P-CAP Design Guide

eN-touch – A Nelson-Miller Brand

Product Features for PCAP

Electrical Voltage:	2.8 ~ 5.5v DC	**Resolution: (Adjust according to LCD resolution and IC Type)**	4096 x 4096 Max
Input Type:	Conductive pen, stylus or finger	**Operation System:**	Android, Linux, Win 7, Win 8, Win CE (Some)
Touch Vibration Time: (Depends on IC Type)	5 ~ 15ms	**Operating Voltage:**	1.8v, 3.3v, 5v (USB)
Touch Point:	10 maximum	**Current at Working:**	2.5mA (Depends on IC Type)
Touch Panel Material Type:	Normal glass, chemical harden glass (solution), physical harden glass (heat), PC, acrylic, PET	**Current at Sleeping Mode:**	< 0.20mA (Depends on IC Type)
Touch Panel Glass Thickness:	Glass: 0.55mm, 0.70mm, 1.10mm PET: 0.188mm, 0.25mm. PC and acrylic follow thickness request. 2.0mm is the maximum to ensure the sensitivity and accuracy of touch.	**Life Expectancy:**	> 200,000,000 Touches
Sensor Thickness:	Glass: 0.55mm, 0.70mm, 1.10mm Film: 0.125mm	**Operating Temperature:**	-20 Deg C ~ +80 deg C (-20 Deg

|			with the condition, T/P not Frozen)
OCA Thickness:	FOCA Thickness: 0.125mm, 0.175mm. LOCA thickness: 0.15mm	**Storage Temperature:**	-30 Deg C ~ +80 deg C
Touch Pressure:	Capacitive touch, no touch pressure required	**Operating Interface:**	IIC, USB (Seldom use) Interface Depends on Operating System Choose.
Surface Hardness;	Glass >= 6H, PET >= 3H	**Anti-Interference (Whole Unit Test Under Static Electricity):**	Contact Discharge > = 8kv Gap Discharge > = 15kv

Common PCAP Constructions

Construction	G + F	G + F + F	G + G	PET + G
Cost	Low	Highest	High	Lowest
Good Yield	Low	Low	High	High
Light Transmissivity	> = 88%	> = 86%	> = 88%	> = 88%
Fog	< = 3%	< = 3%	< = 3%	< = 3% (Gloss PET)

Legibility	98%	98%	98%	98% (Gloss PET)
Advantage	Lower cost, thinner, surface hardness is good.	Supports hand writing, max 10 touch point, Surface hardness is good.	Supports hand writing, max 10 touch points, good transmissivity, surface hardness is good.	Supports hand writing, max 10 touch points, good transmissivity, low development cost.
Disadvantage	Only 1 touch point supports 2 points at virtual effect. Maximum size is 4".	High cost development, unit cost is high due to 2 layers of film used.	High development cost, lead time is longer, unit cost is higher. Cannot CNC hole on sensor glass.	Surface harness is low due to touch panel is PET.

Methods for Circuit Construction
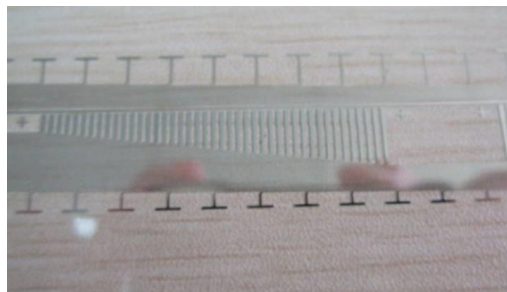
Laser/ MoAlMo:

You can have very fine line widths. 0.05mm

Tooling cost is HIGH, lead time longer

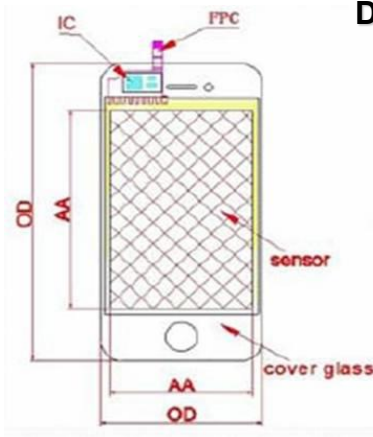eN-touch – A Nelson-Miller Brand

Silk Screen Printing:

Line width is not as fine as laser.
0.12mm

Tooling cost is low, lead time better,
recommend use silk screen printing
if no special requirement.

IC Suppliers & Definitions

IC Suppliers:

- Goodix
- FocalTech
- Neolec
- Solomon
- EETI
- PIXCIR
- Atmel

Definitions:

1. PCT: Projected Capacitive Touch
2. AA: Active Area
3. OD: Outer Dimensional
4. ITO Film: PET Coated with ITO
5. ITO Glass: Glass Coated with ITO
6. FPC: Flexible Printed Circuit
7. Cover Glass: Touch Panel Glass, MUST be Non-Conductive
8. Sensor: Layer Below Cover Glass, Conductive or Called Functional Layer, Consist of Glass and Film 2 Types.

Information Needed to Start Up Project

Information Needed for New PCAP Project Start Up:

1. CAD drawing for touch panel (1:1 Ratio needed if given in a PDF file. The file must be clearly readable.
2. The drawing must indicate the construction of the touch panel, interface, FPC location, and Dimensions.
3. The location of FPC to fold and assemble into the LCD needs to be indicated so that engineering can make the proper layout.
4. The following information also needed;
   a. The Interface Between PCB and TP: I2C or USB?
   b. TP Structure Type (G+G or G+F etc.)
   c. TP Dimension and Thickness
   d. The Application of Touch Panel and The Operating System (Please Provide the Version if Pos
   e. Brand of IC?
   f. Any Hand Writing Function Needed?
   g. Any Special Function Needed?
5.

Cover Glass Design

Construction	Min Size	Min Tolerances it can Meet
Outline	NA	+/- 0.15mm
Silk screen line width	0.12mm	+/- 0.15mm
Silk screen line pitch	0.12mm	+/- 0.15mm

Distance from AA (active area,) to silk screen circuit	1.50mm	NA
Number of printing for X or Y	Length or width of AA, divide by 6	NA
Distance from outer edge of circuit to edge of outer dimension	1.30mm	NA
Bevel edge	0.15mm	+/- 0.15mm
Radius	0.30mm	+/- 0.15mm
Speaker hole or hole	1.40mm	+/- 0.15mm
Distance between hole to hole	3.50mm	+/- 0.15mm
Distance between hole to edge	4.0mm	+/- 0.15mm

Please send enquiries for additional information or quotation to:

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Or call us at (866) 618-1202

www.en-touch.com