

**UL4-12**



**Physical Specification**

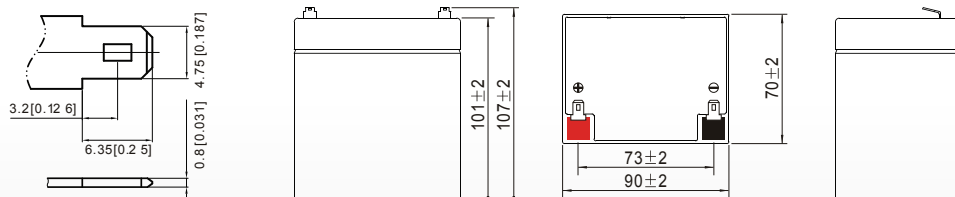
Part Number:	<b>UL4-12</b>
Length:	<b>90 ± 2 mm (3.54 inches)</b>
Width:	<b>70 ± 2 mm (2.76 inches)</b>
Container Height:	<b>101 ± 2 mm (3.98 inches)</b>
Total Height (with terminal):	<b>107 ± 2 mm (4.21 inches)</b>
Approx Weight:	<b>Approx 1.40kg (3.08lbs)</b>

**Specifications**

	Normal Voltage	12V
	Normal Capacity (20HR)	4AH
<b>Terminal Type</b>	Standard Terminal	F1
	Optional Terminal	-
<b>Container Material</b>	Standard Option	ABS
	Flame Retardant Option (FR)	UL94:VO
<b>Rated Capacity</b>	4.00 AH/0.20A	(20hr, 1.80V/cell, 25°C / 77°F)
	3.72 AH/0.372A	(10hr, 1.80V/cell, 25°C / 77°F)
	3.40 AH/0.68A	(5hr, 1.75V/cell, 25°C / 77°F)
	3.06 AH/1.02A	(3hr, 1.75V/cell, 25°C / 77°F)
	2.51 AH/2.51A	(1hr, 1.60V/cell, 25°C / 77°F)
<b>Max Discharge Current</b>	60A (5s)	
<b>Internal Resistance</b>	Approx 45mΩ	
<b>Discharge Characteristics</b>	Operating Temp. Range	Discharge: -15 ~ 50°C (5 ~ 122°F)
		Charge: 0 ~ 40°C (5 ~ 104°F)
		Storage: -15 ~ 40°C (5 ~ 104°F)
	Nominal Operating Temp. Range	25 ± 3°C (77 ± 5°F)
	Cycle Use	Initial Charging Current less than 1.2A.Voltage 14.4V ~ 15.0V at 25°C (77°F) Temp. Coefficient -30mV/°C
	Standby Use	No limit on Initial Charging Current Voltage 13.5V ~ 13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	40°C (104°F) 103%	
	25°C (77°F) 100%	
	0°C (32°F) 86%	
<b>Design Floating Life at 20°C</b>	5 Years	
<b>Self Discharge</b>	Ultracell batteries may be stored for up to 6 months at 25°C(77F) and then a refresh charge is required. For higher temperatures the time interval will be shorter.	

**Dimensions**

**F1 Terminal**



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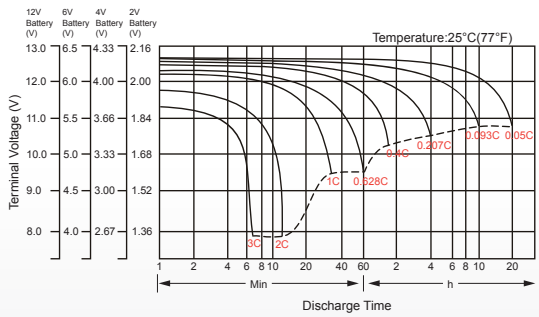
### Constant Current Discharge (Amperes) at 25°C (77°F)

F.V/Time	5 min	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	7.62	5.85	4.85	4.19	3.24	2.39	2.01	1.19	0.93	0.76	0.62	0.54	0.432	0.361	0.198
1.80V/cell	10.2	7.47	5.85	4.95	3.82	2.78	2.25	1.30	1.00	0.81	0.66	0.57	0.458	0.372	0.200
1.75V/cell	11.5	8.21	6.39	5.33	3.97	2.88	2.36	1.35	1.02	0.83	0.68	0.59	0.466	0.382	0.202
1.70V/cell	12.7	8.95	6.83	5.60	4.13	3.00	2.43	1.38	1.05	0.85	0.70	0.60	0.473	0.39	0.206
1.65V/cell	14.0	9.66	7.26	5.95	4.36	3.07	2.49	1.40	1.09	0.88	0.72	0.62	0.480	0.398	0.208
1.60V/cell	15.4	10.5	7.76	6.34	4.60	3.20	2.51	1.46	1.13	0.90	0.74	0.63	0.485	0.402	0.210

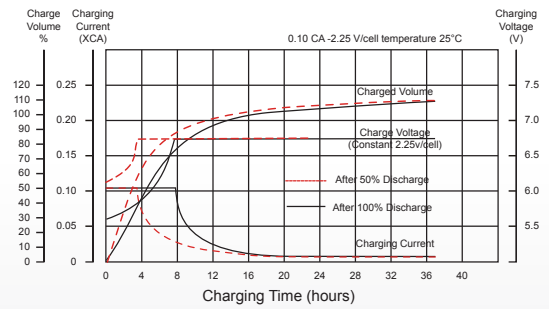
### Constant Power Discharge (Watts) at 25°C (77°F)

F.V/Time	5 min	10 min	15 min	20 min	30 min	45 min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	13.9	10.8	9.04	7.90	6.17	4.59	3.88	2.31	1.81	1.48	1.21	1.05	0.853	0.714	0.392
1.80V/cell	18.5	13.6	10.8	9.20	7.17	5.29	4.32	2.50	1.94	1.57	1.29	1.12	0.902	0.735	0.396
1.75V/cell	20.4	14.8	11.6	9.80	7.39	5.44	4.50	2.59	1.97	1.60	1.32	1.15	0.915	0.754	0.399
1.70V/cell	21.9	15.7	12.2	10.2	7.65	5.64	4.63	2.65	2.02	1.64	1.35	1.17	0.927	0.768	0.406
1.65V/cell	23.8	16.8	12.9	10.8	8.00	5.73	4.70	2.67	2.10	1.69	1.39	1.20	0.939	0.783	0.411
1.60V/cell	25.6	17.8	13.6	11.4	8.39	5.94	4.72	2.77	2.15	1.74	1.43	1.22	0.947	0.790	0.413

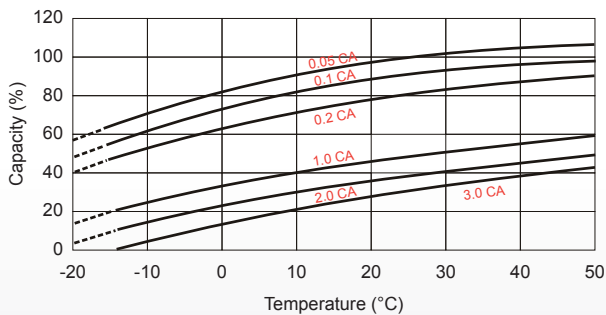
### Discharge Characteristics



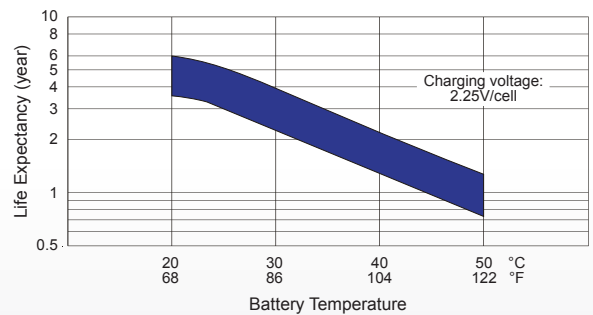
### Float Charging Characteristics



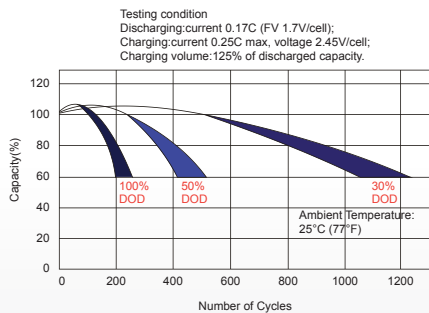
### Temperature Effects in Relation to Battery Capacity



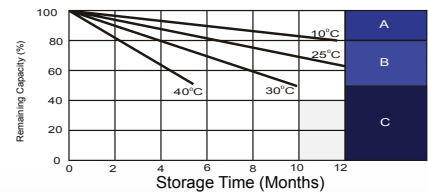
### Effect of Temperature on Long Term Float Life



### Cycle Life in Relation to Depth of Discharge



### Self Discharge Characteristics



- A** No supplementary 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 2.25V/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.

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