

# Small Energy Device Cylinder type (UMAC)

RoHS

REACH

Hand Soldering Only

UL1642

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



## Advantages

### ① High rate charge/discharge

800mohm low ESR and high rate (10C, 30mA) enabled by optimizing materials and structure

### ② High safety

No thermal runaway occurs because of its low capacity and chemically stable materials.

This product received safety standard, UL1642 and IEC61233 certification.

### ③ Long cycle life

Charge (capacity) recovery is over 80% even after 5000 cycles. It can realize maintenance free design.

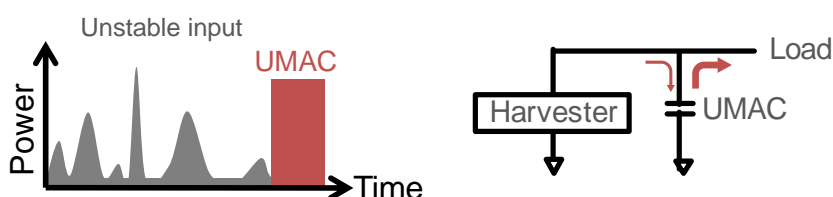
### ④ Compact and lightweight

Package size:  $\phi 4 \times 12\text{mm}$ , 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

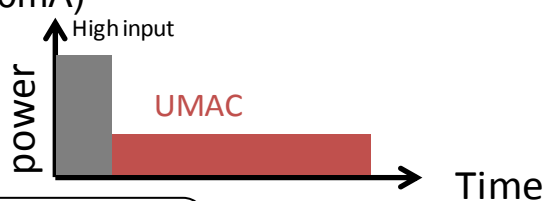


#### Application Example:

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

### 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

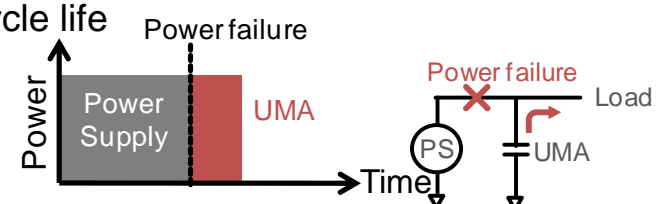


#### Application Example:

- ✓ Electric pen
- ✓ Wearable equipment

### 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

For more details, please visit our website.  
Application notes, technical notes, FAQs are available.

<http://www.murata.com/en-global/products/smallenergydevice/uma>



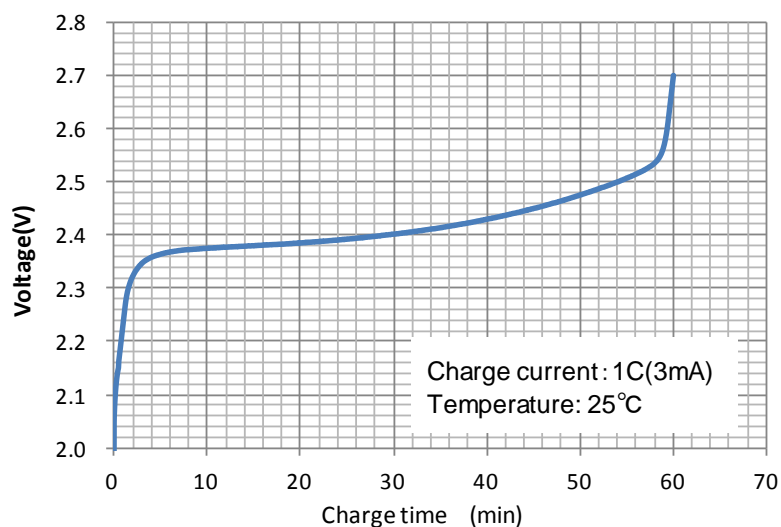
## Specifications

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°C

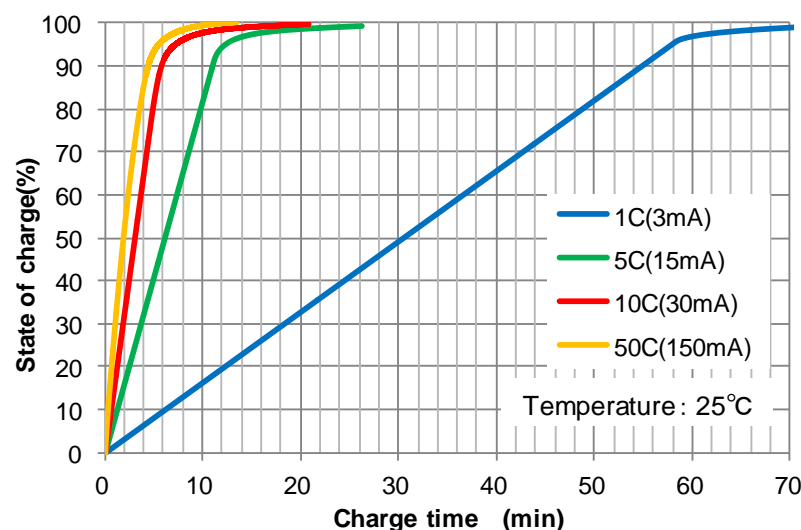
# Characteristics

## <Charge Characteristics>

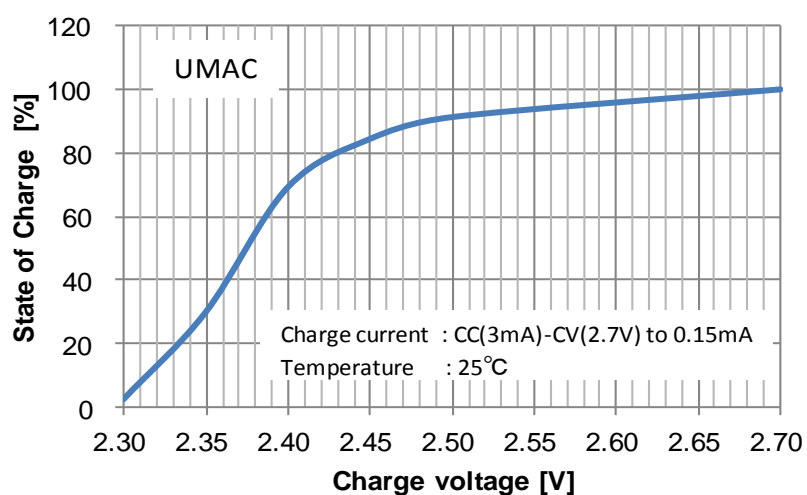
### Charge Curve



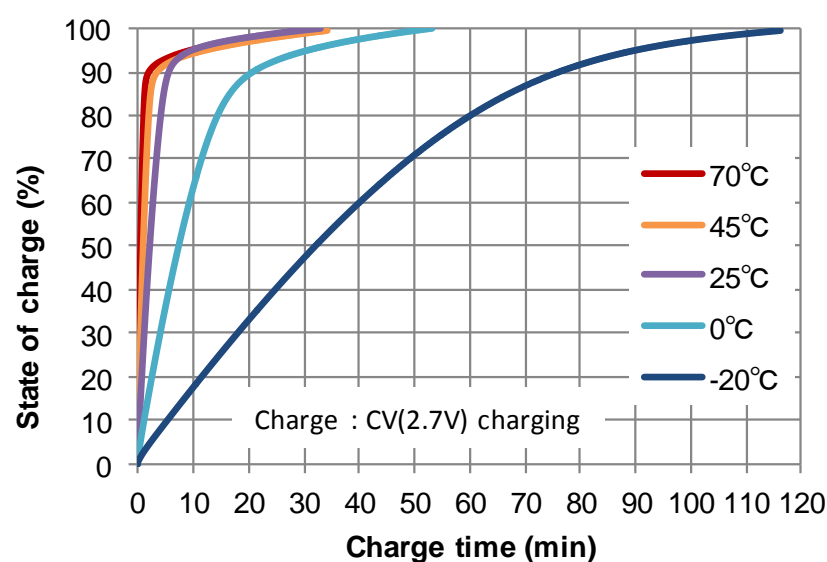
### SOC : Current Characteristics



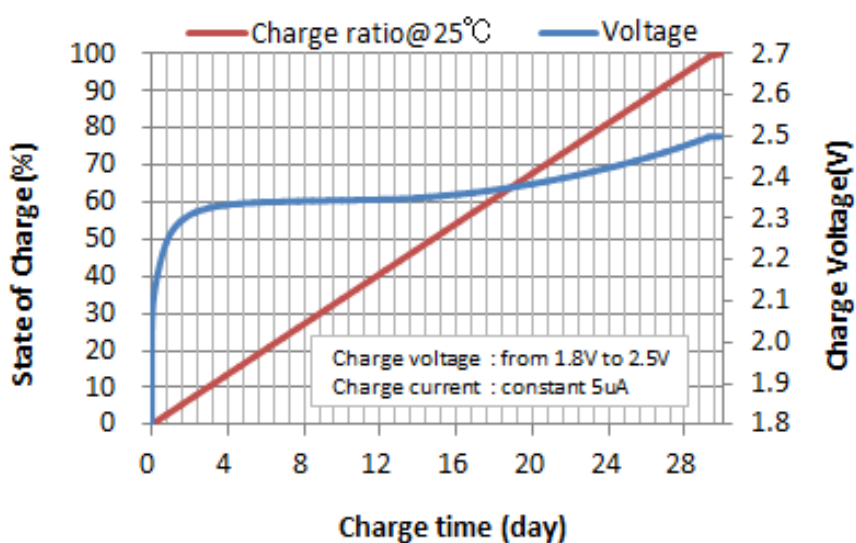
### SOC : Charge Voltage Characteristics



### SOC by CV Charge: Temperature Characteristics

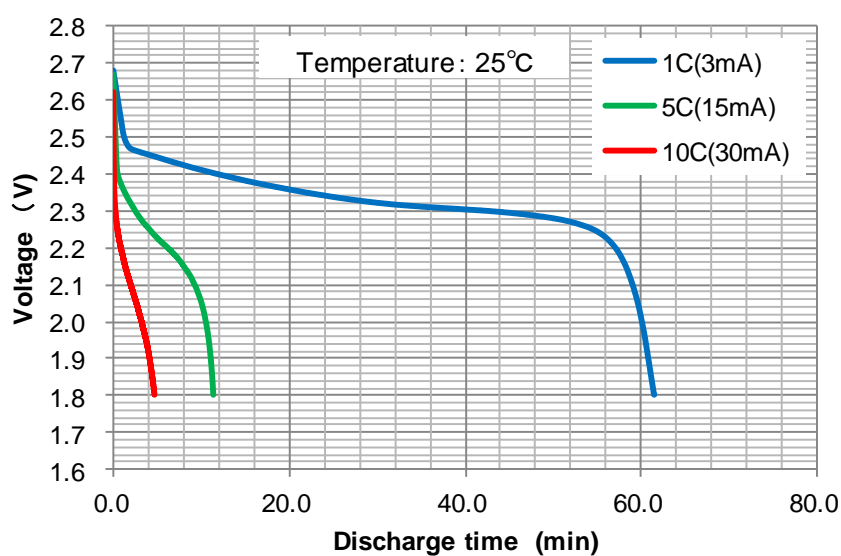


### SOC by 5 μ A Current Charge

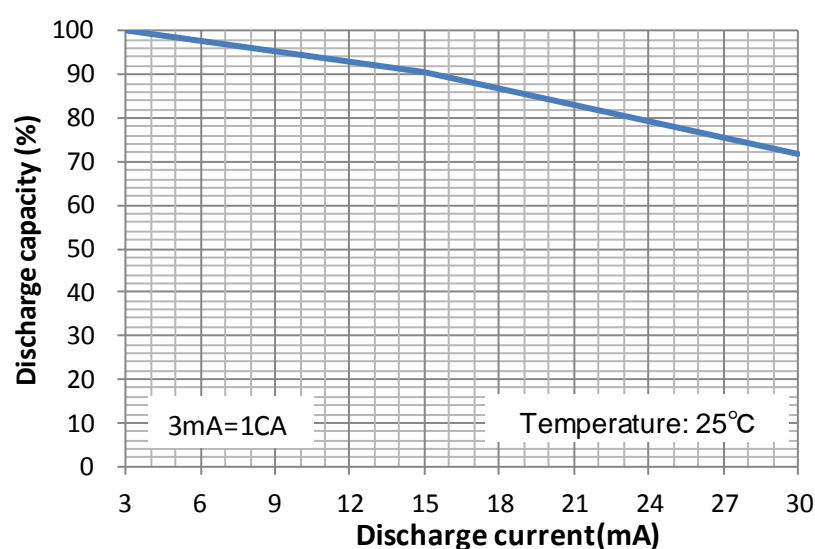


## <Discharge Characteristics>

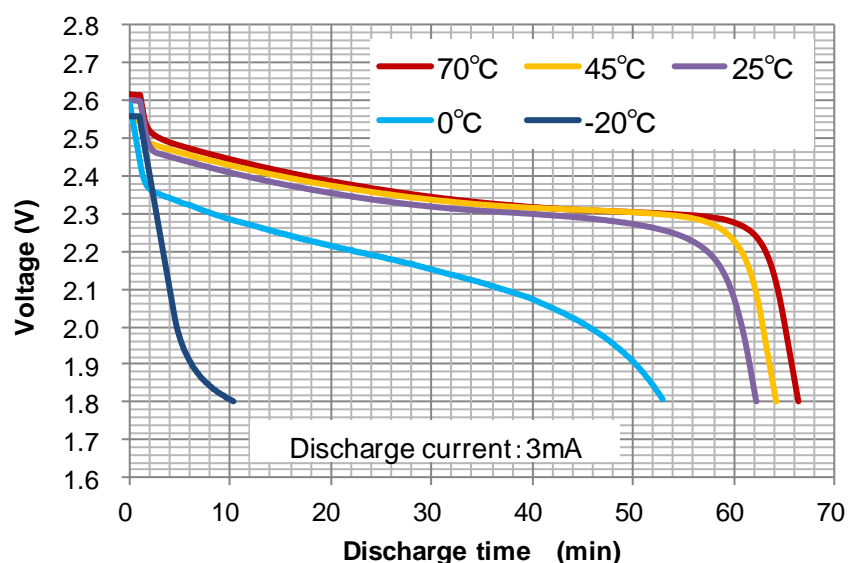
### Discharge: Current Characteristics



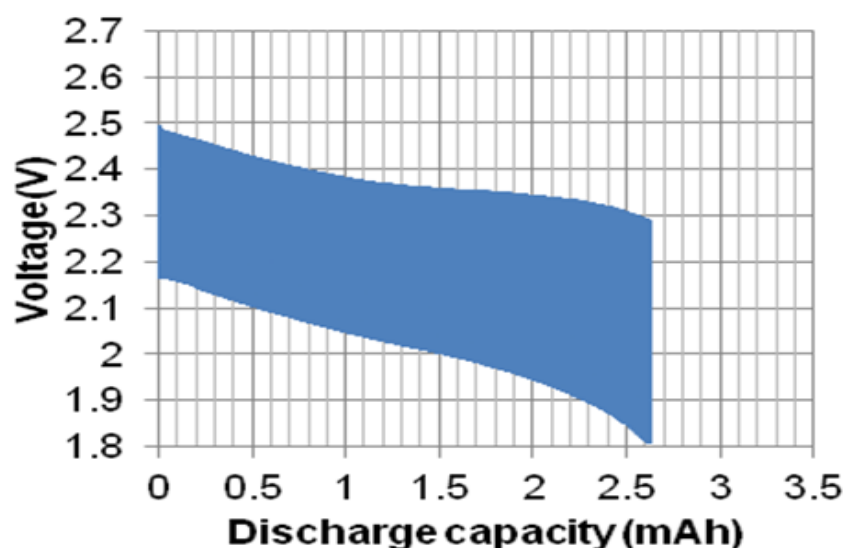
### Discharge Capacity: Current Characteristics



Discharge Temperature Characteristics

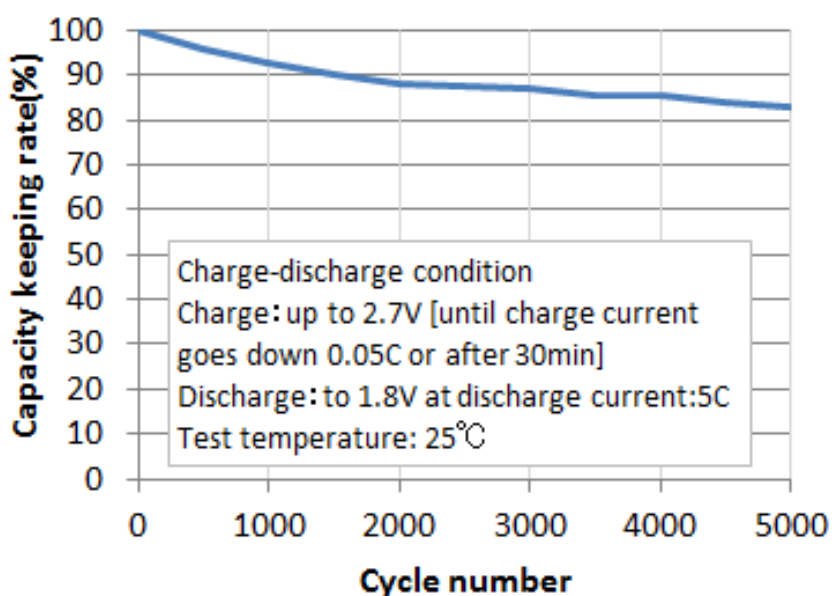


Pulse Discharge Characteristics at -20°C ( the cycle of 30mA, 10msec discharge & Rest 15sec.)



<Other characteristics>

Cycle Characteristics



Charge (Capacity) retention

