# PerSe™
# Smart Sensing

Solutions Selector Guide
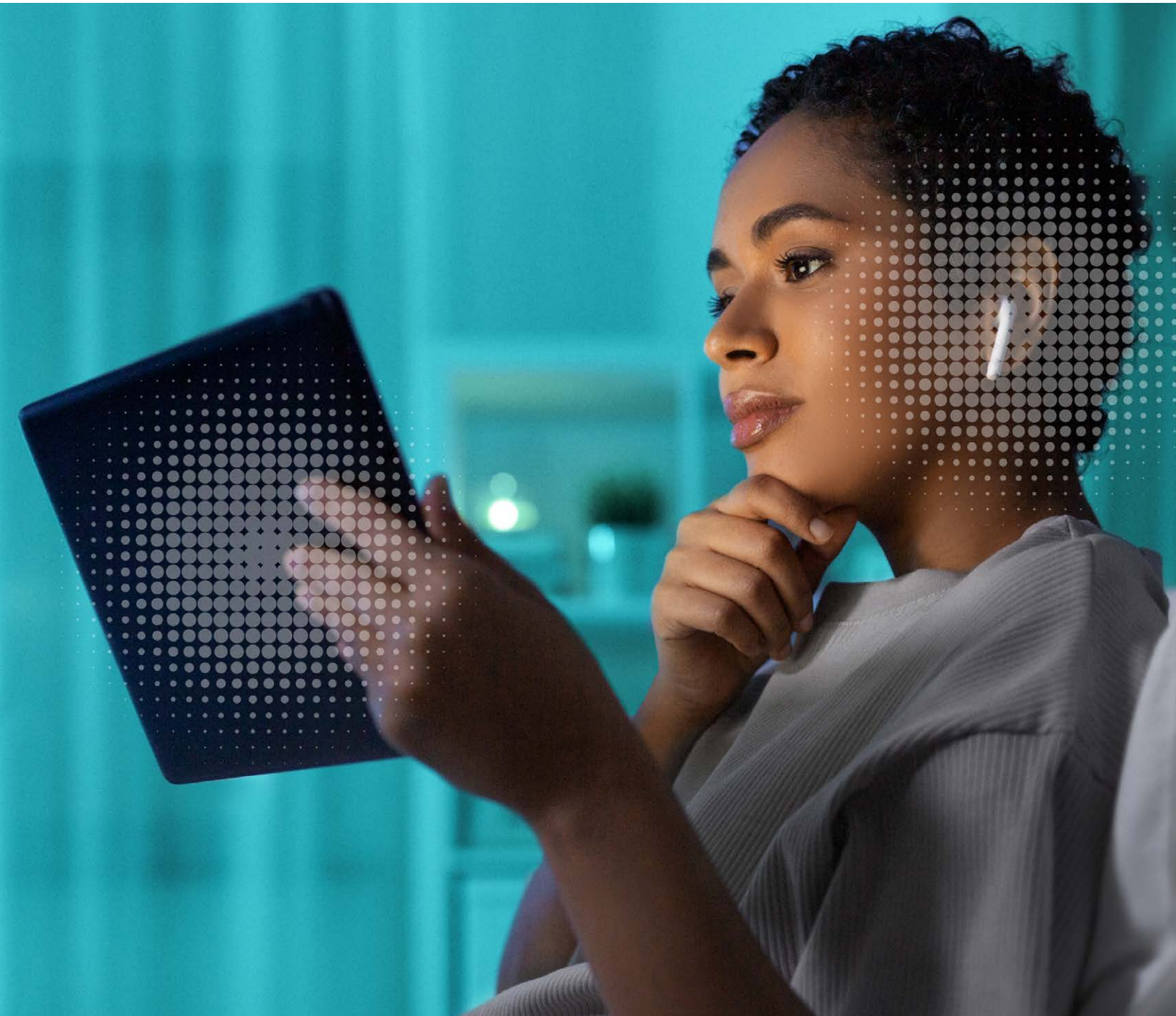
PerSe™
by Semtech

SEMTECH

## contents

# PerSe™
by Semtech

# Innovative Human Sensing
## for Smarter Touch Applications

PerSe by Semtech is for every personal connected consumer device. PerSe technology offers best-in-class sensing performance and is commonly used in a wide range of applications such as smartphones, laptops, tablets, and wearables.

Our PerSe product line features three core product portfolios – PerSe Connect, PerSe Connect Pro and PerSe Control. PerSe sensors intelligently sense human presence near a mobile device and enable advanced radio frequency (RF) control when a user is in close proximity — delivering high quality connectivity and throughput in smartphones, laptops and wearables, while providing compliance with global safety standards.

Only PerSe can intelligently sense human presence to enable a smart response

Learn more by downloading our infographic at **semtech.com/PerSe**

PerSe™
by Semtech

# PerSe™ Connect

## High Performance SAR Sensor

PerSe Connect enhances connectivity for a wide range of wireless technologies such as 5G sub-6/4G/Wi-Fi in smartphones, tablets and laptops.

SX9330 is part of Semtech's PerSe Connect portfolio. It offers 4 sensor inputs to support advanced radio frequency (RF) control for performance optimization and worldwide Specific Absorption Rate (SAR) regulation compliance. Its high sensing performance and high DC offset compensation capability make it the ideal choice for applications such as smartphones, tablets and laptops.

### APPLICATIONS

- Smartphones (5G sub-6/4G/Wi-Fi)
- Tablets (5G sub-6/4G/Wi-Fi)
- Laptops (5G sub-6/4G/Wi-Fi)
- Other wireless portable devices
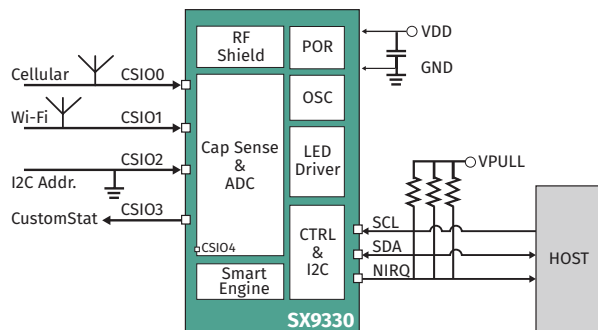
### FEATURES

- Patented on-chip smart engine for human detection and advanced SAR control
- Up to 4 programmable capacitive sensor inputs
  - High resolution capacitive sensing down to 0.001fF
  - Capacitance offset compensation up to 300pF
  - Integrated high performance RF shield for enhanced noise immunity
  - Extremely low temperature drift for stable measurement
  - Reduced VDD ripple susceptibility
- Input supply voltage: 2.7V - 3.6V
- Ultra-low power
  - Doze mode: 7µA
  - Sleep mode: 1.1µA
- Automatic calibration
  - Eliminates false triggers due to environmental factors
- 400kHz I²C serial interface
  - Input level compatible w/ 1.8V host processor
  - 2 sub-addresses selectable by pin
- Compact size:
  - 1.25 mm x 1.26 mm WLCSP
  - 1.60 mm x 1.90 mm DFN



### PerSe Connect

| Part Number | Sensor Inputs | Supply Voltage | Resolution | Offset Compensation | Package (mm) |
|---|---|---|---|---|---|
| SX9320 | 2 | 1.8V | 4aF | 200pF | WLCSP (0.92 x 1.69) |
| SX9328 | 3 | 1.8V | 8aF | 180pF | WLCSP (0.92 x 1.69) |
| SX9330 | 4 | 3.3V | 1aF | 300pF | WLCSP (1.25 x 1.26) |
| | | | | | DFN (1.60 x 1.90) |
| SX9338 | 5 | 3.3V | 5aF | 220pF | DFN (1.80 x 2.10) |

# PerSe™ Connect Pro

## Ultra-High Performance Power Density Sensor

PerSe Connect Pro is a portfolio of Power Density (PD) sensors that improves connectivity in smartphones, tablets and laptops. The focus of PerSe Connect Pro is high performance and high band 5G mmWave applications.

The SX9340 is the world's first ultra-high performance power density sensor. It is a part of the Semtech PerSe Connect Pro family which maximizes connectivity for high band 5G mmWave applications. It provides multiple-channels to support sophisticated radio frequency (RF) management for improved performance and regulatory compliance worldwide. Its extraordinary sensing performance and robust immunity make it the ideal choice for 5G mmWave smartphones, tablets and laptop applications.

### APPLICATIONS

- Smartphones (5G mmWave)
- Tablets (5G mmWave)
- Laptops (5G mmWave)

### FEATURES

- Multi-channel sensor inputs designed for Power Density (PD) applications
- Ultra-high resolution sensing for several centimeter range detection
- Semtech patented smart engine
- Advanced temperature compensation
- Automatic calibration
- Ultra-low power consumption
- 400KHz I²C serial Interface
- Compact footprint

### Designed for 5G mmWave

| PerSe Connect Pro | | | |
|---|---|---|---|
| Part Number | Supply Voltage | Interface | Package |
| SX9340 | 3.3V | I²C | DFN |

# PerSe™ Control

Low Power Human Sensor

PerSe Control enables intuitive control and elevates user experience in wearable products. Auto on/off detection, advanced gesture/media control and smart assistant activation are features commonly supported by our human sensor.

Semtech SX9210 is part of the PerSe Control portfolio. It offers 3 sensor inputs to support features such as in-ear/on-wrist control as well as gesture detection. With ultra-low power consumption and a tiny footprint, it is the ideal choice for applications such as earbuds, smartwatches or fitness trackers.
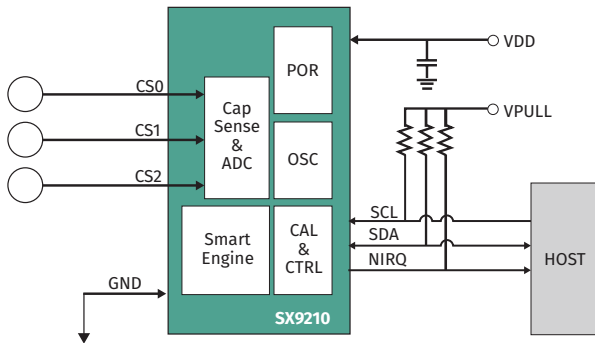
## APPLICATIONS

- Wearables
- Hearables

## FEATURES

- 3-channel sensor inputs
  - Stable proximity sensing with temperature
  - High resolution capacitive sensing down to 0.008fF
  - Capacitance offset compensation up to 75pF
- Input supply voltage: 1.7V - 2.0V
- Active sensor guarding
- Ultra-low power
  - Doze mode: 6µA
  - Sleep mode: 1.75µA
- Automatic calibration
  - Eliminates false triggers due to environmental factors
- 400kHz I²C serial interface
  - 2 sub-addresses selectable by pin
- Compact size: 0.92 mm x 1.69 mm WLCSP package

| PerSe Control | | | | | |
| --- | --- | --- | --- | --- | --- |
| Part Number | Sensor Inputs | Supply Voltage | Resolution | Offset Compensation | Package (mm) |
| SX9211 | 1 | 3.3V | 23aF | 75pF | DFN (1.4 x 1.4) |
| SX9210 | 3 | 1.8V | 8aF | 75pF | WLCSP (0.92 x 1.69) |
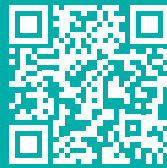
For a detailed list of sales representatives
in your area please visit **semtech.com/sales**

**SEMTECH**

Semtech Corporation is a leading global supplier of high performance analog and mixed-signal semiconductors and advanced algorithms for infrastructure, high-end consumer and industrial equipment. Products are designed to benefit the engineering community as well as the global community. The Company is dedicated to reducing the impact it, and its products, have on the environment. Internal green programs seek to reduce waste through material and manufacturing control, use of green technology and designing for resource reduction. Publicly traded since 1967, Semtech is listed on the Nasdaq Global Select Market under the symbol SMTC.

200 Flynn Road, Camarillo, California 93012 | 805-498-2111

semtech.com |  f  ✗  ▶  in  Find us, like us, follow us