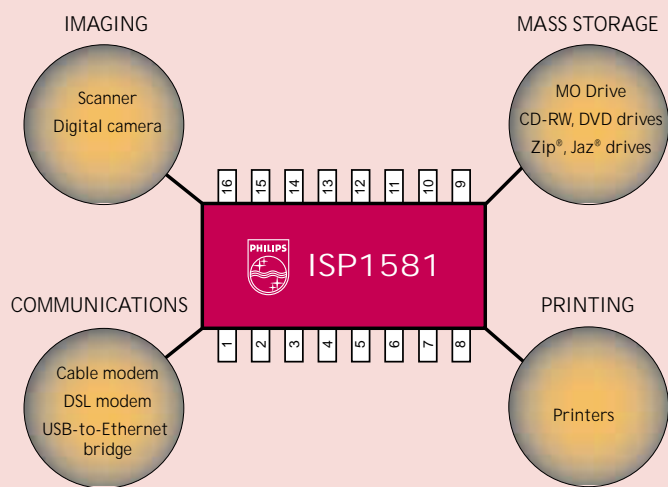


ISP1581

High-Speed USB 2.0 Interface Device with Parallel Bus



High-speed ISP1581 USB 2.0 interface device with parallel bus

Key Features

- Complies with Universal Serial Bus Specification Rev. 2.0 and most device class specifications
- Supports auto USB 2.0 mode discovery and USB 1.1 fallback capabilities
- Supports a direct interface to ATA/ATAPI peripherals
- High-performance USB interface device with integrated SIE, FIFO memory, transceiver and voltage regulator
- Bus-independent, 16 Mbyte/s interface to most microcontrollers and RISC processors
- DMA operation is fully autonomous and supports multiple configurations
- Up to 16 programmable USB endpoints
- Integrated multiconfiguration FIFO memory (14 kbytes logical, 8 kbytes physical)
- Double buffering scheme of endpoints increases throughput and facilitates real-time data transfer
- Bus-powered capability with low power consumption and low suspend current
- 12 MHz crystal or oscillator for low EMI performance
- Software-controllable connection to the USB bus (SOFTCONNECT™)
- Operation with the extended USB bus voltage (3.0–5.5 V) with 5 V-tolerant I/O pads
- Higher than 12 kV in-circuit ESD protection on accessible pins such as D+/D-
- LQFP64 package

The ISP1581 is a high-speed Universal Serial Bus (USB) interface device that is particularly well suited for use in ATA/ATAPI peripherals. It provides a fast, general-purpose parallel interface for communications with most microcontrollers and RISC processors. The device supports two bus configurations and local direct memory access (DMA) transfers.

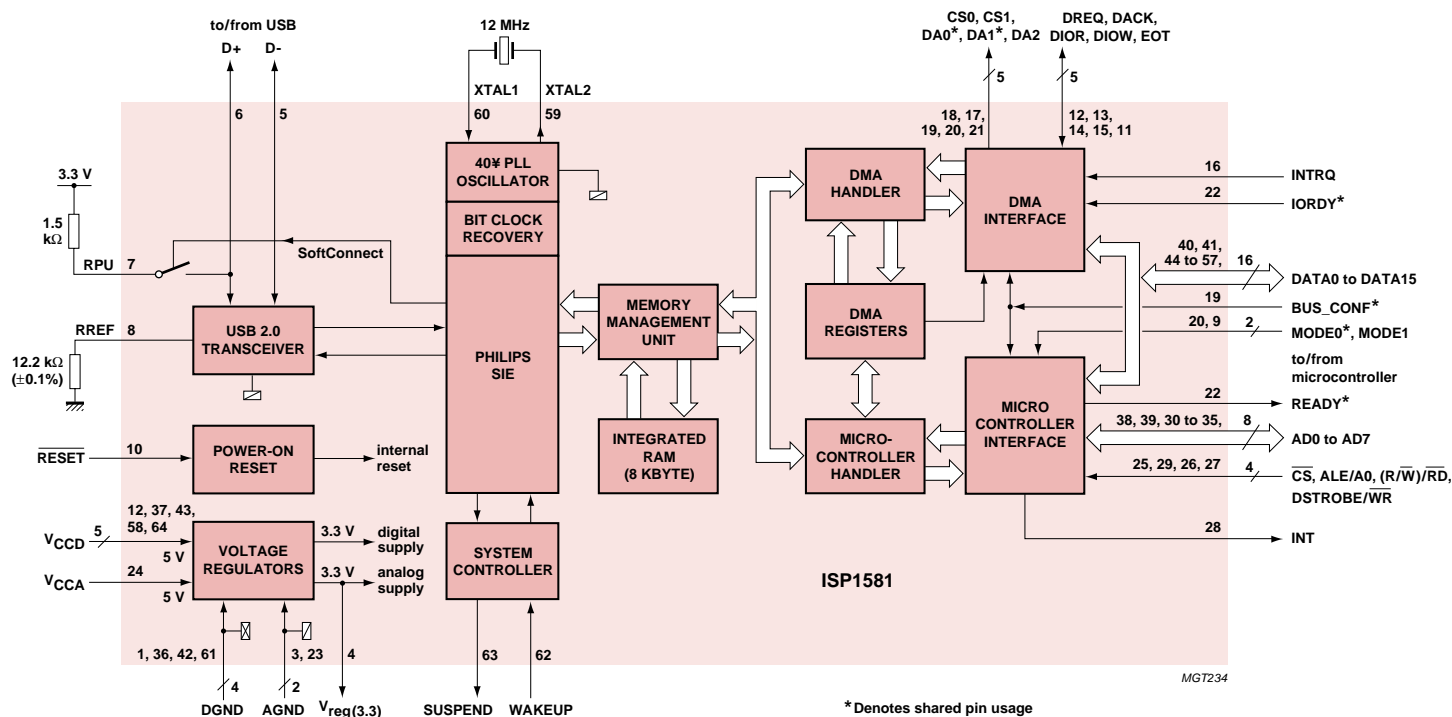
Description

The ISP1581 USB 2.0 device has been designed for maximum feature optimization and cost effectiveness. USB transceivers are integrated with the Philips Serial Interface Engine (SIE) core and embedded random access memory (RAM) to provide an interface between the USB and a microprocessor-based device. A fast, general-purpose parallel interface provides communications with the system microcontroller. The internal DMA block is generic, thus enabling easy integration into data-streaming applications. Due to the various configurations of the DMA block, the ISP1581 device is also ideally suited for use in mass-storage applications. Fully autonomous DMA operation (including auto download, auto repeat and auto execution functions) eliminates the need for the device to continually re-enable or re-initialize the DMA operation.

The ISP1581 provides a modular approach to implementation of a USB interface device. This gives designers the flexibility to select the optimum system microcontroller from a wide variety of available devices. Another benefit of the modular approach is that it allows reuse of existing architecture and firmware, thereby shortening development time, eliminating risk and reducing costs. This results in fast and efficient development of a highly cost-effective USB peripheral solution.

The ISP1581 device fully conforms to the USB Specification Rev. 2.0. Auto-discovery enables detection of a USB 2.0 system, while the USB 1.1 fallback mode allows the USB device to continue operating, even when connected to a USB 1.1 host. Because the ISP1581 is designed as a generic USB interface integrated circuit, it can be utilized in all existing device classes, including Imaging Devices, Mass-Storage Devices, Communication Devices, Printing Devices and Human Interface Devices.

Ideally suited for many high-bandwidth, high-performance applications, the ISP1581 is the perfect device for use in USB peripherals. Consider it for application in printers; imaging devices such as scanners and digital cameras; mass-storage devices such as magneto-optical (MO), CD-RW, and Zip drives; communications devices such as cable and DSL modems; and USB-to-Ethernet bridges. The ISP1581's low suspend-power consumption enables easy implementation of equipment that is compliant with ACPI, OnNow and USB power-management requirements. In addition, the device incorporates features such as a low-frequency crystal oscillator and integrated termination resistors. The ISP1581 is an excellent choice for adding advanced USB functionality to peripherals while at the same time significantly reducing system implementation costs.



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