Design Guide: TIDA-010300

Low-Power CGM Sensor Reference Design With 20mm Footprint

Description

This continuous glucose monitor (CGM) reference design provides a comprehensive evaluation platform for TI's latest resources in low-power and continuous monitoring of glucose for diabetes care. The reference design utilizes an analog front-end (AFE) for low-power and accurate electrochemical sensing with up to two channels. The TMP63 or TMP118 can monitor body temperature to increase accuracy in glucose sensing. Electrochemical sensor readings are processed by the low-power CC2340R5 Bluetooth® Low Energy (LE) microcontroller and are transmitted to a smartphone for real-time display and data collection. Flexible selection of low-I_Q voltage converters enables support for battery input from silver-oxide (1.5V) and lithium batteries (3.0V), while maintaining a compact design of less than 20mm in diameter.

Resources

TIDA-010300	Design Folder
CC2340R5, Electrochemical AFE	Product Folder
TPS62840, TPS61299	Product Folder
TMP63, TMP118	Product Folder

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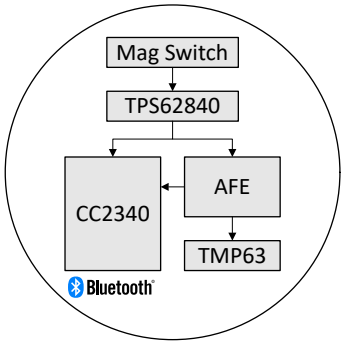
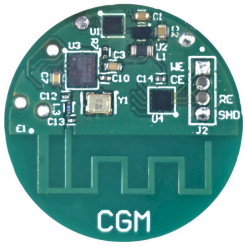
Features

- Low-power CC2340R5 Arm® Cortex®-M0+ Bluetooth® LE wireless microcontroller with 512KB flash and < 710nA sleep mode with RAM retention
- Ultra-low-power electrochemical AFE for glucose monitoring offers two input channels for 2, 3, and 4-electrode configurations in a compact package
- Ultra-small digital temperature sensor TMP118 or linear thermistor TMP63 enable high accuracy temperature measurements
- Low-I_Q voltage converters support 3.0V lithium or 1.5V silver-oxide coin cell batteries with over 15 days of active life and 2 years of shelf life
- Compact, < 20mm diameter design with WCSP packaging and space optimized component layout
- SimpleLink™ Connect mobile application integration with real-time recorded display of CGM and temperature measurements
- Comprehensive evaluation tools including Howland current source simulation platform and mass data collection help accelerate large-scale testing

Applications

- Continuous glucose monitor sensor
- Medical sensor patches





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Last updated 10/2025