IQS550-TS43 user guide (quick-start)
10x15 channel touch panel for placement on 4.3" LCD displays

Introduction

The IQS550 is a capacitive sensing controller designed for multi-touch applications using projected capacitance touch panels. This IC is at the heart of this touch screen solution. The main features include the 4.3" Touchscreen Panel with a 3584 x 2304 resolution and up to 5 simultaneous touch co-ordinates. This touch panel requires a supply voltage of 1.65V to 3.6V and communicates with an I^2C interface.

Operation Characteristics

The IQS550 requires a master device for reading the following touch point data over I^2C:

- Touch ID
- Touch co-ordinates
- Touch strength

Figure 1 IQS550-TS43

The solution can simply be powered and touch data read at a rate of up to about 80 Hz. No special pre-configuration routines are required. Example code is available within the IQS550-TS43 data pack ("IQS550-TS43_datapack.zip") to aid engineers in planning program flow and possible custom adjustments. See the IQS550-TS43 datasheet for a summary on the communications interface and application note AZD067 for the full details.

User Configurable Options

Various settings can be changed on the IQS550 through I^2C. See the example code for popular and common adjustments. For a full set of adjustments consult the IQS550 datasheet (IQS5xx-A000 Trackpad Datasheet).
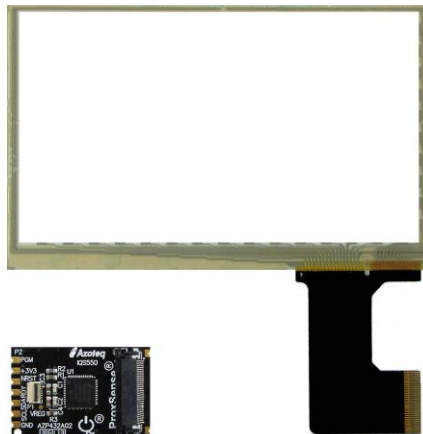

Figure 2 IQS550 module board

Integration

Start by connecting the capacitive touch panel to the module board. Add a power line to the +3V3 pad and a reference ground to GND. Add 3 more lines to SCL, SDA and RDY for clock, data and ready lines. Connect these wires to a master that communicates with this I^2C slave device. Add the NRST line to enable a soft reset of the IQS550, offering robust control against firmware failure. Using the NRST line is also the fastest method of auto-calibrating the panel for a stable environment after LCD start-up.

The module board can be mounted on a PCB (recommended footprint can be found in the IQS550-TS43 datasheet). Alternatively the module can be fixed using adhesive or the PCB mounting holes while opting for the 6-way ZIF connector with an FFC cable for communication.

The touch panel should only be used on 4.3" LCD displays. To install, remove rear covering, ensure no residue on back of panel, remove tape covering, place on display, remove top covering, evaluate touch performance with a custom master device or the Azoteq CT210 USB device.

Evaluation and debugging

It is recommended to evaluate a solution using the Azoteq CT210. The USB device communicates via I^2C with the module board. Use this method to evaluate performance and explore the vast amount of custom settings available on the IQS550. The standard IQS5xx GUI may be used while consulting the AZD070 application note for connection and GUI details.