

### MHB MS Series--Small-size batteries

- 100% before shipment testing, stable and reliable long-term quality
- patented grid alloy formula and updated manufacturing technique
- completely sealed and maintenance-free, low self-discharge
- Excellent charging and re-charging acceptance
- Cycle use: More than 260 cycles at 100% DOD
- Floating & standby use: 3-5 years

### Application:

- Alarm System
- Cable Television
- Communication Equipment
- Emergency Power System
- Security System
- Medical Equipment
- UPS
- Power tools
- Control Equipment
- Toys

### Construction:

- Component .....Raw material
- Positive .....Lead dioxide
- Negative .....Lead
- Container .....ABS
- Cover .....ABS
- Sealant .....Epoxy
- Safety valve .... Rubber
- Terminal .....Copper
- Separator .....Fiber glass
- Electrolyte .....Sulfuric acid



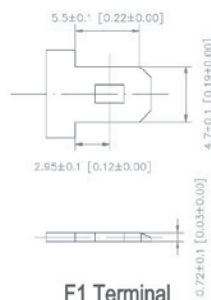
ISO:9001



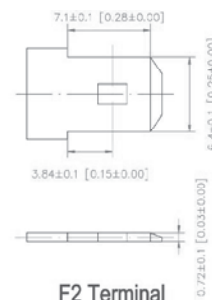
ISO:14001



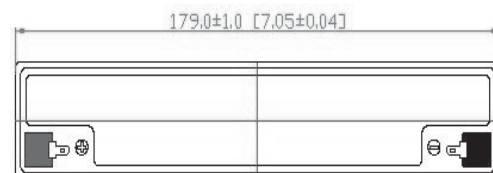
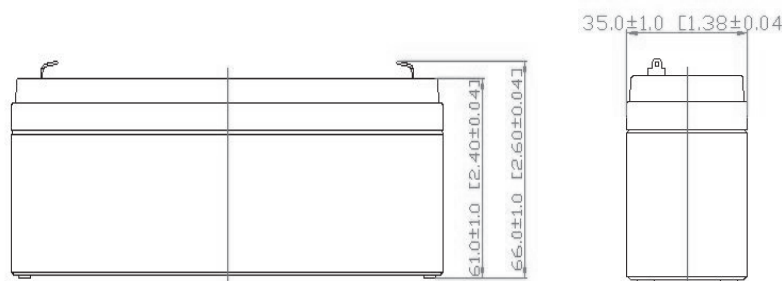
TB 09075935 MH 47104



F1 Terminal



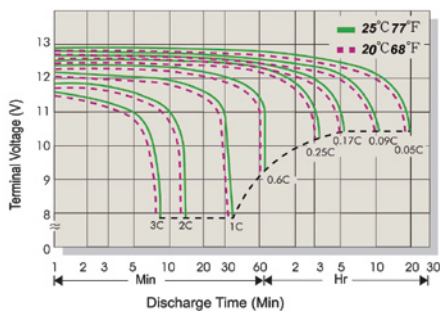
F2 Terminal



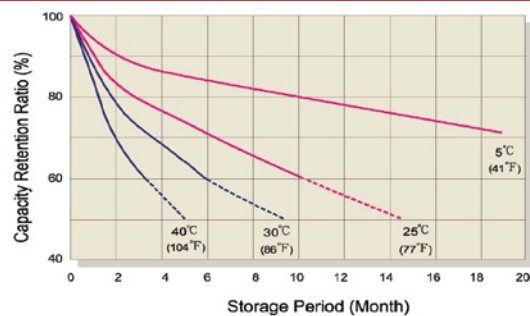
### Specification:

| Battery Model                    | MS 2.3 - 12 12V 2.3AH                       |                    |                       |                   |
|----------------------------------|---------------------------------------------|--------------------|-----------------------|-------------------|
| Designed Floating Life           | 3~5 Years                                   |                    |                       |                   |
| Capacity@ (40°C)                 | 20HR(0.115A, 10.5V)                         | 10HR(0.22A, 10.5V) | 5HR(0.41A, 10.5V)     | 1HR(1.38A, 10.5V) |
|                                  | 2.30 AH                                     | 2.20AH             | 2.05AH                | 1.38AH            |
| Dimensions                       | Length                                      | Width              | Height                | Total Height      |
|                                  | 179mm (7.05inch)                            | 35mm (1.38inch)    | 61mm (2.40inch)       | 66mm (2.60inch)   |
| Approx. Weight                   | 0.92Kg (2.03 lbs) ± 5%                      |                    |                       |                   |
| Internal Resistance              | Full charged at 25°C: ≤ 95 mΩ               |                    |                       |                   |
| Self Discharge                   | 2% of capacity declined per month at (25°C) |                    |                       |                   |
| Capacity Affected by Temp.(20HR) | 40°C                                        | 25°C               | 0°C                   | -15°C             |
|                                  | 102%                                        | 100%               | 85%                   | 65%               |
| Charge Voltage(25°C)             | Cycle use                                   |                    | Float use             |                   |
|                                  | 14.4-15.0V(-30mV/°C), max. Current: 0.69A   |                    | 13.6-13.8V (-20mV/°C) |                   |

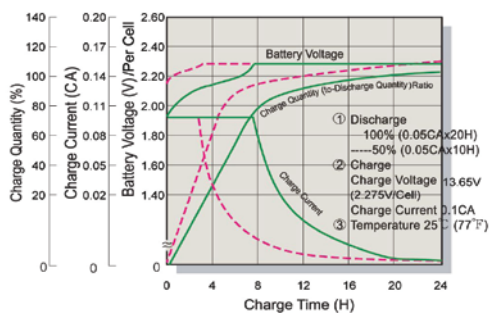
Terminal Voltage (V) and Discharge Time



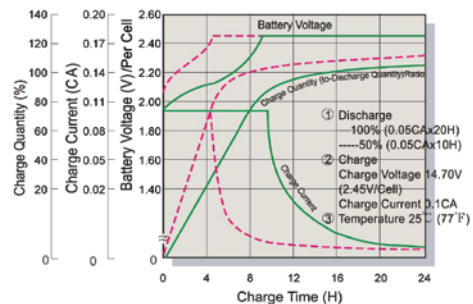
Capacity Retention Characteristic



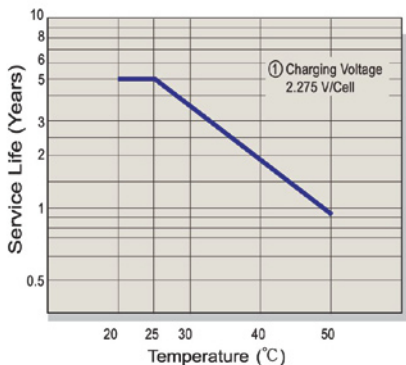
Battery Voltage and Charge Time for Standby Use



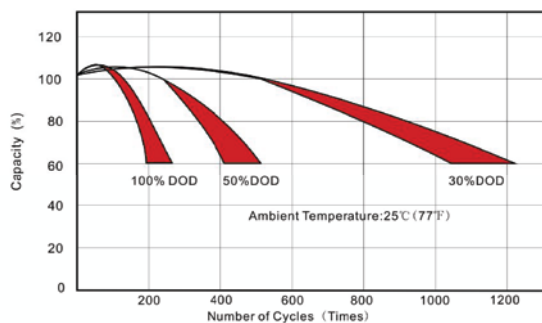
Battery Voltage and Charge Time for Cycle Use



Tickle(or Float) Service Life



Cycle Service Life



Constant Current Discharge(CC,Unit:A) at 25°C

| F.V/Time   | 5Min | 10Min | 15Min | 30Min | 1Hr  | 2Hr  | 3Hr  | 4Hr   | 5Hr   | 6Hr   | 10Hr  | 20Hr  |
|------------|------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-------|
| 1.85V/Cell | 6.34 | 4.69  | 3.40  | 2.29  | 1.33 | 0.76 | 0.58 | 0.464 | 0.399 | 0.325 | 0.213 | 0.111 |
| 1.80V/Cell | 6.46 | 4.77  | 3.46  | 2.33  | 1.35 | 0.78 | 0.59 | 0.473 | 0.406 | 0.331 | 0.217 | 0.113 |
| 1.75V/Cell | 6.59 | 4.86  | 3.53  | 2.37  | 1.38 | 0.79 | 0.60 | 0.482 | 0.414 | 0.337 | 0.221 | 0.115 |
| 1.70V/Cell | 7.18 | 5.16  | 3.74  | 2.47  | 1.40 | 0.80 | 0.61 | 0.491 | 0.421 | 0.343 | 0.225 | 0.117 |
| 1.67V/Cell | 7.90 | 5.59  | 4.06  | 2.61  | 1.42 | 0.81 | 0.62 | 0.496 | 0.426 | 0.347 | 0.228 | 0.118 |
| 1.60V/Cell | 8.56 | 5.89  | 4.27  | 2.72  | 1.43 | 0.82 | 0.63 | 0.501 | 0.430 | 0.351 | 0.230 | 0.120 |

Constant Power Discharge (CP,Unit:W) at 25°C

| F.V/Time   | 5Min  | 10Min | 15Min | 30Min | 1Hr  | 2Hr  | 3Hr  | 4Hr  | 5Hr  | 6Hr  | 10Hr | 20Hr |
|------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
| 1.85V/Cell | 12.37 | 9.14  | 6.63  | 4.46  | 2.59 | 1.48 | 1.13 | 0.91 | 0.78 | 0.63 | 0.42 | 0.22 |
| 1.80V/Cell | 12.61 | 9.31  | 6.75  | 4.54  | 2.64 | 1.51 | 1.16 | 0.92 | 0.79 | 0.65 | 0.42 | 0.22 |
| 1.75V/Cell | 12.84 | 9.49  | 6.88  | 4.63  | 2.69 | 1.54 | 1.18 | 0.94 | 0.81 | 0.66 | 0.43 | 0.22 |
| 1.70V/Cell | 14.00 | 10.05 | 7.29  | 4.81  | 2.73 | 1.57 | 1.20 | 0.96 | 0.82 | 0.67 | 0.44 | 0.23 |
| 1.67V/Cell | 15.41 | 10.91 | 7.91  | 5.08  | 2.76 | 1.58 | 1.21 | 0.97 | 0.83 | 0.68 | 0.44 | 0.23 |
| 1.60V/Cell | 16.70 | 11.48 | 8.32  | 5.30  | 2.79 | 1.60 | 1.22 | 0.98 | 0.84 | 0.68 | 0.45 | 0.23 |