muRata

Lithium Ion Rechargeable Battery Technical Information

Revision 0.2
26th August 2013

Model Number	**US18650VTC5**
Cell Type	**Cylindrical**
Cell Name	**US18650VTC5**
Sony Code	**49928190**

Lithium-Ion Battery Specifications

1 General

1.1 Scope

This product specification is applied to “Lithium-Ion Rechargeable Batteries” used for
“ xxxxxxxxxx ”.
Please contact us when using this product for any other applications than described in the above.

1.2 Product Category
Lithium-Ion Rechargeable Battery

1.3 Cell Type
US18650VTC5D

1.4 Cell Designation based on IEC61960.
INR19/66

1.5 Acquired Safety Standard（Registration name ： US18650VTC5D）

UL1642 : File No.MH12566
UL62133 : File No.MH61426
IEC62133 2nd Edition
Taiwan Commodity Inspection Act (CNS 15364) Indian Compulsory
Registration Order, IS 16046:2015
(Murata Energy Device Singapore Pte. Ltd. Product Only) 1.6 Applicable Safety

Standard

United Nations, Recommendations on the Transport of Dangerous Goods (UN38.3) Japan, Electrical Appliance
and Material Safety Law

Reference

In case of the energy density is more than 400Wh/l (see 3.4 Energy Density), it is possibility to be subject to regulation by object country. It is recommend to confirm the contents of regulation.

As of April 2018 Japan, Electrical Appliance and Material Safety Law
“http://www.meti.go.jp/policy/consumer/seian/denan/index.htm” (Japanese)
“http://www.meti.go.jp/english/policy/economy/consumer/pse/index.html” (English)

Sony Energy Devices Corporation
Device Solutions Business Group / Sony Corporation

1. General

1.1 Name and Code

1.1.1 Model Number : US18650VTC5
1.1.2 Cell Name : US18650VTC5
1.1.3 Sony Code : 49928190

1.2 Cell Shape and Weight

1.2.1 Cell Shape : Cylindrical
*1.2.2 Size (*with plastic tube) : Diameter 18.35mm max
Length 65.20mm max
1.2.3 Weight : 44.3g Average

1.3 Safety Regulation

Sony will acquire UL1642.

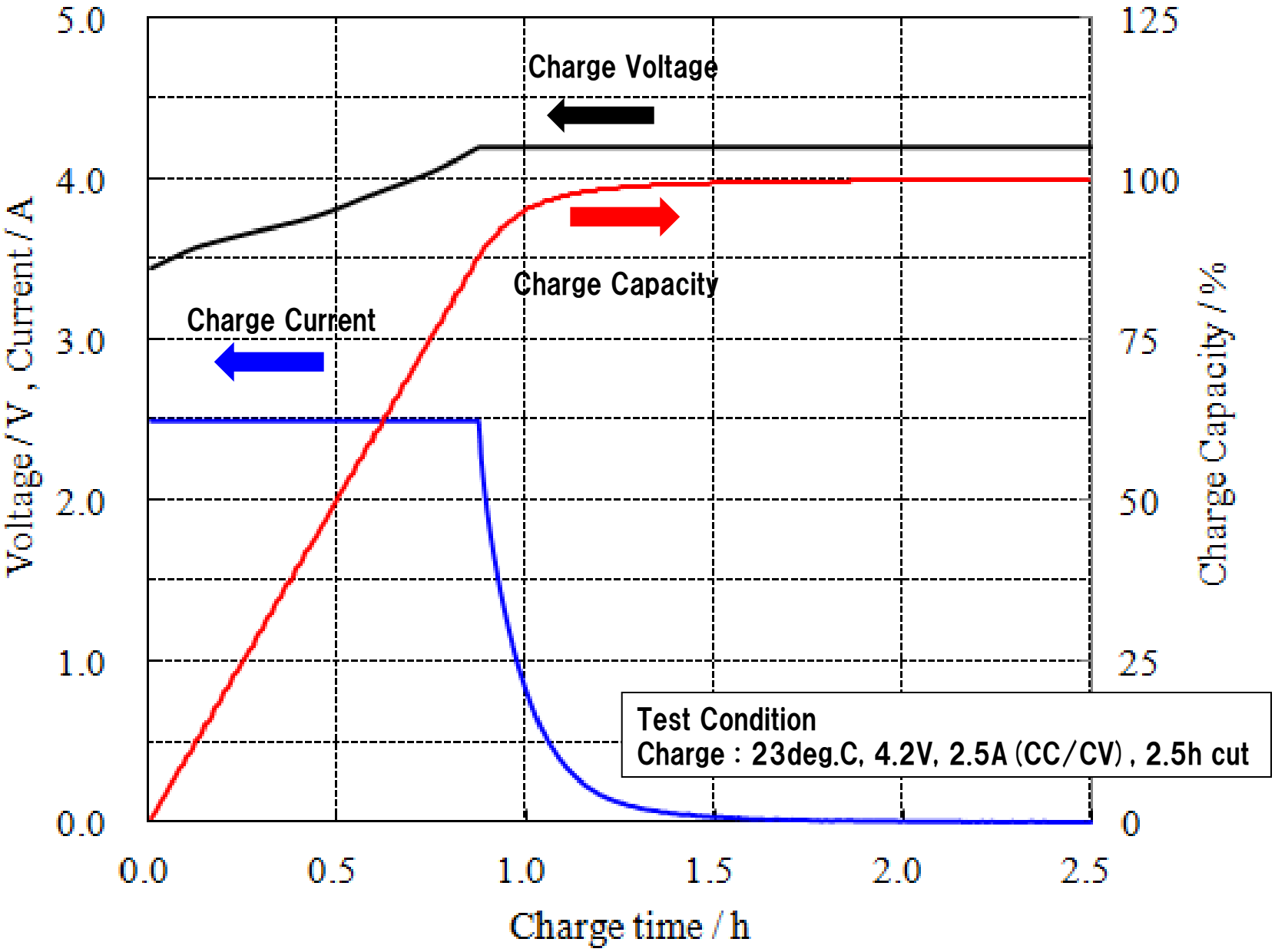
2. Performance

Nominal Capacity (0.2C discharge)	2600mAh 9.36Wh	average capacity 3.60V (average discharge voltage) at room temperature,2.0V cut off
Rated Capacity (0.2C discharge)	2500mAh 9.00Wh	minimum capacity at room temperature,2.0V cut off
Capacity at 1C	2563mAh 9.23Wh	average capacity at room temperature,2.5V cut off
Capacity at 10A	2577mAh 8.80Wh	average capacity at room temperature,2.5V cut off
Nominal Voltage	3.6V	
Internal Impedance	13.0mΩ Typ.	measured by AC1kHz
Cycle Performance	70% Min. of Initial capacity at 300 cycles	10A discharge at room temperature,2.5V cut off

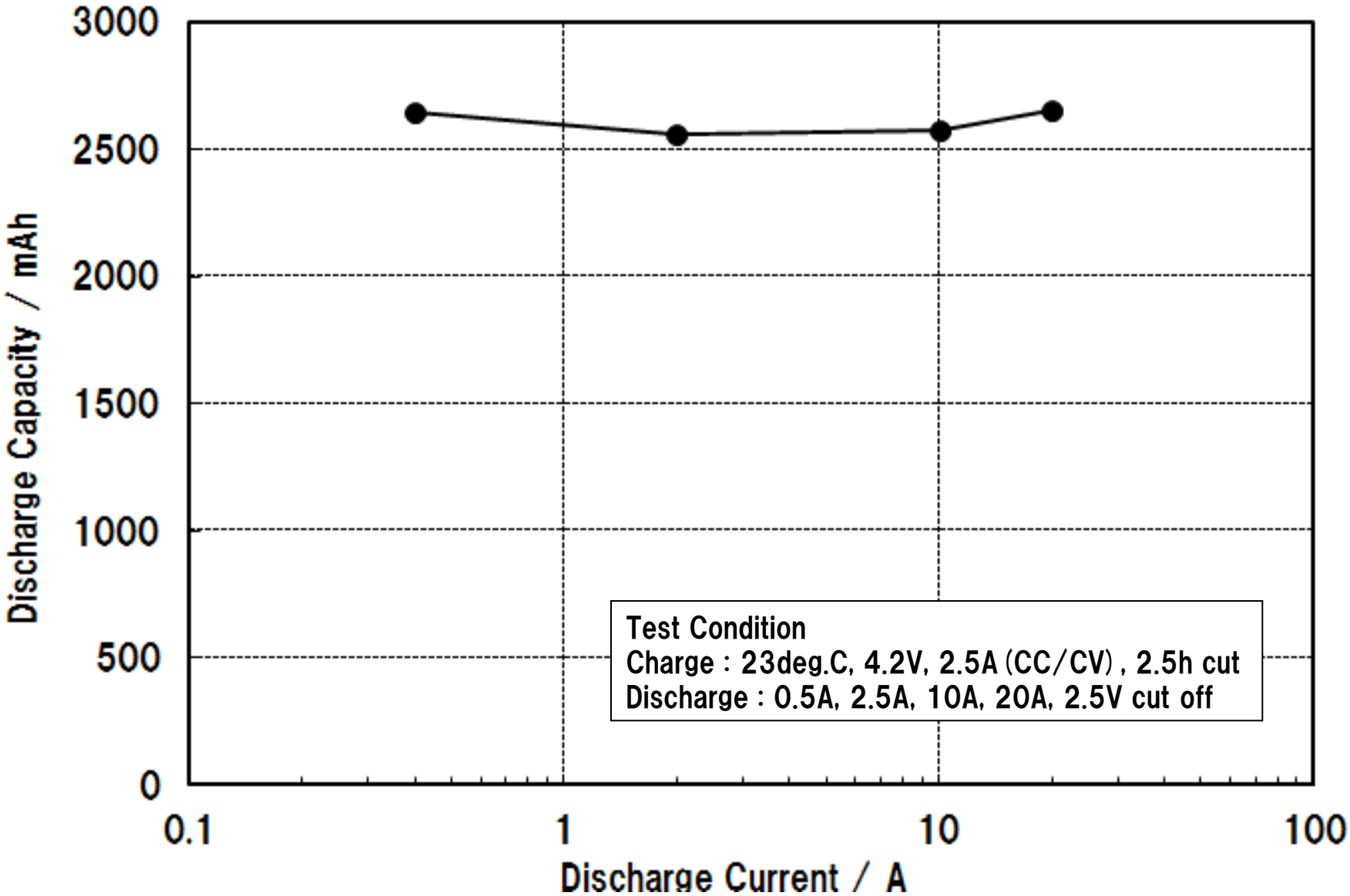
* Standard Charge Condition

Charge Method : constant current constant voltage
Charge Up Voltage : 4.2± 0.05V
Charge Current : 2.5A
Charge Time : 2.5h
Ambient Temperature : 23°C

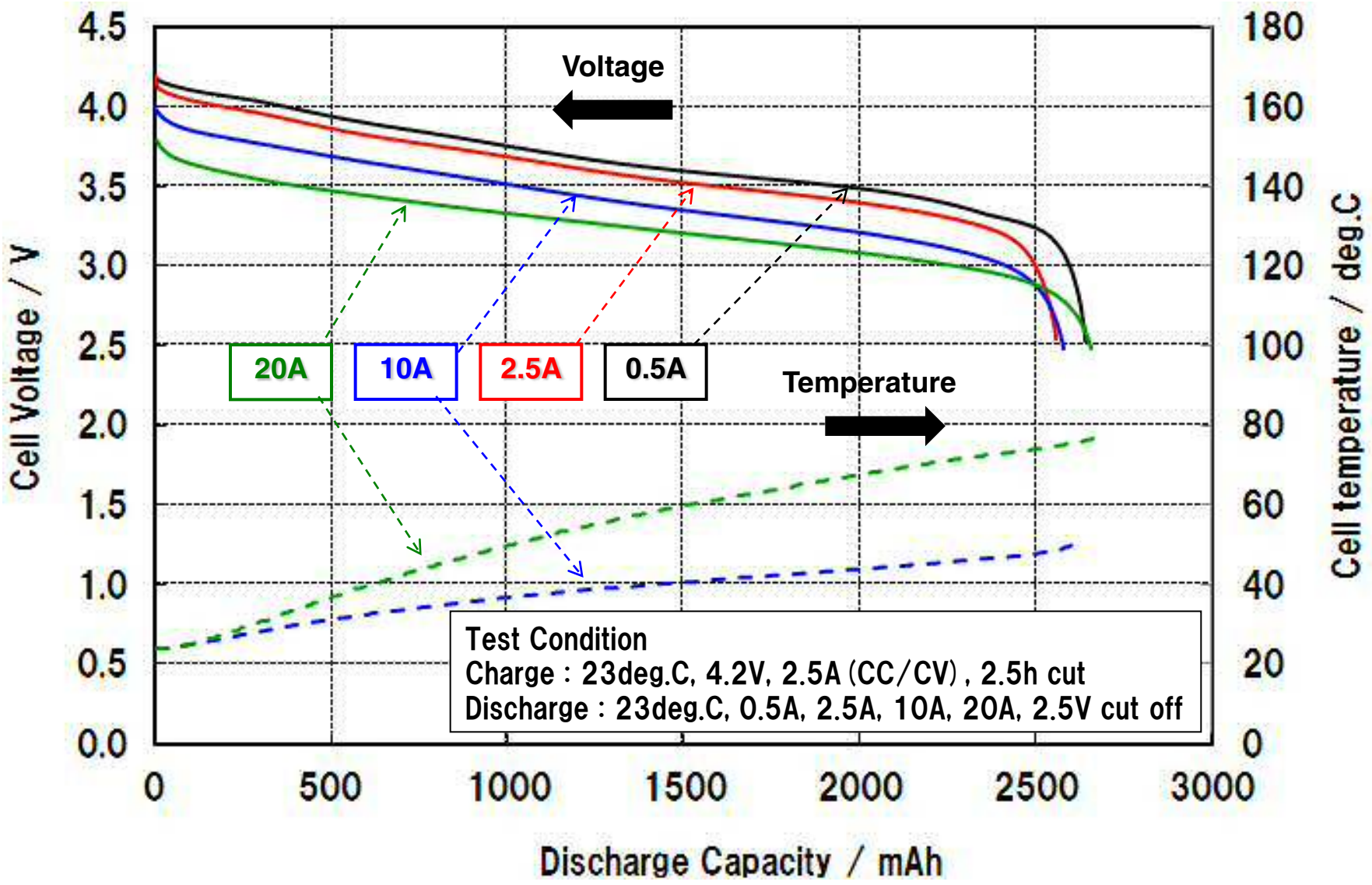
Charge Characteristics (US18650VTC5)



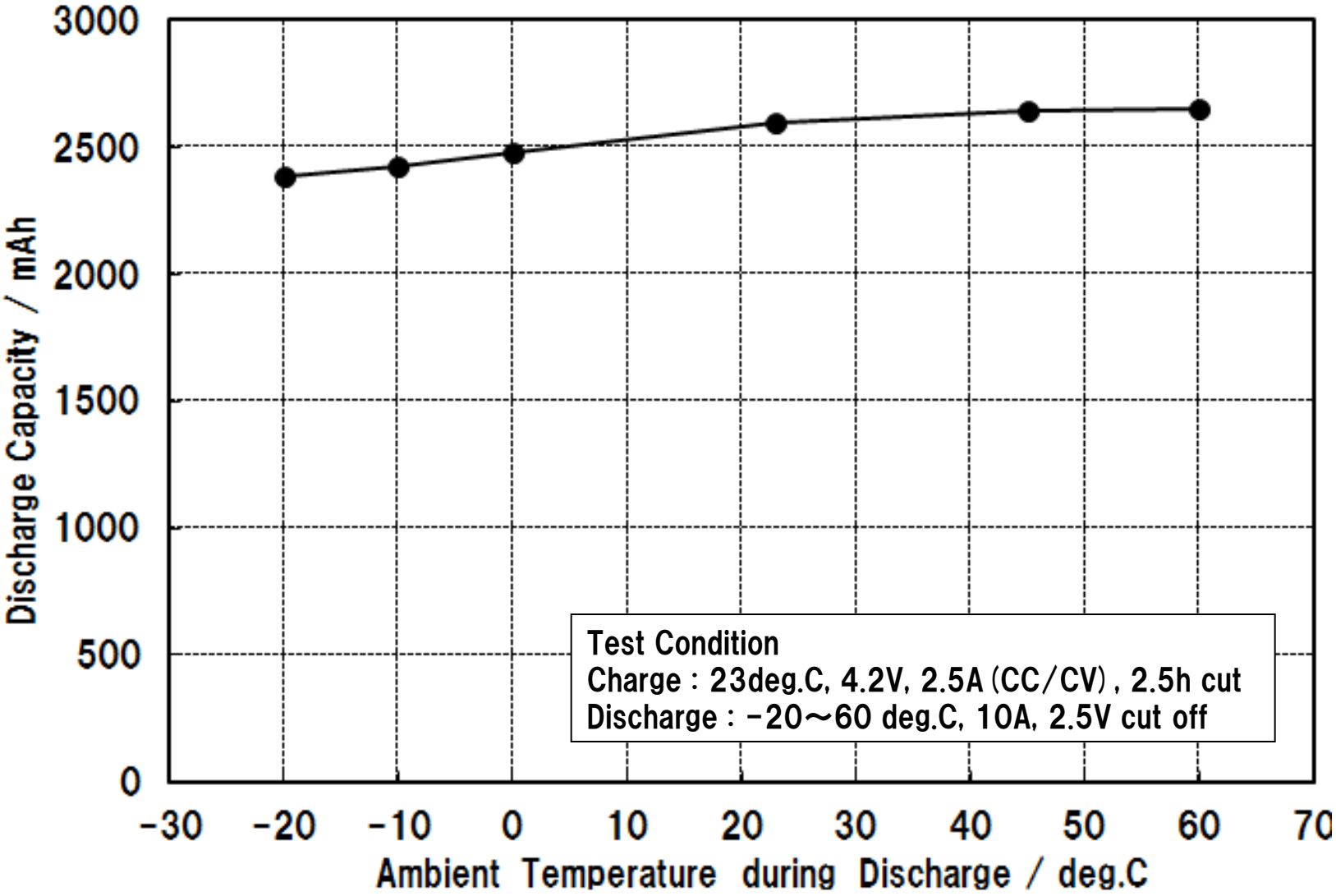
Discharge Load Characteristics (US18650VTC5)



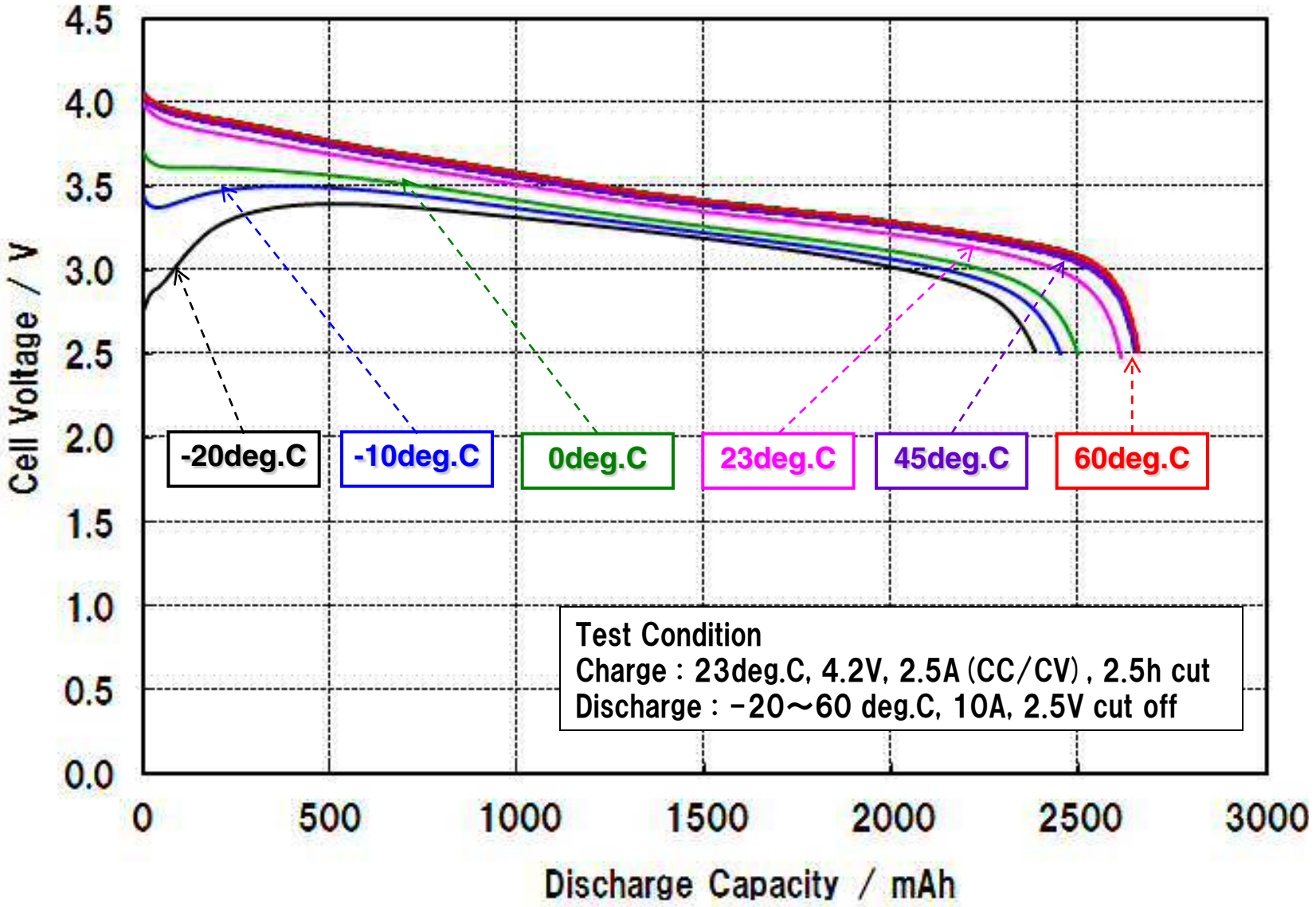
Discharge Load Characteristics (US18650VTC5)



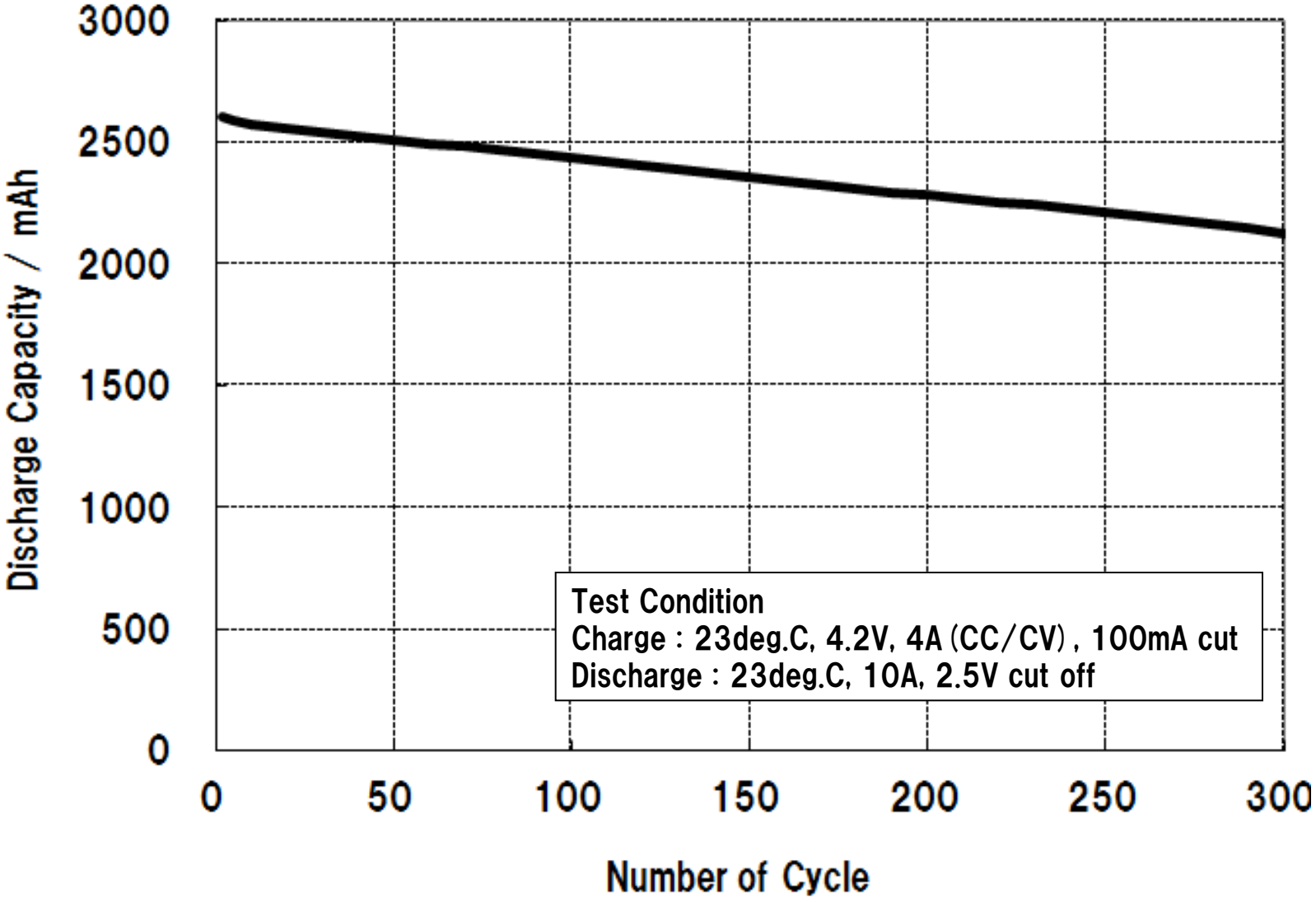
Temperature Dependence of Discharge Capacity (US18650VTC5)



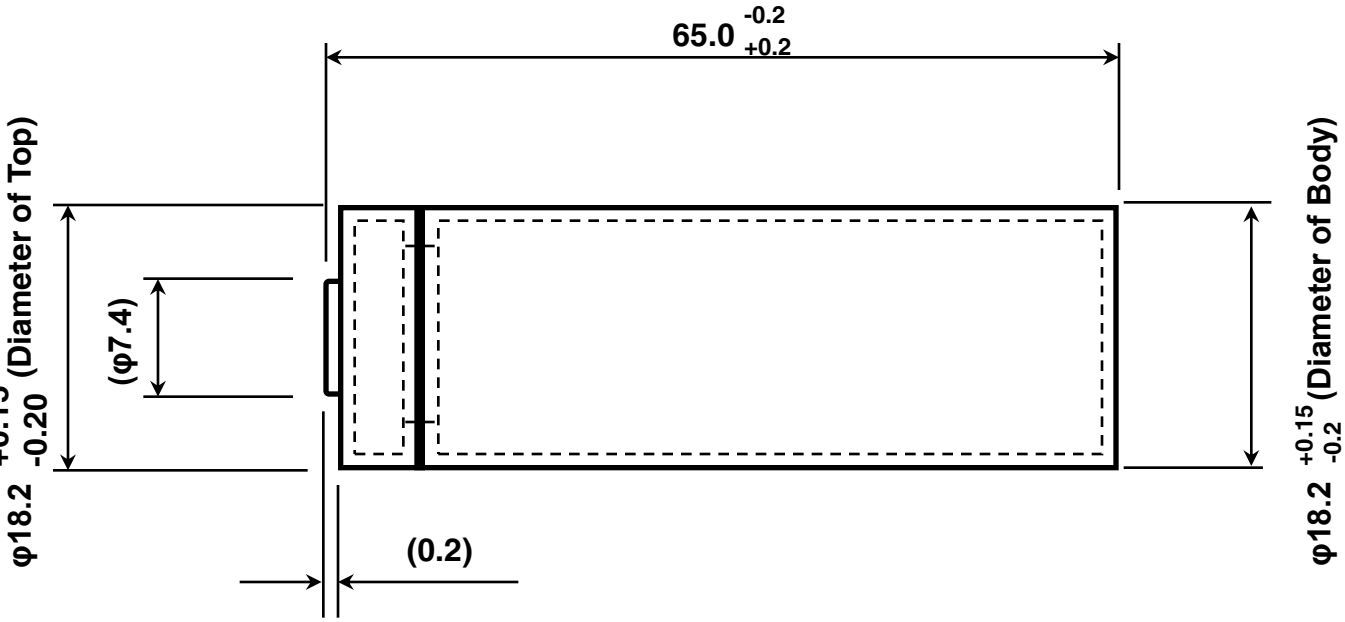
Temperature Dependence of Discharge Curves (US18650VTC5)



Cycle Life Performance (US18650VTC5)
10A discharge



Dimension with Plastic Tube: US18650VTC5



7 Caution

Caution on usage of Lithium-Ion Rechargeable Battery

⚠CAUTION

7.1 Caution for installing the battery into the pack

*Do not combine the different Lot Number cell (the Last 5 letters and figure) into the pack.

7.2 Caution for the battery and the pack

7.2.1 Charge

*It should be Constant Current-Constant Voltage (CC-CV) charging method.

*It shall be the shape which cannot be connected easily to any charger other than the dedicated charger.

*It shall have the structure which cannot be connected easily for end user to apply for another purpose.

7.2.2 Design of battery pack

*It shall have terminals or function which cannot easily cause external short circuit.
(such as chain short by necklace).

*It shall not short easily by effect of vibration or drop due to contact of internal wiring materials to battery.

*Mounted PWB which is assembled in battery pack shall perform the smoke and fire protection for the electrolyte adhesion.

*It should have the structure which protect electrolyte to outside of battery pack, in case of the electrolyte leakage from battery cell.

*The protection circuit shall be installed in the battery pack or the charger.

*The battery system must possess the following four types of protective circuits;

7.2.3 Protection Circuit for Safety

7.2.3.1 Over charging protective circuit by each block cell voltage monitoring

By each block cell voltage monitoring, the overcharging protective circuit shall operate at less than 4.250V/cell.

7.2.3.2 Over discharging protective circuit by each block cell voltage monitoring

By each block cell voltage monitoring, the over discharging protective circuit shall operate at 1.5V/cell to 2.5V/cell.

7.2.3.3 Over current protective circuit

The over current protective circuit shall operate charging at less than 6A.

The over current protective circuit or device shall operate discharging at less than 35A. If the over 35A discharge occur, the allowable time of operating over current protection comply with the below table.

Discharge current	～40A	～50A	～60A	～80A	～100A
Time	<91sec.	<43sec.	<28sec.	<15sec.	<9sec.

～120A	～130A	～150A	～200A
<6sec.	<4sec.	<3sec.	<1sec.

7.2.3.4 Temperature protective circuit

The over temperature protective circuit at high temperature side shall operate discharging until 90deg.C on the cell surface.（Including overshoot）.

The over temperature protective circuit at high temperature side shall operate charging at until 60deg.C on the cell surface.（Including overshoot）.

The over temperature protective circuit at low temperature side shall operate charging below 0degC on the cell surface.

7.2.4 Prohibition of Charging at over discharged state.

*In the situation that the battery becomes over discharged to the point where it becomes less than or equal to 1.0V, it is prohibited to charge such battery. 7.2.5 Cell

Configuration

* The maximum cell configuration for the battery pack is shown in below table.

Parallels	Series
1P	Up to 32
2P, 3P	Up to 18
4P, 5P	Up to 14

7.3 Storage

*Keep and Store the same package condition as shipping from Manufacturer.
*The recommendation is SOC 10～50% for long-term storage.
*Recommended condition is temperature 0～25deg.C and Humidity 75%RH or less.
*Do not store the battery near heat sources, nor in a place subject to direct sunlight.

7.4 Prohibition Clause

⚠WARNING

*Do not use the battery for any purpose other than the application and the battery pack specified in the Pack Check Sheet for Li-ion Cell (Category; Power Technology) of such battery.
*Do not resell the battery.

⚠DANGER

*Do not expose the batteries to water or moisture.
*Do not leave the battery in a place of high temperature (60deg.C or more).
*Do not use the battery in a place of high temperature (60deg.C or more).
*Do not throw the battery into fire, nor heat the battery.
*Do not disassemble nor modify the battery.
*Do not add strong shock, nor drop the battery.
*Do not solder leads directly to the battery body.
*Do not short (+) and (-) terminal of the battery with a kind of metal.
*Do not reverse charge the battery.
*Do not penetrate the battery with a nail etc., nor make a hole in the battery.
*Do not put the battery into a microwave oven or high pressure container.

7.5 Note

If any doubt or inconvenience regards this specification arises, modification and revision shall be only made per mutual agreement.

Depending upon circumstances such as E.O.L of raw material for cell component,
we may not be able to keep the supply of the cell. In that case, we will notify you of
this announcement by more than 6 months before production stop (before discontinuation).

When production location of the cell is planned to be changed or added,
we'll inform and provide of necessary evaluation data beforehand to get customer's approval.

8 Packing

8.1 Packing Instruction

LBH, Class9 and CAO marks are printed on the surface on carton. These marks are compliant with the specified design of ICAO and IATA.

8.2 Parts Name Marking

Part name is marked on the bar code label of master carton.
This bar code label is stuck onto one of the faces of the master carton.

8.3 Packing Instruction for Pallet

LBH, Class9 and CAO labels are affixed on the surface of the stretch film. These labels are compliant with the specified design of ICAO and IATA.