

Using the EVK1040A:

This kit is for the evaluation and development of applications using the AT42QT1040-MMH ('QT1040') 4 Channel QTouch™ Integrated Circuit (IC). In this example, the QT1040 is shown working on a simple battery powered double-sided PCB. The EVK1040A is configured with 4 capacitive keys behind a 1mm acrylic front panel, where a touch is shown by an LED for each key touched.

Please refer to the QT1040 datasheet available at <http://www.atmel.com/products/touch/> for full details of this (and other) products.

- Insert the CR2032 3V battery provided into the battery holder on the EVK1040A. Ensure that the battery has the correct orientation (negative (-) side to board) or the EVK1040A will not work.
- Slider the Power switch to ON (towards the battery).
- Touch any of the 4 key(s) (K0, K1, K2 or K3) on the EVK1040A and the corresponding LED(s) will illuminate. (The number of LEDs illuminated will depend on the Adjacent Key Suppression™ (AKS™) feature setting at J1.)
- Remove the touch from the key(s) and the LED(s) will switch off.
- If a key is touched for longer than 30 seconds the corresponding LED will switch off. This is because the Max On-Duration has been exceeded and the QT1040 has recalibrated.
- Battery lifetime is very dependant on the Speed setting at J2. Slide Power switch to OFF (away from battery) when the EVK1040A is to be left for extended periods of time.



EVK1040A USER GUIDE

External Electrodes:

The EVK1040A can be connected to external electrodes by soldering to pads at J5. Disconnect K0, K1, K2 and K3 by cutting through the connecting tracks to J5.

Discrete Outputs:

The four discrete outputs from the QT1040 can be accessed at J3. If connected externally, remove RL0, RL1, RL2 and RL3.

Debug Output:

The QT1040 has a debug mode that can be entered by applying a short circuit across CS3 at power-up and removing the short circuit within 5 seconds.

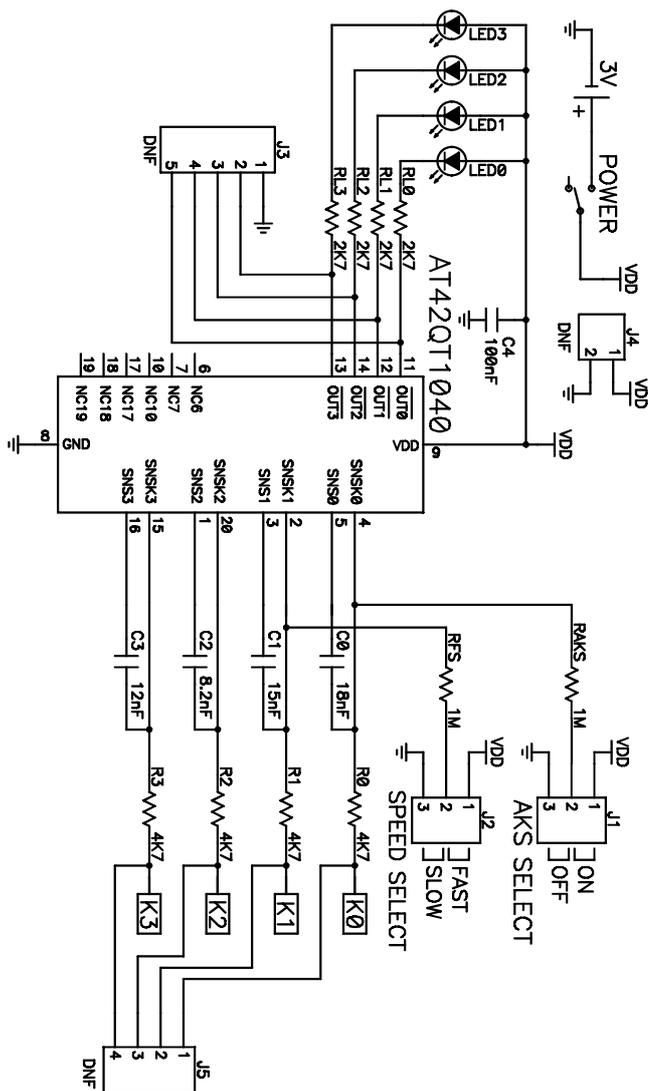
Using this, the internal parameters of the QT1040 can be monitored externally through connections available at J3.

Sense Capacitors/Sensitivity:

C0, C1, C2 and C3 can be replaced with different value X7R capacitors to change the sensitivity of each of the channels K0, K1, K2 and K3 respectively.

Increasing the capacitor values will increase sensitivity and decreasing the capacitor value will decrease the sensitivity. (All flux residues should be removed after component replacement.)

NOTES:



AKS Feature:

The AKS mode is changed by moving the 2-way link fitted to J1 as indicated. For the change to become active, cycle power by sliding the Power switch to OFF then ON.

- If AKS feature set to 'On' (link on Pins 1 and 2): When touching multiple keys, only the LED associated with the key with the strongest signal is lit.
- If set to 'Off' (link on Pins 2 and 3): When touching multiple keys, multiple LEDs will be lit.

Note that the sensitivity of Key K0 will change between AKS ON and AKS OFF modes. The supplied default K0 sensitivity setting (capacitor C0) is for AKS set to ON.

Speed Selection:

The QT1040 response speed can be changed on the EVK1040A for either a fast response (16ms), or a slightly slower response (64ms) (with the benefit of reduced power consumption) by moving the 2-way link fitted to J2 as indicated. For the change to become active, cycle power by sliding the Power switch to OFF then ON.

Note that the sensitivity of Key K1 will change between FAST and SLOW settings. The supplied default K1 sensitivity setting (capacitor C1) is for Speed set to SLOW.

Power Supply:

An external power supply (1.8V - 5.5V) can be used instead of the battery by connecting to J4, but ensure that the battery is removed.



EVK1040A Kit Contents:

1x EVK1040A Assembly	
1x CR2032 Battery, 3V, 235mAh	
2x Sample AT42QT1040-MMH ICs	
1x EVK1040A User Guide	
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