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Customized Swiss Microelectronics

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# Ultra-Low-Power Wake-Up: The power saving switch for autonomous applications

Ultra-low-power wake-up

Remote autonomous sensing modules are everywhere, whether they are monitoring environmental parameters, tracking and monitoring assets or monitoring machines.

Autonomous modules use energy harvesters like solar cells to charge an energy storage device such as a capacitor or rechargeable battery. Often, the modules will be in places that don't allow a power connection so they must be efficient with the generated energy. Most power is used when the system is "ON" so we only want the system to be "ON" when it is really needed.

Ultra-low-power wake-up from Microdul

The MS8892 is a capacitive touch sensor that together with a separate real time clock (RTC) provides a solution that wakes your system up using a touch or a time alarm with a standby current of less than 150nA. Looking at the diagram below:
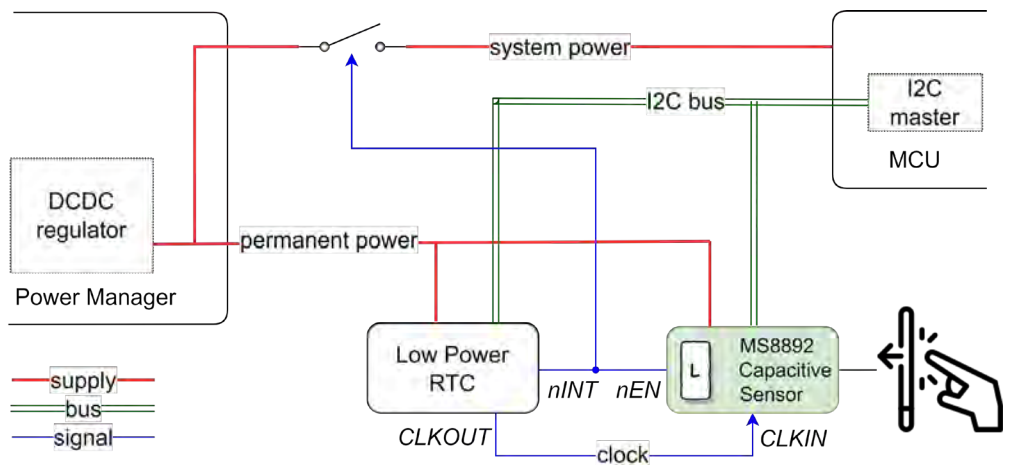

- The permanent power from the power manager to the RTC and capacitive sensor is always on.
- The MCU and the rest of the system are supplied by the system power supply, which can be switched on and off.
- System power is switched on when there is an alarm from the RTC or a touch event at the capacitive sensor electrode.
- The power state is latched (L) in the MS8892.
- Either the RTC or the MS8892 can cause the power to be switched on to power the system.
- The MCU switches off its power via I²C or GPIO.
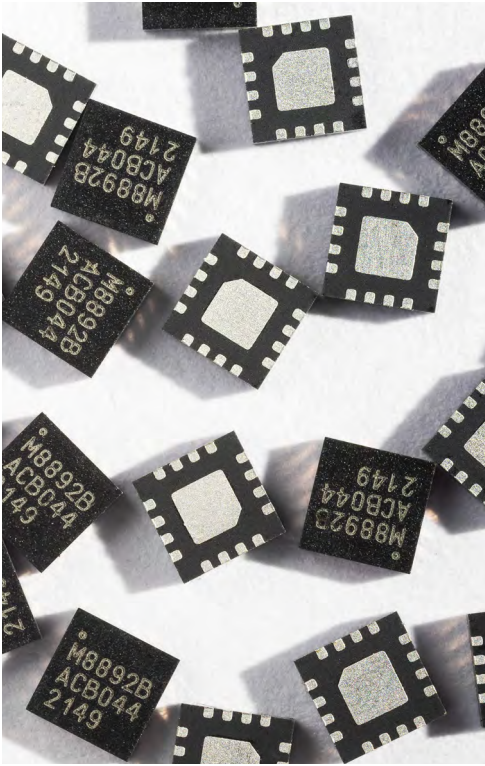
The MS8892 is available in small plastic packages like QFN16 (3x3 mm) and chip scale packages (1.03 x 1.52 mm)

Like the QFN package, the chip scale package is supplied in tape and can be soldered like a conventional SMD component.
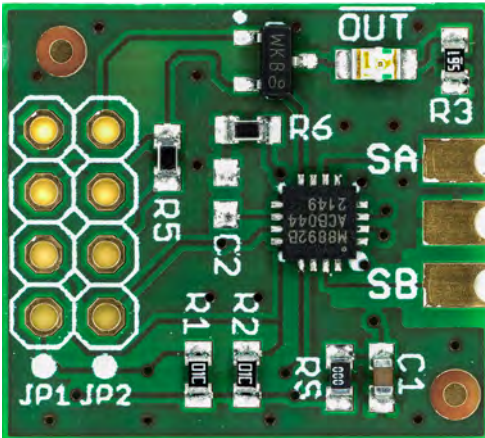
The picture on the left shows our evaluation board with the QFN16 package.

Datasheets, application notes and ordering information are available on our website www.microdul.com.

About Microdul

Microdul AG is a privately owned Swiss company and an MBO from Philips Semiconductors founded in 1991. We manufacture modules especially for medical applications including active implants and we are both ISO9001 and ISO13485 certified.

Our Semiconductors group develops and supplies ultra-low-power, mixed-signal, custom products as well as standard products. We have extensive experience in IC development for temperature monitoring, capacitive sensing, power management and 32kHz timing.

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