

# SB645S - 6V4.5Ah - Security Series




SB645S is a AGM battery with Security Series 5 years of design life in float service. It meets with IEC and JIS standards. With up-dated Security Series valve regulated technology and high purity raw materials, the SB series battery has a reliable standby service life. It is suitable for emergency lighting and security systems applications.

## Specifications

- Nominal Voltage: 6 volts
- Nominal Capacity at 77°F/25°C
  - 20 Hour rate 4.5 Ah
  - 10 Hour rate 4.4 Ah
  - 5 Hour rate 3.8 Ah
  - 1 Hour rate 2.8 Ah
- Number of cells - 3
- Design Life - 5 year(s)
- Internal resistance -  $\pm 23 \text{ m}\Omega$
- Operating Temperature Range - (See Charging recommendations)
  - Discharge:  $-40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$
  - Charge:  $-20^{\circ}\text{C}$  to  $50^{\circ}\text{C}$
  - Storage:  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$
- Max. Discharge current - 45 A (5sec)
- Float Charge - 6.85 to 6.95 Volts @  $25^{\circ}\text{C}$
- Cyclic charge - 7.3 to 7.4 Volts @  $25^{\circ}\text{C}$
- Terminal configuration - F1
- Self discharge rate at  $25^{\circ}\text{C}$  - 3% per month

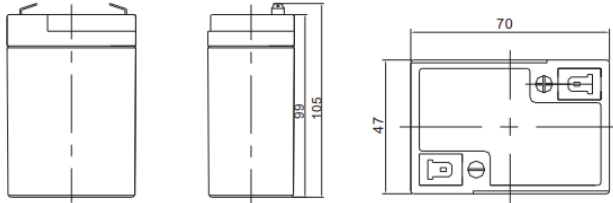
## General Features

- AGM technology also called VRLA (Valve Regulated Lead Acid) has an efficient gas recombination process which allows for a maintenance free battery.
- Not restricted for air transport and complies with IATA/ICAO Special Provision A67.
- UL-recognized component (MH60449)
- Manufactured in a plant with the following standards:
  - ISO 9001:2008
  - ISO 14001:2004
  - OHSAS 18001:2007
- Can be mounted in any orientation, but not to be charged in a inverted position.
- Computer designed lead/calcium/tin alloy grids for high power density. The lead is virgin lead of the highest purity.
- Long service life ( years) designed for float/standby applications.
- Low self discharge rate.

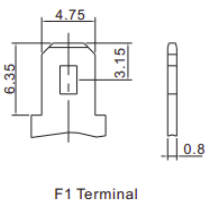


MH60449

**Dimensions:** 70(L)x47(W)x99(H) mm/2.76 x1.85x3.9 inches



**Weight:** Approx. 0.72 kg



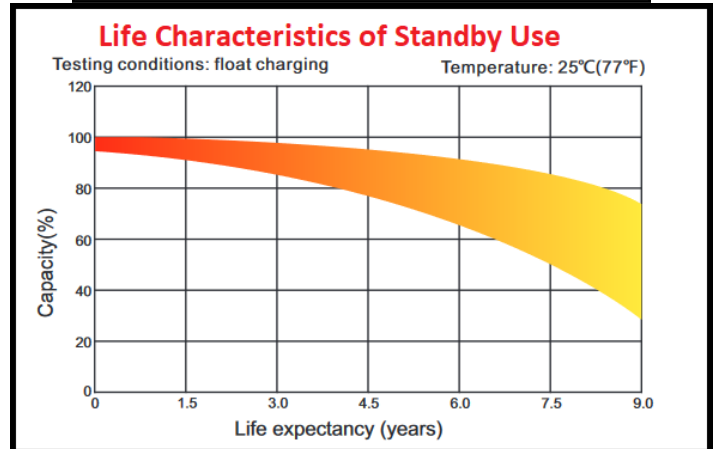
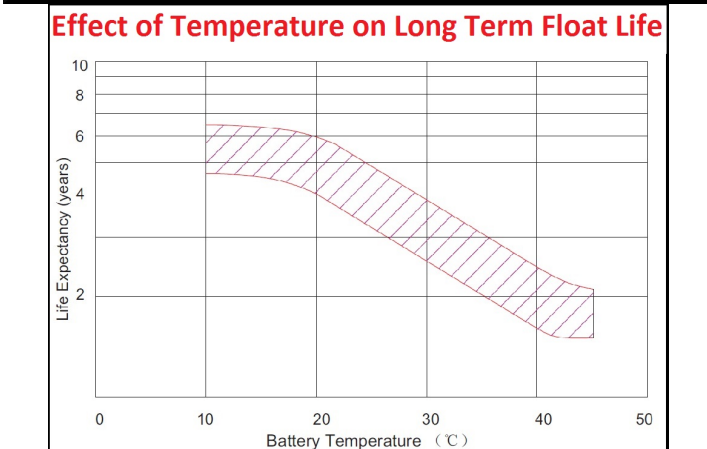
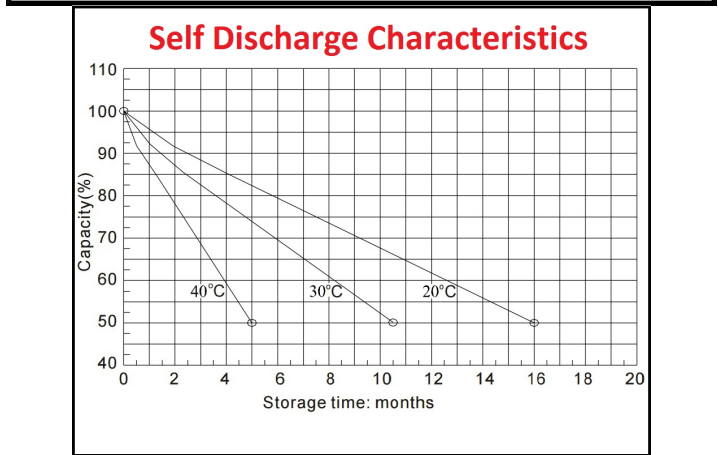
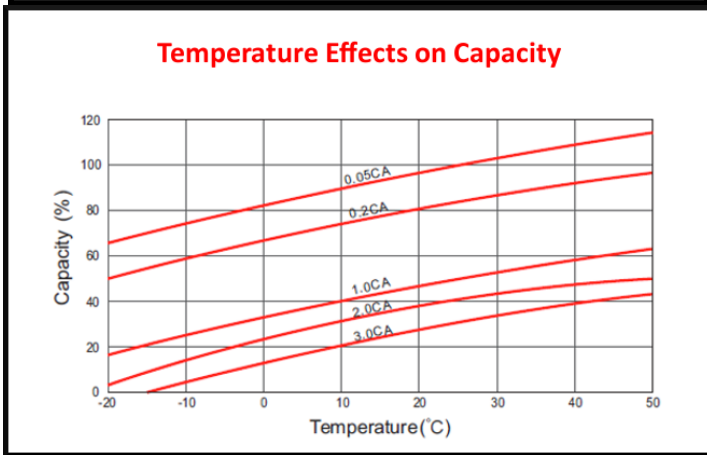
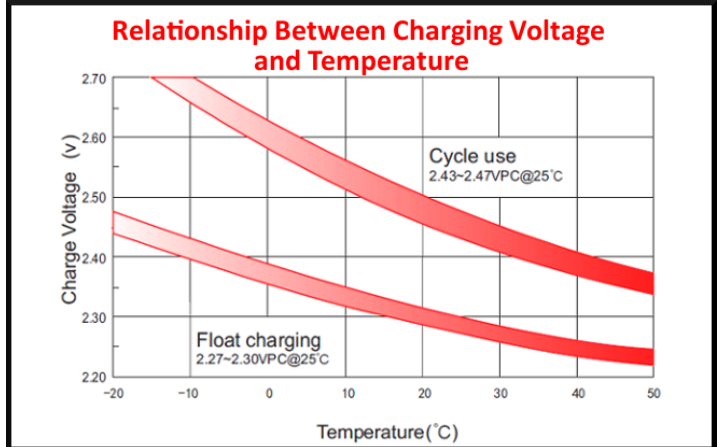
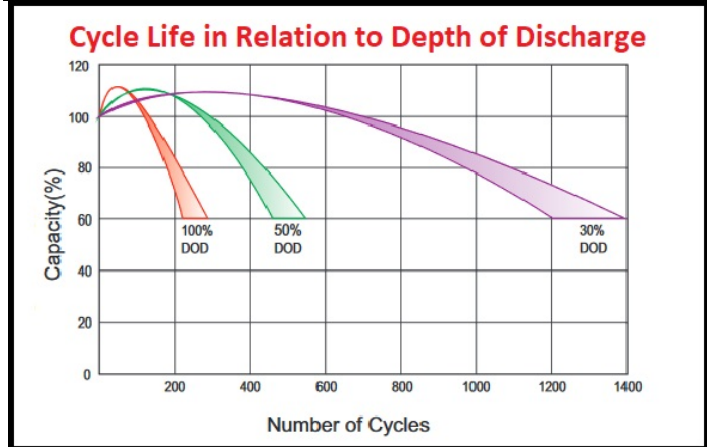
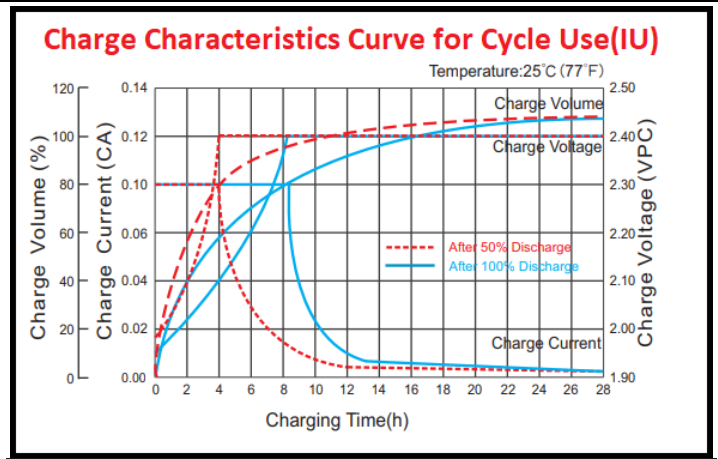
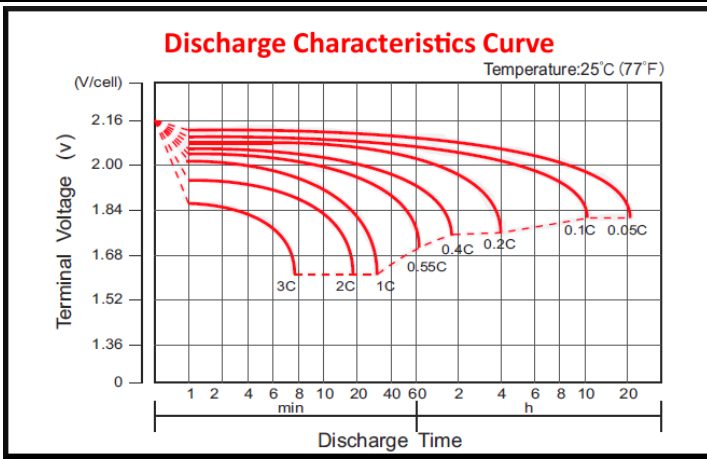
F1 Terminal

## Constant Current Discharge Characteristics: Amps @ 25°C

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
1.60V	17.84	11.64	8.584	4.968	2.870	1.694	1.231	0.980	0.828	0.553	0.450	0.234
1.65V	17.20	11.29	8.359	4.859	2.817	1.669	1.215	0.968	0.818	0.547	0.446	0.232
1.70V	16.36	10.83	8.063	4.714	2.747	1.636	1.193	0.952	0.805	0.540	0.440	0.230
1.75V	15.28	10.25	7.678	4.526	2.654	1.592	1.164	0.930	0.788	0.530	0.433	0.227
1.80V	13.92	9.494	7.183	4.281	2.533	1.535	1.126	0.902	0.766	0.517	0.423	0.222
1.85V	12.25	8.553	6.558	3.968	2.378	1.460	1.076	0.865	0.737	0.500	0.409	0.216

## Constant Power Discharge Characteristics: Watts @ 25°C

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
1.60V	30.71	20.08	15.23	9.16	5.45	3.26	2.39	1.91	1.62	1.10	0.90	0.47
1.65V	30.39	19.99	15.14	9.09	5.40	3.23	2.37	1.90	1.61	1.09	0.89	0.47
1.70V	29.23	19.40	14.74	8.87	5.29	3.18	2.33	1.87	1.59	1.08	0.88	0.46
1.75V	27.79	18.68	14.24	8.60	5.13	3.11	2.29	1.83	1.56	1.06	0.87	0.45
1.80V	25.76	17.61	13.51	8.22	4.92	3.01	2.22	1.78	1.52	1.03	0.85	0.45
1.85V	23.08	16.15	12.51	7.70	4.65	2.88	2.13	1.72	1.47	1.00	0.82	0.44



## Charging Recommendations

- For standby (float) use 2.28 to 2.32 volts per cell (@ 25°C).
- For cyclic use 2.43 to 2.47 volts per cell (@25°C)
- Recommended maximum charging current limit is 1.35 Amp.
- Charging voltage should be regulated in relation to the ambient temperature. When the temperature is higher, the charging voltage should be lower. Where the temperature is lower, the charging voltage be higher. (3 mVolts per °C per cell in standby applications and 4 mVolts per °C per cell in cyclic applications). Typical applications in a range of 0°C-30°C do not require this compensation.
- It is recommended that "refresh charging" be applied to any battery which has been stored for a long period of time, prior to putting the battery into service and/or within 6 months after manufacture.
- To obtain the optimum standby performance it is vital that the correct charging profile is utilised (see Charge Characteristics figures)
- Typically it takes more energy to recharge a battery that it has expended. The ratio is 1.1 - 1.15 has to get into battery for every 1.0 that was supplied by the battery.

## Service Life

- Please refer to the life curves provided. These curves represent typical results under optimum operating conditions. Actual life will vary due to variability of these conditions.
- Improper charging (overcharging and lack of charging) is the number one reason why AGM/VRLA batteries fail prematurely. Follow charging guidelines found on this specification sheet.
- Elements that affect Cycle Life: There are various factors that will have an effect on the service life of AGM/VRLA batteries in cyclic applications; ambient operation temperature, discharge rate, depth of discharge, the manner in which the battery is recharged, and the timeliness of the recharge, to obtain maximum service life it is recommended not to go beyond 80% DOD (Depth Of Discharge) and if all possible limit it to 50 % DOD. At 50 % you will obtain the ideal trade-off for life expectancy for AGM batteries. This recommendation goes for all brands of AGM batteries.
- Elements that affect standby life: All the same factors are responsible but the most important in this case is the ambient temperature followed closely by the charging parameters. For example - in an enclosed UPS cabinet with no ventilation temperatures, are most often than not well above 25°C, henceforth battery life is severely affected.

## Warnings

- Never install AGM/VRLA batteries in an airtight container.
- Keep away from sparks, and any source of flames.
- Connect cables tightly to avoid sparks at terminals.
- The electrolytes contains sulfuric acid which can cause serious damage to eyes and skin. Should this occur, flush profusely with water and seek medical attention.
- Do not short circuit AGM/VRLA terminals with metal object, they are capable of generating hundreds of amperes, you can seriously burn yourself in short circuiting a battery.
- Mixing batteries of different capacities, age and/or manufacturer is not recommended.