

WIRELESS & SENSING

GENERAL DESCRIPTION

The SX9306 is an ultra-low power capacitive Specific Absorption Rate (SAR) controller that accurately discriminates between an inanimate object and human body proximity. The resulting detection is used in portable electronic devices to reduce and control radio-frequency (RF) emission power in the presence of a human body, enabling significant performance advantages for manufacturers of electronic devices with electro-magnetic radiation sources to meet stringent emission regulations' criteria and Specific Absorption Rate (SAR) standards. Operating directly from an input supply voltage of 2.7 to 5.5V, the SX9306 outputs its data via a 1.65 – 5.5V host compatible I2C serial bus.

The I2C serial communication bus port is compatible with 1.8V host control to report body detection/proximity and to facilitate parameter settings adjustment. Upon proximity detection, the NIRQ output asserts, enabling the user to either determine the relative proximity distance, or simply obtain an indication of detection.

The SX9306 includes an on-chip auto-calibration controller that regularly performs sensitivity adjustments to maintain peak performance over a wide variation of temperature, humidity and noise environments, providing simplified product development and enhanced performance.

In QFN package, a dedicated transmit enable (TXEN) pin is available to synchronize capacitive measurements for applications that require synchronous detection, enabling very low supply current and high noise immunity by only measuring proximity when requested.

KEY PRODUCT FEATURES

- ◆ **2.7 – 5.5V Input Supply Voltage**
- ◆ **Up to 4 Capacitive Sensor Inputs**
 - ❖ Patented On-Chip Smart Engine for Human Detection and Advanced SAR Control
 - ❖ High Resolution Capacitive Sensing down to 0.08fF
 - ❖ Capacitance Offset Compensation up to 30pF
 - ❖ Configurable Proximity Detection (single/combined)
 - ❖ Integrated High Performance RF Shield for Enhanced Noise Immunity
 - ❖ Extremely Low Temperature Drift for Stable Measurement
 - ❖ Reduced VDD Ripple Susceptibility
- ◆ **Active Sensor Guarding**
- ◆ **Automatic Calibration**
- ◆ **Ultra Low Power Consumption:**
 - ❖ Active Mode: 170 uA
 - ❖ Doze Mode: 18 uA
 - ❖ Sleep Mode: 2.5 uA
- ◆ **400kHz I2C Serial Interface**
 - ❖ Four programmable I2C Sub-Addresses
 - ❖ Input Levels Compatible with 1.8V Host Processors
- ◆ **Open Drain NIRQ Interrupt pin**
- ◆ **Up to Three Reset Sources: POR, Soft Reset, NRST**
- ◆ **-40°C to +85°C Operation**
- ◆ **1.63x1.23 mm WLCSP or 3x3mm Thin QFN package**
- ◆ **QFN version pin-to-pin compatible with SX9300/SX9500**
- ◆ **Pb & Halogen Free, RoHS/WEEE compliant**

APPLICATIONS

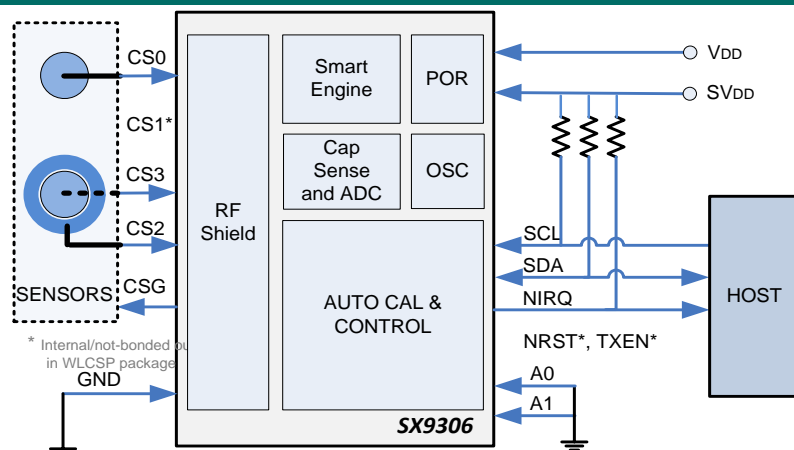
- SAR Compliant Systems
- Tablets/Phablets
- Mobile Phones
- Wearable Devices

ORDERING INFORMATION

Part Number	Package	Marking
SX9306ICSTRT ⁽¹⁾	WLCSP-12	MH06
SX9306ICBTRT ⁽²⁾	WLCSP-12	MB06
SX9306IULTRT	QFN-20	A39E
SX9306EVKA	Eval. Kit	-

⁽¹⁾ Without Backside Coating ⁽²⁾ With Backside Coating

TYPICAL APPLICATION CIRCUIT



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