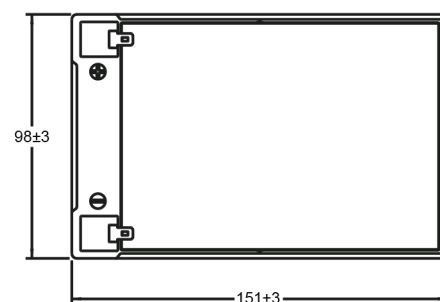
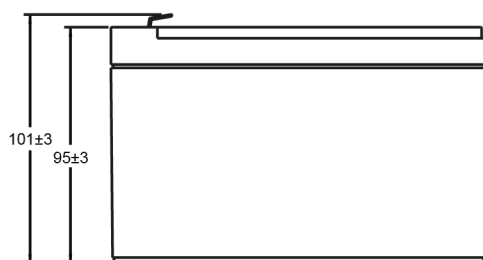
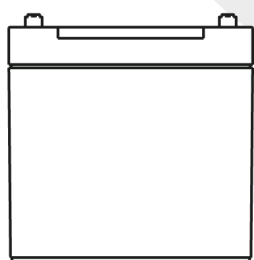


### Technical Dimensions (mm)

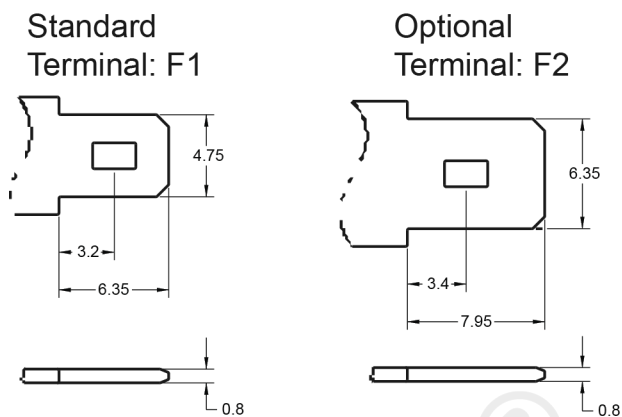




Image



Terminal Dimensions (mm)



Technical Specification

|                                     |                                  |   |
|-------------------------------------|----------------------------------|---|
| <b>Output</b>                       | Nominal Voltage                  | 12V   |
|                                     | Nominal Capacity (20HR)          | 13Ah  |
| <b>Terminal Type</b>                | Standard Terminal                | F1  |
|                                     | Optional Terminal                | F2  |
| <b>Container Material</b>           | Standard Option                  | ABS   |
|                                     | Flame Retardant Option (FR)      | ABS (UL94:VO)   |
| <b>Rated Capacity</b>               | (20HR 1.80V/cell, 25°C)          | 13.9 Ah/0.70A   |
|                                     | (10HR 1.80V/cell, 25°C)          | 13.0 Ah/1.30A   |
|                                     | (5HR 1.75V/cell, 25°C)           | 11.4 Ah/2.28A   |
|                                     | (3HR 1.75V/cell, 25°C)           | 10.3 Ah/3.45A   |
|                                     | (1HR 1.60V/cell, 25°C)           | 8.40 Ah/8.40A   |
| <b>Max Discharge Current</b>        | 195A (5s)                        |   |
| <b>Internal Resistance</b>          | Approx 14mΩ                      |   |
| <b>Discharge Characteristics</b>    | Operating Temp Range             | Discharge: -15 ~ 50°C<br>Charge: 0 ~ 40°C<br>Storage: -15 ~ 40°C                                    |
|                                     | Nominal Operating Temp Range     | 25 ± 3°C  |
|                                     | Cycle Use                        | Initial Charging Current less than 3.6A.<br>Voltage 14.4V ~ 15.0V @ 25°C Temp. Coefficient -30mV/°C |
|                                     | Standby Use                      | No limit on initial charging current.<br>Voltage 13.5V ~ 13.8V @ 25°C Temp. Coefficient -20mV/°C    |
|                                     | Capacity affected by Temperature | 40°C 103%<br>25°C 100%<br>0°C 86%   |
| <b>Design Floating Life at 20°C</b> | 10 Years                         |   |

Self Discharge

Ultracell® UCG batteries may be stored for up to 6 months at 25°C and then a refresh charge is required. For higher temperatures the time intervals will be shorter.

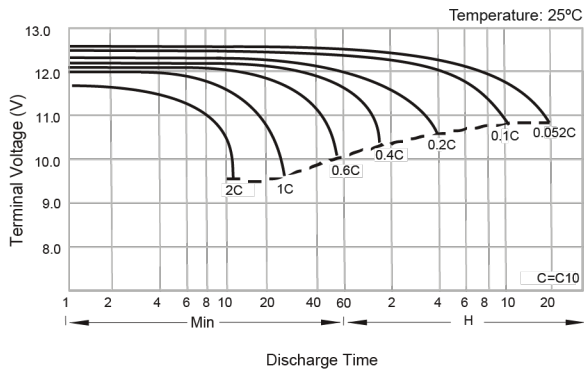
Constant Current Discharge / Constant Power Discharge At 25°C (Amperes & Watts/Cell)

A = Amperes W = Watts

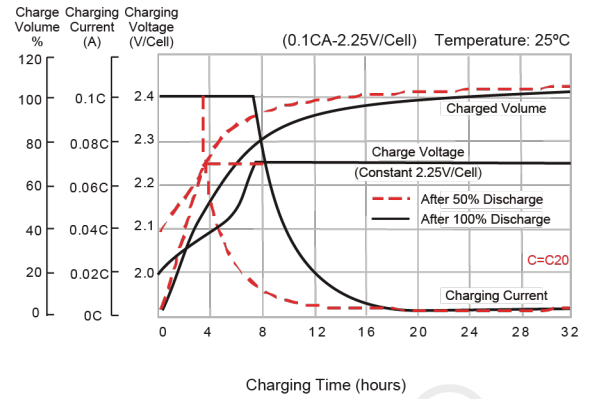
| F.V/TIME   | 10 min | 15 min | 20 min | 30 min | 45 min | 60 min | 2 hours | 3 hours | 4 hours | 5 hours | 6 hours | 8 hours | 10 hours | 20 hours |
|------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|----------|----------|
| A          | W      | W      | W      | W      | W      | W      | W       | W       | W       | W       | W       | W       | W        | W        |
| 1.85V/cell | 19.0   | 16.0   | 14.0   | 10.1   | 8.00   | 6.49   | 4.03    | 3.14    | 2.55    | 2.07    | 1.81    | 1.47    | 1.23     | 0.690    |
|            |        | 35.5   | 30.2   | 26.7   | 19.4   | 15.5   | 12.6    | 7.86    | 6.14    | 4.99    | 4.06    | 3.57    | 2.43     | 1.381    |
| 1.80V/cell | 24.3   | 19.4   | 16.5   | 11.9   | 9.30   | 7.27   | 4.40    | 3.38    | 2.72    | 2.22    | 1.94    | 1.56    | 1.30     | 0.697    |
|            |        | 44.8   | 35.9   | 31.0   | 22.6   | 17.8   | 14.0    | 8.52    | 6.58    | 5.30    | 4.35    | 3.81    | 3.09     | 1.392    |
| 1.75V/cell | 26.7   | 21.1   | 17.8   | 12.3   | 9.65   | 7.61   | 4.56    | 3.45    | 2.78    | 2.28    | 1.99    | 1.59    | 1.31     | 0.703    |
|            |        | 48.6   | 38.9   | 33.1   | 23.3   | 18.4   | 14.6    | 8.81    | 6.68    | 5.41    | 4.46    | 3.91    | 3.14     | 1.404    |
| 1.70V/cell | 29.1   | 22.6   | 18.7   | 12.8   | 10.0   | 7.85   | 4.75    | 3.54    | 2.85    | 2.34    | 2.03    | 1.61    | 1.33     | 0.716    |
|            |        | 52.2   | 41.2   | 34.6   | 24.2   | 19.1   | 15.0    | 9.14    | 6.85    | 5.54    | 4.56    | 3.98    | 3.18     | 1.429    |
| 1.65V/cell | 31.4   | 24.0   | 19.9   | 13.5   | 10.3   | 8.11   | 4.88    | 3.69    | 2.95    | 2.40    | 2.07    | 1.64    | 1.35     | 0.725    |
|            |        | 56.0   | 43.5   | 36.6   | 25.4   | 19.5   | 15.5    | 9.37    | 7.12    | 5.72    | 4.68    | 4.07    | 3.23     | 1.445    |
| 1.60V/cell | 34.1   | 25.7   | 21.2   | 14.3   | 10.7   | 8.40   | 5.04    | 3.81    | 3.04    | 2.48    | 2.12    | 1.65    | 1.37     | 0.729    |
|            |        | 59.7   | 46.0   | 38.6   | 26.5   | 20.2   | 15.9    | 9.63    | 7.30    | 5.87    | 4.81    | 4.15    | 3.25     | 1.451    |



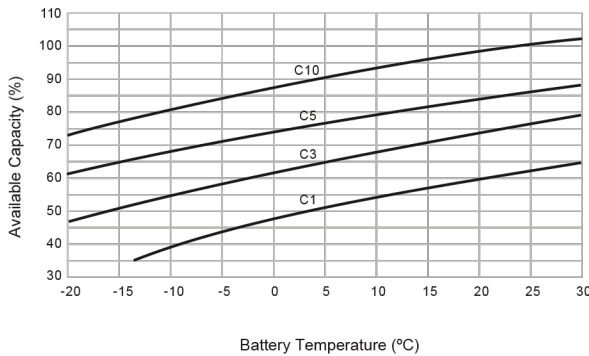
### Discharge Characteristics



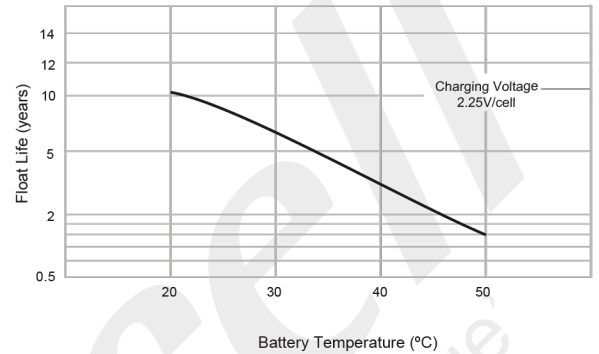
### Float Charging Characteristics



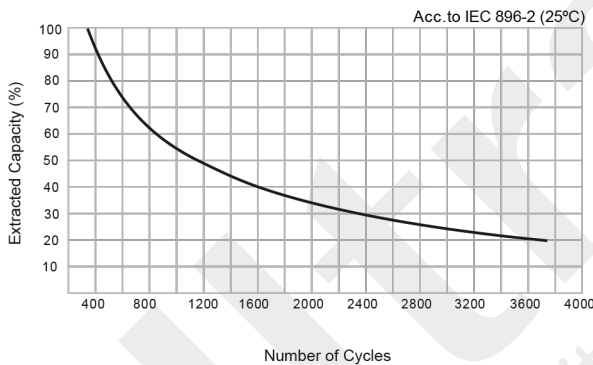
### Temperature Effects in Relation to Battery Capacity



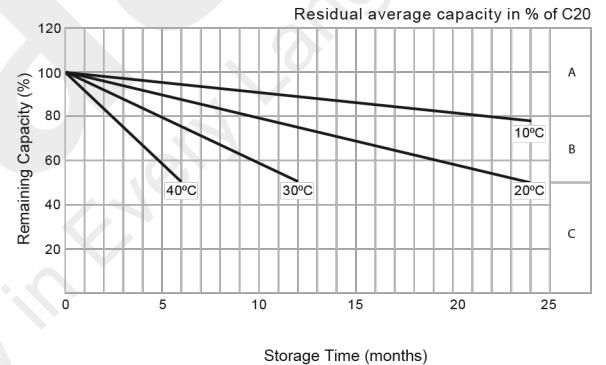
### Effect of Temperature on Long Term Float Life



### Cycle Life in Relation to Depth of Discharge



### General Relation of Capacity vs. Storage Time



### General Relation of Capacity vs. Storage Time (Notes)

- A) No supplementary charge required.  
(Carryout supplementary charge before use if 100% capacity is required.)
- B) Supplementary charge required before use. Optional charging way as below:
  1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
  2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
  3. Charged for 8 ~ 10 hours at limited current 0.05 CA.
- C) Supplementary charge may often fail to recover the capacity.  
The battery should never be left standing till this is reached.