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Product Brief

TC358760/1 Display Bridge (MDDI to MIPI® Interfaces)

Highlights

- Display Bridge for connectivity of MIPI® panels to the Baseband or Application Processors using an MDDI interface.
- Solutions are based on the latest versions of industry standard MDDI 1.2 and MIPI DSI 1.01 interfaces. MDDI 1.2 ensures high-speed data rates of up to 800 Mbps per lane. Backward compatibility to MDDI 1.1 is supported.
- Legacy interfaces such as MIPI DPI and MIPI DBI are also supported.
- Applicable to a range of mobile product platforms such as smartphones, netbooks, smartbooks, MIDs and PNDs.

Description

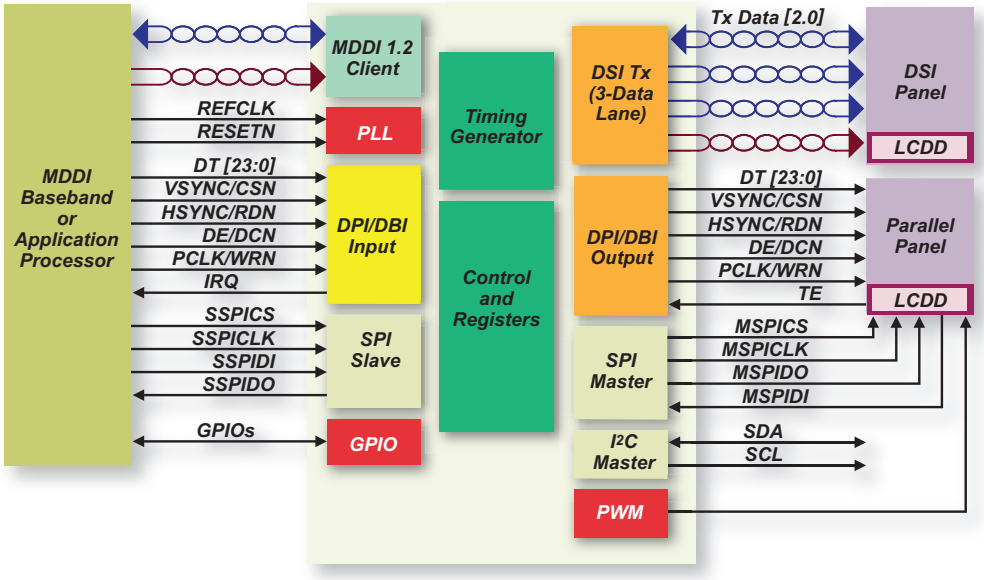
The Toshiba TC358760XBG / TC358761XBG display bridge is optimized for mobile handsets using an MDDI high-speed serial digital packet host interface and high-resolution display panel with a MIPI Display Serial Interface (DSI). The bridge supports an MDDI 1.2 Type 1 with up to 800 Mbps data lane speed on the host side. The bridge is also backward compatible with earlier versions of MDDI. The bridge supports MIPI DSI on the panel side with up to 500 Mbps per data lane times three data lanes.

The TC358760XBG is a 49-pin device and supports MDDI and MIPI DSI interfaces. The TC358761XBG is a 72-pin device and supports the legacy parallel interfaces on the host or on the panel side. The TC358761XBG supports both MIPI DPI (Display Pixel Interface) and MIPI DBI (Display Bus Interface).

Features

- LCD module interface
  - 3 ports LCD interface (Only one port can be used at a time)
    - MIPI DSI-TX Data 3-lane, CLK 1-lane with data rates up to 500 Mbps/lane
    - MIPI DPI synchronous port
    - MIPI DBI Type-B asynchronous port
    - Support for up to qHD size LCD panel
  - Output format: RGB888, RGB666 and RGB565.

System Block Diagram of TC358760XBG / TC358761XBG



The TC358760XBG bridge supports only the serial interfaces:
MDDI and MIPI DSI interfaces. The TC358761XBG supports serial and parallel interfaces.
The TC358761XBG has the following use case scenarios:

Use Case 1: MDDI to MIPI DSI
Use Case 2: MDDI to MIPI DBI
Use Case 3: MDDI to MIPI DPI
Use Case 4: MIPI DPI to MIPI DSI
Use Case 5: MIPI DBI to MIPI DSI

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- Host interface (Only one port can be used at a time, except for MDDI+SPI/SSI and DPI+SPI/SSI)
  - MDDI Client (MDDI Version 1.2 Type-1) Interface with data rates up to 800 Mbps
    - Forward video link
    - Forward and backward Register Access Packet
    - Hibernation
  - MIPI DBI Type-B 16-bit bus interface
    - 18-bit bus RGB 666 format supported. Note, when this format is selected, the valid command and data bus width is 16 bit.
  - Serial input interface
    - 3 or 4-wire 8-bit SPI synchronous transfer
    - 3-wire 9-bit SSI synchronous transfer
  - MIPI DPI 24-bit bus interface
- Peripheral control ports
  - SPI or SSI serial I/F ports
  - Single I²C serial I/F port
  - Up to 13 General Purpose I/O ports
  - One PWM signal for LED intensity control
- PLL: External reference clock needed to generate internal clock.
- Power supply
  - Core : 1.2V ±0.1V
  - MDDI I/O : 1.2 ±0.1V and 1.8 ±0.1V
  - DSI I/O : 1.2 ±0.1V
  - I/O : 1.8 ±0.1V to 3.0 ±0.3V
- Package
  - P-VFBGA 49-pin 3.5 mm x 3.5 mm, 1 mm height, 0.4 mm ball pitch (TC358760XBG)
  - P-VFBGA 72-pin 4.5 mm x 4.5 mm, 1mm height, 0.4 mm ball pitch (TC358761XBG)

Toshiba Mobile Initiative

This chipset is a member of the Toshiba mobile initiative product family. The Toshiba Mobile Strategic Initiative is a comprehensive program designed to offer its U.S.-based mobile handset/mobile consumer device customers a product portfolio that aims to provide faster time-to-market and helps them stay competitive.

As part of this initiative, Toshiba provides local application and design-in support and access to a host of analog peripheral ICs, including the Toshiba CMOS image sensor family, display controllers/drivers, I/O expander, bridge ICs, memory products and LCD modules.

The expanded portfolio also includes support tools, reference designs and evaluation boards.

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