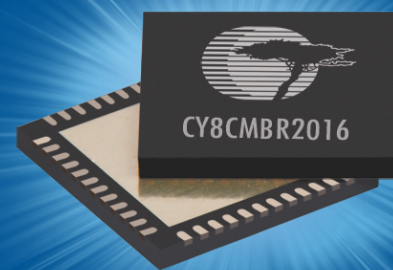


CYPRESS CY8CMBR2016 CapSense® Express™ MATRIX KEYPAD SOLUTION



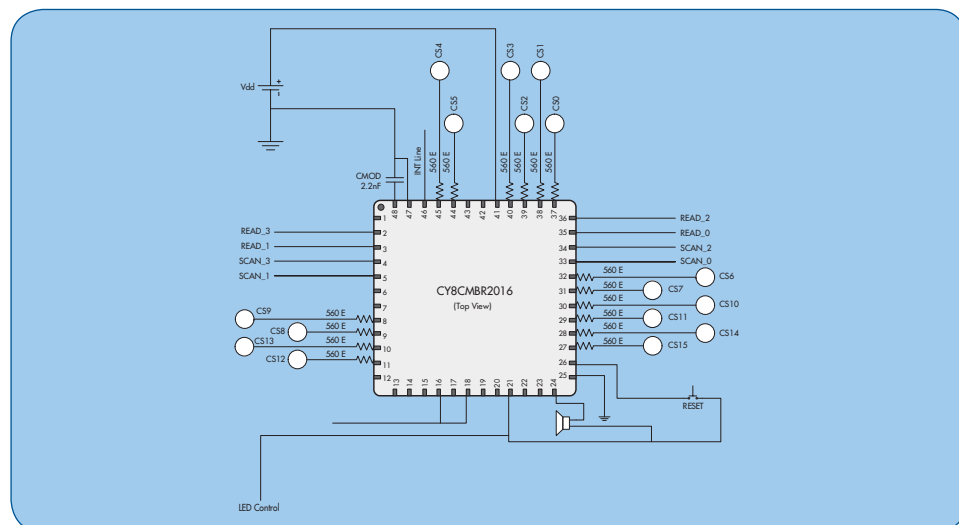
PRODUCT OVERVIEW

SMARTSENSE™ AUTO-TUNING ENABLED, HARDWARE CONFIGURABLE SOLUTION

Creating a capacitive matrix keypad has never been simpler. With Cypress's CY8CMBR2016, you can complete a matrix keypad design (up to 4x4) quickly and effortlessly. This complete approach, requiring no firmware development based on hardware configurable settings, dramatically reduces the design cycle. A member of the CapSense® Express™ family, the CY8CMBR2016 supports industry-standard Keypad Scan and Truth Table host interface protocols, enabling customers to leverage their existing host processor firmware.

No programming is required for the CY8CMBR2016. Instead, it offers pin-configurable settings for button sensitivity, auto-reset performance, and General Purpose Output (GPO) functionality. This solution eliminates the need for software tools, firmware development, and system tuning for developing capacitive sensing matrix solutions.

The CY8CMBR2016 is enabled with Cypress's SmartSense™ auto-tuning, the industry's only true run-time tuning solution. SmartSense establishes, monitors, and maintains the system-to-noise ratio (SNR) for optimal CapSense performance. Further, in moving from the prototype stage to mass production, manufacturing variances in PCB and/or overlay material can affect the parasitic or intrinsic capacitance of the system. Additionally, SmartSense auto-tuning incorporates automatic determination and dynamic optimization of the sensor capacitance threshold.



CY8CMBR2016 Block Diagram

ADVANTAGES

HARDWARE CONFIGURABLE MATRIX SOLUTION

- Create a matrix system with no software tools, firmware, and device programming
- Multiple matrix configurations available (3 x 4, 4 x 4)
- Can also be configured as 16 individual CapSense buttons

MATRIX HOST INTERFACE COMMUNICATION

- Industry standard host interface protocols reuse existing host processor firmware - Keypad Scan Interface, Truth Table Interface
- Encoded GPO Interface

SIMULTANEOUS KEY PRESS ENABLED

- Perfect for applications that require switching between multiple user interface modes

SMARTSENSE AUTO-TUNING ENABLED

- Robust noise performance
- Strong immunity to Radio Frequency (RF) and Alternating Current (AC) noise
- No manual tuning required
- Supports wide range of input capacitance (5 pF to 40 pF)

SPEAKER DRIVE (PIEZO)

LOW-POWER CONSUMPTION

- Supply current in run mode as low as 15 uA/button
- Deep sleep mode: 100 nA

WIDE OPERATING RANGE

- 1.71 to 5.5 V ideal for a wide range of regulated and unregulated battery applications

INDUSTRIAL TEMPERATURE RANGE

-40 °C to + 85 °C

48-PAD (QFN) PACKAGE
(6 mm x 6 mm x 0.6 mm)

The included Design Toolbox provides step-by-step guidance for the sensor design and layout process, which saves valuable engineering resources, test time, improves yield, and speeds time-to-volume.

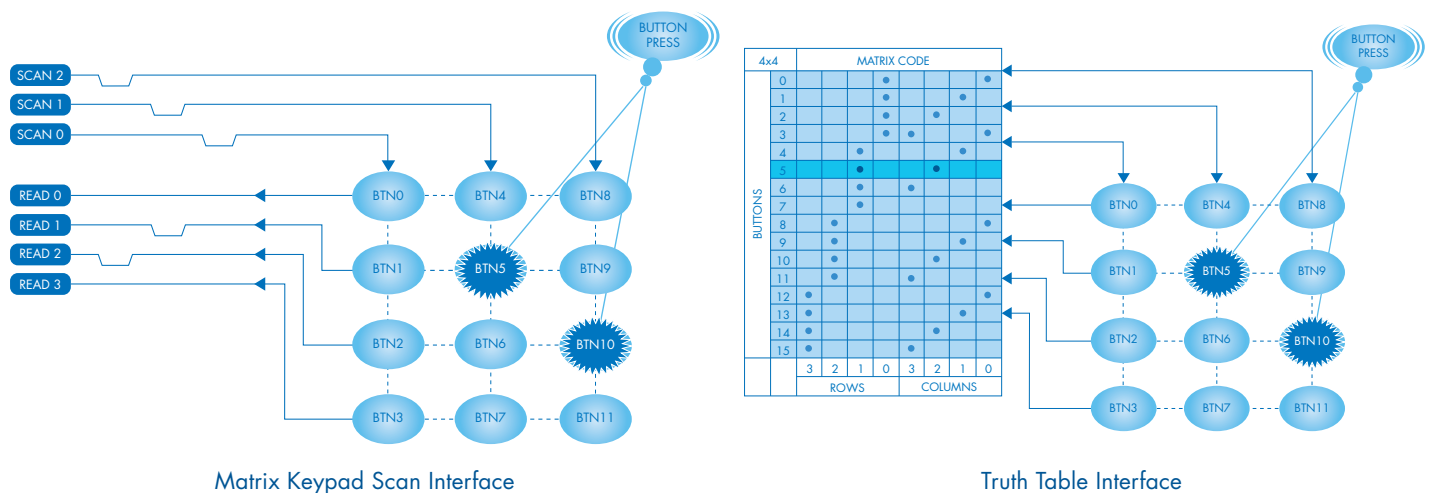
Additional features include the ability to provide up to 16 individual CapSense buttons with multi-touch, perfect for current applications that require multiple touch combinations for separate user interface modes. The CY8CMBR2016 also provides world-class power and voltage options, with a 1.71 V to 5.5 V range ideal for a wide range of regulated and unregulated battery applications, and supply current in run mode as low as 15 μ A/button.

APPLICATIONS

- Industrial control panels • Set-top boxes • Security panels • POS terminals • Biometric scanner keypads • Fire alarm control panels
- Thermostats • Home appliances • Medical equipment

DROP-IN COMPATIBILITY, TIME-TO-MARKET SAVINGS

The CY8CMBR2016 is made to be drop-in compatible with standard host interface protocols, such as Keypad Scan and Truth Table. This allows a design engineer the ability to avoid costly rework in their host processor firmware, providing time-to-market savings. The diagram below depicts the matrix host interface options.



PRODUCT INFORMATION

Part Number	Description	Voltage	Package
CY8CMBR2016-24LQXI, CY8CMBR2016-24LQXIT	SmartSense-enabled CapSense matrix keypad controller	1.71 V to 5.5 V	48 QFN

GET STARTED NOW

Visit www.cypress.com/go/capsense for more information on the CapSense Express CY8CMBR2016 Matrix Solution and all Cypress CapSense products.

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