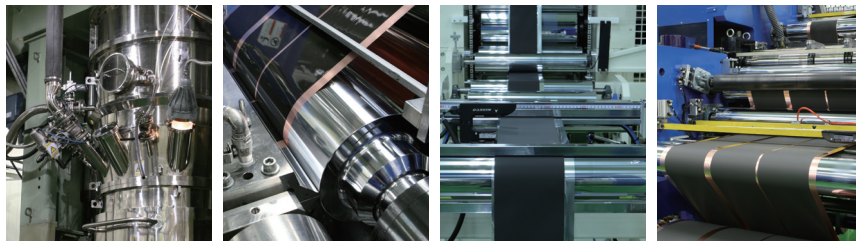


ELECTRODE

EnerTech, which was previously part of Saechan Group in Korea, has more than 25 years of experience in coating and pressing active materials. The company leveraged its early proficiency in producing magnetic videotape and re-writable compact disks into its current experience coating electrodes for lithium-ion batteries.

The company has a strong background in materials handling and automated production techniques – as well as a quality-focused approach – to meet customers' needs across a variety of industries.



WORLD-CLASS COATING TECHNOLOGY

UNDER

25 YEARS

Of Coating Production Know-How

UNDER

04 YEARS

Of LiFePO₄ Mass Production Experience

OVER

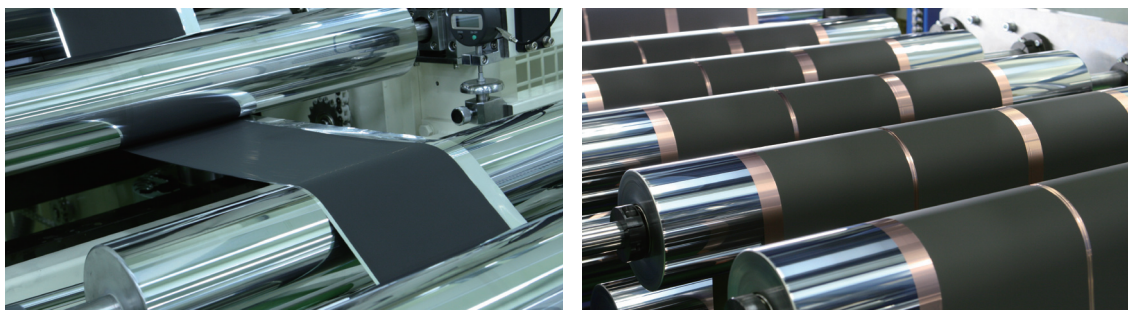
10 KINDS

Of Pre-Production Experience for Various Electrode Chemistries

**PVDF &
SBR BINDER
BOTH EXPERIENCED**

Electrode		Coating		Press	Punching
		Continuous	Intermittent		
Dimension	Width	10~680mm	10~680mm	10~680mm	W*H:
	Length	3,500m	Coating: 50mm~∞ Non-C: 20~100mm	Max. 700*350mm	
	Thickness	15~300μm			
	Loading Density	10~50mg/cm ²			
	Tolerance	±2mg/cm ²	±2mg/cm ²	±2μm	
	Density of Electrode	3.9g/cc			
Current Collector	Thickness	Al: 10~50μm, Cu: 8~25μm			
	Diameter(mm)	φ 172~1000/Roll	φ 172~1000/Roll	φ 172~1000/Roll	
Dimensions of Electrode roll	Weight	Max. 800kg/Roll			
	Core(mm)	ID: 76~152			

For OEM suppliers, EnerTech can design electrodes based on the following specifications. Custom designs can also be developed through EnerTech's engineering team.



CATHODE

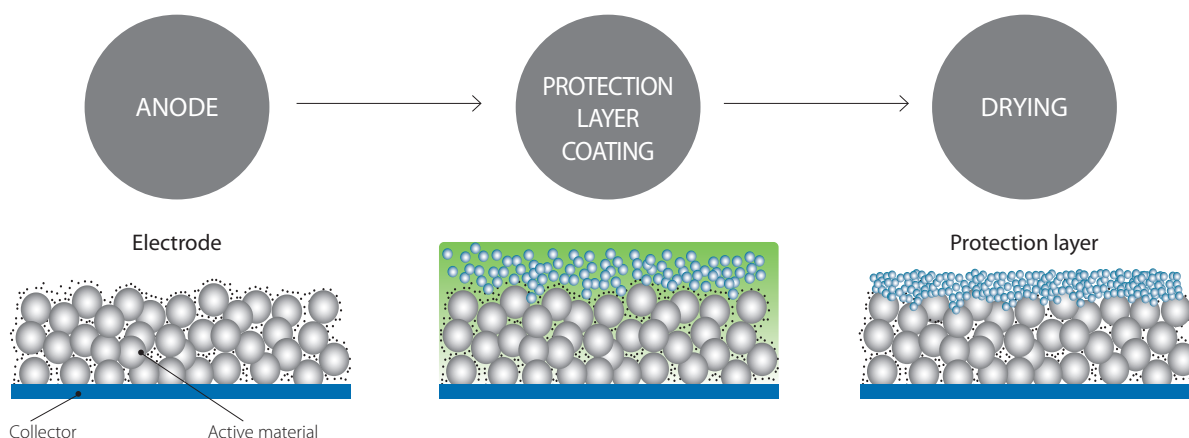
System		LCO	NMC	LMO	LFP
Coating density for single side (mA h/cm ²)	Min.	2.0	2.0	1.8	2.4
	Max.	7.0	7.0	3.8	3.8
Al foil thickness (μm)	Min.			15	
	Max.			50	

ANODE

System		Graphite (PVDF)	Graphite (SBR)	Hard Carbon
Coating density for single side (mA h/cm ²)	Min.	2.4	2.4	3.5
	Max.	7.8	7.8	6.1
Al foil thickness (μm)	Min.		10	
	Max.		20	

PROTECTION LAYER TECHNOLOGY

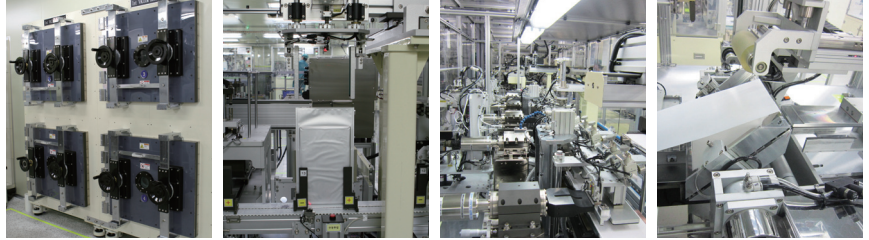
Coating Thickness : 2~20μm



LITHIUM-ION CELL

EnerTech International Inc. proudly presents Large format Batteries that we have developed in Korea. With the state-of-the-art manufacturing facilities and know-how on the Lithium-Ion Batteries, EnerTech International Inc. unveils various types of Large format Batteries.

With expert coating Electrode with Nano-Materials, EnerTech International makes the better performance and quality of Large format batteries that are feasible to emerging market applications such as Electric Vehicle, HEV and UPS Telecommunication.



UNDER

10 YEARS

Production of Lithium Ion Cells

MIN.

0.4 mm THIN

The thinnest Cells

MAX.

60 Ah

For ESS, EV, HEV and PHEV Cells

MAX.

25 C-RATE

For RC Application and High Drain Purpose



- Experienced our own Process Design and Development from small cell to large format cell.
- Accumulated Design Technology through various application such as IT(2000mAh to 4500mAh), LEV(4Ah to 12Ah), and EV(17Ah to 60Ah)
- Experienced high volume Production.
- Automatic Production System with Automatic assembly for large format cell.

LARGE FORMAT CELL LIST

	Capacity (mAh)	Nominal Voltage	Max. Discharge Current	Coating		Weight (g)	Energy Density	
				Charge	Discharge		Volume (Wh/l)	Weight (Wh/kg)
SPB58253172	17500	3.65	52.5A 3C	-20℃~55℃	-20℃~55℃	430	253	148
SPB59253172	16000	3.65	80.0A 5C	-20℃~55℃	-20℃~55℃	450	227	130
SPB90140220	20000	3.7	100.0A 5C	0℃~45℃	-20℃~55℃	490	271	151
SPB150140220	20000	3.2	100.0A 5C	0℃~45℃	-20℃~55℃	650	153	98
SPB90210260	40000	3.7	160.0A 4C	0℃~45℃	-20℃~55℃	990	323	156
SPB110210260	40000	3.2	120.0A 3C	0℃~45℃	-20℃~55℃	1100	213	116

LITHIUM-ION CELL LIST FOR IT & RC

	Capacity	Nominal Voltage	Max. Discharge Current		Coating		Weight (g)	Energy Density	
	(mAh)				Charge	Discharge		Volume(Wh/l)	Weight (Wh/kg)
IT-MODEL									
SPB273439	350	3.7	0.70A	2C	0℃~45℃	-20℃~60℃	6.8	362	190
SPB283349	500	3.7	1.00A	2C	0℃~45℃	-20℃~60℃	9.7	409	191
SPB463048	700	3.7	1.40A	2C	0℃~45℃	-20℃~60℃	13.5	391	192
SPB484852	1200	3.7	2.40A	2C	0℃~45℃	-20℃~60℃	23	371	193
SPB503759a	1300	3.7	2.60A	2C	0℃~45℃	-20℃~60℃	25	441	192
SPB503759	1330	3.7	2.66A	2C	0℃~45℃	-20℃~60℃	24	451	205
SPB374380	1350	3.7	2.70A	2C	0℃~45℃	-20℃~60℃	27	392	185
SPB465060	1480	3.7	2.96A	2C	0℃~45℃	-20℃~60℃	28	397	196
SPB584852	1500	3.7	3.00A	2C	0℃~45℃	-20℃~60℃	28	383	198
SPB605060	2000	3.7	4.00A	2C	0℃~45℃	-20℃~60℃	37	411	200
SPB655060	2280	3.7	4.56A	2C	0℃~45℃	-20℃~60℃	42	433	201
SPB426395	2400	3.7	4.80A	2C	0℃~45℃	-20℃~60℃	47	353	189
SPB496395	3000	3.7	6.00A	2C	0℃~45℃	-20℃~60℃	57	378	195
SPB704684	3300	3.7	6.60A	2C	0℃~45℃	-20℃~60℃	60	451	204
SPB546395	3700	3.7	7.40A	2C	0℃~45℃	-20℃~60℃	69	424	198
SPB636395	4500	3.7	9.00A	2C	0℃~45℃	-20℃~60℃	82	442	203
RC MODEL									
SPB333450H	480	3.7	7.7A	16C	0℃~45℃	-10℃~60℃	11	319.5	161.5
SPB463450H	730	3.7	10.2A	14C	0℃~45℃	-10℃~60℃	15	345.4	180.1
SPB433462H	910	3.7	13.7A	15C	0℃~45℃	-10℃~60℃	20	371.5	168.4
SPB603462HS	950	3.7	23.8A	25C	0℃~45℃	-10℃~60℃	27.5	277.9	127.8
SPB563369H	1300	3.7	15.6A	12C	0℃~45℃	-10℃~60℃	28	377.2	171.8
SPB603462H	1320	3.7	15.8A	12C	0℃~45℃	-10℃~60℃	26.4	386.1	185
SPB605060H	1900	3.7	15.2A	8C	0℃~45℃	-10℃~60℃	38	391	185
SPB605060H	1900	3.7	22.8A	12C	0℃~45℃	-10℃~60℃	39	390.6	180.3
SPB653496H	2100	3.7	37.8A	18C	0℃~45℃	-10℃~60℃	45	366.2	172.7
SPB453459H	740	3.7	11.1A	15C	0℃~45℃	-10℃~60℃	18.2	303.3	150.4
SPB553450H	910	3.7	13.7A	15C	0℃~45℃	-10℃~60℃	19	256	177
SPB783496H	2500	3.7	45.0A	18C	0℃~45℃	-10℃~60℃	54	363.3	171.3
SPB803496H	2600	3.7	41.6A	16C	0℃~45℃	-10℃~60℃	56	368.4	171.8



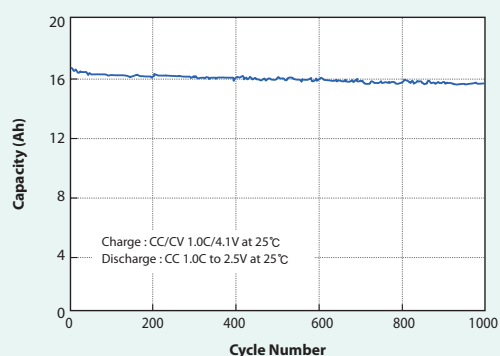
LARGE FORMAT CELL

SPB58253172EG1

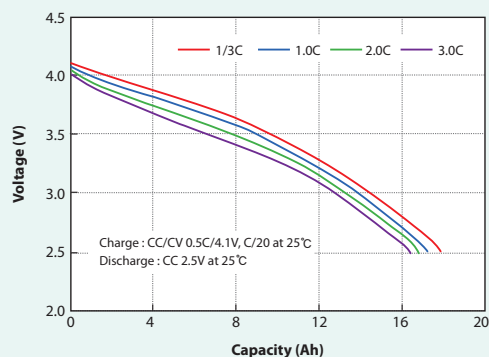


MODEL		SPB58253172EG1
Nominal Capacity		17.5 Ah
Energy density	Volumetric	253 Wh/l
	Gravimetric	148 Wh/Kg
Weight		≤430g
Nominal Voltage		3.65V
Operating Voltage Range	Max.	4.10V
	Min.	2.50V
Standard Current	Charge	5.83A(1/3C)
	Discharge	5.83A(1/3C)
Maximum Current	Charge	35.0A(2.0C)
	Discharge	52.5A(3.0C)
	Discharge	87.5A(Pulse@≤10sec)
Internal Resistance		<2mΩ
Operating Temperature	Charge	-20°C ~ 55°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	5.8±0.1 / -0.4 mm
	Width	253±1 mm
	Length	172±2.0 / -1.6 mm

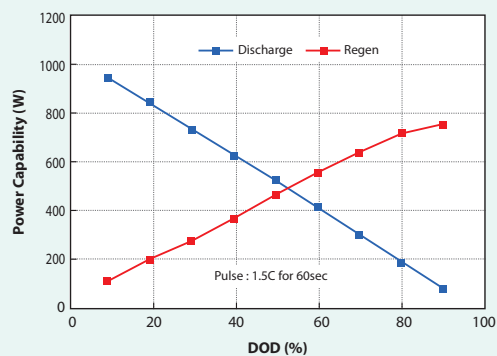
CELL CYCLE



RATE CAPABILITY



PULSE POWER CHARACTERISTICS



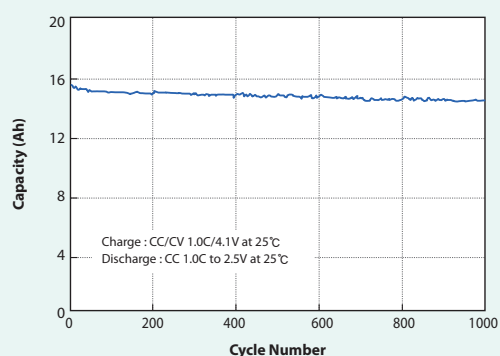
LARGE FORMAT CELL

SPB59253172PG1

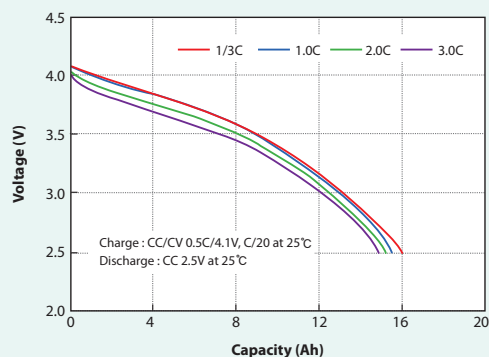


MODEL		SPB59253172PG1
Nominal Capacity		16.0 Ah
Energy density	Volumetric	227 Wh/l
	Gravimetric	130 Wh/kg
Weight		≤450g
Nominal Voltage		3.65V
Operating Voltage Range	Max.	4.10V
	Min.	2.50V
Standard Current	Charge	5.30A(1/3C)
	Discharge	5.30A(1/3C)
Maximum Current	Charge	80.0A(5.0C)
	Discharge	50.5A(5.0C)
	Discharge	112.0A(Pulse@≤10sec)
Internal Resistance		<1mΩ
Operating Temperature	Charge	-20°C ~ 55°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	5.9+0.1 / -0.4 mm
	Width	253±1 mm
	Length	172+2.0 / -1.6 mm

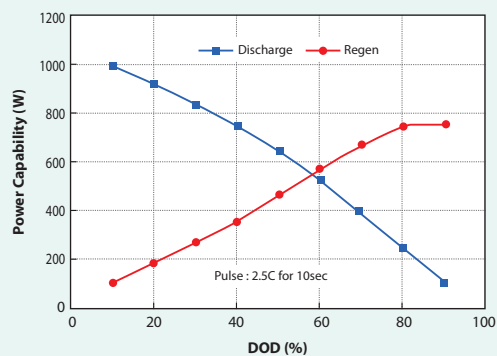
CELL CYCLE



RATE CAPABILITY



PULSE POWER CHARACTERISTICS



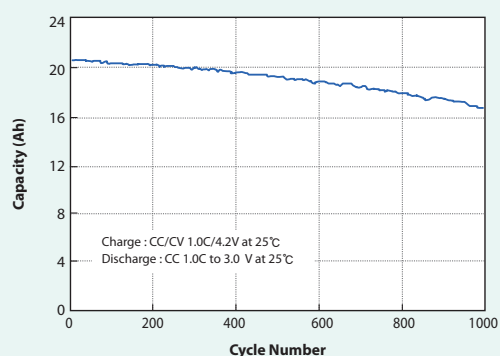
LARGE FORMAT CELL

SPB90140220V1

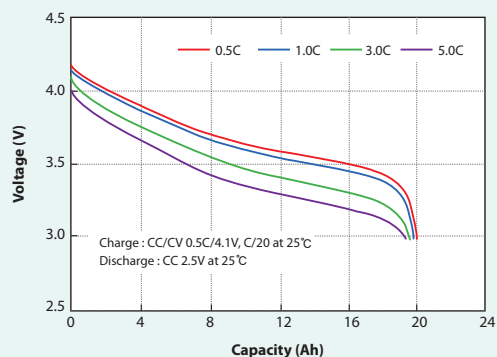


MODEL		SPB90140220V1
Nominal Capacity		20.0 Ah
Energy density	Volumetric	271 Wh/ℓ
	Gravimetric	151 Wh/kg
Weight		≤490g
Nominal Voltage		3.70V
Operating Voltage Range	Max.	4.20V
	Min.	3.00V
Standard Current	Charge	10.0A(0.5C)
	Discharge	10.0A(0.5C)
Maximum Current	Charge	40.0A(2.0C)
	Discharge	100.0A(5.0C)
	Discharge	200.0A(Pulse@≤10sec)
Internal Resistance		<3mΩ
Operating Temperature	Charge	0°C ~ 45°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	9.0±0.5 mm
	Width	140±1.5 mm
	Length	217±1.5 mm

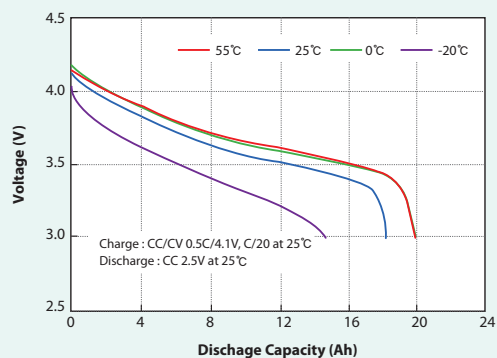
CELL CYCLE



RATE CAPABILITY



TEMPERATURE CAPABILITY



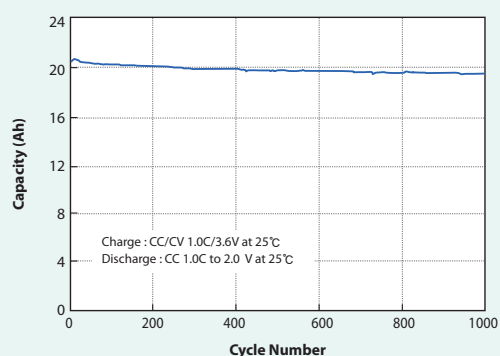
LARGE FORMAT CELL

SPB150140220V1

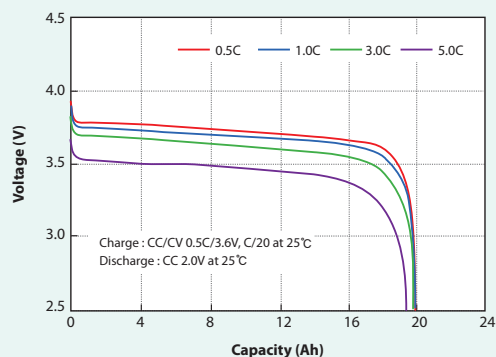


MODEL		SPB1501402200V1
Nominal Capacity		20.0 Ah
Energy density	Volumetric	153 Wh/ℓ
	Gravimetric	98 Wh/kg
Weight		≤650g
Nominal Voltage		3.20V
Operating Voltage Range	Max.	3.60V
	Min.	2.00V
Standard Current	Charge	10.0A(0.5C)
	Discharge	10.0A(0.5C)
Maximum Current	Charge	40.0A(2.0C)
	Discharge	100.0A(5.0C)
	Discharge	200.0 A(Pulse@≤10sec)
Internal Resistance		<3mΩ
Operating Temperature	Charge	0°C ~ 45°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	14.0±1.5 mm
	Width	140±1.5 mm
	Length	217±3.0 mm

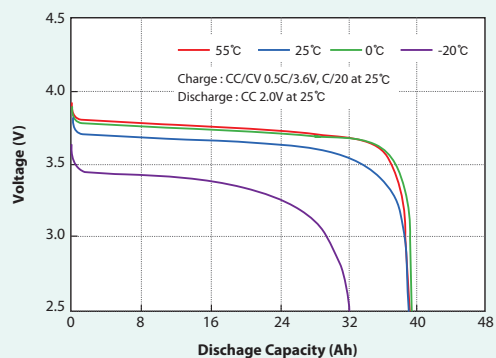
CELL CYCLE



RATE CAPABILITY



TEMPERATURE CAPABILITY



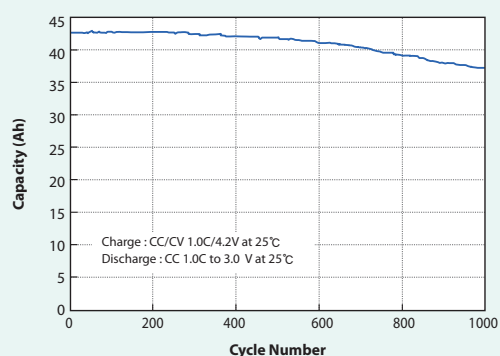
LARGE FORMAT CELL

SPB90210260V1

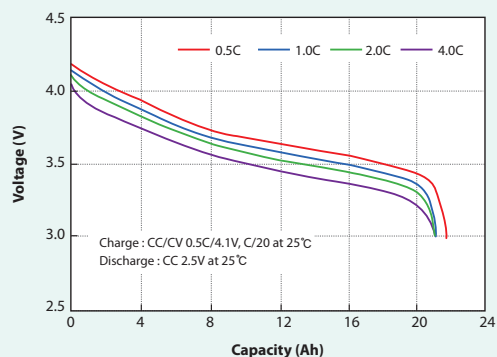


MODEL		SPB90210260V1
Nominal Capacity		40.0 Ah
Energy density	Volumetric	323 Wh/ℓ
	Gravimetric	156 Wh/kg
Weight		≤990g
Nominal Voltage		3.70V
Operating Voltage Range	Max.	4.20V
	Min.	3.00V
Standard Current	Charge	20.0A(0.5C)
	Discharge	20.0A(0.5C)
Maximum Current	Charge	40.0A(1.0C)
	Discharge	160.0A(4.0C)
	Discharge	200.0A(Pulse@≤10sec)
Internal Resistance		<3mΩ
Operating Temperature	Charge	0°C ~ 45°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	9.0±0.5 mm
	Width	210±3.0 mm
	Length	260±3.0 mm

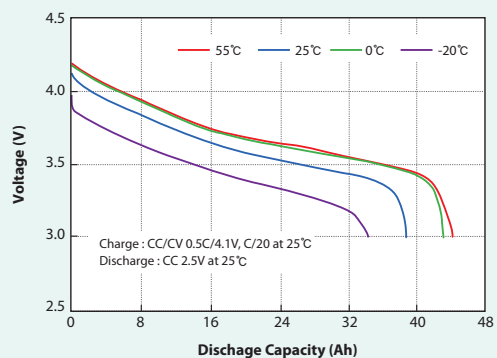
CELL CYCLE



RATE CAPABILITY



TEMPERATURE CAPABILITY



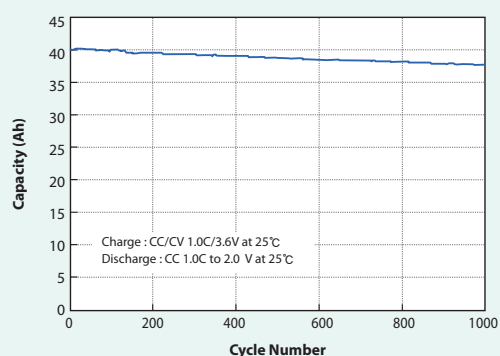
LARGE FORMAT CELL

SPB110210260V1

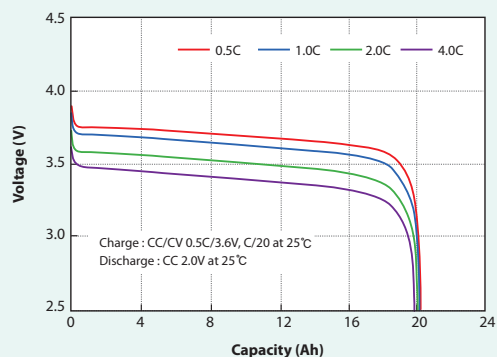


MODEL		SPB110210260V1
Nominal Capacity		40.0 Ah
Energy density	Volumetric	213 Wh/ℓ
	Gravimetric	116 Wh/kg
Weight		≤1100g
Nominal Voltage		3.20V
Operating Voltage Range	Max.	3.60V
	Min.	2.00V
Standard Current	Charge	20.0A(0.5C)
	Discharge	20.0A(0.5C)
Maximum Current	Charge	40.0A(1.0C)
	Discharge	120.0A(3.0C)
	Discharge	200.0 A(Pulse@≤10sec)
Internal Resistance		<3mΩ
Operating Temperature	Charge	0°C ~ 45°C
	Discharge	-20°C ~ 55°C
	Recommend	25°C ± 3°C
Storage Temperature	Range	-40°C ~ 60°C
	Recommend	25°C ± 3°C
Storage Humidity		45~85%RH
Cell Dimensions	Thickness	11.0±0.5 mm
	Width	210±3.0 mm
	Length	260±3.0 mm

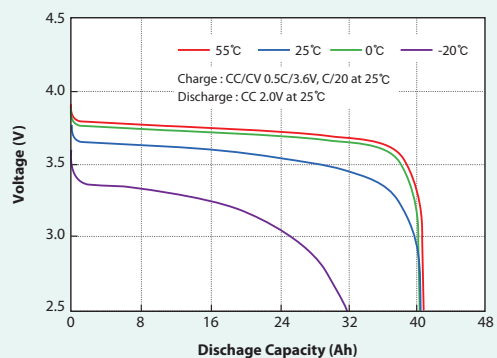
CELL CYCLE



RATE CAPABILITY



TEMPERATURE CAPABILITY



BATTERY PACK

Product diversification within information technology industry has created enormous growth for rechargeable batteries. EnerTech is a major manufacturer of battery packs, combining today's most advanced cell technology with its own custom-designed protective circuitry. EnerTech also develops its own line of lithium-ion polymer cells for individual use, or for use within pack designs.

Utilizing advanced, state-of-the-art manufacturing technology, EnerTech also provides top-quality products to meet the needs of OEMs requiring UL-listed batteries from ISO9001 approved manufacturers. EnerTech also delivers its own line of batteries for the OEM aftermarket.



STANDARD PACK LIST

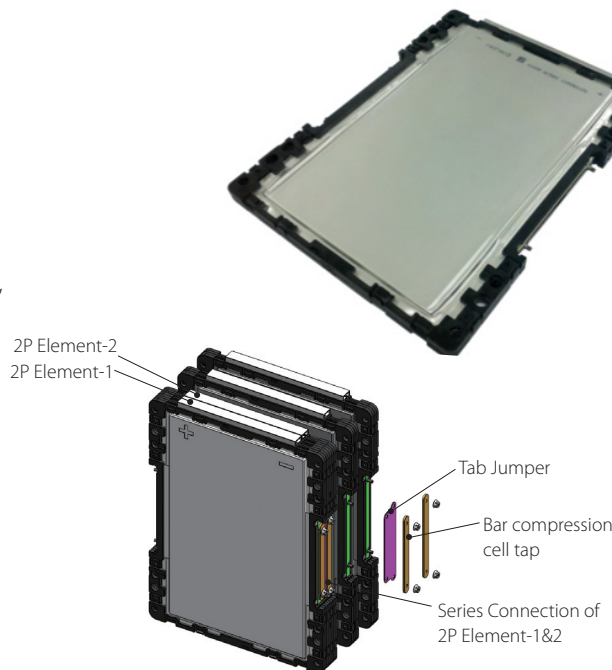
Model	Capacity (mAh)	Nominal Voltage(V)	Charging Voltage(V)	Cell Configuration	Chemistry	Dimensions			Weight (g)
						Length	Width	Height	
LI18S	5,200	7.2	8.4	2P - 2S	Li-ion	145	37.5	20.5	≤250
LI 201SX	5,200	10.8	12.6	2P - 3S	Li-ion	214.5	52.5	19	≤350
LI202(S,SX)-6600	6,600	10.8	12.6	3P - 3S	Li-ion	140	88.8	19.6	≤450
LI202(S,SX)-7800	7,800	10.8	12.6	3P - 3S	Li-ion	140	88.8	19.6	≤450
LI204SX-6,600	6,600	10.8	12.6	3P - 3S	Li-ion	214.6	59	23	≤500
LI204SX-7,800	7,800	10.8	12.6	3P - 3S	Li-ion	214.6	59	23	≤500
LI202SX-8,700	8,700	10.8	12.6	3P - 3S	Li-ion	140	88.8	19.6	≤450
LI402SX	5,200	14.4	16.8	2P - 4S	Li-ion	214.6	59	23	≤400
NM15SX	2,100	10.8	18.0	1P - 9S	Ni-MH	145	52.5	18.5	≤350
NM35S	3,800	10.8	18.0	1P - 9S	Ni-MH	214.5	52.3	18.5	≤520
NM36S	3,800	10.8	18.0	1P -10S	Ni-MH	149	89	19.5	≤600
Element	35,000	3.65	4.1	2P -1S	Polymer	266.3	198	13.1	≤1,100
Module 1	35,000	43.8	49.2	2P - 12S	Polymer	266.3	198	178	≤14,000
Module 2	35,000	87.6	98.4	2P - 24S	Polymer	266.3	396.5	178	≤28,000
Module 3	40,000	44.4	50.4	1P - 12S	Polymer	294	232	153	≤20,000

ELEMENT & MODULE

*For convenience, EnerTech can supply elements and modules for a customers' own battery system.
EnerTech can also provide a complete battery solution, from design to production, to meet a customer's specific needs (1kWh to 12kWh).*

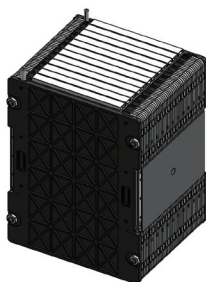
ELEMENT

Nominal Voltage(V): 3.65V
Capacity(mAh): 35,000mAh
Chemistry: Lithium-ion polymer
Dimension(mm): (L) 266.3 (W) 198.0 (H) 13.1
Weight(g): 1.05kg
Temperature: Charge 0 ~20~55°C Discharge -20~55°C,
Storage -40~60°C
Cell Spec(Size): SPB58253172
Cell Configuration: 1S2P
Protection Circuit: None
LED Display: None



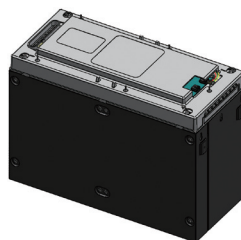
MODULE 1

Nominal Voltage(V): 43.8V
Capacity(mAh): 35,000mAh
Chemistry: Lithium-ion polymer
Dimension(mm): (L) 266.3 (W) 198.0 (H) 178.0
Weight(g): 6.3kg
Temperature: Charge -20~55°C
Discharge -20~55°C, Storage -40~60°C
Cell Spec(Size): SPB58253172
Cell Configuration: 12S2P
Protection Circuit: None
LED Display: None



MODULE 2

Nominal Voltage(V): 87.6V
Capacity(mAh): 35,000mAh
Chemistry: Lithium-ion polymer
Dimension(mm): (L) 266.3 (W) 396.5 (H) 178.0
Weight(g): 30kg
Temperature: Charge -20~55°C
Discharge -20~55°C, Storage -40~60°C
Cell Spec(Size): SPB58253172
Cell Configuration: 24S2P
Protection Circuit: None
LED Display: None



MODULE 3

Nominal Voltage(V): 44.4V
Capacity(mAh): 40,000mAh
Chemistry: Lithium-ion polymer
Dimension(mm): (L) 294.0 (W) 232.0 (H) 153.0
Weight(g): 15kg
Temperature: Charge 0~45°C
Discharge -20~55°C, Storage -40~60°C
Cell Spec(Size): SPB90210260
Cell Configuration: 12S1P
Protection Circuit: None
LED Display: None

