# COMX-P4040 & COMX-P4080

## High Performance NXP® QorIQ® Modules

**Data Sheet**

*COM Express based modules with QorIQ processing power for rapid deployment across diverse I/O requirements*

- NXP QorIQ P4040 and P4080 processors
- Four or eight Power Architecture cores running at 1.5 GHz
- Supports two channels of 2GB DDR3-1333 ECC SO-UDIMM (4GB max.)
- 95 mm x 125 mm COM Express Basic footprint
- 12 configurable SERDES lanes available for maximum flexibility

The COMX-P4040 and COMX-P4080 modules from Artesyn Embedded Technologies provide the performance and features of the NXP QorIQ processors on ready-to-go pluggable mezzanine modules. By incorporating and leveraging the mechanical features and dimensions of the COM Express® specification, these modules exhibit all the best attributes of the COM Express open standard enabling shorter development schedules and faster time-to-market. Artesyn has a range of QorIQ based COM Express form factor modules to enable scalable product strategies with multiple performance levels. This open, standardized approach fosters competitive pricing, greater upgrade flexibility and longevity of support.
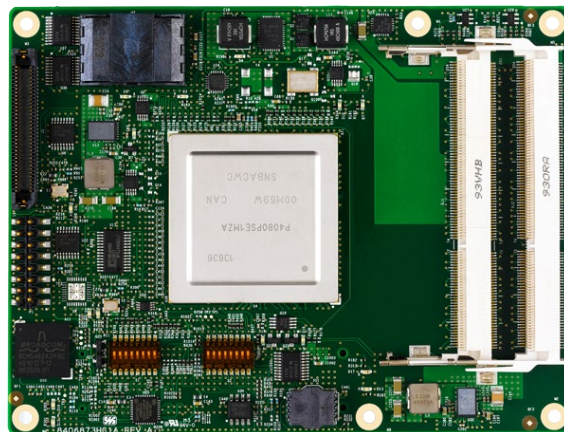
The QorIQ P4040 and P4080 processors are effectively system-on-chip (SOC) devices with a range of features including high-performance datapath acceleration and network processing in a low power envelope making the COMX-P4040 and COMX-P4080 modules suitable for combined control, datapath and application layer processing. Underpinning the high-compute capability of these modules are the multiple Power Architecture e500mc cores which are complemented by highly flexible I/O including 10G-XAUI, SRIO, GPIO, USB 2.0, PCI Express, Gigabit Ethernet and real-time debug.

The dimensions of the COMX-P4040 and COMX-P4080 modules are 95 mm x 125 mm which enable them to fit within a very wide range of enclosures when mounted on a customer carrier. They are off-the-shelf processor solutions that isolate you from the complexities of high speed processor and memory system design, allowing you to concentrate on a carrier tailored to application I/O needs.
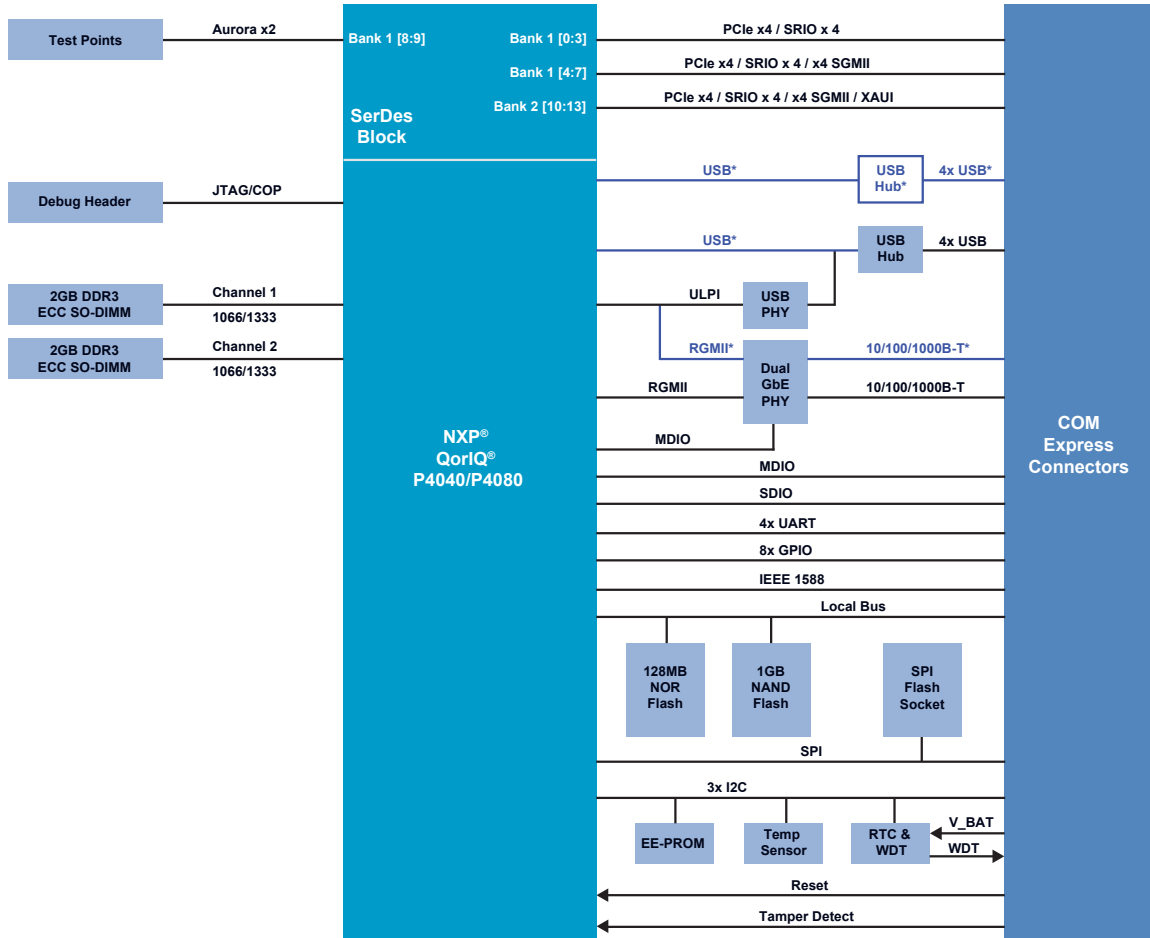
By combining the tried and tested Power Architecture processor cores along with a considerable range of on-module I/O, the COMX-P4040 and COMX-P4080 are suitable for a range of applications including enterprise and service provider routers, switches, base-station controllers, radio network controllers (RNCs), long-term evolution (LTE) and general-purpose embedded computing systems in the networking, telecom/datacom, wireless infrastructure, military and aerospace markets.

RoHS 6/6 COMPLIANT

NXP

COM Express®

ARTESYN™
EMBEDDED TECHNOLOGIES

## COMX-P4040 & COMX-P4080 Block Diagram

| | | | |
|---|---|---|---|
| **Test Points** | Aurora x2 | Bank 1 [8:9] | Bank 1 [0:3] | PCIe x4 / SRIO x 4 |

**SerDes Block**

Bank 1 [4:7] — PCIe x4 / SRIO x 4 / x4 SGMII

Bank 2 [10:13] — PCIe x4 / SRIO x 4 / x4 SGMII / XAUI

**Debug Header** — JTAG/COP

**2GB DDR3 ECC SO-DIMM** — Channel 1 — 1066/1333

**2GB DDR3 ECC SO-DIMM** — Channel 2 — 1066/1333

**NXP® QorIQ® P4040/P4080**

USB* — **USB Hub\*** — 4x USB*

USB* — **USB Hub** — 4x USB

ULPI — **USB PHY**

RGMII* — **Dual GbE PHY** — 10/100/1000B-T*

RGMII — 10/100/1000B-T

MDIO

MDIO

SDIO

4x UART

8x GPIO

IEEE 1588

Local Bus

**128MB NOR Flash** **1GB NAND Flash** **SPI Flash Socket**

SPI

3x I2C

**EE-PROM** **Temp Sensor** **RTC & WDT** — V_BAT / WDT

Reset

Tamper Detect

**COM Express Connectors**

*Not supported on COMX-P4040

# Hardware Specifications

## PROCESSOR

- NXP QorIQ P4080, eight cores running at 1.5 GHz
- NXP QorIQ P4040, four cores running at 1.5 GHz

## FORM FACTOR

- 95 mm x 125 mm COM Express Basic size

## BOOTLOADER

- U-boot

## MEMORY

- Support for 4GB DDR3-1333 ECC SO-UDIMM (two channels of 2GB)

## ON-BOARD STORAGE

- 128MB NOR flash
- 1GB NAND flash
- 2kilobit EEPROM

## ON-BOARD I/O

- JTAG Debug

## I/O TO THE CARRIER

12 configurable SERDES lanes available for maximum flexibility in customer platform design. Available interfaces include:

- Up to one (1) 10 GbE XAUI 3.125Gbps
- Up to four (4) 1 GbE SGMII 1.25 Gbps
- Up to three (3) PCI Express (x4) 2.5 or 5Gbps
- Up to two (2) SRIO (4x) 2.5 or 3.125 Gbps

## OTHER I/O AT THE CONNECTOR

- Four (4) UART ports
- One (1) Gigabit Ethernet interface (10/100/1000Base-T)
- Two (2) MDIO
- One (1) SDIO
- Eight (8) general purpose I/O (GPIO) ports
- Three (3) I²C bus
- Five (5) IRQ interrupts
- Four (4) USB 2.0 ports
- IEEE 1588 control
- Tamper detection
- Real-time clock
- Watchdog timer
- SPI Bus with four (4) chip selects

## ACCESSORIES

- Heatsink, heat spreading plate, development carrier

## ENVIRONMENTAL

- 0 °C to 60 °C operating temperature range

## COMPLIANCE AND CERTIFICATION INFORMATION

- RoHS 6/6
- UL/CSA 60950-1, EN55022, FCC Class B

# Firmware and Operating System Support

## OS SUPPORT

- Linux 2.6.34 BSP
- Wind River VxWorks 6.8 AMP and SMP
- Green Hills INTEGRITY

## Ordering Information

| Product | Description |
|---------|-------------|
| COMX-P4040 | P4040 processor module |
| COMX-P4040-4G-KIT | P4040 with 4GB DRAM and heatsink |
| COMX-P4080 | P4080 processor module |
| COMX-P4080-HP | P4080 heat spreading plate |
| COMX-P4080-HTSNK | P4080 active heatsink |
| COMX-P4080-4G-KIT | P4080 with 4GB DRAM and heatsink |
| COMX-CAR-P1 | QorIQ module carrier card |
| P4080COME-DS-PB | NXP Development System including the P4080 module, carrier, memory and driver. This kit is available from NXP and NXP distributors. For more information go to www.nxp.com |

## SOLUTION SERVICES

Artesyn Embedded Technologies provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

### WORLDWIDE OFFICES

| | | | |
|---|---|---|---|
| United States | +1 888 412 7832 | Japan | +81 3 5403 2730 |
| Hong Kong | +852 2176 3540 | Korea | +82 2 6004 3268 |
| China | +86 400 8888 183 | | |

**ARTESYN**
EMBEDDED TECHNOLOGIES

**www.artesyn.com**