# Small Energy Device
# Cylinder type (UMAC)

RoHS | REACH | Hand Soldering Only

**Rechargeable battery having long cycle life**
**High rate charge/discharge is available.**

## Advantages

**①High rate charge/discharge**
800mohm low ESR and high rate (10C, 30mA) enabled by optimizing materials and structure

**②High safety**
No thermal runaway occurs because of its low capacity and chemically stable materials.

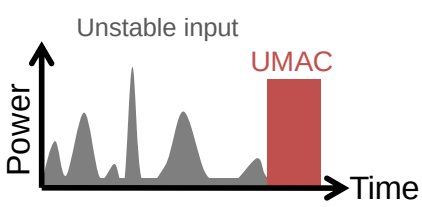
**③Long cycle life**
Charge (capacity) recovery is over 80% even after 3000 cycles. It can realize maintenance free design.

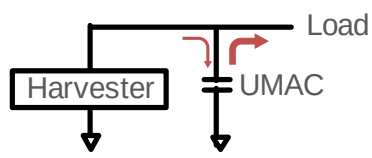
**④Compact and lightweight**
Package size: φ4 x 12mm, Weight：0.29g

## Applications & Benefits

### 1. Energy Harvesting Systems

- Charge/discharge in wide input/output range
- Long working time due to low leakage current
- Quick start without pre-charging due to low leakage current
- Enables maintenance free

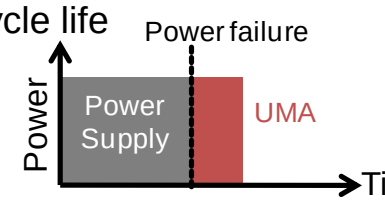


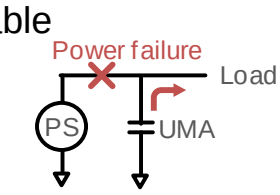




Application Example:
- ✓ Solar battery charger equipment
- ✓ Sensor node with wireless sensor network in combination with micro and macro energy harvesting systems

### 2. Backup

- Can backup system during replacing main battery
- Long backup time over 30sec
- High power discharge is available
- Long cycle life

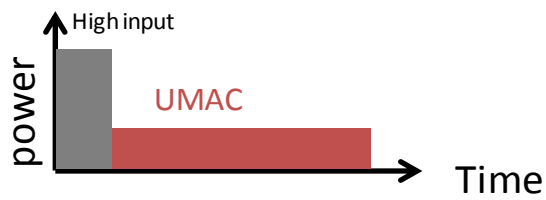



Application Example:
- ✓ Handy terminal / barcode reader
- ✓ POS (payment terminals, etc.)
- ✓ Emergency call or transmitter (medical equipments such as nurse call, industrial equipments using ISM band, etc.)
- ✓ Other battery powered equipments

### 3. Small power equipment

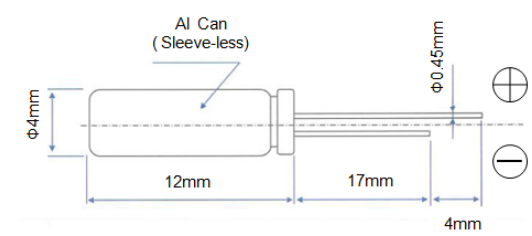
- Can be charged with High Input(10C,30mA)
- Quick start due to high Input
- Permanent use due to long cycle life
- High safety due to low capacity




Application Example:
- ✓ Electric pen
- ✓ Wearable equipment

For more details, please visit our website.
Application notes, technical notes, FAQs are available.
http://www.murata.com/en-global/products/smallenergydevice/uma

## Specifications

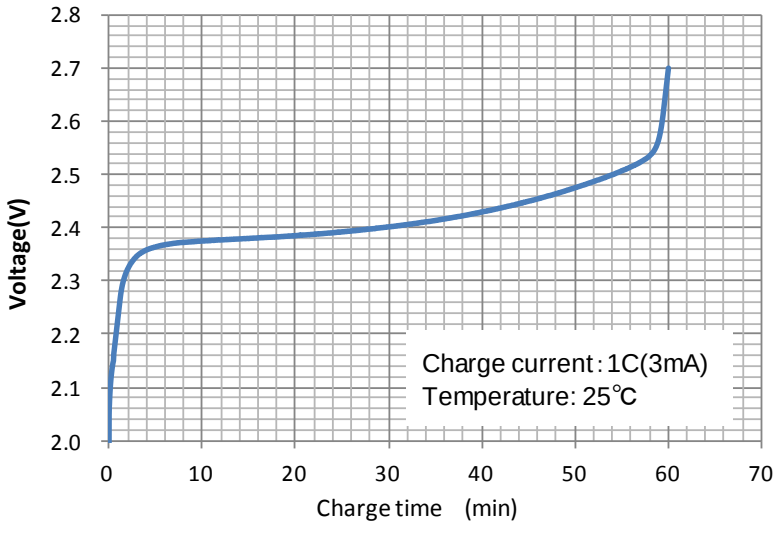
| | | | |
|---|---|---|---|
| Type | UMAC040130A003TA01 | Size |  |
| Nominal Voltage | 2.3V | | |
| Charge Voltage | 2.7V | | |
| End-of-discharge Voltage | 1.8V | | |
| Capacity | 3mAh (10F) | | |
| ESR | 800mΩ | Operating Temp. range | -20～70℃ |



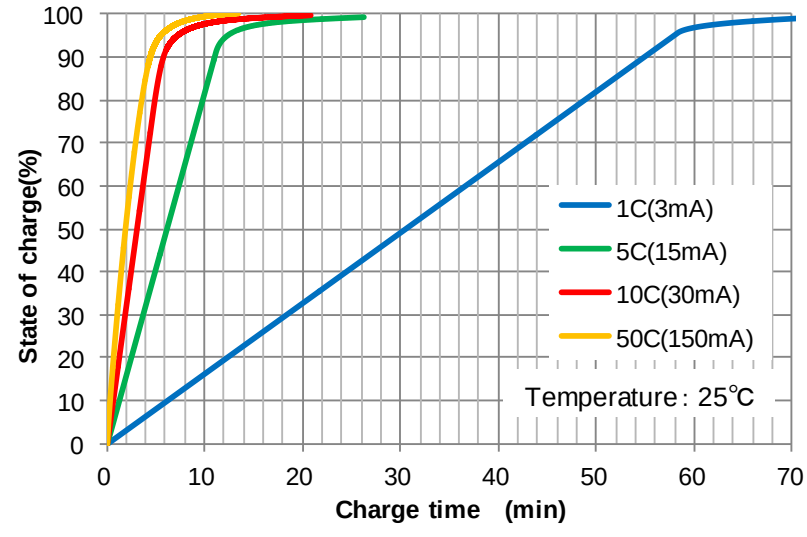
Recycle: Lithium-Ion batteries can be recycled. Regulations and laws related to the recycling of lithium ion batteries vary from country to country as well as by state and local governments. Please check the laws and regulations of final consuming areas.

# <Charge Characteristics>

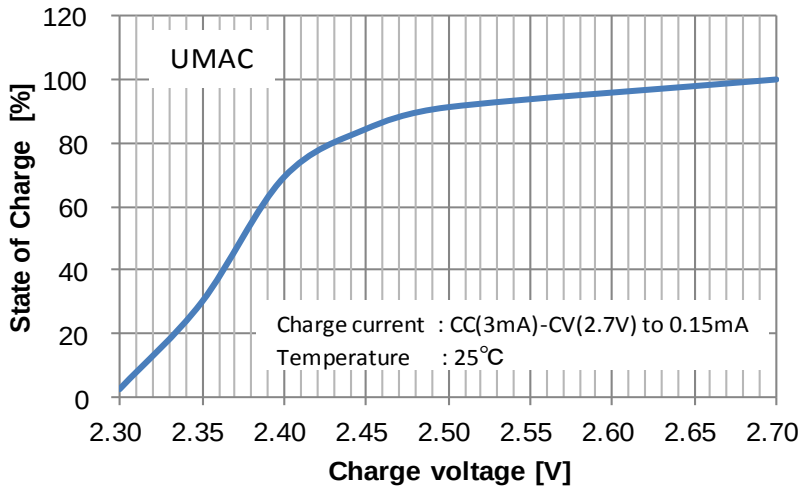
## Charge Curve



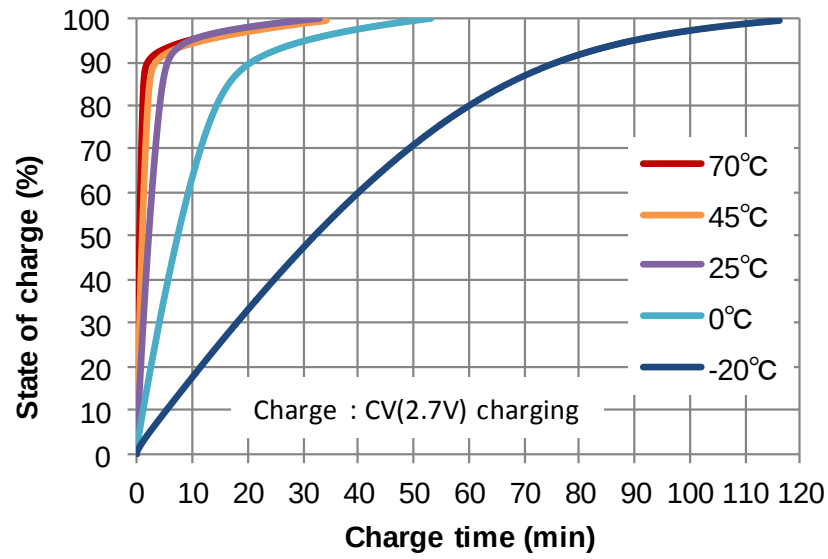

## State of Charge : Current Characteristics



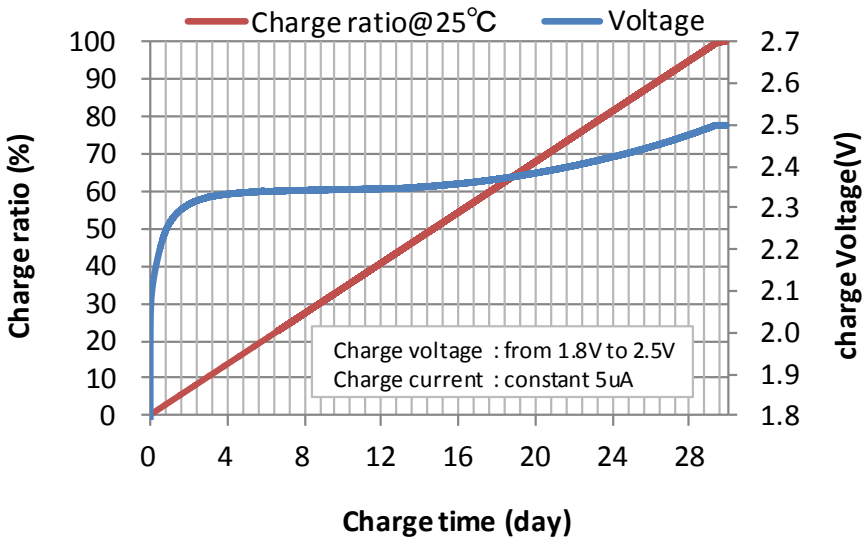

## Charge Ratio : Charge Voltage Characteristics




## SOC by CV Charge: Temperature Characteristics

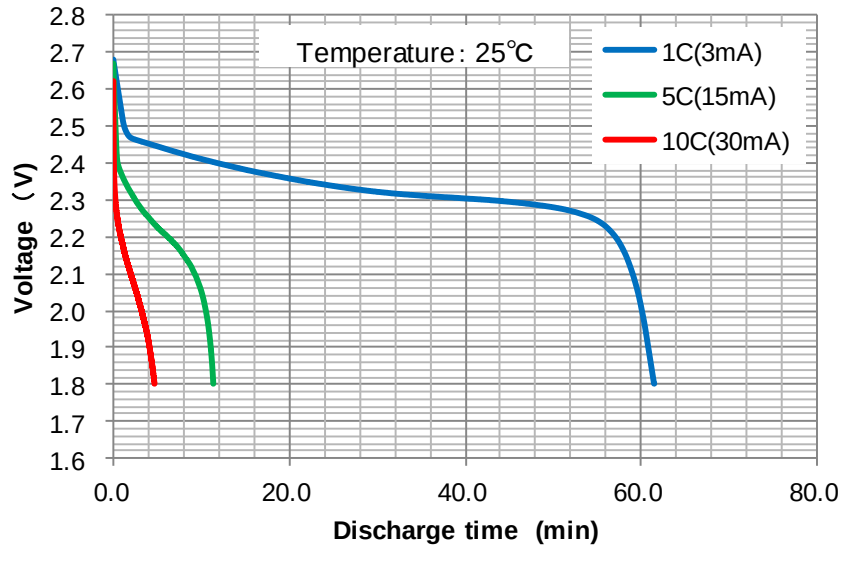



## State of Charge by 5μA Current Charge

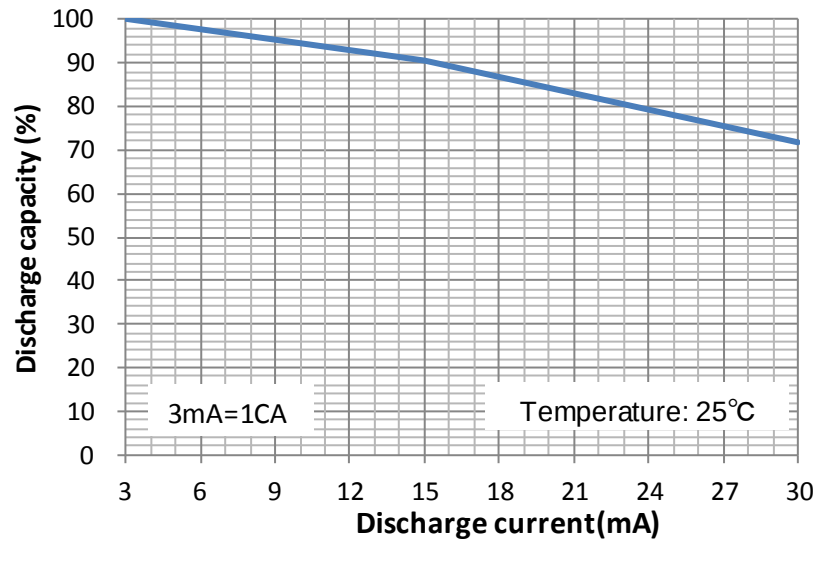



# <Discharge Characteristics>

## Discharge: Current Characteristics




## Discharge Capacity: Current Characteristics

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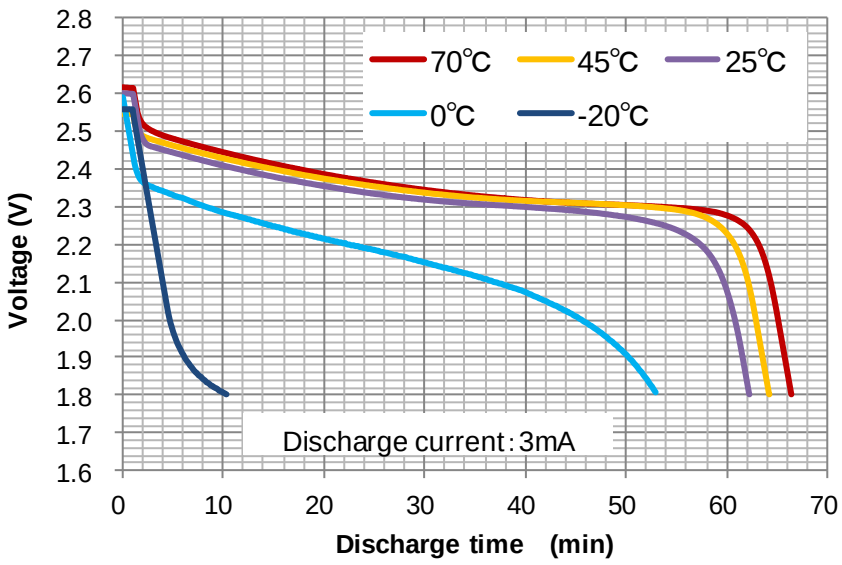
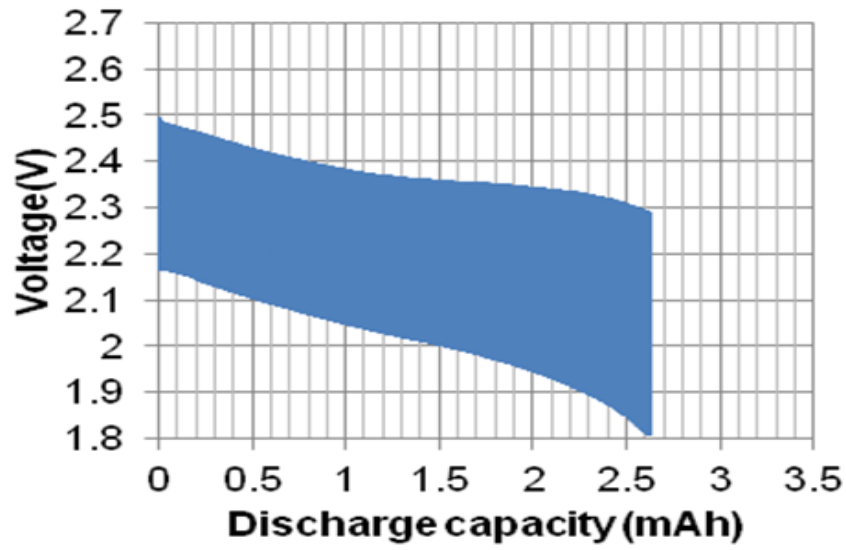
## Discharge Temperature Characteristics

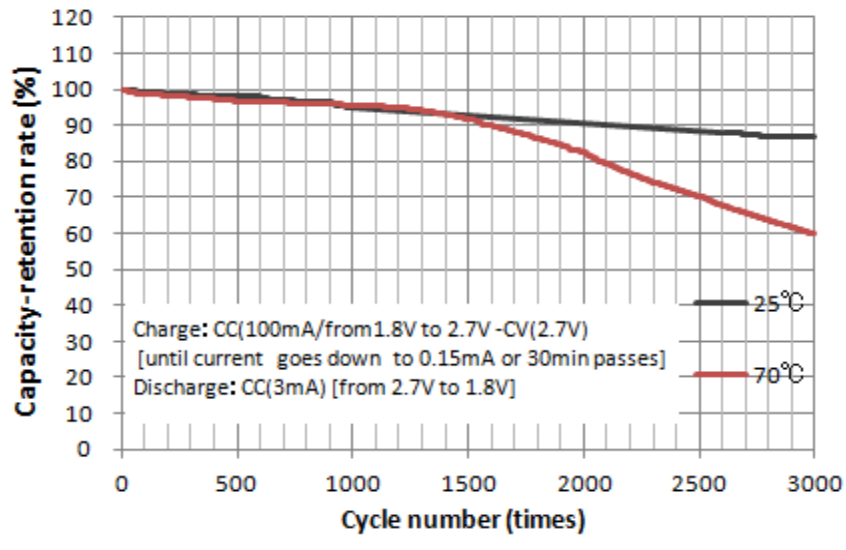



## Pulse Discharge Characteristics at -20℃( the cycle of 30mA, 10msec discharge & Rest 15sec.)

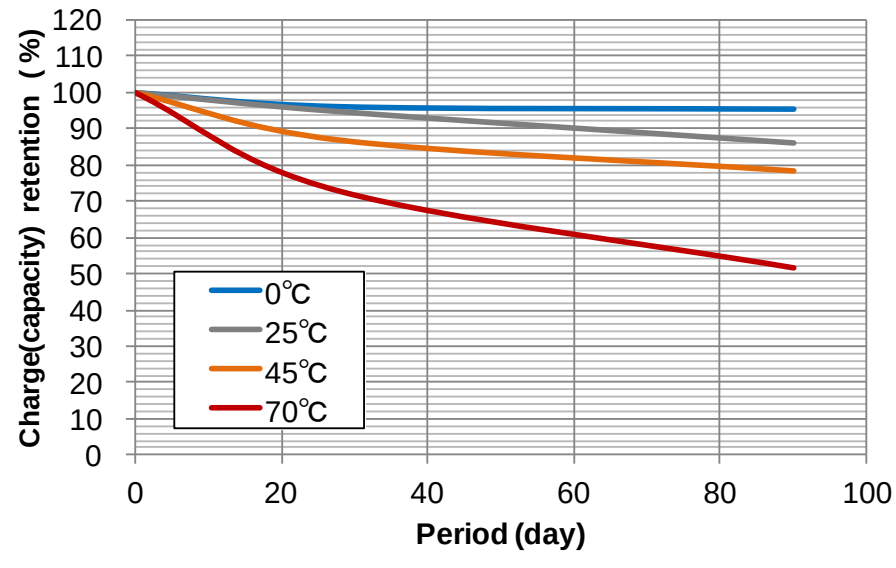



# <Other characteristics>

## Cycle Characteristics




## Charge(Capacity) retention

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