

# VL811

## Super-Speed USB Hub Controller

Version: OLS 1.01d

### VL811 System Overview

VIA Lab's VL811 is an enhanced USB 3.0 Hub controller that offers USB Charging and External Charger IC support. Featuring four down-stream ports, multiple USB devices can be connected to a single downstream port on the host computer or another hub. The VL811 employs an advanced CMOS process that allows for power-efficient operation, and the custom in-house USB PHY enables VL811 to run in USB Super-Speed, High-Speed, and Full-Speed modes with excellent signal integrity characteristics and improved backwards compatibility.

VL811 based hub devices work under Windows 7, Vista, XP, 2003/2000/ME, Mac OS X and various Linux kernels without additional drivers. Since USB 3.0 hubs do not require additional drivers, VL811 is also compatible with non-x86 devices and platforms that support USB hub functions such as tablets. It is well suited for stand alone USB hub applications, desktop PC front panel, motherboard on-board hub, USB docking stations, and USB hub compound devices.

With well-planned pinout and a high level integration, VL811 based devices can enjoy easy layout, simplified BOM, and low working temperature. Full sideband signal pins are available for showing power enable, over current, and LED status control. The SPI interface can support external EEPROM/Flash for firmware upgrades or additional software enhancements. VL811 is available in QFN 88L green package (10x10x0.85 mm) to fit small form-factor designs.

## **Product Features**

### USB 3.0 Compliant

- Compliant to Universal Serial Bus 3.0 Specification Revision 1.0
- Compliant to Universal Serial Bus Specification Revision 2.0
- One up-stream port supports Super-speed(SS), high-speed (HS) and full-speed (FS) traffic
- Four down-stream ports support Super-speed(SS), high-speed (HS), full-speed (FS), and low-speed (LS) traffic
- In-house USB PHY employs advanced CMOS process for low power consumption
- Supports USB 3.0 UX states

### Full Sideband Signal Support

- Supports either individual mode or gang mode operation for power enable and over current detection on down-stream ports
- Supports Dual LED status indicators with automatic or manual control via GPIO per down-stream port (Typically Green & Amber)

### USB Battery Charging Support

- Supports USB Battery Charging Specification v1.2 (SDP, CDP)
- External Charging IC Support
- Enables “Sleep Charging” (DCP + Apple Mode)
- Support up to 4x Charging IC for charging across all down-stream ports

### Applications

- Standalone USB hub
- Desktop/Notebook motherboard on-board hub
- Desktop front panel hub
- USB Docking systems
- USB hub compound device with keyboard, mouse, display, etc.

### Platform and Operating System Support

- General support across all major OS and platforms that offer USB such as PC, MAC, Linux, etc.
- USB hub function is dependent upon the USB Host Controller
- No proprietary driver needed, even for Battery Charging Function

### Misc

- 3.3 V and 1.0 V power supply
- PLL embedded with external 25MHz crystal
- Support external SPI flash for firmware upgrade

## VL811 Block Diagram

