sealing technique guarantees.
- \* Design life 5years in float service; Long service life ,float or cyclic, which is shown in the specification sheet.
- \* Maintenance-free operation. UL-recognized component.
- \* Heavy duty grids: The heavy-duty lead calcium-alloy grids ,provide an extra margin of performance and service life in float & cyclic.
- \* Case and cover are available in both standard and flame retardant ABS.
- \* Low self discharge; low pressure venting system.



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**MP12-6 (12V6Ah)**

### Specifications

|                               |              |                     |
|-------------------------------|--------------|---------------------|
| Nominal Voltage               |              | 12V                 |
| Rated capacity (20 hour rate) |              | 6.0Ah               |
| Dimensions<br>(±1.5mm)        | Total Height | 99mm (3.90 inches)  |
|                               | Height       | 93mm (3.66 inches)  |
|                               | Length       | 151mm (5.94 inches) |
|                               | Width        | 51mm (2.01 inches)  |
| Weight Approx (±3%)           |              | 1.66Kg (3.66 lbs)   |

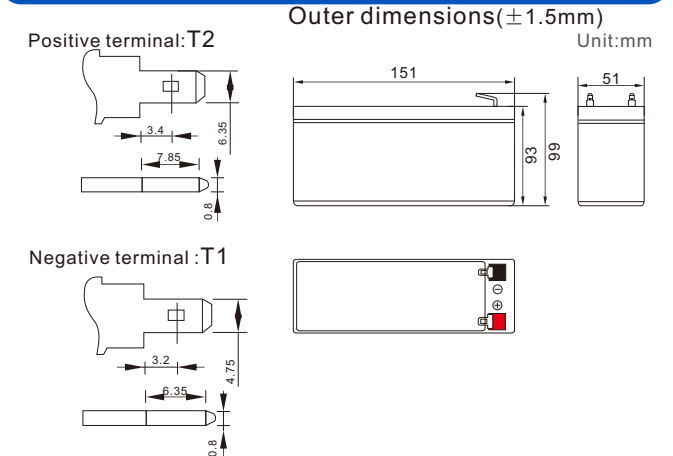
### Battery picture and construction



#### Battery Construction

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

### Outer dimension and terminal



### Characteristics

|   |   |  |
|---|---|--|
| Capacity<br>25°C(77°F)                                  | 20 hour rate(0.3A, 10.5V)<br>10 hour rate(0.55A, 10.5V)<br>5 hour rate(1.02A, 10.5V)<br>1 hour rate(3.6A, 9.6V) | 6.0Ah<br>5.5Ah<br>5.1Ah<br>3.6Ah   |
| Internal Resistance                                     | Full charged battery at 25°C(77°F)  | Approx 25 mΩ   |
| Capacity<br>affected<br>by Temperature<br>(20hour rate) | 40°C (104°F)<br>25°C (77°F)<br>0°C (32°F)<br>-15°C (5°F)  | 102%<br>100%<br>85%<br>65%   |
| Remaining capacity<br>Self-Discharge<br>At 25°C(77°F)   | Capacity after 3 month storage<br>Capacity after 6 month storage<br>Capacity after 12 month storage             | 91%<br>82%<br>64%  |
| Terminal type   | Positive T2 ,negative T1  |  |
| Max. Discharge current 25°C/(77°F)                      | 90A (5Seconds)  |  |
| Nominal operating temperature                           | 25°C ±5°C(77°F ±9°F)  |  |
| Operating<br>Temperature<br>Range                       | Discharge<br>Charge<br>Storage  | -15°C ~50°C (5°F ~122°F)<br>-10°C ~50°C (14°F ~122°F)<br>-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 1.8A<br>Voltage 14.10-14.40V<br>Temperature compensation:-30mV/°C |
|   | Standby use   | Voltage 13.50-13.80V<br>Temperature compensation:-18mV/°C  |

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

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

Unit:A

Unit:watts

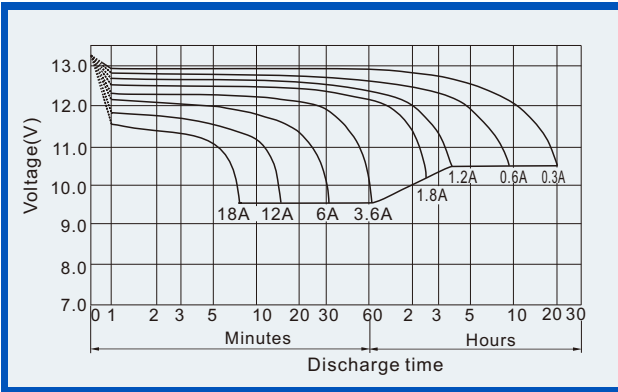
#### Constant Current(Amp) and Constant Power(Watt) Discharge Table at 25°C(77°F)

| Time   | 5min | 10min | 15min | 30min | 1h   | 2h   | 3h   | 4h    | 5h    | 8h    | 10h  | 20h  |      |
|--------|------|-------|-------|-------|------|------|------|-------|-------|-------|------|------|------|
| 9.60V  | A    | 21.6  | 14.2  | 10.5  | 6.90 | 3.60 | 2.10 | 1.55  | 1.24  | 1.05  | 0.69 | 0.57 | 0.31 |
|        | W    | 254.7 | 160.0 | 121.0 | 73.2 | 41.5 | 24.3 | 17.88 | 14.35 | 12.18 | 8.03 | 6.57 | 3.60 |
| 10.20V | A    | 19.8  | 13.5  | 9.6   | 6.55 | 3.38 | 2.01 | 1.50  | 1.20  | 1.03  | 0.68 | 0.58 | 0.30 |
|        | W    | 239.7 | 151.5 | 113.7 | 72.8 | 39.0 | 23.3 | 17.37 | 13.90 | 11.95 | 7.90 | 6.45 | 3.50 |
| 10.50V | A    | 18.0  | 12.7  | 9.0   | 6.35 | 3.27 | 1.98 | 1.47  | 1.14  | 1.03  | 0.68 | 0.55 | 0.30 |
|        | W    | 231.5 | 147.0 | 108.8 | 72.0 | 37.8 | 22.9 | 17.07 | 13.20 | 11.88 | 7.83 | 6.40 | 3.48 |
| 10.80V | A    | 17.3  | 12.1  | 8.40  | 6.18 | 3.16 | 1.92 | 1.45  | 1.12  | 0.98  | 0.66 | 0.54 | 0.29 |
|        | W    | 203.0 | 142.5 | 104.7 | 71.7 | 36.8 | 22.4 | 16.88 | 13.04 | 11.35 | 7.50 | 6.25 | 3.40 |
| 11.10V | A    | 16.0  | 11.4  | 7.80  | 6.00 | 3.05 | 1.88 | 1.38  | 1.10  | 0.93  | 0.64 | 0.53 | 0.29 |
|        | W    | 196.2 | 137.7 | 99.8  | 71.3 | 36.3 | 22.2 | 16.38 | 13.00 | 11.10 | 7.25 | 6.12 | 3.38 |

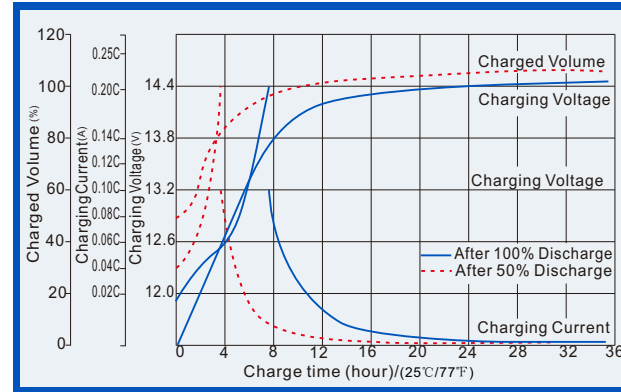
(Above characteristics data are average values obtained within three charge/discharge cycles, not the minimum values.)

# VRLA Battery (AGM technology) Maintenance-free Sealed Lead Acid Rechargeable Battery

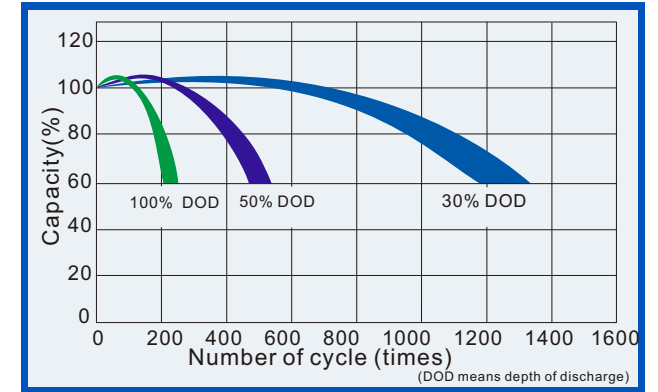
**Discharge characteristics (25°C, 77°F)**



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



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



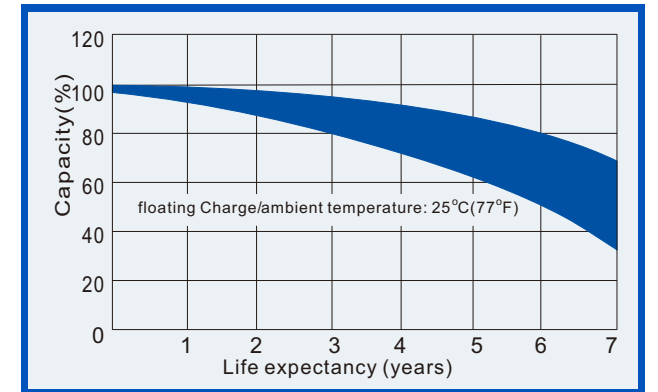
**Effect of Temperature on capacity**



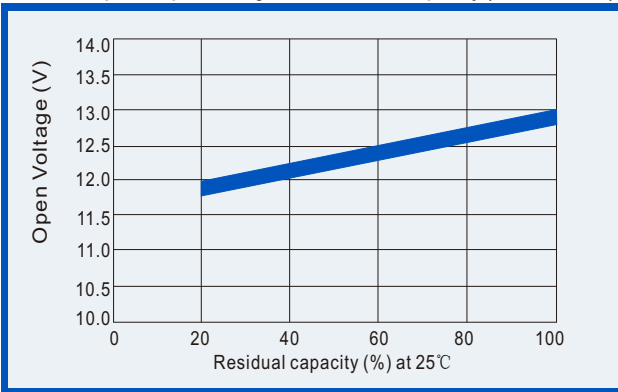
**Self-discharge characteristics**



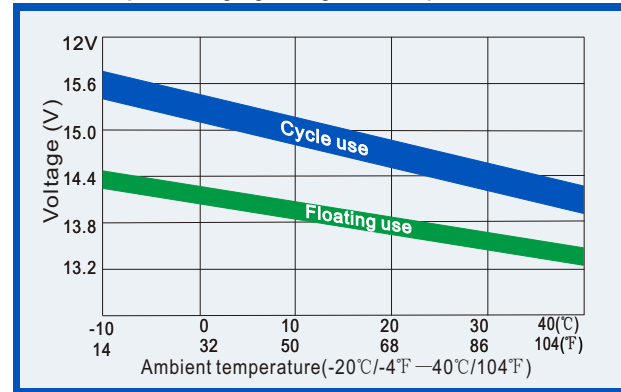
**Life Characteristics of standby use (25°C, 77°F)**



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



**Relationship for charging voltage and temperature**



**Temperature effects on floating life**

