mXT640T
PCAP Atmel I^{2}C controller

Revision: 001

Date: 2016-04-13

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1 Introduction

The I²C mXT640T controller is designed as a part of the capacitive touch systems developed by Data Modul. It offers the possibility to connect a projective capacitive touch sensor to standard computers or embedded systems using the I²C interface. For the connection the customer can use a cable or connect the controller board via soldering pads.

The controller is based on the Atmel maXTouch 640T IC which offers a good touch performance and a high noise resistance. With outstanding filter technology the maXTouch ICs are suitable for industrial, medical and other applications.

For the communication with the OS the controller uses the I²C interface with Atmel´s I²C protocol. Besides transmitting coordinates information it is also possible to configure the controller parameters. For more information about the Atmel I²C protocol, please refer to the *Data Modul maXTouch Protocol Guide* and the GitHub sources https://github.com/atmel-maxtouch.

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2   Controller specification

2.1   Mechanical features

|	
Size	33x21 mm
Height	3.2 mm (soldering pads) or 4.5 mm (with connector)
Operating temperature	-20 to +75 °C
Storage temperature	-25 to +85 °C
Temperature slew rate	10 °C /minute (max.)
Relative humidity	95 % at 60 °C no condensation
RoHS compliant	Yes

2.2   Connection features

Protocol	I^2C
Touch report	10 fingers simultaneously (max.)
Resolution	4096 x 4096 (x/y)
Report rate	3.4 MHz max. (subject to configuration)
Connector	MOLEX 53261-0971 (and equivalent) or solder pads

2.3   Electrical features

Power supply	3.3 V± 5%
V_{in} ripple	±40 mV peak-peak (max.)
On board voltage	3.3 V and 6.6 V
Power consumption	90 mW (max. subject to configuration)

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3 Mechanical drawing

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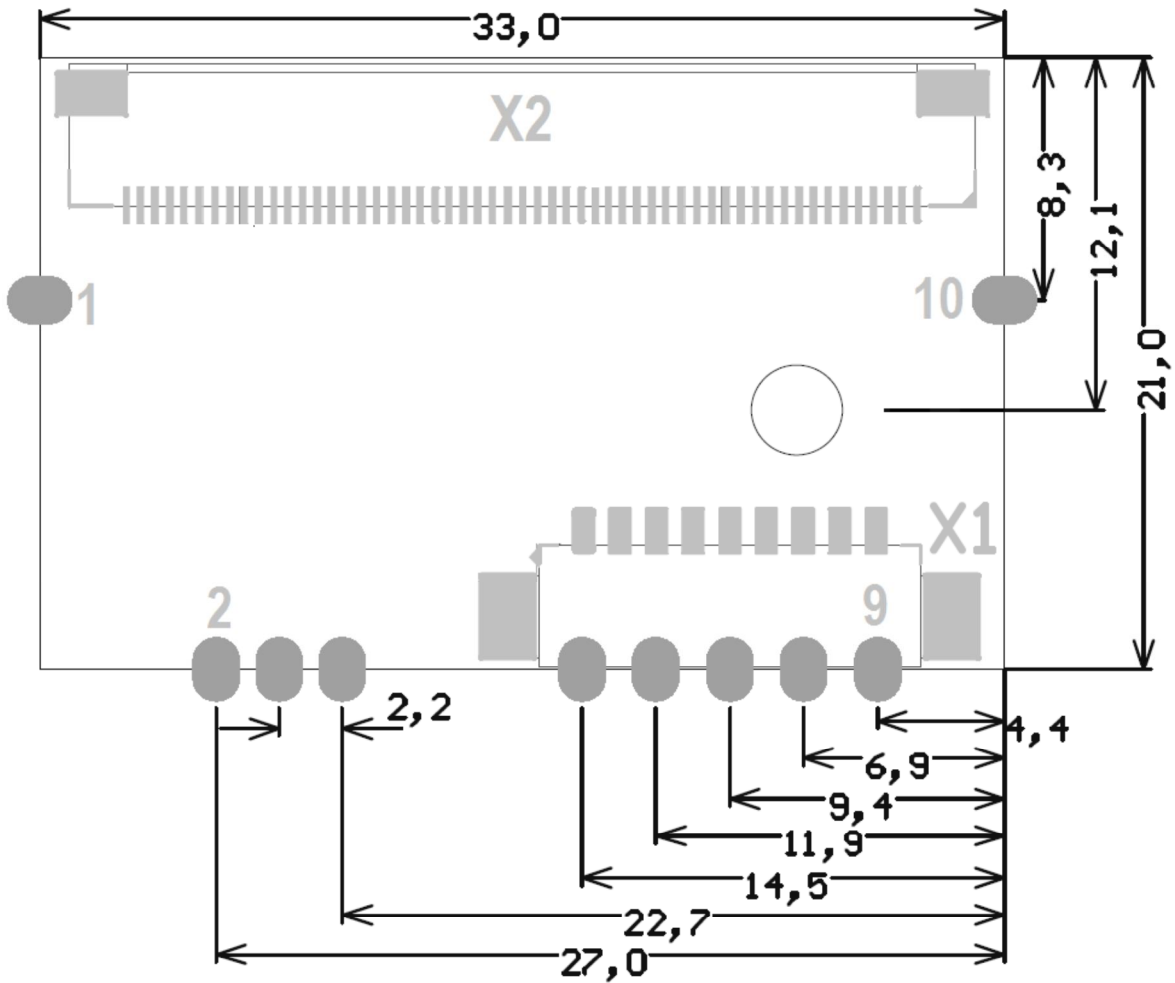
4   Connectors and signals

4.1   Connectors

Connector	Type	Connection
X1	1.25 mm pitch 9 pin header MOLEX 53261-0971	I^{2}C, VDD, GND
X2	0.5 mm pitch 55 pin header	Flextail to touch sensor
Soldering pads 1-10		Alternative to X1

4.2   X1 and soldering pads

X1	Pad	Signal	Description
1	5	VDD	Power supply
2	6	SDA	I^{2}C data
3	7	SCL	I^{2}C clock
4	8	CHG	Change
5	9	RES	Chip reset
6	2	-	*Do not connect*
7	3	-	*Do not connect*
8	-	ADDSEL	I^{2}C address select
9	1,4,10	GND	Ground

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5 Appendix - frequently asked questions

Touch coordinates are not stable and the cursor is "jumping around"?

In mains-operated systems this can happen if the touch controller is missing the systems ground reference. Another reason can be an extreme amount of noise present that exceeds the touch threshold set in the controller.

For best touch performance the touch controller needs a low AC impedance connection to the person that operates the system to achieve a good current loop back to the controller. Please take care the controller has a good connection to the system ground.

If the instability is caused by a noise source like a display, a switching regulator or a RF antenna your system may have an integration issue. With proper settings the controller can most likely suppress the noise. However, eliminating the noise source should be the first thing to check. If you have any difficulties to find the correct settings, please contact Data Modul.

Connecting is done, but no touch function at all?

If the tail is inserted "upside-down" you will not get any touch event. Please check if the tail is connected correctly. When connecting the touch panel to the controller, do not let the golden finger side misleading you. Please always connect the tail first before you power up the controller. You also should check if you touch the correct side of the panel. The glass side is the touch side which most of them has a black printed frame.