USB 2.0, 4-Port & 7-Port Hub Controllers

OVERVIEW

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XR22404	4-Port (STT)
XR22414	4-Port (MTT)
XR22417	7-Port (MTT)

FEATURES

- Hub controller ICs with 4 or 7 downstream ports
- USB 2.0 compliant interface
- Single 5V and / or 3.3V power supply
- Single 12MHz Crystal
- Regulated +3.3V power output up to 100mA
- LED indicators for port and hub activity
- XR22404
  - Compatible with Battery Charging Spec 1.1/1.2
  - 4 port Single Transaction Translators (STT)
  - Ganged port power enable
  - Global overcurrent sensing
- XR22414
  - Individual or Ganged port power enable
  - Individual or Global over-current sensing
  - 4 port Multiple Transaction Translators (MTT)
- XR22417
  - Individual port power enables
  - Individual overcurrent sensing
  - 7 port Multiple Transaction Translators (MTT)

BENEFITS

- Simple low-cost solution to add USB connectivity
- Compatible with native hub device drivers
- Provides overcurrent sensing for the downstream ports
- Integrated pull-up / pull-down resistors saves board space
- Supports self- or bus-powered operation without an external LDO

APPLICATIONS

- USB port expansion
- POS terminals
- Test instrumentation
- Factory automation
- Industrial process control
- Docking stations
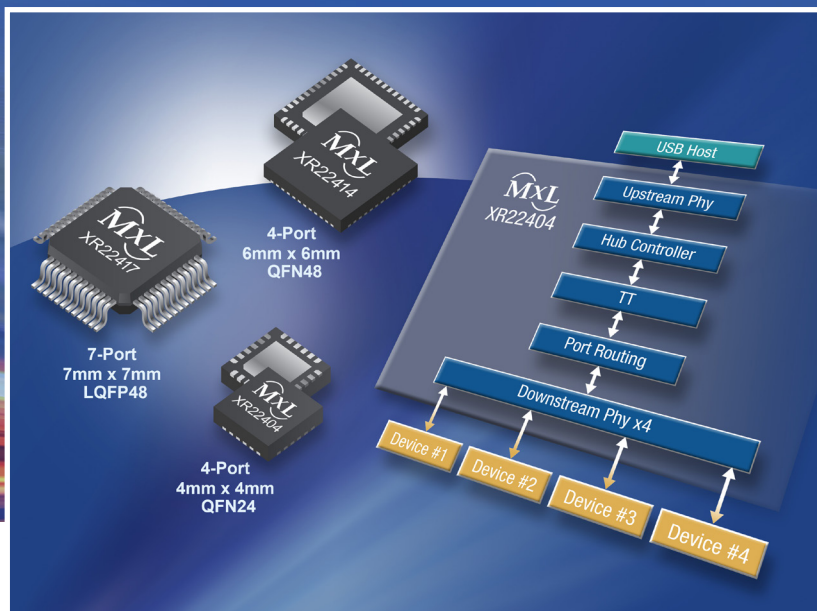
The XR22404, XR22414 and XR22417 are USB 2.0, 4-port and 7-port hub controllers. They are the industry's lowest power and smallest footprint options for USB 2.0, 4- and 7-port hubs.

The XR22404 is a USB 2.0, 4-port hub that can be configured for downstream device charging and is compatible with Battery Charging Specification revision 1.1/1.2. The XR22404 operates from either 3.3V or 5V supply allowing bus- or self-powered operation without an external LDO. It is available in a tiny 4mm x 4mm, 24-pin QFN or a 28-pin SSOP.

The XR22414 is a USB 2.0, 4-port hub using Multiple Transaction Translators (MTT) for highest bandwidth capability. It provides ganged or individual power control as well as global or individual over-current Sensing modes. Operating from either a 5V or 3.3V supply allows for bus- or self-powered operation without an external LDO. The XR22414's 3.3V output may be used for external circuitry if the device is powered by 5V. It is available in a 6mm x 6mm 48-pin QFN or a 9mm x 9mm 48-pin LQFP.

The XR22417 is a USB 2.0, 7-port hub also using Multiple Transaction Translators (MTT) for highest possible bandwidth capability. The XR22417 is available in a 64-pin LQFP as well as a smaller 48-pin version.

The XR22404, XR22414 and XR22417 use native hub device drivers and provide hub and downstream port activity indicators to simplify implementation. All controllers attach to upstream ports as hi-speed (480Mbps) or full-speed (12Mbps) hubs. The downstream PHYs support hi-speed, full-speed and low-speed (1.5Mbps) on each of the downstream ports.

Interface

USB 2.0 Hub Controllers

Part Number	Data Bus Interface	Down-stream Ports	Down-stream Port Disable	Transaction Translator	Bus-Powered	Self-Powered	Battery Charging	Over-current Monitoring	Individual Port Power Management	Ganged Port Power Management	Supply Voltage Range V$_{CC}$ (V)	Package
XR22404	USB 2.0	4	✔	STT	✔	✔	✔	✔		✔	3.0 to 3.6 4.4 to 5.25	QFN24 SSOP28
XR22414	USB 2.0	4		MTT	✔	✔		✔	✔	✔	3.0 to 3.6 4.4 to 5.25	QFN48 LQFP48
XR22417	USB 2.0	7	✔	MTT		✔		✔	✔		4.4 to 5.25	LQFP64 LQFP48

Note: Temperature Range 0 to 70 (C°)

Evaluation Boards Available for all Package Options
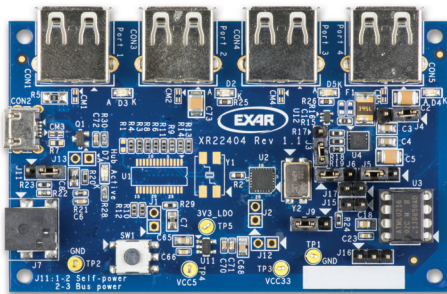
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XR22404CL24EVB (Pictured)
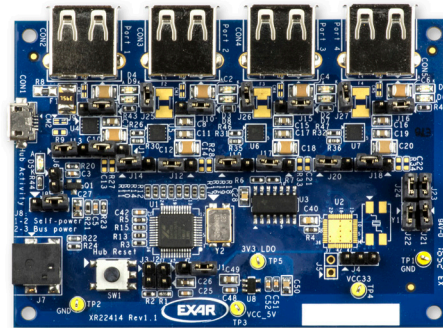
XR22414CL48EVB
XR22414CV48EVB (Pictured)
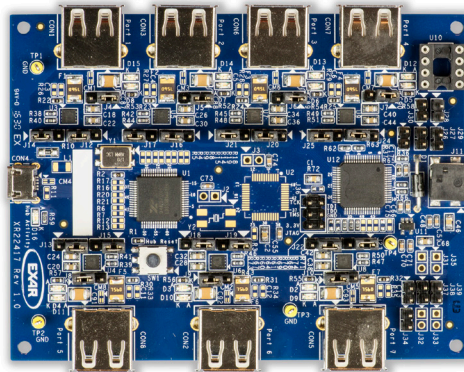
XR22417CV48EVB
XR22417CV64EVB (Pictured)

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