

Touchscreen Performance Improvement Techniques

INTRODUCTION

This application note describes how the signal converted from 4-wire touchscreens can be improved by simply adding some small decoupling capacitors. The addition of these capacitors produce a more stable input to the AUXADC, however, charge settling times must be compensated for in the circuit setup. This application note describes where to connect capacitors and what register settings to alter in order to obtain maximum performance.

IMPLEMENTATION

4-Wire touchscreen interface is available on both WM9705 and WM9712 devices. To improve the stability of the touchscreen output, de-coupling capacitors can be added to the four connections Y+, Y-, X+, X- as shown below

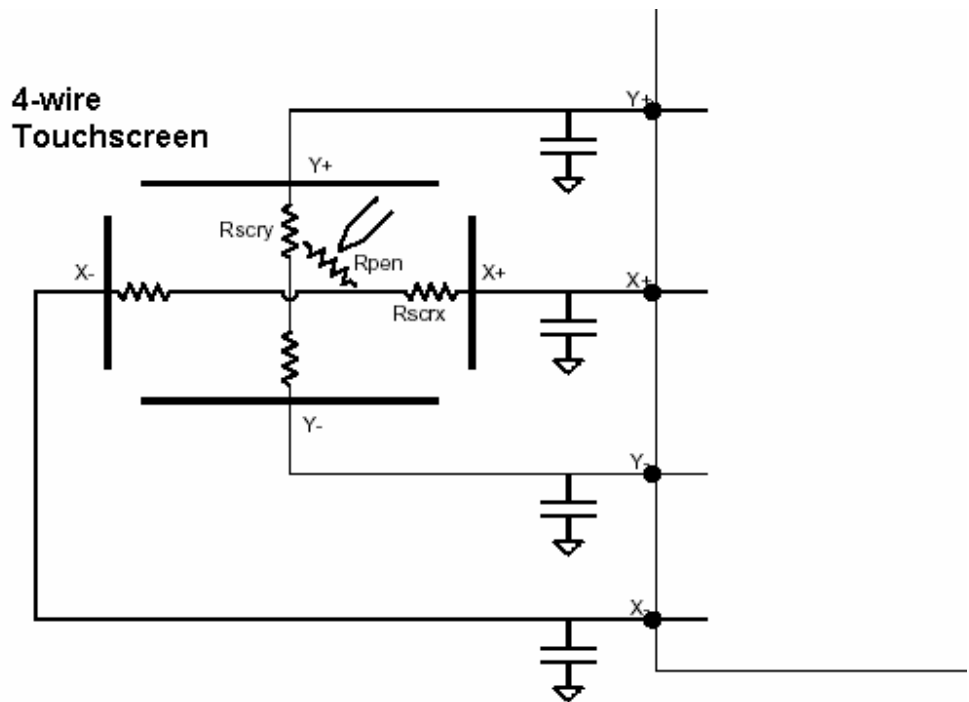


Figure 1 Touchscreen Capacitor Modification

Touchscreens are available with varying characteristics. However, the following setup has been found to provide best performance for a typical setup.

WM9705 Setup:

1. Pins X+,X-,Y+,Y- should be decoupled with 10nF to AGND.
2. The delay function is required. The suggested value is 16 frame delay (DEL[3:0]=0100 in register 76h).
3. The sensitivity of Pen Detect has to be altered to be less sensitive. This can be achieved using the internal comparator to set the pen detect threshold to 7Vmid/15 (PDD[3:0]=0111 in register 78h).
4. Once this is done the PDRES resistance value has to be altered, approximately 10k ohms is a good starting value.

NOTE: These values will vary depending on the system. The sensitivity can be varied further by altering the resistance on PDRES or by lowering the pen detect threshold.

WM9712 Setup:

1. Pins X+,X-,Y+,Y- should be decoupled with 10nF to AGND.
2. The delay function is required. The suggested value is 16 frame delay (DEL[3:0]=0100 in register 76h).
3. The sensitivity of Pen Detect has to be altered to be less sensitive. This is achieved using internally set resistance RPU. For best results the RPU should be set to approximately 2K (RPU[5:0]=011111 in register 78h)

Note:

These values will vary depending on the system. The sensitivity can be varied further by altering the RPU resistance.

5-WIRE

Generally it has been found that the output from 5-wire touchscreens is far more stable than the 4-wire versions. In theory only one capacitor would be required for improved signal input. This decoupling capacitor (in the 10nF range) should be connected from the WIPER to AGND. However, we have not encountered a requirement for this modification to date.

SUMMARY

This document describes how to improve touchscreen performance by the addition of capacitors and some minor setup alterations on Wolfson's WM9705 and WM9712 AC'97 CODEC's. Although significant improvement can be made from these changes it should be noted that in some applications the touchscreen performance will be adequate with no modification.

APPLICATION SUPPORT

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