



# Valve Regulated Lead-Acid Rechargeable Battery



## SH4.5-12

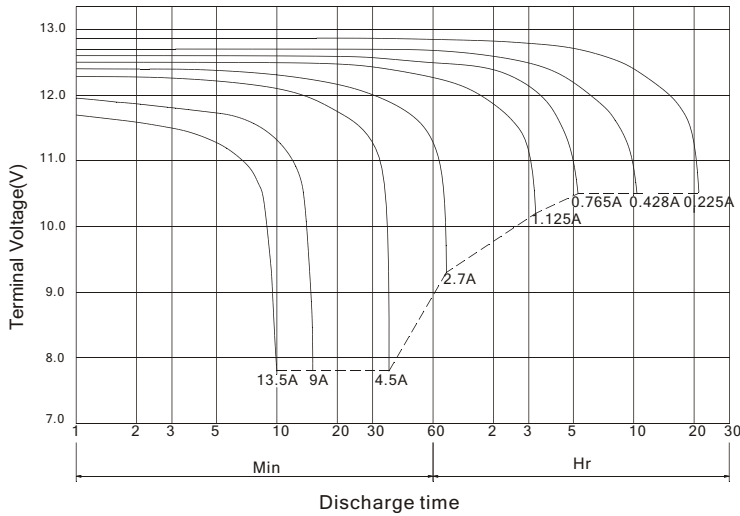
For High Rate Discharge

The battery is constructed by plates, separators, safety valves and container. Since the electrolyte is held by a glass-mat separator and plates, the battery can be used in any direction and position without leakage.

### PERFORMANCE SPECIFICATIONS

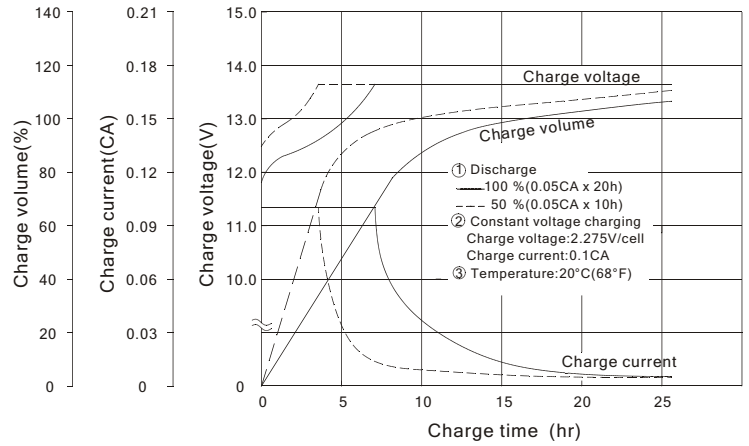
|   |  |
|---|--|
| Nominal Voltage(V).....   | 12 volts(6cells in series)                   |
| Nominal Capacity(AH)  |  |
| 20 hour rate F.V.(1.75V/cell) (225mA to 10.50volts) .....   | 4.5A.H.                                      |
| 10 hour rate F.V.(1.75V/cell) (428mA to 10.50volts) .....   | 4.28A.H.                                     |
| 5 hour rate F.V.(1.75V/cell) (765mA to 10.50volts) .....  | 3.83 A.H.                                    |
| 1 hour rate F.V.(1.55V/cell) (2700mA to 9.30volts).....   | 2.7 A.H.                                     |
| 15 Min rate F.V.(1.30V/cell) (108W to 7.80volts).....   | 2.25 A.H.                                    |
| 3C rate F.V.(1.75V/cell) (13.5Ato 10.50volts).....  | 1.91 A.H.                                    |
| Approximate Weight.....   | 1530g(3.37 lbs.)                             |
| Terminal  |  |
| Standard.....   | Type T1                                      |
| Optional.....   | Type T2                                      |
| Internal Resistance (Fully Charged Battery).....  | <42m Ω                                       |
| Maximum Discharge Current For 5 sec.(A).....  | 67.5 A                                       |
| Maximum Charge Current(A).....  | 1.35 A                                       |
| Ambient Temperature   |  |
| Charge.....   | 0°C(32°F)~40°C(104°F)                        |
| Discharge.....  | -20°C(-4°F)~50°C(122°F)                      |
| Storage.....  | -20°C(-4°F)~40°C(104°F)                      |
| Vibration test:   |  |
| Frequency: 16.7HZ   |  |
| Amplitude: 4mm  |  |
| Vibrate the battery horizontally or vertically for 60 minutes. The battery have no abnormality. Case..... | ABS  |
| Dimension(mm/inch)  |  |
| Length           1.5mm.....   | 90/3.54                                      |
| Width           ±1.5mm.....   | 70/2.76                                      |
| Container Height ±1.5mm.....  | 102/4.02                                     |
| Total Height   ±2mm.....  | 106/4.17                                     |
| Application.....  | ± Electronic Doorbells, Toy-Cars, Fans, UPS. |

## SH4.5-12 Battery discharge characteristics (25°C/77°F)



## Battery Charging Characteristics

(Typical example of the charge characteristics for the standby use)

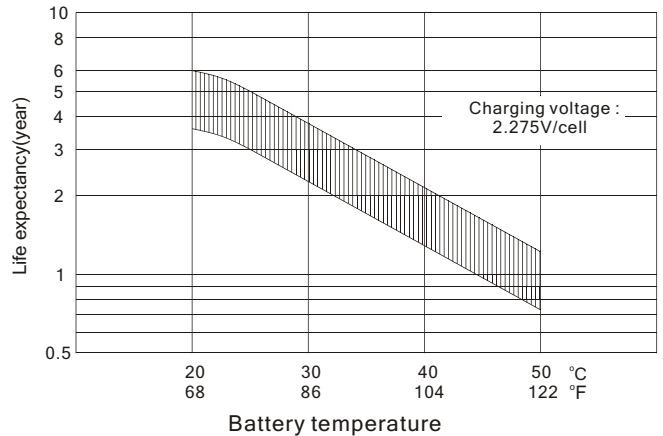


## Charging Procedure

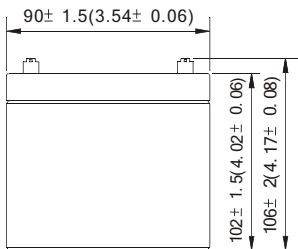
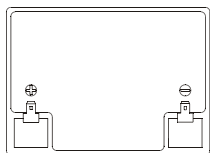
| Application              | Charging method   | Charging Voltage at 20°C (V/cell) | Temperature compensation coefficient of charging voltage (mV/°C/cell) | Max. charging current (CA) | Charging time 0.1CA, 20°C (h) |               | Temp (°C)       |
|--------------------------|---|-----------------------------------|---|----------------------------|-------------------------------|---------------|-----------------|
|                          |   |                                   |   |                            | 100% discharge                | 50% discharge |                 |
| For standby power Source | Constant voltage & Constant current charging (with current restriction) | 2.25~2.30                         | -3  | 0.3                        | 24                            | 20            | 0~40 (32~104°F) |
| For cycle service        |   | 2.40~2.50                         | -4  | 0.3                        | 16                            | 10            |                 |

\*Temperature compensation of charging voltage is not needed, when using the batteries within 5°C to 35°C range.

## Effect of Temperature on Long Term Float Life

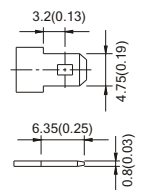


## OUTER DIMENSIONS

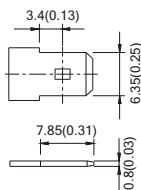


## TERMINAL TYPE mm(inch)

### Terminal T1



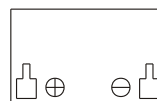
### Terminal T2



## Constant power discharge characteristics at 25°C/77°F

| Final Voltage | Discharge time          |       |       |       |       |       |      |      |
|---------------|-------------------------|-------|-------|-------|-------|-------|------|------|
|               | 5Min                    | 10Min | 15Min | 30Min | 1Hr   | 3Hr   | 5Hr  | 10Hr |
|               | Battery output power(W) |       |       |       |       |       |      |      |
| 10.80V        | 160.4                   | 122.7 | 94.8  | 54.4  | 29.17 | 12.37 | 8.79 | 4.94 |
| 10.50V        | 184.9                   | 130.6 | 98.3  | 56.8  | 30.49 | 12.55 | 8.91 | 5.02 |
| 10.20V        | 198.5                   | 134.9 | 101.7 | 57.2  | 31.45 | 12.64 | 8.96 | 5.06 |
| 9.90V         | 206.9                   | 138.5 | 104.8 | 58.4  | 32.13 | 12.71 | 8.99 | 5.08 |
| 9.60V         | 213.2                   | 141.0 | 107.5 | 59.2  | 32.50 | 12.75 | 9.02 | 5.09 |
| 7.80V         | 213.5                   | 141.2 | 108.0 | 59.5  | 32.52 | 12.76 | 9.02 | 5.09 |

## TERMINAL POSITION



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