



Cypress Roadmap: USB

Q4 2018



USB Portfolio

	Device	Hub	Bridge	Storage	Type-C		
USB 3.1	CYUSB301x FX3 32-Bit Bus to USB 3.1 Gen 1 ARM9, 512KB RAM FX3Gen2 USB 3.1 Gen 2 Peripheral Controller Contact Sales	CYUSB33xx HX3 USB 3.1 Gen 1, Shared Link™ ¹ BC 1.2 ² , Ghost Charge™ ³ CYUSB333x HX3C 4 Ports: 1 Type-C, 3 Type-A USB PD, Billboard, BC1.2 ² NEW CYUSB43xx HX3PD Q119 USB 3.1 Gen 2 Type-C Hub 7 Ports, PD, Billboard, 10 Gbps	CYUSB306x CX3 CSI-2 ⁴ to USB 3.1 Gen 1 4 CSI-2 ⁴ Lanes, 1 Gbps/Lane CYUSB361x GX3 USB 3.1 Gen 1 to GigE Energy Efficient Ethernet	CYUSB303x FX3S 16-Bit Bus to USB 3.1 Gen 1 RAID ⁵ , Dual SDXC ⁶ /eMMC ⁷ CYUSB302x SD3 USB 3.1 Gen 1 SD Reader SDXC ⁶ /eMMC ⁷ , RAID ⁵	CYPD1xxx CCG1 USB Type-C Port Controller 1 PD Port, 5 Profiles, 100 W CYPD2xxx CCG2 USB Type-C Cable Controller 1 PD Port, Termination, ESD CYPD3xxx CCG3 USB Type-C Port Controller 20-V, Crypto, Billboard CYPD4xxx CCG4/CCG4M USB Type-C Port Controller 2 PD Ports, 128KB Flash, Mux CYPD5xxx CCG5/CCG5C USB Type-C Port Controller 2 PD Ports, V _{BUS} short protection NEW CYPD612x CCG6 Q119 USB Type-C Port Controller 1 PD Port, Load S/W Cntrl, TBT NEW CYPD612x CCG6F Q119 USB Type-C Port Controller Contact Sales	CYPD317x CCG3PA USB Type-C Port Controller 30V, PPS, QC4, 64KB Flash CYPD118x CCG3PA2 USB Type-C Port Controller 30V, PPS, QC4, 128KB Flash NEW CYPD27xx CMG1 Q418 USB Type-C EMCA Controller PD 3.0, V _{BUS} short protection NEW CYPAS1xx PAG1S Q119 Secondary-side Controller Contact Sales NEW CYPAP1xx PAG1P Q219 Primary-side Start-up Controller Contact Sales CYAC1xxx ACG1F USB Type-C Port Controller Contact Sales	
	USB 2.0	CY7C6801x/53 FX2LP 16-Bit Bus to USB 2.0 8051, 16KB RAM CYUSB201x FX2G2 32-Bit Bus to USB 2.0 ARM9 512KB RAM	CY7C656x4 HX2VL 4 Ports 4 Transaction Translators CY7C656x1 HX2LP 4 Ports, Industrial Grade 1 Transaction Translator	CY7C6803x/3xx NX2LP/AT2LP NAND Flash/PATA to USB 2.0 8051	CYWB0x2xABS Arroyo™, Astoria™ 16-Bit Bus to USB 2.0 8051, Dual SD/eMMC ⁷ CYWB016xBB Bay™ HS USB OTG Dual SDXC ⁶ /eMMC ⁷	Host	
		CY7C638xx/64215/643xx enCoRe™ II/III/V M8C MCU, GPIOs SPI, Flash CY7C65210/7 USB Billboard ARM Cortex M0 1 or 2 UART/SPI/I ² C channels		CY7C6521x USB-Serial UART/SPI/I ² C to USB 2 Channels, CapSense® CY7C65213 USB-to-UART (Gen 2) 3 Mbps, 8 GPIOs	SL811HS FS USB Host/Device 256Byte RAM CY7C67300/200 EZ-Host/EZ-OTG™ 4/2 Ports, FS USB OTG GPIOs		
USB 1.1							

Type-C products apply to any USB speed

¹ Simultaneous USB 2.0 and SuperSpeed traffic on the same port
² Battery Charging specification v1.2

³ Enables USB charging without host connection
⁴ Camera Serial Interface v2.0

⁵ Redundant array of independent disks
⁶ SD extended capacity

⁷ Embedded Multimedia Card

Status Availability

Concept	Development	Sampling	Production



EZ-PD CMG1

USB Type-C Passive EMCA Controller

Applications

USB-C EMCA

Features

- USB-C PD Controller, PD 3.0 Transceiver
- V_{BUS} -to-CC Short Protection
- V_{BUS} -to- V_{CONN} Short Protection
- Power from V_{CONN} range 3.0 to 5.5-V
- Termination Resistor R_A
- Supports R_A Weakening to Reduce Power Consumption
- Configurable 32-byte Storage for Configuration Over Type-C Interface
- Integrated oscillator eliminating the need for external clock
- Power Operation
 - 2.7-V to 5.5-V operation (V_{CONN} pin)
 - Active: 7.5 mA
 - Sleep: 1 mA
- System-Level ESD on CC, V_{CONN} Pins
 - ± 8 -kV contact, ± 15 -kV Air Gap IEC61000-4-2 level 4C
- Packages
 - 9-ball WLCSP (1.95 mm²)
 - Supports industrial temperature range (-40°C to +85°C)

Collateral

Preliminary Datasheet: [CMG1 Datasheet](#)

CMG1: USB Type-C Passive EMCA Controller

USB PD Subsystem

V_{BUS} -to-CC
Short Protection

V_{BUS} -to- V_{CONN1}
Short Protection,
 R_A

V_{BUS} -to- V_{CONN2}
Short Protection,
 R_A

USB PD & Type-C PHY

EMCA Protocol Engine

Storage

32-Byte Storage for
Configuration

System Resources

Oscillator

Reset

VREF

IREF

Availability

Samples: Now Production: Q4 2018

CCG6

Single-Port USB Type-C and PD Port Controller

Applications

Thunderbolt / non- Thunderbolt Desktop, Notebook

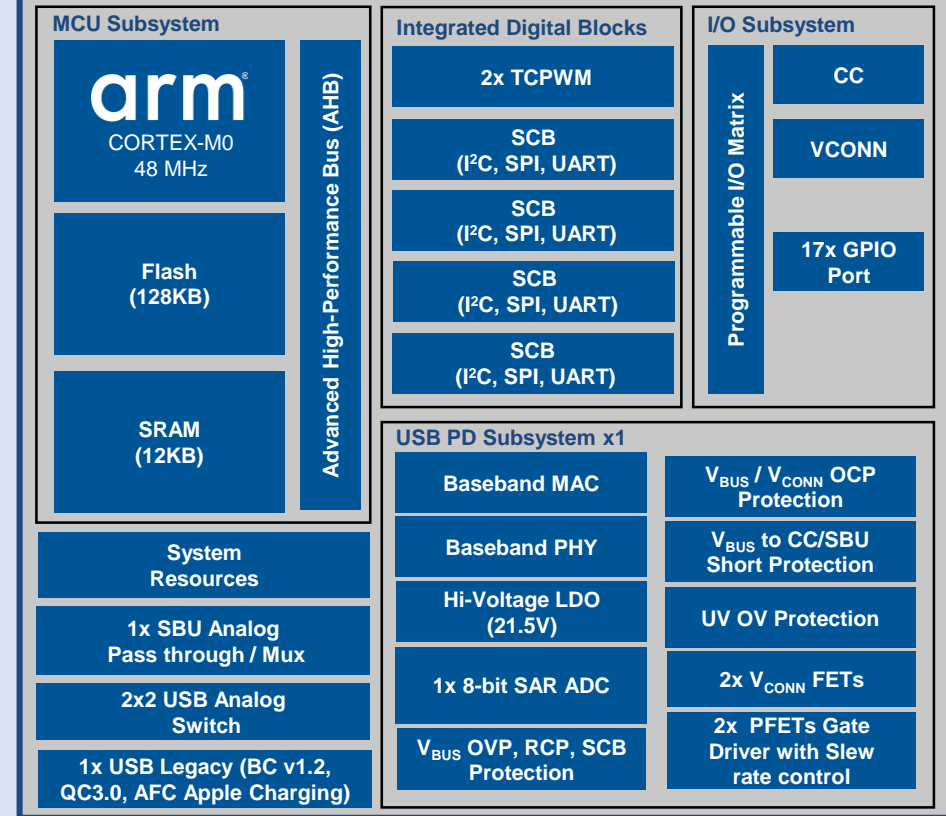
Features

- **Type-C/Power Delivery 3.0** transceiver and TBT, DP Alt Mode and USB platforms
- V_{BUS} to CC/SBU short protection
- **Integrated high-voltage 20V-regulator** to power CCG6
- **Integrated Analog Blocks**
2x1 SBU analog mux, 2x2 USB analog mux
Configurable V_{BUS} over-voltage protection and over-current protection
High-side current sense³ amplifier across 5mohms
Legacy charge-detect block (BC v1.2, QC3.0, AFC, Apple Charging)
- **Integrated Digital Blocks**
Two timers, counters and pulse-width modulators, 17x GPIOs
Four SCBs¹ for configurable master/slave I2C, SPI or UART
- **ARM® Cortex®-M0 with MCU Subsystem and 128KB flash**
- **Power System**
High-voltage (4 - 21.5 V, 26 V Max) V_{BUS} voltage inputs
2x V_{CONN} FETs supporting up to 500 mA, Supports Dead Battery mode operation
- **Integrated PFET gate drivers and Slew Rate Control**
- **VBUS Over Voltage Protection and Reverse Current Protection** on provider path
- **Packages**
96 BGA (6x6 mm)

Collateral

Preliminary Datasheet: [Contact Sales](#)

CCG6F: Single-Chip Type-C Controller



Availability

Sampling: Now

Production: Q1 2019

¹ Serial communication block configurable as UART, SPI or I²C

² Analog feedback control circuit to regulate V_{BUS}

³ Circuit to measure the current flowing on the V_{BUS}

⁴ Timer/counter/pulse-width modulator block

⁵ Termination resistors: R_p read as a DFP, R_D as a UFP

EZ-USB HX3PD

USB 3.1 Gen 2 Type-C Hub with Power Delivery

Applications

Notebook/tablet docking stations, monitor docks, multi-function USB Type-C peripherals

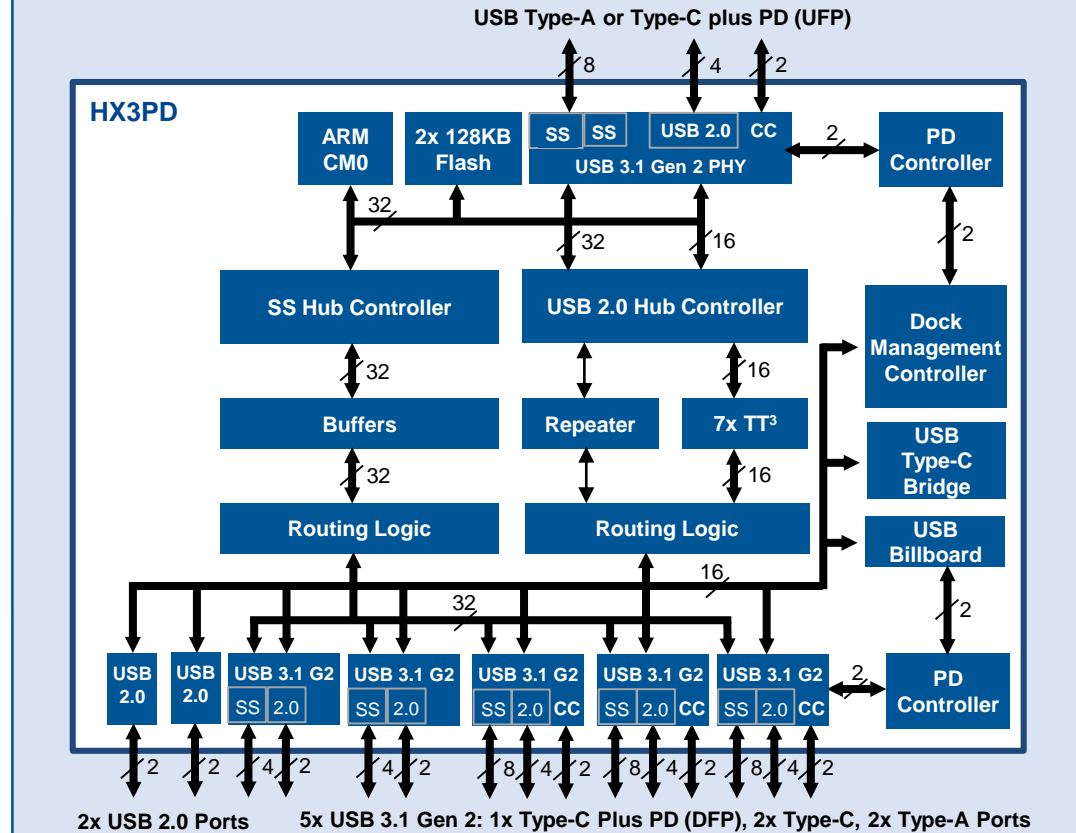
Features

- **USB 3.1 Gen 2-Compliant Hub Controller with Type-C and PD**
- **Upstream (US) ports:**
 - 10 Gbps; Type-A or Type-C plus PD (UFP)
- **Downstream (DS) ports:**
 - 7 ports: 5x 10 Gbps, 2x 480 Mbps
 - 3 Type-C ports: 1 PD port (DFP), 2 Type-C only
- **Integrated Type-C Transceivers and Dual-PHY for Type-C plug orientation correction**
 - Integrated termination resistors (R_P and R_D)¹
 - Integrated USB Billboard Controller², USB Type-C Bridge Controller
 - Integrated V_{CONN} FETs and ADC for overvoltage and overcurrent protection
- **Charging Support**
 - USB PD, BC v1.2, Apple Charging Standard, QC 4.0, Samsung AFC
 - USB PD policy engine configures power profiles dynamically
- **Ghost Charge™:** Charging DS without US connection
- **Dock Management Controller for secured firmware download**
 - Firmware upgradable over USB
- **System-Level ESD on Configuration Channel (CC) Pins:** 8 kV Contact, 15 kV Air
- **Package:** 192-ball BGA (12 mm x 12 mm x 1 mm, 0.8-mm ball-pitch)

Collateral

Datasheet: [HX3PD Datasheet](#)
Kit: [HX3PD Evaluation Kit](#)

HX3PD: USB 3.1 Gen 1 Type-C PD Hub



Availability

Samples: Now **Production:** Q1 2019

¹ Termination resistors: R_P read as a DFP, R_D as a UFP ² A USB Device controller that is used to implement the USB Billboard Device Class ³ Transaction Translator
Informs the USB Host of the supported Alternate Modes as well as any failures

EZ-PD CCG2

USB Type-C and PD Port Controller

Applications

USB Type-C Electronically Marked Cabled Assembly (EMCA) and powered accessories

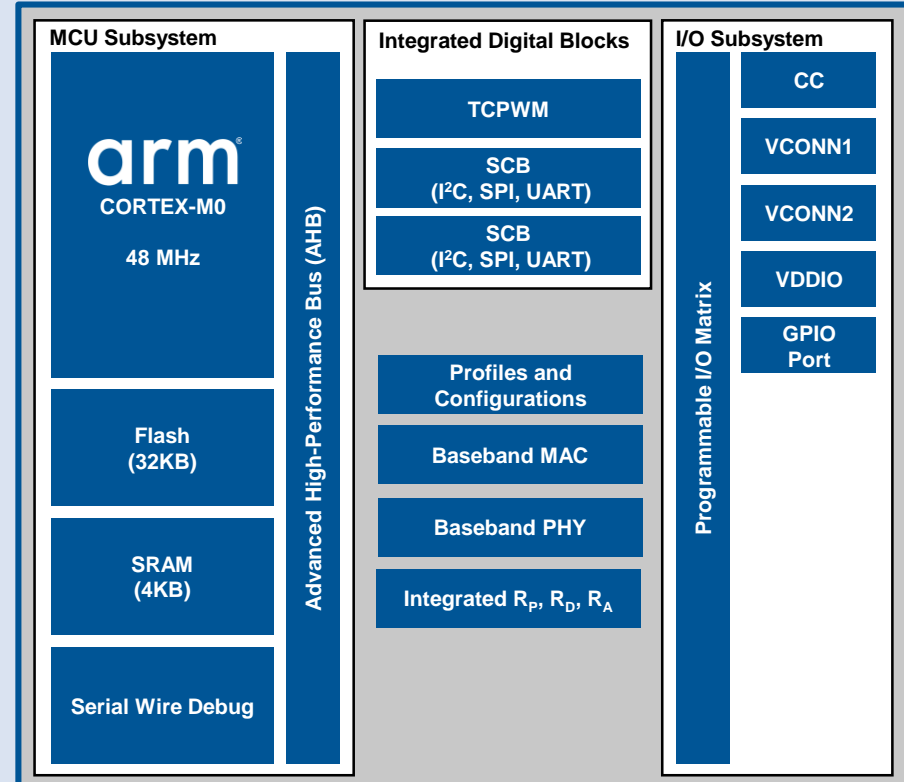
Features

- **32-bit MCU Subsystem**
 - 48-MHz ARM® Cortex® -M0 CPU with 32KB Flash and 4KB SRAM
- **Integrated Digital Blocks**
 - Integrated timer/counter/pulse-width modulators (TCPWMs)
 - Two SCBs¹ configurable to I²C, SPI or UART modes
- **Type-C Support**
 - Integrated transceiver, supporting one Type-C port
 - Integrated termination resistors (R_P , R_D , R_A)²
- **Power Delivery (PD) Support**
 - Standard power profiles
- **Low-Power Operation**
 - Two independent V_{CONN} rails with integrated isolation
 - Independent supply voltage pin for GPIO
 - 2.7–5.5-V operation; Sleep: 2.0 mA; Deep Sleep: 2.5 μ A
- **System-Level ESD on CC and VDD Pins**
 - ± 8 -kV Contact, ± 15 -kV Air Gap IEC61000-4-2 Level 4C
- **Packages**
 - 20-ball CSP (3.3 mm²) with 0.4-mm ball pitch, 14-pin DFN (2.5 x 3.5 mm) with 0.6-mm pin pitch and 24-pin QFN (4 mm²) with 0.55-mm pin pitch

Collateral

Datasheet: [CCG2 Datasheet](#)
Reference Design Kit: [CCG2 RDK](#)
Evaluation Kit: [CCG3 EVK](#)

CCG2: USB Type-C Port Controller With PD



Availability

Production: Now

¹ Serial communication block configurable as UART, SPI or I²C

² Termination resistors: R_P read as a DFP, R_D as a UFP, R_A as an EMCA

EZ-PD CCG3

USB Type-C and PD Port Controller

Applications

Accessories and power adapters

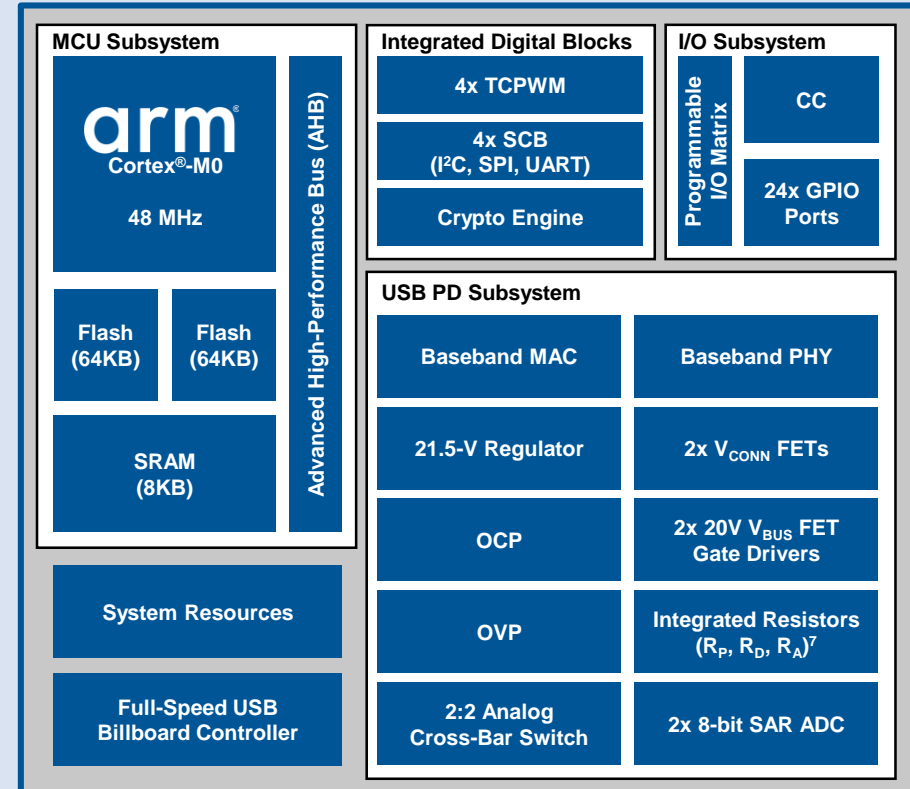
Features

- **One Type-C Port with Integrated Transceiver**
 - Alternate Modes¹, Crypto Engine² for USB Authentication³
- **Power Delivery (PD) Support for Standard Power Profiles**
- **Integrated Digital Blocks for V_{BUS} Power and MUX Interface**
 - 4 timers/counters/pulse-width modulators (TCPWM), 24x GPIOs
 - 4 serial communication blocks (SCBs) configurable as master/slave I²C, SPI or UART
 - USB Billboard Controller⁴ with Billboard Device Class⁵ support
- **Integrated Analog Blocks for Overvoltage (OVP) and Overcurrent Protection (OCP)**
 - 21.5-V OVP and OCP; 2:2 cross-bar switch
- **32-bit ARM[®] Cortex[®]-M0 CPU with MCU Subsystem**
 - 2x64KB Flash for fail-safe updates over CC, I²C or USB interfaces
- **Low-Power Operation**
 - 2x V_{BUS} Gate Drivers⁶, for consumer and provider power paths
 - 2x high-voltage (5–21.5 V, 25 V, maximum) V_{BUS} voltage inputs
 - Sleep: 2.0 mA; Deep Sleep: 2.5 μ A with wake-on-I²C or wake-on-CC
- **System-Level ESD on CC/ V_{CONN} , V_{BUS} , and SBU Pins**
 - ± 8 -kV Contact, ± 15 -kV Air Gap IEC61000-4-2 Level 4C
- **Packages**
 - 42-ball (8.38 mm²) CSP, 40-pin (36 mm²) QFN and 32-pin (25 mm²) QFN

Collateral

Datasheet: [CCG3 Datasheet](#)

CCG3: USB Type-C Port Controller



Availability

Production: Now

¹ Mode of operation in which the data lines are repurposed to transmit non-USB data

² The encryption hardware and software required to implement USB Authentication

³ A USB-IF specification that defines the authentication protocol for Type-C accessories

⁴ A USB Device controller that informs the USB Host of the supported Alternate Modes

⁵ A specification that defines the method for a USB Device to communicate the supported Alternate Modes

⁶ Circuits to control the gates of external power Field-Effect Transistors (FETs) on V_{BUS} (5-20 V)

⁷ Termination resistors: R_P read as a DFP, R_D as a UFP, R_A as an EMCA

EZ-PD CCG4/4M

Dual-Port USB Type-C and PD Port Controller

Applications

Notebooks, tablets, monitors, docking stations

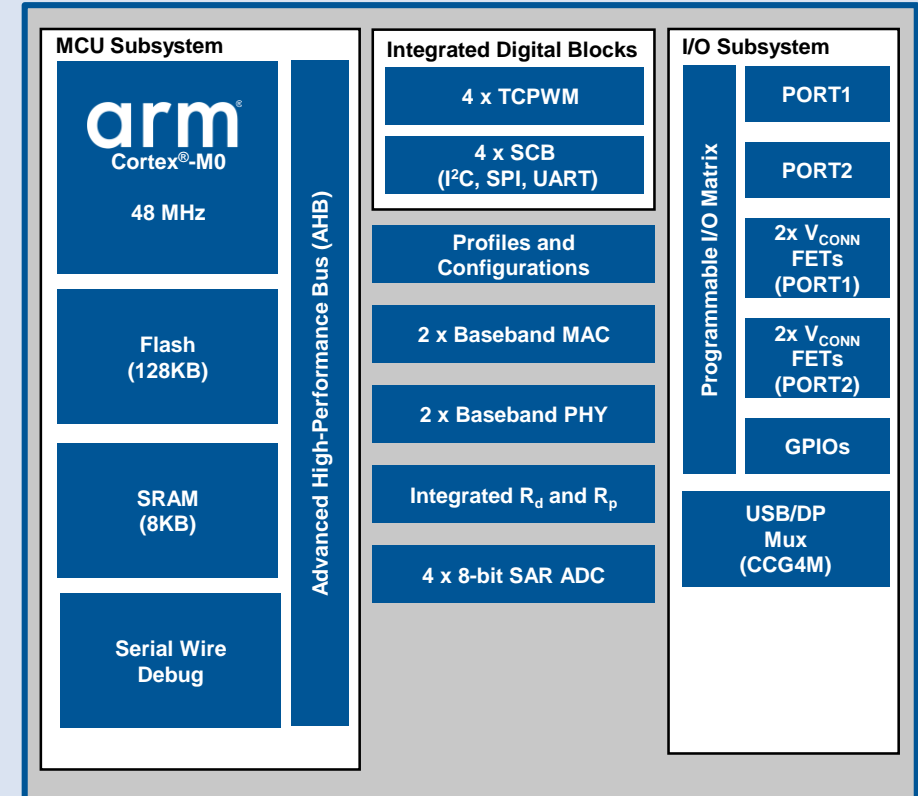
Features

- **Integrated USB Type-C Transceivers Support Two Type-C Ports**
 - Integrated 2x 1-W V_{CONN} FETs and 2x FET control signals, per port programmable R_P^1 and removable R_P , and R_D^2 terminations
 - Supports dead battery mode operation
 - Integrated SuperSpeed USB/DisplayPort (DP) Mux (CCG4M)
- **Increased Flash Enables Fail-Safe Bootup**
 - Integrates 128KB Flash to store dual FW images for fail-safe boot
- **Integrated Digital Blocks for Inter-Chip Communications**
 - Four serial communication blocks (SCBs) master or slave configurable to I²C, SPI or UART
 - SCBs interconnect CCG4 with embedded controller, two alternate muxes and Thunderbolt controller (optional)
- **Integrated Blocks for Overvoltage (OVP) and Overcurrent Protection (OCP)**
 - Four 8-bit SAR ADCs configurable for OVP and OCP
- **Low-Power Operation**
 - 2.7–V to 5.5-V operation and independent supply voltage for GPIO; Sleep: 2.0 mA; Deep Sleep: 2.5 μ A with wake-on-I²C or wake-on-configuration channel (CC)
- **System-Level ESD on CC Pins**
 - \pm 8-kV Contact, \pm 15-kV Air Gap IEC61000-4-2 Level 4C
- **32-bit ARM[®] Cortex[®]-M0 CPU with MCU Subsystem**
 - 128KB Flash, upgradable over CC lines or I²C interface
- **Packages**
 - 40-pin QFN, 96-ball BGA (CCG4M)

Collateral

Datasheet: [CCG4 Datasheet](#)

CCG4/4M: USB Type-C Port Controller



Availability

Production: Now

¹ Termination resistor read as a DFP

² Termination resistor read as a UFP

EZ-PD CCG3PA

USB Type-C and PD Port Controller

Applications

Power adapters, chargers, power banks

Features

- **Integrated Type-C and Power Delivery (PD) Transceiver**
 - Integrated high-voltage 30-V-tolerant LDO to power CCG3PA
 - Four timers/counters/pulse-width modulators (TCPWMs), 12x GPIOs
 - Two serial communication blocks (SCBs) for configurable master/slave I²C, SPI or UART
- **Integrated Analog**
 - Configurable V_{BUS} overvoltage (OVP) and overcurrent (OCP) protection
 - Integrated error amplifier¹ with analog out for V_{BUS} control
 - Low side current sense² capable of detecting 100mA change
 - Minimum 25-V-tolerant CC pins and FET control GPIOs
 - Two legacy charge-detect block (BC 1.2, Apple Charging 2.4A, QC 4.0 and Samsung AFC³)
- **32-bit ARM[®] Cortex[®]-M0 CPU with 64KB Flash**
- **Low-Power Operation**
 - High-voltage (5–30 V, 30 V maximum) V_{BUS} voltage inputs
 - Sleep: ~3.5 mA; Deep Sleep: 50 µA with wake-on-I²C or CC
- **System-Level ESD on CC / V_{CONN}, V_{BUS}, and SBU Pins**
 - ±8-kV Contact, ±15-kV Air Gap IEC61000-4-2 Level 4C
- **Packages**
 - 24-QFN (16 mm²), 16-SOIC (60 mm²)

Collateral

Datasheet: [Contact Sales](#)

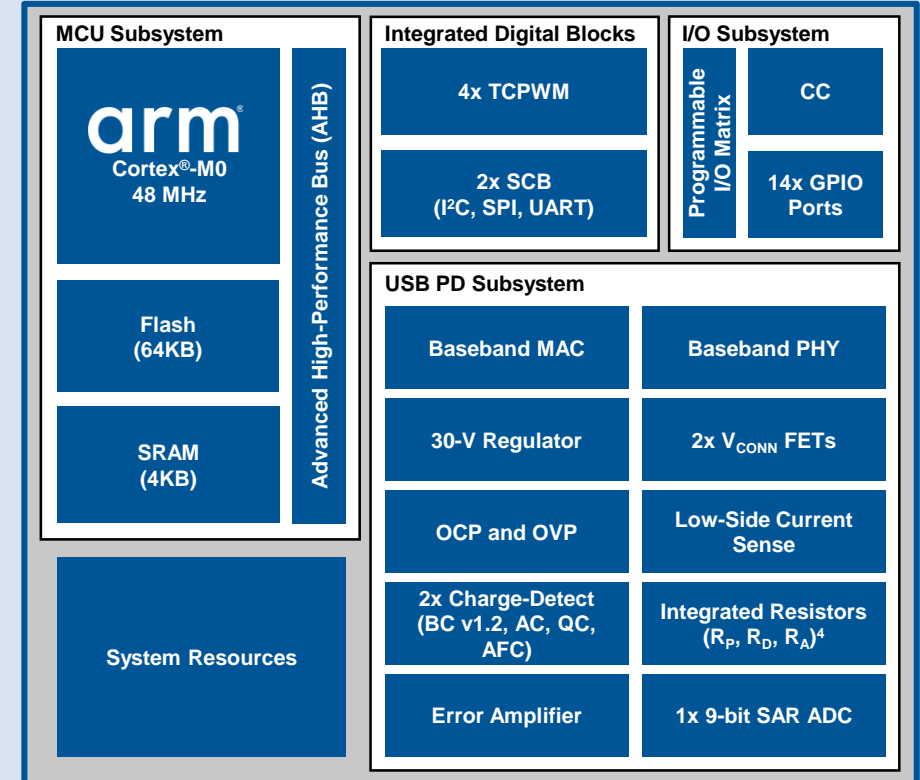
¹ Analog feedback voltage control circuit to control V_{BUS}

² Circuit to measure the current flowing on the V_{BUS}

³ Adaptive Fast Charging

⁴ Termination resistors: R_p read as a DFP, R_d as a UFP, R_A as an EMCA

CCG3PA: USB Type-C Port Controller



Availability

Production: Now

EZ-PD CCG3PA2

USB Type-C and PD Port Controller

Applications

Power adapters, chargers, power banks

Features

- **Integrated Type-C and Power Delivery (PD) Transceiver**
 - Integrated high-voltage 30-V–tolerant LDO
 - Four timers/counters/pulse-width modulators (TCPWMs), 12x GPIOs
 - Two serial communication blocks (SCBs) for configurable master/slave I²C, SPI or UART
- **Integrated Analog**
 - Configurable V_{BUS} overvoltage (OVP) and overcurrent (OCP) protection
 - Integrated error amplifier¹ with analog out for V_{BUS} control
 - Low side current sense² capable of detecting 100mA change
 - Minimum 25-V–tolerant CC pins and FET control GPIOs
 - Two legacy charge-detect block (BC 1.2, Apple Charging 2.4A, QC 4.0 and Samsung AFC³)
- **32-bit ARM[®] Cortex[®]-M0 CPU with 128KB Flash**
- **Low-Power Operation**
 - High-voltage (5–30 V, 30 V maximum) V_{BUS} voltage inputs
 - Sleep: ~3.5 mA; Deep Sleep: 50 µA with wake-on-I²C or CC
- **System-Level ESD on CC / V_{CONN}, V_{BUS}, and SBU Pins**
 - ±8-kV Contact, ±15-kV Air Gap IEC61000-4-2 Level 4C
- **Packages**
 - 32-QFN (25 mm²), 30-ball CSP (7.5 mm²)

Collateral

Datasheet: [Contact Sales](#)

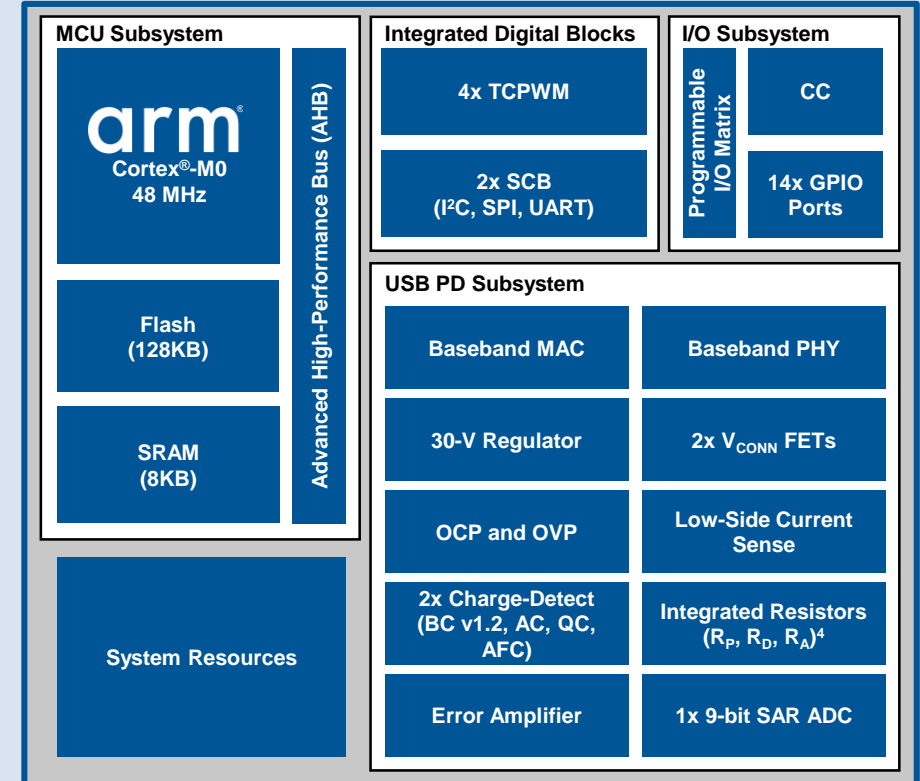
¹ Analog feedback voltage control circuit to control V_{BUS}

² Circuit to measure the current flowing on the V_{BUS}

³ Adaptive Fast Charging

⁴ Termination resistors: R_p read as a DFP, R_d as a UFP, R_A as an EMCA

CCG3PA2: USB Type-C Port Controller



Availability

Production: Now

EZ-PD CCG3PA2

USB Type-C and PD Port Controller

Applications

Power adapters, chargers, power banks

Features

- **Integrated Type-C and Power Delivery (PD) Transceiver**
 - Integrated high-voltage 30-V–tolerant LDO to power CCG3PA
 - Four timers/counters/pulse-width modulators (TCPWMs), 12x GPIOs
 - Two serial communication blocks (SCBs) for configurable master/slave I²C, SPI or UART
- **Integrated Analog**
 - Configurable V_{BUS} overvoltage (OVP) and overcurrent (OCP) protection
 - Integrated error amplifier¹ with analog out for V_{BUS} control
 - Low side current sense² capable of detecting 100mA change
 - Minimum 25-V–tolerant CC pins and FET control GPIOs
 - Two legacy charge-detect block (BC 1.2, Apple Charging 2.4A, QC 4.0 and Samsung AFC³)
- **32-bit ARM[®] Cortex[®]-M0 CPU with 64KB Flash**
- **Low-Power Operation**
 - High-voltage (5–30 V, 30 V maximum) V_{BUS} voltage inputs
 - Sleep: ~3.5 mA; Deep Sleep: 50 µA with wake-on-I²C or CC
- **System-Level ESD on CC / V_{CONN}, V_{BUS}, and SBU Pins**
 - ±8-kV Contact, ±15-kV Air Gap IEC61000-4-2 Level 4C
- **Packages**
 - 32-QFN (25 mm²), 30-ball CSP (7.5 mm²)

Collateral

Datasheet: [Contact Sales](#)

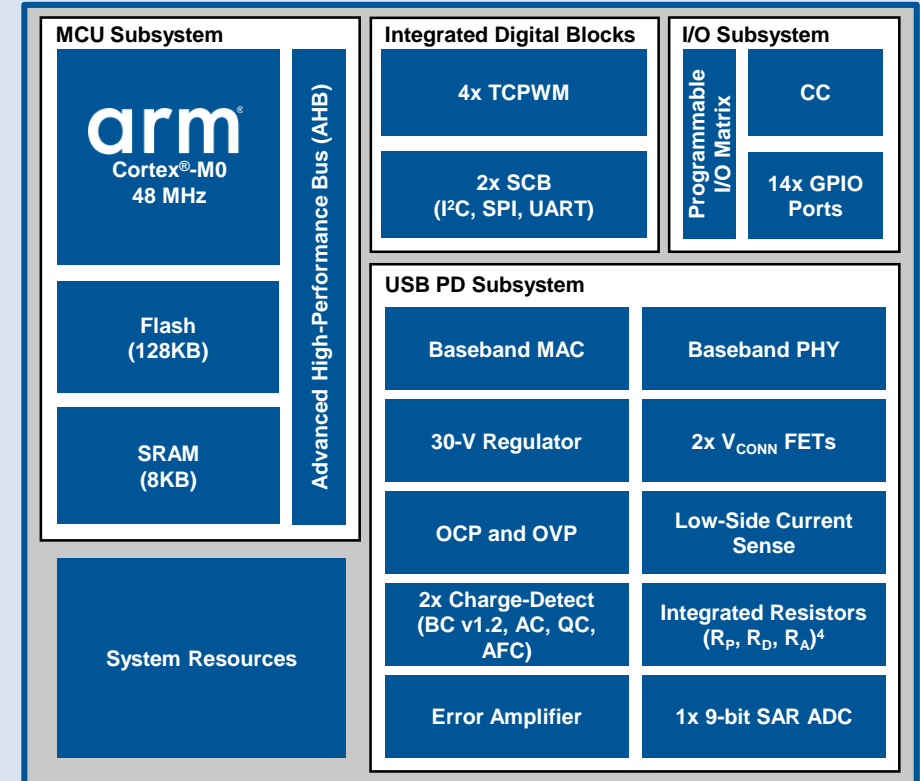
¹ Analog feedback voltage control circuit to control V_{BUS}

² Circuit to measure the current flowing on the V_{BUS}

³ Adaptive Fast Charging

⁴ Termination resistors: R_p read as a DFP, R_d as a UFP, R_A as an EMCA

CCG3PA: USB Type-C Port Controller



Availability

Production: Now

EZ-PD CCG5

Dual-Port USB Type-C and PD Port Controller

Applications

Notebooks, docks, Thunderbolt devices

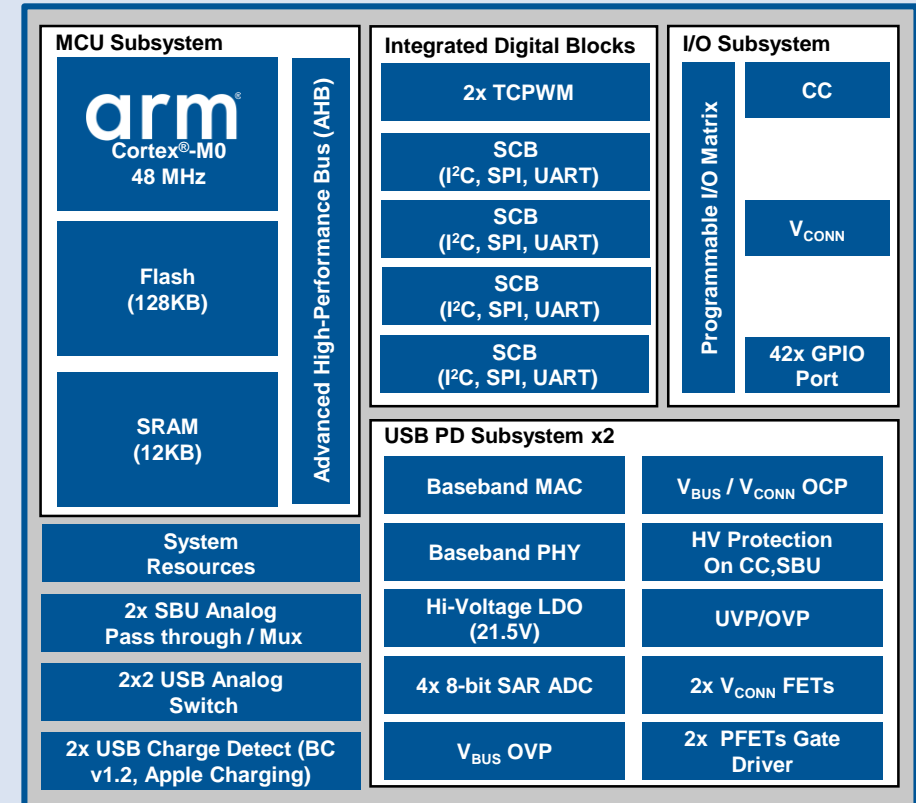
Features

- **Integrated Type-C Transceiver for Two Type-C USB PD 3.0-Compliant Ports**
 - Support for Thunderbolt, DisplayPort (DP), HDMI Alt Mode and USB platforms
 - USC1¹-compliant Interface with WHQL²-certified driver
 - Support for UEFI³ driver with Microsoft capsule firmware download
- **Integrated Analog**
 - Integrated high-voltage LDO and 4x V_{CONN} FETs supporting up to 500 mA
 - Integrated 2x2 USB analog switch; integrated SBU analog pass with high-voltage tolerance
 - Integrated 2x USB Charger Detect (BC 1.2, Apple Charging, QC 4.0 and Samsung AFC⁴)
 - Integrated Type-C termination resistors (R_p , R_D , R_{DB})⁵
 - 25-V tolerance on CC1/2 and SBU pins
- **ARM[®] Cortex[®]-M0 CPU with 128KB Flash and 12KB SRAM**
 - 4x serial communication blocks (SCB) - I²C, SPI or UART
 - Firmware upgradable over SWD/I²C interfaces
 - Supports Dead Battery mode operation
 - Overvoltage protection (OVP) with 2 μ s response time; integrated $V_{\text{BUS}}/V_{\text{CONN}}$ overcurrent protection (OCP)
- **System-Level ESD on CC/ V_{CONN} , V_{BUS} , and SBU Pins**
 - ± 8 -kV Contact, ± 15 -kV Air Discharge IEC61000-4-2 Level 4C
- **Packages**
 - 2-Port in 96-BGA (6 mm²), 1-Port in 40-QFN (6 mm²)

Collateral

Datasheet: [Contact Sales](#)

CCG5: USB Type-C Port Controller



Availability

Production: Now

¹ USB Type-C Connector System Software Interface ² Windows Hardware Quality Labs ³ Unified Extensible Firmware Interface ⁴ Adaptive Fast Charging ⁵ Termination resistors: R_p read as a DFP, R_D as a UFP, R_{DB} as UFP in Dead-Battery scenario

EZ-USB FX3

USB 3.1 Gen 1 Peripheral Controller

Applications

Industrial cameras, medical and machine vision cameras, 3-D and 1080p full HD and 4K Ultra HD (UHD) cameras, document and fingerprint scanners, videoconferencing and data acquisition systems, video capture cards and HDMI converters, protocol and logic analyzers, USB test tools and software-designed radios (SDRs)

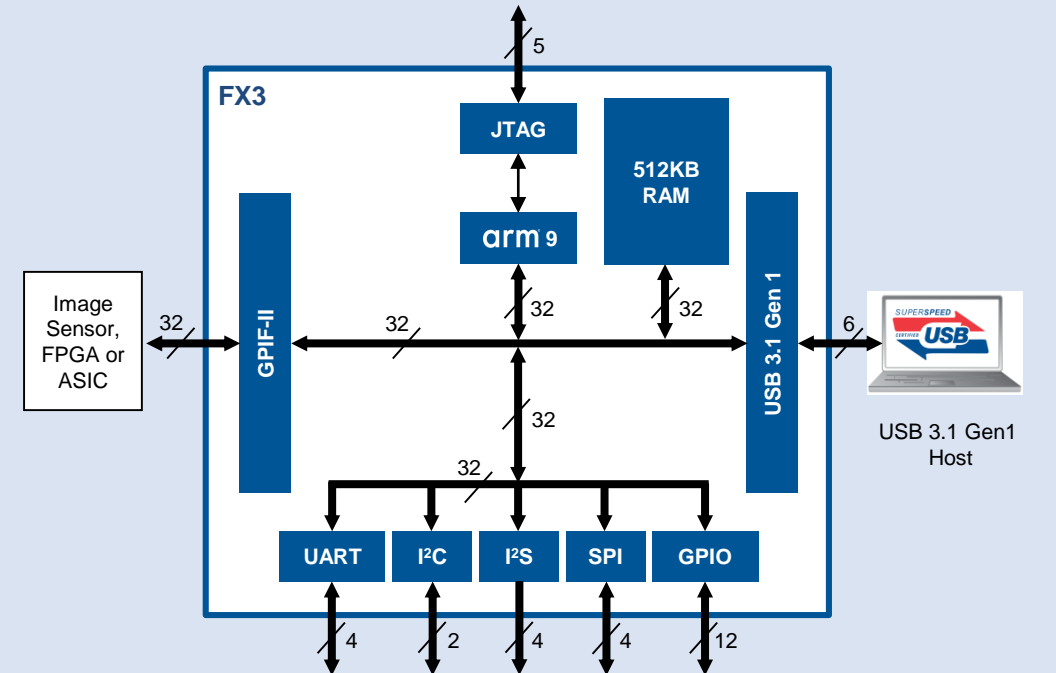
Features

- **USB 3.1 Gen 1-Compliant Peripheral Controller**
 - USB-IF-certified (TID: 340800007)
 - Up to 32 USB endpoints
- **Fully Accessible 32-bit, 200-MHz ARM® 926EJ Core**
 - 512KB of embedded SRAM for code space and buffers
- **32-bit, 100-MHz, flexible GPIF II Interface**
 - Other peripheral interfaces such as I²C, I²S, UART, SPI and 12 GPIOs
 - Unused I/O pins can be used as GPIOs
 - 19.2-MHz crystal or 19.2-MHz, 26-MHz, 38.4-MHz and 52-MHz clock input
- **Flexible Clock Options**
- **Packages**
 - 121-ball BGA (10 mm²), 131-ball WLCSP (4.7 x 5.1 mm)

Collateral

Datasheet: [FX3 Datasheet](#)
Development Kit: [FX3 SuperSpeed Explorer Kit](#)
Software Development Kit: [EZ-USB FX3 SDK](#)

FX3: USB 3.1 Gen 1 Peripheral Controller



Availability

Production: Now

EZ-USB FX3S

USB 3.1 Gen 1 RAID¹-on-Chip

Applications

Servers, routers, mobile storage, USB Flash drives, POS terminals, automatic teller machines (ATM), SDIO expanders and data logging devices

Features

- **USB 3.1 Gen 1-Compliant Peripheral Controller**
 - USB-IF-certified (TID: 340800007)
 - Up to 32 USB endpoints
- **Fully Accessible 32-bit, 200-MHz ARM® 926EJ Core**
 - 512KB of embedded SRAM for code space and buffers
- **32-bit, 100-MHz, Flexible GPIF II Interface**
 - Other peripheral interfaces such as I²C, I²S, UART, SPI and 12 GPIOs
 - Unused I/O pins can be used as GPIOs
- **Two SDXC², eMMC³ 4,4, or SDIO 3.0 Interfaces**
 - Support RAID0 or RAID1 configurations
- **Flexible Clock Options**
 - 19.2-MHz crystal or 19.2-MHz, 26-MHz, 38.4-MHz and 52-MHz clock input
- **Packages**
 - 121-ball BGA (10 mm²), 131-ball WLCSP (4.7 x 5.1 mm)

Collateral

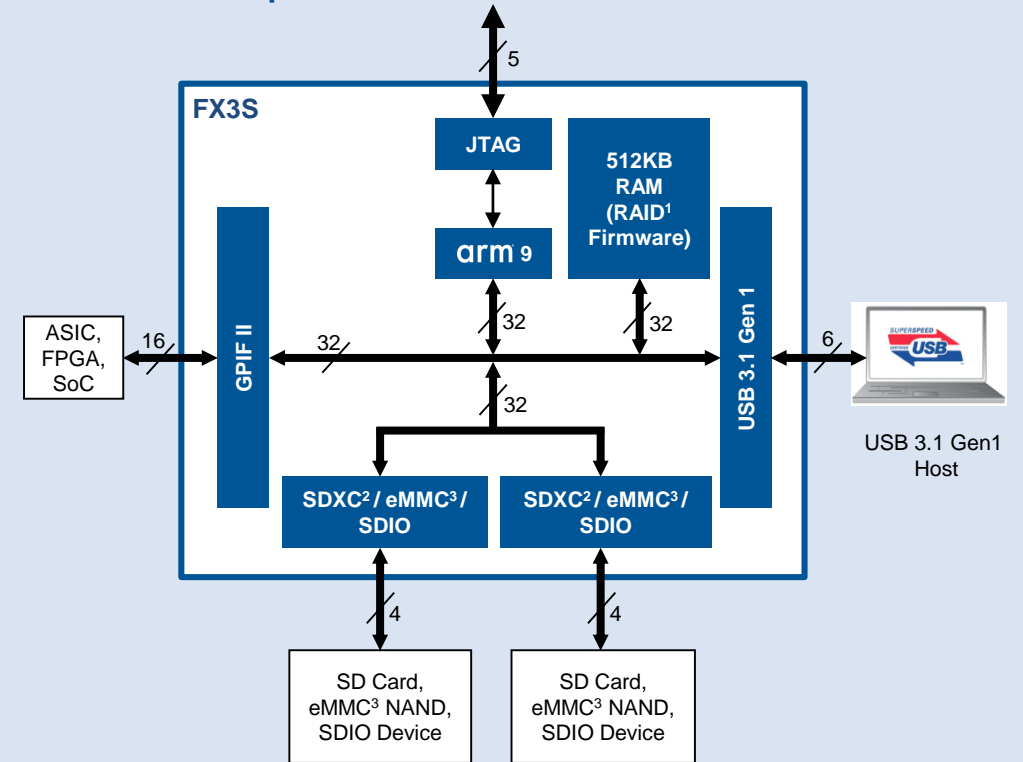
Datasheet: [FX3S Datasheet](#)
Kit: [FX3S RAID¹-on-Chip Boot Disk Kit](#)
Software Development Kit: [EZ-USB FX3 SDK](#)

¹ Redundant array of independent disks

² SD extended capacity

³ Embedded Multimedia Card

FX3S: RAID¹-on-Chip



Availability

Production: Now

EZ-USB CX3

MIPI¹ CSI-2 to USB 3.1 Gen 1 Bridge

Applications

Industrial, medical and machine vision cameras, 1080p full HD and 4K Ultra HD (UHD) cameras, document scanners, fingerprint scanners, game consoles, videoconferencing systems, notebook PCs, tablets and image acquisition systems

Features

- **USB 3.1 Gen 1-Compliant Peripheral Controller**
 - Up to 32 USB endpoints
- **Fully Accessible 32-bit, 200-MHz ARM® 926EJ core**
 - 512KB of embedded SRAM for code space and buffers
- **Four-Lane MIPI¹ Camera Serial Interface v2.0 (CSI-2) Input**
 - Camera Control Interface (CCI) for image sensor configuration
 - Other peripheral interfaces such as I²C, UART, SPI and 12 GPIOs
- **Supports Industry-Standard Video Data Formats**
 - RAW8/10/12/14², YUV422/444³, RGB888/666/565⁴
- **Supports Uncompressed Streaming Video**
 - 4K UHD at 15 fps, 1080p at 30 fps, 720p at 60 fps
- **Packages**
 - 121-ball BGA (10 x 10 x 1.7 mm)

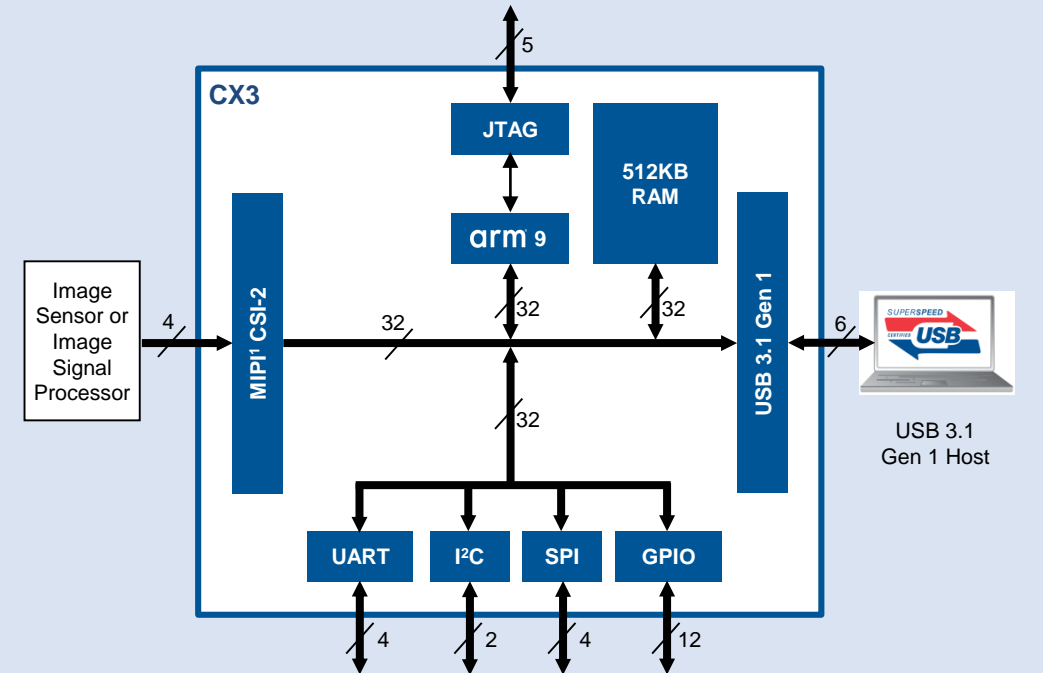
Collateral

Datasheet: [CX3 Datasheet](#)
Reference Design Kit: [CX3 Reference Design Kit](#)
Software Development Kit: [EZ-USB FX3 SDK](#)

¹ Mobile Industry Processor Interface
² Video format for raw video data

³ Video format for luminance and chrominance components
⁴ Video format for red, green and blue pixel components

CX3: MIPI¹ CSI-2 to USB 3.1 Gen 1 Bridge



Availability

Production: Now

EZ-USB GX3

USB 3.1 Gen 1 to GigE¹ Bridge

Applications

USB dongles, docking stations and port replicators, network printers and security cameras, ultrabooks and home gateways, game consoles and portable media players, DVRs, IP set-top boxes and IP TVs and other embedded systems

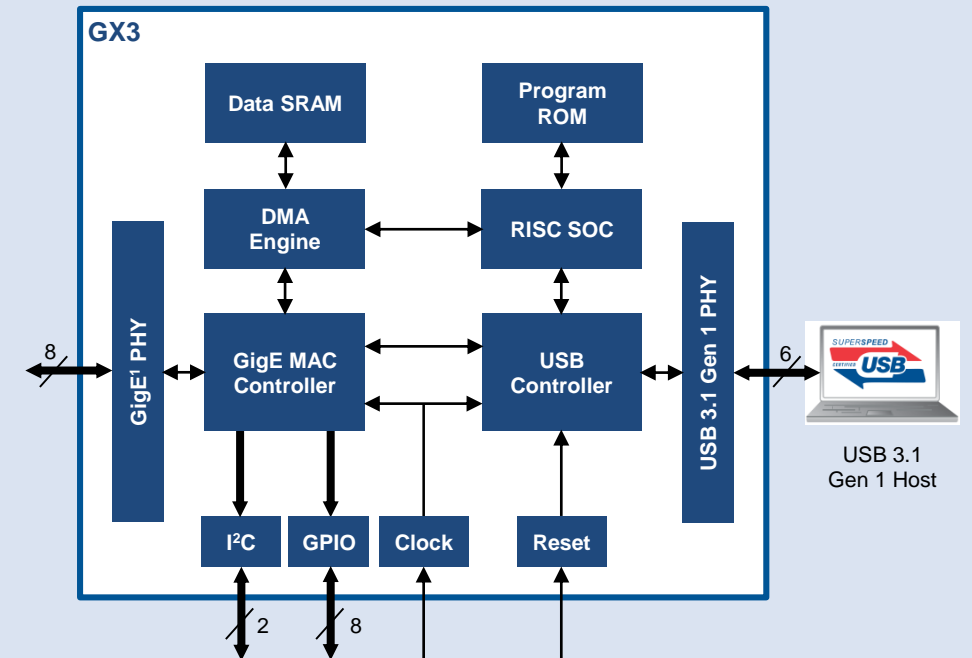
Features

- **One-Chip USB 3.1 Gen 1 to 10/100/1000M GigE Bridge**
 - Integrates USB 3.1 Gen 1 PHY and GigE PHY
 - Integrates USB 3.1 Gen 1 Controller and GigE MAC²
 - Needs only a 25-MHz crystal to drive both USB and GigE1 PHY
- **IEEE 802.3az³ Support for Low-Power Idle State**
 - Supports dynamic cable length and power adjustment
 - Offers multiple power management wake-on-LAN⁴ features
- **Supports Optional EEPROM to Store USB Descriptors**
 - Integrates on-chip power-on-reset (POR) circuitry
- **Packages**
 - 68-QFN (8 x 8 x 0.85 mm)

Collateral

Datasheet: [GX3 Datasheet](#)
Reference Design Kit: [GX3 Reference Design Kit](#)
Software & Drivers: [GX3 Drivers](#)

GX3: USB 3.1 Gen 1 to GigE¹ Bridge



Availability

Production: Now

¹ Gigabit Ethernet

² Media access controller that provides the address to an Ethernet node

³ A new-energy efficient Ethernet standard

⁴ An Ethernet standard that allows a computer to be turned on by a network message

EZ-USB HX3

USB 3.1 Gen 1 Hub

Applications

Docking stations for notebook PCs and tablets, PC motherboards, servers, televisions and monitors, retail hub boxes, printers and scanners, set-top boxes, home gateways, routers and game consoles

Features

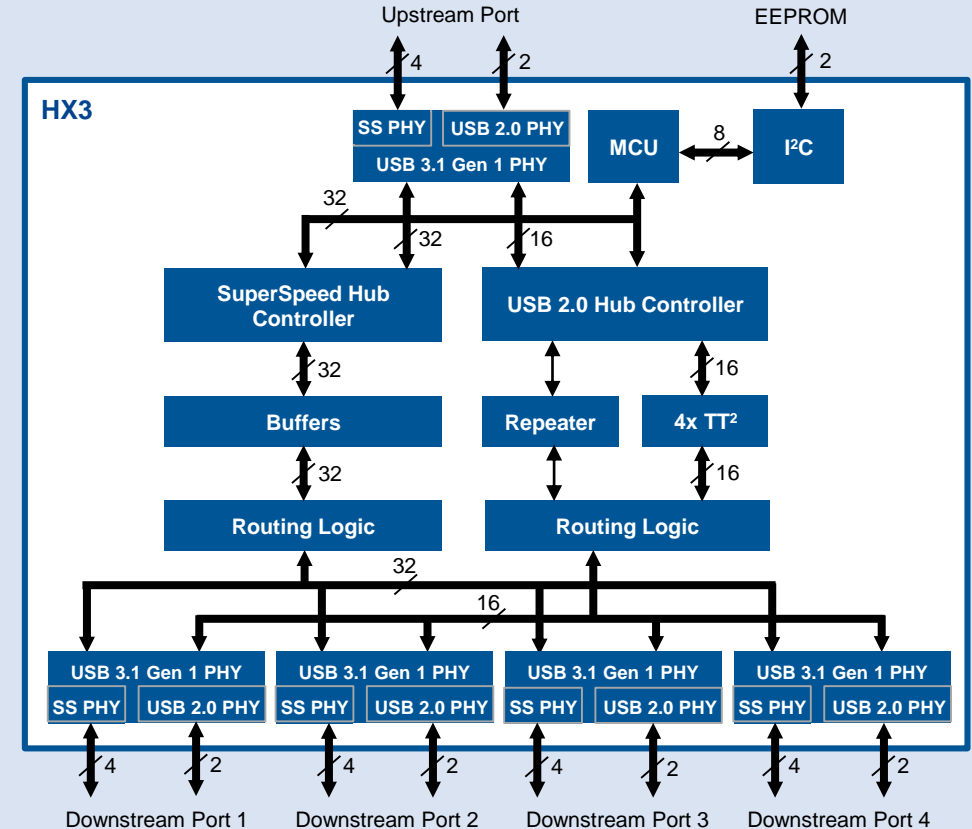
- **USB 3.1 Gen 1-Compliant Four-Port Hub Controller**
 - USB-IF certified (Test ID: 330000047)
 - WHQL certified for Windows 7, Windows 8, Windows 8.1
- **Shared Link™**
 - Supports simultaneous USB 2.0 and USB SuperSpeed (SS) devices on the same port
- **Ghost Charge™**
 - Enables USB charging while the hub is disconnected from a USB Host
- **Charging Standard support**
 - USB-IF Battery Charging (BC) v1.2, Apple Charging Standard
 - Charging an OTG Host in an ACA-Dock
- **Programming of External EEPROM via USB**
- **Configurable USB SS and USB 2.0 PHY (drives 11" trace)**
- **Packages**
 - 68-QFN (8 x 8 x 1.0 mm), 88-QFN (10 x 10 x 1.0 mm), 100-BGA (6 x 6 x 1.0 mm)

Collateral

Datasheet: [HX3 Datasheet](#)
Kit: [CY4609](#), [CY4603](#), [CY4613](#)
Configuration Utility: [Blaster Plus](#)¹
App Notes: [HX3 Hardware Design Guide \(AN91378\)](#)

¹ A Cypress GUI-based PC application for setting HX3 configuration parameters ² Transaction translator

HX3: USB 3.1 Gen 1 Hub



Availability

Production: Now

EZ-USB HX3C

USB 3.1 Gen 1 Type-C PD Hub

Applications

USB Type-C charging hubs, 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 Hub Controller with Type-C and PD**
 - Upstream (US): Type-C, Downstream (DS): 1 Type-C and 2 Type-A ports
- **Integrated Type-C Transceivers, Supporting Two Type-C Ports**
 - Integrated termination resistors (R_P and R_D)¹
 - Integrated USB Billboard Controller²
- **Charging Support**
 - USB PD, BC v1.2, Apple Charging Standard
 - PD policy engine configures power profiles dynamically
- **Ghost Charge™**
 - Charging DS without US connection
- **Firmware Upgradable Over USB**
- **System-Level ESD on Configuration Channel (CC) Pins**
 - 8 kV Contact, 15 kV Air
- **Configurable USB SS and USB 2.0 PHY (drives 11" trace)**
- **Packages**
 - 121-ball BGA (10 mm x 10 mm, 0.8 mm ball-pitch)

Collateral

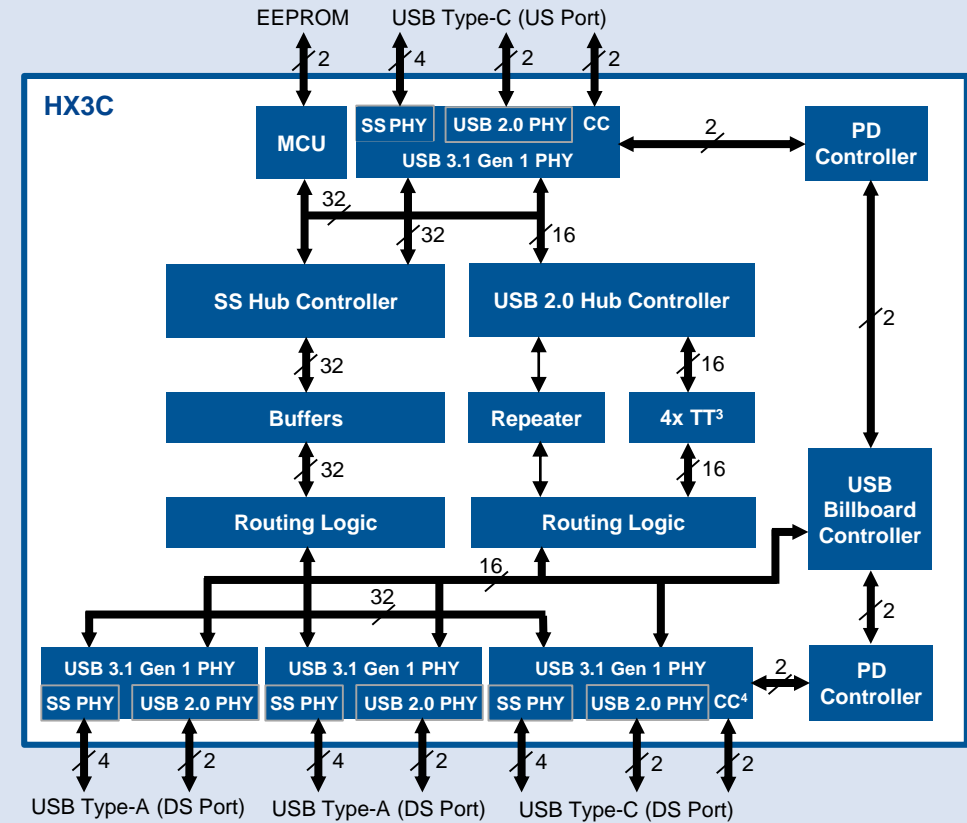
Datasheet:

[HX3C Datasheet](#)

Reference Design:

[HX3C Type-C Monitor/Dock Reference Design](#)

HX3C: USB 3.1 Gen 1 Type-C PD Hub



Availability

Production: Now

¹ Termination resistors: R_P read as a DFP, R_D as a UFP ² A USB Device controller that is used to implement the USB Billboard Device Class

⁴ Informs the USB Host of the supported Alternate Modes as well as any failures

³ Transaction Translator



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