Capacitive Touch Design Checklist

Design inputs for capacitive touch panels, overlays, sensor circuits and HMI assemblies.

Use this before requesting a capacitive touch interface, glass/acrylic panel or touch-sensitive overlay.

Capacitive touch performance depends on overlay, sensor, grounding and t

Engineering source notes

- Microcontroller vendor design guides emphasize that robust capacitive touch depends on sensor geometry, cover material, shielding, moisture/noise conditions and tuning.
- Overlay material and thickness affect sensitivity; PET, PC, acrylic and glass can all work when the electrode, controller and tuning are designed together.
- Gloves, water film, EMI, grounding, LEDs and display windows should be treated as design inputs before the first sensor layout.

Touch panel overview

Application/device	Overlay material
Overlay thickness	Touch key count
Controller/IC preference	Use with gloves or water

Mechanical and overlay details

[ ] Overlay material and thickness are selected: PET, PC, acrylic, glass or other panel.
[ ] Touch active areas, icons and spacing are clearly marked.
[ ] Display window, LED window, dead-front icons and backlighting needs are shown.
[ ] Housing grounding, metal frame and mounting method are reviewed.
[ ] Adhesive layer, air gap and stack-up are controlled because they affect sensitivity.
[ ] Surface finish, printing, window clarity and cleaning resistance are defined.

Electrical and firmware inputs

[ ] Sensor layout, channel count and controller preference are known or open for JASPER review.
[ ] Power supply, communication interface and connector/pinout are stated.
[ ] Grounding, shielding and nearby noise source locations are identified.
[ ] ESD, EMI, water film, gloves or false touch requirements are stated.
[ ] LED/display/backlight circuits are separated from touch sensing risk areas.
[ ] Firmware tuning or customer controller validation plan is defined.

Prototype and validation

[ ] Samples will be tested inside the real housing, not only on the bench.
[ ] User conditions are known: dry finger, wet finger, gloves, cleaning, vibration or outdoor use.
[ ] Sensitivity acceptance and false-trigger conditions are defined.
[ ] Temperature and humidity range is included in validation.
[ ] Touch response is checked near edges, display openings and grounded metal parts.
[ ] Revision control covers overlay artwork, sensor circuit and firmware parameters.

Information to send to JASPER

- Mechanical drawing and artwork.
- Overlay material/thickness target or appearance sample.
- Touch key layout and expected operating conditions.
- Controller, connector and communication requirements.
- Housing drawing, grounding plan and nearby noise sources.
- Validation requirements for gloves, water, ESD or EMI.

Touch design decision log

Overlay approved	Sensor layout approved
Controller approved	Ground/shielding approved
Validation test required	Open issues

Technical references reviewed

- Microchip AN2934 Capacitive Touch Sensor Design: https://www.microchip.com/en-us/application-notes/an2934
- Texas Instruments CapTIvate Design Guide: https://software-dl.ti.com/msp430/msp430_public_sw/mcu/msp430/CapTIvate_Design_Center/
- MacDermid Alpha Autotex hardcoated polyester films: https://www.macdermidalpha.com/products/film-smart-surface-solutions/
- JASPER factory engineering review practice and public product/resource pages: https://www.jasperele.com/

Send drawings and requirements to JASPER

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