



TD4376

TDDI product brief

New Full High Definition 144 Hz Touch and Display Driver Integration for Next-Generation Smartphone LCD Displays

OMNIVISION Display Solutions' TD4376 touch and display driver integration (TDDI) leverages OMNIVISION's proven image algorithms, high quality, and stable supply chain to help tier-one LTPS panel manufacturers speed time to market. It supports higher performance in touch and display with much lower power consumption.

TD4376 enables 1080RGB pixel full high definition (FHD) resolution with up to 144 Hz display frame rate for smartphones. It also provides 2x touch report rate in LCD TDDI solutions.

Upgraded from TD4377, which is in mass production in millions of tier-one OEM phones, TD4376 is pin-to-pin compatible with TD4377 and is held to the same high quality standards for customers.

Find out more at www.ovt.com.



- TD4376-B0S-HJV30Z-0 (general 3 inch tray)
- TD4376-B0S-HJV40B-0 (general 4 inch tray)

Applications

- smartphones

Touch Features

- multi-touch coordinate sensing without ghost points
 - voltage correction circuits enhance the sensitivity (supporting automatic calibration)
- RISC CPU optimized for capacitive sensing and other human interaction
- supports up to 18x36 electrodes to provide the highest possible accuracy
 - analog front ends (AFE) support up to 648 receiver pads
- supports I2C and SPI with OMNIVISION TouchComm protocol for communication with the host
- proprietary intelligent algorithms, run locally on the CPU facilitate the removal of mechanical buttons and switches, which increases reliability and reduces footprint and component cost
- low power sensing modes enable wake-up gesture functionality
- face-detect proximity capability reduces cost by eliminating the need for other proximity sensing components
- display synchronization and increased voltage capability enable improved performance over discrete touch implementations
- programmable sensing speed of 30 kHz to 250 kHz to minimize noise interference
- includes support to control segmented VCOM in-cell touch scanning circuits and enable ultra-thin, low-cost integrated sensing schemes
- high signal-to-noise ratio (SNR) touch AFE improves touch performance
- 120/90/60 Hz long H-blank sensing
- low power wake-up gesture (LPWUG)

Display Features

- 16.777M colors (24 bpp data format) single chip driver for a 1024-grayscale TFT with a resolution of 1080 RGB x 2520-dot graphics (with power supply circuits and supporting low temperature poly-silicon (LTPS) panel)
- 4-lane/1-port MIPI DSI-2 D option interface for high-speed and low power transmission in both directions with low EMI noise (DSI-2 1.0, D-PHY1.1, DCS 1.2)
- 3-lane/1-port MIPI DSI-2 C option interface for more high-speed and low power transmission in both directions with fewer data lane number and low noise (DSI-2 1.0, C-PHY1.1, DCS 1.2)
- MIPI DSI-2 D option video image display interface (see patents) with 1.3 Gbps/lane
- MIPI DSI-2 C option video image display interface (see patents) with 1.1 Gbps/trio
- direct compressed data input
 - 1/3 data compressed data input with one port
 - compression interface supports DSC (VESA) Version 1.2 (DSC v1.2 has backward compatibility with DSC v1.1 to change the PPS setting)
- digital pixel processing
 - digital GAMMA for RGB separate gamma correction function
 - content adaptive backlight control (CABC)
 - color enhancement (CE) with color space management
 - sunlight readability enhancement function (SRE)
 - outline sharpness function
 - local area auto contrast optimization function (LCO)
 - paper mode
- low power consumption architecture (allowing direct input of the interface I/O power supply)
 - input power supply voltage:
 - o interface and logic power supply: IOVCC
 - o analog power supply: VSP, VSN
 - o MIPI D-PHY power supply: DPHYVCC
 - o MIPI C-PHY power supply: DPHYVCC

Functional Block Diagram

