MSP430 LaunchPad (MSP-EXP430G2) with Capacitive Touch BoosterPack (KT35S430-S1) User Guide

1 430BOOST-SENSE1 Overview

1.1 Overview

The **KT35S430-S1** ITO Capacitive Touch BoosterPack is an extension module for the MSP-EXP430G2 MSP430 LaunchPad Value Line Development Kit (see Figure 1).
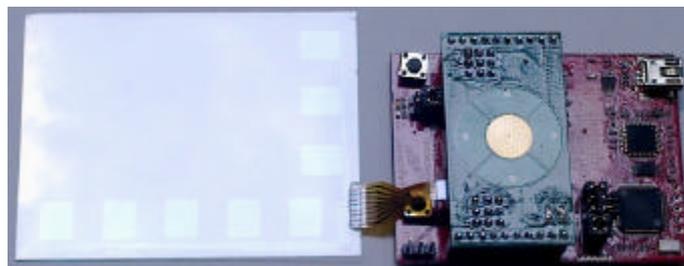

Figure 1. Capacitive Sense BoosterPack With LaunchPad

The ITO Capacitive Sense BoosterPack features the new MSP430G2xxx devices with transparent ITO glass sensor. The BoosterPack includes a converter board and an ITO glass capacitive touch sensor. The user experience application demonstrates capacitive sense as standalone feature by showing the user interaction directly with the onboard LEDs.

KT35S430-S1 features:

- Single layer of ITO Glass Sensor with high transmittance
- 3.5 inch diagonal
- Simply applied on any type of LCD displays
- 5 function keys
- Instant feedback to user interaction by 2 LEDs
- Low product cost
- Low customization cost
   - Customization on numbers of keys, key position and FPC

1.2 Kit Contents

The **KT35S430-S1** kit includes two components:
• One ITO Glass Capacitive Touch sensor with five function keys and FPC pinout (Figure 2)
• One converter board for connected the ITO glass sensor to the MSP-EXP430G2 MCU board (Figure 3)
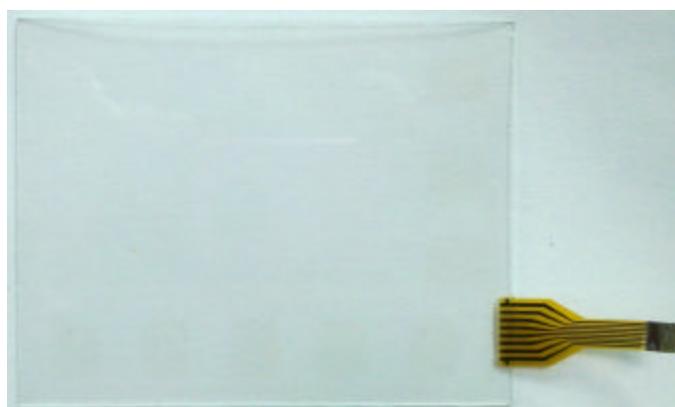
Figure 2. ITO Glass Capacitive Touch sensor
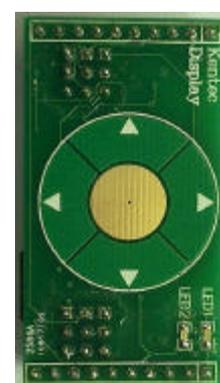
Figure 3. Connector board

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2 Hardware Preparation

2.1. Remove the J3 connections on the LaunchPad to disconnect TXD, and RXD from P1.1 and P1.2.

2.2. Remove the J5 connections on the LaunchPad to disconnect the LaunchPad LEDs from P1.0 and P1.6.

2.3. Remove R34 and C24 on the LaunchPad to disconnect it from P1.3.

2.4. Use the MSP430G2211 device witch come from the LaunchPad Development Kit and insert it in the LaunchPad MCU socket.

2.5. Connect the ITO Capacitive Sensor and the converter board to the LaunchPad with proper orientation by ensuring that the "Kentec Display" text are in the same direction as the text on the Launchpad.

2.6. Connect the LaunchPad with an USB cable to a PC.
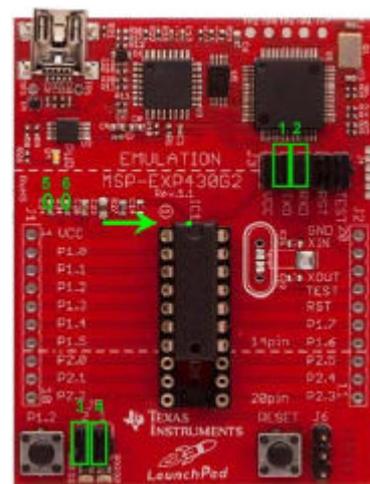
NOTE: The 32-kHz crystal/oscillator on pins 12 and 13 is not required for the ITO Capacitive Sensor demo.

3 Software Preparation

Bellow attachment is the source code for the projects, compile and download it to the LaunchPad.

NO.	Document	Attachment
1	Source code package	

4 ITO Capacitive Touch BoosterPack Hardware

As shown in Figure 4 and Table 1, the ITO Capacitive Touch BoosterPack is an advance capacitive touch application example for the new MSP430G2xxx touch-sense enabled I/O pins. The demo shows 5 touch button for HMI, In addition, there are two LEDs on the board to give instant feedback to user interaction.
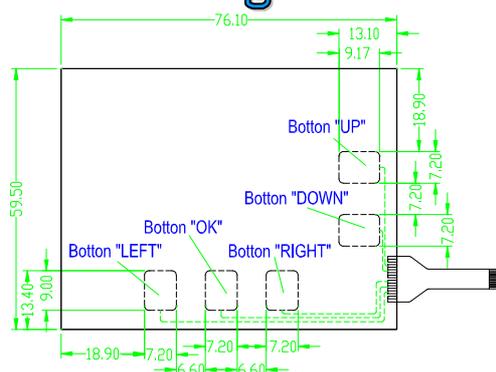
Figure 4. ITO Capacitive Sensor

Table 1. BoosterPack Interface

Pin	MSP430 Port	BoosterPack Signal	Description
1	VCC	VCC	Supply voltage
2	P1.0	TACLK Input	Timer0_A clock signal input
3	P1.1	CA_Ref	Comparator reference
4	P1.2	S1	Touch-sense 1
5	P1.3	S2	Touch-sense 2
6	P1.4	S3	Touch-sense 3
7	P1.5	S4	Touch-sense 4
8	P1.6	S5	Touch-sense 5
9	P1.7	CA_Out	Comparator output
10	RST/SBWTDIO	NC	Reset line for SBW JTAG data, not connected to BoosterPack
11	TEST/SBWTCK	CN	Test line for SBW JTAG clock, not connected to BoosterPack
12	P2.6/XOUT	LED1	LED1 positive drive
13	P2.7/XIN	LED2	LED2 positive drive
14	GND	GND	Supply ground

# 5 Schematics and PCB Layout

5.1 Schematics
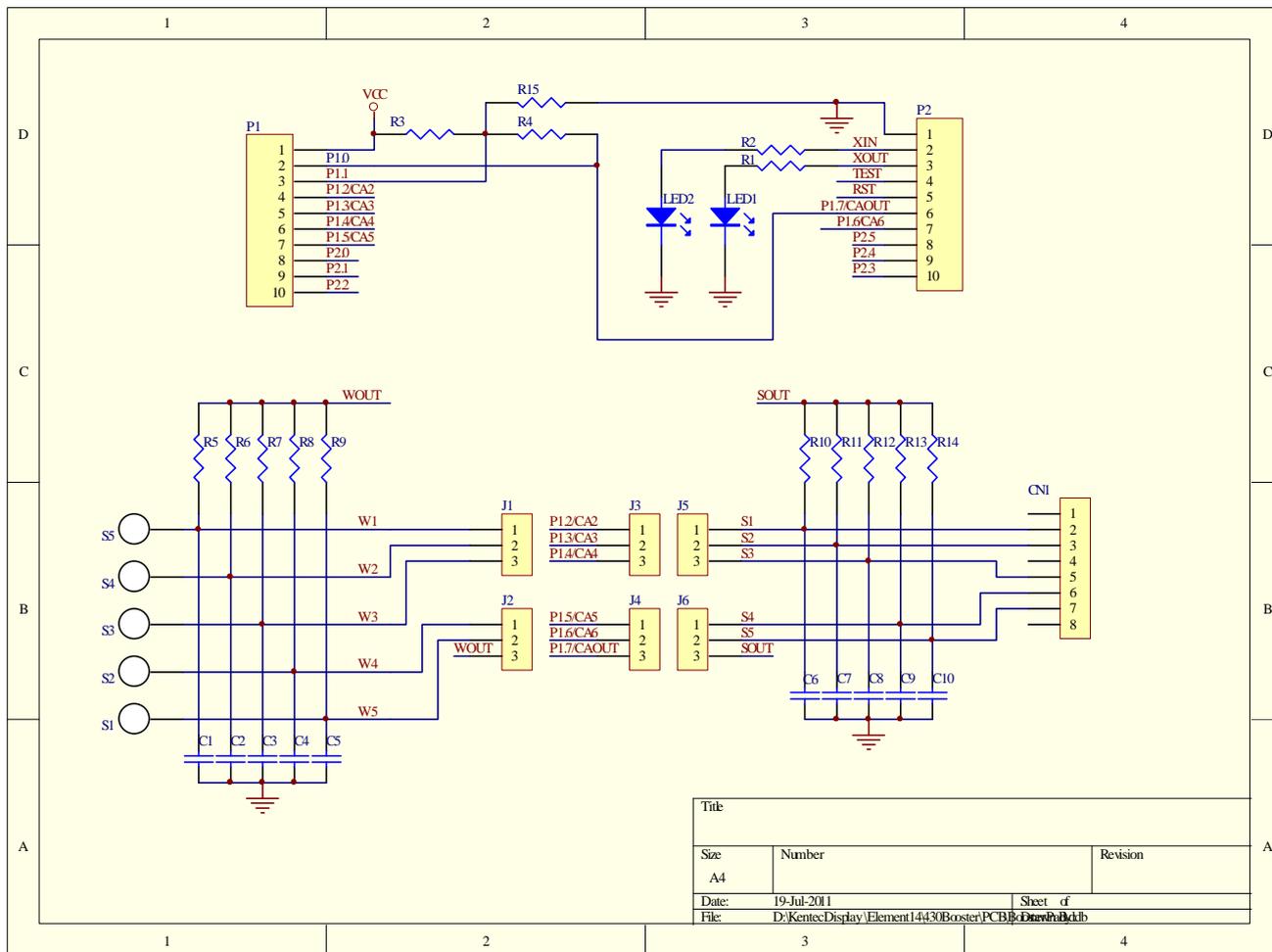
**Figure 5. Converter board schematic**

5.2 PCB Layout
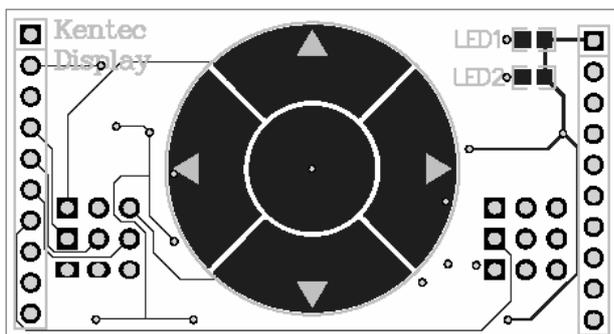
Figure 6. Converter board layout, Top layer
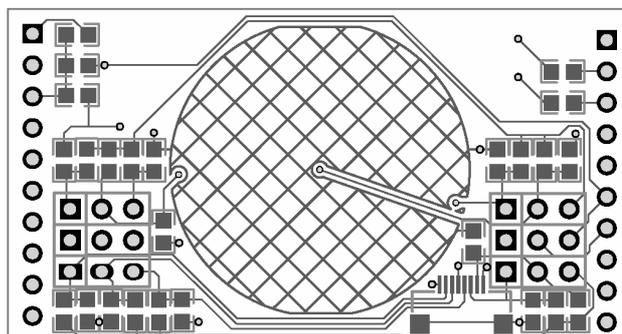
Figure 7. Converter board layout, Bottom layer

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