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MSJ 650 ▶ 2V 660 Ah

MSJ 650 is a long service life battery up to 20 years expected life under normal float charge. As with all CSB batteries, all are rechargeable, highly efficient, leak proof and maintenance free.



CSB-manufactured **VRLA** (Absorbent Glass Mat type) batteries are UL-recognized components under UL1989.

CSB is also certified by ISO 9001 and ISO 14001.

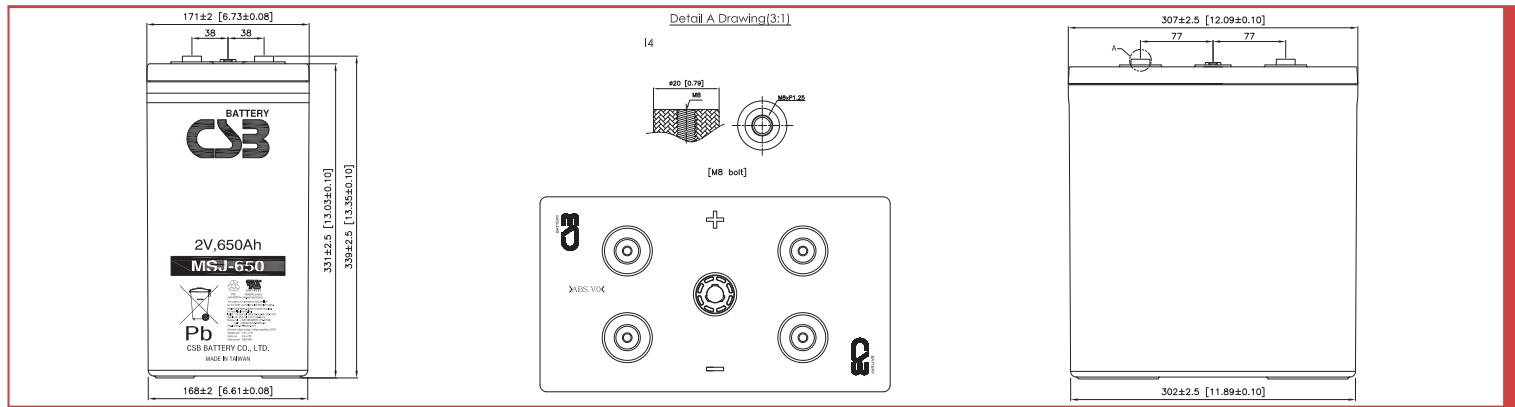
► Specification

Cells Per Unit	1
Voltage Per Unit	2
Capacity	660Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F)
Weight	Approx. 46.6 kg (102.8 lbs)
Maximum Discharge Current	3900A(5sec)
Internal Resistance	Approx. 0.26m Ω
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 at 25 °C (77°F) Temp. Coefficient ±3.3mV/°C (±1.8mV/°F)
Recommended Maximum Charging Current Limit	195A
Equalization / Cycle Use Charging Voltage	2.35V Temps coefficient ±3.3mV/°C (±1.8mV/°F)
Terminal	Pb-Ca-Sn Alloy Recessed Terminal
Container Material	The container and cover are made of flame retardant plastics which meet ABS(UL 94-V0) specifications. The oxygen index level is higher than 28

► Dimensions :

Unit: mm (inch)

Overall Height (H)	Container height (h)	Length (L)	Width (W)
339±2.5 (13.35±0.10)	331±2.5 (13.03±0.10)	307±2.5 (12.09±0.10)	171±2 (6.73±0.08)



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

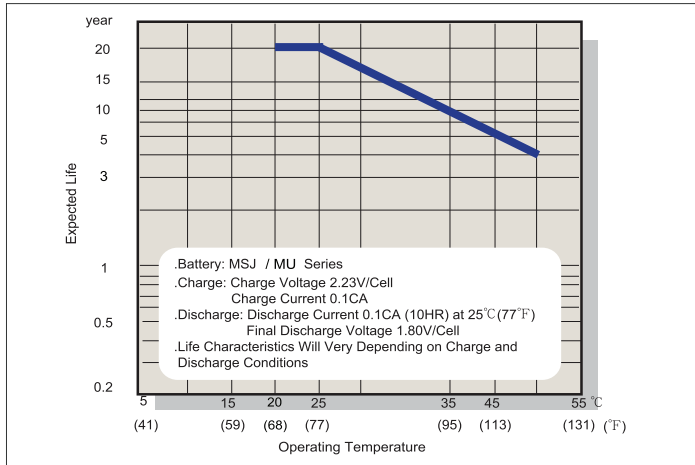
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	1205	807	494	282.9	202.7	156.8	127.9	108.2	84.6	70.0
1.67V	1079	767	481	279.5	200.6	155.1	126.6	107.2	83.9	69.5
1.70V	1014	741	472	277.1	199.2	154.0	125.8	106.6	83.5	69.1
1.75V	912	675	449	270.8	195.7	151.3	123.7	105.0	82.3	68.2
1.80V	780	597	414	259.0	188.7	146.1	119.8	102.0	80.1	66.5
1.83V	690	548	388	247.8	181.4	140.9	115.8	99.0	77.9	64.6

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

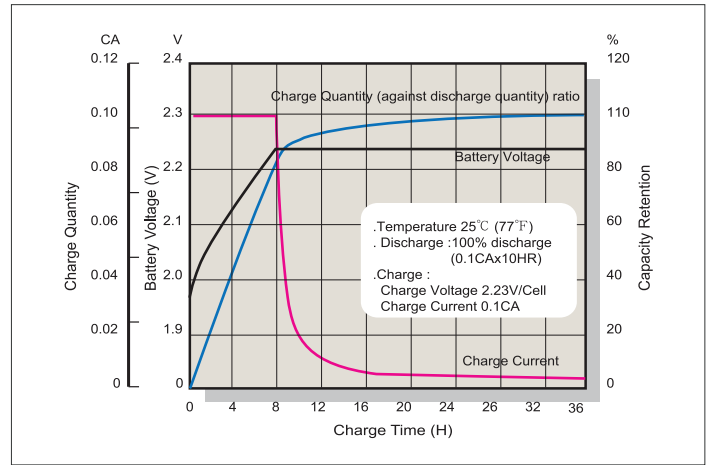
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	2109	1463	898	540.0	386.9	305.3	253.7	217.4	166.5	130.4
1.67V	1960	1407	881	534.7	383.8	303.3	252.1	216.1	165.3	129.4
1.70V	1883	1371	867	531.0	381.6	301.8	251.0	215.2	164.5	128.8
1.75V	1721	1281	832	520.2	375.4	297.8	247.9	212.6	162.0	127.0
1.80V	1543	1157	776	499.6	363.4	290.0	241.7	207.4	157.2	123.4
1.83V	1391	1079	732	479.6	351.4	281.8	235.0	202.1	152.3	119.6

Ratings presented herein are subject to revision without notice. Please refer to www.csb-battery.com to confirm the latest version.

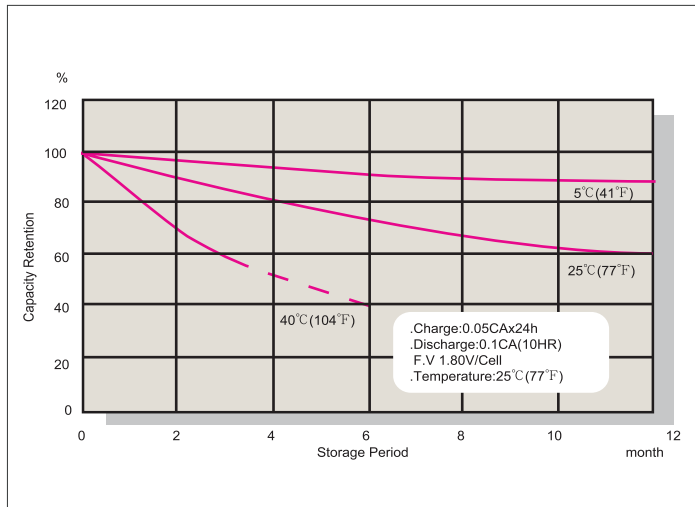
Expected Life V.S Operating Temperature



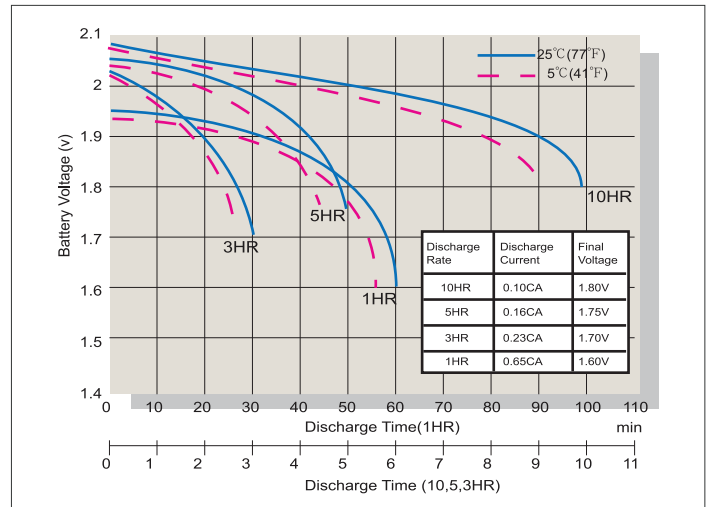
Typical Constant Voltage Charge Characteristics



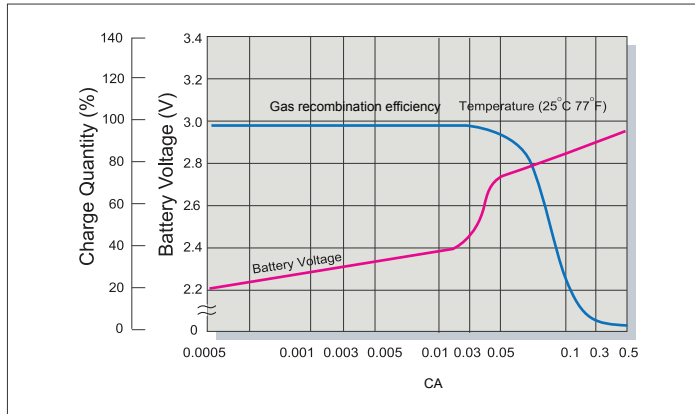
Capacity Retention Characteristics



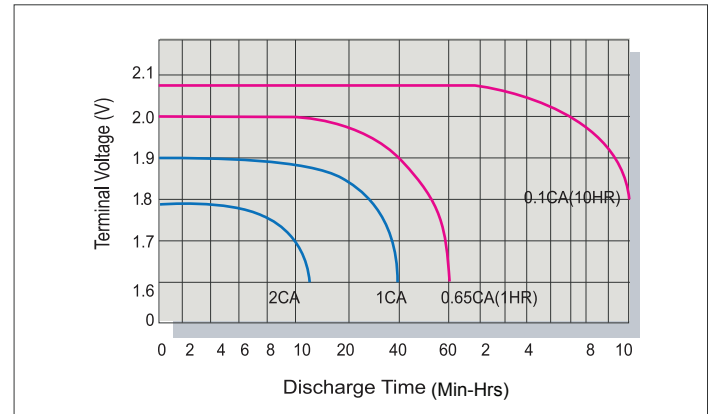
Discharge Characteristics



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
0.40C > A ≥ 0.20C	1.70
A > 0.40C	1.60

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