EU-2020 Project AMANDA

AMANDA

The world in your hands

AutonoMous self powered miniAturized iNtelligent sensor for environmental sensing anD asset tracking in smArt IoT environments

AMANDA

- Autonomous, connected sensor card
- Ultra-low-power, ultra long life – 10 years
- Solid state battery, no battery change required
- Small and thin (3mm thickness)
- Multi-sensor (see next slide)

Microdul

- MS8892 Ultra-low-power capacitive sensor 65nA used for wake-up
- MS1089 Ultra-low-power temperature sensor with “zero” standby current

Use Cases

- Environment monitoring and reporting (comfort monitoring, fire monitoring)
- Assets tracking and occupancy monitoring (parking lot, asset access & localization)
- Mitigating the effects of the current pandemic (vaccine monitoring, crowd counting)

This project has received funding from the European Union’s Horizon 2020 Research and innovation programme under Grant Agreement n°825464

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Human Body Detector MS8891A (basis for AMANDA chip MS8892)

- Capacitive sensor in fF range
- Idle current 50nA
- Average current for 2 measurements/s in switch mode typ. 725nA (1 channel, no noise filter)
- Two capacitive sensor channels
- Meter (measures C) or switch mode (compare)
- Sensor capacitance range 0-1.6pF
- Voltage range 1.8-4.5V
- Active current during measurement typ. 11µA
- Temperature range -40° to 85°C
- I^2C interface or standalone operation
- No external components required
- Available in QFN16 or Chip Scale Package
- Video: https://youtu.be/FGz2HWKBLwE

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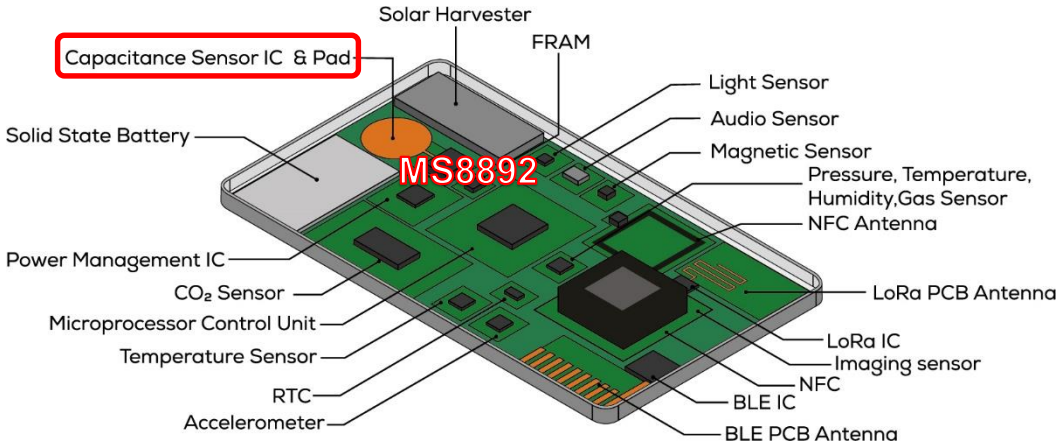
AMANDA, save power, wake-up with MS8892

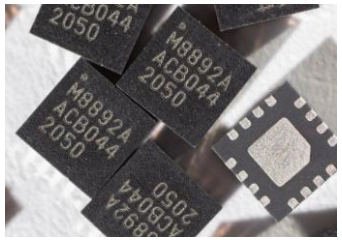


MS8892

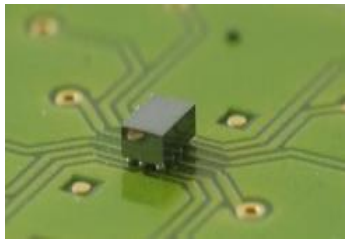
- 65nA external clock, 725nA internal clock
- Capacitance measurement or switch mode
- Compensation of factory tolerances possible
- Measures up to 1pF, voltage range 1.8-4.5V
- Autonomous operation or I^2C with MCU

Small

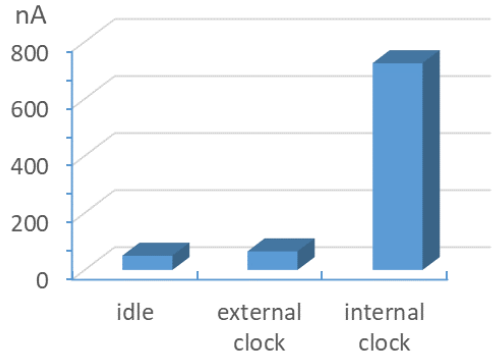
QFN 3x3mm



CSP 1.52 x 1.03mm



MS8892 Cap-Sensor Current



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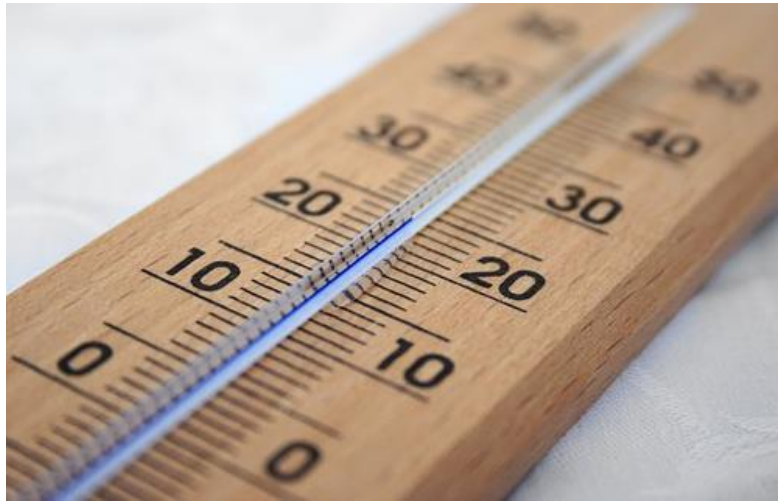
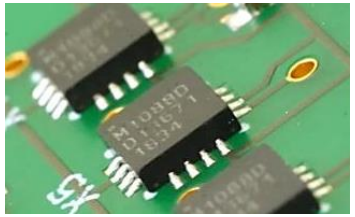
Temperature sensor MS1088D (basis for AMANDA chip MS1089)

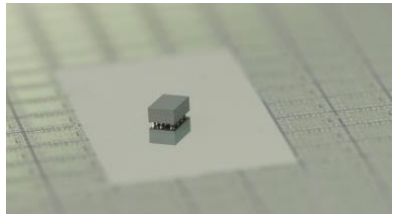


Small

QFN (3x3)



CSP (1.44x0.98)



- Ideal for IoT and energy harvesting
- 80nA average current (one sample/minute), 20nA idle current
- Temperature range -40°C to 120°C
- Accuracy ±0.3°C from 10°C to 40°C
- I^2C or SPI interface
- Low peak current in active state 75µA
- Voltage range 2.2 to 3.5V
- Battery End-of-Life (EOL) detection
- Available in QFN Chip Scale Package
- Video: https://youtu.be/33rt6R9Z0yo

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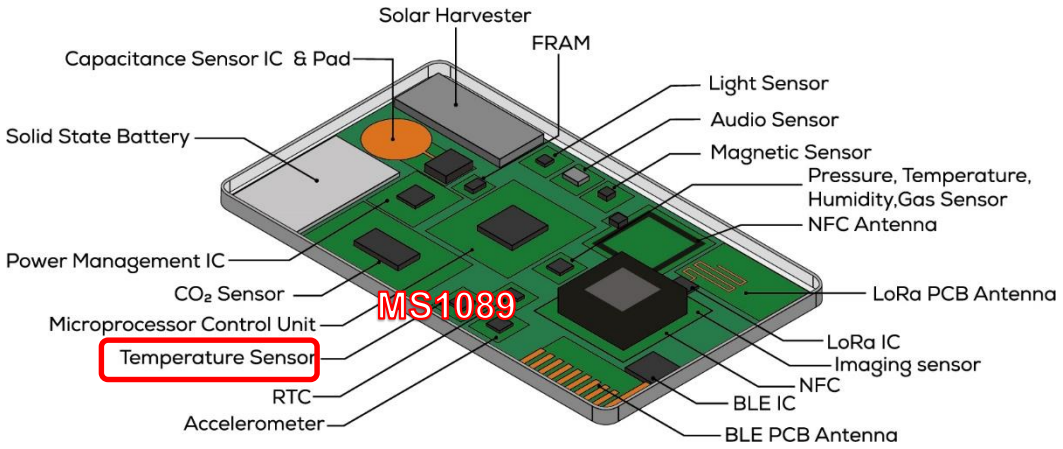
AMANDA, temperature sensor with “zero” standby current MS1089

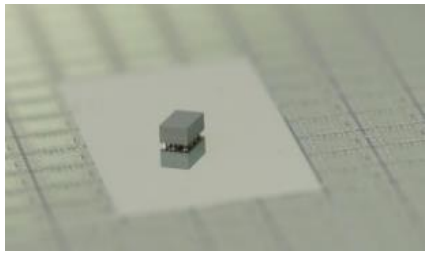


MS1089

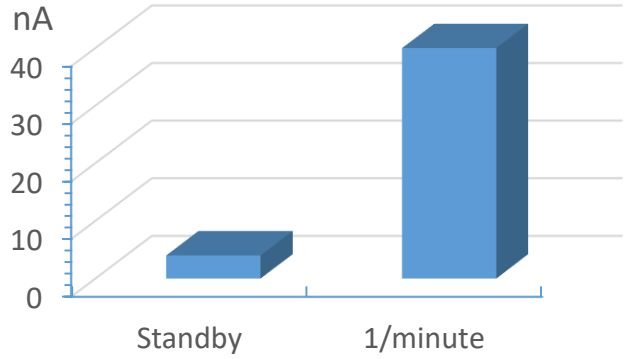
- “Zero standby” (~5nA) current in sleep mode
- Average 40nA at one measurement per minute
- 70µA peak current during measurement
- Supply range 1.8V – 3.6V
- ±0.3°C from 10°C to 50°C, -40°C to 85° range

Small

CSP 1.17 x 1.095mm



MS1089 “Zero” Standby current



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Standard products from Microdul

Product	Datasheet Link	Package	Article Number	Description	Availability
MS8883A	Datasheet MS8883A	SO8	916683	1-channel cap-switch	✓
PCF8883T/1	Datasheet PCF8883T/1	SO8	9160398	1-channel cap-switch	✓
PCF8883US/7EA/1	Datasheet PCF8883US/7EA/1	CSP	9160397	1-channel cap-switch	✓
MS8883C	Datasheet MS8883C	DFN8	9160178	1-channel cap-switch	✓
MS8885B	Datasheet MS8885B	QFN28	9160151	8-channel cap-switch	✓
PCF8885TS/1	Datasheet PCF8885TS/1	TSSOP28	9160399	8-channel cap-switch	✓
PCA8885TS/Q900/1	Datasheet PCA8885TS/Q900/1	TSSOP28	9160404	8-channel cap-switch Automotive	✓
MS8891A	Datasheet MS8891A	QFN16	9160407	2-channel human body detector	✓
MS8891A	Datasheet MS8891A	CSP	9160406	2-channel human body detector	✓
MS1088D	Datasheet MS1088D	QFN16	9160372	Temperature sensor	✓
MS1088D	Datasheet MS1088D	CSP	9160379	Temperature sensor	✓
MS8892	Datasheet MS8892	QFN16	9160454	1-channel ULP cap-sensor	Samples available
MS1089	In development			ULP temperature sensor	Samples available, 2021

Enquiries to info@microdul.com

Web-Information: https://www.microdul.com/en/ultra-low-power-sensors/

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