# IQS231AEV02 Quick start guide

Single Channel Capacitive Proximity/Touch/SAR Controllerwith movement detection

The IQS231A ProxSense[®] IC is a self-capacitance controller designed for SAR applications where a reliable proximity detection function is required along with human and inanimate object distinction. The IQS231A uses quick release and movement detection to achieve this. The IQS231A operates standalone or I$^2$C can be configured via OTP (One Time Programmable) bits. The IC is also available in DFN10 (3x3) package and WLCSP (0.9x1.5).
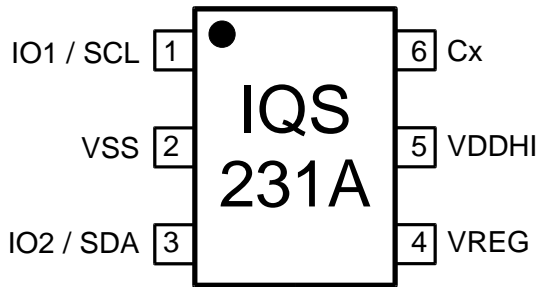
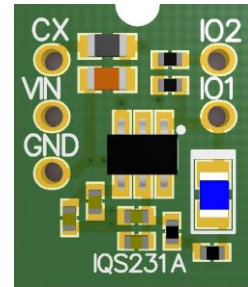## 1 Reference design and pin layout



**Figure 1.1 TSOT23-6 Pin layout**



**Figure 1.2 IQS231AEV01**

**Table 1.1      Pin-out description**

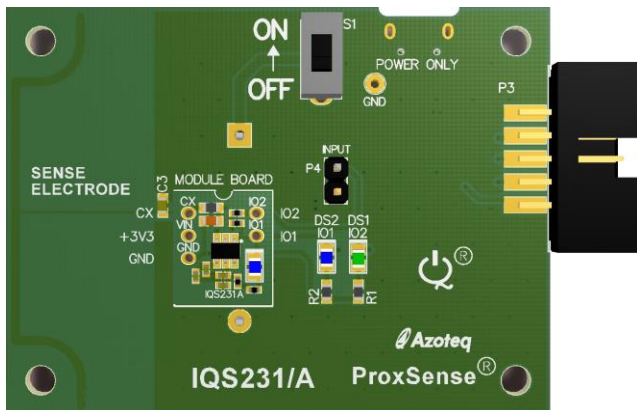| Pin | Name | Type | Function |
|-----|------|------|----------|
| **IQS231A in TSOT23-6** | | | |
| 1 | IO1 / SCL | Digital Input / Output | Multifunction **IO1** / **SCL** (I$^2$C Clock signal) |
| 2 | VSS | Signal GND | |
| 3 | IO2 / SDA | Digital Input / Output | Multifunction **IO2 / SDA** (I$^2$C Data output) |
| 4 | VREG | Regulator output | Requires external capacitor |
| 5 | VDDHI | Supply Input | Supply:1.8V – 3.3V |
| 6 | Cx | Sense electrode | Connect to conductive area intended for sensor |



**Figure 1.2 IQS231AEV02**

**Table 1.2 Multifunction pin descriptions**

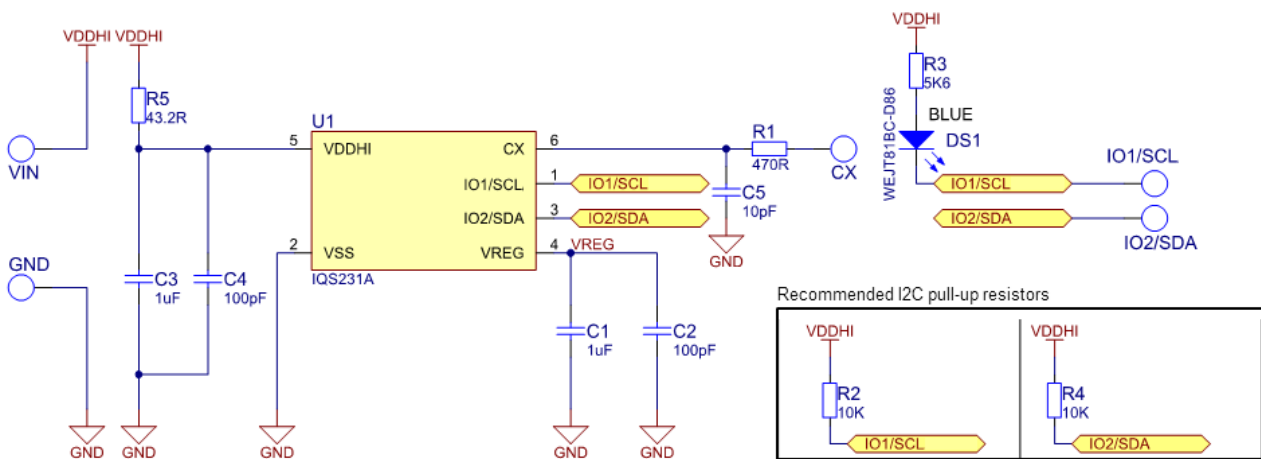| Multifunction pin name | Multifunction pin option |
|------------------------|--------------------------|
| IO1 | Proximity output / Proximity output with heartbeat |
| IO2 | Sensitivity input / Synchronization input / Movement output / Touch output |

**Figure 1.3 Reference design**

# 2 Configuration information

- Default config (**IQS231A 00000000 TSR**): Standalone operation mode
- Default EV02 config (**IQS231A 31313000 TSR**): Standalone operation mode
- Alternative config (**IQS231A 00004000 TSR**): I2C mode

External configuration options are available when using the IQS231A in standalone mode. OTP configuration of the devices allow for different functionality of IO2 multifunction pin.
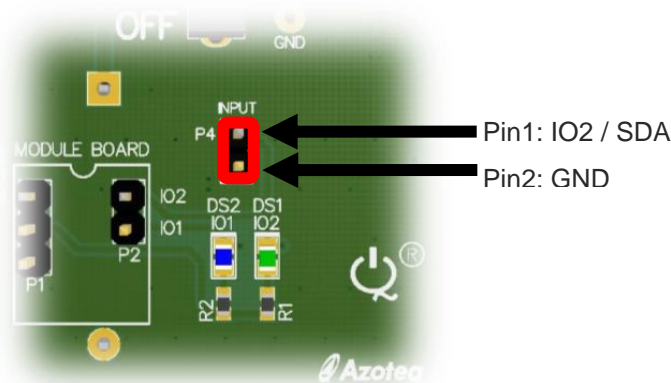


Pin1: IO2 / SDA
Pin2: GND

**Table 2.2 Standalone mode IO2 input configuration options**

| | |
|---|---|
| **IQS231A 31313000 TSR** | Default settings for EV02. The modules supplied are programmed to show movement output on green LED, no movement time-out 10seconds, quick release time-out 2seconds. |
| **IQS231A 00000000 TSR** | Sensitivity adjustment input on IO2<br>• P4 pin1 floating (internal pull-up on IO2): Less sensitive<br>• P4 pin1 connected to pin2 = GND: More sensitive |

# 3 Evaluation and configuration

Different UI's can be selected in the IQS231A GUI and can then be selected to run in standalone mode.

The GUI is available for download from the Software & Tools section of azoteq.com and theCT210 (sold separately) is used in conjunction with the GUI to select the different UI's and settings.

Using USBProg the IQS231A can be configured in different variations. Please note when settings are programmed it is permanent

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