

Polytone Technology Co., Ltd.

Innovator of differentiated power products (Cell)

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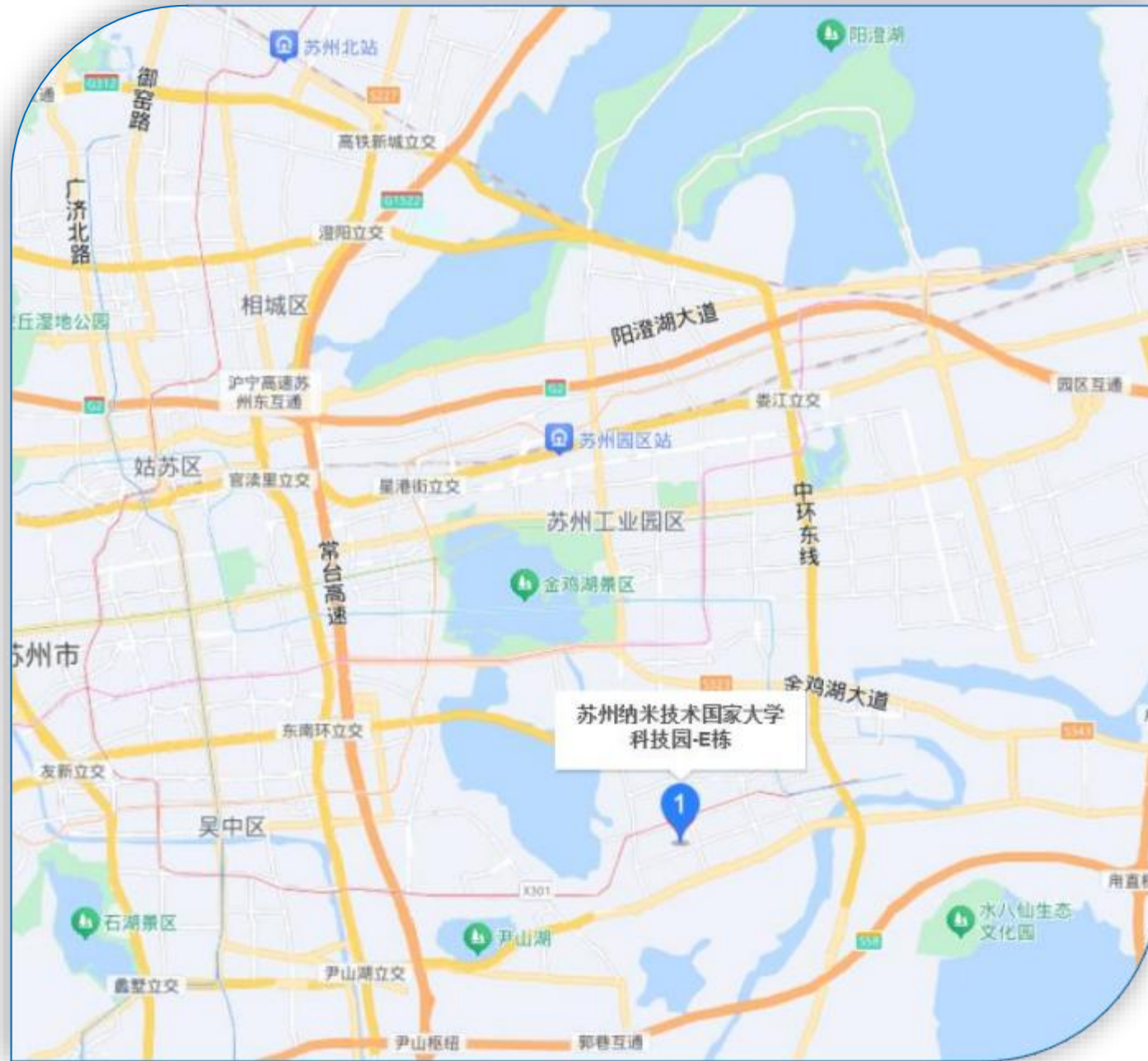
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01 Company Introduction



Polytone Technology Co., Ltd., Located in Donghaiwang Industrial district, Longgang , Shenzhen, Founded in 2004 October 14th.

Polytone Corporation is a lithium battery industry. It was founded by senior engineers who have experienced the development of advanced automobiles at home and abroad. The company also cooperates with the University of Science and Technology of China, Shenzhen University and Chinese Academy of Sciences. The company has close technical cooperation and technology sharing with the Institute of Chemical Physics. The company focuses on high-performance specialty lithium-ion or The core of lithium battery R&D of core materials, battery cells and power systems and design, manufacture and Sale.

The company is currently focusing on two applications Direction (but technical ability is not limited to):

1. For high-security special operations in extremely cold areas, low-temperature military industry, low-temperature daily travel, and low-temperature high-power engineering operations, etc. High safety power supply requirements for fast charging and discharging;
2. High energy, high power and light weight for low altitude flight and UAVs High safety power requirements.



02 Technical capabilities



Technical Team

The Polytone team consists of more than over 8 year old Team composition, ratio of masters and doctors 95%, and all came to the country The head company. The personnel are engaged in materials, electricity electrolyte, solid-state battery technology, sodium-ion battery development development, process design and development, as well as mechanism, simulation, Security, digital analytics, etc.



Engineering Products

Focus on professional understanding of market demand, team members are rich Rich design and development experience leading national projectsM3Eyes, APPLESeries products and BMW Battery, Mercedes-Benz 4CBattery cells, new force semi-solid-state batteriesDevelopment and quantity Products include square, blade, softPackage, round Column. Current design development10Special collarDomain Requirements Products, high energy density, low temperature, fast charging products At the same time, it has good high thermal performance and fast charging performance.Taking into account safety Complete.



Core Materials

Atomic-scale growth of phosphate liquid phase synthesis technology, In situ doped nanoparticles (20-150nm) Iron phosphate (or manganese) lithium positive electrode material to achieve good Processing characteristics and low temperature rate characteristics. Developed ultra-low temperatureMild rate Electrolyte additivesTAD01And electrolyte Square technology can synthesize nano-sized particlesUniform Solid electrolyte materials to achieve10-2S/cmof Electrical conductivity and good processing characteristics.



Innovation support

Have stable OEM resources from leading companies,manufacture Capabilities are stable and reliable. Dalian Institute of Chemical Physics, Chinese Academy of Sciences High-energy lithium-sulfur battery, all-solid-state sampleProduct technology and new Technical licensing or sharing of battery technology, etc. The team has made great progress in chemical system matching, electrode design and production. The ultimate in power, especially the latest design.Unique Special understanding.

03 Core Advantages

High nickel, high silicon, ternary,
high safety

New lithium iron phosphate
extreme performance system

Development of next generation
novel chemical systems

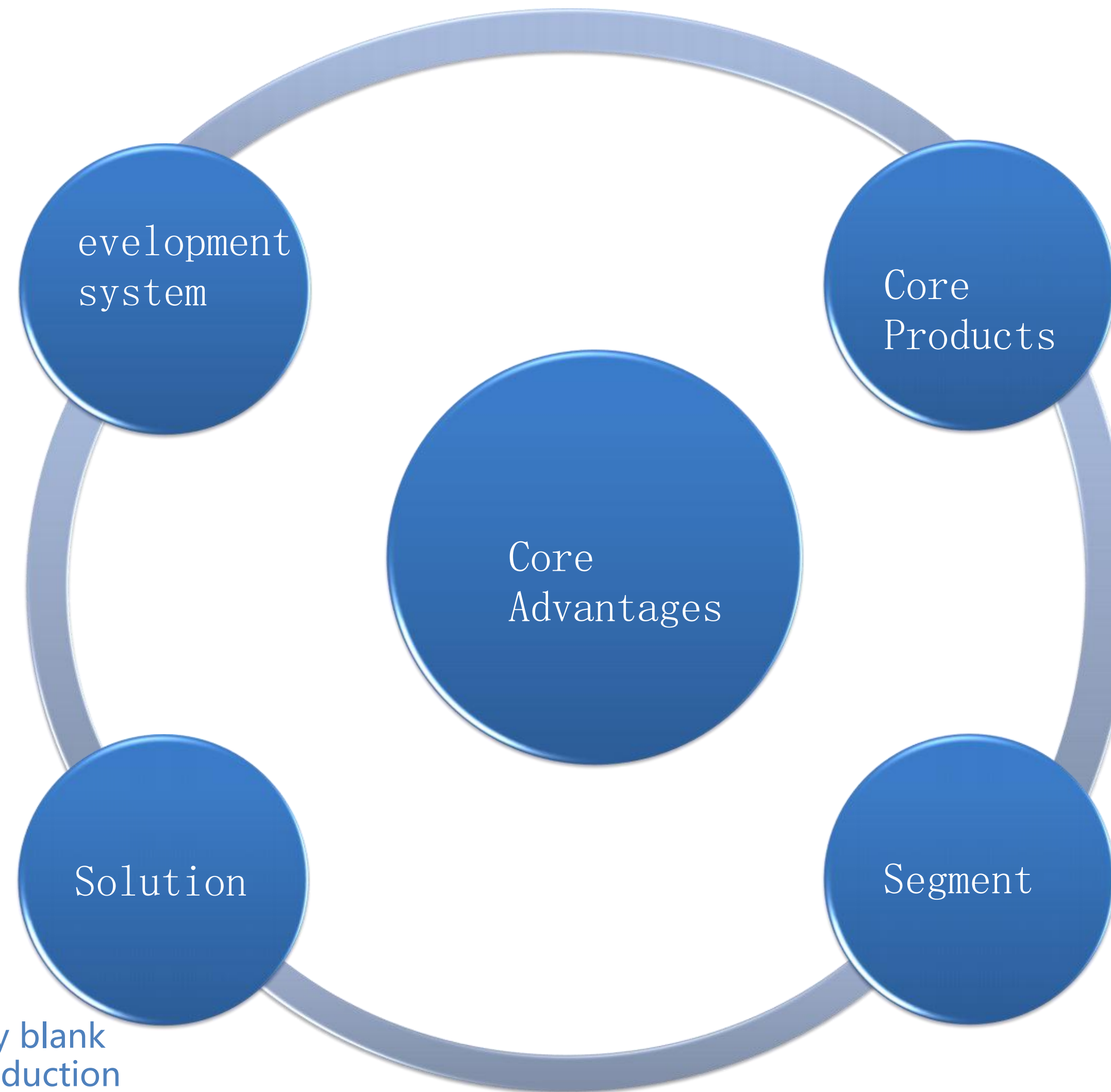
Recycled Materials Application
Technology

Lithium-ion batteries in special
environments need

Good product performance and
production quality assurance

Large soft pack comparable to
consumer battery performance

Energy storage and power battery blank
area small market battery cell production
Product Demand



ED breakthrough > 400Wh/kg high-end products

LT -50°C, FC/FD > 4C Extreme environment products

Large soft pack and standard square battery cells
are flexible in size and easy to match Group size
requirements

Small market special application field product
demand

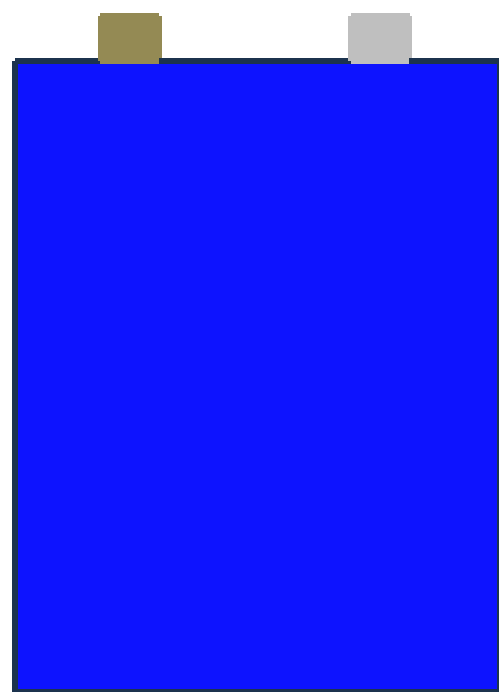
UAV, vehicle charging power supply, mining

card, low temperature Charging car, Solar
street lights, communication base station

power supplies, medical equipment power

supplies, robots Power supply and other fields

04-1 Ultra-low temperature high rate phosphorusLithium iron phosphate battery



Product application areas:

Strict requirements for low temperature, energy and safetyJ
engineering application fields with high requirements,
Low temperatures in high-altitude/plateau (border)
areasBackup power, low temperature power And low
temperature start and other scenarios.

Features:

High rate characteristics

Continuous charging capability > 3C
Continuous discharge capability > 5C

Ultra-low temperature working characteristics

Working temperature range: -50~60℃
-40℃ 1C discharge capacity is greater than90%

High safety features

No temperature rise or smoke during acupuncture, no fire
Heat resistant to 200℃ for 2 hours without thermal runaway

model	T36130230	
capacity	100Ah	
size	T36mm*W130mm*H230mm(including pole)	
weight	2080±50g	
Energy Density	>150Wh/kg (Actual 160Wh/kg)	
Internal resistance	AC (1kHz)	< 0.4 mOhm
Voltage	Nominal Charging cut-off	3.2V 3.65V
Operating temperature range	Charging temperature range Discharge temperature range	-20~55℃ -40~55℃
Charge	Standard charging Pulse charging	4C (400A) 5C (500A)
Discharge	Standard discharge Pulse discharge	5C (500A) 6C (600A)
Low temperature discharge	-30℃ discharge (Cut-off voltage 1.6V) -40℃ discharge (Cut-off voltage 1.6V)	Retention rate: > 95% (capacity) Retention rate: > 90% (capacity)
Low temperature charging	-10℃ -20℃	0.3C (NO ALP) 0.2C (NO ALP)
Cycle life	Normal temperature	6000 weeks @ 80%

04-2 Ultra-low temperature high rate
phosphorusLithium iron phosphate battery



Product application areas:

Low temperature, energy and safetyStrictly required J
engineering application fields,
Low temperatures in high-altitude/plateau (border)
areasBackup power, low temperature power And low
temperature start and other scenarios.

Features:

High rate characteristics

Continuous charging capability > 5C
Continuous discharge capability > 6C

Ultra-low temperature working
characteristics

Working temperature range: -50~60°C
-40°C 1C discharge capacity is greater than90%

High safety features

No temperature rise or smoke during acupuncture, no
fire Heat resistant to 200°C for 2 hours without
thermal runaway

model	T78161230	
capacity	30 Ah	
size	T7.8mm*W161mm*H230mm	
weight	580±15g	
Energy Density	>160Wh/kg(Actual 170Wh/kg)	
Internal resistance	AC (1kHz)	< 1.0 mOhm
Operating temperature range	Charging temperature range Discharge temperature range	-20~55°C -40~55°C
Charge	Standard charging Pulse charging	5C (150A) 6C (180A)
Discharge	Standard discharge Pulse discharge	6C (180A) 7C (210A)
Low temperature discharge	-30°C discharge (Cut-off voltage 1.6V) -40°C discharge (Cut-off voltage 1.6V)	Retention rate: > 95% (capacity) Retention rate: > 90% (capacity)
Low temperature charging	-10°C -20°C	0.3C (NO ALP) 0.2C (NO ALP)
Cycle life	Normal temperature	6000 weeks @ 80%

04-3 Ultra-light electriccore



Reconnaissance aircraft and flying aircraft products

Product application areas:

Strict requirements on energy, rate and qualityJ uses a mini drone.

Features:

High energy density
260~380 Wh/Kg

Fast charge and discharge power characteristics

Normal temperature 25°C 7C above fastcharge
8~10C continuous discharge

Ultra-light weight
Unit AH mass is less than 12 g

model	T802854	
capacity	1.7 Ah	
size	T8mm*W28mm*H54mm	
weight	18~21g	
Energy Density	300Wh/kg	
Internal resistance	AC (1kHz)	<0.8 mOhm
Voltage	Nominal Charging cut-off	3.6V 4.25V
Operating temperature range	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C -20~0°C	5C (8.5A) 1C (1.7A) 0.25C (0.43A)
Discharge	8C (13.6A) 10C (17A)	Lasts 5 minutes Lasts 30 seconds
Low temperature charging	-10°C -20°C	0.3C (NO ALP) 0.2C (NO ALP)
Cycle life	25°C (5C/5C) 25°C (5C/10C)	>400 cls >300 cls



04-4Ultra-high energy lithium metal battery



Solid-state battery cells, suicide drones andLong-range drone products

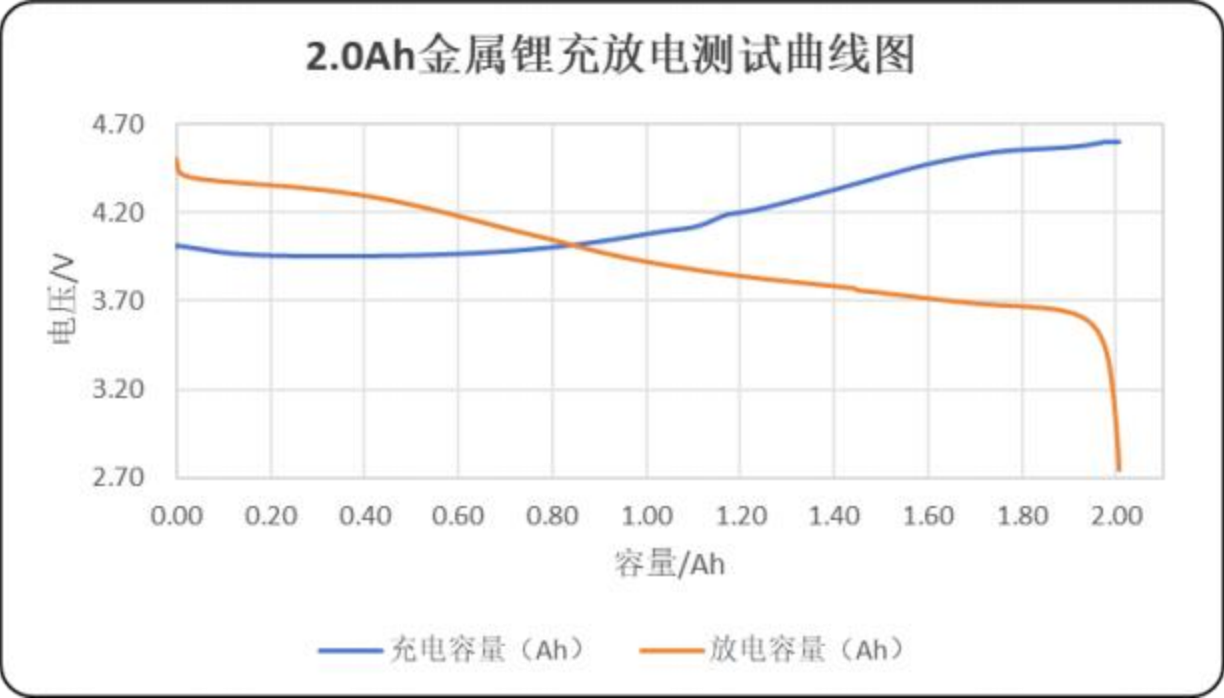
Product application areas:

J has strict requirements on energy and qualityUse a mini drone.

Features:

Ultra-high energy density
500~550Wh/Kg

Ultra-light weight
Unit AH mass is less than 8 g



model	T804054	
capacity	4.0Ah	
size	T8mm*W40mm*H54mm	
weight	30~32g	
Energy Density	500Wh/kg	
Internal resistance	AC (1kHz)	<1.0 mOhm
Voltage	Nominal Charging cut-off	3.95V 4.6V
Operating temperature range	Charging temperature range Discharge temperature range	0~55℃ -20~60℃
Charge	20~55℃ 0~20℃ -20~0℃	1C (2A) 0.5C (1A) 0.25C (0.43A)
Discharge	3C (6A) 4C (8A)	Lasts 5 minutes Lasts 30 seconds
Cycle life	25℃ (1C/1C)	>50 cls

04-5 High Energy Cell



Universal drone
battery-Load
Drone battery with
variable capacity

Product application areas:

Small and medium enterprises with strict requirements on energy, safety and quality UAV or Intelligent Robotics

Features:

Ultra-high energy density
340~360 Wh/Kg

Fast charge and discharge power characteristics
Normal temperature 25°C 2~3C Fast charging
Can discharge continuously at 3~4C

High safety features
Heat resistant to 200°C for 2 hours without thermal runaway

model	T1187187	
capacity	22~35 Ah	
size	T6-11mm*W87mm*H187mm	
weight	325~375g	
Energy Density	330~360 Wh/Kg	
Internal resistance	AC (1kHz)	<0.8 mOhm
Voltage	Nominal Charging cut-off	3.6V 4.25V
Operating temperature range	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C	1C (35A) 0.2C (7A)
Discharge	2C (70A) 4C (140A)	Lasts 30 minutes Lasts 30 seconds
Cycle life	25°C (0.5C/0.5C) 25°C (1C/2C)	>2000 cls >1000 cls

04-6 High Energy Cell



Bombing,
agriculture, load
carrying,
Batteries for
logistics drones

Product application areas:

Energy, safety and qualityMedium and large unmanned Machine or intelligent robot field.

Features:

Ultra-high energy density
335~355Wh/Kg

Fast charge and discharge power characteristics

Normal temperature 25°C 2~3C Fast charging
Can discharge continuously at 3~4C

High safety features

Heat resistant to 200°C for 2 hours without thermal runaway

model	T60161230	
capacity	44 Ah	
size	T6.0mm*W161mm*H230mm	
weight	475±15g	
Energy Density	335~355Wh/kg	
Internal resistance	AC (1kHz)	<1 mOhm
Voltage	Nominal Charging cut-off	3.60V 4.25V
Operating temperature range	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C	1C (44A) 0.2C (8.8A)
Discharge	2C (88A) 4C (176A)	Lasts 30 minutes Lasts 30 seconds
Cycle life	25°C (0.5C/0.5C) 25°C (1C/2C)	>2000 cls >1000 cls

04-7 High Energy Cell



Aviation drones,
performance
Batteries for
drones,
Customized

Product application areas:

Small and medium enterprises with strict requirements on energy, safety and quality UAV or Intelligent Robotics

Features:

Ultra-high energy density

330~350 Wh/Kg

Fast charge and discharge power characteristics

Normal temperature 25°C 2~3C Fast charging
Can discharge continuously at 3~4C

High safety features

Heat resistant to 200°C for 2 hours without thermal runaway

model	T1045180	
capacity	14 Ah	
size	T10mm*W45mm*H180mm	
weight	145~165g	
Energy Density	330~350 Wh/Kg	
Internal resistance	AC (1kHz)	<2.0mOhm
Voltage	Nominal Charging cut-off	3.6V 4.25V
Operating temperature range	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C	1C (14A) 0.2C (2.8A)
Discharge	2C (28A) 4C (56A)	Lasts 30 minutes Lasts 30 seconds
Cycle life	25°C (0.5C/0.5C) 25°C (1C/2C)	>2000 cls >1000 cls

04-8 High Energy Cell



Aviation drones,
performance
Batteries for
drones,
Manufacturing
products, robot
demand Customized
Products

Product application areas:

Small and medium enterprises with strict requirements on energy, safety and quality UAV or Intelligent Robotics

Features:

Ultra-high energy density
330~350 Wh/Kg

Fast charge and discharge power characteristics

Normal temperature 25°C 2~3C Fast charging
Can discharge continuously at 3~4C

High safety features

Heat resistant to 200°C for 2 hours without thermal runaway

model	T1059142	
capacity	12~18 Ah	
size	T10mm*W59mm*H142mm	
weight	135~165g	
Energy Density	330~350 Wh/Kg	
Internal resistance	AC (1kHz)	<2.1mOhm
Voltage	Nominal Charging cut-off	3.6V 4.25V
Operating temperature range	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C	1C (14A) 0.2C (2.8A)
Discharge	2C (28A) 4C (56A)	Lasts 30 minutes Lasts 30 seconds
Cycle life	25°C (0.5C/0.5C) 25°C (1C/2C)	>2000 cls >1000 cls

04-9 Ultra-high energy battery



Manned UAV products

Product application areas:

Energy, safety and qualityMedium and large unmanned Machine or intelligent robot field.

Features:

Ultra-high energy density
350~400 Wh/Kg

Fast charge and discharge power characteristics
Normal temperature 25°C 2~3C Fast charging
Can discharge continuously at 3~4C

High safety features
Heat resistant to 200°C for 2 hours without thermal runaway

model	T13103314	
capacity	95 Ah	
size	T13mm*W103mm*H314mm	
weight	930~960g	
Energy Density	350~400 Wh/Kg	
Internal resistance	AC (1kHz)	<0.8 mOhm
Voltage	Nominal Charging cut-off	3.60V 4.25V
Working temperature range Wai	Charging temperature range Discharge temperature range	0~55°C -20~60°C
Charge	20~55°C 0~20°C	1C (95A) 0.2C (19A)
Discharge	2C (190A) 4C (380A)	Lasts 30 minutes Lasts 30 seconds
Cycle life	25°C (0.5C/0.5C) 25°C (1C/2C)	>2000 cls >1000 cls