TD4160

TDDI product brief

High Definition 120 Hz Touch and Display Driver Integration Provides Narrow Border Solution for Smartphone LCD Displays

OMNIVISION Display Solutions' TD4160 touch and display driver integration (TDDI) with interleave and sink-bump pin map reduces routing area achieving ~1.0 mm panel border. TD4160's advanced design supports high frame rate display and multi-finger touch applications for a-Si and LTPS panels.

The TD4160 enables 720RGB pixel high definition (HD+) resolution, up to 120 Hz display rate, and multi-finger high touch report rate for LCD smartphones. The TD4160 leverages OMNIVISION's mature IP algorithm to provide OEM customers with reliable application support. The TD4160 is in mass production in hundreds of millions of smartphones and covers almost all tier-one OEM brands. The TD4160 provides high quality standards for customers.

Find out more at www.ovt.com.

TD4160

Ordering Information

- **TD4160-B0S-HHV30Z-0** (general 3 inch tray)
- **TD4160-B0S-HHV40B-0** (general 4 inch tray)

Applications

- smartphones

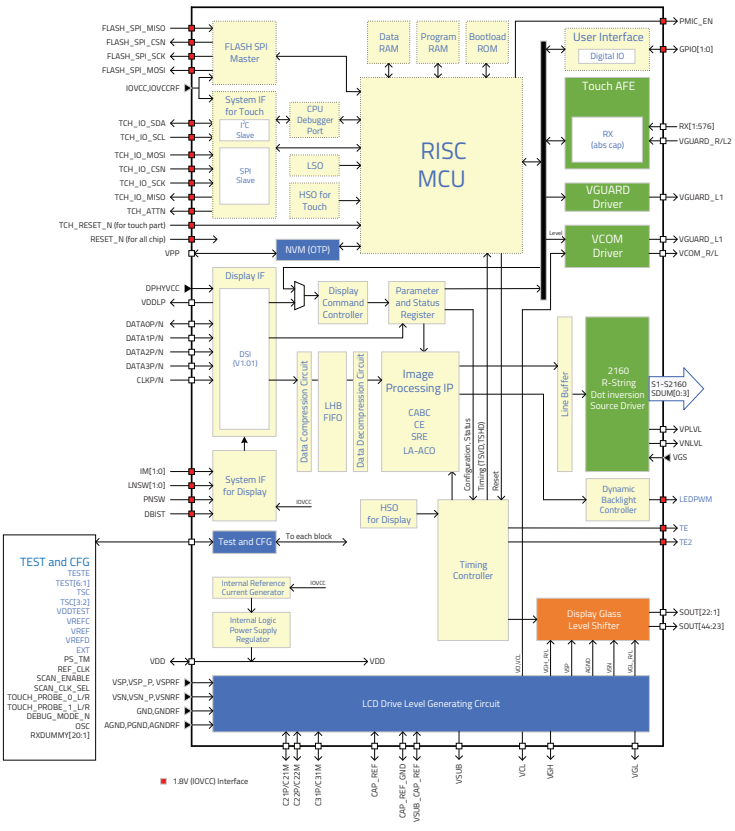
Display Features

- 16.777M colors (24 bpp data format) single chip driver for a 256-grayscale TFT with a resolution of 720 RGB x 1680-dot graphics (with power supply circuits and supporting amorphous silicon (a-Si) panel)
- 4-lane/1-port MIPI DSI interface for highspeed and low power transmission in both directions with low EMI noise (DSI 1.3, DPHY1.0, DCS 1.2)
- MIPI DSI video image display interface (see patents) with 1.2 Gbps/lane
- 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 (SRE) function
  - outline sharpness function
  - automatic contrast optimization (ACO) function
  - paper mode
- low-power consumption architecture (allowing direct input of the interface I/O power supply)
  - input power supply voltage: interface and logic power supply: IOVCC analog power supply: VSP, VSN MIPI D-PHY power supply: DPHYVCC

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 interactions
- supports up to 18x32 electrodes to provide the maximum accuracy
  - analog front ends (AFEs) support up to 576 receiver pads
- supports I2C and SPI with OMNIVISION TouchComm protocol for communication with the host
- proprietary intelligent algorithms, run locally on the CPU facilitates 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 50 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
- 120/60 Hz long H-blank sensing
- low power wake-up gesture (LPWG)

Functional Block Diagram



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