

Features

- Number of Keys:
 - One
 - Configurable as either a single key or a proximity sensor
- Technology:
 - Patented spread-spectrum charge-transfer (direct mode)
- Key outline sizes:
 - 6 mm x 6 mm or larger (panel thickness dependent); widely different sizes and shapes possible
- Electrode design:
 - Solid or ring electrode shapes
- PCB Layers required:
 - One
- Electrode materials:
 - Etched copper, silver, carbon, Indium Tin Oxide (ITO)
- Electrode substrates:
 - PCB, FPCB, plastic films, glass
- Panel materials:
 - Plastic, glass, composites, painted surfaces (low particle density metallic paints possible)
- Panel thickness:
 - Up to 12 mm glass, 6 mm plastic (electrode size and Cs dependent)
- Key sensitivity:
 - Settable via capacitor (Cs)
- Interface:
 - Digital output, active high
- Moisture tolerance:
 - Good
- Power:
 - 1.8V – 5.5V; 17 μ A at 1.8V typical
- Package:
 - 6-pin SOT23-6 RoHS compliant
- Signal processing:
 - Self-calibration, auto drift compensation, noise filtering
- Applications:
 - Control panels, consumer appliances, proximity sensor applications, toys, lighting controls, mechanical switch or button,
- Patents:
 - QTouch[®] (patented charge-transfer method)
 - HeartBeat[™] (monitors health of device)



One-channel Touch Sensor IC

AT42QT1010

Summary

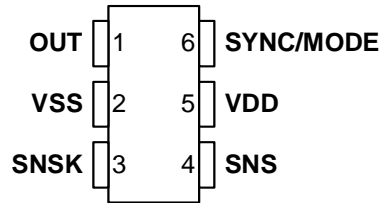
Note: This is a summary document.
A complete document is available.
For more information contact
www.atmel.com/touch.

9541ES-AT42-02/10



1. Pinout and Schematic

1.1 Pinout Configuration



1.2 Pin Descriptions

Table 1-1. Pin Listing

Name	Pin	Type	Comments	If Unused, Connect To...
OUT	1	O	Output state	–
Vss	2	P	Supply ground	–
SNSK	3	I/O	Sense pin	Cs + Key
SNS	4	I/O	Sense pin	Cs
Vdd	5	P	Power	–
SYNC	6	I	SYNC and Mode Input	Pin is either SYNC/Slow/Fast Mode, depending on logic level applied

I Input only

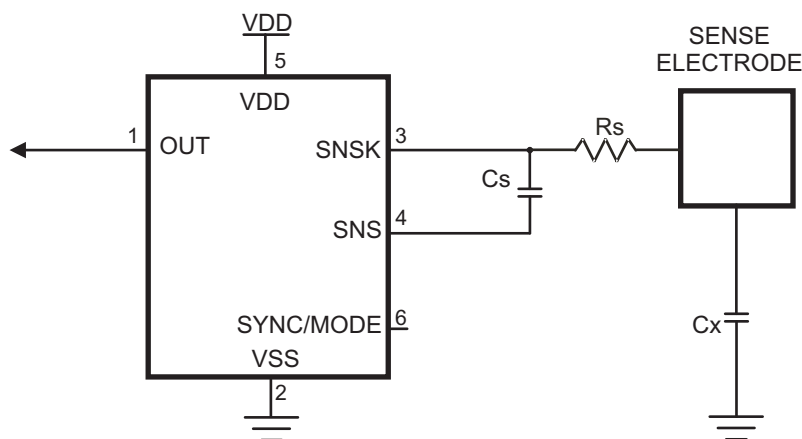
O Output only, push-pull

I/O Input and output

P Ground or power

1.3 Schematic

Figure 1-1. Basic Circuit Configuration



Note: A bypass capacitor should be tightly wired between Vdd and Vss and kept close to pin 5.

2. Overview of the AT42QT1010

The AT42QT1010 (QT1010) is a digital burst mode charge-transfer (QT™) sensor that is capable of detecting near-proximity or touch, making it ideal for implementing touch controls.

With the proper electrode and circuit design, the self-contained digital IC will project a touch or proximity field to several centimeters through any dielectric like glass, plastic, stone, ceramic, and even most kinds of wood. It can also turn small metal-bearing objects into intrinsic sensors, making them responsive to proximity or touch. This capability, coupled with its ability to self-calibrate, can lead to entirely new product concepts.

The QT1010 is designed specifically for human interfaces, like control panels, appliances, toys, lighting controls, or anywhere a mechanical switch or button may be found. It includes all hardware and signal processing functions necessary to provide stable sensing under a wide variety of changing conditions. Only a single low-cost capacitor is required for operation.



Revision History

Revision No.	History
Revision A – May 2009	<ul style="list-style-type: none">• Initial release
Revision B – August 2009	<ul style="list-style-type: none">• Updated for chip revision 2.2
Revision C – August 2009	<ul style="list-style-type: none">• Minor updates for clarity
Revision D – January 2010	<ul style="list-style-type: none">• Updated for revision 2.4.1
Revision ES – February 2010	<ul style="list-style-type: none">• Minor updates

Notes



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