



**SPECIFICATION  
FOR  
LCD MODULE**

**MODULE NO: CTP043  
VERSION NO.: V1.0**

Customer's Approval:

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	SIGNATURE	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

<b>Version</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>CHANGED BY</b>
00	Nov-17-2011	First issue	

# Contents

1、 General.....	3
2、 Characteristics.....	4
2.1 Temperature Characteristics.....	4
2.2 Optical and Mechanical Characteristics.....	4
2.3 Electrical Characteristics.....	4
2.4 Structure Characteristics.....	5
3、 Reliability.....	5
4、 Life Time.....	5
Attachment:	
I 、 Touch Panel Drawing	
II 、 Inspection Criteria for Capacitive Touch Panel	

## 1. General

Item	Description	Remark
Product Part No	CTP043	
Product Model	Touch Panel	
VA Description	4.3inch	Diagonal
Structure	Glass (Lens) +Glass (sensor)	
IC Solution	<input checked="" type="checkbox"/> COF <input type="checkbox"/> COB	
Interface Type	<input checked="" type="checkbox"/> Smart Phone <input type="checkbox"/> MID <input type="checkbox"/> Others _____	
Inspection Criteria	A1	Refer to Page 6-13

## 2. Characteristics

### 2.1 Temperature Characteristics

Item	Description	Remark
Operating Temperature	-20 °C ~ 70 °C	
Storage Temperature	-20 °C ~ 80 °C	

### 2.2 Optical and Mechanical Characteristics

Item	Description	Remark
Transparency	≥86% (550nm wave length)	
Surface Hardness	≥6H (Loading 500g , 45 deg °)	
Ball-falling Test	≥ 60cm    Steel ball weight: 64g)	
FPC bending test	≤10 times bending (by R≥1 mm),	

### 2.3 Electrical Characteristics

FPC Design	Item	Description	Remark
<input checked="" type="checkbox"/> COF	IC solution on TP Model	MXT224E	
	Touch Count Max	5 point	
	Display Resolution*	480*272	
	Interface Type *	I2C	
	I2C Slave Address*		
	Interface Signal Voltage*	3.3V	
	Power Voltage*	3.3V	
	Origin of Coordinate*	Top left corner	
<input type="checkbox"/> COB	IC solution on Broad*		
	Driving Channels		
	Sensing Channels		

Note1: The detail refer to the Specification For IC

Note2: ‘\*’ means that the item is optional according to the product requirement

## 2.4 Structure Characteristics

Item	Dimension/	Tolerance	Unit
View Area Size	96.04X 54.86	±0.2	mm
Cover Lens Size	105.5X67.2	±0.1	mm
Cover Lens R Angle	0.3(4X)	±0.1	mm
Cover lens Thickness	1.1	±0.05	mm
Sensor Size	104.5 X66.37	±0.1	mm
Sensor Thickness	0.55	±0.05	mm
Lens+Sensor Thickness	1.8	±0.2	mm
Tolerance for lens/sensor	-----	±0.15	mm
FPC Thickness (with component )	1.5	Max	mm
FPC connect Pitch	6pin pitch=0.5	±0.05	mm

## 3. Reliability

Item	Description	Remark
Storage High Temperature	80±5 °C*96Hrs; (except for dew gathering)	No visual damage and function defect, which inspected after testing at normal temperature and humidity for 24 hours
Storage Low Temperature	-20±5°C*96Hrs; (except for dew gathering)	
Storage Temperature-Humidity	60±5°C*90±5%RH*96Hrs; (except for dew gathering)	
Storage Temperature Cycling	(-20±5 °C*30min→25±5°C*10min→80±5°C*30min→25±5°C*10min)*10Cycles; (except for dew gathering)	
ESD Test	±8KV (Air)	Testing condition: TP is operated on terminal machine
	±4KV (Contact)	
Vibration for Packaging	Frequency 250/min, Swing 1inch, 45min	No Visual damage and function defect to the product after testing
Drop for Packaging	Six free-fall drops made up of every faces, three free-fall drops made up of random edges and one free-fall drop made up of random corner. Drop height as following: 1) weight<10Kg, 0.8m; 2) weight 11~20 Kg, 0.6m; 3) weight 21~30 Kg, 0.5m	

## 4.Life Time

Item	Condition	Description
Life Time	22±3°C, 40~70%RH	Visual: 1 Month (Unopened Packaging ) Function: 12 Months

CUSTOMER APPROVAL: \_\_\_\_\_

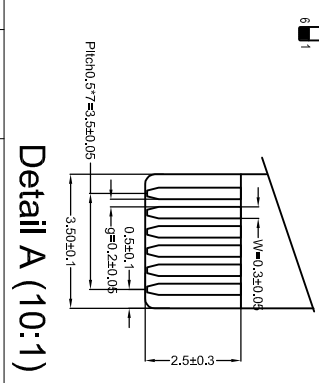
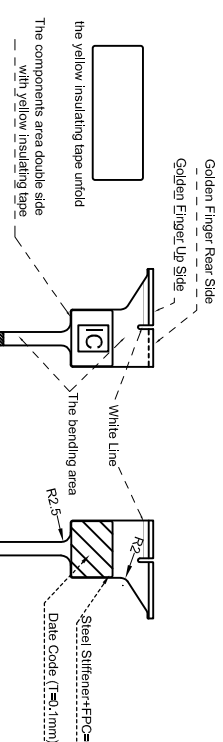
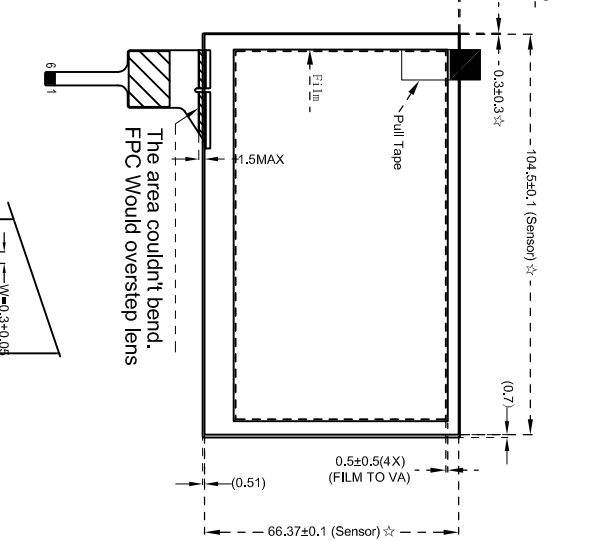
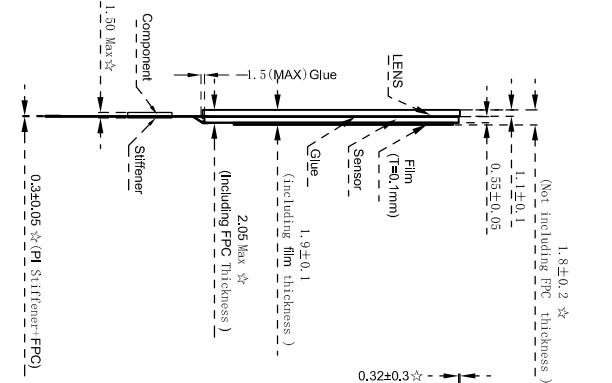
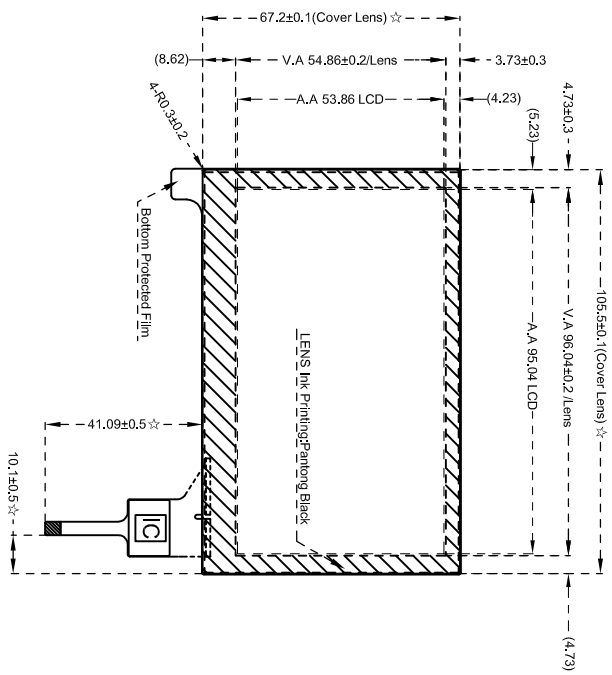
1 2 3 4 5 6 7 8

Rev	Nature of Modification	NAME	DATE

### TOP VIEW

### SIDE VIEW

### BOTTOM VIEW



IOVDD=3.3V

Pin	Definition
1	RESET
2	VDD/VCC
3	GND
4	INT
5	SCL
6	SDA

#### Notes:

1. Operation Temperature: -20 ~ 70°C
2. Storage Temperature: -30 ~ 80°C
3. Transmittance: ≥ 80%
4. IC: MXT224E(BGA)
5. ROHS Compliance



UNIT: mm	TOLERANCES: ANGLES ± °	NAME	DATE	TITLE: Touch Panel Counter Drawing
3RD ANGLE	Unspecified			
NOT IN SCALE	Tolerance: ±0.20			
DRAFTED BY: HWZ			2014-04-16	TP. PART NO. CTP043
CHECKED BY:				CUST. PART NO.
APPROVED BY:				

Rev	DATE	DESCRIPTION

1 2 3 4 5 6 7 8

# A<sub>1</sub> Level Inspection Criteria for Capacitive Touch Panel

Revise history			
Chapter Number	Revise Content	Version	Revise Date
5.5	Revise the content and formation in the inspection criteria	1.1	2011-4-13
5.5	Revise the dot determination criteria in the inspection criteria	1.2	2011-7-30
5.4	Revise the comment and remark of T/P designed zone in the inspection criteria	1.3	2011-12-8
5.5	Revise / add the content and format for the appearance inspection	1.4	2012-6-29
5.6	Revise / add the function test	1.4	2012-6-29
6.0	Add the requirement of the Outline dimension and the general performance	1.4	2012-6-29
8.0	Add the requirement of the package identification	1.4	2012-6-29
5.5	Revise the inspection criteria for the linear shape contaminant and dot shape defect of the size not more than 5.3 inches T/P	1.5	2012-7-24

## **1. Purpose**

The purpose of this specification is to establish the cosmetic inspection standard for ensuring the quality to meet customer requirements and to define operating procedures and acceptance criteria.

## **2. Scope**

This specification is applicable to Orient Display Cover Lens(PET/glass/PMMA/PC)+DITO Capacitive touch panel

## **3. Definition**

3.1 Major Defect: Affect the product performance、reliability and assembly.

3.2 Minor Defect: Do not affect product performance、reliability and assembly.

## **4. Responsibility**

Quality Engineer: Be responsibility for establishing this specification

Operator & QC: Be responsibility for inspecting the products base on this specification

## **5. Content**

### 5.1 Equipment / Materials

5.1.1 Light-box

5.1.2 Ionizer

5.1.3 Film sheet

5.1.4 use liquid alcohol/ isopropanol

5.1.5 finger tip

5.1.6 Vernier caliper

5.1.7 Wrist strap

### 5.2 Sampling Plan

5.2.1 Cosmetic Inspection: MIL-STD-105E LEVEL II AQL: 0.65%

5.2.2 Functional Test: MIL-STD-105E LEVEL II AQL: 0.4%

### 5.3. Inspection Environment

5.3.1 Inspection temperature: 20~25°C

5.3.2 Inspection distance: 30cm±2cm

5.3.3 Angle of visual Vertical Rotation Angle: +/- 30° from normal (top to bottom); Horizontal Rotation Angle: +/-30° from normal (left to right).

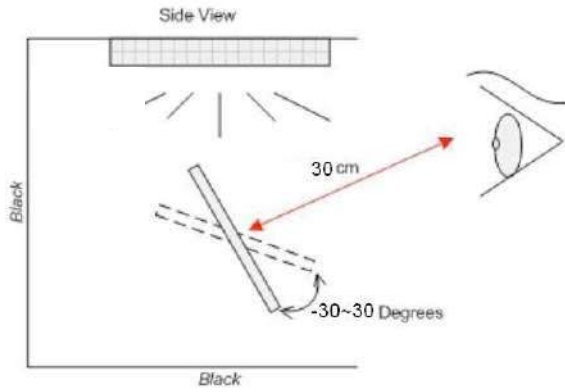
5.3.4 Lighting illumination: 500~700Lux

5.3.5 Background color: Black

5.3.6 Inspection time : Within 10 seconds per piece



### Black Booth or Black Background



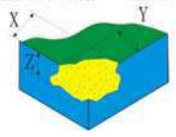
#### 5.4 Area classify:

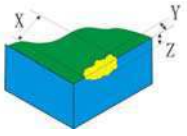
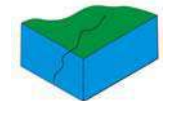
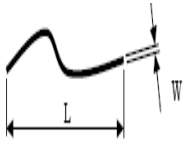
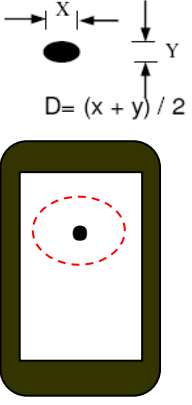
5.4.1 A area: Transparent area with red

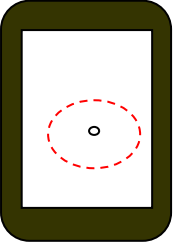
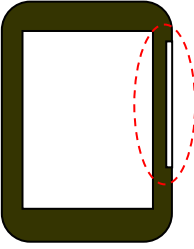
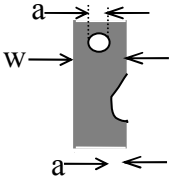

5.4.2 B area: FPC area and 4 edges




#### 5.5 Cosmetic inspection criteria

Defect	Criteria for less than 5.3 Inches T/P	Criteria for more than 5.3 Inches T/P	Defect Classify		Result
			MA	MI	
<b>Chip on corner</b> 	$X \leq 0.2\text{mm}; Y \leq 0.3\text{mm}$ , allow 1 for each side	$X \leq 0.3\text{mm}; Y \leq 0.4\text{mm}$ , allow 1 for each side		★	OK
	$X > 0.2\text{mm}, Y > 0.3\text{mm}$	$X > 0.3\text{mm}, Y > 0.4\text{mm}$		★	NG

<b>Chip on edge</b> 	$X \leq 0.2\text{mm}; Y \leq 0.3\text{mm}$ , allow 1 for each side	$X \leq 0.3\text{mm}; Y \leq 0.4\text{mm}$ , allow 1 for each side		★	OK
	$X > 0.2\text{mm}, Y > 0.3\text{mm}$	$X > 0.3\text{mm}, Y > 0.4\text{mm}$		★	NG
<b>Glass Crack</b> 	Any Crack	Any Crack		★	NG
<b>Linear Defect (Including scratch, fiber)</b>  <b>W:Width</b> <b>L:Length</b>	$W \leq 0.05\text{mm}$ ; Ignore	$W \leq 0.05\text{mm}$ , Ignore		★	OK
	$0.05\text{mm} < W \leq 0.08\text{mm}$ , $L \leq 8\text{mm}$ allow 2, Min distance 10m	$0.05\text{ mm} < W \leq 0.1\text{ mm}$ , $L \leq 10\text{mm}$ allow 3, Min distance 10m		★	OK
	$> 0.08\text{mm}, L > 8\text{mm}$	$W > 0.1\text{mm}, L > 10\text{mm}$		★	NG
<b>Dot Defect (Different Color Dot, including air bubble)</b> <b>D stand for Diameter</b>  $D = (x + y) / 2$	$D \leq 0.10\text{mm}$ ; Ignore	$D \leq 0.15\text{ mm}$ ; Ignore		★	OK
	$0.10\text{mm} < D \leq 0.20\text{mm}$ allow 2, Min distance 10m	$0.15\text{ mm} < D \leq 0.30\text{ mm}$ allow 3, Min distance 10m		★	OK
	$D > 0.2\text{mm}$	$D > 0.3\text{mm}$		★	NG
<b>Dot Defect (Same color)</b>	$D \leq 0.1\text{mm}$ ; Ignore	$D \leq 0.15\text{mm}$ ; Ignore		★	OK

<b>dot)</b> 	$0.1\text{ mm} < D \leq 0.25\text{mm}$ , allow 2, Min distance 10m	$0.15\text{ mm} < D \leq 0.35\text{mm}$ , allow 3, Min distance 10m		★	OK
	$D > 0.25\text{mm}$	$D > 0.35\text{mm}$	★		NG
<b>Exposed light from ink</b> 	The edge width of exposed light area $\leq 0.15\text{mm}$	The edge width of exposed light area $\leq 0.15\text{mm}$		★	OK
	The edge width of exposed light area $> 0.15\text{mm}$	The edge width of exposed light area $> 0.15\text{mm}$	★		NG
<b>The surface dirty</b>	For the dirty that can be cleaned, we can clean it with a cleaning less dried	For the dirty that can be cleaned, we can clean it with a cleaning less dried duster cloth or a cotton bar with the cleaning agents (such as: IPA or Ethanol), and use the other cleaning method.		★	OK
<b>FPC Defect</b> 	Dent, pin hole $a \leq w/3$	Dent, pin hole $a \leq w/3$		★	OK
	Open /Scratch /break off	Open /Scratch /break off	★		NG
	Oxidation, Contamination	Oxidation, Contamination	★		NG
<b>FPC crease</b> 	FPC crease	FPC crease	★		NG

<b>FPC warpage</b> 	FPC warpage	FPC warpage		★	OK
: Remarks: 1. There are the amount of six defects on a same product is allowed. 2. Please refer to the limited sample, if there is a discrepancy between the Criteria and the actual product.					

5.6 Function Test : Use OD tester and software to do testing, the test software will automatically show “OK” “PASS” or “NG”. The final test result need the test procedure show “OK” “PASS”, then line drawing test need pass also, Details please refer to the test procedure and the product manufacture instruction.

Short Circuit	The test data show short circuit and the test value is obviously bigger or smaller than the normal ones.	★		NG
Open Circuit	The test data show open circuit and the test value is Zero The test actual value depend on the test procedure refer to the test procedure.	★		NG
No Function	The step of the test procedure does not running, no line drawing test can't pass	★		NG
Line drawing skip Line drawing break off	The test result show OK , line drawing test show the abnormal, such as Line drawing skip, Line drawing break off etc.	★		NG

## 6. Outline Dimension and General Performance Specification

6.1 General performance inspection tools: Micrometer, Thickness-test gauge, Pencil hardness test instrument, Spectrophotometers, Drop ball tester.

S/N	Item	Specification	Defect Class	
			MA	MI
1	Dimension	According to the Engineering Drawing specification.	★	
2	Warpage Degree	According to the Engineering Drawing specification.	★	
3	Surface Hardness	According to the Engineering Drawing specification.	★	
4	View area transmittance (550nm)	According to the Engineering Drawing specification.	★	
5	IR transmittance (550nm& 850nm)	According to the Engineering Drawing specification.	★	
6	<b>Drop ball test</b>	According to the Engineering Drawing specification.	★	

6.2 General Performance Inspect method:

A. Transmittance Test: According to the Engineering Drawing Specification, and the operation step refer to Spectrophotometer Instruction.

B. Surface Hardness Test: According to the Engineering Drawing Specification, Cut the type of XH pencil into column shape, then rubdown its tip, and put it onto the Pencil hardness test instrument. Load 500g on the tip of pencil, let it become 45°angle between the pencil and horizon. Draw out 3~5 lines with the length of 3~5cm each line at the difference direction and the difference position, then check with the eyeball under the a fluorescent lamp, there is not any crack on the product surface is OK.

C. Drop ball test: According to the Engineering Drawing Specification, and base on the different glass thickness to determinate the steel weight and drop height, let a steel ball drop down smoothly at a designed height to pump at the center of the panel surface one time, the product need fine without any crack.

D. Wrapage degree test: Place the sample onto the marble or glass flat desk, and use plug gauge to measure. Wrap degree is equal to h/L. For example: for 7 Inches: Wrap degree is equal to  $h(0.35\text{mm})/L(185.24) = 1.9\% < 2.0\%$ , the result is OK.

Less than 5 Inches	From 5 to 8 Inches	More than 8 Inches
	≤0.2%	≤0.25%

## 7.Package & Identification

7.1 Require the package method is in a proper condition, and can protect the products and convenience for the customer usage.

7.2 Inside and outside package must including: Model、Description、Quantity、Lot No、Produced Date, etc.

7.3Inner package should post ROHS Compliance label. If customer required additional Outgoing

Inspection Report, we must highlight on the carton and let customer find it easily.

## **8.Storage**

8.1 Storage condition: Temperature: 22+/-3°C , Humidity:40%~70%RH

8.2 Appearance lifetime limited: 3 months. Suggest customer use out within one month is appreciatory; If exceed 3 months, there may be some Contaminations between the glass and the protect film, or glue come off panel, etc. Customer should is responsible for it.

8.3 Function lifetime limited: Within one year under OD designed operation conditions.

## **9.Cautions:**

9.1 Please do not strike the T/P heavy, or drop it from high position, due to the capacitance touch panel is made of glass.

9.2 Please do not overlap placement or press heavy on it while storage.

9.3 Please do not let the capacitance T/P or the part of flex contact metal substance directly.

9.4 Please do not bent or pull hardly on the flex during assembly for avoid it break off.

9.5 Please do not touch the ink in the back of the capacitance T/P with hardness substance during assembly for avoid it scratched.

9.6 Please do not touch the view zone, suggest use the OD appointed cleaning method for clean issue, and select the pure ethanol is OK .

9.7 Please use the finger or a conduction electricity pen to touch the capacitance T/P, Caution on the high voltage and ESD.

## **10.the Comments:**

10.1 If there are some item not defined in the Inspection Criteria, please follow up the Engineering Drawing specifications. In the other hand, the customer and OD have special requirements, need negotiate about on it and follow up negotiate result.

10.2 According to the Inspection Criteria, Engineering Drawing specification, Technical specifications, and the limited sample for settle any disputatious.

## **11.Suggestion:**

11.1 Strongly suggest that the protect film on the OD T/P could not use in the continuous process at customer side.

11.2 Suggest that customer tear the protect film on the finished T/P off, clear up it, and do appearance inspection, then carry out the next assembly. Do not use the torn down protected film again.

11.3 Strongly suggest that the customer or the user tear the protect film on the finished T/P off, clear it with a cleaning less dried duster cloth or a cotton bar with the cleaning agents (such as: IPA or Ethanol) and use the right cleaning method to clean.