



US 20100144391A1

(19) **United States**

(12) **Patent Application Publication**
Chang et al.

(10) **Pub. No.: US 2010/0144391 A1**

(43) **Pub. Date: Jun. 10, 2010**

(54) **INTEGRATED TOUCH PANEL FOR A TFT DISPLAY**

Publication Classification

(51) **Int. Cl.**
H04B 1/38 (2006.01)
G06F 3/041 (2006.01)
G02F 1/1343 (2006.01)
(52) **U.S. Cl.** **455/566; 345/173; 349/187**

(76) **Inventors:** **Shih Chang Chang**, Cupertino, CA (US); **John Z. Zhong**, Cupertino, CA (US)

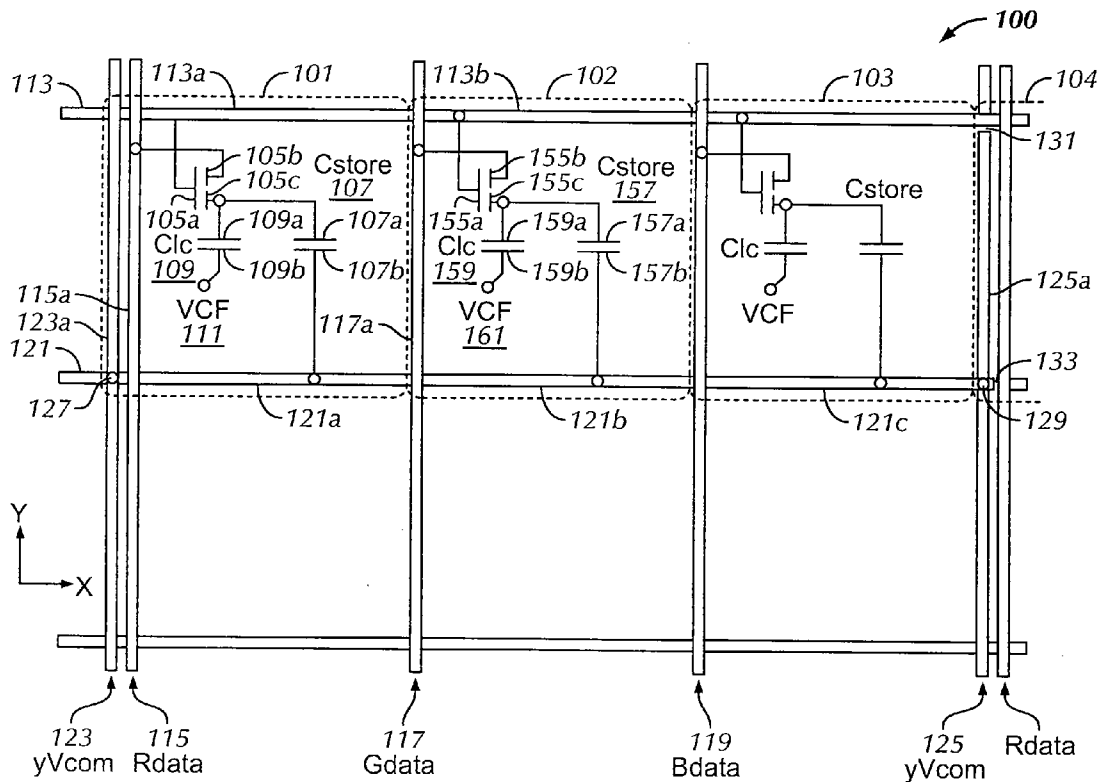
(57) **ABSTRACT**

This relates to displays for which the use of dual function capacitive elements does not result in any decreases of the aperture of the display. Thus, touch sensitive displays that have aperture ratios that are no worse than similar non-touch sensing displays can be manufactured. More specifically, this relates to placing touch sensing opaque elements so as to ensure that they are substantially overlapped by display related opaque elements, thus ensuring that the addition of the touch sensing elements does not substantially reduce the aperture ratio. The touch sensing display elements can be, for example, common lines that connect various capacitive elements that are configured to operate collectively as an element of the touch sensing system.

Correspondence Address:
APPLE C/O MORRISON AND FOERSTER, LLP
LOS ANGELES
555 WEST FIFTH STREET SUITE 3500
LOS ANGELES, CA 90013-1024 (US)

(21) **Appl. No.: 12/315,869**

(22) **Filed: Dec. 5, 2008**



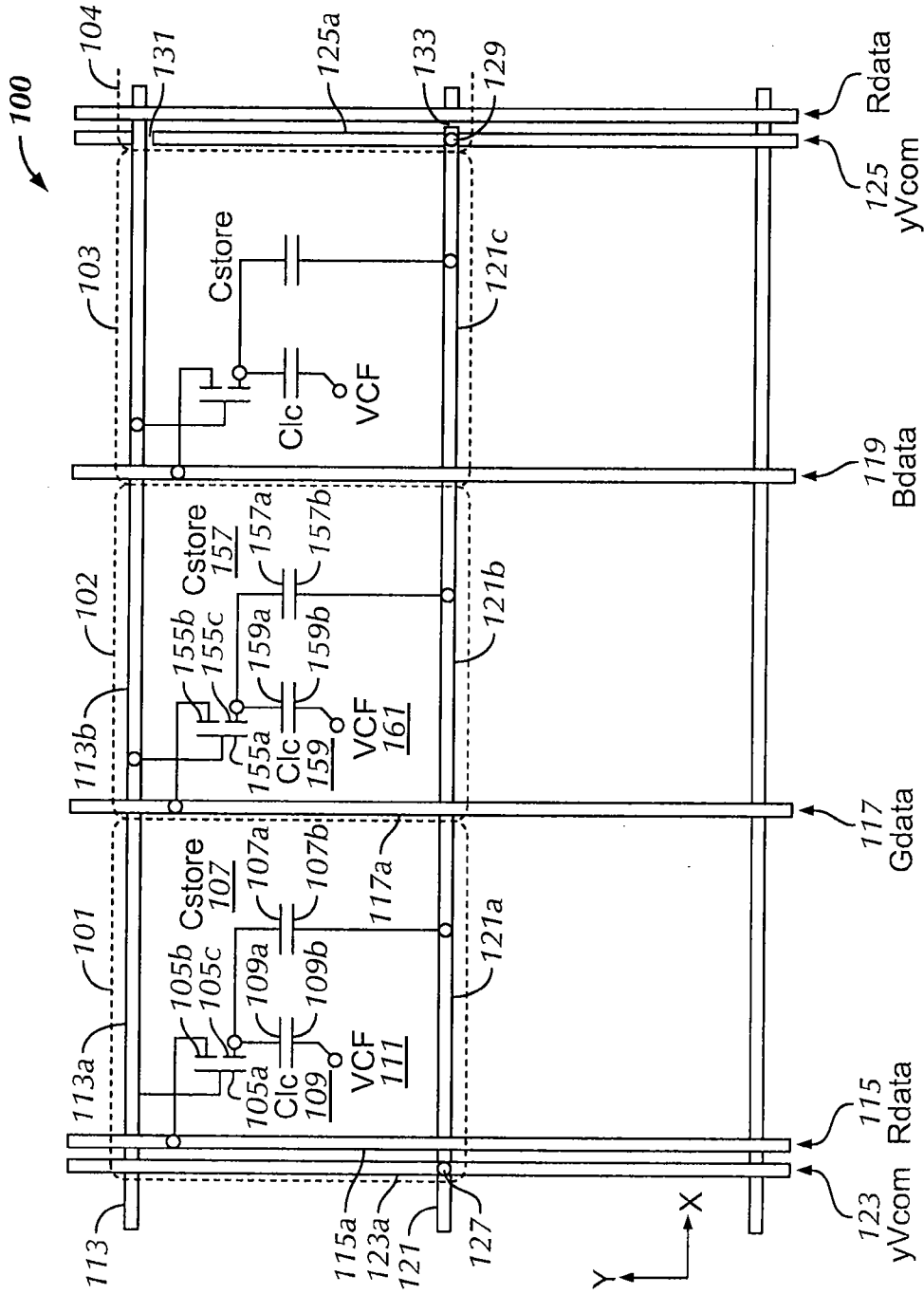


FIG. 1

TFT Glass Region Layout

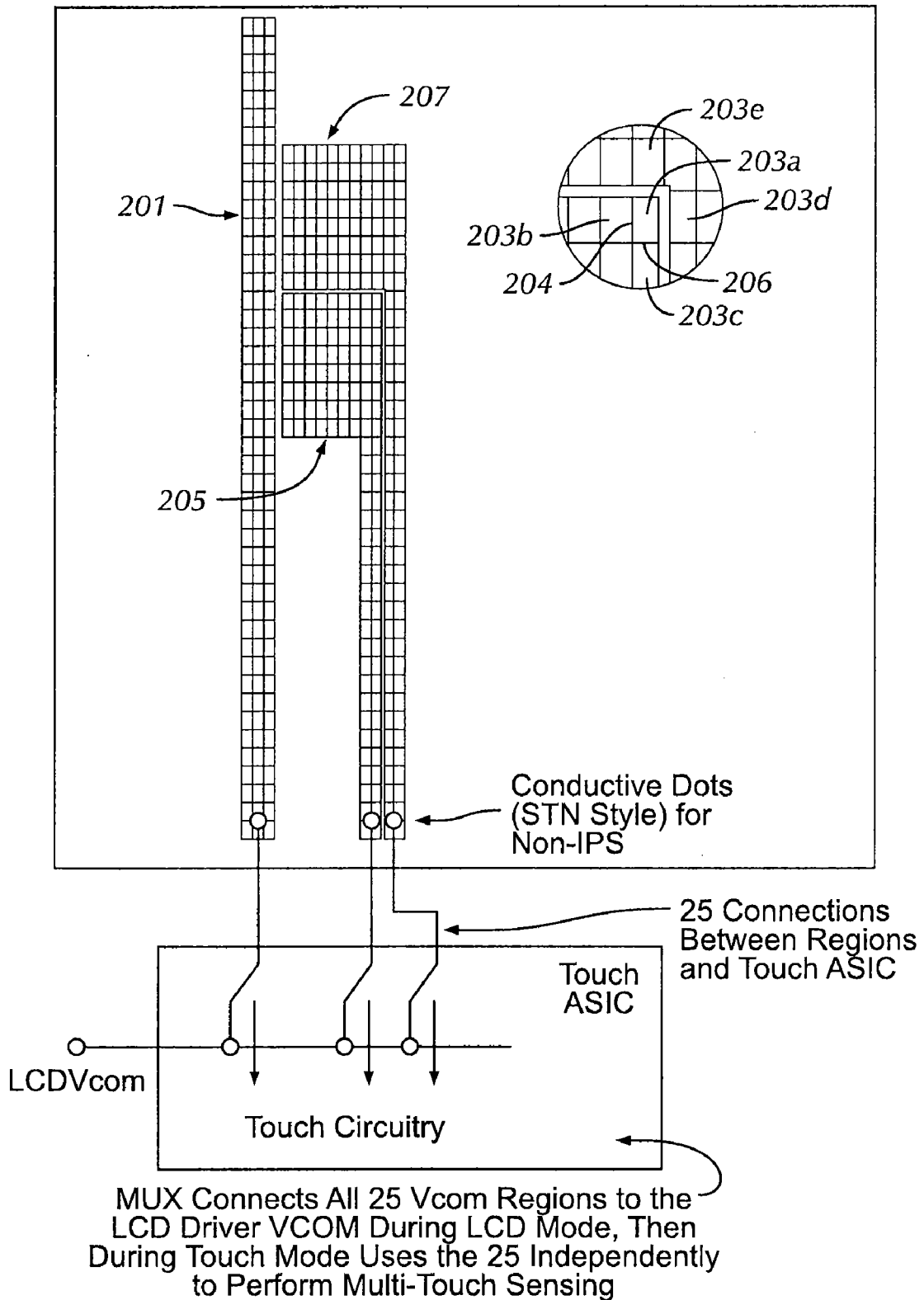


FIG. 2A

CF Glass Patterned ITO Region Layout
(Note, for IPS no ITO on CF Plate is Needed)

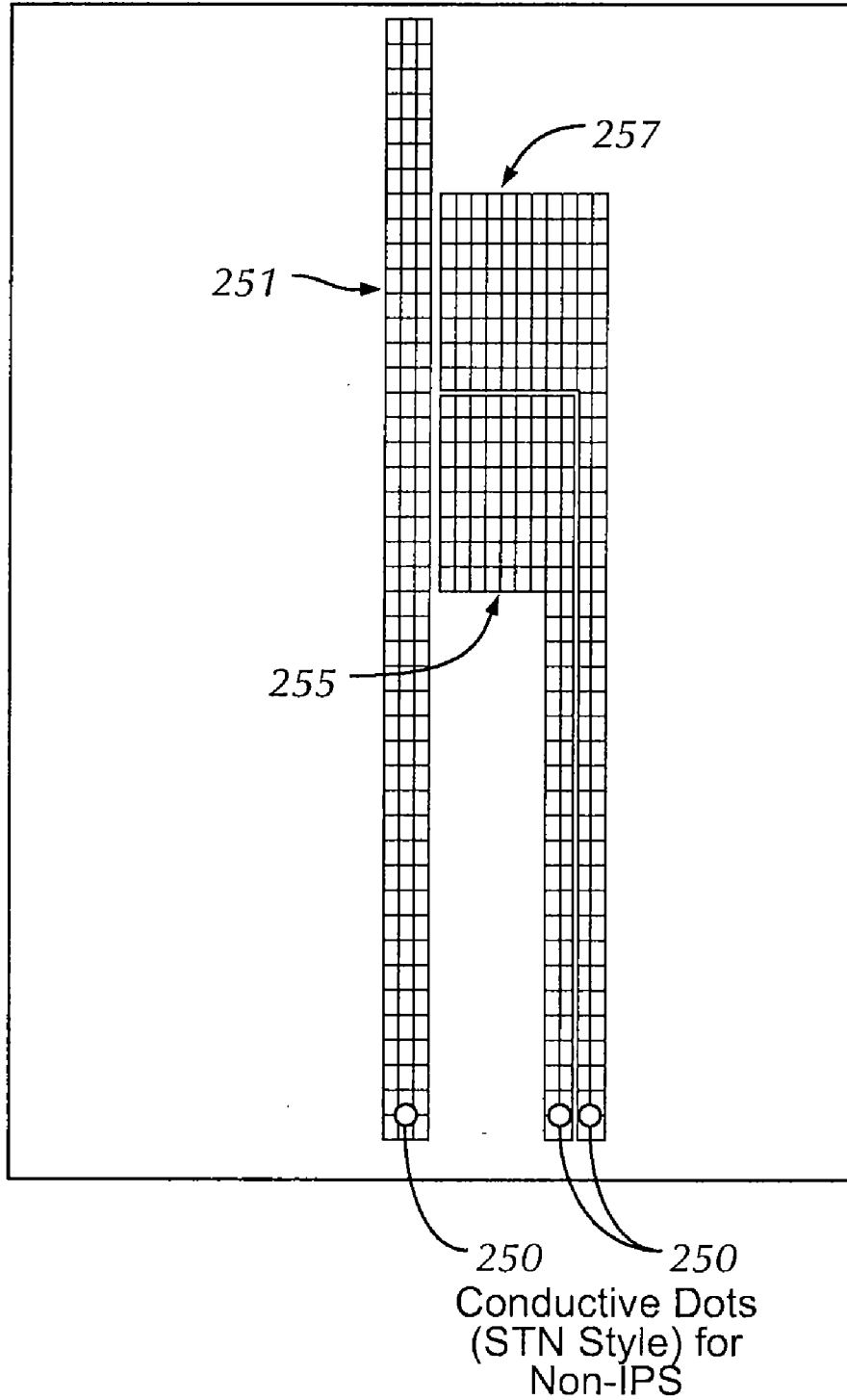


FIG. 2B

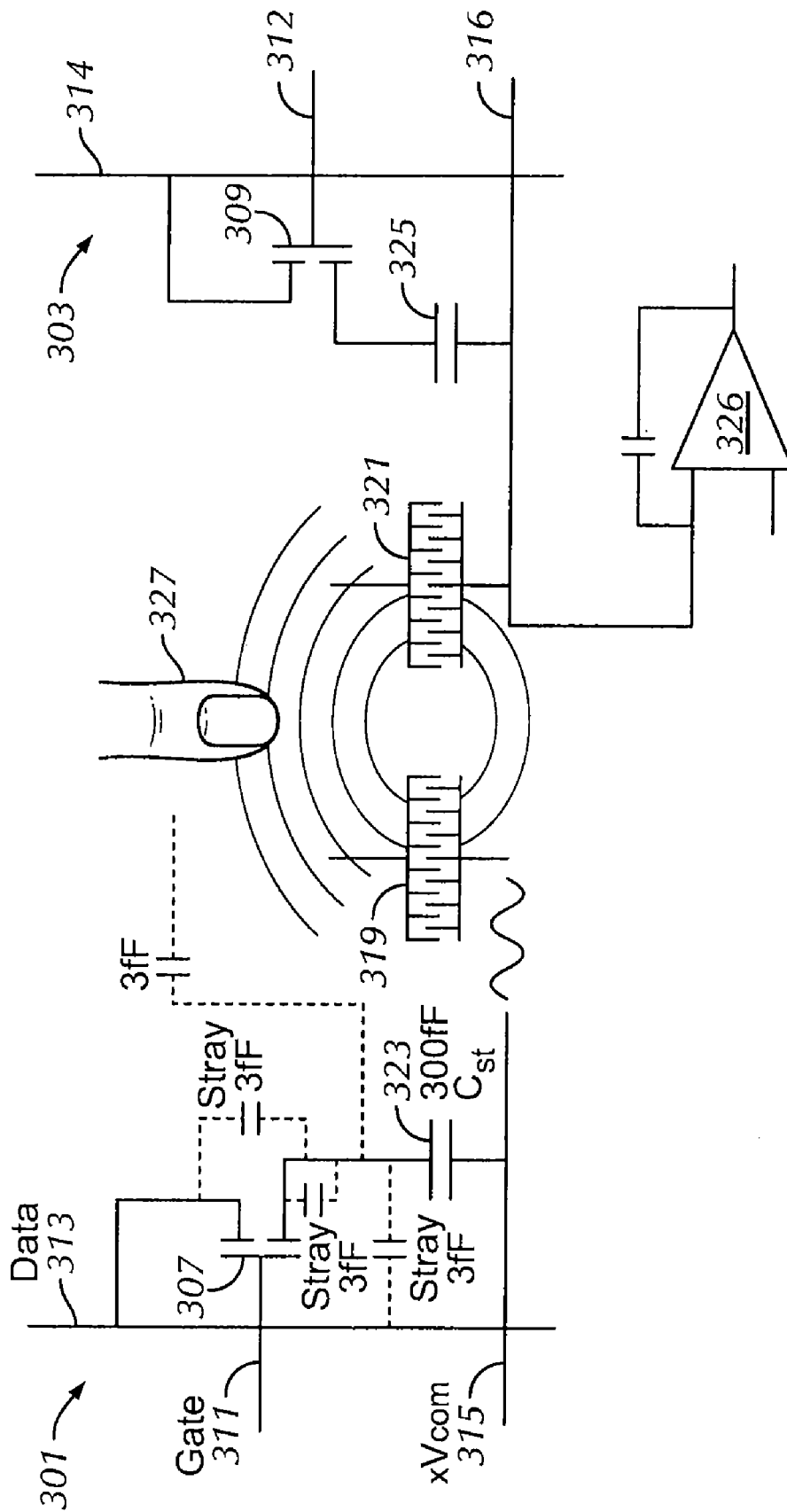


FIG. 3

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.