

# Advantages of using Murata micro batteries (SR, LR) in portable medical devices

## 1. Overview

In recent years, the demand for portable medical devices that are able to monitor vital data such as humans' body sweat, temperature, heart rate, blood pressure and blood glucose level and etc. has increased. The basic health data of human body has been difficult to quantify so far. However portable medical can visualize the user's health status by communicating the data or storing data in memory and analyzing data. Those devices can provide users useful information for their health maintenance and health issues.

The insulin pumps periodically inject insulin by motor drive to diabetic patients who lack insulin and used for the purpose of effectively controlling the blood glucose level. As these type of devices are worn by human body, downsizing are necessary. In order to meet this portable medical devices market needs, we believe our Murata micro batteries (SR: Silver oxide batteries, and LR: Alkaline manganese batteries) will be one of dominant tools

## 2. Advantage

Below, advantages of our Murata micro batteries; 1. SR: Silver oxide batteries, 2. LR: Alkaline manganese batteries.

☞Lineup of smaller size and wide range of sizes.

The graph below shows the capacity vs size of size of the primary batteries (shops and Web sites)

厚径 直径 Thickness Diameter	系 Type	0.393 inch (0.047 inch)	0.055 inch	0.063 inch	0.079 inch (0.083 inch)	0.102 inch (0.108 inch)	0.118 inch (0.122 inch)	0.142 inch	0.165 inch	0.213 inch
0.189 inch	NaOH			SR416SW (8.3)	SR421SW (12.5)					
0.228 inch	NaOH	SR512SW (8)		SR616SW (11.5)	SR621SW (16)	SR627SW (22.5)				
0.268 inch	NaOH			SR616SW (18)	SR621SW (18)	SR626SW (26)				
	KOH				SR621W (20)	SR626W (28)				
0.311 inch	NaOH	SR712SW (9.5)	SR714SW (16)	SR716SW (23)	SR721SW (25)	SR726SW (36)	SR731SW (39)			
	KOH				SR721W (28)	SR726W (36)		SR41 (45)		SR46 (75)
								LR41 (45)		
0.374 inch	NaOH			SR916SW (30)	SR920SW (36)	SR927SW (52)		SR936SW (70)		
	KOH				SR920W (40)	SR927W (52)		SR936W (75)		
	NaOH									
0.457 inch	NaOH				SR1116 (30)	SR1120 (60)		SR1130 (85)	SR43 (110)	SR44 (160)
	KOH				LR1120 (45)		LR1130 (70)	LR43 (110)	LR44 (120)	

The number in ( ) shows nominal capacity (mAh)

Murata offers a wide lineup of small size batteries, which will can contribute to the miniaturization of wearable devices

### High output (current)

Next, the upper right graph shows the relationship between

capacity (mAh) and output current (mA) of SR/LR and CR.

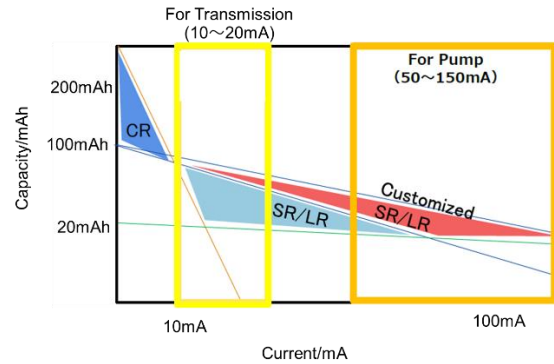
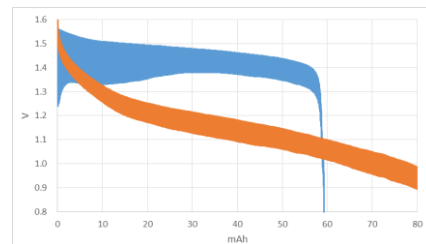


Fig.1 Capacity (mAh) vs Output (mA)

By using an aqueous solution as the electrolyte, SR/LR achieve lower internal resistance and enable pulse high discharge for communication (BLE) and small motor driving (However, 2 or 3 series use is required). On the other hand, CR has higher voltage and capacity than SR/CR. However conventional CR cannot output high current.

Below shows pulse test result of SR vs LR



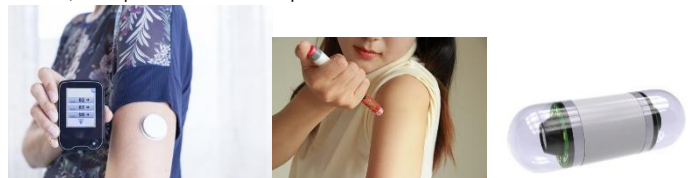
Test condition : LR(Orange)、SR(Blue)

- Cycle discharge at 23°C
- Pulse discharge : 30mA × 0.1sec
- Interval : 0.1sec

A single SR or LR can drive a small motor of about 0.1W. The SR/LR is a battery suitable for portable medical devices because it can maintain high output while keeping the devices small size.

### Recommended application

Portable medical devices : Insulin pump (pen type)、CGM、Capsule endoscope



## 4. Technical support

Sample and Technical support

- Please contact our local office or authorized agent

<https://www.murata.com/en-global/products/batteries/micro/cr/high-drain?intcid5=com xxx xxx cmn hd xxx>