



Doc No	AS-92-P3032-C20-F01-1	Doc Rev : 1.0
Product	Part Number : 92-P3032-C20-F01      Size : 7.03"	Date Released : Jul.17, 2017
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## Projective Capacitive Touch Panel Specification

Manufacturer: Apex Material Technology Corp.

### 1.0 Mechanical Dimensions and Construction

1.1 General: Projective capacitive touch panel is designed by Cover Lens-Film-Film construction

1.2 Mechanical Performance:

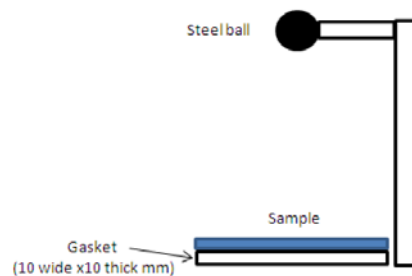
1.2.1 Surface Hardness: Mohs 5

1.2.2 Cover Lens Thickness: 1.10mm

1.2.3 Overall Thickness: 1.50±0.20mm

1.2.4 Static Force Requires Breaking the Glass: >20kgf

1.2.5 After a steady state 130g steel ball freely drops on the center position of touch panel surface from 140mm high one time, the touch panel will not break for the first time impact.



Note: The test is for the touch panel only, not including the mechanical.

1.2.6 Tail Type: COF (Chip on FPC tail)

1.2.6.1 Controller is P2-06 IC on the FPC tail, the COF is named PM2204

1.2.6.2 FPC Tail Bending Radius: R2.5mm

1.2.6.3 Bending endurance: 180deg for 10 times

1.2.6.4 Holding force for tail, peeling upward 90deg with 500gw without impact to electric performance.

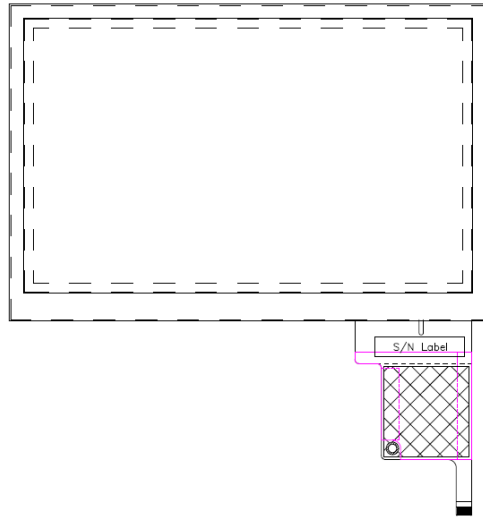
1.2.6.5 Connector Pins & Pitch : 10pins, pitch is 0.5mm

1.2.7 Top Surface Finish Type: Clear



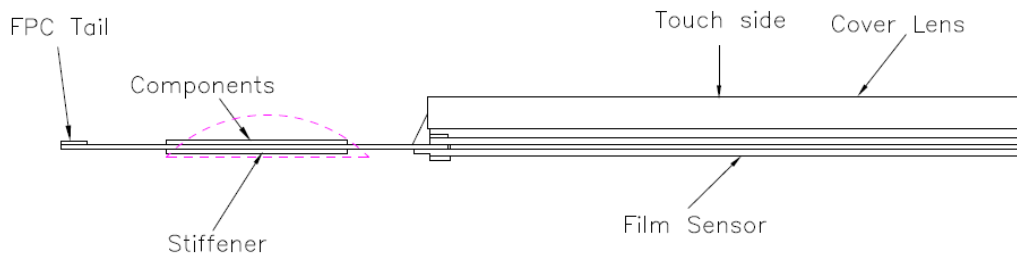
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Touch Panel Front View:

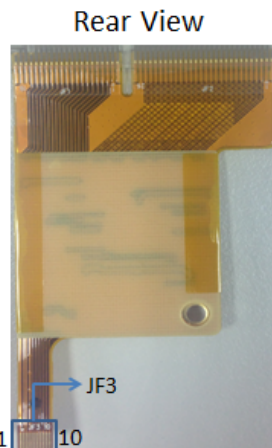


Remark: Components located in front side

Touch Panel Side View:



COF Tail Rear/ Front View:



Pin#	Assignment
1	VCC
2	D-
3	D+
4	GND
5	SCL/RXD
6	SDA/TXD
7	nRESET
8	nDetect
9	nINT
10	N/A

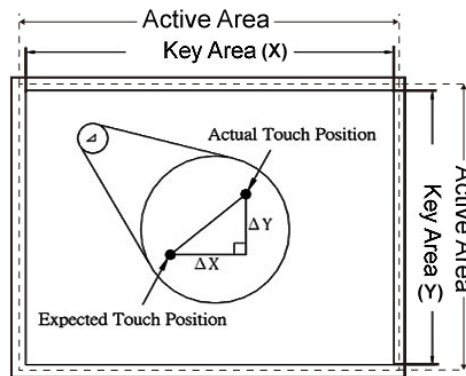
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## 2.0 Typical Optical Characteristics

- 2.1 Visible Light Transmission: 90±3%
- 2.2 Haze: < 3%

## 3.0 Electrical Specifications

3.1 Positional Accuracy: The accuracy specifications are based on PenMount touch panel controllers and drivers to define, the percentage of positional inaccuracy is less than 2.0% as defined below.



X direction of linearity:  $\Delta x/X * 100\%$ .

Y direction of linearity:  $\Delta y/Y * 100\%$ .

3.2 Activation Force: Zero force

3.3 Electrostatic Discharge Protection: (according to IEC 61000-4-2, level 4/class B)

3.3.1 Air discharge: 15KV(maximum)

Static electricity comes from the touch side of the touch panel

3.3.2 Contact discharge: 8KV(maximum)

Static electricity comes from the touch side of the touch panel

Note: Testing result is highly relevant to mounting methods, about this, AMT has summarized our experience in the document: "Projected Capacitive Touch Panel Integration Guide"

## 4.0 Environmental Specifications

4.1 Operating Temperature: -25°C ~ +70°C

4.2 Storage Temperature: -40°C ~ +85°C

4.3 Humidity: limits to be at 90% RH at max 40°C; no dew condensation.



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## 5.0 Reliability Test

### 5.1 Exposure to High Temperature

Touch panel is put into a test machine at the condition of 85° C for 288 hours. Then it is left at room temperature for 24 hours or more, all the electrical specifications as list in the above item 3.0 will be remained same.

### 5.2 Exposure to Low Temperature

Touch panel is put into a test machine at the condition of -40° C for 288 hours. Then it is left at room temperature for 24 hours or more, all the electrical specifications as list in the above item 3.0 will be remained same.

### 5.3 Exposure to Constant Temperature and Humidity

Touch panel is put into a test machine at the condition of 60° C, 90%RH for 288 hours. Then it is left at room temperature for 24 hours or more, all the electrical specifications as list in the above item 3.0 will be remained same.

Remark:

Well protect the COF circuitry area, do not let moisture be in the COF components, otherwise, malfunction or defect will be caused.

### 5.4 Thermal Shock

Touch panel is put into a test machine at the condition of -40° C for 30 minutes, and then 80° C for 30 minutes. The process is repeated by 20 cycles. Then it is left at room temperature for 24 hours or more, all the electrical specifications as list in the above item 3.0 will be remained same.

### 5.5 Vibration Test

5.5.1 Vibration under Operation: Set frequency at 10~58Hz with 0.075mm amplitude and frequency at 58~500Hz with 1g amplitude; Test 10 cycles, test axis is +X, +Y, +Z axis; 1 octave / min.

5.5.2 Vibration under Storage: Set frequency at 5~9Hz with 3.5mm amplitude and frequency at 9~500Hz with 1g amplitude; Test 10 cycles, test axis is +X, +Y, +Z axis; 1 octave / min.

### 5.6 Shock Test

5.6.1 Shock under Operation: The condition is set at 15g acceleration, half sine by 11ms shock. Test 3 cycles, test axis is +X, -X, +Y, -Y, +Z, -Z axis.

5.6.2 Shock under Storage: The condition is set at 25g acceleration, half sine by 6ms shock. Test 1000 cycles, test axis is +X, -X, +Y, -Y, +Z, -Z axis.



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## 6.0 Surface Chemical Resistance

6.1 Refer to AMT surface chemical resistance test method ASTD-001.

## 7.0 Optical Performance

7.1 Optical inspection method and optical defect standards refer to AMT document A003 updated version ; “Touch Screen Optical Quality Standard.”

7.2 Outside to Viewing Area: any optical defects in this area should be ignored if no touch panel function is affected.

## 8.0 Others

8.1 Always store the touch panel in its original shipping container under normal conditions (Temperature 20~25° C; Humidity  $\leq$  65%RH).

8.2 Remove the power supply of the touch controller before touching it, always hold the touch controller by the edge, avoid touching the components on the touch controller or COF tail on the sensor.

8.3 Use a grounded wrist strap or touch a safely grounded object before handling the touch controller or COF tail on the sensor to avoid damaging them due to static electricity.

8.4 This Model is RoHS compliant.

8.5 UL Safety Certifications: The touch panels and PenMount controllers are UL recognized components as per report reference E331240.

8.6 For COF PCI products, the IC and component areas should be well protected; moisture in these areas can cause malfunction or errors of the touch functionality.