Crystal Touch: Single Touch Specification

MODEL: FTC10005-58

Rev. F

Table of Contents

Product descriptions and specifications are subject to change without notice.

Date	Rev	Summary
1/12/2010	A	Approved for Release
1/21/2010	B	Updated drawing notes
3/17/2010	C	Added shutdown current to Electrical Characteristics
5/12/2010	D	Updated address
8/26/2011	E	Various formatting updates
3/31/2012	F	Corrected depth dimension in Table 1 Corrected spelling in Table 3 Various formatting updates

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1. General Description

5.7″ Capacitive touch panel with SPI interface

For information on the theory of operation, communications protocol, user interface guidelines, etc., refer to the Crystal Touch User's Manual available on the Ocular website. For touch controller specifications, contact the touch controller manufacturer directly to request information.

2. Panel Specification

Table 1

Parameter	Specification	Unit	Remarks
Screen Size	5.7 (diagonal)	inch	
Active Area	115.2 (W) x 86.4 (H)	mm	
Outline Dimensions	127.6 (W) x 98.8 (H) x 2.35 (D)	mm	
Operating Temperature	-30 to 70	°C	
Storage Temperature	-30 to 80	°C	

Note 1: Specification for touch sensor only.

3. Electrical Specifications and Configuration

3.1. Electrical Characteristics

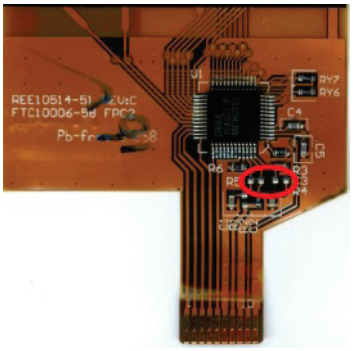
Table 2

Parameter	Min.	Typ.	Max.	Units	Remarks
Digital Power Supply (V_{DD})	2.5	3.3	3.6	V	Note 1 See section 3.2.
Internal Regulator Supply	4.5	5.0	5.5	V	
High level input voltage	0.7 * V_{DD}	V_{DD}	V_{DD} + 0.5 V	V	
Low level input voltage	-0.5	0	0.3 * V_{DD}	V	
Active Current	—	2.5	—	mA	
Idle Current	—	1.5	—	mA	
Sleep Current	—	40	80	µA	
Shutdown Current	—	1	—	µA	
Accuracy	±1.5	—	—	%	
Resolution	—	2048	—	—	X (long axis)
	—	1536	—	—	Y (short axis)

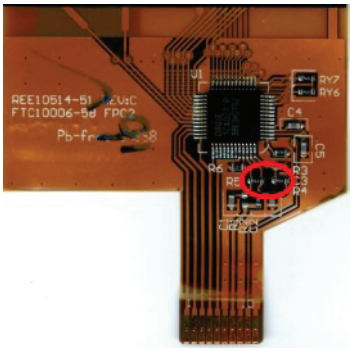
Note 1: When configured for 5 V operation, the user-supplied 5 V is routed to an internal regulator which generates the 3.3 V used by the rest of the controller chip. All other voltage and current values are stated in terms of the 3.3 V supply and do not change when the internal regulator is being used to generate the 3.3 V.

3.2. Voltage Option

All Crystal Touch touch panels are available in both 3.3 V and 5 V configurations. Ocular has already configured the touch panel for your specified voltage option. This can be confirmed by locating resistors R4 and R5 on the flat cable along the edge of the touch panel. For 5 V operation R4 and R5 are unpopulated. For 3.3 V operation R4 and R5 are populated.



5 V Configuration
R4/R5 Unpopulated



3.3 V Configuration
R4/R5 Populated

3.3. Touch Panel Interface Pinout

Mating connector part is Molex 52207-1060 or equivalent.

Table 3

Pin No.	Symbol	Description	Notes
1	SCK	SPI Clock	
2	MISO	SPI Master In Slave Out	
3	SS_N	SPI Select	Set low to communicate with the touch panel
4	DR	Data Ready	Goes high when touch panel data is available
5	MOSI	SPI Master Out Slave In	
6	GND	Ground	
7	V_{DD}	Power Supply	
8	GND	Ground	
9	SNSN	Stylus input	Connect to stylus or leave floating
10	GND	Ground	

3.4. Software Interface

Refer to the Crystal Touch User's Manual.

4. Mechanical Characteristics

Touch panel uses projected capacitive technology. No activation force is required. Top surface glass is chemical resistant with no wear from normal use. When placed in properly sealed enclosure, touch panel can be water tight and weather resistant. Glass surface is scratch and impact resistant.

5. Origin

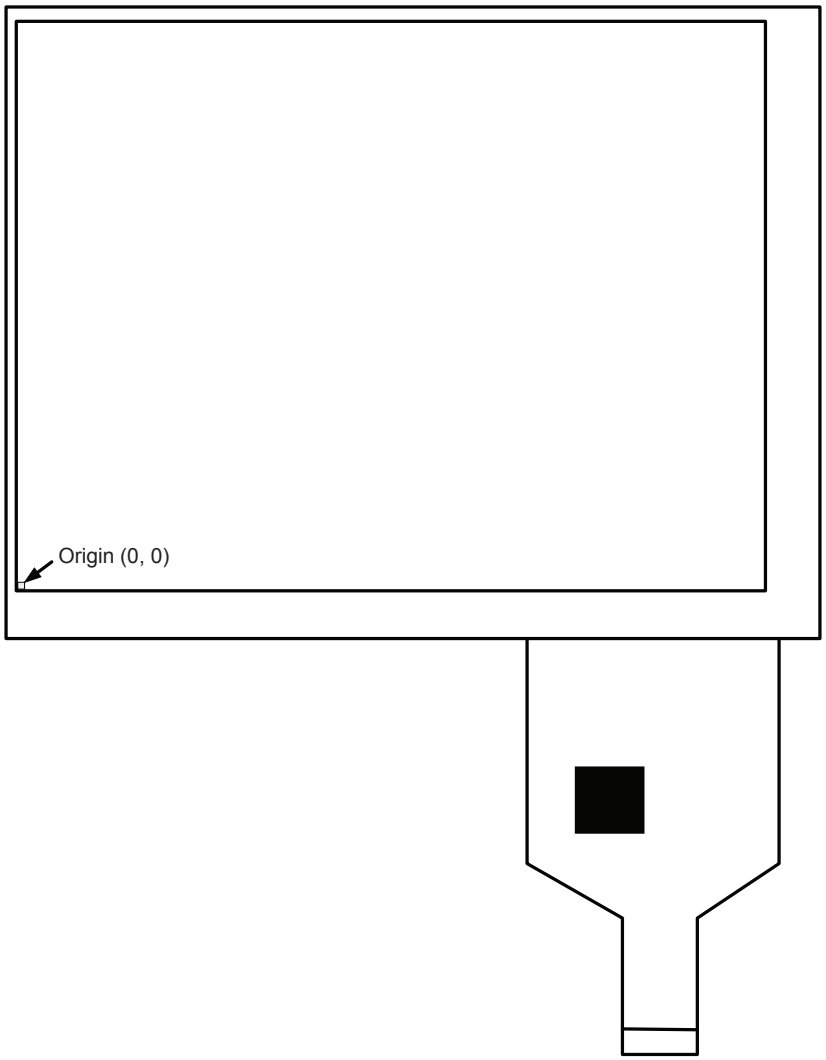


Figure 1: Location of Origin

6. Optical Characteristics

Table 4

Item	Specifications			Unit
	Min	Typ.	Max.	
Transmissivity	90	—	—	%

7. Quality Assurance

Table 5

No.	Test Description	Test Parameters	Remarks
1	High Temperature Storage Test	80°C for 500 h	Non-operating
2	Low Temperature Storage Test	-30°C for 500 h	Non-operating
3	High Temperature Operation Test	70°C for 24 h	Operating
4	Low Temperature Operation Test	-20°C for 24 h	Operating
5	High Temperature and High Humidity Operation Test	60°C @ 90%RH for 500 h	Operating
6	Electro Static Discharge Test	±6 kV Contact ±12 kV Air	Operating
7	Vibration Test (non-operating)	10 Hz to 50 Hz 1.5 mm Amplitude 2 hours on each axis	Non-operating

Note 1: Test samples are allowed a 2 hour recovery time at room temperature following non-operational tests before functional operation is verified.
Note 2: Data for touch sensor only.

8. Precautions

The following precautions will ensure proper handling of Ocular's touch panels.

8.1. Mounting Precautions

- Any mounting configuration should ensure that there is no twisting force applied to the panel. Additionally the mounting should be such that large external forces are not directly transmitted to the panel.
- Use standard glass cleaning materials to clean the surface of the touch panel.
- The panel should be mounted using a configuration that either holds the panel by all four corners or by all four sides. The bezel edge must be positioned outside the active area. The bezel may cause false activation if the edge touches the active area. A gap of approximately 0.5 mm is needed between the bezel and the touch panel surface. The bezel may cause false activation if the gap is too narrow. There is a tolerance of 0.2 mm to 0.3 mm for the outside dimensions of the touch panel and tail. A cushioned gap must be present to account for the tolerance of the case and connector.

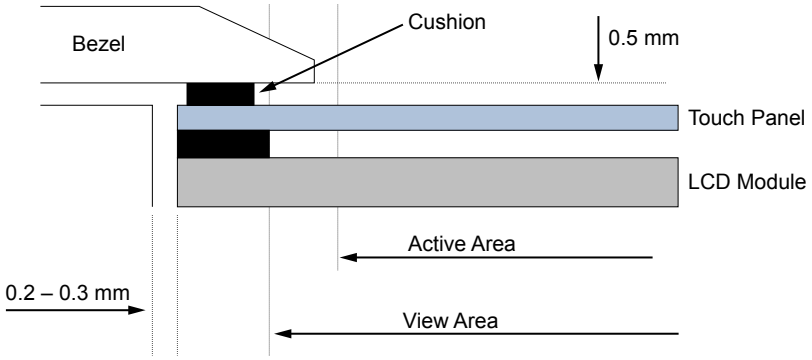


Figure 2: Mounting Diagram

8.1.1. Optical Bonding Agent

- The air gap between the TFT and touch panel can be eliminated by using an optical bonding agent such as DuPont™ Vertak®. Elimination of the air gap improves the electrical performance of the touch panel and enhances the clarity of the TFT image.

8.2. Operating Precautions

- A stable, low-noise power supply is necessary to avoid touch panel operational errors. Noise and voltage spikes should be lower than ±200 mV.
- Panel should be used with a power supply that is equipped with overcurrent protection. The panel does not include any current limiting protection circuitry.
- Temperature changes that may form moisture condensation can seriously damage the panel and result in permanent failure.
- Grounding and shielding is recommended to minimize the electromagnetic interference if the panel is to be used with high frequency circuits.

8.3. Electrostatic Discharge Control

- Although Ocular has considered ESD in the design of the panel, the panel has limited protection to electrostatic discharge. System designers must include ESD protection in the design to prevent panel damage due to ESD.
- Proper ESD protection must be followed when handling the panel. ESD discharge through the interface pins can seriously damage the panel. Wear an ESD grounding strap when handling the panel.
- When working with the panel, it is recommended that the operator's body and any electrical equipment that comes in contact with the panel be grounded. Ocular strongly recommends using anti-static mats to protect against the hazards of electrical shock.
- Removal of the protective film from the panel can generate static electricity. The film should be peeled off slowly and carefully by an electrically grounded operator in the presence of ionizing air blowoff guns or fans.

8.4. Storage

When storing the panel for an extended time, the following precautions are necessary:

- Store the panel in a dark place. Do not expose the panel to sunlight or fluorescent light. The temperature should be between 5°C and 35°C at normal humidity.
- It is recommended that the panel be stored in the original packaging.

8.5. Handling Precautions for Glass

- The panel is made from glass. Avoid high impact or a large mechanical shock. If the glass should break, handle it with care.
- When the protection film is peeled off, static electricity is generated between the film and panel. Be sure to peel this film off in an ESD protected environment.
- Avoid excess or repeated bending of the FPC connector on the panel.

9. Mechanical Drawing