



# MSJ 200

## 2V 200Ah

MSJ-200 is a Long service life battery with 15~20 years expected life under normal float charge. As with all CSB batteries, all are rechargeable, highly efficient, leak proof and maintenance free.



### Specification

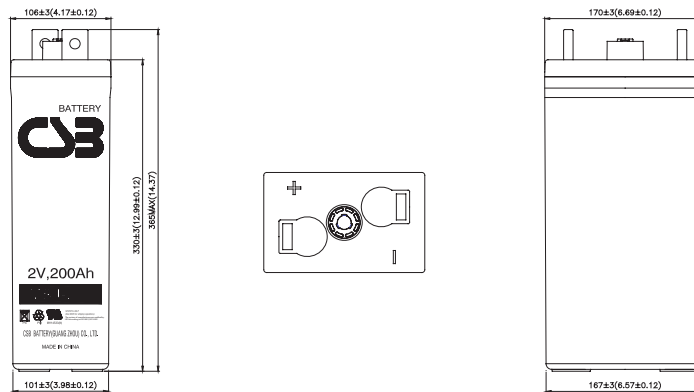
Cells Per Unit	1
Voltage Per Unit	2
Capacity	200Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F)
Weight	Approx. 15kg(33.0 lbs)
Maximum Discharge Current	1200A(5sec)
Internal Resistance	Approx. 0.62 mΩ
Operating Temperature Range	Discharge: -20°C~50°C (-4°F~122°F) Charge: 0°C~40°C (32°F~104°F) Storage: -20°C~40°C (-4°F~104°F)
Nominal Operating Temperature Range	25°C±3°C (77°F±5°F)
Float Charging Voltage	2.23±0.02/Cell AT25°C (77°F) Temp. Coefficient-3.3mV/°C (-1.8mV/°F)
Recommended Maximum Charging Current Limit	60A
Equalization and Cycle Service	2.35V Temps coefficient -3.3mV/°C (-1.8mV/°F)
Terminal	Pb-Ca-Sn Alloy
Container Material	The container and cover are made of flame retardant plastics which meet UL-94V-0 specifications. The oxygen index level is higher than 28.



CSB-manufactured batteries are UL-recognized components under UL924 and UL1989. CSB is also certified by ISO 9001 and ISO 14001.

### Dimensions

Unit:(mm)



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

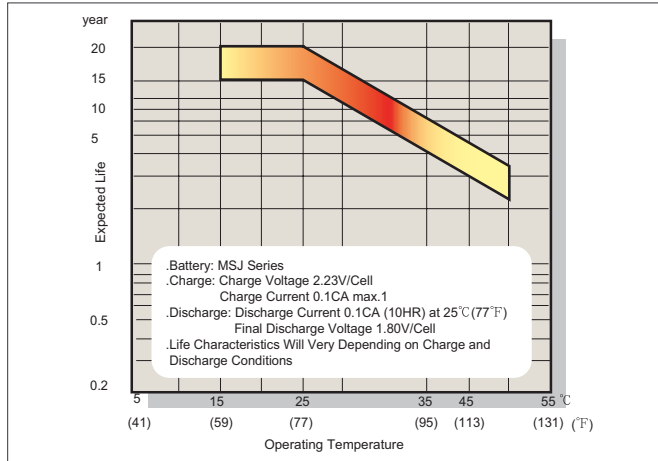
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.83V	182.00	141.00	97.00	62.00	47.00	38.00	32.00	28.00	23.00	19.40
1.80V	215.00	156.00	105.00	66.00	49.00	40.80	34.00	29.00	24.00	20.00
1.75V	250.00	169.00	112.00	69.00	51.00	41.20	35.00	30.00	24.50	20.60
1.70V	282.00	191.00	121.00	73.00	54.00	43.00	36.00	31.70	25.00	21.30
1.65V	302.00	202.00	123.00	74.00	55.00	44.00	37.00	32.00	26.00	21.60
1.60V	317.00	211.00	129.00	77.00	57.00	45.00	38.00	33.00	27.00	22.50

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

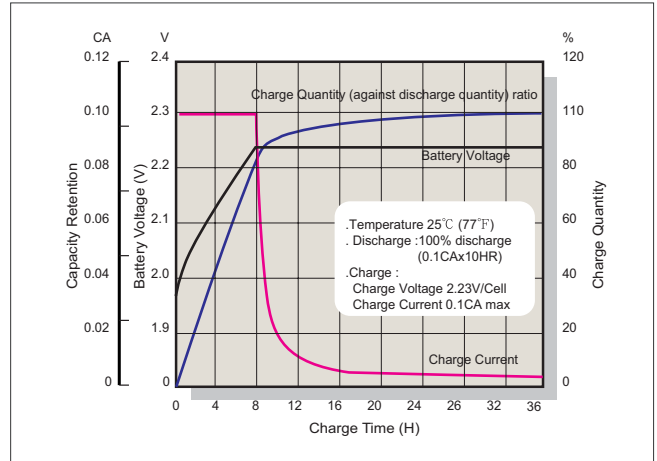
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.83V	331.00	260.00	181.00	116.00	88.00	70.00	61.00	54.00	44.00	38.00
1.80V	392.00	288.00	196.00	123.00	93.00	76.00	65.00	57.00	46.00	39.00
1.75V	456.00	312.00	208.00	129.00	97.00	77.00	66.00	58.00	47.00	40.00
1.70V	507.00	347.00	223.00	135.00	101.00	82.00	69.00	61.00	48.00	41.00
1.65V	551.00	373.00	230.00	137.00	102.00	83.00	70.00	61.50	49.00	41.50
1.60V	556.00	375.00	231.00	139.00	104.00	84.00	71.00	62.00	50.00	42.00

- All mentioned values are average values.
- Cycle Information : 300~400 cycles@DOD80%, 600~700 cycles@DOD50%, 900~1200 cycles@DOD30%

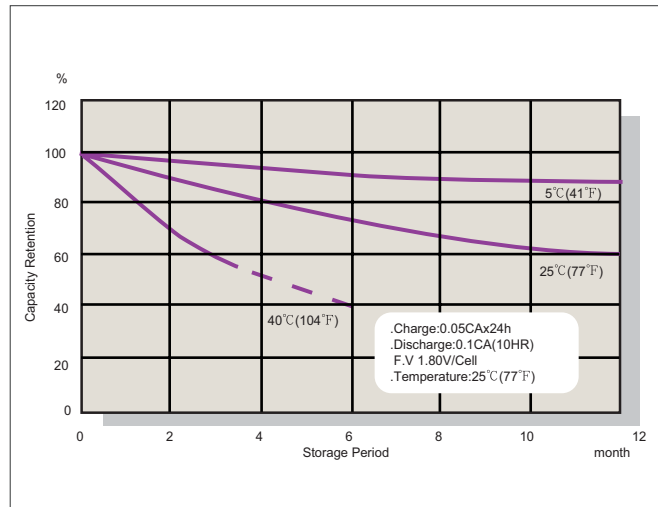
### Expected Life V.S Operating Temperature



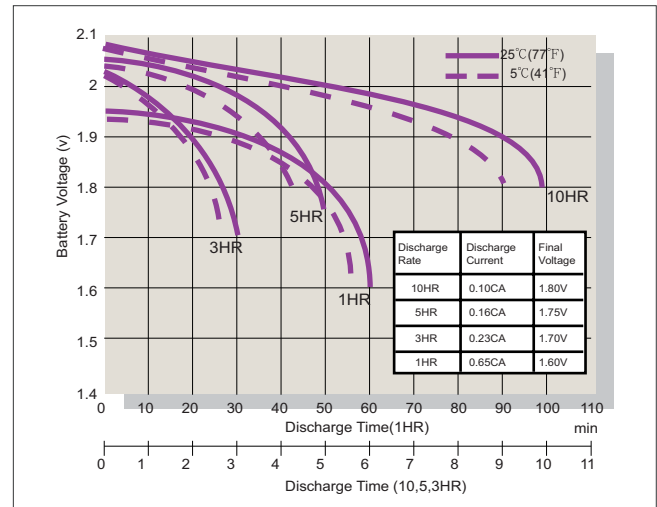
### Typical Constant Voltage Charge Characteristics



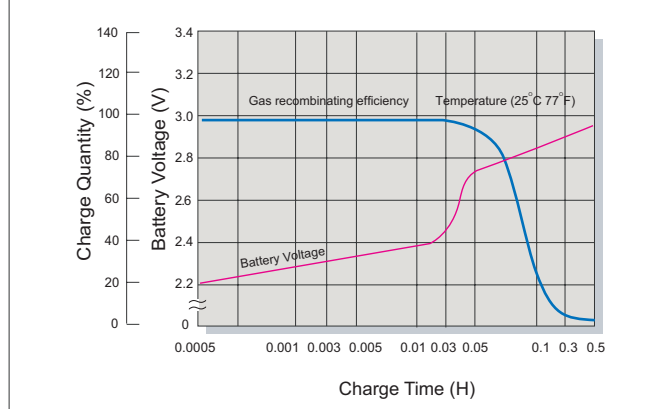
### Capacity Retention Characteristics



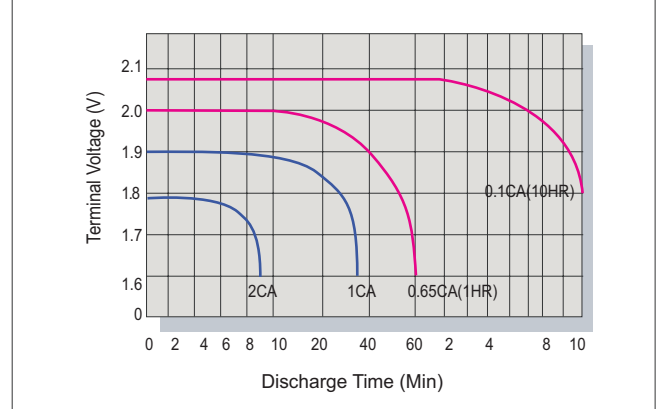
### Discharge Characteristics



### Oxygen Recombination Efficiency Chart



### Terminal Voltage (V) and Discharge Time 25°C (77°F)



### Charging Procedures

Application	Charge Voltage (V/Cell)			Max. Charge Current
	Temperature	Set Point	Allowable Range	
Standby	25°C (77°F)	2.23	2.21~2.25	0.3C

### Discharge Current VS. Discharge Voltage

Discharge Current (A)	Final Discharge Voltage (V/Cell)
0.05C > A	1.90
0.15C > A ≥ 0.05C	1.80
0.20C > A ≥ 0.15C	1.75
0.40 C > A ≥ 0.20C	1.70
A > 0.40 C	1.60

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