

CYPRESS

CY8C21x34B CAPSENSE® PLUS WITH SMARTSENSE™ AUTO-TUNING TECHNOLOGY



PRODUCT OVERVIEW

PROXIMITY AND WATER-TOLERANT DESIGNS MADE EASY

Cypress's new CY8C21x34B family of CapSense® controllers is ideal for proximity sensing and water-tolerant designs. Enabled with Cypress's revolutionary new SmartSense™ auto-tuning technology, this easy-to-use family significantly reduces end-system design cycle time, and eliminates manual tuning from prototype to mass production.

The CY8C21x34B family supports proximity sensing up to 25 cm. Proximity coupled with LED effects such as fading or breathing produces an inviting, power saving "wake-on-touch" or "wake-on-approach" user interface. Water tolerance enables applications to handle mist, water droplets, or streaming water without triggering a false touch, thereby enhancing the usability of the end product. This family satisfies the rigorous demands of the industrial and white goods markets but is ideal for any application that requires proximity and/or water-tolerant sensing.

The robust Capacitive Sigma Delta (CSD) algorithm ensures optimal sensor performance in noisy environments – another source of false triggers. In addition, SmartSense auto-tuning technology dynamically compensates for environmental variations during runtime. This technology adapts to manufacturing variations in PCBs, overlays, and automatically tunes out noise generators such as LCD inverters, AC lines and switched-mode power supplies.

APPLICATIONS

- White goods • Medical devices • Entry systems, building controls, security panels
- Small home appliances • Industrial control • Consumer applications • LCD/LED TVs

* (SNR of 5:1 is required to ensure robustness of the solution across a wide range of end applications)

FEATURES

EASY IMPLEMENTATION OF ADVANCED PROXIMITY EFFECTS AND WATER TOLERANCE

- Proximity - 'wake-on-touch' or 'wake-on-approach' designs to minimize power consumption; up to 5 cm with PCB trace; up to 25 cm with external wire
- Water tolerance - robust sensor operation in the presence of mist, water droplets, or streaming water

ROBUST SYSTEM PERFORMANCE

- High-sensitivity, low-noise CSD algorithm
- Strong immunity to radio frequency (RF) and alternating current (AC) noise
- Low radiated EMC emission

SMARTSENSE AUTO-TUNING TECHNOLOGY

- Eliminates the tuning process
- Supports a wide range of input capacitance (5 pF to 45 pF)
- All CapSense parameters are automatically set in runtime
- Eliminates false presses due to noise

SIGNAL-TO-NOISE RATIO (SNR)

- Sensitivity of 0.1 pF of finger touch capacitance is detected with 5:1 SNR
- Supports up to 15 mm glass overlays or up to 5 mm acrylic overlays
- Maintains minimum SNR between 5:1* and 10:1 with parasitic capacitance of 5 pF to 45 pF

WIDE OPERATING RANGE

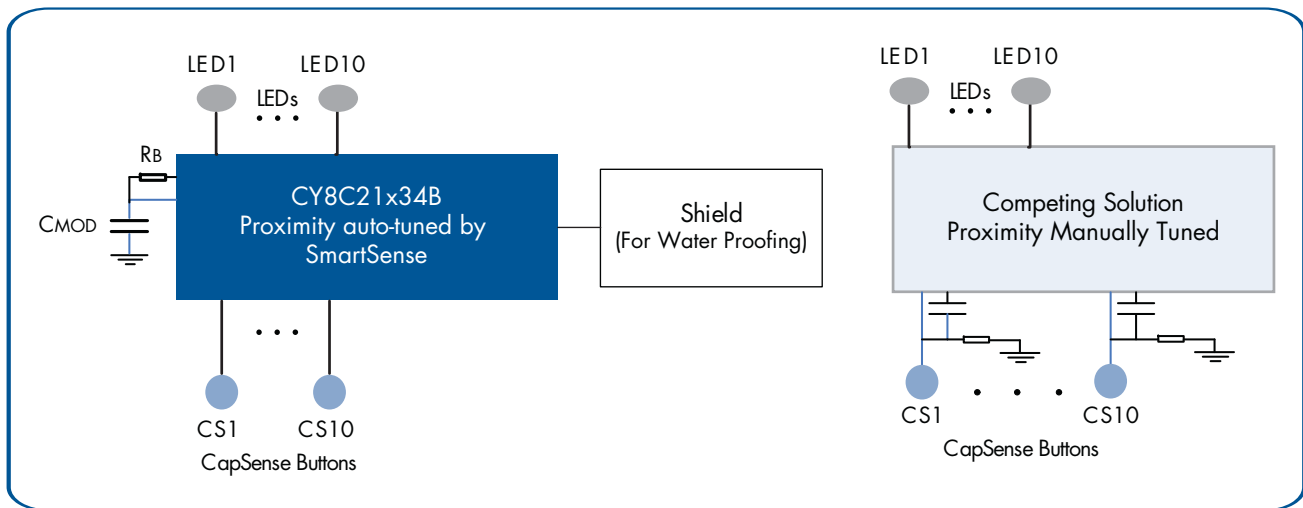
- 2.7 V to 5.25 V ideal for a wide range of applications

INDUSTRIAL TEMPERATURE RANGE: -40 °C TO + 85 °C

SMALL FORM FACTOR PACKAGING: 16-PIN SOIC, 20-PIN SSOP, 28-PIN SSOP, 32-PAD QFN

FEATURES AND BENEFITS

| Features | Benefits |
|-------------------------------------|---|
| SmartSense auto-tuning technology | No tuning required. Faster design cycle, no additional external components. |
| Built-in noise filtering techniques | Robust capacitive sensing in noisy environments. No false triggers. |
| Proximity | Fast and easy implementation of advanced proximity effects. |
| Water tolerance | Accurate sensing in the presence of mist, water droplets, or streaming water. |



CY8C21x34B SmartSense Device Versus Competition

| Cypress | Competing Solutions |
|---|---|
| Only two external components are required (C _{MOD} and R _B). | Four external capacitors, four to eight resistors, and eight pins are required. |
| SmartSense auto-tuning technology eliminates the tuning process. | Manual tuning required via external resistors or software tools. |

PRODUCT INFORMATION

| Part Number | Description | Voltage | Package |
|-------------|--|-----------------|-----------------------------------|
| CY8C21x34B | SmartSense-enabled CapSense controller | 2.7 V to 5.25 V | 16 SOIC, 20 SSOP, 28 SSOP, 32 QFN |

GET STARTED NOW

Go to www.cypress.com/go/capsense for more information on Cypress's CapSense products.

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