



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

# USB251xB/xBi

## USB 2.0 Hi-Speed Hub Controller

### General Description

The Microchip USB251xB/xBi hub is a family of low-power, configurable, MTT (multi transaction translator) hub controller IC products for embedded USB solutions. The *x* in the part number indicates the number of downstream ports available, while the *B* indicates battery charging support. The Microchip hub supports low-speed, full-speed, and hi-speed (if operating as a hi-speed hub) downstream devices on all of the enabled downstream ports.

### Highlights

- High performance, low-power, small footprint hub controller IC with 2, 3, or 4 downstream ports
- Fully compliant with the *USB 2.0 Specification* [1]
- Enhanced OEM configuration options available through either a single serial I<sup>2</sup>C EEPROM, or SMBus slave port
- **MultiTRAK™**
  - High-performance multiple transaction translator which provides one transaction translator per port
- **PortMap**
  - Flexible port mapping and disable sequencing
- **PortSwap**
  - Programmable USB differential-pair pin locations ease PCB design by aligning USB signal lines directly to connectors
- **PHYBoost**
  - Programmable USB signal drive strength for recovering signal integrity using 4-level driving strength resolution

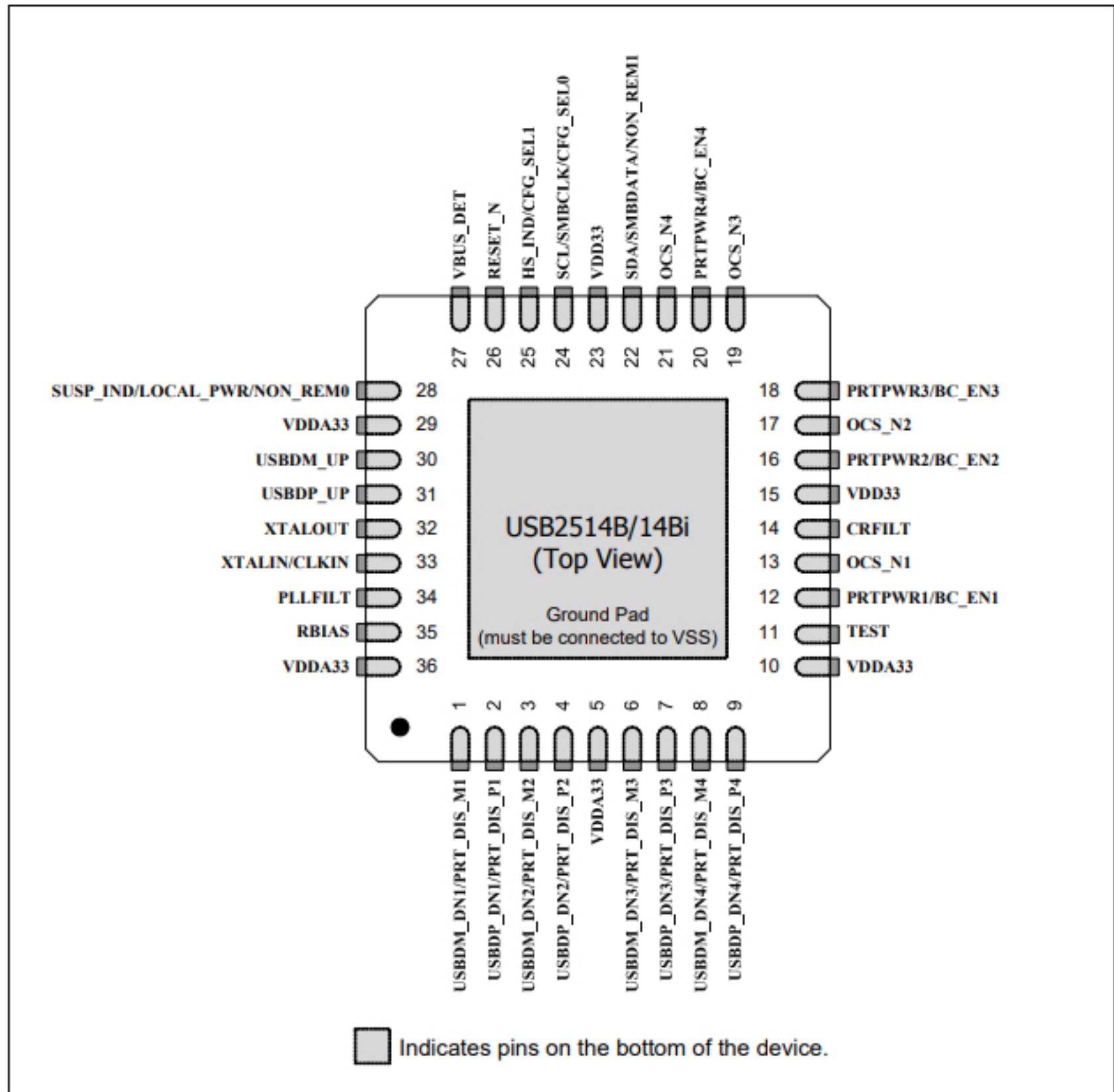
### Features

- USB251xB/xBi products are fully footprint compatible with USB251x/xi/xA/xAi products as direct drop-in replacements
  - Cost savings include using the same PCB components and application of USB-IF Compliance by Similarity
- Full power management with individual or ganged power control of each downstream port
- Fully integrated USB termination and pull-up/pull-down resistors
- Supports a single external 3.3 V supply source; internal regulators provide 1.2 V internal core voltage
- Onboard 24 MHz crystal driver or external 24 MHz clock input
- Customizable vendor ID, product ID, and device ID
- 4 kilovolts of HBM JESD22-A114F ESD protection (powered and unpowered)
- Supports self- or bus-powered operation
- Supports the USB Battery Charging specification Rev. 1.1 for Charging Downstream Ports (CDP)
- The USB251xB/xBi offers the following packages:
  - 36-pin SQFN (6x6 mm) (Preferred)
  - 36-pin QFN (6x6 mm) (Legacy)
- USB251xBi products support the industrial temperature range of -40°C to +85°C
- USB251xB products support the extended commercial temperature range of 0°C to +85°C

### Applications

- LCD monitors and TVs
- Multi-function USB peripherals
- PC motherboards
- Set-top boxes, DVD players, DVR/PVR
- Printers and scanners
- PC media drive bay
- Portable hub boxes
- Mobile PC docking
- Embedded systems

FIGURE 3-3: USB2514B PIN DIAGRAM



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