

Ultra-low power capacitive sensor and touch switch for human body detection and system wake-up

General description

The integrated circuit MS8892B is an ultra-low power, two channel capacitive sensor for human body detection. It offers meter mode or switch mode. In switch mode, the sensor capacitance is compared with a programmable threshold capacitance. The sensor output changes polarity if the sensor capacitance falls below or rises above this threshold capacitance. The output can control a power switch or a PMIC, and its state can be read via the I²C serial interface. In meter mode, the absolute capacitance value of the sensor electrodes is measured. The configuration of the various options and the operation of the meter mode are done via the I²C serial interface.

Applications

- Human body detection (e.g. in-ear phone, finger detection, wearables)
- System wake-up controller
- Capacitive sensor
- Touch and proximity switch

Typical application

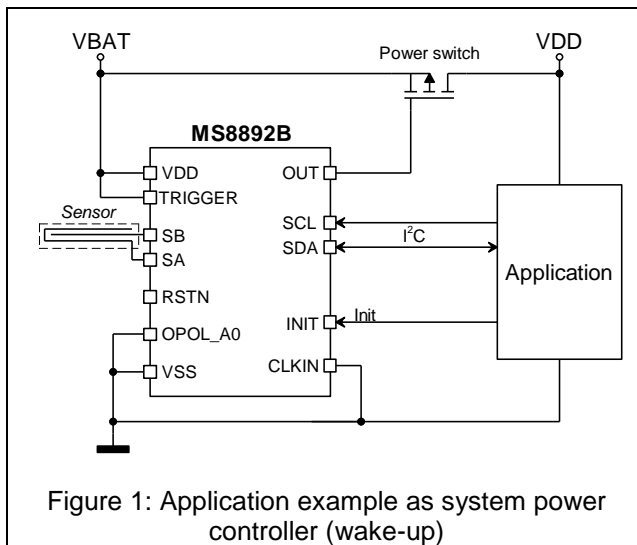


Figure 1: Application example as system power controller (wake-up)

Features

- Capacitive sensor with direct digital output
- Meter mode or switch mode
- Average current for 2 measurements/s in switch mode typ. 65nA with external clock source
- Average current for 2 measurements/s in switch mode typ. 725nA
- Latching output to directly control power state of a PMIC or a PMOS power switch
- Capacitance meter with a measuring range of 0.2 to 1.0pF with a resolution of 8 bits
- Individually programmable threshold capacitance in switch mode
- Automatically adjusted switching threshold in switch mode with a programmable threshold step size
- Programmable measuring interval in switch mode
- Programmable noise filter in switch mode
- Programmable output polarity
- CMOS or open-drain output driver
- Internal switchable pull-up resistor in open-drain configuration to avoid static current in pull-up
- I²C address pin allowing operation of two MS8892B on a single bus
- No external components needed
- Sensor capacitance can be realized with conductive tracks on PCB or casing
- Voltage operating range 1.8 to 4.5V
- Temperature operating range -40 to 85°C
- Available in QFN16 3x3 or in CSP12 (1.52x1.03mm)

Pinout

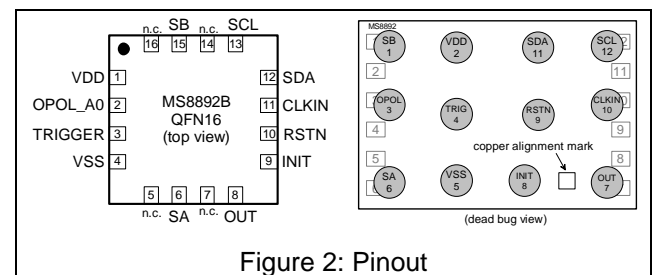


Figure 2: Pinout

Key advantages

- Reliable human body and touch detection
- Easy to configure and to integrate
- Durable switch technology without wear (no mechanical parts)
- Ultra-low power: fully operable at 725nA, and only 65 nA with external clock source
- Ideal for use in battery-operated systems (Wearables, IoT etc.)
- Cost effective solution: no external components
- Versatile: stand-alone operation with configuration in OTP memory or control over I²C with MCU
- Small footprint: standard 3x3mm QFN16 or 1.52x1.03mm CSP12 (chip scale package)

Request the datasheet or samples at info@microdul.com or call +41 44 455 35 11 for more information