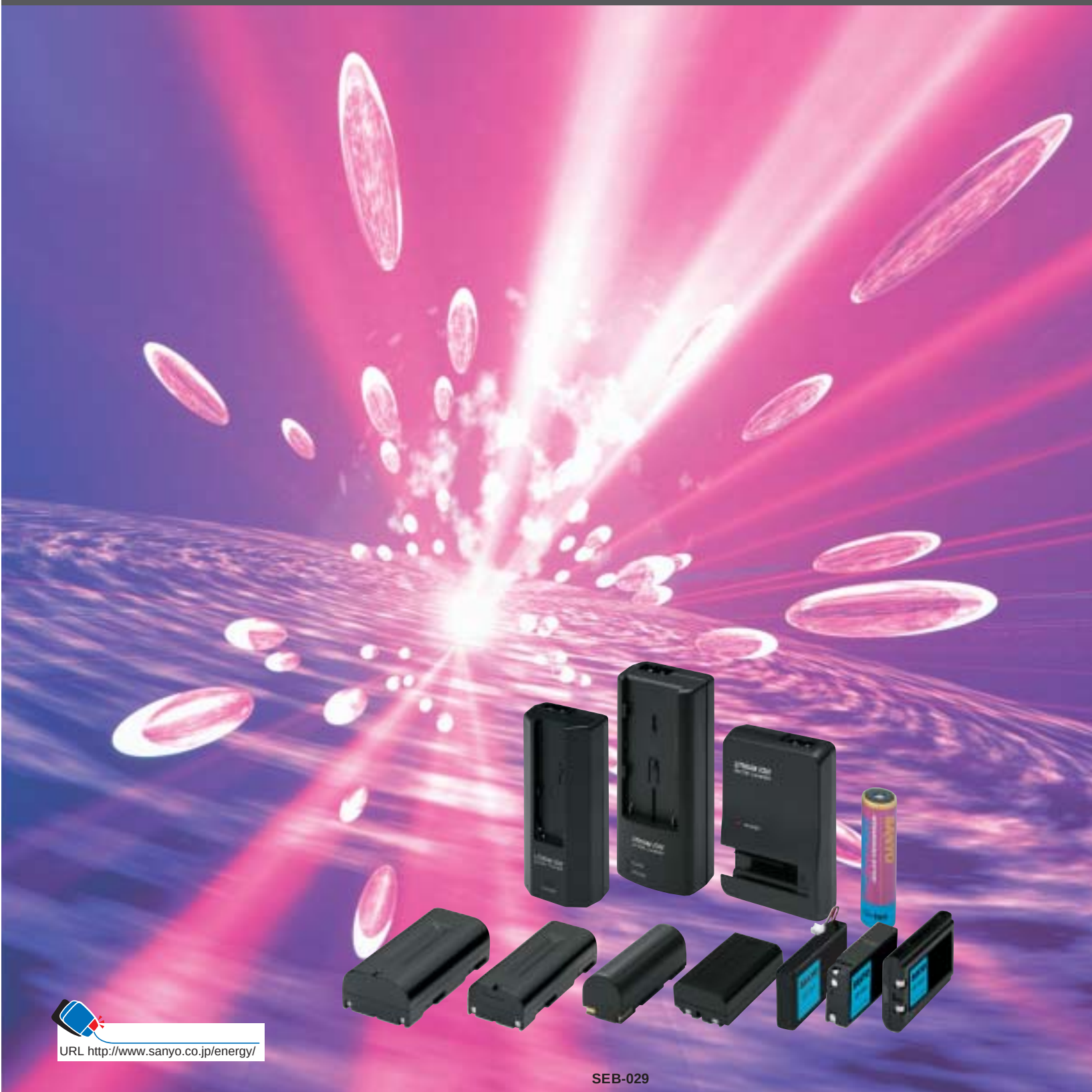
SANYO

Lithium ion

Standard Lithium-ion Battery Packs & Battery-Specific Chargers



URL http://www.sanyo.co.jp/energy/

SEB-029

Lithium-ion Battery Handling Precautions

⚠ Danger

1 Do not disassemble or modify the battery pack. The battery pack is equipped with built-in safety/protection features. Should these features be disabled, the battery pack can leak acid, overheat, emit smoke, burst and/or ignite.

2 Do not connect the positive (+) and negative (–) terminals with a metal object such as wire. Do not transport or store the battery pack together with metal objects such as necklaces, hair pins, etc. Otherwise, short-circuiting will occur, overcurrent will flow, causing the battery pack to leak acid, overheat, emit smoke, burst and/or ignite, or the metal object such as wire, necklace or hair pin can generate heat.

3 Do not discard the battery pack into fire or heat it. Otherwise, its insulation can melt down, its gas release vent or safety features will be damaged and/or its electrolyte can ignite, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition on it.

4 Do not use or leave the battery pack near a heat source such as a fire or a heater (80°C or higher). If the resin separator should be damaged owing to overheating, internal short-circuiting may occur to the battery pack, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition of the battery pack.

5 Do not immerse the battery pack in water or seawater, and do not allow it to get wet. Otherwise, the protective features in it can be damaged, it can be charged with extremely high current and voltage, abnormal chemical reactions may occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

6 Do not recharge the battery pack near fire or in extremely hot weather. Otherwise, hot temperatures can trigger its built-in protective features, inhibiting recharging, or can damage the built-in protective features, causing it to be charged with an extremely high current and voltage, and, as a result, abnormal chemical reactions can occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

7 To recharge the battery pack, use the battery charger specifically designed for the purpose and observe the recharging conditions specified by SANYO. A recharging operation under non-conforming recharging conditions (higher temperature and larger voltage/current than specified, modified battery charger, etc.) can cause the battery pack to be overcharged, or charged with extremely high current, abnormal chemical reaction can occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

8 Do not pierce the battery pack with a nail or other sharp objects, strike it with a hammer, or step on it. Otherwise, the battery pack will become damaged and deformed, internal short-circuiting can occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

9 Do not strike or throw the battery pack. The impact might cause leakage, overheating, smoke emission, bursting and/or ignition. Also, if the protective feature in it becomes damaged, it could become charged with an extremely high current and voltage, abnormal chemical reactions can occur, which can lead acid leakage, overheating, smoke emission, bursting and/or ignition.

10 Do not use an apparently damaged or deformed battery pack. Otherwise, acid leakage, overheating, smoke emission, bursting and/or ignition of the battery pack may occur.

11 Do not directly solder the battery pack. Otherwise, heat can melt down its insulation, damage its gas release vent or safety features possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

12 Do not reverse the positive (+) and negative (–) terminals. Otherwise, during recharging, the battery pack will be reverse-charged, abnormal chemical reactions then may occur, or excessively high current can flow during discharging possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

13 The positive (+) and negative (–) terminals are arranged in a particular orientation. Do not force the connection if you cannot easily connect the battery pack terminals to the battery pack charger or other equipment. Confirm that the terminals are correctly oriented. Reversing the terminals will result in reverse-charging, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition of the battery pack.

14 Do not connect the battery pack to an electrical outlet, vehicle cigarette lighter, etc. When subjected to large voltage, overcurrent can flow on the battery pack, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

15 Do not use the battery pack for a purpose other than those specified. Otherwise, its guaranteed performance will be lost and/or its service life will be shortened. Depending on the equipment in which the battery pack is used, excessively high current can flow through battery pack, possibly damaging it and leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

16 If the battery pack leaks, and the electrolyte gets into the eyes, do not rub them. Instead, rinse the eyes with clean running water and immediately seek medical attention. Otherwise, eye injury may result.

⚠ Warning

1 Do not use the battery pack in combination with primary battery packs (such as dry-cell battery packs) or battery packs of different capacities or brands. Otherwise, the battery pack can be overdischarged during use or overcharged during recharging, abnormal chemical reactions may occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

2 If recharging operation fails to complete even when a specified recharging time has elapsed, immediately stop further recharging. Otherwise, acid leakage, overheating, smoke emission, bursting and/or ignition can occur.

3 Do not put the battery pack into a microwave oven or pressurized container. Rapid heating or disrupted sealing can lead to acid leakage, overheating, smoke emission, bursting and/or ignition.

4 If the battery pack leaks or gives off a bad odor, remove it from any exposed flame. Otherwise, the leaking electrolyte may catch fire, and the battery pack may emit smoke, burst or ignite.

5 If the battery pack gives off an odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately remove it from the equipment or battery pack charger and stop using it. Otherwise, the problematic battery pack can develop acid leakage, overheating, smoke emission, bursting and/or ignition.

⚠ Caution

1 Do not use or subject the battery pack to intense sunlight or hot temperatures such as in a car in hot weather. Otherwise, acid leakage, overheating and/or smoke emission can occur. Also, its guaranteed performance will be lost and/or its service life will be shortened.

2 The battery pack incorporates built-in safety devices. Do not use it in a location where static electricity (greater than the manufacturer's guarantee) may be present. Otherwise, the safety devices can be damaged, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

3 The guaranteed recharging temperature range is 0 to 40°C. A recharging operation outside this temperature range can lead to acid leakage and/or overheating of the battery pack, and may cause damage to it.

4 If acid leaking from the battery pack contacts your skin or clothing, immediately wash it away with running water. Otherwise, skin inflammation can occur.

5 Store the battery pack in a location where children cannot reach it. Also, make sure that a child does not take out the battery pack from the battery pack charger or equipment.

6 Before use, carefully study the Operation Manual and Precautions. For further information, contact a nearest SANYO distributor or representative. Safekeep the manual for future reference.

7 For recharging procedures, refer to the Operation Manual of your battery pack charger.

8 If you find rust, a bad odor, overheating and/or other irregularities when using the battery pack for the first time, return it to your supplier or vendor.

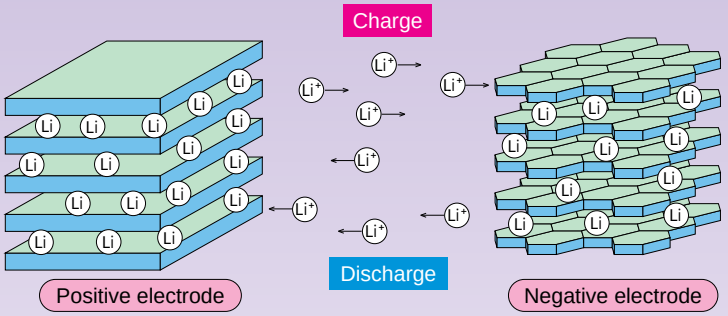
Smaller, lighter, more powerful
Meeting today's needs for a compact, portable, and robust source of energy.

Devices designed to make our lives easier are being developed at an increasingly rapid pace. With the multimedia age dawning, the market is becoming more deversified with such innovations as lightweight, compact video equipment, personal computers, and data-processing equipments. Such devices have created a need for high-quality, reliable power sources that provide excellent functionality.

Sanyo now introduces a series of lithium-ion batteries offering a higher energy density and three times the voltage of Nickel-Cadmium (Ni-Cd) and Nickel-Metal-Hydride (Ni-MH) batteries.

In particular, the prismatic lithium ion battery pack incorporates an aluminum alloy casing to help design lighter equipment.

To allow our users to adopt our unique lithium batteries with a minimum development cost (in the case of standard specifications) involving no cost for a new die, as well as for us to be able to deliver a user-specific battery pack approximately three months after receiving an order from a customer, we offer a full range of SANYO standard lithium ion battery packs.



Features of standard lithium ion battery packs

■ A user-specific battery pack can be readily mass-produced. All that is necessary for the user is to specify the rating label, stencil print pattern and operating instructions.

■ Low development cost since preparation for a new die is not necessary (with standard specifications)

■ Delivery is possible in approximately three months after reception of an order.

■ L-shaped output terminals allow greater freedom in designing equipment that uses the battery pack. (Applicable products: UR-121, 212, 320,421,521)

Features of battery-specific chargers

■ A user-specific battery pack can be readily mass-produced. All that is necessary for the user is to specify the rating label, stencil print pattern and operating instructions.

■ Low development cost since preparation for a new die is not necessary (with standard specifications)

■ Delivery is possible in approximately three months after reception of an order.

Technical Data Table

Product Number	Battery Type	Nominal Voltage	Rated Capacity	Dimensions (W×L×H)	Weight	Operating Temperature Range (※)	Typical Applications
UR-611	1UR18650F	3.7V	2100mAh	20.3×70.7 (φ) (H)	Approx.50.0g	Charge: 0–40°C Discharge: −20–60°C	Portable MD, PDA, HT, DSC, etc.
UR-121	2UR18650P	7.4V	1700mAh	37.6×71.6×20.4	Approx.97.0g	Charge: 0–40°C Discharge: −20–60°C	Portable navigation systems, PDA, HT, DSC, DVD, DVC, etc.
UR-212	1UR18500F	3.7V	1300mAh	19.8×55.5×20.4	Approx.38.0g	Charge: 0–40°C Discharge: −20–60°C	DSC, PDA, etc.
UR-320	2UR14650	7.2V	800mAh	30.2×71.6×16.7	Approx.60.0g	Charge: 0–40°C Discharge: −20–60°C	PDA, HT, DSC, etc.
UR-421	2UR14500P	7.4V	800mAh	32.3×51.8×15.7	Approx.45.0g	Charge: 0–40°C Discharge: −20–60°C	PDA, HT, DSC, etc.
UR-521	2UR18500F	7.4V	1500mAh	39.5×55.8×20.9	Approx.80.0g	Charge: 0–40°C Discharge: −20–60°C	PDA, HT, DSC, etc.
UF-311	1UF812248P	3.7V	700mAh	27.3×52.0×8.6	Approx.23.0g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-410	1UF102248	3.6V	800mAh	27.3×50.5×11.5	Approx.27.5g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-511	1UF612248P	3.7V	480mAh	27.3×52.0×6.85	Approx.17.5g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-811	1UF611948P	3.7V	420mAh	24.3×50.4×6.6	Approx.14.5g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-912	1UF553048F	3.7V	820mAh	30.9×54.1×5.9	Approx.20.0g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-1011	1UF103450P	3.7V	1800mAh	37.0×57.0×12.8	Approx.45.5g	Charge: 0–40°C Discharge: −20–60°C	DSC, PDA, HT, etc.
UF-1311(C)	1UF463048P	3.7V	680mAh	31.1×52.8×5.1	Approx.18.9g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, PHS, PDA, etc.
UF-2812	1UF553436F	3.7V	720mAh	6.0×35.45×39.35	Approx.17.0g	Charge: 0–40°C Discharge: −20–60°C	Mobile phone, HT, DSC, etc.

※The operating temperature range varies according to the using condition.

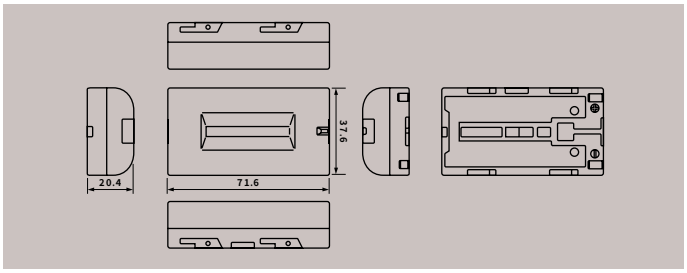
DSC: Digital Still Camera, HT: Handy Terminal
DVC: Digital Video Camcorder, PDA: Portable Handy Assistant

Lithium ion Battery Pack (UR-121)

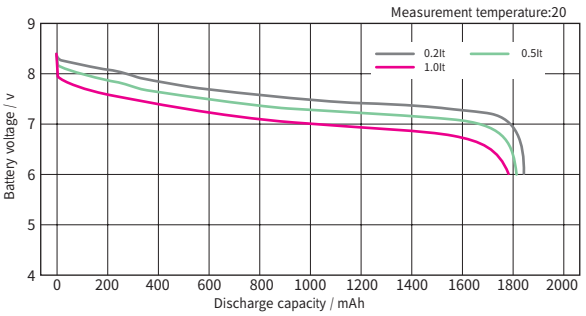
- L-shaped output terminals allow greater freedom in designing equipment that uses the battery pack.
- 3-mm wide terminals, situated 1 mm below the pack surface, to positively prevent chain short-circuit fault.
- Durable pack construction (compatible with UL1409).

【UR-121 specifications】

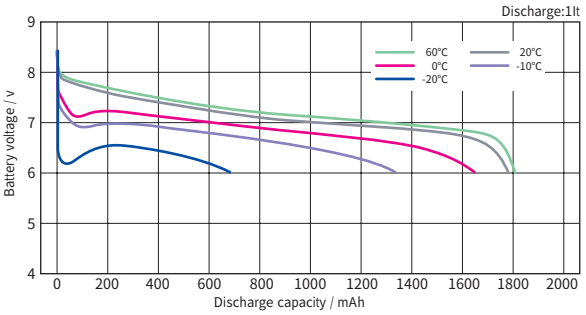
Cell used	Two UR18650P cells in series
Nominal voltage	7.4V
Nominal capacity	1,700mAh
Charge system	Constant current : to 1.7A Constant voltage : 8.4V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	37.6×71.6×20.4mm
Weight	Approx.97g



Discharge Rate Characteristics



Discharge Temperature Characteristics



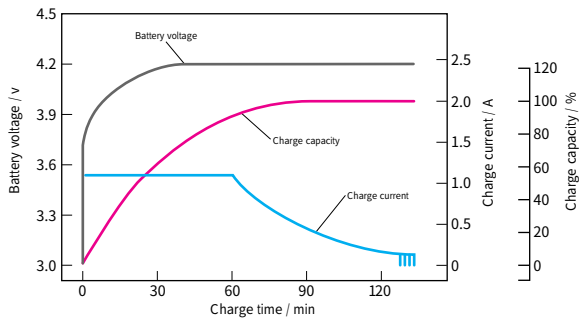
Special Charger for UR-121 (NC-LSC05)

- Compact design ensures portability. The charger can be used anywhere in the world.
- Its quick recharge capability allows the battery pack to be fully charged in approximately two hours.

【NC-LSC05 specifications】

Input voltage	AC100−240VAC, 50−60Hz
Charge indication	Charge ON ; red LED ON Charge OFF ; red LED OFF
Charge system	Constant voltage-constant current system
Input connection	Inlet system
Safety standard	PSE mark approved , EN60950 , ICE60950 , UL1950 , CSA C22.2 No.950
Dimensions (W×L×H)	55×120×38.5mm
Weight	Approx.135g
Option	Adaptor

Charge Characteristics

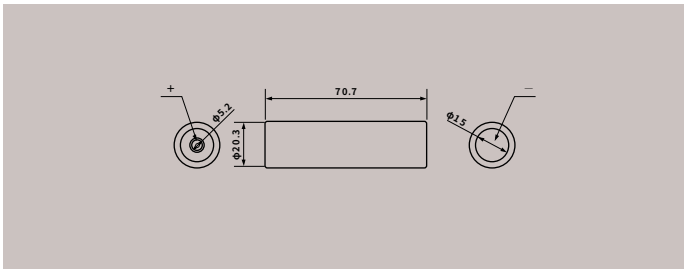


Lithium ion Battery Pack (UR-611)

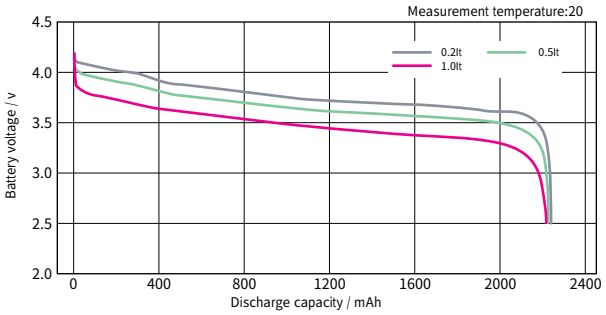
- Built-in charge control circuit enables charging operation within a wider voltage range (4.1 to 4.5 V)
- Positive and negative terminals are disposed respectively on the top and bottom of the cylindrical form.
- The recessed positive terminal is intended to prevent reverse loading of the battery pack.

【UR-611 specifications】

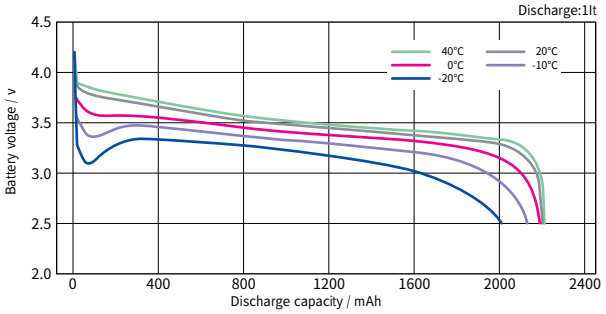
Cell used	One UR18650F cell
Nominal voltage	3.7V
Nominal capacity	2,100mAh
Charge system	Constant current : to 2A Constant voltage : 4.2 to 4.5V
Operating temperature range	Charge : 0 to 40℃ Discharge : −20 to 60℃
Dimensions (φ×H)	20.3×70.7mm
Weight	Approx.50g



Discharge Rate Characteristics



Discharge Temperature Characteristics



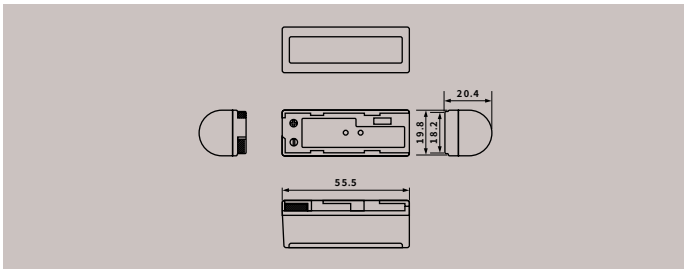
※The operating temperature range varies according to the using condition.

Lithium ion Battery Pack (UR-212)

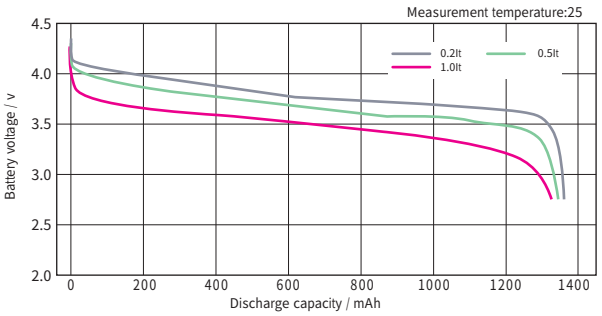
- Helps design compact, light-weight equipment.
- L-shaped output terminals allow greater freedom in designing equipment that uses the battery pack.
- Terminals, situated 1 mm below the pack surface, to positively prevent chain short-circuit fault.
- Durable pack construction (compatible with UL1409).

【UR-212 specifications】

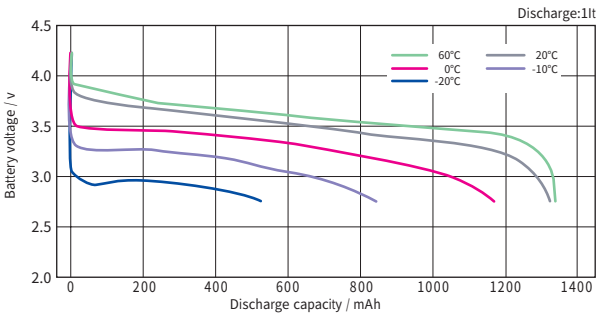
Cell used	One UR18500F
Nominal voltage	3.7V
Nominal capacity	1,300mAh
Charge system	Constant current : to 1.3A Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	19.8×55.5×20.4mm
Weight	Approx.38g



Discharge Rate Characteristics



Discharge Temperature Characteristics



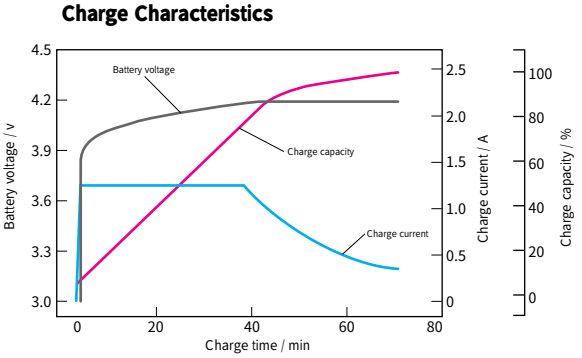
Special Charger for UR-212 (NC-LSC03)

- Compact design ensures portability. The charger can be used anywhere in the world.
- Its quick recharge capability allows the battery pack to be fully charged in approximately one hour.

【NC-LSC03 specifications】

Input voltage	AC100−240VAC, 50−60Hz
Charge indication	Charge ON ; red LED ON Charge OFF ; red LED OFF
Charge system	Constant voltage-Constant current system
Input connection	Plug-in system (Japan, North America), or inlet system
Safety standard	Plug-in type ; PSE mark approved , EN60950 , ICE60950 , UL1950 , CSA C22.2 No.95 Inlet type ; EN60065-compatible
Dimensions (W×L×H)	50×108×34mm
Weight	Approx.100g

Charge Characteristics

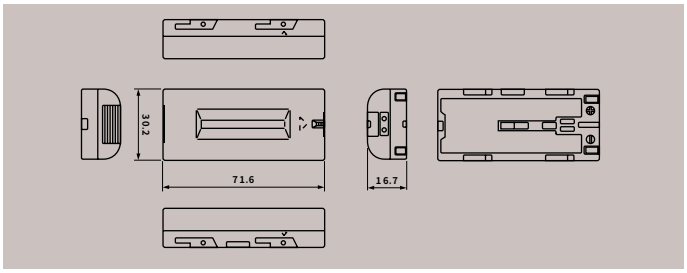


Lithium ion Battery Pack (UR-320)

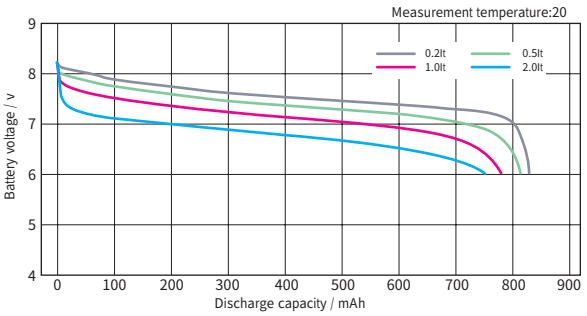
- Helps design compact, light-weight equipment.
- L-shaped output terminals allow greater freedom in designing equipment that uses the battery pack.
- Terminals, situated 1 mm below the pack surface, to positively prevent chain short-circuit fault.
- Durable pack construction (compatible with UL1409).

【UR-320 specifications】

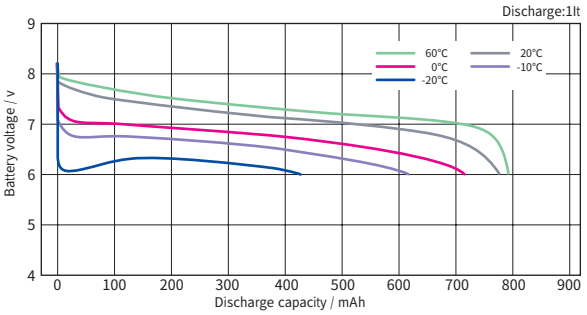
Cell used	Two UR14650 cells in series
Nominal voltage	7.2V
Nominal capacity	800mAh
Charge system	Constant current : to 0.75A Constant voltage : 8.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	30.2×71.6×16.7mm
Weight	Approx.60g



Discharge Rate Characteristics



Discharge Temperature Characteristics



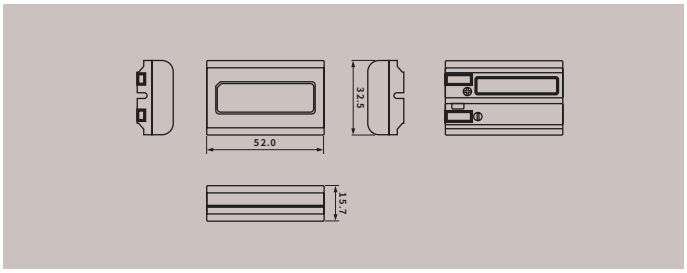
※The operating temperature range varies according to the using condition.

Lithium ion Battery Pack (UR-421)

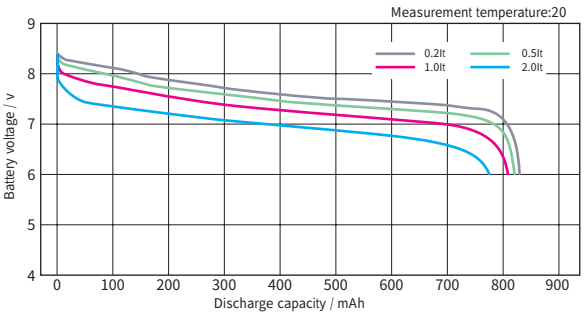
- Helps design compact, light-weight equipment.
- Low profile helps design thinner equipment.
- Its dimensions are near common to those on a lithium battery (2CR5). Thus, an existing equipment design may be used with minimum modification (form and terminal voltage).

【UR-421 specifications】

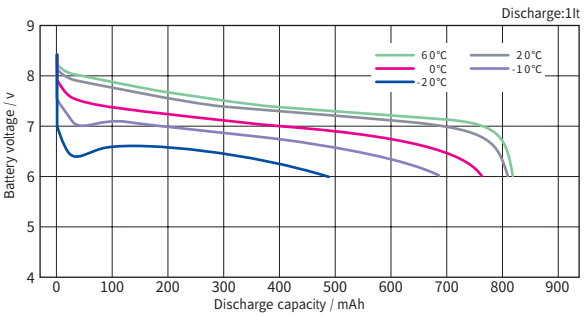
Cell used	UR14500P, two connected in series
Nominal voltage	7.4V
Nominal capacity	720mAh
Charge system	Constant current : to 0.72A Constant voltage : 8.4V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	32.3×51.8×15.7mm
Weight	Approx.44g



Discharge Rate Characteristics



Discharge Temperature Characteristics



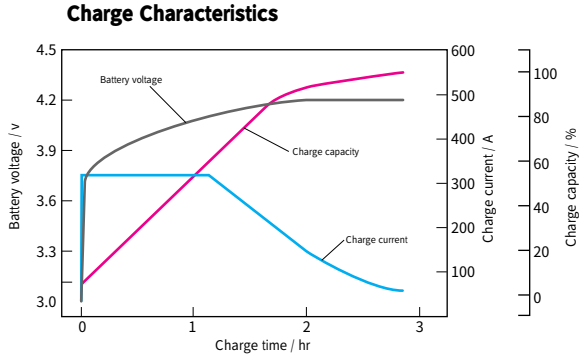
Special Charger for UR-421 (NC-LSC06)

- Compact design that still can house the battery pack.
- The charger can be used anywhere in the world.

【NC-LSC06 specifications】

Input voltage	AC100−240VAC, 50−60Hz
Charge indication	Charge ON ; red LED ON Charge OFF ; red LED OFF
Charge system	Constant voltage-constant current system
Input connection	Inlet system
Safety standard	PSE mark approved , EN60950 , ICE60950 , UL1950 , CSA C22.2 No.950
Dimensions (W×L×H)	70×90×25mm
Weight	Approx.90g

Charge Characteristics

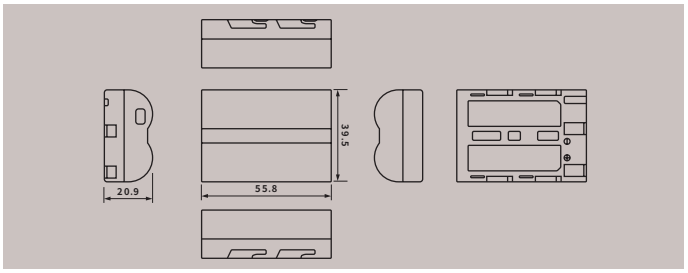


Lithium ion Battery Pack (UR-521)

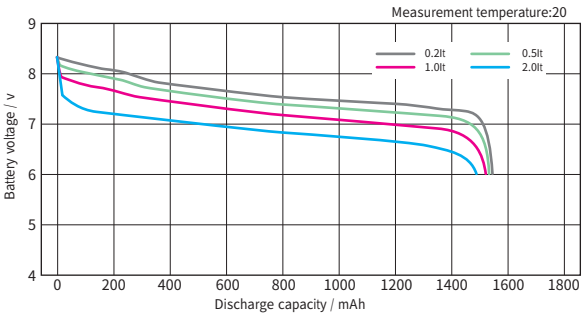
■ Helps design compact, light-weight equipment.

【UR-521 specifications】

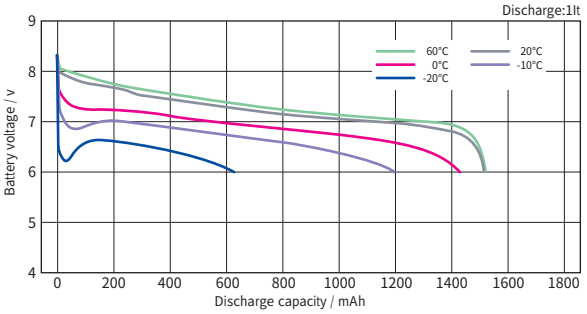
Cell used	Two UR18500F cells in series
Nominal voltage	7.4V
Nominal capacity	1,500mAh
Charge system	Constant current : to 1.5A Constant voltage : 8.4V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	39.5×55.8×20.9mm
Weight	Approx.80g



Discharge Rate Characteristics



Discharge Temperature Characteristics



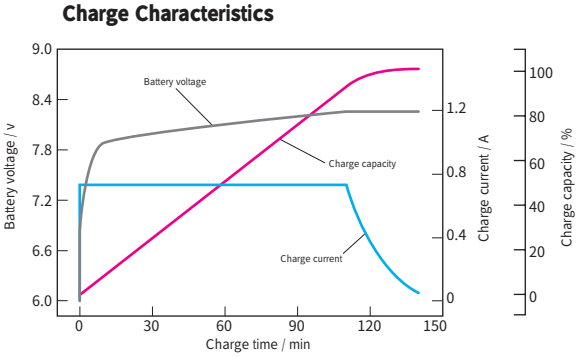
Special Charger for UR-521 (NC-LSC11)

■ Compact design ensures portability. The charger can be used anywhere in the world.

【NC-LSC11 specifications】

Input voltage	AC100−240VAC, 50−60Hz
Charge indication	Charge ON ; red LED ON Charge OFF ; red LED OFF
Charge system	Constant voltage-constant current system
Input connection	Inlet system
Safety standard	PSE mark approved , EN60950 , ICE60950 , UL1950 , CSA C22.2 No.950
Dimensions (W×L×H)	65×90×30.2mm
Weight	Approx.89g

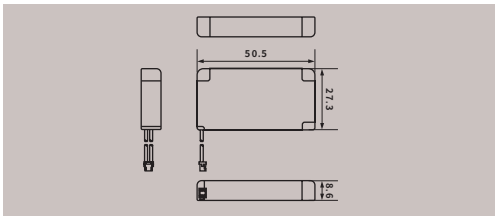
Charge Characteristics



※The operating temperature range varies according to the using condition.

Lithium ion Battery Pack (UF Series)

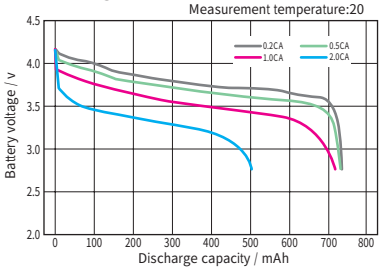
UF-311



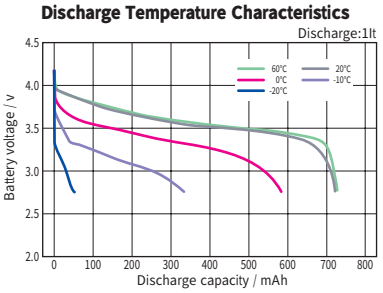
【UF-311 specifications】

Cell used	UF812248P
Nominal voltage	3.7V
Nominal capacity	700mAh
Charge system	Constant current : 1It(700)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	27.3×52.0×8.6mm
Weight	Approx.23.0g

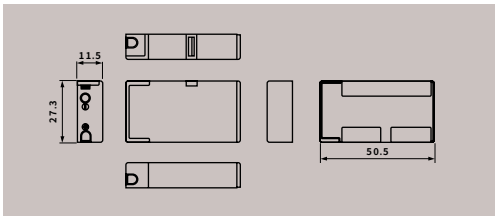
Discharge Rate Characteristics



Discharge Temperature Characteristics



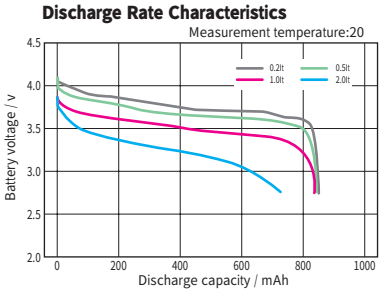
UF-410



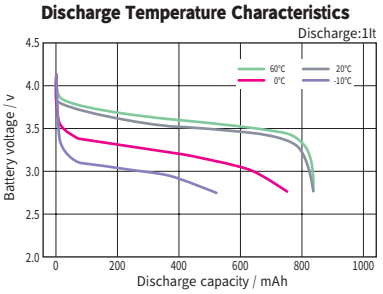
【UF-410 specifications】

Cell used	UF102248
Nominal voltage	3.6V
Nominal capacity	800mAh
Charge system	Constant current : 1It(800)mA Constant voltage : 4.1V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	27.3×50.5×11.5mm
Weight	Approx.27.5g

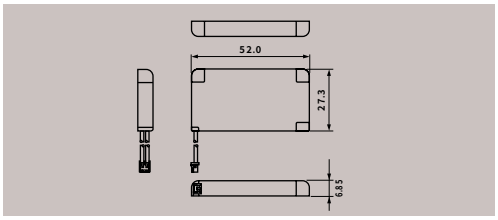
Discharge Rate Characteristics



Discharge Temperature Characteristics



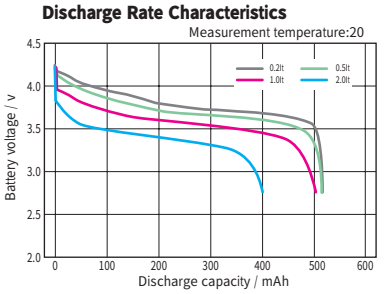
UF-511



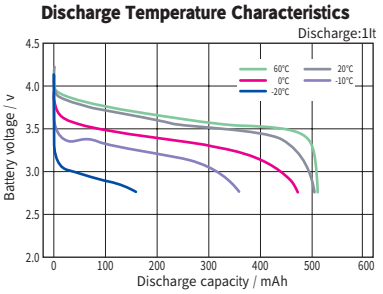
【UF-511 specifications】

Cell used	UF612248P
Nominal voltage	3.7V
Nominal capacity	480mAh
Charge system	Constant current : 1It(480)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	27.3×52.0×6.85mm
Weight	Approx.17.5g

Discharge Rate Characteristics



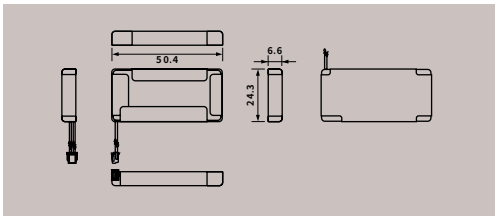
Discharge Temperature Characteristics



※The operating temperature range varies according to the using condition.

Lithium ion Battery Pack (UF Series)

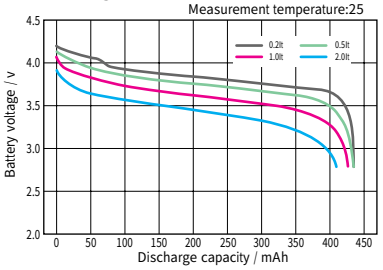
UF-811



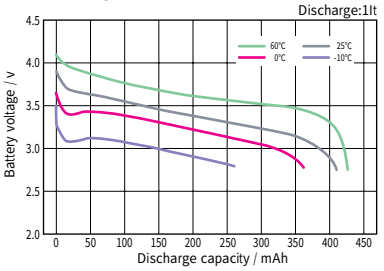
【UF-811 specifications】

Cell used	UF611948P
Nominal voltage	3.7V
Nominal capacity	420mAh
Charge system	Constant current : 1It(420)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	24.3×50.4×6.6mm
Weight	Approx.14.5g

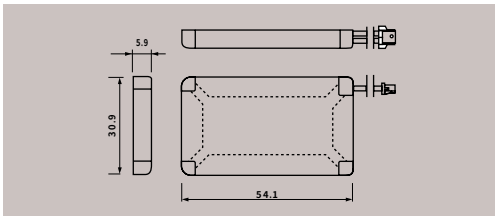
Discharge Rate Characteristics



Discharge Temperature Characteristics



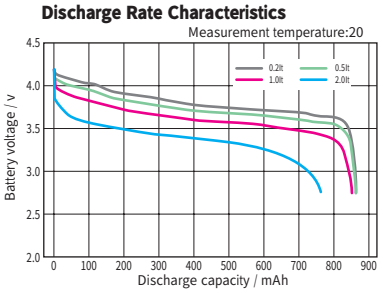
UF-912



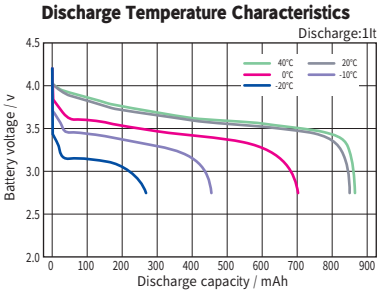
【UF-912 specifications】

Cell used	UF553048F
Nominal voltage	3.7V
Nominal capacity	820mAh
Charge system	Constant current : 1It(820)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	30.9×54.1×5.9mm
Weight	Approx.20.0g

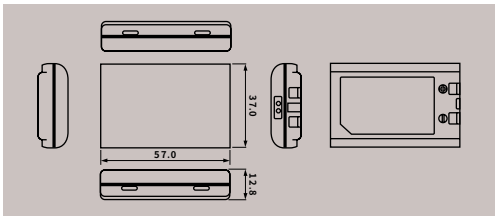
Discharge Rate Characteristics



Discharge Temperature Characteristics



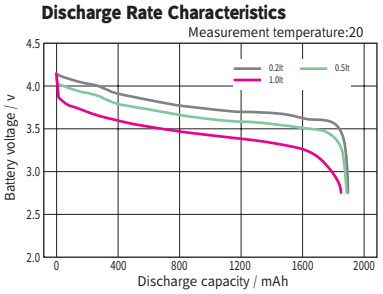
UF-1011



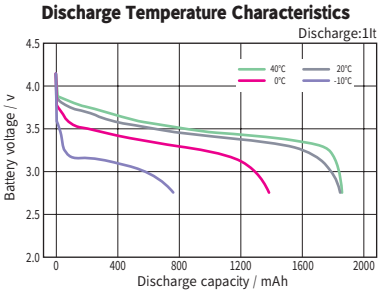
【UF-1011 specifications】

Cell used	UF103450P
Nominal voltage	3.7V
Nominal capacity	1,800mAh
Charge system	Constant current : 1It(1,800)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	37.0×57.0×12.8mm
Weight	Approx.45.5g

Discharge Rate Characteristics



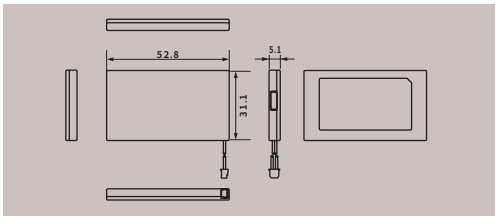
Discharge Temperature Characteristics



For the technical data of charger cases, see page 3.

Lithium ion Battery Pack (UF Series)

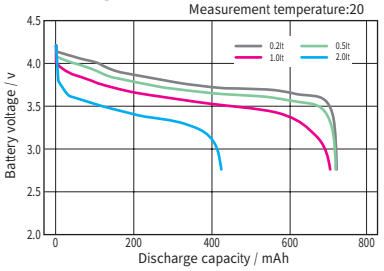
UF-1311(C)



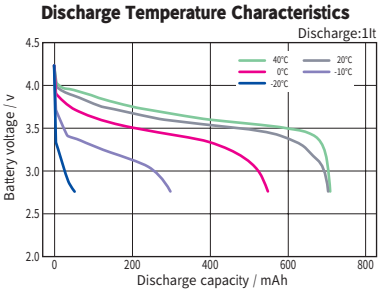
【UF-1311(C) specifications】

Cell used	UF463048P
Nominal voltage	3.7V
Nominal capacity	680mAh
Charge system	Constant current : 1It(680)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	31.1×52.8×5.1mm
Weight	Approx.18.9g

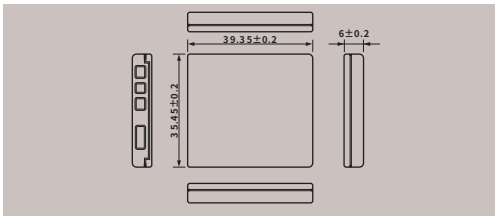
Discharge Rate Characteristics



Discharge Temperature Characteristics



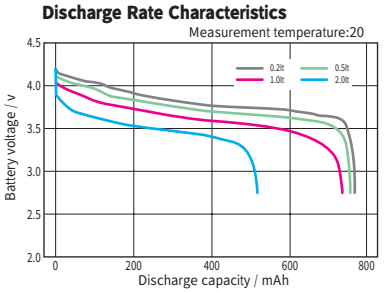
UF-2812



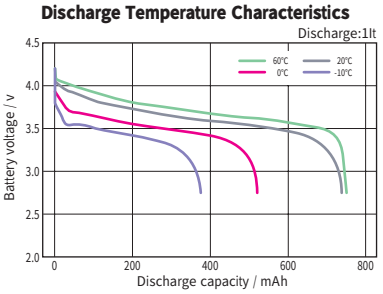
【UF-2812 specifications】

Cell used	UF553436F
Nominal voltage	3.7V
Nominal capacity	720mAh
Charge system	Constant current : 1It(720)mA Constant voltage : 4.2V
Operating temperature range	Charge : 0 to 40°C Discharge : −20 to 60°C
Dimensions (W×L×H)	6.0×35.45×39.35mm
Weight	Approx.17.0g

Discharge Rate Characteristics



Discharge Temperature Characteristics

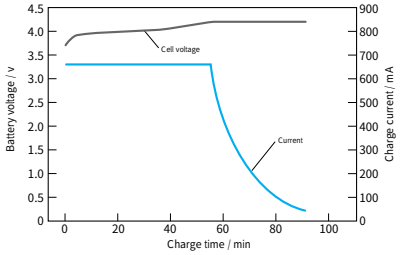


Special Charger for UF-2812 (NC-SAC05)

【NC-SAC05 specifications】

Input voltage	AC100−240VAC, 50−60Hz
Charge indication	Charge ON ; red LED ON Charge OFF ; red LED OFF
Charge system	
Input connection	
Safety standard	PSE mark approved , UL1310 , CSA C22.2 No223 , IEC60950
Dimensions (W×L×H)	45×85×32.3mm
Weight	Approx.70g

Charge Characteristics



※The operating temperature range varies according to the using condition.

For the technical data of charger cases, see page 3.

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