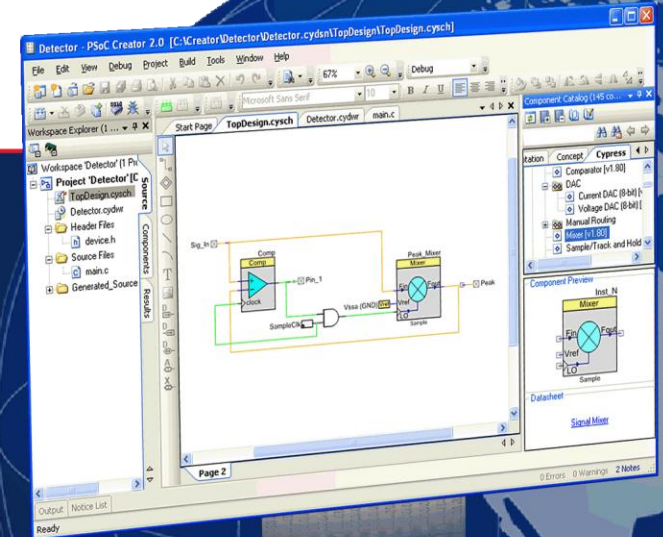




Solution Example EZ-USB HX3C: USB 3.0 Type-C Hub With Power Delivery



Simplify USB Type-C Docks and Adapters With the
World's First One-Chip USB 3.0 Type-C Hub Controller

HX3C: USB 3.0 Type-C Hub¹ With Power Delivery (PD)²



Applications

USB Type-C charging Hubs¹, adapters and accessories
 Docking stations for notebook PCs and tablets
 Televisions and monitors
 PC motherboards and servers
 Set-top boxes, home gateways and routers

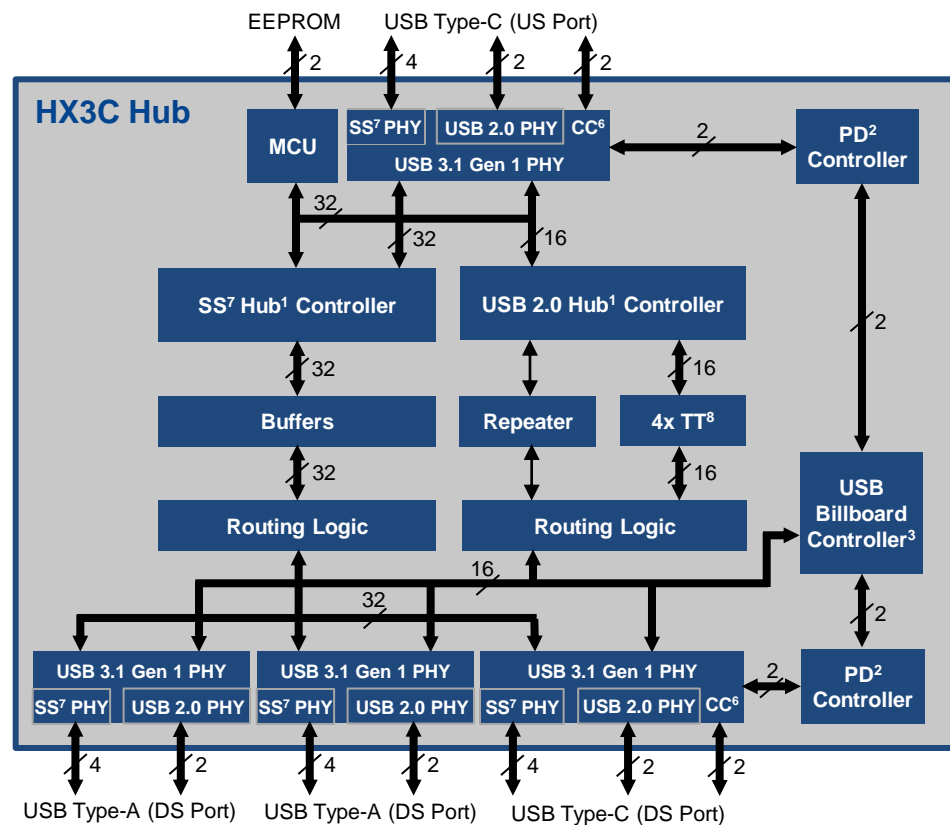
Features

USB 3.1 Gen 1-compliant Hub¹ controller
 Upstream (US): Type-C
 Downstream (DS): 1 Type-C and 2 Type-A ports
 Integrated Type-C transceivers, supporting two ports
 Integrated DFP (R_P) and UFP (R_D) termination resistors
 Integrated USB Billboard Controller³
 Charging Support: USB PD², BC v1.2⁴, Apple Charging Standard⁵
 PD policy engine configures power profiles dynamically
 Ghost Charge™: Charging DS without US connection
 Firmware upgradable over USB
 System-Level ESD on CC⁶ Pins: 8 kV contact, 15 kV air-configurable USB SS⁷ and USB 2.0 PHY (drives 11" trace)
 121-ball BGA (10 mm x 100 mm, 0.8 mm ball-pitch)

Collateral

Datasheet: [HX3C Datasheet](#)
 Product Overview: [HX3C Overview](#)
 App Note: [EZ-USB™ HX3C: USB Type-C Hub with Power Delivery](#)

Block Diagram



Availability

Production: Now

¹ Directs data traffic between a USB Host and multiple USB Devices

² A new USB standard that increases power delivery over V_{BUS} from 7.5 W to 100 W

³ A USB Device controller that is used to implement the USB Billboard Device Class
 Informs the USB Host of the supported Alternate Modes as well as any failures

⁴ A specification published by the USB Implementers Forum (USB-IF) for charging portable USB Devices

⁵ An Apple-specified battery charging standard for the iPhone, iPod and iPad

⁶ Configuration Channel

⁷ USB SuperSpeed

⁸ Transaction Translator

HX3C Solution Example: USB Type-C Dock With PD¹

Cypress Solution Value

Design Challenges

- Ensure USB interoperability
- Provide a mix of USB Type-A and Type-C ports
- Support multiple USB charging standards, including PD¹ 2.0
- Support firmware update to keep up with USB standard changes

HX3C Solution

- Works with all known controllers; tested at USB plug-fests
- Provides 1 Type-C US², 1 Type-C and 2 Type-A DS³ ports
- Supports USB-PD¹, BC 1.2⁴ and Apple Charging Standard⁵
- Supports field upgrades with fully compliant firmware

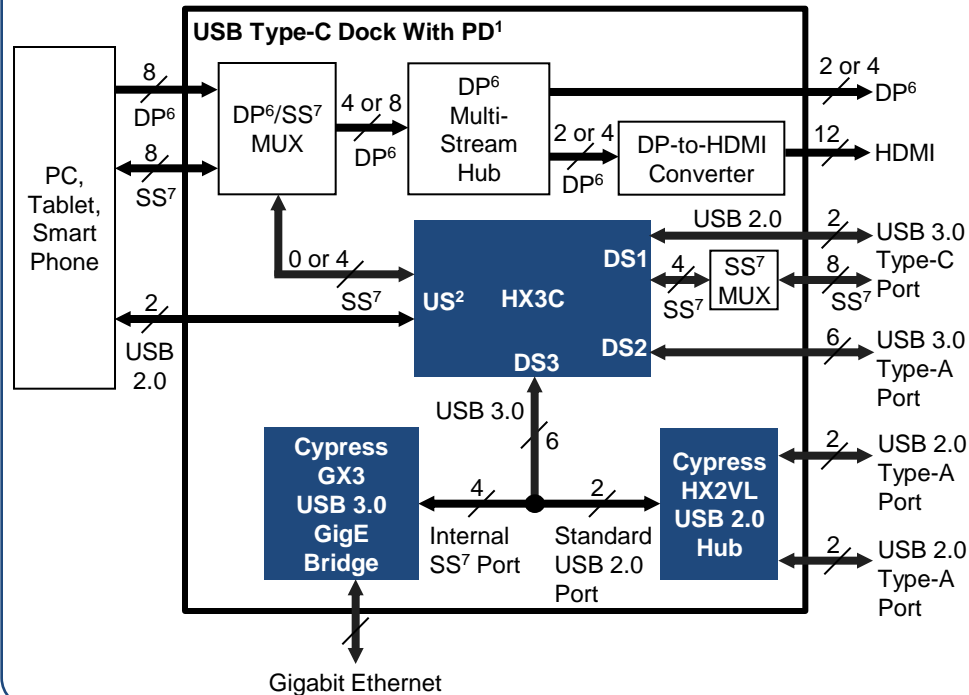
Suggested Collateral

- Datasheet: [HX3C Datasheet](#)
- Product Overview: [HX3C Overview](#)
- App Note: [EZ-USB™ HX3C: USB Type-C Hub with Power Delivery](#)
- Demo Video: [HX3C Video](#)

How to Get Started

- Download the [HX3C Datasheet](#)
- Read the [HX3C Knowledge Based Articles](#)
- Watch the [HX3C Demo Video](#)
- Contact Cypress for a [HX3C USB Type-C Dock RDK](#)

Block Diagram



Lumia 950 Docking Station
By Microsoft



USB Docking Station
By Anker



¹ A new USB standard that increases power delivery over V_{BUS} from 7.5 W to 100 W
² Upstream port of a USB Hub
³ Downstream port of a USB Hub
⁴ A specification published by the USB Implementers Forum for charging portable USB Devices
⁵ An Apple-specified battery charging standard for the iPhone, iPod and iPad
⁶ DisplayPort
⁷ SuperSpeed USB, operating at 5 Gbps

HX3C Solution Example: USB Type-C Adapter With PD¹

Cypress Solution Value

Design Challenges

Ensure USB interoperability
Provide a mix of USB Type-A and Type-C ports
Support multiple USB charging standards, including PD¹ 2.0
Support firmware update to keep up with USB standard changes

HX3C Solution

Works with all known controllers; tested at USB plug-fests
Provides 1 Type-C US², 1 Type-C and 2 Type-A DS³ ports
Supports USB PD¹, BC 1.2⁴ and Apple Charging Standard⁵
Supports field upgrades with fully compliant firmware

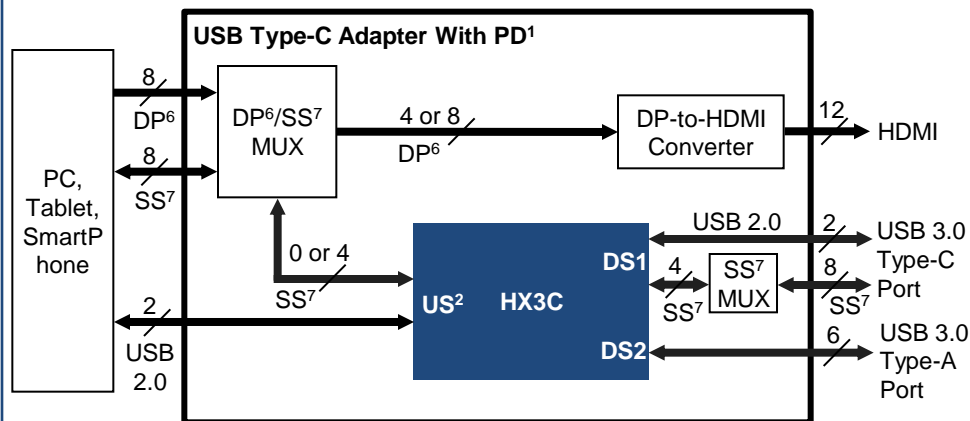
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Block Diagram



USB Type-C Adapter
By Hyper



USB Type-C Adaptor
By Comsol



¹ A new USB standard that increases power delivery over V_{BUS} from 7.5 W to 100 W

² Upstream port of a USB Hub

³ Downstream port of a USB Hub

⁴ A specification published by the USB Implementers Forum for charging portable USB Devices

⁵ An Apple-specified battery charging standard for the iPhone, iPod and iPad

⁶ DisplayPort, a digital display interface standard developed by the Video Electronics Standards Association (VESA)

⁷ SuperSpeed USB, operating at 5 Gbps