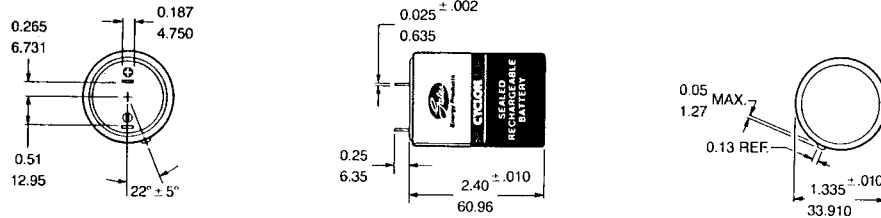


Mechanical Specifications

254916
254924

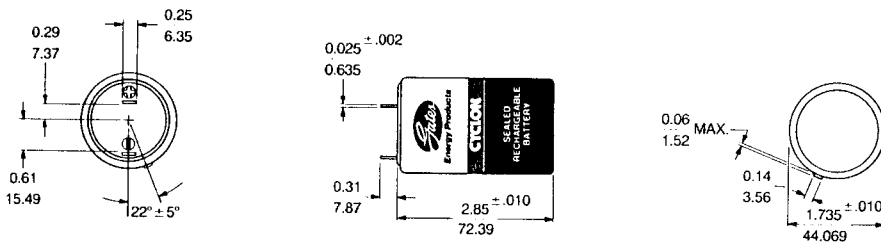
D Cell



Length 2.650 in./67.31 mm
 Width (dia.) 1.335 in./33.91 mm
 Weight 6.4 oz./182 gm
 Tabs 0.187 in. × .025 in.
 4.750mm × 0.635mm
 Tolerance .xx ± .010 .xxx ± .005
 (unless noted)

U.S. Patent Numbers 3,704,173-3,862,861

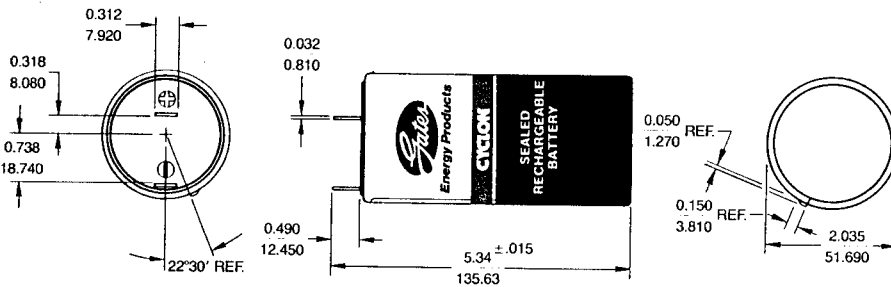
X Cell



Length 3.160 in./80.26 mm
 Width (dia.) 1.735 in./44.07 mm
 Weight 13.0 oz./369 gm
 Tabs 0.250 in. × 0.025 in.
 6.350mm × 0.635mm
 Tolerance .xx ± .010 .xxx ± .005
 (unless noted)

U.S. Patent Numbers 3,704,173-3,862,861

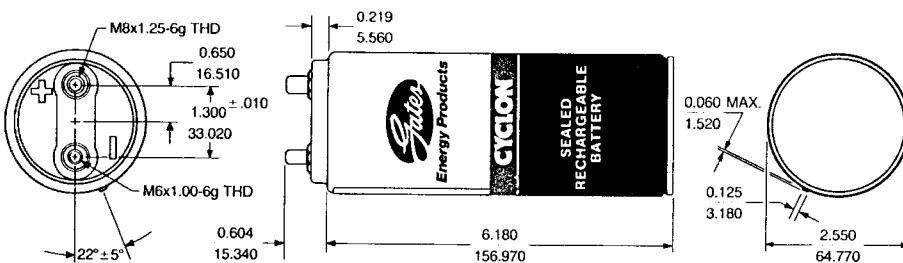
J Cell



Length 5.340 in./135.63 mm
 Width (dia.) 2.035 in./51.69 mm
 Weight 1.85 lb./84 kg
 Tabs 0.312 in. × 0.032 in.
 7.92 mm × 0.81 mm
 Tolerance .xx ± .010 .xxx ± .005
 (unless noted)

U.S. Patent Numbers 3,862,861-3,839,093

BC Cell



Length 6.784 in./172.31 mm
 Width (dia.) 2.550 in./64.77 mm
 Weight 3.490 lbs./1.58 kg
 Studs M6 × 1-6g THD
 M8 × 1.25-6G THD
 Tolerance ± .020 in.
 (unless noted)

U.S. Patent Numbers 3,862,861-3,839,093

All Dimensions = $\frac{\text{Inches}}{\text{Millimeters}}$



Cyclon®

The building blocs providing optimum reliability for customised and specialist battery applications

- Wide temperature operating range (-65°C to +80°C)
- Extremely low self-discharge rate providing up to 2 years shelf-life
- Pure lead design offers highest recharge efficiency
- Very high cycle life delivers up to 300 cycles (100% Depth of Discharge)
- Greatest high-rate power density, per unit weight
- Up to 10-year design life at 25°C*
- Proven in-the-field technology and UL recognised components

*C₅ rate, to 80% of rated capacity



CYCLON® Battery Product Family (All capacities at 10 hr. rate 25°C to 1.67Vpc)

CYCLON® Battery 2V Single Cell:

Products	Capacity	Internal res. of fully charged cell mΩ @ 25°C	Nominal short circuit current for charged cell	DIMENSIONS				
				Diameter mm	Height mm	Height with terminals mm	Weight g	Tabs mm
D cell	2.5Ah	5.0	400A	34.3	61.2	68.1	178.0	4.75x0.64
DT cell	4.5Ah	5.0	400A	34.3	96.0	102.9	274.4	4.75x0.64
X cell	5.0Ah	3.5	570A	44.5	72.9	81.5	362.0	6.35x0.64
E cell	8.0Ah	3.0	665A	44.5	100.1	108.7	489.9	6.35x0.64
J cell	12.0Ah	2.5	800A	51.8	123.2	135.6	839.2	7.92x0.81

CYCLON® Battery 4V Monoblocs:

Products	Capacity	Internal res. of fully charged Monobloc mΩ @ 25°C	Nominal short circuit current for charged cell	DIMENSIONS				
				Diameter mm	Height mm	Height with terminals mm	Weight g	Tabs mm
D cell	2.5Ah	10.0	400A	79.5	46.0	69.9	.36	4.75x0.64
X cell	5.0Ah	7.0	570A	96.5	53.8	76.7	.74	6.35x0.64
E cell	8.0Ah	6.0	665A	96.8	54.1	101.6	.96	6.35x0.64

CYCLON® Battery 6V Monoblocs:

Products	Capacity	Internal res. of fully charged Monobloc mΩ @ 25°C	Nominal short circuit current for charged cell	DIMENSIONS				
				Length mm	Width mm	Height mm	Weight k	Tabs mm
D cell	2.5Ah	15.0	400A	113.8	46.0	69.9	.52	4.75x0.64
X cell	5.0Ah	10.0	570A	139.2	53.8	76.7	.98	6.35x0.64
E cell	8.0Ah	8.0	665A	139.2	54.1	101.6	1.43	6.35x0.64

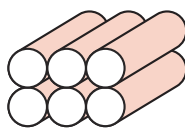
For the entire range of products available, please see the CYCLON® Selection Guide that is available at www.enersys-emea.com

Alternative battery configurations

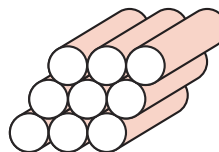
Standard battery configurations are rectangular in overall shape.

A sample of other possible configurations are illustrated.

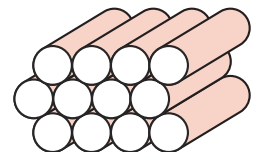
These can be held together with tape (offering the lowest cost and minimum electrical and mechanical protection) or by shrink wrapping. The CYCLON battery Single Cell can be custom configured in virtually an infinite number of designs.



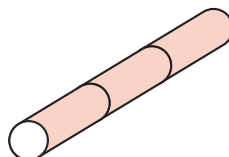
Rectangular



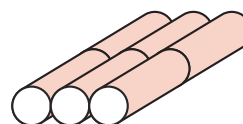
Rhomboid



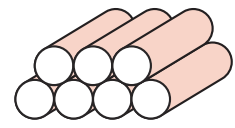
Nested



Tubular



Flat Pack



Trapezoid



www.enersys-emea.com

EnerSys
World Headquarters
 2366 Bernville Road
 Reading, PA 19605
 USA
 Tel: +1 610 208 1991
 +1 800 538 3627
 Fax: +1 610 372 8613

EnerSys EMEA
 EH Europe GmbH
 Löwenstrasse 32
 8001 Zürich
 Switzerland

EnerSys Asia
 152 Beach Road
 Gateway East Building
 Level 11
 189721 Singapore
 Tel: +65 6508 1780

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Typical Specifications (Ta = 25°C)	D Cell – 2.5Ah	X Cell – 5.0Ah	J Cell – 12.5Ah	BC Cell – 25.0Ah
Product Number	0810-0004	0800-0004	0840-0004	0820-0004
Capacity Rating				
20 hour rate	2.7Ah (125mA)	5.2Ah (250mA)	13.0Ah (625mA)	26.0Ah (1.25A)
10 hour rate	2.5Ah (250mA)	5.0Ah (500mA)	12.5Ah (1.25A)	25.0Ah (2.50A)
1 hour rate	1.8Ah (2.5A)	3.2Ah (5A)	9.0Ah (12.5A)	17.5Ah (25.0A)
Cell Power Rating				
Peak Power	(@135A)135W	(@200A)200W	(@350A)325W	(@600A)600W
Energy/Unit Volume (@ C/10 rate)	1.47 W-h/in ³	1.48 W-h/in ³	1.48 W-h/in ³	1.47 W-h/in ³
	0.09 W-h/cm ³	0.09 W-h/cm ³	0.09 W-h/cm ³	0.09 W-h/cm ³
Energy/Unit Weight (@ C/10 rate)	12.5 W-h/lb	12.3 W-h/lb	13.5 W-h/lb	14 W-h/lb
	27.5 W-h/kg	27.17 W-h/kg	29.7 W-h/kg	31 W-h/kg
Internal Resistance (max. for a charged cell)	10x10 ⁻³ ohms <small>Measured on Hewlett-Packard 4328A milliohm meter.</small>	6x10 ⁻³ ohms	4x10 ⁻³ ohms	2.2x10 ⁻³ ohms
Nominal Cell Voltage	2.0V	2.0V	2.0V	2.0V
Cell Temperature Range	Storage Discharge Charge	-65°C to +65°C -65°C to +65°C -40°C to +65°C		
Storage Time	Ta = 0°C Ta = 23°C Ta = 65°C	7,200 days 1,200 days 60 days		
Atmospheric Pressure Range	0-8 Atmospheres			
Cell Charging	Constant Voltage cyclic float Constant Current cyclic, maximum float, maximum	2.40-2.60V 2.30-2.40V C/3 rate for D, X, J cells, C/5 rate for BC cells C/500 rate		
Cycle Life	200-2,000 cycles <small>200 cycles — 100% depth of discharge, one cycle per day (Charge: 2.45V constant voltage, no current limit; Discharge: C/5 rate); 2000 cycles — 25% depth of discharge (Charge: 2.45V/cell for 7.5 hrs. — 2.0A current limit; Discharge: C/2 rate for 30 min); More cycles are available with shallower discharges.</small>			
Expected Float Life	8 years	<small>Based on accelerated test methods, 2.35 volts constant voltage charge at 23°C ambient temperature.</small>		

Handwritten signature

Gates Energy Products, Inc.
1050 South Broadway
Post Office Box 5887
Denver, Colorado 80217 U.S.A.
303 744-4806
TWX 910-931-2658
Telex 45511

Gates Energy Products
12-14 Chandos Road
North Acton
London NW10 6NF England
01-9613993
Telex Acton 8951668 VARLEY G

Performance Characteristics

1 Discharge Characteristics

The discharge current as a function of time curves indicate the high current capabilities for the D, X, J, and BC cells.

2 State of Charge

The open circuit voltage of the Gates cell enables its state of charge to be determined quickly and easily.

3 Storage Characteristics

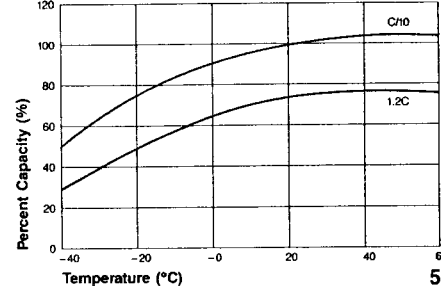
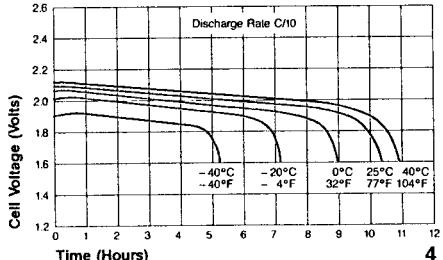
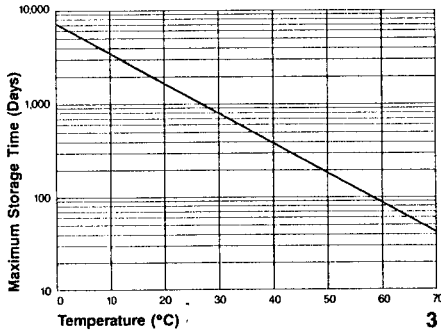
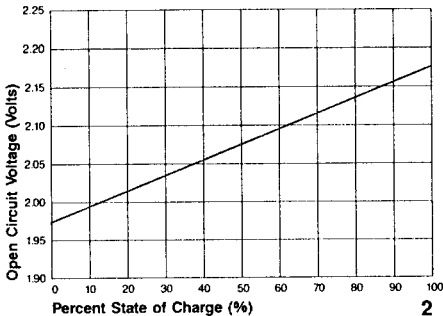
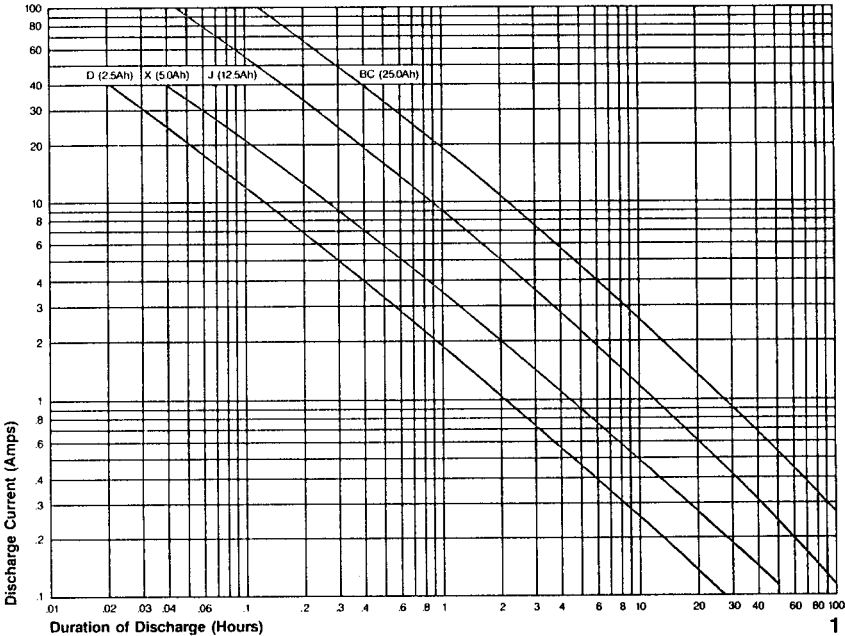
The Gates cell may be stored up to three years at room temperature. Storage time is dependent on the storage temperature as shown in this maximum allowable storage time versus temperature curve for a charged cell.

4 Voltage Regulation

The voltage regulation of the Gates cell is equal to or better than any other commercially available system. Typical curves shown.

5 Temperature Characteristics

This graph illustrates the excellent capacity available in the cell as a function of temperature at two different discharge rates.



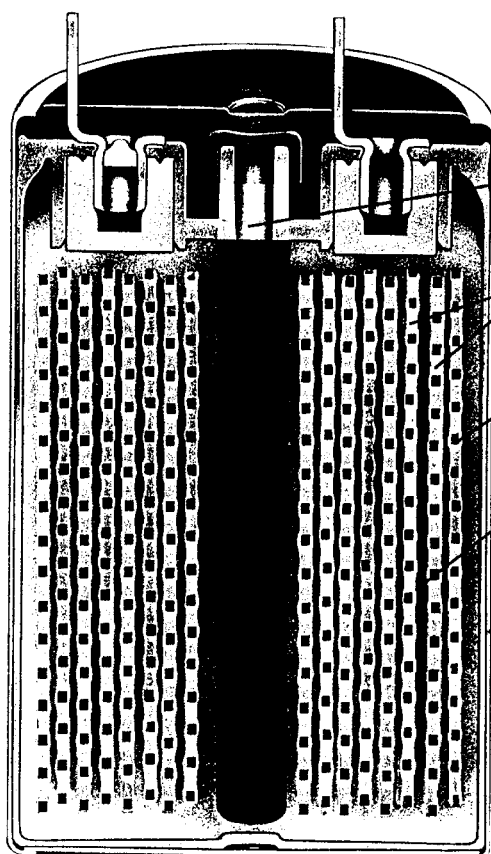
Gates Long-life, Maintenance-free Rechargeable Battery

The dynamic pace of development in electronics today demands stringent requirements of the equipment's power supplies. New technology can present special and often unconventional requirements for the battery.

The unique construction and design flexibility of the Gates Cyclon cell offers innovative solutions for today's battery applications. The problems associated with conventional batteries can be solved with the Gates sealed, rechargeable lead-acid batteries.

The patented starved electrolyte system allows recombination of gases to prevent water loss and the venting of acid vapor effectively ending terminal corrosion present with most lead-acid batteries. The unique starved electrolyte system provides numerous performance advantages over the conventional designs:

- Float life of 8-10 years at 23°C before falling to 80% of rated capacity
- Absolutely no "memory" effects
- Safe charging and discharging in any position, even near electronic circuitries
- A self-resealing safety valve which will vent under overcharge conditions
- Cycle life of 200-2000 cycles, depending on depth of discharge
- Excellent mechanical and vibrational strength
- Impressive low-temperature performance — At -40°C, Gates Cyclon delivers 50% of C/10 room temperature capacity
- Storage life of up to 3 years at room temperature without recharging or damage



Safety Vent

Allows for very abusive overcharge or charger failure without cell rupture.

Positive and Negative Plates

Spirally-wound to yield high discharge capacity, even at high rates.

Pure Lead Grids

Give excellent corrosion resistance and low internal impedance.

Highly Retentive Separator

Retains essentially all of the electrolyte.

Rugged Metal Can Enclosure

No acid or acid vapor is vented from the cell. Gas is recombined directly with the plate materials at up to the C/3 rate of overcharge. The metal can protects the cell from physical damage.