MICROCHIP

USB Solutions

Robust USB Portfolio Including Support for USB-C™ and Power Delivery











www.microchip.com/usb

USB Hubs and Devices

Microchip's versatile, cost-effective and power-efficient USB hubs, bridges, switches, transceivers and power delivery controllers deliver industry-leading data throughput in mixed-speed USB environments. The USB hub families provide USB port expansion solutions for USB 2.0 and USB 3.1 applications that demand ultra-low power and a small footprint without compromising on performance. Our new SmartHub features exciting capabilities such as I/O bridging and FlexConnect, integrating more functionality than traditional hubs. Microchip's USB 2.0 family of bridge products combines an ultra-fast interface between a USB host and today's most popular Flash media card and Smart Card formats. Our Hi-Speed USB 2.0 switches and ULPI-based transceivers provide an ultra-small footprint and data multiplexing on a common connector with proven ESD protection, and our newest product line built around power delivery, enable 100W of power to be provided over the latest, small form factor, USB Type-C™ connector.







Key Features of Microchip's USB Product Line

- Continued integration of new functionality like I/O bridging reduces risk, design complexity and BOM costs
- Support for USB-C covers basic- to full-featured market tier requirements
- Fast battery charging times
- Signal robustness and tuning for dynamic designs
- Flexible solutions for wide variety of applications and markets

USB 2.0 and 3.1 Hubs

- USB-IF compliant hub
- 2-, 3-, 4- and 7-port configurations
- Hybrid solutions (USB 2.0/3.1 ports)
- I/O bridging for expanded hub functionality
- FlexConnect technology enabling host swapping
- USB Type-C support including integrated MUX
- MPLAB® Code Configurator tool for application customization
- USB-IF battery charger v1.2 and legacy devices

USB Power Delivery

- USB-IF compliant Power Delivery (PD) controllers
- Integrated USB Type-C/PD PHY
- Integrated VCONN FETs with OCP
- I^2C/SPI interface to MCU/SoC
- UFP/DFP/DRP modes
- Alternate mode capable
- Total system solution with USB Hubs and embedded controllers

USB 2.0 Media Card Bridges

- Ultra-fast Flash media reader/writer for external memory card storage including embedded Flash memory
- Supports SD™, MMC/eMMC interfaces
- Supports 1- and 2-port Smart Card interfaces
- Fully compliant with ISO/IEC 7816, EMV 4.2/4.3, ETSI TS 102 221 and PC/Smart Card standards
- Integrated hub combo devices
- Fully configurable VID and PID

USB 2.0 Transceivers and Switches

- Hi-Speed ULPI+ interface
- Supports USB 2.0 OTG specification
- PHYBoost technology restores USB signal integrity
- VariSense™ technology provides signal level adjustability
- Flexible clocking support for all major frequencies
- Hi-Speed USB 2.0 switch with port protection
- USB-IF battery charger v1.2 and legacy devices
- Highly integrated for small-footprint and low-part-count applications

USB Applications

Universal Serial Bus (USB) specifications created over the last two decades have truly lived up to the term “universal”. With over 4 billion units shipping per year with USB ports, USB is integrated into systems from compact mobile phones to full-size SUVs. Although best known as the technology that enable peripherals to connect to personal computers, USB functionality has expanded over the years, with power delivery capable of providing up to 100W of power to both hosts and devices, increasing data rates to 10 Gbps (USB 3.1 Gen2), and embedded applications where USB is used for on-board connections via USB Hi-Speed Interchip Communication (HSIC).

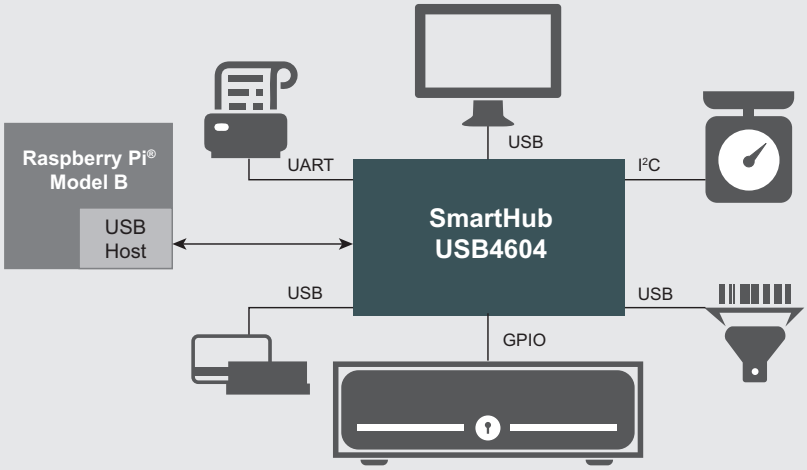
In today’s IoT and automotive applications, Microchip’s USB solutions provide unique products for host/device swapping and integrated Ethernet connectivity. As end systems become more complex, design re-use and system partitioning are vital elements in system design. USB plays a key role for connecting sub-systems with a proven protocol and a wide variety of class drivers to address applications needs from communications, human-interface devices, video streaming, printing and many more.

Microchip offers a range of USB solutions covering USB 2.0 Hi-Speed, 480 Mbps speeds and USB 3.1 SuperSpeed 5 Gbps and 10 Gbps solutions, with chip-level integration for USB physical layer devices, USB switches, USB hubs and USB combination hubs that include Ethernet ports and media card support. With patented technologies, including FlexConnect, SmartHub and Multi-Host to name a few, Microchip adds unique features that will enhance and differentiate your system functionality.

Typical Applications

- Docking stations
- LCD monitors
- HDTVs
- Expansion hubs
- PC motherboards
- Gaming consoles
- Multi-function printers
- Cable/DSL modems
- Set-top boxes
- DVD/CD-ROM/DVR
- Digital still and video cameras
- Portable media players
- Entertainment devices
- Video record/playback systems
- Smart phones
- Storage drives
- Headsets
- Media players
- GPS personal navigation
- External hard drives
- Server front/back panels
- Keyboards and KVM switches
- Point-of-Sale (POS) systems
- IP telephony
- Auto/home audio systems
- Industrial products

Example Point-of-Sale System Showing Six Subsystems







USB SmartHubs

A SmartHub is a USB hub that integrates system-level functions typically associated with a separate MCU or processor. Imagine the SmartHub as having an “extra” port to handle host communication outside of USB. By adding the extra port, you gain the ability for the host to interact with peripheral components under the USB umbrella without the need for special bridge ICs. Plus the downstream port used for the external bridge IC is now available for other USB functionality. I/O bridging and FlexConnect are two key embedded technologies that make SmartHubs smart. Microchip’s product portfolio includes SmartHubs around USB 2.0 and USB 3.1 solutions.

Importance of SmartHub Capabilities

- Expands functionality beyond traditional hubs
- BOM savings through integration of functionality
- Simplifies hardware design
- Provides flexibility to Host to configure as needed

Other SmartHub Functions

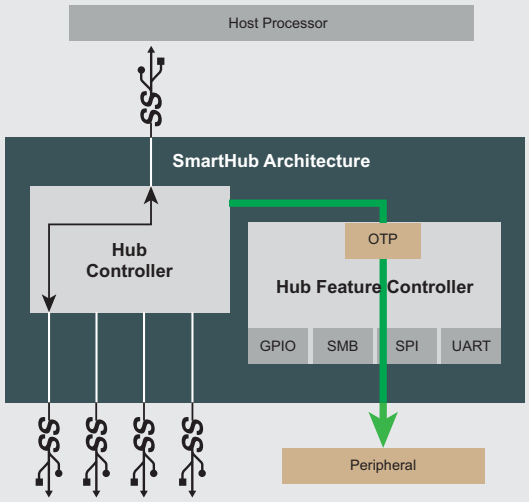
- One Time Programmable (OTP) memory for customization of SmartHub ports
- MPLAB Code Configurator tool for setting the SmartHub configuration or programming SmartHub on manufacturing line
- Availability of configuration straps with predetermined setting to avoid programming entirely


S.M.A.R.T.
simple
realistic
ambitious
measurable
time-framed

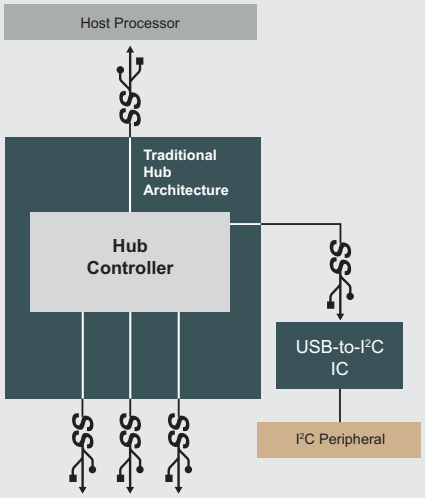
Bridging over USB for I/O Expansion

- A host has the ability to communicate to a non-USB peripheral over USB through a simple set of APIs
  - I²C, SMBus, SPI, UART, GPIO
- Saves added expense of using a separate bridging IC to manage the non-USB peripheral
- Also saves having to use a downstream USB port to interface to the bridging IC

SmartHub I/O Bridging



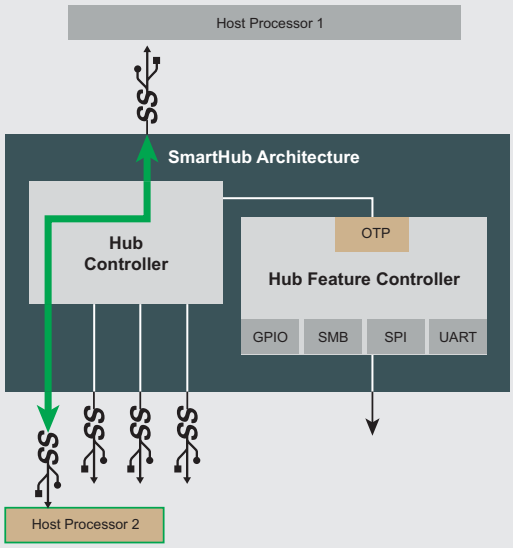
Traditional Hub I/O Bridging



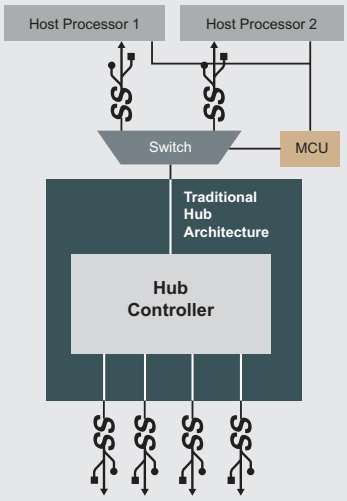
Dynamic Host Switching

- System can be configured to switch between two USB Hosts
- Switch can be enabled through a GPIO pin, a USB Host command or through preboot configuration code
- Remaining downstream device will re-enumerate with new Host once switch has been made
- Saves you the added expense of using a separate 2:1 switch external to the hub
- Also simplifies implementation through dedicated GPIO pins, by setting registers or enabling custom APIs

SmartHub FlexConnect



Traditional Flex Architecture



USB 2.0 Hi-Speed Hubs

Microchip offers a wide selection of USB 2.0 Hi-Speed hubs covering basic hub functionality, as well as feature-enhanced, SmartHubs, giving you the choice to optimize your board for cost and functionality. By offering devices with Hi-Speed Inter-Chip (HSIC) interfaces, you also have the choice to connect from one chip to another over USB directly on the PCB.

At 480 Mbps, USB 2.0 hubs provide a high-speed bus that is well suited for embedded applications, and connecting sub-systems or modules into a complete design. When coupled with Microchip's PIC32MZ family which incorporates USB 2.0 Hi-Speed hosts, you have the key building blocks to create high-performance systems.

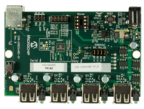
All device types are supported in commercial and industrial temperature ranges, with a unique package offering including wafer-level, chip-scale packages to provide the smallest footprint possible for a USB hub implementation.

USB2422 Hi-Speed USB 2.0 Single TT 2-Port Hub with Battery Charging Evaluation Board (EVB-USB2422)



This board demonstrates a standalone application for the USB2422 low-power, full-featured, configurable Hi-Speed USB 2.0 compliant hub. The board includes two downstream ports with individual port power control and battery charging support on each port.

USB2534 Hi-Speed USB2.0 4-Port Hub with Battery Charging Evaluation Board (EVB-USB2534BC)



The EVB-USB2534BC is a four-layer RoHS-compliant evaluation board that utilizes the USB2534 to provide a fully functional 4-port high-speed hub with battery charging capabilities.

USB2517 Hi-Speed USB 2.0 Multi TT 7-Port Hub Customer Evaluation Board (EVB-USB2517)



The USB2517 with MultiTRAK™ technology is a low-power full-featured High-Speed USB 2.0 compliant hub with seven down-stream ports. This board demonstrates a standalone application for the hub with advanced power saving options and configurable port assignments.

USB4604 Hi-Speed USB 2.0 4-Port SmartHub with Battery Charging Evaluation Board (EVB-USB4604)



The Microchip USB4604 is a low-power, OEM configurable, MTT (Multi-Transaction Translator) USB 2.0 hub controller with four downstream ports and advanced features for embedded USB applications.

USB 2.0 Hub Products

	Downstream Ports	Port Type (Up/Down)	Hub Feature Controller	FlexConnect	Supply/ Internal Reg.	Link Power Management	Charging Profiles	Packages	PHYBoost PortMap PortSwap
USB2422	2*	USB/USB	–	–	3.3V/Yes	–	BC1.1	24-pin SQFN	Yes
USB2517	7	USB/USB	–	–	3.3V/Yes	–	–	64-pin QFN	Yes
USB251xB	2, 3, 4	USB/USB	–	–	3.3V/Yes	–	BC1.1	36-pin SQFN, 36-pin VQFN	Yes
USB3503	3	HISC/USB	–	–	3.3V/Yes	–	BC1.1	25-pin WLCSP, 32-pin SQFN	Yes***
USB3803	3**	USB/USB	–	–	3.3V/Yes	–	BC1.1	25-pin WLCSP	Yes***
USB3813	3	USB/HISC or USB	Yes	Yes	VBUS, VBAT, 3.3V/Yes	Yes	BC1.2, Apple®, China	30-pin WLSCP	Yes***
USB3613	3	HSIC/USB	Yes	Yes	VBUS, VBAT, 3.3V/Yes	Yes	BC1.2, Apple, China	30-pin WLCSP	Yes***
USB253x	2, 3, 4	USB/USB	Yes	Yes	3.3V/Yes	Yes	BC1.2, Apple, China	36-pin SQFN	Yes***
USB46x4	4	USB or HSIC/ USB or HSIC	Yes	Yes	VBUS, VBAT, 3.3V/Yes	Yes	BC1.2, Apple, China	48-pin QFN	Yes***
USB4715	4	USB/USB	Yes	Yes/All ports	3.3V/Yes	Yes	BC1.2, Apple, China	48-pin QFN	Yes***

*Single transaction translator for cost effectiveness **Single port bypass ***Plus VariSense™ Technology

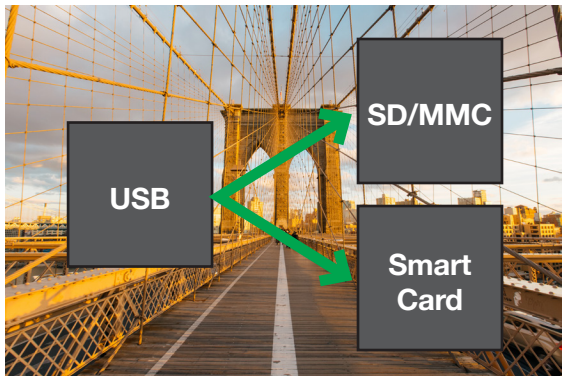
www.microchip.com/USBhubs

USB 2.0 Bridges and Combo Products

Microchip's family of Hi-Speed USB 2.0 bridging controllers provides an ultra-fast interface between a USB host controller and today's most popular Flash media and Smart Cards. Offering comprehensive USB 2.0 compliance and interoperability, each product family is engineered to provide flexibility for system designers to choose independent or simultaneous access to a wide selection of Flash media and Smart Card readers. Microchip's family of full-speed USB 2.0 bridges are low-cost, low-power, single-chip Smart Card controllers with USB or UART interfaces. Up-to-date EMV and USB certifications enhance interoperability with all of the latest and legacy SmartCards and host operating systems.

Key Features

- Low-cost and low-power
- USB 2.0 Hi-Speed, Smart Card bridges
- Single-chip controllers and combo implementations
- SD, SDHC, SDXC, MMC and eMMC Media formats
- Ready-to-use USB Chip Card Interface Device (CCID)
- One-Time Programmable (OTP) memory



USB2642 Hi-Speed USB 2.0 2-Port Hub and Fast Flash Media Reader Evaluation Board (EVB-USB2642)



The EVB-USB2642 is a customer evaluation board that contains an ultra-fast USB 2.0 multi-format Flash media controller, a USB 2-port hub combo and a UCS81001 port power controller with charger emulation. This evaluation board includes a SMBus header interface to monitor I²C traffic from the USB to I²C bridge, as well as either an external I²C EEPROM or SPI Flash device for customized functionality.

Smart Card Bridge to USB2.0/UART Evaluation Board (EVB-SEC1210)



The SEC1210 is a low-cost, low-power, dual port Smart Card controllers with USB or UART interfaces. The SEC1210 utilizes TrustSpan technology which enables digital systems to securely communicate, process, move and store information on system boards, across networks and through the cloud.

USB 2.0 Bridges and Combo Products

Part Number	Hub and/or Bridge	Port Type (Upstream)	Port Type (Downstream)	Supports	Supply/Internal Reg.	USB-to-I²C Bridge	Packages	PHYBoost PortMap PortSwap
USB2244*	Bridge	USB 2.0	Card reader	SD 2.0, MMC 4.2	3.3V/Yes	–	36-pin QFN	–
USB2642*	Hub and Bridge	USB 2.0	2x USB 2.0 plus card reader	SD 2.0, MMC 4.2	1.8V, 3.3V/No	Yes	48-pin QFN	Yes
USB2660*	Hub and Bridge	USB 2.0	2x USB 2.0, plus 2x card reader	SD 2.0, MMC 4.2	3.3V/Yes	–	64-pin QFN	Yes
SEC1110**	Bridge	USB 2.0	SmartCard reader	ISO/IEC 7816	3V to 5.5V/Yes	–	16-pin QFN	–
SEC1210**	Bridge	USB 2.0 or UART	2x SmartCard reader	ISO/IEC 7816	3V to 5.5V/Yes	–	24-pin QFN	–

*Supports SDXC – Extended capacity of 2 TB **Supports EMV 4.2/4.3

www.microchip.com/USBbridges

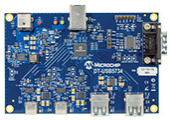
USB 3.1 Gen1 Hubs

Microchip offers a wide selection of USB 3.1 Gen1 SuperSpeed hubs covering basic hub functionality, as well as feature enhanced SmartHubs, giving you the choice to optimize your board design for cost and functionality. By offering devices that support USB Type-C, Microchip also provides you the ability to build a USB subsystem supporting power delivery.

At 5 Gbps, USB 3.1 Gen1 hubs provide a SuperSpeed bus that is well suited for the performance-driven computing platforms as well as embedded applications, and connecting sub-systems or modules into a complete design. When coupled with a high-performance processor which incorporates USB 3 SuperSpeed hosts, you have the key building blocks to create high-performance USB systems.

SmartHubs include unique features, which can add enormous system value. FlexConnect allows for host switching and device swapping which can be used to enable diagnostic support out in the field. With the hub feature controller, a USB hub provides connectivity for I^2C, SPI, GPIO and UARTs interfaces to enable even more connectivity and control in a single chip.

USB 3.1 Gen1 4-Port SmartHub Evaluation Board (EVB-USB5734)



The EVB-USB5734 is a demonstration and evaluation platform for the USB5734 SmartHub on a 4-layer RoHS-compliant Printed Circuit Board (PCB). The 4-port USB5734 is compliant with the USB 3.1 Gen1 USB specification and supports Super Speed (SS), Hi-Speed (HS), Full-Speed (FS) and Low-Speed (LS) USB signaling for complete coverage of all defined USB operation speeds. Five I/O daughter cards are included to demonstrate SmartHub functionality like FlexConnect and I/O bridging.

USB 3.1 Gen1 6-Port SmartHub Evaluation Board (EVB-USB5806)



The EVB-USB5806 is a demonstration and evaluation platform for the USB5806, a 6-Port SS/HS USB SmartHub on a 4-layer RoHS-compliant PCB. The EVB-USB5806 supports six downstream ports that are USB 2.0 and USB 3.1 Gen1 compliant, battery charging on all downstream ports (maximum of 13A) and is configured for operation through internal default settings, SMBus or through an external SPI Flash device.

USB 3.1 Gen1 6-Port SmartHub with USB-C Evaluation Board (EVB-USB5926)



The EVB-USB5926 is a demonstration and evaluation platform for evaluating the USB5926, a 6-Port SS/HS USB SmartHub on a 6-layer RoHS-compliant PCB. The EVB-USB5926 supports six downstream ports; two USB-C USB 3.1 Gen 1 ports with integrated MUX and 4 Type A ports (2x USB Gen1, 2x USB 2.0).

USB 3.1 Gen1 Hub Products

Part Number	Downstream Ports	Port Type (Upstream)	Port Type (Downstream)	Hub Feature Controller (I/O Bridging)	FlexConnect	Billboard Support for Power Delivery	Packages	PortMap (USB 2.0/3.1)/ PortSplit
USB5742	2	Type B	Type A	–	–	–	56-pin QFN	Yes/No
USB5744	4	Type B	Type A	–	–	–	56-pin QFN	Yes/No
USB5734	4	Type B	Type A	Yes	Yes	–	64-pin QFN	Yes/No
USB5807	7	Type B	Type A	–	–	–	100-pin QFN	Yes/Yes
USB5806	6	Type B	Type A	Yes	Yes	Yes	100-pin QFN	Yes/Yes
USB5816	6	Type B	Type A, 1x USB-C™*	Yes	Yes	Yes	100-pin QFN	Yes/Yes
USB5826	6	Type B	Type A, 2x USB-C*	Yes	Yes	Yes	100-pin QFN	Yes/Yes
USB5906	6	USB-C*	Type A	Yes	Yes	Yes	100-pin QFN	Yes/Yes
USB5916	6	USB-C*	Type A, 1x USB-C*	Yes	Yes	Yes	100-pin QFN	Yes/Yes
USB5926	6	USB-C*	Type A, 2x USB-C*	Yes	Yes	Yes	100-pin QFN	Yes/Yes

*USB-C ports include and integrated MUX
Note: All USB 3.1 products support: PHYBoost (USB 2.0), VariSense™ Technology (USB 2.0), BC1.2, Apple®, China charging

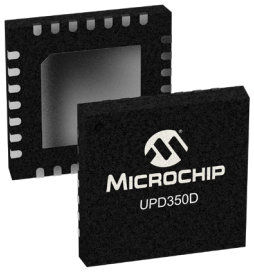
www.microchip.com/USBhubs

USB Power Delivery

Microchip offers a family of USB Type-C/Power Delivery (PD) controllers compliant with USB PD 2.0 and 3.0 specifications. These PD controllers work alongside with Microchip's hubs and Embedded Controllers (ECs), to offer a total USB PD solution. These PD controllers support all PD power schemes, roles, alternate modes and billboard device classes.

The UPD360 is Microchip's original USB Type-C/PD controller, compliant to the USB PD 2.0 specification. UPD360 integrates a 15W (5V/3A) port power switch, VCONN FETs, PD MAC and PHY in a 44-ball BGA package. The UPD360 connects to system controllers (Hubs/ECs) via I²C or SPI interfaces. The 16 programmable GPIOs can be configured to control power subsystems, muxes and switches.

The UPD350D is Microchip's second generation USB Type-C/PD controller compliant to the USB PD 3.0 specification, including Fast Role Swap signaling. UPD350 integrates VCONN FETs, PD MAC and PHY in a 28-pin QFN package. The UPD350 connects to system controllers (Hubs/ECs) via I²C or SPI interfaces. The 10 programmable GPIOs can be configured to control power subsystems, muxes and switches.



Key Features

- Supports all PD power schemes and roles (UFP, DFP and DRP)
- Management of power supplies, alternate mode (DisplayPort)
- USB Type-C mux control
- Support for billboard device classes

USB Power Delivery Products

Part Number	Interface	Interface Voltage	PD Type	GPIOs	Supports	Features	Packages
UPD360-A	I²C	1.8V	2.0	16	UFP, DFP, DRP, DB	15W Switch, VCONN FETs, OC and OV sensing	44-ball BGA
UPD360-B	I²C	3.3V	2.0	16	UFP, DFP, DRP, DB	15W Switch, VCONN FETs, OC and OV sensing	44-ball BGA
UPD360-C	SPI	–	2.0	16	UFP, DFP, DRP, DB	15W Switch, VCONN FETs, OC and OV sensing	44-ball BGA
UPD350-A	I²C	1.8–3.3V	3.0	10	FRS, UFP, DFP, DRP, DB	VCONN FETs, OC and OV sensing	28-pin QFN
UPD350-B	SPI	–	3.0	10	FRS, UFP, DFP, DRP, DB	VCONN FETs, nOC and OV sensing	28-pin QFN
UPD350-C	I²C	1.8–3.3V	3.0	10	FRS, UFP, DFP, DRP	VCONN FETs, OC and OV sensing	28-pin QFN
UPD350-D	SPI	–	3.0	10	FRS, UFP, DRP, DRP	VCONN FETS, OC and OV sensing	28-pin QFN

www.microchip.com/powerdelivery

USB 2.0 PHYs and Switches

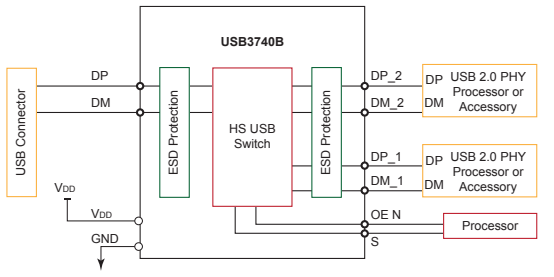
Microchip's families of Hi-Speed USB 2.0 transceivers deliver enhanced USB functionality for the portable market with support for the latest USB-IF Battery Charging (BC 1.2) specification. This family of devices dramatically reduces system Bill of Material (BOM) costs by up to 60% over competitive solutions.

Microchip's family of Hi-Speed USB switches are specifically designed to enable a range of applications to achieve single-port connectivity. Their design provides a substantial 1 GHz of bandwidth, allowing for the passage of robust USB 2.0 signals. High-performance USB 2.0 switches provide excellent flexibility, with very-low current consumption in an extremely small package.

Key Features

- Single-port connectivity
- 1 GHz of bandwidth
- Integrated port detection and protection
- Extremely-small footprint (WLCSP)
- Excellent ESP protection
- Over-Voltage (OVP) and Under-Voltage (UVP) protection
- RapidCharge Anywhere technology
- USB-IF battery charging-compliant (BC1.2)

USB Switching Diagram



USB3330 Transceiver with ULPI Interface, RapidCharge Multi-Frequency Reference Clock Evaluation Board



The USB333x family of Hi-Speed USB 2.0 transceivers delivers enhanced USB functionality for the portable market with support for the latest USB-IF Battery Charging 1.2 (BC 1.2) specification. This board provides an excellent compliment to USB charging ports by enabling portable devices to negotiate up to three times the charging current compared to a standard USB port, resulting in faster battery charging.

Hi-Speed USB2.0 Switch Evaluation Board (EVB-USB3740)



The USB3740 family of Hi-Speed USB switches were specifically designed to enable a range of applications to achieve single-port connectivity. Their design provides a substantial 1 GHz of bandwidth, allowing for the passage of robust USB 2.0 signals.

Part Number	PHY or Switch	Port Type (Upstream)	Reference Clock	Supply/Internal Reg.	I²C Interface	Charging Profiles	Packages	Dead Battery Support
USB333x	PHY	ULPI	Multi, 19.2, 26, 38.4 MHz	1.8V, 3.3V/Yes	–	–	25-pin WLCSP	–
USB334x	PHY	ULPI	Multi, 19.2, 26, 27 MHz	1.8V, 3.3V/Yes	–	–	24- or 32-pin QFN	–
USB3740	Switch	USB 2.0	–	5V/No	–	–	10-pin QFN	–
USB3750A-1	Switch	USB 2.0	–	5V/No	Yes	BC 1.2, Apple®, China	16-pin QFN	–
USB3751A-x	Switch	USB 2.0	–	5V/No	Yes	BC 1.2, Apple, China	16-pin QFN	Yes

www.microchip.com/switches

USB Automotive Support

Microchip provides innovative USB products for the automotive segment, with complete AEC-Q100 qualification. Whether your design needs a high-performance switch, a ULPI transceiver, USB Type-C support, USB power delivery, card readers, USB 2.0 Hi-Speed or USB 3.1 SuperSpeed Hubs, Microchip offers high-quality proven automotive solutions. Coupled with comprehensive support, including evaluation boards, demo applications, datasheets, applications notes and dedicated, automotive field applications, designers throughout the world can be confident when designing with a Microchip automotive USB chip is chosen.





As more and more handsets offer automotive capabilities to render applications from your mobile to the vehicle's display, Microchip has developed unique, patented architectures that are integrated into many of our automotive hubs. In particular, dual-role mechanisms allow the Down Facing Ports (DFP) to switch from host to device, while simultaneously establishing USB data paths to the vehicle's head unit. Three unique methods are available depending upon:

- Bandwidth needs
- USB port type available on the head unit
- Requirement for persistent USB data on the remaining DFPs

By coupling these methodologies with Microchip's SmartHub feature set, you can readily implement your systems without compromise while optimizing board area and overall system cost.

All new Microchip development projects are created with an automotive process, so our product pipeline will continue to deliver automotive-grade solutions for future USB specifications to come.

Part Number	Downstream Ports	USB Technology	Dual Role (Method)	Dual Role with Persistent USB	Battery Charging	SmartHub Bridging	Upstream Ports
USB8251X	2, 3, 4	USB 2.0	–	–	–	–	1 (Host)
USX470X	2, 4	USB 2.0	–	–	BC 1.2, Apple®, China	Yes	1 (Host)
USB8460X	2, 4	USB 2.0	Yes (FlexConnect)	No	BC 1.2, Apple, China	Yes	1 (OTG)
USB4715	4	USB 2.0	Yes (FlexConnect)	No	BC 1.2, Apple, China	Yes	1 (OTG)
USB4914	3	USB 2.0	Yes (Multi-Host)	Yes	BC 1.2, Apple, China	Yes	1 (Host or OTG)
USB4916	5	USB 2.0	Yes (Multi-Host)	Yes	BC 1.2, Apple, China	Yes	1 (Host or OTG)
USB4925	3	USB 2.0	Yes (Dual Upstream)	Yes	BC 1.2, Apple, China	Yes	1 (Host or OTG)
USB4927	5	USB 2.0	Yes (Dual Upstream)	Yes	BC 1.2, Apple, China	Yes	2 (Host or OTG)
USB7002*	4	USB 3.1	Yes (Multi-Host)	Yes	BC 1.2, Apple, China	Yes	1 (Host or OTG)

*CC pin support

Support

Microchip is committed to supporting its customers in developing products faster and more efficiently. We maintain a worldwide network of field applications engineers and technical support ready to provide product and system assistance. For more information, please visit www.microchip.com:

- Technical Support: www.microchip.com/support
- Evaluation samples of any Microchip device: www.microchip.com/sample
- Knowledge base and peer help: www.microchip.com/forums
- Sales and Global Distribution: www.microchip.com/sales

Training

If additional training interests you, Microchip offers several resources including in-depth technical training and reference material, self-paced tutorials and significant online resources.

- Overview of Technical Training Resources: www.microchip.com/training
- MASTERs Conferences: www.microchip.com/masters
- Developer Help Website: www.microchip.com/developerhelp
- Technical Training Centers: www.microchip.com/seminars

Sales Office Listing

AMERICAS

Atlanta, GA
Tel: 678-957-9614
Austin, TX
Tel: 512-257-3370
Boston, MA
Tel: 774-760-0087
Chandler, AZ (HQ)
Tel: 480-792-7200
Chicago, IL
Tel: 630-285-0071
Dallas, TX
Tel: 972-818-7423
Detroit, MI
Tel: 248-848-4000
Houston, TX
Tel: 281-894-5983
Indianapolis, IN
Tel: 317-773-8323
Tel: 317-536-2380
Los Angeles, CA
Tel: 949-462-9523
Tel: 951-273-7800
Raleigh, NC
Tel: 919-844-7510
New York, NY
Tel: 631-435-6000
San Jose, CA
Tel: 408-735-9110
Tel: 408-436-4270
Canada - Toronto
Tel: 905-695-1980

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Denmark - Copenhagen
Tel: 45-4450-2828
Finland - Espoo
Tel: 358-9-4520-820
France - Paris
Tel: 33-1-69-53-63-20
Germany - Garching
Tel: 49-8931-9700
Germany - Haan
Tel: 49-2129-3766-400
Germany - Heilbronn
Tel: 49-7131-67-3636
Germany - Karlsruhe
Tel: 49-721-62537-0
Germany - Munich
Tel: 49-89-627-144-0
Germany - Rosenheim
Tel: 49-8031-354-560

EUROPE

Israel - Ra'anana
Tel: 972-9-744-7705
Italy - Milan
Tel: 39-0331-742611
Italy - Padova
Tel: 39-049-7625286
Netherlands - Drunen
Tel: 31-416-690399
Norway - Trondheim
Tel: 47-7289-7561
Poland - Warsaw
Tel: 48-22-3325737
Romania - Bucharest
Tel: 40-21-407-87-50
Spain - Madrid
Tel: 34-91-708-08-90
Sweden - Gothenberg
Tel: 46-31-704-60-40
Sweden - Stockholm
Tel: 46-8-5090-4654
UK - Wokingham
Tel: 44-118-921-5800

ASIA/PACIFIC

Australia - Sydney
Tel: 61-2-9868-6733
China - Beijing
Tel: 86-10-8569-7000
China - Chengdu
Tel: 86-28-8665-5511
China - Chongqing
Tel: 86-23-8980-9588
China - Dongguan
Tel: 86-769-8702-9880
China - Guangzhou
Tel: 86-20-8755-8029
China - Hangzhou
Tel: 86-571-8792-8115
China - Hong Kong SAR
Tel: 852-2943-5100
China - Nanjing
Tel: 86-25-8473-2460
China - Qingdao
Tel: 86-532-8502-7355
China - Shanghai
Tel: 86-21-3326-8000
China - Shenyang
Tel: 86-24-2334-2829
China - Shenzhen
Tel: 86-755-8864-2200
China - Wuhan
Tel: 86-27-5980-5300
China - Xiamen
Tel: 86-592-2388138
China - Xian
Tel: 86-29-8833-7252

ASIA/PACIFIC

China - Zhuhai
Tel: 86-756-321-0040
India - Bangalore
Tel: 91-80-3090-4444
India - New Delhi
Tel: 91-11-4160-8631
India - Pune
Tel: 91-20-4121-0141
Japan - Osaka
Tel: 81-6-6152-7160
Japan - Tokyo
Tel: 81-3-6880-3770
Korea - Daegu
Tel: 82-53-744-4301
Korea - Seoul
Tel: 82-2-554-7200
Malaysia - Kuala Lumpur
Tel: 60-3-7651-7906
Malaysia - Penang
Tel: 60-4-227-8870
Philippines - Manila
Tel: 63-2-634-9065
Singapore
Tel: 65-6334-8870
Taiwan - Hsin Chu
Tel: 886-3-577-8366
Taiwan - Kaohsiung
Tel: 886-7-213-7830
Taiwan - Taipei
Tel: 886-2-2508-8600
Thailand - Bangkok
Tel: 66-2-694-1351
Vietnam - Ho Chi Minh
Tel: 84-28-5448-2100

10/31/17

MICROCHIP

www.microchip.com

Microchip Technology Inc. | 2355 W. Chandler Blvd. | Chandler AZ, 85224-6199

The Microchip name and logo, Microchip logo and MPLAB are registered trademarks and MultiTRAK, USBCheck and VariSense are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries. USB-C and USB Type-C are trademarks of the USB Implementers Forum. All other trademarks mentioned herein are property of their respective companies. © 2017, Microchip Technology Incorporated. All Rights Reserved. 11/17

DS00002445A