

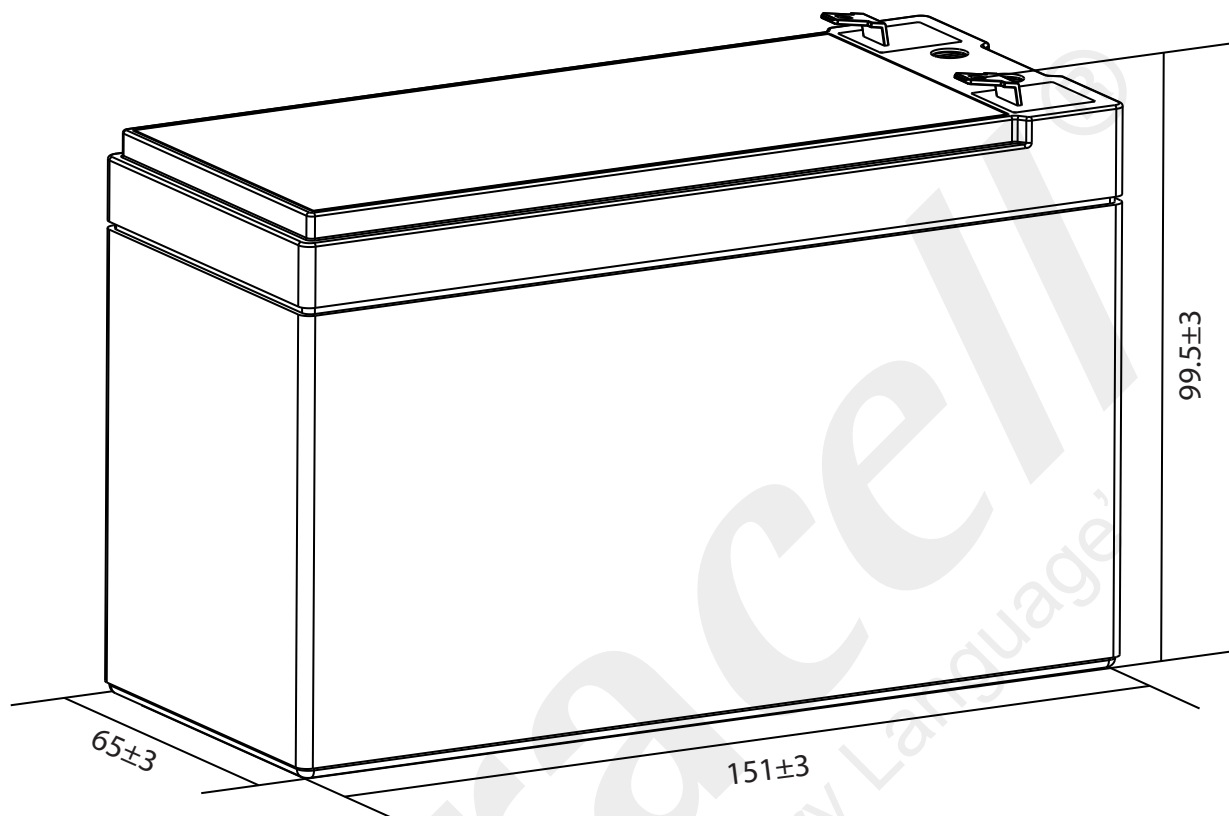
# Ultracell®

'Quality in Every Language'

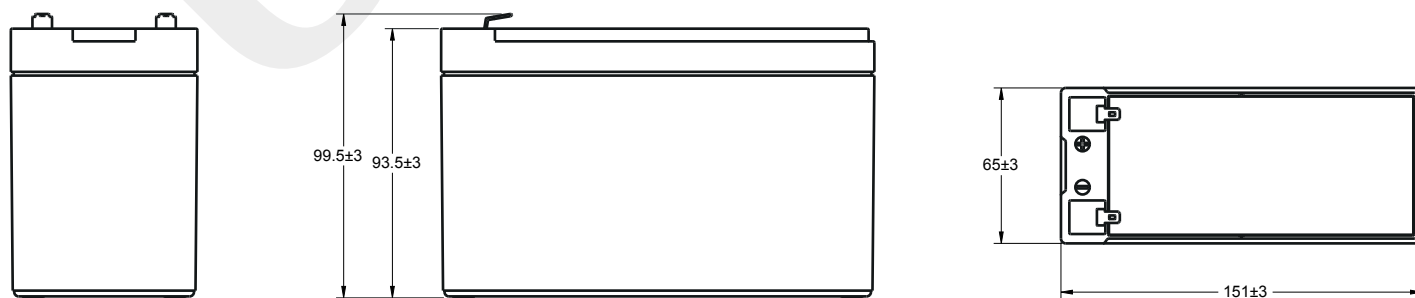
UL9-12

12V 9Ah

General Series



## Technical Dimensions (mm)

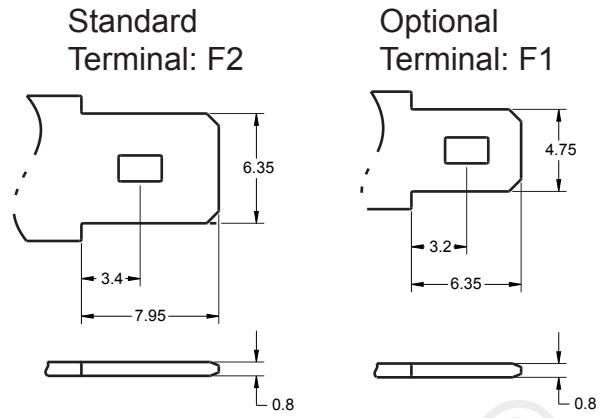




Image



Terminal Dimensions (mm)



Technical Specification

<b>Output</b>	Nominal Voltage	12V
	Nominal Capacity (20HR)	9Ah
<b>Terminal Type</b>	Standard Terminal	F2
	Optional Terminal	F1
<b>Container Material</b>	Standard Option	ABS
	Flame Retardant Option (FR)	ABS (UL94:VO)
<b>Rated Capacity</b>	(20HR 1.75V/cell, 25°C)	9.00 Ah / 0.450A
	(10HR 1.75V/cell, 25°C)	8.38 Ah / 0.838A
	(5HR 1.75V/cell, 25°C)	7.65 Ah / 1.53A
	(3HR 1.75V/cell, 25°C)	6.75 Ah / 2.25A
	(1HR 1.60V/cell, 25°C)	5.59 Ah / 5.59A
<b>Max Discharge Current</b>	135A (5s)	
<b>Internal Resistance</b>	Approx 24mΩ	
<b>Discharge Characteristics</b>	Operating Temp Range	Discharge: -15 ~ 50°C Charge: 0 ~ 40°C Storage: -15 ~ 40°C
	Nominal Operating Temp Range	25 ± 3°C
	Cycle Use	Initial Charging Current less than 2.7A. Voltage 14.4V ~ 15.0V @ 25°C Temp. Coefficient -30mV/°C
	Standby Use	Initial Charging Current less than 2.7A. Voltage 13.5V ~ 13.8V @ 25°C Temp. Coefficient -20mV/°C
	Capacity affected by Temperature	40°C 103% 25°C 100% 0°C 86%
<b>Design Floating Life at 20°C</b>	5 Years	

Self Discharge

Ultracell® UL 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.

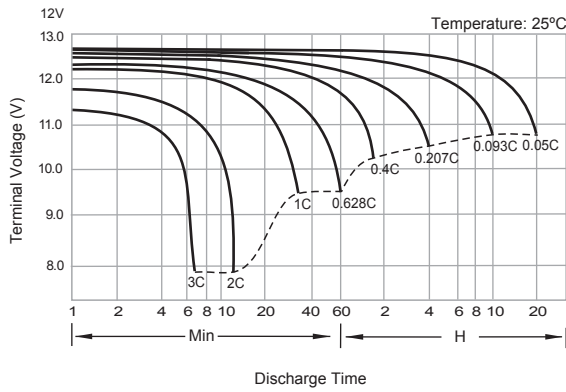
Constant Current Discharge / Constant Power Discharge At 25°C (Amperes & Watts/Cell)

A = Amperes W = Watts

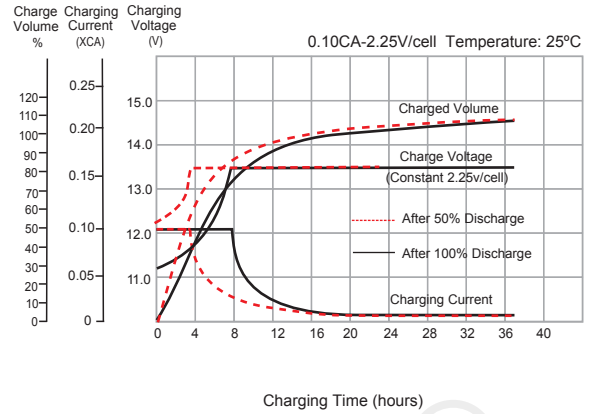
F.V/TIME	5 min	10 min	15 min	20 min	30 min	45 min	60 min	90 min	2 hours	3 hours	4 hours	5 hours	6 hours	8 hours	10 hours	20 hours
<b>1.85V/cell</b>	23.5 44.7	17.3 33.1	13.7 26.4	11.2 21.6	8.33 16.1	6.12 11.9	5.12 10.0	3.80 7.43	3.03 5.93	2.18 4.29	1.75 3.45	1.49 2.94	1.28 2.52	1.00 1.99	0.818 1.63	0.440 0.881
<b>1.80V/cell</b>	25.5 48.2	18.2 34.6	14.3 27.3	11.6 22.1	8.54 16.4	6.24 12.1	5.21 10.1	3.87 7.53	3.08 6.01	2.22 4.35	1.78 3.50	1.51 2.98	1.29 2.55	1.01 2.01	0.828 1.64	0.445 0.890
<b>1.75V/cell</b>	27.6 51.7	19.1 36.1	14.8 28.1	11.9 22.7	8.75 16.8	6.36 12.3	5.31 10.3	3.93 7.63	3.13 6.09	2.25 4.40	1.80 3.54	1.53 3.01	1.31 2.58	1.03 2.03	0.838 1.66	0.450 0.899
<b>1.70V/cell</b>	29.6 55.2	20.0 37.6	15.3 29.0	12.2 23.3	8.9 17.1	6.48 12.4	5.40 10.4	4.00 7.74	3.18 6.17	2.28 4.46	1.83 3.58	1.55 3.05	1.33 2.61	1.04 2.06	0.848 1.68	0.454 0.909
<b>1.67V/cell</b>	30.9 57.3	20.5 38.5	15.6 29.5	12.5 23.6	9.1 17.3	6.56 12.6	5.46 10.5	4.03 7.79	3.20 6.22	2.30 4.49	1.84 3.60	1.56 3.07	1.34 2.63	1.05 2.07	0.854 1.69	0.457 0.914
<b>1.60V/cell</b>	33.6 61.8	21.7 40.4	16.4 30.6	12.9 24.3	9.3 17.7	6.73 12.8	5.59 10.7	4.12 7.9	3.27 6.32	2.35 4.57	1.88 3.66	1.59 3.12	1.36 2.67	1.06 2.10	0.867 1.72	0.464 0.927



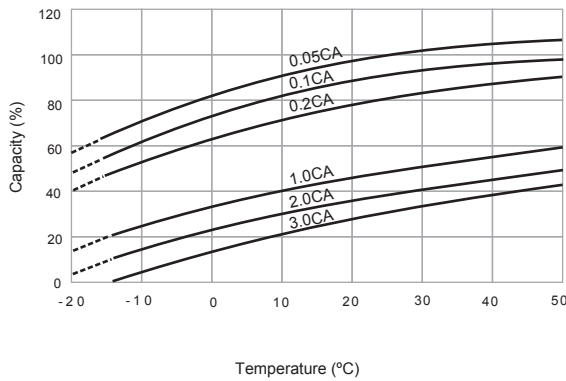
**Discharge Characteristics**



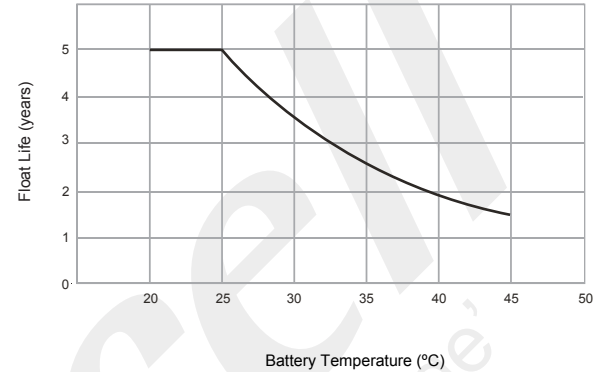
**Float Charging Characteristics**



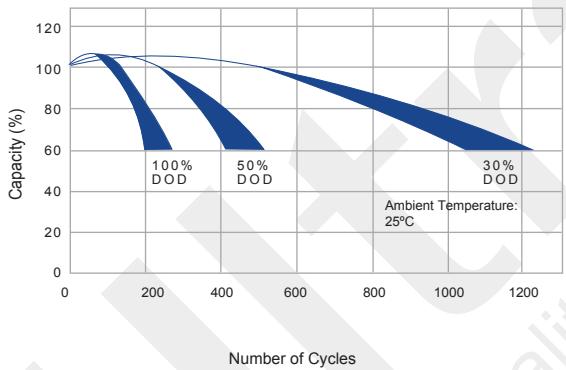
**Temperature Effects in Relation to Battery Capacity**



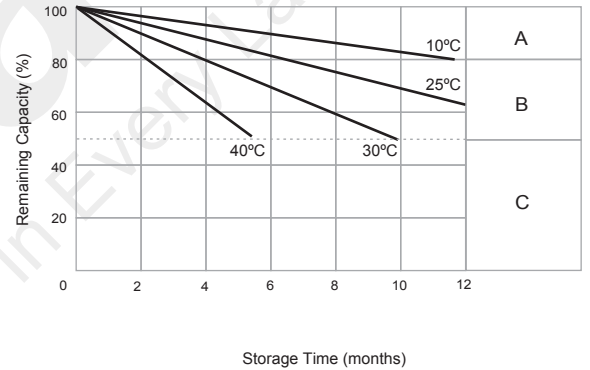
**Effects of Temperature on Long Term Float Life**



**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.