RECHARGEABLE BATTERIES

General Purpose and High Rate Discharge Series

POWER SONIC

Engineered With Vision. Built With Care.

Power-Sonic has more than 38 years of battery industry experience and today our batteries are sold in more than 70 countries world-wide. Since our inception in 1970, our focus has been the design, manufacture and marketing of rechargeable batteries, specifically:

- Sealed lead-acid (SLA), also called valve regulated lead-acid (VRLA) batteries
- Powersport batteries
- Sealed nickel-cadmium (NiCd) and nickel-metal hydride (NiMH) batteries
- NiCd and NiMH configured packs (cell assemblies)
- SLA battery chargers

Our products are widely used in an ever broadening range of electronic and industrial applications. Our batteries continue to be used wherever cost effective and reliable DC power is required, be it as the principal power or standby power source.

Our aim is the ongoing improvement of our existing products, coupled with the development of new tailored products, to meet the ever increasing needs for stand alone power. Our advanced engineering techniques and state-of-the-art manufacturing processes ensure that we remain on the cutting edge of battery technology. These skills, coupled with our selection of the finest raw materials, allow us to produce batteries combining superior performance and value.

Providing our customers with reliable, yet economical, products is the cornerstone of our mission.

Features

Sealed/Maintenance-Free
The valve regulated, spill-proof construction allows trouble-free, safe operation in any position. There is no need to add electrolyte, as gases generated during overcharge are recombined in a unique “oxygen cycle.”

Valve Regulated Design
Our batteries incorporate a series of one-way low pressure valves. These self sealing valves allow the venting of any excess gasses that may be produced in the battery due to severe overcharging. Valve regulated batteries should never be recharged inside a sealed container.

Design Flexibility
Batteries may be used in series and/or parallel to obtain choice of voltage and capacity. Due to recent design breakthroughs, the same battery may be used in either cyclic or standby applications. Over 60 models are available to choose from.

Compact
Power-Sonic batteries use state-of-the-art design, high grade materials, and a carefully controlled plate-making process to provide excellent output per cell. The high energy density results in superior power/volume and power/weight ratios.

Rugged Construction
The high impact resistant battery case is made of non-conductive ABS plastic to UL94-HB. This material imparts very good resistance to shock, vibration, chemicals and heat. Certain models feature flame retardant (FR) cases/covers to UL94 V-O.

Wide Operating Temperature Range
Power-Sonic batteries may be discharged over a temperature range of -40°C to +60°C (-40°F to +140°F) and charged at temperatures ranging from -40°C to +50°C (-40°F to +122°F).

Long Service Life
Under normal operating conditions, four or five years of dependable service life can be expected in stand-by applications, or between 200 and 1000 charge/ discharge cycles depending on the average depth of discharge.

Deep Discharge Recovery
Special separators, advanced plate composition, and a carefully balanced electrolyte system have greatly improved the ability to recover from excessively deep discharge.

Lead Calcium Plates
Heavy duty lead calcium plates provide an extra margin of performance and life in both cyclic and float applications and give unequaled recovery from deep discharge.

Economical
The high watt-hour per dollar value is made possible by the materials used in a sealed lead-acid battery: they are readily available and low in cost.

Operation in any Orientation
Our SLA batteries can be discharged in any orientation, without reduction in performance or leakage of electrolyte.

High Rate Discharge
Low internal resistance allows discharge currents of up to ten times the battery’s rated capacity. Relatively small batteries may thus be specified in applications requiring high peak currents.

Long Shelf Life
A low self discharge rate allows storage of fully charged batteries for extended periods of time before charging is required. Lower storage temperatures further enhance shelf life characteristics.

General Purpose Design

* FR: UL94 V-0 flame retardant case & cover

Model	Nominal Voltage V	Nominal Capacity A.H.	Current @ 20-hr. rate mA	Length		Width		Height		Ht. Over Terminal		Weight		Standard Terminals
				in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.	
PS-260	2	6.0	300	1.97	50	1.34	34	3.94	100	4.13	105	0.89	0.40	F1
PS-445	4	4.5	225	1.89	48	2.09	53	3.70	94	3.86	98	1.30	0.59	F2
PS-490	4	9.0	450	4.01	102	1.73	44	3.74	95	4.02	102	2.20	1.00	F2
PS-4100	4	10.0	500	4.01	102	1.97	50	3.70	94	3.85	98	2.50	1.13	F1
PS-605	6	0.5	25	2.24	57	0.55	14	1.97	50	1.97	50	0.20	0.09	WL
PS-610	6	1.1	55	2.00	51	1.65	42	2.00	51	2.20	56	0.44	0.20	F1
PS-612	6	1.4	70	3.82	97	0.94	24	2.00	51	2.20	56	0.66	0.30	F1
PS-621	6	2.0	100	1.69	43	1.46	37	2.99	76	2.99	76	0.75	0.34	F1
PS-628	6	2.9	145	2.60	66	1.30	33	3.86	98	4.06	103	1.30	0.59	F1
PS-630	6	3.5	175	5.28	134	1.34	34	2.35	60	2.56	65	1.37	0.62	F1
PS-632	6	3.5	175	2.60	66	1.30	33	4.65	118	4.80	122	1.65	0.83	F1
PS-640	6	4.5	225	2.76	70	1.86	47	3.94	100	4.25	108	1.60	0.73	F1
PS-650LS & LF	6	5.0	250	2.64	67	2.64	67	3.94	100	4.64	118	1.80	0.82	F1 or SP
PS-665	6	6.5	325	3.86	98	2.20	56	3.78	96	4.02	102	2.70	1.22	FP
PS-670	6	7.0	350	5.95	151	1.34	34	3.70	94	3.94	100	2.42	1.10	F1
PS-682	6	9.0	450	3.86	98	2.20	56	4.65	118	4.72	120	3.20	1.45	F1
PS-6100	6	12.0	600	5.95	151	2.00	51	3.70	94	3.86	98	4.30	1.95	F1 or F2
PS-6120FP	6	13.0	650	4.25	108	2.80	71	5.55	141	5.55	141	4.80	2.18	FP
PS-6200	6	20.0	1000	6.18	157	3.27	83	4.92	125	4.92	125	7.10	3.22	NB1
PS-6360	6	36.0	1800	6.25	159	3.35	85	6.50	165	6.93	176	12.10	5.49	F2 or NB1
PS-62000	6	210.0	10500	12.05	306	6.65	169	8.65	220	8.96	228	63.93	29.00	T8
PS-832	8	3.2	160	5.29	134	1.42	36	2.49	63	2.70	69	1.58	0.72	F1
PS-1208	12	0.8	40	3.78	96	0.98	25	2.44	62	n/a	n/a	0.77	0.35	WL
PS-1212	12	1.4	70	3.78	96	1.69	43	2.04	52	2.28	58	1.20	0.54	F1
PS-1220	12	2.5	125	7.00	178	1.38	35	2.36	60	2.56	65	2.10	0.95	F1
PS-1221S	12	2.0	100	5.91	150	0.80	20	3.52	89	n/a	n/a	1.60	0.73	F1/0
PS-1223	12	2.3	115	7.17	182	0.94	24	2.40	61	2.40	61	1.50	0.68	PC
PS-1227	12	2.9	145	3.11	79	2.20	56	3.90	99	4.13	105	2.40	1.09	F1
PS-1228	12	2.8	140	5.24	133	1.30	33	3.82	97	4.09	104	2.60	1.18	F1
PS-1229	12	2.9	145	7.00	178	1.38	35	2.36	60	2.60	66	2.30	1.04	F1
PS-1230	12	3.4	170	5.24	133	2.64	67	2.36	60	2.60	66	2.90	1.32	F1
PS-1238	12	3.8	190	7.68	195	1.85	47	2.91	74	2.99	76	3.50	1.59	F1
PS-1250	12	5.0	250	3.54	90	2.76	70	3.98	101	4.21	107	3.50	1.59	F1 or F2
PS-1270	12	7.0	350	5.95	151	2.56	65	3.70	94	3.86	98	4.80	2.18	F1 or F2
PS-1280	12	8.0	400	5.95	151	2.56	65	3.72	95	3.94	100	5.51	2.50	F1 or F2
PS-1282L	12	9.0	450	7.72	196	2.20	56	4.65	118	4.65	118	6.90	3.13	F1
PS-1282S	12	9.0	450	3.86	98	4.40	112	4.65	118	4.65	118	6.90	3.13	F1
PS-1290	12	9.0	450	5.95	151	2.56	65	3.70	94	3.86	98	6.00	2.72	F2 or NB1
PS-12100	12	12.0	600	5.95	151	4.00	102	3.70	94	3.86	98	8.14	3.69	F1 or F2
PS-12100H	12	10.5	525	5.94	151	2.56	65	4.40	112	4.67	118	7.23	3.28	F2
PS-12120	12	12.0	600	5.95	151	3.86	98	3.70	94	3.94	100	7.92	3.59	F2
PS-12120L	12	12.0	600	8.45	215	2.75	70	5.75	146	5.75	146	9.50	4.32	FP
PS-12140	12	14.0	700	5.95	151	3.86	98	3.70	94	3.94	100	9.00	4.09	F2
PS-12180	12	18.0	900	7.13	181	3.00	76	6.59	167	6.59	167	12.60	5.72	F2, NB2, T12
PS-12200	12	20.0	1000	7.13	181	3.00	76	6.57	167	6.50	165	13.20	6.00	NB1
PS-12260	12	26.0	1300	6.56	167	6.97	177	4.92	125	4.92	125	17.00	7.71	F2, NB2, T12
PS-12280	12	28.0	1400	6.50	165	4.92	125	6.97	177	6.97	177	20.10	9.14	NB1
PS-12330	12	33.0	1650	7.72	196	5.14	131	6.22	158	7.00	178	21.40	9.73	NB3
PS-12350	12	35.0	1750	7.72	196	5.14	131	6.22	158	7.00	178	23.40	10.64	NB3 or T6
PS-12400	12	40.0	2000	7.76	197	6.50	165	6.69	170	6.69	170	29.10	13.20	NB4
PS-12550	12	55.0	2750	9.04	230	5.45	138	8.15	207	8.98	228	36.00	16.33	U or T6
PS-12750	12	75.0	3750	10.25	260	6.60	168	8.15	207	8.98	228	50.60	22.95	U or T6
PS-121000	12	100.0	5000	12.00	305	6.60	168	8.15	207	8.98	228	68.00	30.84	U or T6
PS-121100	12	110.0	5500	13.00	330	6.73	171	8.35	212	8.66	220	69.50	31.52	T11
PS-121400FR*	12	140.0	7000	13.50	343	6.73	171	10.80	274	11.15	283	99.00	44.91	T11

High-Rate Discharge Design / PSH Series

* FR: UL94 V-0 flame retardant case & cover

Model	Nominal Voltage V	Nominal Capacity A.H.	Current @ 20-hr. rate mA	Length		Width		Height		Ht. Over Terminal		Weight		Standard Terminals
				in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.	
PSH-655 FR*	6	5.5	275	2.76	70	1.85	47	3.94	100	4.17	106	2.10	0.95	F1
PSH-1255 FR*	12	6.0	300	3.54	90	2.76	70	3.98	101	4.21	107	4.00	1.81	F2
PSH-1280 FR*	12	8.5	425	5.94	151	2.56	65	3.70	94	3.86	98	6.00	2.72	F2
PSH-12100 FR*	12	10.5	525	5.94	151	2.56	65	4.37	111	4.61	117	7.00	3.18	F2
PSH-12180 FR*	12	21.0	1050	7.14	181	3.03	77	6.59	167	6.59	167	13.20	5.99	NB2

High-Rate Discharge, Long Life Design / PHR Series

* FR: UL94 V-0 flame retardant case & cover

10-year design life in standby service.

Model	Nominal Voltage V	Watts per Cell @ 15-min.	Rated Capacity 20-hr.(A.H.)	Length		Width		Height		Ht. Over Terminal		Weight		Standard Terminals
				in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.	
PHR-12100*	12	93	27.0	6.46	164	4.92	125	6.89	175	6.50	165	17.4	7.9	T12
PHR-12150*	12	150	36.0	7.68	195	5.12	130	6.46	164	6.57	167	22.5	10.2	T6
PHR-12200*	12	225	58.0	9.02	229	5.43	138	7.87	200	7.99	203	38.1	17.3	T6
PHR-12300*	12	324	82.0	10.20	259	6.61	168	8.19	208	8.31	211	52.5	23.8	T6
PHR-12350*	12	370	95.0	12.00	305	6.61	168	8.15	207	8.27	210	60.4	27.4	T6
PHR-12400*	12	430	110.0	12.81	326	6.69	170	8.39	213	8.50	216	69.2	31.4	T8
PHR-12500*	12	492	150.0	13.19	335	6.77	172	10.83	275	10.94	278	92.6	42.0	T8

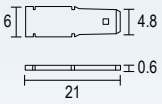
Terminal Options

F1 — **FASTON**
0.187" x 0.032"
quick disconnect tabs.

F2 — **FASTON**
0.250" x 0.032"
quick disconnect tabs

FP — **FASTON POLARIZED**
Positive: "F2", Negative: "F1"

F1/0



SP — **SPRING TERMINALS**
Fully collapsible positive
and negative contacts

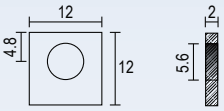
TH — **TOY BATTERY CONNECTORS**
H-connector PS-6120 TH

TS — **TOY BATTERY CONNECTORS**
S-connector PS-6120 TS

PC — **PRESSURE CONTACTS**

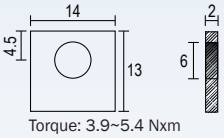
WL — **INSULATED WIRE LEADS**
- Molex Housing 5264-02 & 5263-PBT plug on PS-605
- AMP Housing 1-480318-0 & 8116-1 on PS-1208

NB1



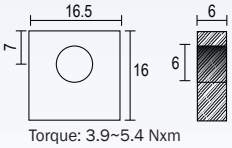
Torque: 2.0~3.0 Nxm

NB2



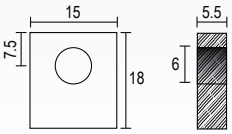
Torque: 3.9~5.4 Nxm

NB3



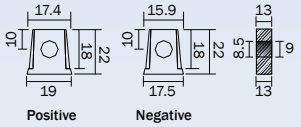
Torque: 3.9~5.4 Nxm

NB4



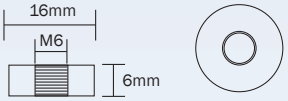
Torque: 3.9~5.4 Nxm

U



Torque: 11.0~14.7 Nxm

T6 — **THREADED INSERT - 6mm STUD**

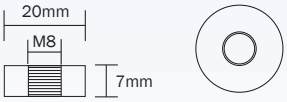


Torque: 3.9~5.4 Nxm

T8 — **THREADED INSERT - 6mm STUD**

Torque: 3.9~5.4 Nxm

T11 — **THREADED INSERT - 8mm STUD**

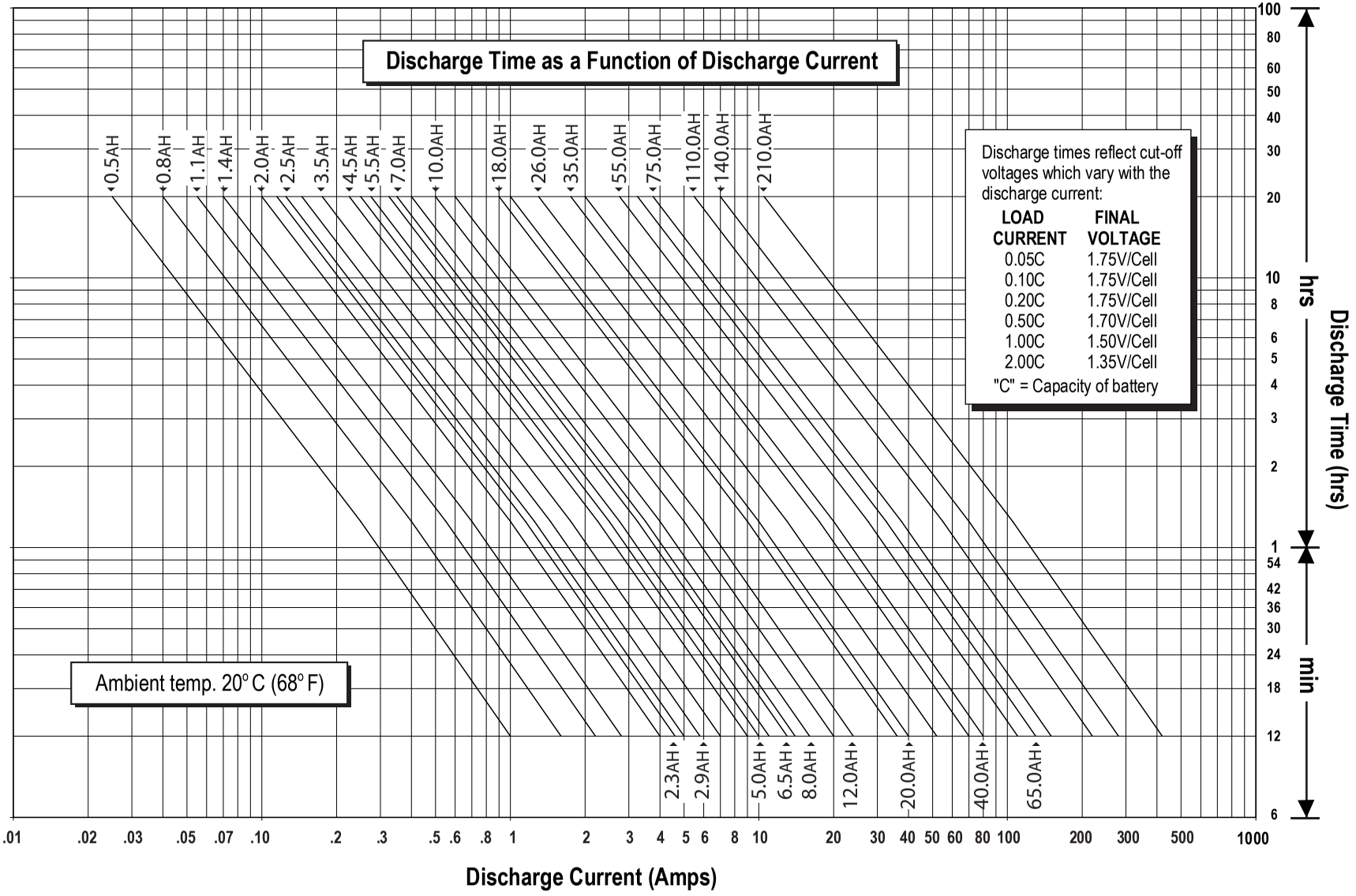


Torque: 11.0~14.7 Nxm

T12 — **THREADED INSERT - 5mm STUD**

Torque: 2.0~3.0 Nxm

All data subject to change without notice.



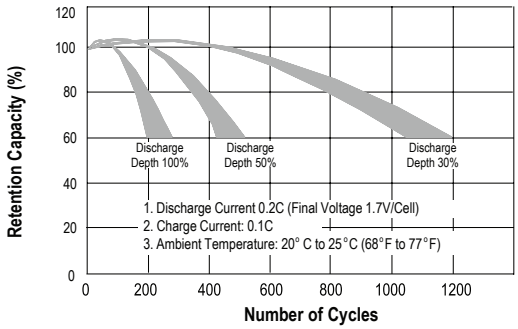
Capacity Variation By Current Load

When a battery discharges current at a constant rate, its capacity changes according to the amperage load. Capacity increases when the discharge current is less than the 20-hour rate and decreases when the current is higher.

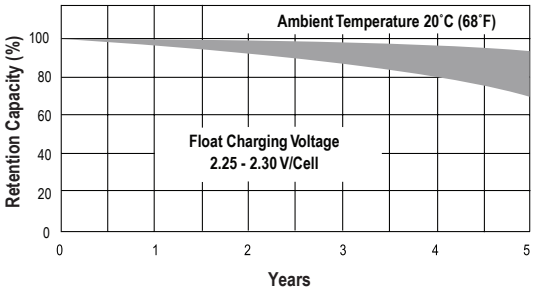
The graph above shows capacity curves for major Power-Sonic battery models with different ampere-hour ratings. Amperage is on the horizontal scale and the time elapsed is on the vertical scale; the product of these values is the capacity. Proper selection of the battery for a specific application can be made from this graph if the required time and current are known. For example, to determine the proper capacity of a battery providing 3 amps for 30 minutes, locate the intersection of these values on the graph. The curve immediately above that point represents the battery which will meet the requirement.

Performance Characteristics

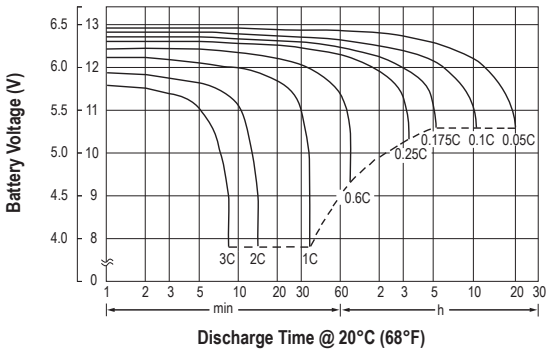
Life Characteristics in Cyclic Use



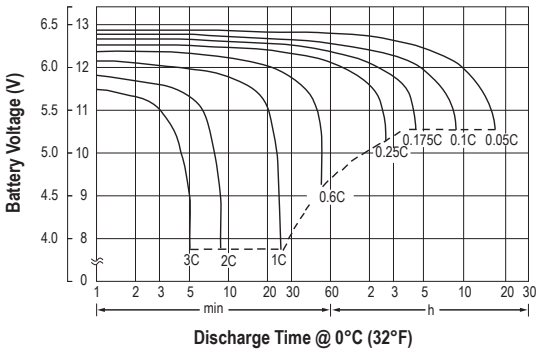
Life Characteristics in Stand-by Use



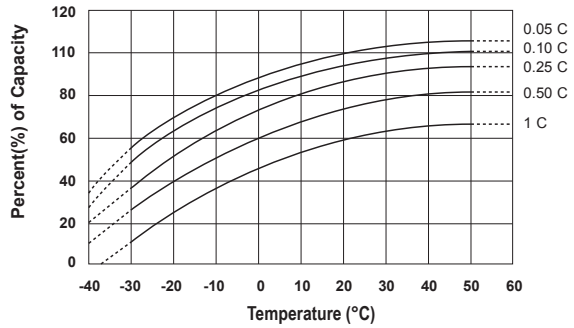
Characteristic Discharge Curves



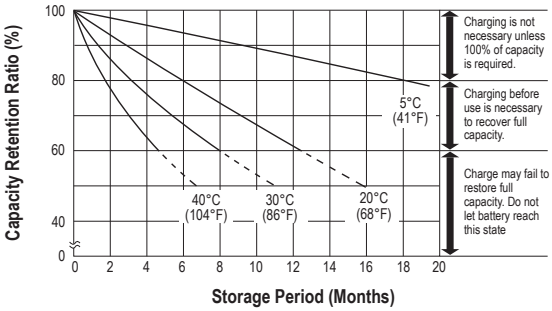
Characteristic Discharge Curves



Effect of Temperature on Capacity



Self-Discharge Characteristics



Charging

Cycle Applications: Limit initial current to 0.30C (C is the nominal amp hour capacity of the battery) or 30% of rated capacity. Charge until battery voltage (under charge) reaches 2.45 volts per cell at 68°F (20°C). Hold at 2.45 volts per cell until current drops to approximately 0.01C ampere. Battery is fully charged under these conditions, and charger should either be disconnected or switched to "float" voltage.

"Float" or "Stand-by" Service: Hold battery across constant voltage source of 2.25 to 2.30 volts per cell continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Application Notes

Continuous over- or undercharging is the single worst enemy of a lead-acid battery. Caution should be exercised to insure that the charger is disconnected after cycle charging, or that the float voltage is set correctly.

Because there is a chance of off-gassing hydrogen and oxygen if the battery is overcharged, it is important to provide adequate air circulation. Never charge or discharge a battery in a hermetically sealed enclosure.

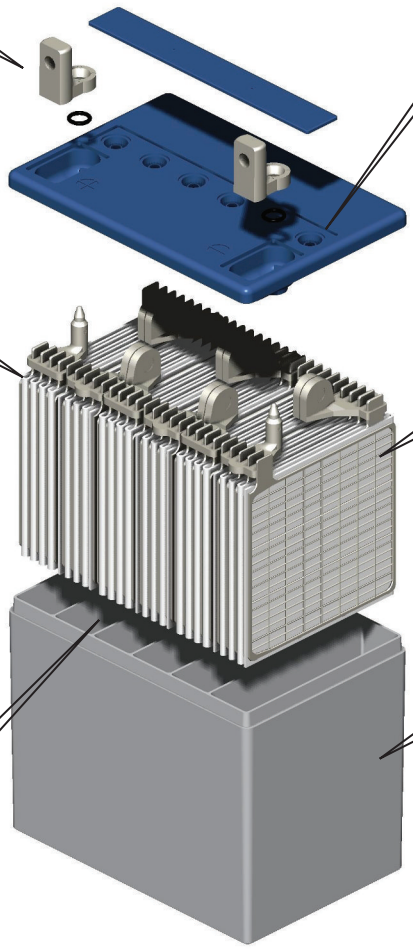
Batteries should not be stored in a discharged state (or in a hot place). If a battery is discharged for some time it may not readily take a charge. To overcome this, leave the charger connected and the battery should eventually begin to accept a charge.

Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged within 6 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation. To prolong shelf life without charging, store batteries at 50°F (10°C) or less.

Battery Construction

Terminals
Depending on the model, batteries come either with AMP Faston type terminals made of tin plated brass, post type terminals of the same composition with threaded nut and bolt hardware, or heavy duty flag terminals made of lead alloy. A special epoxy is used as sealing material surrounding the terminals.

Relief valve
In case of excessive gas pressure build-up inside the battery, the relief valve will open and relieve the pressure. The one-way valve not only ensures that no air gets into the battery where the oxygen would react with the plates causing internal discharge, but also represents an important safety device in the event of excessive overcharge. Vent release pressure is between 2-6 psi; the seal ring material is neoprene rubber.



Plates (electrodes)
Power-Sonic utilizes the latest technology and equipment to cast grids from a lead-calcium alloy free of antimony. The small amount of calcium and tin in the grid alloy imparts strength to the plate and guarantees durability even in extensive cycle service. Lead dioxide paste is added to the grid to form the electrically active material. In the charged state, the negative plate paste is pure lead and that of the positive lead dioxide. Both of these are in a porous or spongy form to optimize surface area and thereby maximize capacity. The heavy duty lead calcium alloy grids provide an extra margin of performance and life in both cyclic and float applications and give unparalleled recovery from deep discharge

Separators
Power-Sonic separators are made of non-woven glass fiber cloth with high heat and oxidation resistance. The material further offers superior electrolyte absorption and retaining ability, as well as excellent ion conductivity.

Electrolyte
Immobilized dilute sulfuric acid: H_2SO_4.

Container & case sealing
Case and lid material is ABS, high impact, resin with high resistance to chemicals and flammability. Case and cover are made of non-conductive ABS plastic to UL94-HB or UL94 V-0. Depending on the model the case sealing is ultrasonic, epoxy or heat seal.

Typical Applications

Power Sources
- Back-up power
- Computers
- UPS

Communications
- GPS equipment
- Marine communications
- Telecommunication systems

Lighting
- Emergency lighting
- Exit lights
- Hand held lights

Security Systems
- Burglar / Fire alarms
- Monitoring alarms
- Metal detectors

Automotive
- Electronic memory accessories
- Braking / Fuel systems

Recreation
- Fish finders
- Ride-on toys
- Electrical bicycles/scooters

Portable Equipment
- Audio-visual devices
- Test and measuring equipment
- Consumer electronics

Monitoring Equipment
- Fiber-optic test equipment
- Scientific instruments
- Weather instrumentation

Agricultural
- Livestock/game feeders
- Containment fencing

Military
- Aerospace
- Aircraft instrumentation
- Fire control systems

Miscellaneous
- Invisible fences
- DC power lifts
- Floor scrubbers
- Laser products
- Robotics
- Advertising signs

Battery Chargers

Power-sonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for “C-Series Switch Mode Chargers” and “Transformer Type A and F Series”. Please contact our technical department for advice if you have difficulty in locating suitable models.

Quality Is Always #1

We employ IQC, PQC and ISO 9001 Quality Management Systems to test materials, monitor manufacturing processes and evaluate finished products prior to shipment. All our batteries are 100% tested with advanced computer equipment prior to being released for sale.

Power-Sonic management and staff are committed to providing the best possible service to satisfy our customer's needs, and fulfill our undertaking to deliver top grade products on time and at a competitive price.

Certificate of UL

Certificate of CE

Certificate of ISO9001

Our batteries are manufactured to international standards including JIS, DIN and IEC and have UL and CE certification.

For inquiries and orders, contact:

MICROBATTERY.COM
7350 NW 35th Terrace, Miami, Florida 33122
Customer Service: 1-866-999-2355
Phone: 1-305-371-9200 Fax: 1-305-371-9400
www.microbattery.com

power-sonic.com