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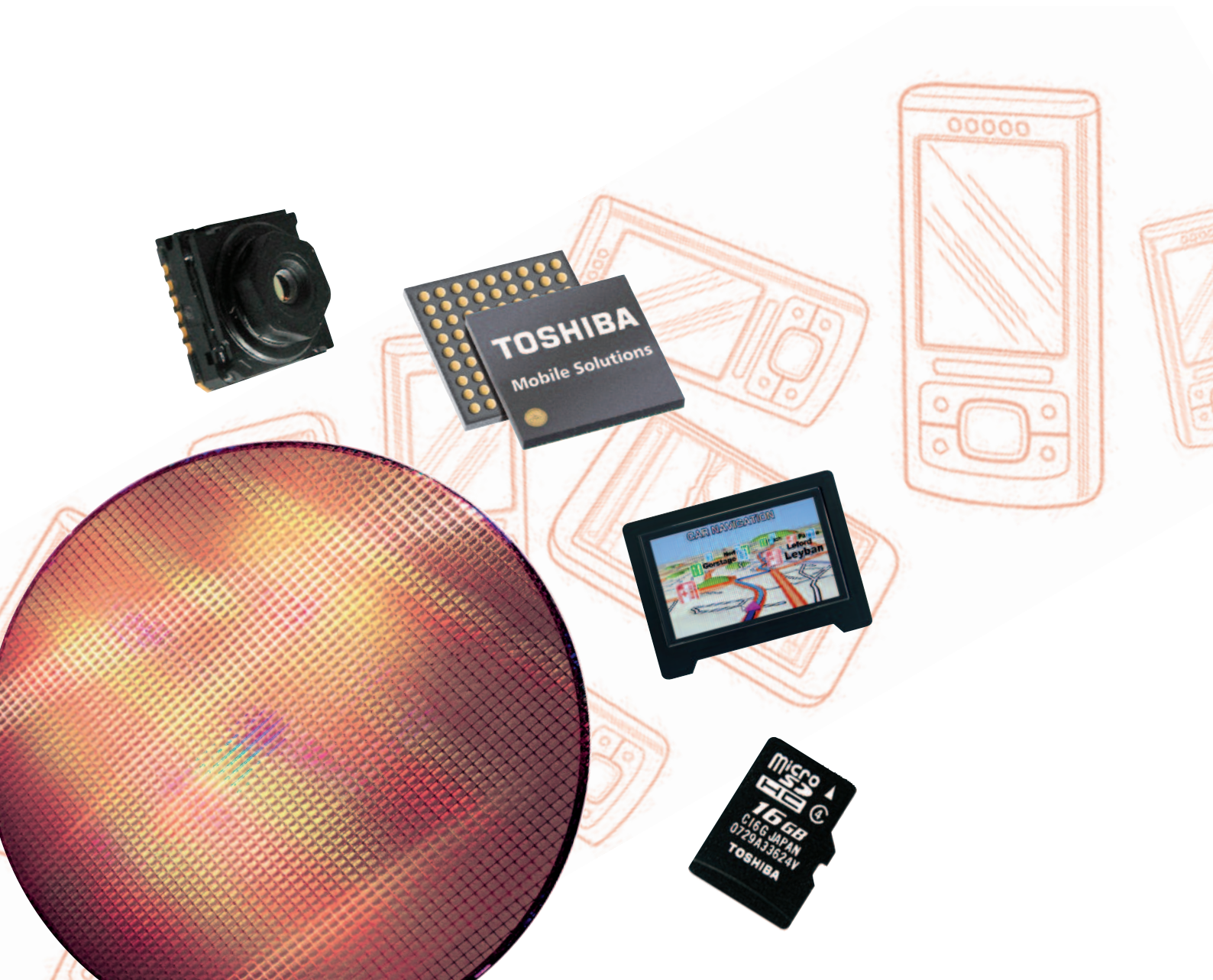
TC358746 MIPI® CSI-2 CAMERA BRIDGE IC



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HIGHLIGHTS

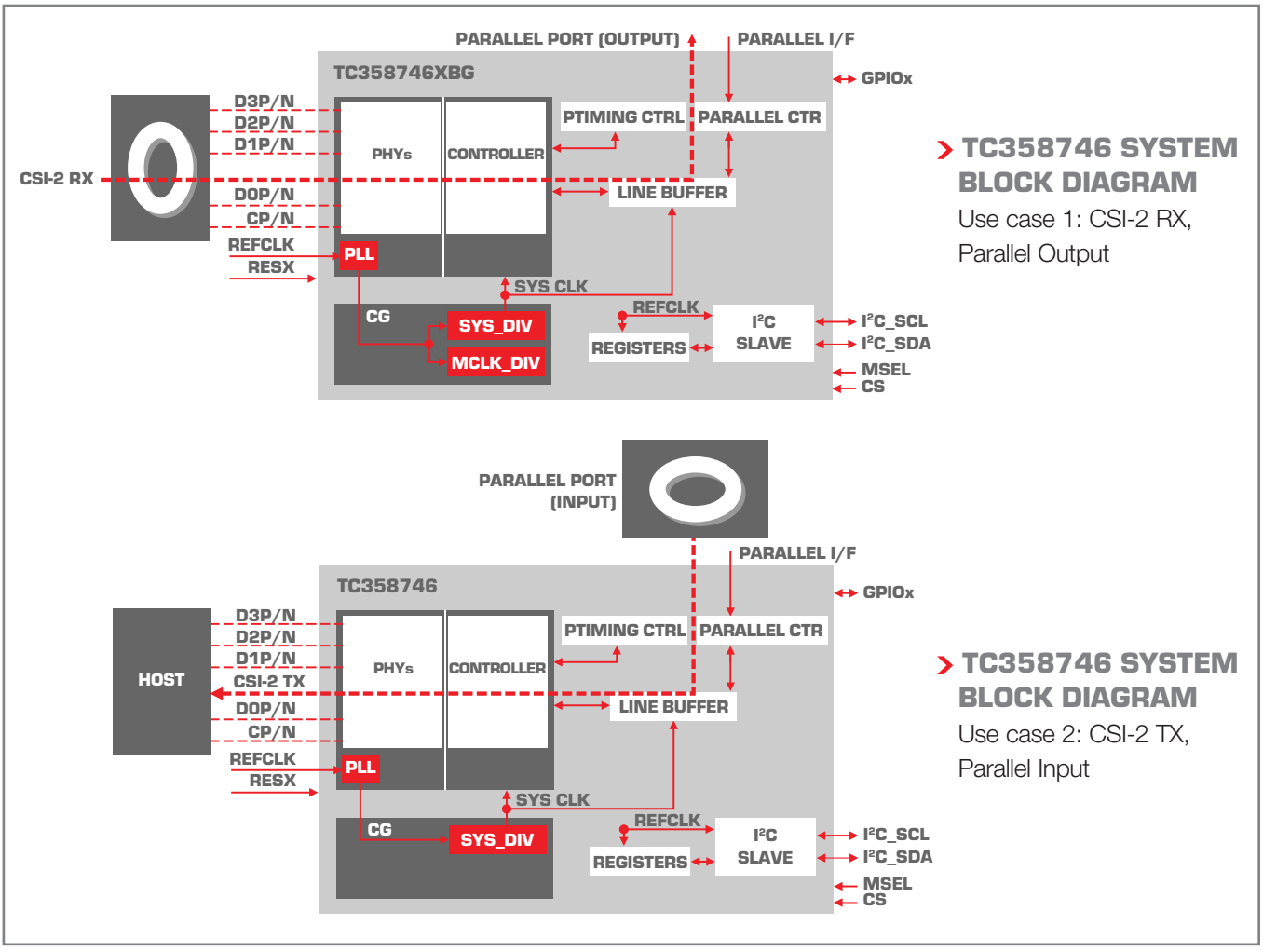
- MIPI® CSI-2 bridge for converting parallel data into MIPI CSI-2 data or MIPI CSI-2 data into parallel data for more flexible sensor selection
- The TC358746 can be configured as CSI-2 TX with a parallel input port or CSI-2 RX with a parallel output port
- Solutions are based on the latest versions of the industry standard MIPI CSI-2 version 1.01
- Applies to products such as smartphones, tablets, VOIP phones and pico projectors

DESCRIPTION

The Toshiba TC358746 camera bridge incorporates a Mobile Industry Processor Interface (MIPI) Camera Serial Interface Type 2 (CSI-2) that functions either as a CSI-2 receiver or as a CSI-2 transmitter. The TC358746 bridge can be configured to connect to a camera with a parallel interface or with a CSI-2 interface. This enables camera selection to be based on performance, and mechanical and electrical criteria, rather than interface connectivity requirements to the Host processor. It can be configured to function as a bridge from a parallel-interface sensor to a MIPI CSI-2 Host or from a MIPI CSI-2 sensor to a parallel-interface Host. It supports several data formats such as RAW, RGB and YUV data formats.

The TC358746 camera bridge supports MIPI CSI-2 version 1.01, up to 4 data lanes with data speed of up to 1 Gbps/lane, for total bandwidth of 4 Gbps. It supports a parallel interface with performance of 100 MHz clock frequency for output mode and 154 MHz clock frequency for input mode. Additional I²C and GPIO interfaces are provided to configure the bridge registers and for control signals.

The Toshiba TC358746 camera bridge is a 72-pin device and is optimised for smartphone and handheld devices. It has a small package of 4.5 mm x 4.5 mm, 0.40 mm ball pitch, 1.0 mm height; and it is designed with clock and power management to support low-power states.



TC358746 SYSTEM BLOCK DIAGRAM

Use case 1: CSI-2 RX, Parallel Output

TC358746 SYSTEM BLOCK DIAGRAM

Use case 2: CSI-2 TX, Parallel Input

FEATURES

CSI-2 TX/RX Interface

- MIPI CSI-2 compliant (Version 1.01 Revision 0.04 — 2 April 2009)
- Configurable to TX or RX controller
- Supports up to 1 Gbps per data lane
- Supports up to 4 data lanes
- Supports the following video data formats
  - For CSI RX configuration: RAW8/10/12/14, YUV422 (CCIR/ITU 8/10-bit), RGB888/666/565 and user-defined 8-bit
  - For CSI TX configuration:YUV422 (CCIR/ITU 8/10-bit), YUV444, RGB888/666/565 and RAW8/10/12/14

Parallel Port Interface

- Supports the following video data formats
  - 24-bit bus - un-packed format (Both input and output mode)
  - RGB888/666/565, RAW8/10/12/14 and YUV422 8-bit (on 8/16-bit data bus) and 10-bit data formats
  - YUV444 (for parallel input mode only)
  - YUV422 8-bit — ITU BT.656 and ITU BT.601 (for parallel input mode only)
- Up to 100 MHz PCLK frequency for output mode, and 154 MHz for input mode

I^2C Slave Interface

- Support for normal (100KHz), fast mode (400 KHz) and special mode (1 MHz)
- Can be used to configure all TC358746 internal registers

GPIO signals

- 3 GPIO signals can be configured as control signals

System

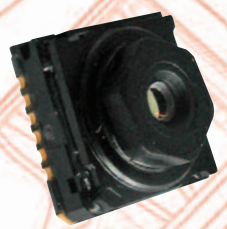
- Clock and power management support to achieve low-power states
- Chip Select (CS) input signal to allow multiple TC358746 chips on the same system

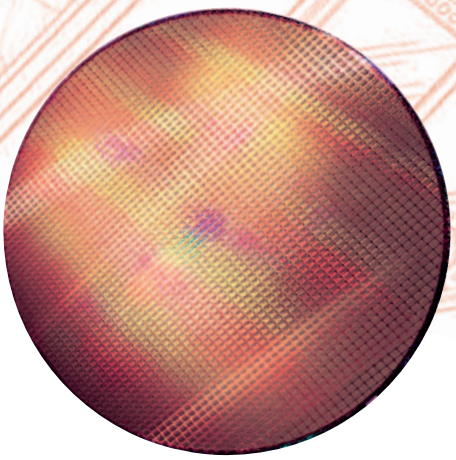
Power supply inputs

- Core and MIPI D-PHY: 1.2V
- I/O: 1.8V – 3.3V

Package

- TC358746XBG: 72-pin, 4.5 mm x 4.5 mm, 0.40 mm ball pitch, 1.0 mm height





GENERAL INFORMATION

› Other Mobile Peripheral Devices
- IO Expander
- TV out controller
- DisplayPort™ controller
- MIPI® and MDDI® display controller with buffer
- MIPI® and MDDI® hubs and bridges
- MIPI® camera interface bridge chips

You can find further information about Toshiba Mobile Peripheral Devices at www.toshiba-components.com/mobile

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