



PSL-SH-12110 12.8V 11.4 AH

Rechargeable Lithium Battery
PSL SH – High-Rate Series

BATTERY FEATURES

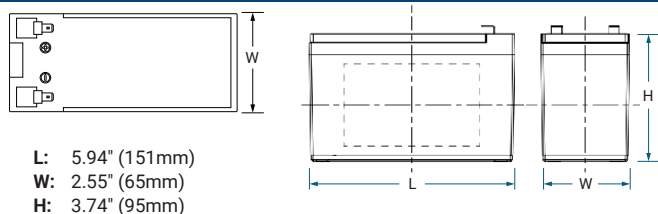
- Super safe lithium iron phosphate (LiFePO₄) chemistry reducing the risk of explosion or combustion due to high impact, over-charging or short circuit situation
- Protection Circuit Module (PCM) controls the parameters of the battery to provide optimum safety by protecting against over-charging and over-discharging
- PCM contains a balance circuit, optimizing battery performance
- Higher voltage capability through serial connections
- Delivers twice the power of lead acid batteries, even at high discharge rates, while maintaining constant power
- Faster charging and lower self-discharge
- Up to 10 times more cycles than lead acid batteries
- Compact and only 40% of the weight of comparable lead acid batteries
- Rugged impact resistant ABS case

APPROVALS

- UL 1642 cell certificate
- IEC 62133 cell certificate
- UN 38.3 certified
- ISO9001:2015 - Quality management systems



DIMENSIONS: inch (mm)



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PROTECTION CIRCUIT MODULE

The PSL-SH Series comes with a protection circuit module which monitors current and voltages during charge and discharge. This protects the battery from over-charge and over-discharge.

The PCM includes a balancing circuit that controls all cell voltages in the battery, making sure they are constantly at the same voltage level, optimizing battery capacity.

SERIES CONNECTION CAPABLE

The SH line allows for up to 2 batteries connected in series. The batteries must be matched at voltage levels, capacity, state of charge, date of manufacturing, and chemistry.

APPLICATIONS

- Medical
- Solar
- Wind
- Mobility
- Data Center
- Transport
- Sports & Recreation
- Utility

PERFORMANCE SPECIFICATIONS

Nominal Voltage	12.8 V
Rated Capacity	11.4 AH at a Constant Current of 0.2C to 10V
Stored Energy	145.9 Wh
Cycle Life (@DOD100%)	2000 Cycles
Approximate Weight	2.87 lbs. (1.3 kg)
Internal Resistance	≤50 mΩ
Max Charge Current	11.4 A
Max Discharge Current	20 A
Charge Cut-off Voltage	14.6 V
Recommended Discharge Cut-Off Voltage	10 V
Series & Parallel Connection	2 batteries can be connected in series, parallel connection not recommended
Operating Temperature Range	
Charge	32°F (0°C) to 113°F (45°C)
Discharge	14°F (-10°C) to 140°F (60°C)
Recommended	59°F (15°C) to 95°F (35°C)
Self-Discharge Rate	3%/month
Long Term Storage	Charge every 6 months or as soon as OCV is 12.8V
Power Sonic Chargers	Contact us for information on a suitable charger
Life Expectancy (years)	5 years at one cycle per day
Short Circuit Protection	Automatically recover after removal of short
Dimensional Tolerances	+/- 0.04 in. (+/- 1mm) for length and width +/- 0.08 in. (+/- 2mm) for height dimensions
Terminal Type	F2

CAPACITY OF LiFePO4 vs. LEAD ACID AT VARIOUS CURRENTS OF DISCHARGE



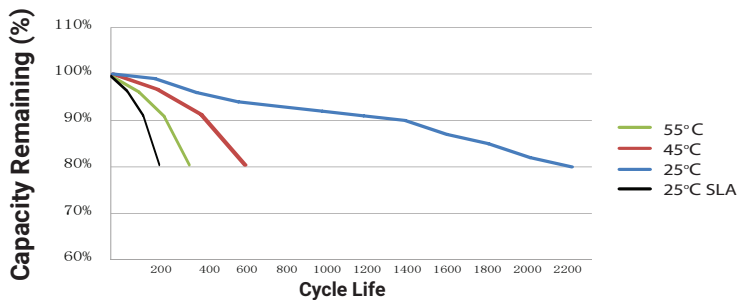
DISCHARGE VOLTAGE PROFILES AT VARIOUS RATES 25°C AMBIENT TEMPERATURE



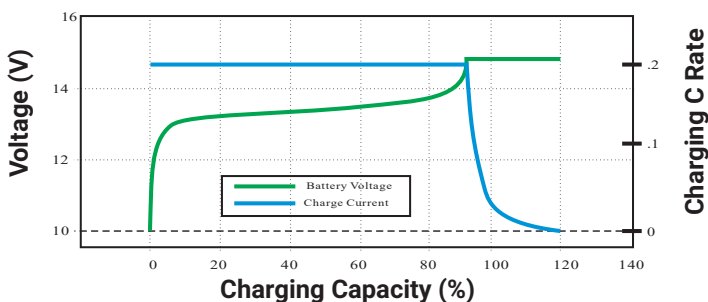
DISCHARGE VOLTAGE PROFILES AT 0.5C DISCHARGE RATE VARIOUS AMBIENT TEMPERATURES



CYCLE LIFE vs. VARIOUS TEMPERATURE 0.2C CHARGE/0.5C DISCHARGE @ 100% DOD



CHARGING CHARACTERISTICS (0.2C AMP @ 25°C)



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BENEFITS OF LITHIUM

Lithium offers several performance benefits versus its sealed lead acid (SLA) equivalent. A lithium battery's capacity is independent from the discharge rate and provides constant power throughout its discharge. The degradation of a lithium battery at a high temperature is significantly reduced in comparison to SLA.

Lithium has ten times the cycle life as SLA at room temperature. Even at an elevated temperature, lithium still has increased cycle life over SLA at room temperature.

Lastly, Lithium charging follows a similar charging profile as SLA, Constant Current Constant Voltage (CC/CV). However, lithium can be charged faster, without the need for a maintenance float charge.

PCM TECHNICAL SPECIFICATIONS

Over-charge	
Over-charge voltage for each cell	3.80 V
Over-charge release voltage for each cell	3.60 V
Over-charge release method	Protection releases when all cell voltages drop below the over-charge release voltage
Over-discharge	
Over-discharge voltage for each cell	2.00 V
Over-discharge release voltage for each cell	2.50 V
Over-discharge release method	Protection releases upon charging
Over current	
Discharge over current protection	80-100 A
Over-current delay time	50-150 ms
Over current release method	Remove load for the over-current protection to release
Battery temperature	
Over-temperature protection	65° C
Release temperature	48° C
Short circuit protection	
Function condition	External short circuit
Short circuit delay time	200-800 ms
Release condition	Remove load for the short circuit protection to release

FURTHER INFORMATION

Please refer to our website www.power-sonic.com or email us at technical-support@power-sonic.com for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.