



## P2010/P2020

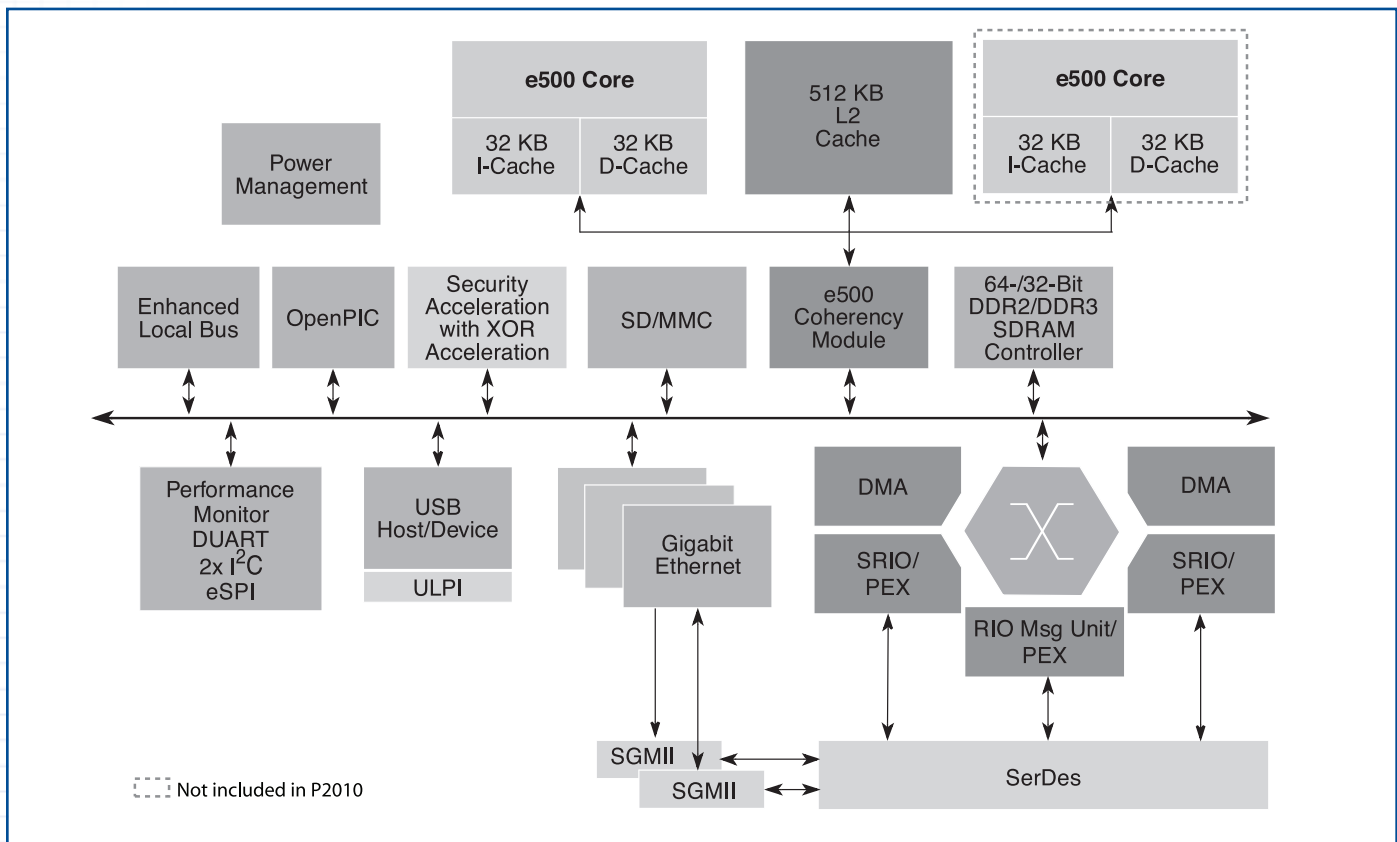
### QorIQ™ Single-/Dual-Core Integrated Communications Processors

The QorIQ™ P2 platform series, which includes the P2010 and P2020 communications processors, delivers high single-threaded performance per watt for a wide variety of applications in the networking, telecom, aerospace and defense, and industrial markets. The series delivers single- and dual-core frequencies up to 1.2 GHz on a 45 nm technology low-power platform.

#### Features

- Single/Dual e500 Power Architecture™ core
  - 800 MHz to 1200 MHz
  - 512 KB frontside L2 cache w/ECC, hardware cache coherent
  - 36-bit physical addressing, DP-FPU
- System unit
  - 64-/32-bit DDR2/DDR3 with ECC to 800 MHz datarate
  - Integrated SEC 3.1 security engine
  - Open-PIC interrupt controller, perf mon, 2x I<sup>2</sup>C, timers, 16 GPIOs, DUART
- 16-bit enhanced local bus supports booting from NAND Flash
- One USB 2.0 host controller with ULPI interface
- SPI controller supporting booting from SPI serial Flash
- SD/MMC card controller supporting booting from Flash cards
- Three 10/100/1000 Ethernet Controllers (eTSEC) with jumbo frame support, SGMII interface
- Enhanced features: Parser/Filter, QOS, IP-Checksum Offload, Lossless Flow Control
- IEEE® 1588v2 support
- Two Serial RapidIO® controllers with integrated message unit operating up to 3.125 GHz
- Three PCI Express® 1.0a controllers operating at 2.5 GHz
- Process and package
  - 45 nm SOI, 1.05V ±50 mV, 0°C to +125°C T<sub>j</sub>
  - -40°C T<sub>a</sub> to +125°C T<sub>j</sub> option
  - 8W maximum at 1.2 GHz
  - 689-pin TePBGAll, 31 mm x 31 mm

#### Block Diagram



## Applications

- Industrial
  - Test/measurement
  - Networking/telecom
  - Multifunction printer
  - Single Board Computers (SBC)
  - Industrial applications
  - Robotics
- Networking
  - Line card controller
  - Mid-range line card control plane
  - Low-end line card combined control and data plane
  - Shelf controller
  - Business gateway
  - Multiservice router
  - Wireless access points
- Telecom
  - AdvancedMC™ card
  - Controller on AdvancedTCA® carrier card
  - Channel and control card for NodeB, BTS, WCDMA, 4G LTE, WiMAX
  - General-purpose compute blade

## QorIQ™ P1 and P2 Series Comparison

	P1011	P1020	P2010	P2020
CPU	e500 Up to 800 MHz 32 KB I/D	Dual e500 Up to 800 MHz 32 KB I/D	e500 Up to 1200 MHz 32 KB I/D	Dual e500 Up to 1200 MHz 32 KB I/D
L2 cache	256 KB	256 KB	512 KB	512 KB
DDR I/F type/width	DDR2/3, 32-bit	DDR2/3, 32-bit	DDR2/3, 32-/64-bit	DDR2/3, 32-/64-bit
10/100/1000 Ethernet (with IEEE® 1588v2)	3 with (2) SGMII	3 with (2) SGMII	3 with (2) SGMII	3 with (2) SGMII
TDM	Yes	Yes	–	–
PCI Express® 1.0a	2 controllers with 4 SerDes	2 controllers with 4 SerDes	3 controllers with 4 SerDes	3 controllers with 4 SerDes
Serial RapidIO® 1.2	–	–	2 x 1 or 1 x 4	2 x 1 or 1 x 4
USB 2.0	2	2	1	1
Memory card	SD/MMC	SD/MMC	SD/MMC	SD/MMC
Other interfaces	SPI, 2 x I <sup>2</sup> C, DUART	SPI, 2 x I <sup>2</sup> C, DUART	SPI, 2 x I <sup>2</sup> C, DUART	SPI, 2 x I <sup>2</sup> C, DUART
Accelerators	SEC 3.3	SEC 3.3	SEC 3.1	SEC 3.1
Package	689 TePBGAll	689 TePBGAll	689 TePBGAll	689 TePBGAll

P1 and P2 series are pin-compatible offerings.

## QorIQ™ P2 and PowerQUICC III Product Comparison

	MPC8544	P2010	MPC8548	P2020	MPC8572
CPU	e500 667 – 1067 MHz 32 KB I/D	e500 800 – 1200 MHz 32 KB I/D	e500 1000 – 1333 MHz 32 KB I/D	Dual e500 800 – 1200 MHz 32 KB I/D	Dual e500 1200 – 1500 MHz 32 KB I/D
L2 cache	256 KB	512 KB	512 KB	512 KB	1 MB
DDR I/F type/width	DDR1/2, 64-bit	DDR2/3, 64-bit	DDR1/2, 64-bit	DDR2/3, 32-/64-bit	Dual DDR2/3, 64-bit
10/100/1000 Ethernet	2 with all SGMII	3 with 2 SGMII	4	3 with 2 SGMII	4 with all SGMII + 10/100
PCI Express®	32-bit PCI +3 PCIe controllers with 9 SerDes	3 PCIe controllers with 4 SerDes	64-bit PCI-X and PCIe with 8 SerDes	3 PCIe controllers with 4 SerDes	2 PCIe controllers with 8 SerDes
Serial RapidIO® 1.2	–	2 x 1 or 1 x 4	1 x 4	2 x 1 or 1 x 4	1 x 4 or 1 x 1
USB 2.0	–	1	–	1	–
Local bus controller	32-bit	16-bit	32-bit	16-bit	32-bit
Memory card	–	SD/MMC	–	SD/MMC	–
Other interfaces	DUART, 2 x I <sup>2</sup> C	DUART, 2 x I <sup>2</sup> C, SPI	DUART, 2 x I <sup>2</sup> C	DUART, 2 x I <sup>2</sup> C, SPI	DUART, 2 x I <sup>2</sup> C
Accelerators	SEC 2.1	SEC 3.1	SEC 3.0	SEC 3.1	SEC 3.0, PME, TLU
Package	783 FC-PBGA	689 TePBGAll	783 FC-CBGA and FC-PBGA	689 TePBGAll	1023 FC-PBGA

For more information, such as datasheets and app notes, visit [www.arrow.com/arrowedge](http://www.arrow.com/arrowedge).