



Capacitive Touch Sensor Interface IC

Description

The EM6420 is a true low power Touch Sensor Interface IC able to scan sequentially up to 16 capacitive sensors. The device parameters (number of used sensors, sensors scan frequency, sensors sensitivity level, IRQ condition) are configurable either from a host microcontroller through a communication port or through configuration inputs.

Recognised touch inputs will be signaled with an active edge at the IRQ pad and data are ready to be read through the communication port by the host MCU. Conditions for the IRQ to get active are configurable : at the end of every scan, at the end of a scan if at least one sensor is active or at the end of a scan if the sensors state has changed.

The EM6420 can also detect the most active sensor in applications where sensors are tightly spaced. It compares relative levels among sensors and selects the sensor with the largest signal strength.

To increase the number of sensors >16, use several EM6420 in parallel.

The supply voltage range is selectable by pin configuration from 1.2 V to 2.0 V or from 2.2 V to 3.6 V.

Depending on the selected supply voltage range, 3 or 4 decoupling capacitors are required for the entire functionality of the EM6420 from -40 to + 85°C.

Interfaces

- Up to 16 analogue sensor inputs
- User selectable communication interfaces : 4-wire SPI, I²C, 4-bit parallel interface and 8-bit direct output
- User-selectable active edge IRQ output signal
- Active high enable input

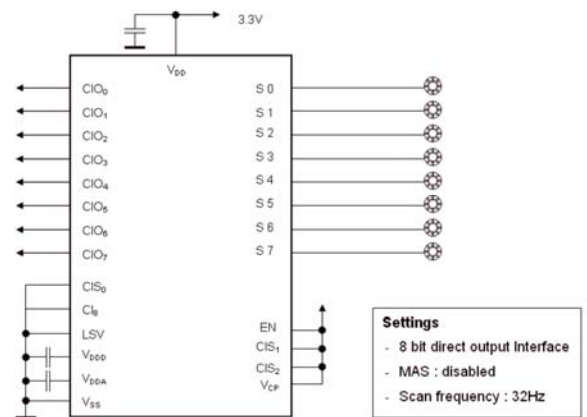
Electrical Characteristics

Supply voltage	1.2 V to 2.0 V
	or 2.2 V to 3.6 V
Power consumption active	8.5 μ A @ 3.0 V
Power consumption std by	5.5 μ A @ 3.0 V
Power consumption sleep	0.6 μ A @ 3.0 V
Nominal sensor capacitance	3 to 31 pF
Sensors scan frequency	1 Hz to 128 Hz *
* frequency depending on number of sensors	
COM clock frequency	up to 400 kHz

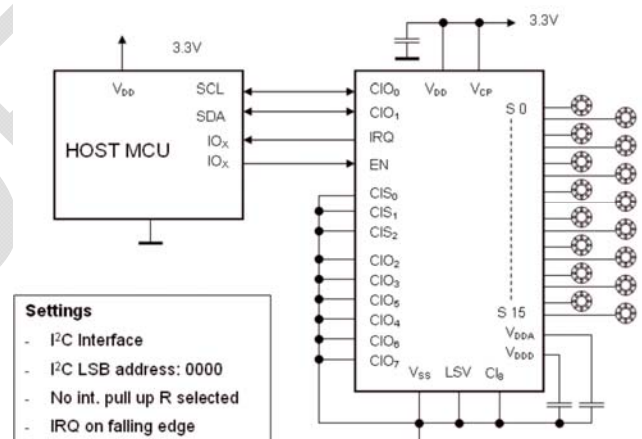
Availability

Naked die
SMT package MLF40

Typical Application in Stand Alone Mode and 8 Sensing Inputs



Typical Application with a Host MCU and 16 Sensing Inputs



Design Considerations

The EM6420 is well suited for battery and mains powered applications where the following features are important :

- Tamper proof applications
- Nice and clean designs
- Touch function to avoid buttons and keys
- Slider functions
- Hygienic issues, cleaning aspects
- Waterproof designs

Applications

- Mobile phones, cordless phones
- PDA, keyboards
- White goods
- Toys
- Lighting - Sliders for dimming