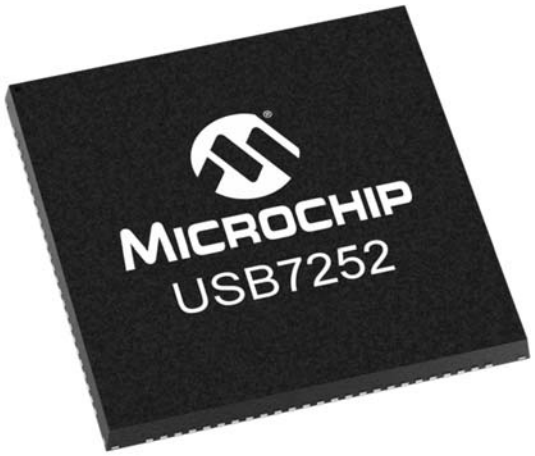
THE DATASHEET OF

USB7252/KDX

USB7252



Device Overview

Summary

The Microchip USB7252 SmartHub™ IC is a low-power, OEM configurable, USB 3.1 Gen 2 hub controller with 4 downstream ports and advanced features for embedded USB applications. The USB7252 is fully compliant with the Universal Serial Bus Revision 3.1 Specification and USB 2.0 Link Power Management Addendum. The USB7252 supports 10 Gbps Super-Speed Plus (SS+), 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 USB7252 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 USB7252 also enable a downstream device to take control of the host system by swapping roles and becoming the host port. The USB7252 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 USB7252 supports native Type-C connectivity on two of the downstream ports. The hub includes internal Type-C CC pin logic and an internal USB 3.1 Gen 2 multiplexer to support both Type-C insertion orientations. The USB7252 supports an additional 2 Type A ports downstream - 1 x USB3.1 Gen2 and 1 x USB2.0. The hub also supports 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 Plus hub controller operates in parallel with the USB 2.0 controller, decoupling the 10 Gbps SS data transfers from bottlenecks due to the slower USB 2.0 traffic.

The USB7252 supports downstream battery charging through integrated battery charger detection circuitry supporting the USB-IF Battery Charging (BC1.2) detection method and most Apple devices. The USB7252 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 USB7252 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 USB7252 can be configured through a series of external low-cost resistor bootstraps. A handful of bootstap pins are available on the USB7252 to enable standard configurations for GPIOs and downstream ports. No OTP programming required.

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Additional Features

- **Four downstream USB3.1 Gen2 / 2.0 ports**
  - Legacy USB Type B 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)**

RoHS Information

Part Number	Device Weight (g)	Shipping Weight (Kg)	Lead Count	Package Type	Package Width	Solder Composition	JEDEC Indicator	RoHS	China EFUP
USB7252/KDX	0.295100	1.250000	100	VQFN	12X12X0.9mm	Matte Tin	e3	RoHS	e
USB7252T/KDX	0.295100	0.686400	100	VQFN	12X12X0.9mm	Matte Tin	e3	RoHS	e

To see a complete listing of RoHS data for this device, please Click here
Shipping Weight = Device Weight + Packing Material weight. Please contact sales office if device weight is not available.

Parametrics

Name	Value
Upstream Port	USB3.1 Gen2
USB Speed	USB3.1 Gen2
Downstream Ports	4
SmartHub	Yes
MGMT I/F	I2C
ROM I/F	SPI
Op Voltage (V)	3.3
MultiTRAK Tech	Yes
PortMap	Yes
PortSwap	Yes
TrueSpeed	Yes
PHYBoost	Yes
Temp. Range Min.	-40
Temp. Range Max.	85

https://www.microchip.com/wwwproducts/en/USB7252/4-7-20

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