

UL 2.4-12

12V 2.4AH

General

Ultracell®

'Quality in Every Language'

UL2.4-12



Physical Specification

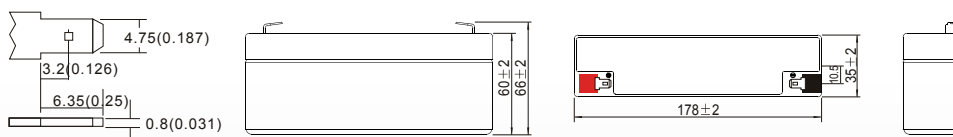
| | |
|-------------------------------|---------------------------------|
| Part Number: | UL2.4-12 |
| Length: | 178 ± 2 mm (7.00 inches) |
| Width: | 35 ± 2 mm (1.38 inches) |
| Container Height: | 60 ± 2 mm (2.36 inches) |
| Total Height (with terminal): | 66 ± 2 mm (2.60 inches) |
| Approx Weight: | Approx 0.85kg |

Specifications

| | | |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| | Normal Voltage | 12V |
| | Normal Capacity (20HR) | 2.4AH |
| Terminal Type | Standard Terminal | F1 |
| | Optional Terminal | - |
| Container Material | Standard Option | ABS |
| | Flame Retardant Option (FR) | UL94:VO |
| Rated Capacity | 2.40 AH/0.115A | (20hr, 1.80V/cell, 25°C / 77°F) |
| | 2.23 AH/0.214A | (10hr, 1.80V/cell, 25°C / 77°F) |
| | 1.95 AH/0.39A | (5hr, 1.75V/cell, 25°C / 77°F) |
| | 1.79 AH/0.59A | (3hr, 1.75V/cell, 25°C / 77°F) |
| | 1.44 AH/1.44A | (1hr, 1.60V/cell, 25°C / 77°F) |
| Max Discharge Current | 34.5A (5s) | |
| Internal Resistance | Approx 100mΩ | |
| Discharge Characteristics | 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 0.69A. 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% | |
| Design Floating Life at 20°C | 5 Years | |
| Self Discharge | 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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CE 1188 MH 29410

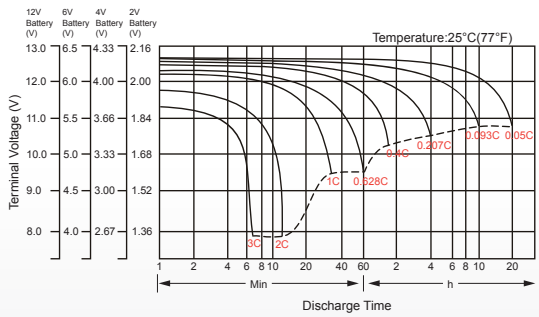
Constant Current Discharge (Amperes) at 25°C (77°F)

| 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 | 4.38 | 3.36 | 2.79 | 2.41 | 1.86 | 1.37 | 1.16 | 0.68 | 0.54 | 0.44 | 0.355 | 0.308 | 0.248 | 0.207 | 0.114 |
| 1.80V/cell | 5.88 | 4.30 | 3.37 | 2.85 | 2.20 | 1.60 | 1.30 | 0.75 | 0.58 | 0.46 | 0.381 | 0.330 | 0.263 | 0.214 | 0.115 |
| 1.75V/cell | 6.63 | 4.72 | 3.68 | 3.06 | 2.28 | 1.66 | 1.36 | 0.77 | 0.59 | 0.47 | 0.391 | 0.339 | 0.268 | 0.220 | 0.116 |
| 1.70V/cell | 7.30 | 5.15 | 3.93 | 3.22 | 2.37 | 1.72 | 1.40 | 0.79 | 0.60 | 0.49 | 0.401 | 0.346 | 0.272 | 0.224 | 0.118 |
| 1.65V/cell | 8.05 | 5.55 | 4.17 | 3.42 | 2.51 | 1.77 | 1.43 | 0.81 | 0.63 | 0.50 | 0.412 | 0.354 | 0.276 | 0.229 | 0.120 |
| 1.60V/cell | 8.88 | 6.03 | 4.46 | 3.64 | 2.65 | 1.84 | 1.44 | 0.84 | 0.65 | 0.52 | 0.426 | 0.362 | 0.279 | 0.231 | 0.121 |

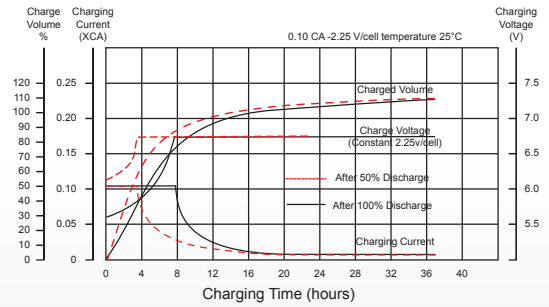
Constant Power Discharge (Watts) at 25°C (77°F)

| 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 | 8.01 | 6.21 | 5.20 | 4.54 | 3.55 | 2.64 | 2.23 | 1.33 | 1.04 | 0.85 | 0.696 | 0.605 | 0.490 | 0.411 | 0.226 |
| 1.80V/cell | 10.6 | 7.85 | 6.20 | 5.29 | 4.12 | 3.04 | 2.49 | 1.44 | 1.12 | 0.90 | 0.743 | 0.647 | 0.518 | 0.423 | 0.227 |
| 1.75V/cell | 11.7 | 8.48 | 6.69 | 5.64 | 4.25 | 3.13 | 2.59 | 1.49 | 1.13 | 0.92 | 0.760 | 0.662 | 0.526 | 0.433 | 0.229 |
| 1.70V/cell | 12.6 | 9.04 | 7.04 | 5.88 | 4.40 | 3.24 | 2.66 | 1.52 | 1.16 | 0.94 | 0.778 | 0.675 | 0.533 | 0.442 | 0.233 |
| 1.65V/cell | 13.7 | 9.66 | 7.43 | 6.20 | 4.60 | 3.29 | 2.70 | 1.53 | 1.21 | 0.97 | 0.797 | 0.688 | 0.540 | 0.450 | 0.236 |
| 1.60V/cell | 14.7 | 10.25 | 7.81 | 6.53 | 4.82 | 3.41 | 2.72 | 1.59 | 1.24 | 1.00 | 0.820 | 0.700 | 0.544 | 0.454 | 0.237 |

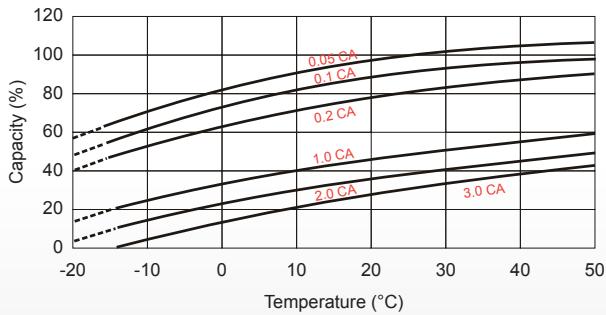
Discharge Characteristics



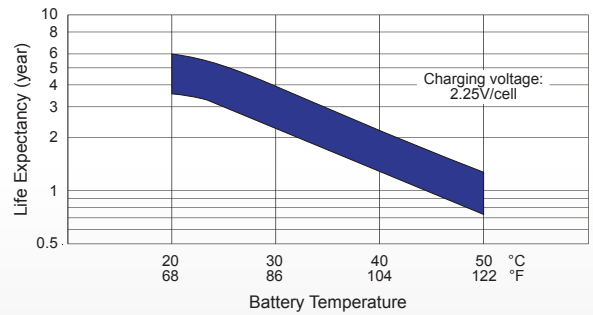
Float Charging Characteristics



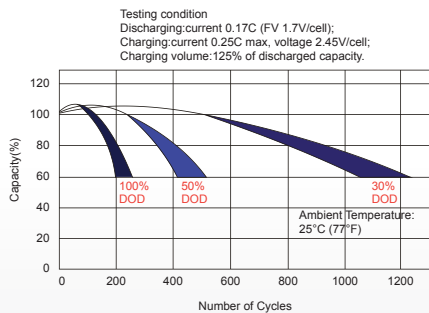
Temperature Effects in Relation to Battery Capacity



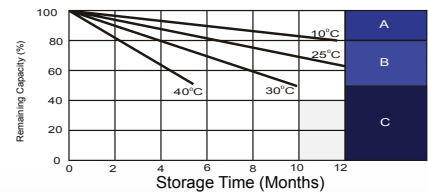
Effect of Temperature on Long Term Float Life



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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