

Li-SOCl₂ Batteries

Lithium thionyl chloride batteries have a lithium metal anode and thionyl chloride(SOCl₂) as active cathode; it has the highest specific capacity and specific energy in all practical chemical power sources and is widely used as a new energy system in electronic devices.

Battery structure



Applications

- ⊙ AMR utility metering (Electricity, Gas, Water, Heat meter)
- ⊙ GPS Tracking, RFID
- ⊙ Alarms and security wireless devices
- ⊙ Mobile asset tracking
- ⊙ TPMS, ETC, E-call
- ⊙ Alarms and security wireless
- ⊙ Professional electronics, Medical
- ⊙ Military radio communication

Key Feature

- ⊙ High and Stable Operating Voltage; nominal voltage 3.6V and the operating voltage throughout the whole lifetime can maintain significant smooth.
- ⊙ Wide Operating Temperature Range: -60°C to +85°C.
- ⊙ High Energy Density: 650wh/kg and 1280wh/dm³, the highest among the primary cell.
- ⊙ Low self-discharge rate : (less than ≤1% per year at 20°C). So it can store above 10 years at ambient temperature.
- ⊙ High safety, non-polluting, meeting UL and UN-related safety requirements; without mercury, cadmium and other heavy metals.



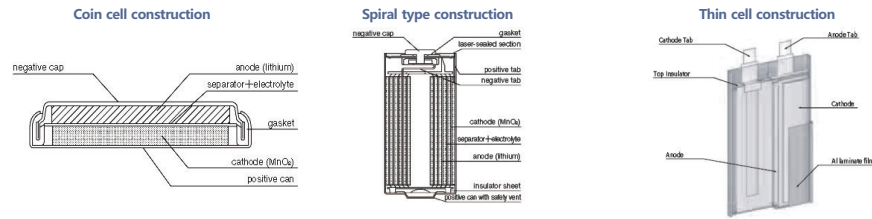
Product list

Product list	Size	Nominal voltage	Nominal capacity	Max. continuous current	Max. pulse current	Operating temperature	Max. outside dimension	Weight
		(V)	(mAh)	(mA)	(mA)	(°C)	(mm)	/g
Cylindrical (Bobbin type)								
ER14250	1/2AA	3.6	1200	15	50	-60~+85°C	14.5x25.4	10
ER14335	2/3AA	3.6	1650	35	75	-60~+85°C	14.5x33.5	12
ER14505	AA	3.6	2700	50	150	-60~+85°C	14.5x50.5	19
ER17505	A	3.6	3600	130	180	-60~+85°C	17.5x50.5	26
ER18505	A	3.6	4000	130	180	-60~+85°C	18.5x50.5	28
ER26500	C	3.6	8500	150	300	-60~+85°C	26.2x50.0	52
ER34615	D	3.6	19000	230	400	-60~+85°C	33.1x61.5	100
ER341245	DD	3.6	35000	420	500	-60~+85°C	33.1x124.5	195
Cylindrical (Bobbin pulse type)								
ER14250V	1/2AA	3.6	1200	15	100	-60~+85°C	14.5x25.4	10
ER14505V	AA	3.6	2600	100	200	-60~+85°C	14.5x50.5	19
Cylindrical (Bobbin type, safe-plus series)								
ER14250H	1/2AA	3.6	1200	15	50	-60~+85°C	14.5x25.4	10
Wafer cells								
ER22G68	BEL	3.6	400	5	20	-60~+85°C	22.6 x 8.0	6
ER32L65	1/10D	3.6	1000	10	50	-60~+85°C	32.9 x7.1	19
ER32L100	1/6D	3.6	1700	10	50	-60~+85°C	32.9 x10.5	24
Prismatic cells								
EF651615	LTC-3PN	3.6	400	5	20	-60~+85°C	16.8x15.8x6.8	5
EF651620	LTC-5PN	3.6	550	10	20	-60~+85°C	16.8x20.1x6.8	6
EF651625	LTC-7PN	3.6	800	10	30	-60~+85°C	16.8x25.8x6.8	8
EF702338	LTC-16N	3.6	1600	20	50	-60~+85°C	23.3x38.3x7.2	19
Profession TPMS cells(coin and prismatic cell)								
ER1860		3.6	280	5	15	-60~+125°C	18.2x6.5	5.5
ER2450T		3.6	500	5	20	-60~+125°C	24.5x6.2	9
EF651615T	LTC-3PN	3.6	400	5	20	-60~+125°C	16.8x25.8x6.8	5
EF651625T	LTC-7PN	3.6	750	10	30	-60~+125°C	16.8x25.8x6.8	8

Li-MnO₂ Batteries

Lithium manganese dioxide cells have a metallic Lithium cathode (the lightest of all the metals) and a solid manganese dioxide anode, immersed in a non-corrosive, non-toxic organic electrolyte. They deliver a voltage of 3V and are cylindrical, coin and soft pack in shape

Battery structure



Applications

- ⊙ Motherboard, RTC/CMOS power
- ⊙ Utility meter (Electricity, Gas, Water Meter)
- ⊙ Remote control, RKE (Remote Keyless Entry)
- ⊙ Medical equipment ,Healthcare equipment
- ⊙ Hazardous gas sensor, Temperature and Humidity monitor
- ⊙ Logistics identification and tracking systems
- ⊙ Electronic access control systems
- ⊙ ETC(Electronic Toll Collection),TPMS
- ⊙ Smoke detector, PIR
- ⊙ Electronic tags, Secure card
- ⊙ High-end electronic toys ,RC model
- ⊙ RFID

Key Feature

- ⊙ I operating voltage:3.0v
- ⊙ Excellent resistance to corrosion
- ⊙ Operating temperature: -40~+125°C.
- ⊙ Superior pulse capability
- ⊙ Minimal voltage delay
- ⊙ UL Recognized(File number MH28717)
- ⊙ lowest self-discharge compatible with long storage duration and extended operation life
- ⊙ RoHS Compliance



Product list

Product list	Nominal voltage	Nominal capacity	Max. continuous current	Max. pulse current	Operating temperature	Max. outside dimension	Weght
	(V)	(mAh)	(mA)	(mA)	(°C)	(mm)	/g
Cylindrical (Spiral type)							
CR2	3	850	1000	2000	-40~+85°C	15.6X27.0	13
CR17335	3	1500	700	2000	-40~+85°C	17.0x33.5	17
CR123A	3	1500	1500	3000	-40~+70°C	17.0x34.5	17
CR17450	3	2400	1500	3000	-40~+85°C	17.0x45	23
CR-P2	6	1500	1500	3000	-40~+85°C	35.0x19.5x36.0	42
CR14250SE	3	950	7	70	-40~+85°C	14.5x25.0	11.5
CR17335SE	3	2000	10	1000	-40~+85°C	17x33.55	18
Coin cell							
CR1225	3	50	2	5	-20~+70°C	12.5x2.5	1
CR2016	3	80	3	15	-20~+70°C	20.0x1.6	1.8
CR2025	3	160	3	15	-20~+70°C	20.0x2.5	2.5
CR2032	3	225	3	15	-20~+70°C	20.0x3.2	3.1
CR2430	3	280	6	25	-20~+70°C	24.5x3.0	4.5
CR2450	3	600	6	25	-20~+70°C	24.5x5.0	6.5
CR3032	3	500	6	25	-20~+70°C	30.3x3.2	7.5
CR2477	3	1000	6	25	-20~+70°C	24.5x7.7	8
High temperature for TPMS							
CR2450HT	3	525	3	15	-40~+125°C	24.5x5.0	7
CR2050HT	3	325	3	15	-40~+125°C	20.5x5.0	5
Product list	Nominal voltage	Nominal capacity	Max. continuous current	Max. pulse current	Operating temperature	Max. outside dimension	Weght
	(V)	(mAh)	(mA)	(mA)	(°C)	(mm)	/g
9V cell							
CR9V-P	9	1200	120	400	-40~+85°C	26.2x17.2x48.8	43
Product list	Nominal voltage	Nominal capacity	Max. continuous current	Max. pulse current	Operating temperature	Max. outside dimension	Weght
	(V)	(mAh)	(mA)	(mA)	(°C)	(mm)	/g
Thin cell							
CF244040	3	900	10	50	-20~+75°C	2.4x40.0x40.0	7.6
CF102836	3	200	0.5	15	-10~+60°C	1.0x28.0x36.0	1.8
CF042039	3	25	0.25	5	-10~+60°C	0.45x20.5x43.0	0.6

Li-FeS₂ Batteries

Lithium-iron disulfide batteries are a kind of lithium primary formed by winding, which use iron disulfide for the cathode, lithium for the anode, and a lithium salt in an organic solvent blend as the electrolyte.

Since lithium-iron disulfide batteries have an operating voltage platform of 1.5V, they have interchangeability with alkaline batteries, Ni-MH batteries having the same size.

Lithium-iron disulfide batteries have a higher operating voltage than alkaline and rechargeable nickel metal hydride (NiMH) batteries and flatter discharge profile versus alkaline. These characteristics result in higher energy density (Wh/L) and specific energy (Wh/kg), especially in heavier drain applications where the operating voltage differences are the greatest.

In addition, lithium-iron disulfide batteries have lighter weight, superior leakage resistance, greater service advantage at low temperature than alkaline batteries, so they will gradually become the best power supply for portable electronic products.

Key Feature

- Provides longer service than standard alkaline batteries in moderate to heavy drain applications
- Far greater power, higher operating voltage and flatter discharge curve than standard alkaline batteries
- Superior leakage resistance compared to alkaline batteries
- Greater service advantage over alkaline batteries at low temperature extremes operating at -40°C
- Weight 1/3 less than standard alkaline batteries
- Environmental-friendly, no added mercury, cadmium, or lead

Applications

- Digital camera
- Portable medical equipment
- High-power toy
- Smart home
- Require for 1.5V battery of civilian market



Product technology parameters

Item/Type	AAA	AA
Nominal capacity(the mid-value)	1100mAh (100mA,0.8V off)	3000mAh (200mA,0.8V off)
Nominal voltage	1.5V	1.5V
Max. constant current	1500mA	2000mA
Max. pulse current (2 sec on / 28 sec off)	2000mA	3000mA
Operating temperature	-40~+60 C	-40~+60 °C
Weight	Approx. 6.2g	Approx.14.2g
Typical Li content	≤0.6g	≤1g
Typical IR (depending on method)	≤500mΩ	70~500mΩ

Super Pulse Battery Capacitor

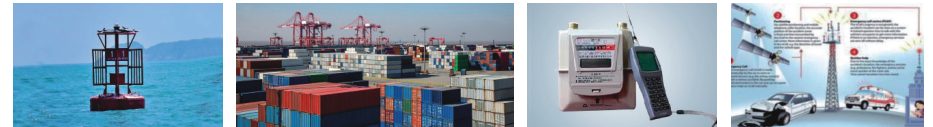
Super Pulse Capacity (SPC), designed and manufactured by EVE independently, is a kind of energy storage device which can realize instantaneous large current discharge and enable pulse discharge in a wide temperature range of -40 °C to + 85 °C. The ER&SPC pulse power supply provided by EVE, which combines the long-life lithium-thionyl chloride (Li/SOCl₂) battery and the super pulse battery capacitor together, is an ideal power solution for applications with long standby time and high current pulse discharge requirements. In terms of design, the application of the unique safety valve and sealing mode can ensure the safety and reliability of this combined power supply during use.

Key Feature

- Long operating life
- Minimized passivation effect
- Low self-discharge
- Wide operating temperature
- Utilized electric characteristics from both ER batteries and SPC(S)
- 10 times pulse capability over the sole -ER batteries solution
- Intrinsic safety, compliance with ATEX,
- UL1642, UN38.3 and etc

Application

- ETC(Electronic Toll Collection)
- Tracking system
- GPS
- Alarms and security wireles
- AMR. AMI
- E-CALL
- RFID



SpC product list

Model	Size (mm) Diameter /height	Max. charging volatge (V)	Capacity (3.6V) (As)	Max. pulse current (mA)		Cut off voltage (V)	Internal resistance (mΩ)	Termina
				continuous	pulse			
SPC 0920	Φ9.0X21.0	3.95	30	150	500	2.5	500	S T 2PT 3PT
SPC 1520	Φ15.1X21.0	3.95	140	500	2000	2.5	150	S T 2PT 4PT
SPC 1530	Φ15.1X27.0	3.95	250	750	3000	2.5	130	S T 2PT 5PT
SPC 1550	Φ15.1X51.0	3.95	560	2000	5000	2.5	80	S T 2PT 6PT

Suggested combination of ER+SPC

Model	Cell size Ref	Nominal voltage (V)	Nominal capacity (mAh)	Max. pulse current (mA)	Size (mm) Diameter /height
ER+SPC battery capacitor					
ER 14250+SPC 1520	1/2AA+2/5AA	3.6	1200	1000	Φ16.5*75.0
ER 26500+SPC 1520	C+2/5AA	3.6	8500	1000	Φ29.0*67.0
ER 34615+SPC 1520	D+2/5AA	3.6	19000	1000	Φ34.0*78.0
ER 14250+SPC 1550	1/2AA+AA	3.6	1200	3000	55.0*32.0*16.0
ER 26500+SPC 1550	C+AA	3.6	8500	3000	55.0*44.0*28.0
ER 34615+SPC 1550	D+AA	3.6	19000	3000	64.0*55.0*35.0

High temperature Li-SOCl₂ Batteries

High temperature lithium thionly chloride battery with high energy density and low self-discharge rate, with the special structure and formula design, it is working temperature range between - 40°C to + 145°C. the battery have anti vibration and shock resistance and heat dissipation characteristics. Mainly used in the field of oil and natural gas drilling, exploration, pipeline detection.

Cylindrical cells

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Max. continuous current(mA)	Operating temperature (°C)	Diameter (mm)	Height (mm)	Weight (g)
Cylindrical (Spiral type)							
ER14250MR-145 (1/2AA)	3.6	0.8	40	-40 ~ +145°C	14.5	25.4	10
ER14505MR-145 (AA)	3.6	1.6	80	-40 ~ +145°C	14.5	50.5	19
ER26500MR-145 (C)	3.6	6.5	230	-40 ~ +145°C	25.4	50	60
ER32615MR-145 (D)	3.6	13	700	-40 ~ +145°C	32.2	61.5	108
ER26760MR-145 (3/2C)	3.6	11	800	-40 ~ +145°C	25.4	76	85
ER21102MR-145 (SLIM CC)	3.6	10	400	-40 ~ +145°C	21	102	80
ER26102S-145 (CC)	3.6	16	1200	-40 ~ +145°C	25.4	102	105
ER321250MR-145 (DD)	3.6	28	2000	-40 ~ +145°C	32.2	126.5	210

MWD High Temperature Battery packs



Key feature

- Long operating life
- Heat dissipation material and structure design
- Low self-discharge
- Wide operating temperature
- Hermetic glass to metal sealing
- Compliant with IEC60086-4 safety standard

Application

- Downhole oil & gas
- Measure while drilling
- Logging while drilling
- Pipeline inspection gauges
- Tracking systems
- Sensor systems

Battery Pack list

Model	Nominal Voltage (V)	Operating time (h)	Diameter (mm)	Tube Length (mm)	Overall Length (mm)	Curve	Operating temperature (°C)
HL-145 MWD	28.8	≥180	37.3±0.2	1188±2	1590±5	≤1°	-40°C ~ +145°C
HF-145 MWD	28.8	≥180	37.3±0.2	1188±2	1590±5	≤1°	-40°C ~ +145°C
HQ-145 MWD	28.8	≥180	37.3±0.2	1192±2	1630±5	≤1°	-40°C ~ +145°C

General Recommendations

This page is not intended to provide all the information that you will need to be able to work safely with EVE batteries, but only to help facilitate site-specific guidance in accordance with local regulations. If there are questions around the safe handling of EVE cells or batteries, please contact us.

Storage

- Store batteries in a cool (preferably less than 30°C), dry and well-ventilated area.
- Keep away from moisture, source of heat, open flames.
- Keep batteries in their original packaging until use.
- Do not jumble batteries.
- Do not apply pressure that may deform the batteries.
- Appropriate fire extinguishing means should be available.
- Storage areas should be equipped with sprinklers.
- Appropriate personal protective equipment should be available (gloves, glasses, work coat...).

Handling

- Do not mix batteries of different types and brands.
- Do not directly heat or solder.
- Do not mix new and used batteries.
- Do not dismantle.
- The most frequent form of handling abuse during receiving, inspection and storage is inadvertent short-circuiting. Control measures to protect against this form of abuse should be implemented throughout the workplace. Issues associated with
 - Cover all conductive work surfaces with an insulating material
 - Work areas should be free of sharp objects that could puncture the insulating material
 - Never disassemble a cell or battery pack or attempt to replace a blown fuse
 - Conductive materials (jewelry, etc.) should not be worn by personnel handling cells and batteries
 - Cells should be stored in their original packaging or by similar means
 - Cells should be moved in trays using pushcarts to reduce the probability of dropping.
 - Dropped cells or batteries should be treated as a potential hot cell and must be segregated from the lot/batch
 - All inspection tools should be non-conductive, or covered with a non-conductive material
 - Cells should be inspected for physical damage
 - Open-circuit-voltage (OCV) should be checked
 - After a cell has been inspected, it should be returned to its storage packaging

Installation and replacement

- Install only new unused batteries, bearing the same date code, coming from the same manufacturer and being of the same model.
- Observe polarities during installation.
- Follow EVE recommendations regarding maximum deliverable currents and operating temperature range.
- Only use batteries of a type that has been homologated by the device manufacturers in which they are fitted.

Disposal

- Dispose of batteries in accordance with local regulations.
- Secure terminals to prevent short-circuiting.
- Package each cell or battery in a manner that prevents shorting with the container of another cell/battery.
- Package leaking cells /batteries in a manner that contains the leak and use specific equipment to handle these products (gloves, safety glasses, appropriated working clothing, respirator, sealable plastic bags).
- Use packaging material that is in compliance with local regulations.

Specific recommendations for lithium batteries— Safety with primary lithium batteries

- Do not short circuit.
- Do not recharge.
- Do not puncture.
- Do not incinerate.
- Do not crush.
- Do not discharge.
- Do not expose content to water.
- Do not heat above 100°C (not applicable for the High temperature battery).