Four Port USB 3.1 Hub USB 3.2 T/R Automotive

Manufacturer:	Microchip Technology, Inc
Package/Case:	VQFN100
Product Type:	Interface ICs
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active
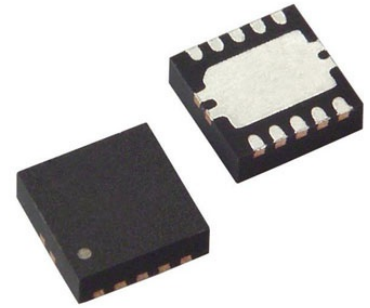
Images are for reference only

Inquiry

General Description

The Microchip USB7002 SmartHub™ IC is a low-power, OEM configurable, USB 3.2 Gen 1 hub controller with 4 downstream ports and advanced features for embedded USB applications. The USB7002 is fully compliant with the Universal Serial Bus Revision 3.2 Specification and USB 2.0 Link Power Management Addendum. The USB7002 supports 5 Gbps Super-Speed (SS), 480 Mbps Hi-Speed (HS), 12 Mbps Full-Speed (FS), and 1.5 Mbps Low-Speed (LS) USB downstream devices on all enabled downstream ports.

A SmartHub IC is defined as a USB hub that integrates system levels functions typically associated with a separate MCU or processor. The USB7002 SmartHub IC enables communication to other peripherals in addition to USB. This I/O Bridging capability allows the host to seamlessly interface to peripherals via I2C, SPI or GPIOs over USB. The USB7002 also enable a downstream device to take control of the host system by swapping roles and becoming the host port. The USB7002 can also switch between two different hosts if required. This role changing technology is called FlexConnect and can be initiated through hardware or software commands.

The USB7002 supports native Type-C connectivity on the upstream port and two of the downstream ports. The hub includes internal Type-C CC pin logic and an internal USB 3.2 Gen 1 multiplexer to support both Type-C insertion orientations. The USB7002 also supports the legacy USB speeds (HS/FS/LS) through a dedicated USB 2.0 hub controller that is the culmination of six generations of Microchip hub feature controller design and experience with proven reliability, interoperability, and device compatibility. The SuperSpeed hub controller operates in parallel with the USB 2.0 controller, decoupling the 5 Gbps SS data transfers from bottlenecks due to the slower USB 2.0 traffic.

The USB7002 supports downstream battery charging. The USB7002 integrated battery charger detection circuitry supports the USB-IF Battery Charging (BC1.2) detection method and most Apple devices. The USB7002 provides the battery charging handshake and supports the following USB-IF BC1.2 charging profiles: DCP: Dedicated Charging Port (Power brick with no data); CDP: Charging Downstream Port (1.5A with data); SDP: Standard Downstream Port (0.5A with data); Custom profiles loaded via SPI EEPROM or OTP.

MPLAB Connect Configurator, Microchip's proprietary software utility, can be used to program On-chip One Time Programmable (OTP) ROM for the USB7002 which stores required register settings to ensure the desired start up configuration at power on. All LED, GPIOs and port control signal pins are under firmware control, allowing for maximum operational flexibility. However, for even more simplicity, the USB7002 can be configured through a series of external low-cost resistor bootstraps. A handful of bootstap pins are available on the USB7002 to enable standard configurations for GPIOs and downstream ports. No OTP programming required..

The USB7002 is also AEC-Q100 certified support traditional data transfer applications that require higher data rates than USB2.0 as well as Multi-Host applications like CarPlay and CarLife that enable the graphical user interface of a phone to be displayed on a vehicles' screen within a car.

Unlike the USB7050/51/52/56, USB7002 applications DO NOT require application-specific firmware developed by Microchip support engineers. There is no native PD firmware included within the USB7002.

*The **USBCheck online design review** service is subject to Microchip's Program Terms and Conditions and requires a myMicrochip account.

Key Features

Four downstream USB3.2 Gen1 / 2.0 ports

Native USB Type-C support on upstream port

Native USB Type-C support on two downstream ports

Integrated Hub Feature Controller (HFC) enabling I/O Bridging and FlexConnect

I/O Bridging: Host communication to external peripherals USB to I2C/SPI/GPIO bridge endpoint support

FlexConnect: Host port Swapping and Switching to downstream Devices Reversible upstream and downstream roles on command

Battery Charging - USB-IF rev1.2 support on downstream ports (DCP, CDP, SDP) including legacy Apple® iOS, Blackberry®, China Charging and many others

Compatible with MSFT Windows 10, 8, 7, XP, Apple OS X 10.4+, and Linux hub drivers

Available in 100-pin (12mm x 12mm) VQFN RoHS compliant package

Industrial grade temperature support (−40°C to +85°C)

Automotive qualified (AEC-Q100) and PPAP support

Recommended For You

USB3320C-EZK-TR	USB3343-CP-TR	USB3318-CP-TR
Microchip Technology, Inc	Microchip Technology, Inc	Microchip Technology, Inc
QFN32	QFN24	QFN24
USB2513B-I/M2	USB3315	USB2504-JT
Microchip Technology, Inc	Microchip Technology, Inc	Microchip Technology, Inc
QFN36	QFN	QFP64
USB3318	USB3318C-CP-TR	USB3340-EZK-TR
Microchip Technology, Inc	Microchip Technology, Inc	Microchip Technology, Inc
QFN	QFN24	QFN32
USB2422T-I/MJ	USB3503AI-1-GL-TR	USB2660I-JZX-03
Microchip Technology, Inc	Microchip Technology, Inc	Microchip Technology, Inc
SQFN24	WLCSP25	QFN

USB2507-ADT

Microchip Technology, Inc

QFP

USB2641-HZH-02

Microchip Technology, Inc

QFN

USB3317C-CP-TR

Microchip Technology, Inc

QFN24