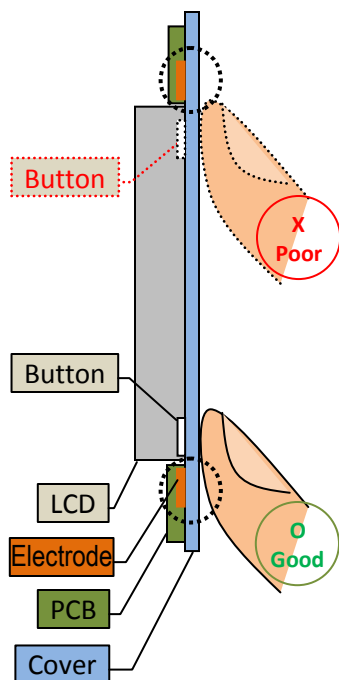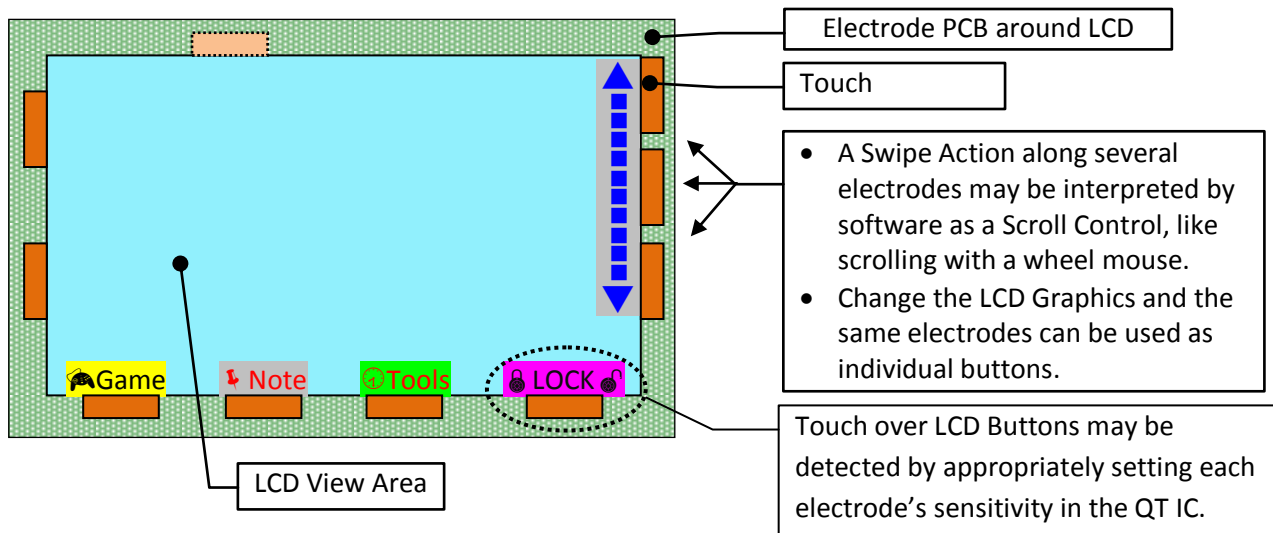# "No Film" Design for QTouch Buttons on LCD

[QTouch_LCD_NoFilm_v02.pdf], 2008-06-21, Paul Russell, QRG FAE Japan

*** These are guidelines only. Actual requirements and performance may vary depending on panel construction, items behind panel, connection length, noise sources, etc.

QTouch^{TM} may be used to implement buttons over LCD Graphics as shown in the following drawings.

- This allows Capacitive Touch in low cost products, as there is no need for expensive ITO films.
- LCD buttons arranged around the screen can be within the field of electrodes framing the LCD.
- QT ICs with PPK (Pin Per Key) and Binary Encoded interfaces are ideal for replacing mechanical switches with a minimum of circuitry change, try the QT1081 or the QT100.
- QT ICs with serial interfaces (I^{2}C, SPI, UART) minimize interface signalling, freeing MCU pins for other use and/or allowing for smaller MCU packages to be used.

Electrode PCB around LCD

Touch

- A Swipe Action along several electrodes may be interpreted by software as a Scroll Control, like scrolling with a wheel mouse.
- Change the LCD Graphics and the same electrodes can be used as individual buttons.

Game   Note   Tools   LOCK

Touch over LCD Buttons may be detected by appropriately setting each electrode's sensitivity in the QT IC.

LCD View Area

Button

X Poor

Button

LCD

Electrode

PCB

Cover

O Good

Arrange electrodes along the edges of the LCD where user touch will most overlap the LCD edge.

In this figure Buttons along the bottom edge will have better coupling to electrodes below LCD due to finger orientation.

Buttons along the sides may vary depending on whether the user is touching with left or right hand.

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