

Suggestion of improving remote keyless entry system (RKE) performance by adding high load functions

1. Overview

Recently, RKE will be applied the high function such as a high security method and engine starter. In order to add high load functions, it is necessary to consider the large voltage fluctuation of the battery at the time of data communication using high current and the battery voltage fluctuation is dependent on the internal resistance of the battery. If the voltage drop is large, the device will reach the lower operating limit voltage and stop even if the battery capacity remains sufficient. Therefore, it is necessary to use a primary battery with a capacity larger than that required. Murata's high-current coin-type lithium batteries can solve this problem. Murata's "High drain type" battery can be achieved the lower resistance. If this type battery is applied to RKE limited power supply, it can reduce the voltage fluctuation and add high load functions (LED monitor, micro motor, buzzer, etc.)

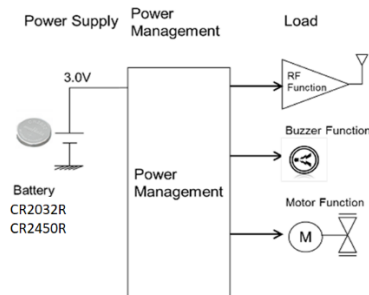


Fig.1 High output RKE system

2. Effects

➤ Stability of Power Supply Line

The "High drain type" can reduce the voltage drop at high peak load and stabilize the operation of device.

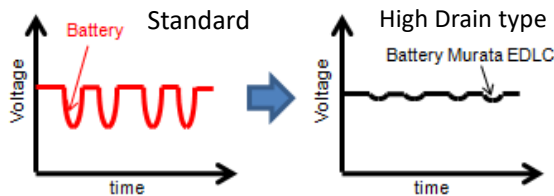


Fig.2 High load peak levelling by "High drain type"

➤ Maximize the battery run time performance

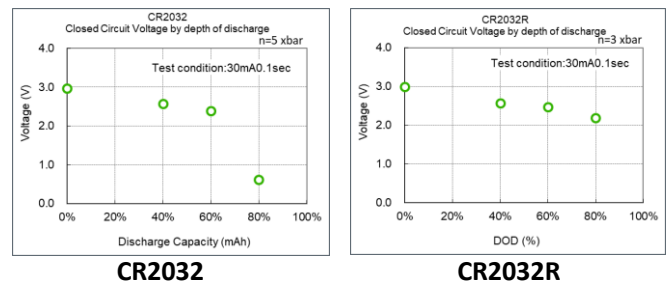
"High drain type" battery can reduce voltage fluctuation that affects battery life and maximizes battery run time.

➤ High function of performance are available

The "High drain type" battery can discharge high peak loads. Therefore, RKE can add multi and high-functional

performance such as long distance communication, small motor, buzzer, etc that are not available with standard coin batteries.

Next, Fig.3 shows the comparison of the battery voltage stabilization of RKE system using a standard CR2302 vs "High drain type" CR2032R. In general, when standard type CR2032 is used, the maximum output power is limited to approximately 0.05W, and the battery voltage fluctuation becomes larger. As shown on Fig.3, the battery voltage fluctuation is large when the power of about 0.09W (30mA×1sec) output is discharged from battery. On the other hand, "High drain type" can minimize the battery voltage drop as shown in the right side of Fig.3, and provides a maximum instantaneous output of 0.09 W. These effects are realized by reducing the ESR (resistance) and supplying a large amount of energy from "High drain type".



* The DOD (Depth of Discharge) of each battery is set to 0, 40, 60, 80% and this shows the voltage fluctuation

Fig.3 Battery voltage fluctuation of assuming RKE system

3. Series Lineup

Recommended products (High drain type)

PN	Nominal capacity (mAh)	Diameter (inch)	height (inch)	Nominal Voltage (V)	Operating temperature* (°C)
CR2032R	200	0.787	0.126	3.0	-30~70
CR2450R	500	0.965	0.197	3.0	-30~70

3. Technical support

Data sheet

[Click ▶ CR2032R](#) [Click ▶ CR2450R](#)

Sample

➤ Samples can be purchased from the link below.

[Click ▶ CR2032R series](#) [Click ▶ CR2450R series](#)

Others

➤ Our web page shows more details.

<https://www.murata.com/en-global/products/batteries/micro/cr/high-drain>

➤ If you have any questions, please feel free to contact.

[Click ▶ Send your inquiry](#)