

# SIN12-1.3 (12V1.3Ah)

SIN series is a general purpose battery with 5 years design life in float service . It meets with IEC and JIS standards .With up-dated AGM valve regulated technology and high purity raw materials, the SIN series battery has reliable standby service life. It is suitable for UPS/EPS, medical equipment, emergency light and security systems applications

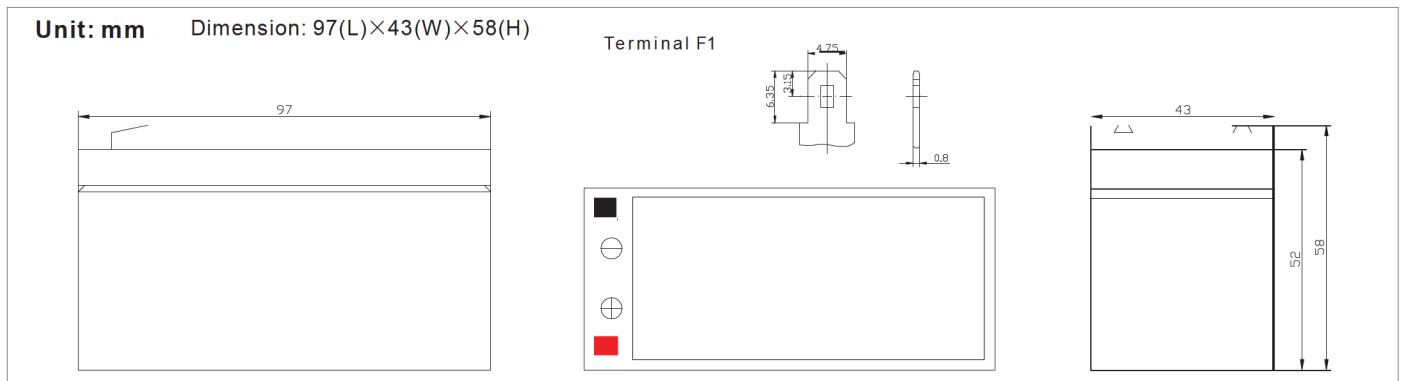


## Specification

|  |   |
|--|---|
| Cells Per Unit                             | 6   |
| Voltage Per Unit                           | 12  |
| Capacity                                   | 1.3Ah@20hr-rate to 1.75V per cell @25°C   |
| Weight                                     | Approx. 0.6 Kg(Tolerance±5%)  |
| Max. Discharge Current                     | 13 A (5 sec)  |
| Internal Resistance                        | Approx. 95 mΩ   |
| Operating Temperature Range                | Discharge: -20°C~60°C<br>Charge: 0°C~50°C<br>Storage: -20°C~60°C  |
| Normal Operating Temperature Range         | 25°C±5°C  |
| Float charging Voltage                     | 13.7 to 13.9 VDC/unit Average at 25°C   |
| Recommended Maximum Charging Current Limit | 0.39 A  |
| Equalization and Cycle Service             | 14.6 to 14.8 VDC/unit Average at 25°C   |
| Self Discharge                             | SINERGY Valve Regulated Lead Acid (VRLA) batteries can be stored for more than 6 months at 25°C. Self-discharge ratio less than 3% per month at 25°C. Please charge batteries before using. |
| Terminal                                   | Faston Tab 187(F1)  |
| Container Material                         | A.B.S. UL94-HB, UL94-V0 Optional.   |



## Dimensions



### CONSTANT CURRENT DISCHARGE CHARACTERISTICS : A(25°C)

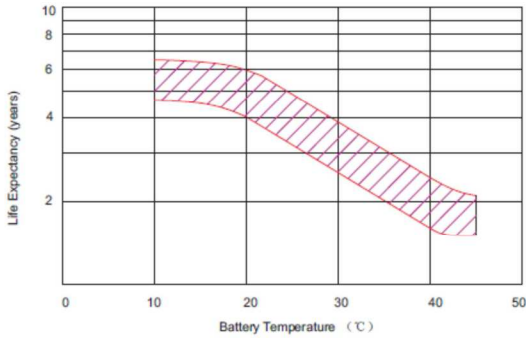
| F.V/Time | 5MIN  | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V    | 5.127 | 3.362 | 2.504 | 1.333 | 0.845 | 0.517 | 0.340 | 0.277 | 0.228 | 0.150 | 0.130 | 0.070 |
| 10.0V    | 4.942 | 3.278 | 2.424 | 1.316 | 0.834 | 0.506 | 0.334 | 0.273 | 0.226 | 0.150 | 0.129 | 0.069 |
| 10.2V    | 4.652 | 3.115 | 2.356 | 1.296 | 0.826 | 0.501 | 0.331 | 0.271 | 0.224 | 0.148 | 0.127 | 0.067 |
| 10.5V    | 4.182 | 2.913 | 2.222 | 1.260 | 0.816 | 0.494 | 0.328 | 0.267 | 0.223 | 0.147 | 0.126 | 0.066 |
| 10.8V    | 3.747 | 2.717 | 2.097 | 1.218 | 0.804 | 0.490 | 0.324 | 0.257 | 0.221 | 0.146 | 0.124 | 0.063 |
| 11.1V    | 3.278 | 2.491 | 1.934 | 1.172 | 0.785 | 0.471 | 0.318 | 0.254 | 0.220 | 0.145 | 0.122 | 0.062 |

### CONSTANT POWER DISCHARGE CHARACTERISTICS : W(25°C)

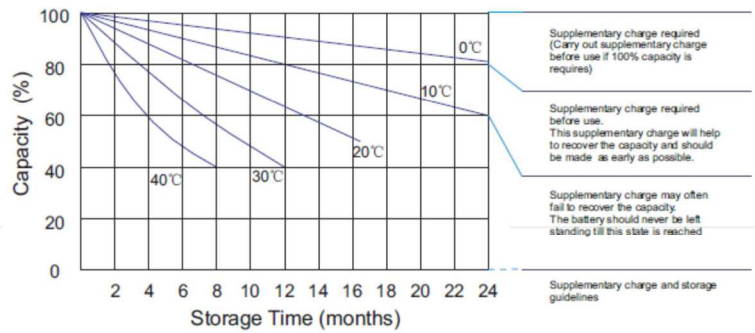
| F.V/Tim | 5MIN  | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V   | 55.61 | 36.86 | 27.63 | 15.26 | 10.10 | 6.088 | 4.070 | 3.319 | 2.730 | 1.797 | 1.557 | 0.835 |
| 10.0V   | 54.16 | 36.10 | 27.23 | 15.10 | 9.95  | 6.008 | 4.004 | 3.272 | 2.706 | 1.790 | 1.542 | 0.828 |
| 10.2V   | 51.52 | 34.67 | 26.87 | 14.97 | 9.88  | 5.955 | 3.970 | 3.242 | 2.689 | 1.777 | 1.522 | 0.807 |
| 10.5V   | 47.02 | 33.24 | 25.47 | 14.66 | 9.75  | 5.891 | 3.940 | 3.198 | 2.668 | 1.762 | 1.512 | 0.793 |
| 10.8V   | 42.42 | 31.09 | 24.07 | 14.31 | 9.619 | 5.849 | 3.894 | 3.090 | 2.655 | 1.754 | 1.489 | 0.761 |
| 11.1V   | 37.41 | 28.95 | 22.67 | 13.92 | 9.407 | 5.645 | 3.818 | 3.046 | 2.646 | 1.742 | 1.467 | 0.749 |

All mentioned values are average values(Tolerance±2%).

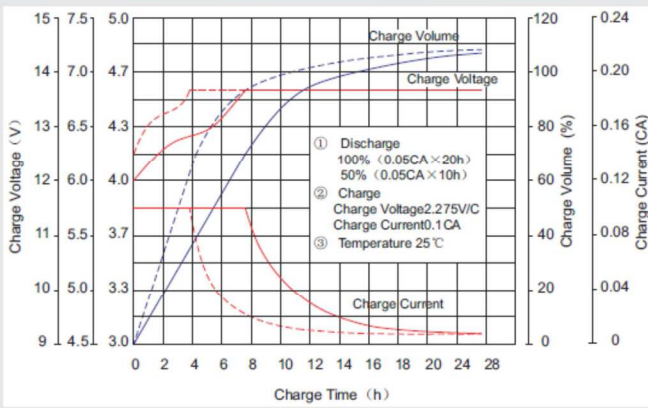
### Effect of temperature on long term float life



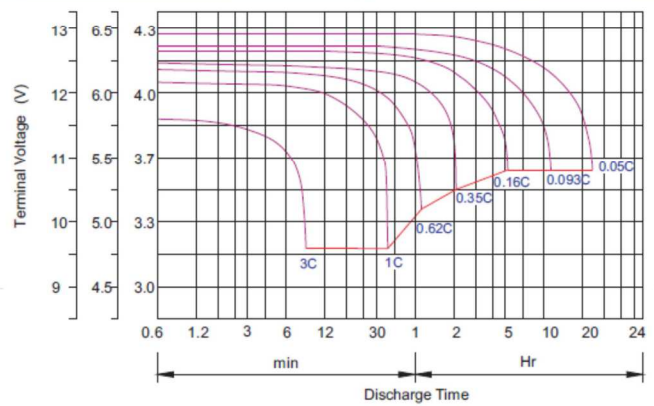
### Storage characteristic



### Charge characteristic Curve for standby use



### Discharge characteristic Curve



### Capacity Factors With Different Temperature

| Battery Type |        | -20°C | -10°C | 0°C | 5°C | 10°C | 20°C | 25°C | 30°C | 40°C | 45°C |
|--------------|--------|-------|-------|-----|-----|------|------|------|------|------|------|
| GEL Battery  | 6V&12V | 50%   | 70%   | 83% | 85% | 90%  | 98%  | 100% | 102% | 104% | 105% |
|              | 2V     | 60%   | 75%   | 85% | 88% | 92%  | 99%  | 100% | 103% | 105% | 106% |
| AGM Battery  | 6V&12V | 46%   | 66%   | 76% | 83% | 90%  | 98%  | 100% | 103% | 107% | 109% |
|              | 2V     | 55%   | 70%   | 80% | 85% | 92%  | 99%  | 100% | 104% | 108% | 110% |

### Discharge Current VS. Discharge Voltage

| Final Discharge Voltage V/cell | 1.75V      | 1.70V             | 1.60V      |
|--------------------------------|------------|-------------------|------------|
| Discharge Current (A)          | (A) ≤ 0.2C | 0.2C < (A) < 1.0C | (A) ≥ 1.0C |

**Charge the batteries at least once every six months, if they are stored at 25°C.**

#### Charging Method:

|                  |  |
|------------------|--|
| Constant Voltage | -0.2Cx2h+2.4-2.45V/cellx24h, Max. Current 0.3C |
| Constant Current | -0.2Cx2h+0.1Cx12h                              |
| Fast             | -0.2Cx2h+0.3Cx4h                               |

| Bolt     | M5                    | M6                   | M8                    |
|----------|-----------------------|----------------------|-----------------------|
| Terminal | F3 F4 F13 F18 T25 T26 | F8 F11 F12-1 F15     | F5 F9 F10 F12 F14 F16 |
| Torque   | 6 <sup>#</sup> 7N·m   | 8 <sup>#</sup> 10N·m | 10 <sup>#</sup> 12N·m |

### Maintenance & Cautions

#### Float Service:

※ Every month, recommend inspection every battery voltage.

※ Every three months, recommend equalization charge for one time.

#### Equalization charge method:

Discharge: 100% rate capacity discharge.

Charge: Max. current 0.3C, constant voltage 2.4-2.45V/Cell charge 24h.

※ Effect of temperature on float charge voltage: -3mV/°C/Cell.

※ Length of service life will be directly affected by the number of discharge

cycles, depth of discharge, ambient temperature and charging voltage.