

### 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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## MP12-4II (12V4Ah)

### Specifications

Nominal Voltage		12V
Rated capacity (20 hour rate)		4.0Ah
Dimensions (±1mm)	Total Height	75mm (2.95 inches)
	Height	70mm (2.76inches)
	Length	194mm (7.64 inches)
	Width	47mm (1.85inches)
Weight Approx (±3%)		1.43Kg (3.15 lbs)

### Battery picture and construction

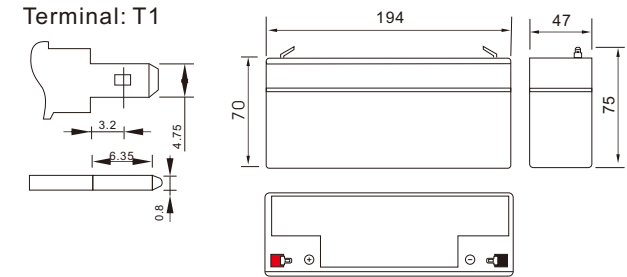


#### Battery Construction

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

Outer dimensions(±1mm)  
Unit:mm



### Characteristics

Capacity 25°C(77°F)	20 hour rate(0.2 A, 10.5V) 10 hour rate(0.37A, 10.5V) 5 hour rate(0.68A, 10.5V) 1 hour rate(2.4 A, 9.6V)	4.0Ah 3.7Ah 3.4Ah 2.4 Ah
Internal Resistance	Full charged battery at 25°C(77°F)	Approx 55 mΩ
Capacity affected by Temperature (20hour rate)	40°C (104°F) 25°C (77°F) 0°C (32°F) -15°C (5°F)	102% 100% 85% 65%
Remaining capacity Self-Discharge At 25°C(77°F)	Capacity after 3 month storage Capacity after 6 month storage Capacity after 12 month storage	91% 82% 64%
Terminal type	T1	
Max. Discharge current 25°C/(77°F)	60A (5Seconds)	
Nominal operating temperature	25°C ±5°C(77°F ±9°F)	
Operating Temperature Range	Discharge Charge Storage	-15°C ~50°C (5°F ~122°F) -10°C ~50°C (14°F ~122°F) -20°C ~50°C (-4°F ~122°F)
Charge methods (constant Voltage) At 25°C(77°F)	Cycle use Standby use	Initial Charging Current less than 1.2A Voltage 14.10-14.40V Temperature compensation:-30mV/°C Voltage 13.50-13.80V Temperature compensation:-18mV/°C

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

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

Unit:A

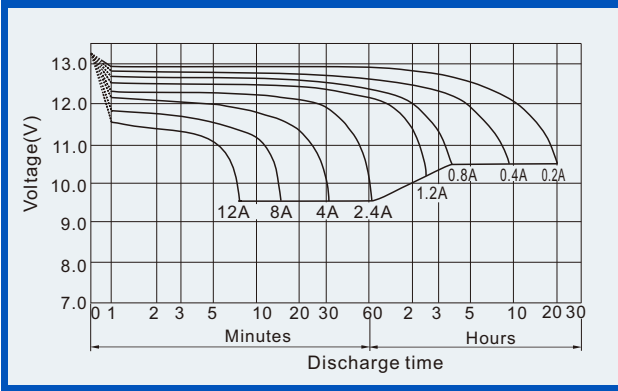
Unit:watts

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	14.4	9.4	7.0	4.60	2.40	1.40	1.03	0.83	0.70	0.46	0.38	0.21
	W	169.8	106.7	80.7	48.8	27.7	16.2	11.92	9.57	8.12	5.35	4.38	2.40
10.20V	A	13.2	9.0	6.4	4.37	2.25	1.34	1.00	0.80	0.69	0.46	0.37	0.20
	W	159.8	101.0	75.8	48.5	26.0	15.6	11.58	9.27	7.97	5.27	4.30	2.33
10.50V	A	12.0	8.4	6.0	4.23	2.18	1.32	0.98	0.76	0.69	0.45	0.37	0.20
	W	154.3	98.0	72.5	48.0	25.2	15.3	11.38	8.80	7.92	5.22	4.27	2.32
10.80V	A	11.5	8.1	5.60	4.12	2.11	1.28	0.97	0.75	0.65	0.44	0.36	0.20
	W	135.3	95.0	69.8	47.8	24.5	14.9	11.25	8.69	7.57	5.00	4.17	2.27
11.10V	A	10.7	7.6	5.20	4.00	2.03	1.25	0.92	0.73	0.62	0.43	0.35	0.19
	W	130.8	91.8	66.5	47.5	24.2	14.8	10.92	8.67	7.40	4.83	4.08	2.25

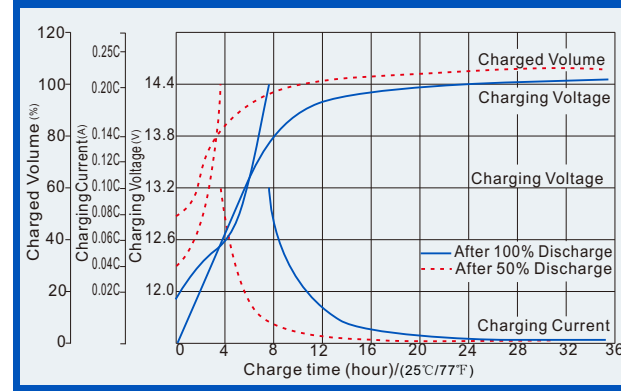
(Above characteristics data are average values obtained within three charge/discharge cycles, not the minimum values.)

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

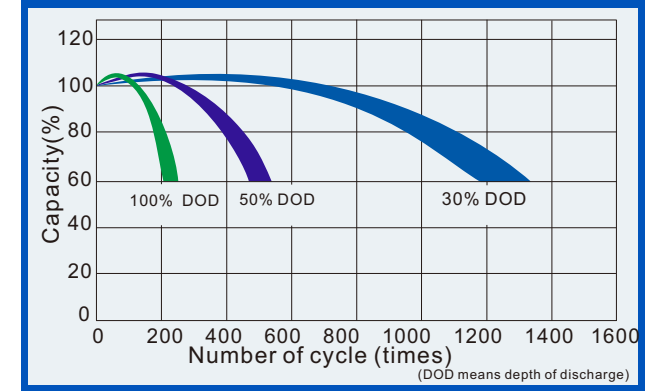
**Discharge characteristics (25°C, 77°F)**



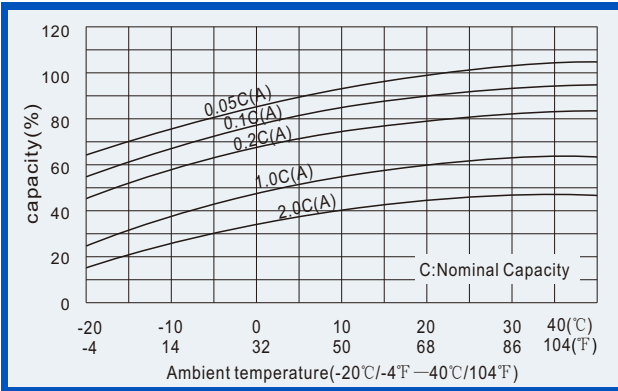
**Charge characteristics (25°C, 77°F)**



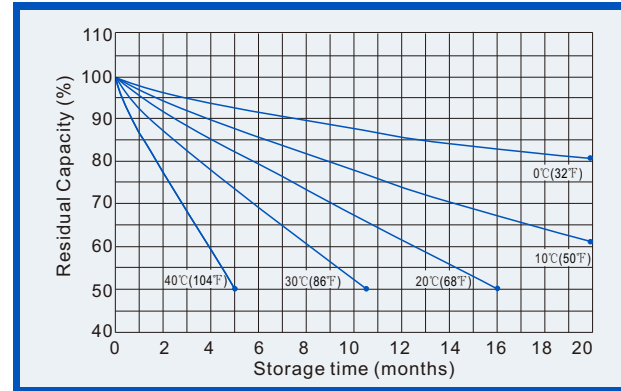
**Life characteristics of Cyclic Use (25°C, 77°F)**



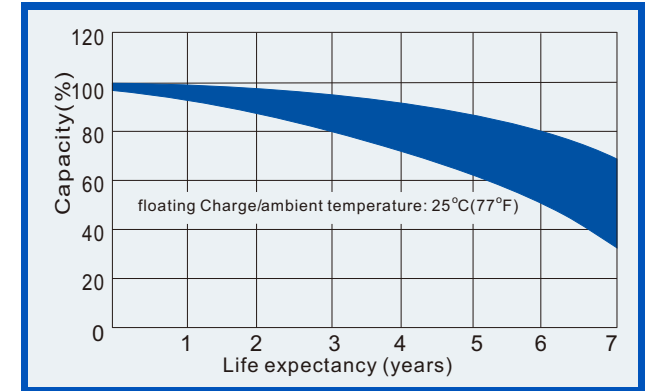
**Effect of Temperature on capacity**



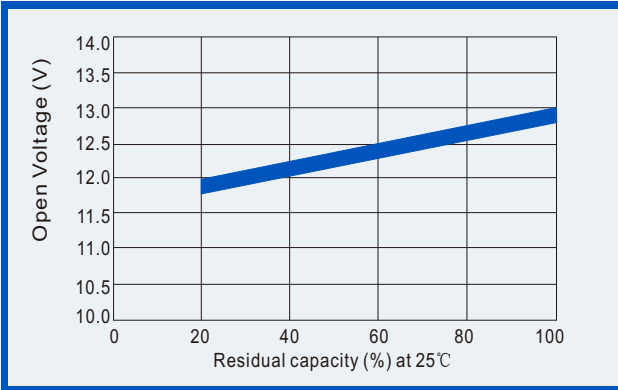
**Self-discharge characteristics**



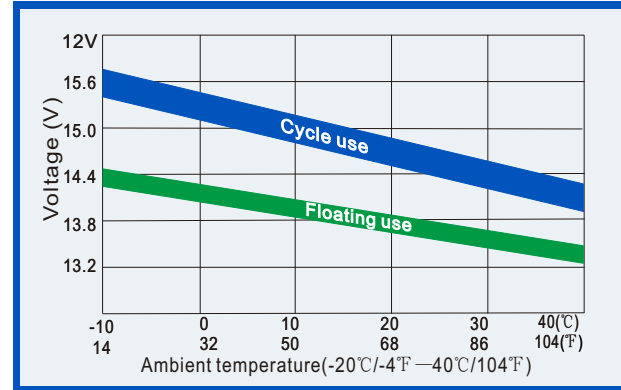
**Life Characteristics of standby use (25°C, 77°F)**



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



**Relationship for charging voltage and temperature**



**Temperature effects on floating life**

