

1 General description

The flexible-PCB temperature patch from Microdul is intended as a demonstration vehicle and starting point for future developments. It implements a patch that can be used for medical purposes to monitor a patient's body temperature on a centralized monitoring system or on a smart phone. The monitoring can be done on a mobile app or on a dedicated central station, within a hospital system.

2 Applications

- Human body temperature monitoring
- Wearables

4 Block diagram

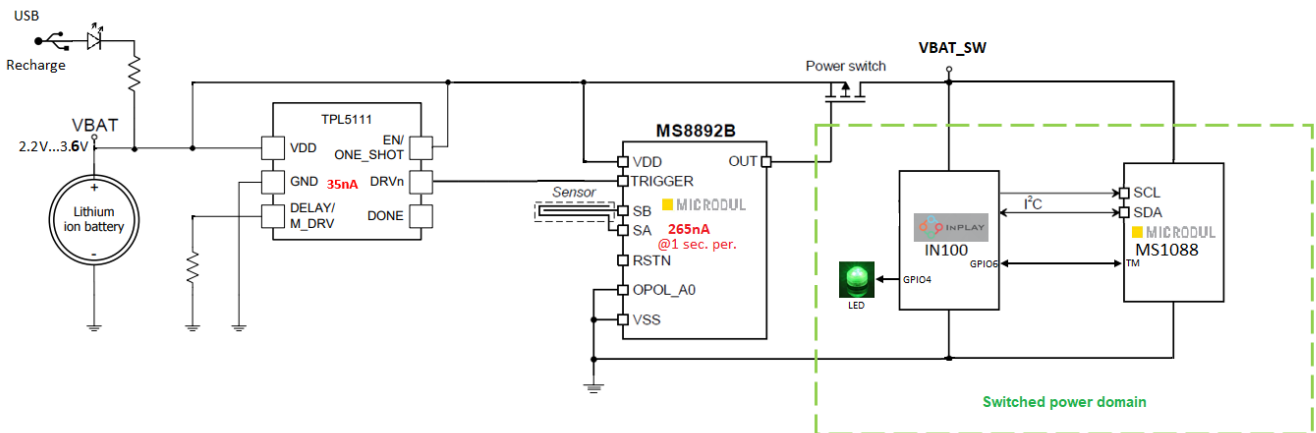


Figure 1: Flex-PCB block diagram

5 Detailed description

The PCB contains, a human body proximity sensor (Microdul's MS8892B) which detects when the patch is applied on the skin. The MS8892B is triggered by the timer (TPL5111) every second to take a measurement of its capacitive sensor as shown in Figure 1.

This configuration allows an extremely low current consumption of the system in stand-by, below 150nA.

3 Features

- Ultra-low stand-by power consumption <300nA (less than 150nA when capacitive measurement sampling rate is 2 seconds or more)
- Ultra-low active power <45uA for a 1 second temperature update period (RF transmitting period).
- Ultra-low costs: small BOM, no microcontroller used. MS8892B and IN100 are programmed during production.
- RF blinking LED for visual feedback.
- Size: 24 x 40 x 1.8 mm (W x L x H)

Temperature measuring range	MS1088	MS1089(*)
	-40°C to +120°C	-40 to + 85°C
Accuracy	typ. ±0.3°C from +10°C to 40°C	typ. ±0.3°C from 0°C to 60°C
Resolution	0.05°C	0.025°C
Supply range	2.2V...3.6V	1.8V...3.6V

(*) MS1089 can replace MS1088 because they are functionally similar.

If proximity to a body is detected, i.e. the patch is applied on the skin, the MS8892B turns on the power switch. Power is supplied to Microdul's MS1088 (temperature sensor) and the IN100 (RF

Beacon from). A temperature reading is taken and the data is sent to an app on the smart phone.

If contact with the skin is lost, the power switch is opened and the MS1088 & IN100 are powered down.