Toshiba develops 7.0-inch LTPS TFT LCD panel

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Toshiba Mobile Display has developed a 7.0-inch low-temperature poly-silicon (LTPS) thin-film transistor (TFT) liquid crystal display (LCD) for vehicle-mounted and industrial uses that enables multi-touch input on the display screen without the need for additional installation of a touch panel as a demonstration of its new touch panel technology.

The technology enables an integrated touch panel function by forming the display pixel electrodes and TFT within the LCD panel using LTPS TFT technology and creating a detecting circuit for electrostatic capacitance changes between the electrodes and the peripheral object. Compared to conventional LCDs with an external touch panel, the thickness is reduced by 57 percent to approximately 1 millimeter, the

weight is reduced by 48 percent to 225 grams and the surface reflection ratio is reduced by 10 percent. Its smaller size enables the design of more compact products for mobile applications, reduces the impact on the environment by saving resources and power, provides crisp and clear images with minimal reflection of natural light even in a bright environment, and features intuitive multi-touch input.

Recently, an increasing number of smartphones, cellular phones, in-vehicle car navigation systems, tablet-type PCs and other equipment for mobile applications have been designed around a capacitive-type touch panel1 integrated LCD, thereby facilitating the rapid spread of products that feature a low-profile and reduced-weight design, and intuitive, easy and simple touch input. TMD has developed this technology in response to the increasing demand for in-cell touch panel2 LCDs with the touch panel function integrated in the LCD panel for further reduction of thickness, weight and environmental impact.

The capacitive-type touch panel is designed to form transparent electrodes on the touch panel and detect changes in electrostatic capacitance between the electrodes and the user's fingers with high accuracy, thereby enabling the screen panel to respond easily to light finger touches. To integrate this feature in the LCD panel it is essential to suppress possible interference with various signals in the LCD panel. To address the problem, TMD has developed a proprietary sensor circuit, taking advantage of LTPS TFT technology. Specifically, an amplifier circuit is formed in the pixels to amplify the signals, which are then detected by the sensor for output, providing a configuration to precisely transmit sensor signals to the outside of LCD panel. This helps achieve consistent and fast-responding touch panel operation.

This technology will be exhibited in the Toshiba booth #1119 at SID 2011 International Symposium, Seminar and Exhibition to be held from May 17 to May 19, 2011 in Los Angeles, Calif., USA.

Provided by Toshiba Corporation