COMPUTING

COMX-T2081 / COMX-T1042

COM Express Modules

Data Sheet

QorIQ processing power on a module for rapid deployment across diverse I/O requirements

- NXP T2081 and T1042 high performance e6500/e5500 CPU cores
- Soldered down 4G and 8G DDR3L ECC memories, up to 16GB optional
- 10/100/1000 BASE-T, SATA, SGMII and PCIe interfaces to carrier board
- Rugged design to support extended operating temperature and vibration
- Basic size form factor (95 mm × 125 mm)
- Linux 4.1 kernel and NXP® QorIQ® SDK 2.0
- Longevity of supply
- Global technical support

RoHS 6/6 COMPLIANT

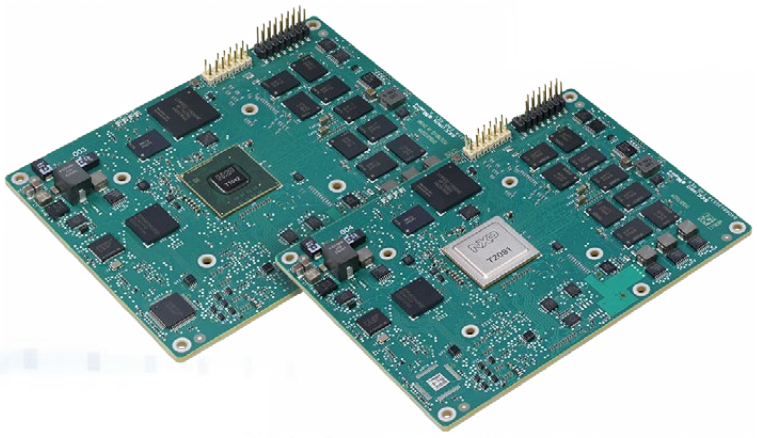
NXP

COM Express®

Leveraging industry-leading expertise in developing NXP® Power Architecture based COM Express modules, Artesyn Embedded Technologies further strengthens its extensive portfolio with newly launched COMX-T2081 and COMX-T1042 modules. Beyond the heritage of longevity of supply and superior performance/power rating, the NXP T2081 and T1042 processors bring a wide spectrum of high speed interfaces, enabling COMX-T2081 and COMX-T1042 as ideal, cost-effective commercial off-the-shelf (COTS) solutions to serve a broad market where processing density, technology migration and long lifecycle takes priority.

As a highly integrated single board computer, the Computer-on-Module (COM) form factor offers computer core processing capability on a compact footprint and generally pairs with a carrier board that functions as an infrastructure facility to provide power and peripheral connectors. The separation of design for a carrier board effectively enhances the modularity of COM form factor. It is the modularity that provides a great level of flexibility for processor selection and makes it easy to upgrade a COM without requiring a redesign of a specialized carrier board, allowing system integrators to focus on the differentiation of end applications, reduce development cost, shorten development cycle, and therefore speed time to market. With its advantages on density, modularity, scalability and “future proofing” attribute, the COM form factor plays a highly important role in the COTS market and enables a broad range of applications spanning telecom, networking, aerospace, military/defense, industrial automation and medical.

Nowadays, COM products are being widely adopted by system developers to address the burgeoning Internet of Things (IoT) market opportunities as it represents a natural fit for applications requiring low power consumption and small physical size. Embedded in various mission-critical systems, COM is also one of prevalent form factors that deliver processing engines to drive Industry 4.0 implementations. A recent market study shows that COM products take the largest share of the overall embedded computing market worldwide and it will grow at the highest Compounded Annual Growth Rate (CAGR) for the next five years. Among the different specifications of the COM form factor, COM Express is becoming the most popular as it is defined to deliver a high performance with a series of high speed interfaces.



ARTESYN™
EMBEDDED TECHNOLOGIES

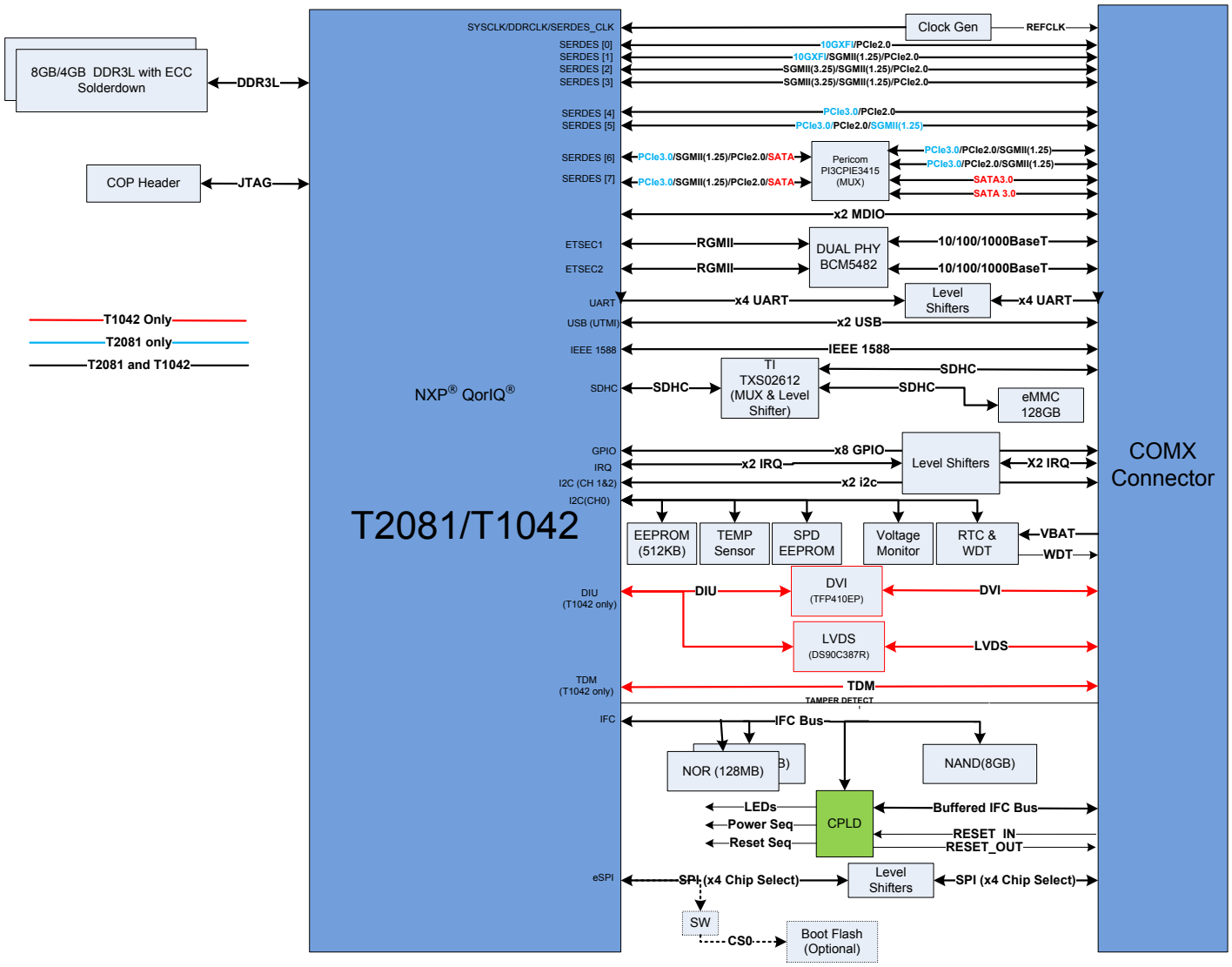
ARTESYN'S LEADING POSITION IN POWER ARCHITECTURE

As a significant contributor to PICMG® and a strategic partner of NXP, Artesyn has developed unmatchable expertise in designing industry-leading COM Express products and has built one of the most extensive Power Architecture based COM Express portfolios. The products built on advanced technology, consistent focus, supply longevity and superior quality have positioned Artesyn as a long-standing, trusted supplier for highly demanding applications in both commercial and military/defense markets. Designed for Basic size form factor (95 mm × 125 mm) and Type 5/6 pin-outs with NXP extensions/modifications, the newly launched QorIQ T-series based COMX-T2081 and COMX-T1042 modules further enhance Artesyn's Power Architecture COM Express portfolio, and provide customers with technology insertion to either handle a product migration smoothly or take on a green-field project effectively. Artesyn's COMX-T2081 and COMX-T1042 modules are designed to meet the stringent requirements on a harsh operating environment with its rugged design supporting extended temperature and vibration.

With its AltiVec engine and architecturally innovative dual-threaded e6500 core offering a high performance/watt rating, NXP's T2081 processor is primarily intended to succeed the successful QorIQ P-series mid-range series of quad-core devices as a control plane or integrated control and data plane processor. T2081 is designed to deliver maximum benefit for mid-range applications as it outperforms the previous generation in core capability, cache size and SerDes bandwidth, within a similar power budget. Pin-compatible with the T2081, the quad-core T1042 offers a cost-effective alternative for the applications requiring high performance CPU cores, along with SATA and graphics, in a low power envelope.

The lineup of COMX-T2081 and COMX-T1042 modules adheres to Artesyn's scalable product strategy by providing system developers with multiple performance levels. The implementation flexibility makes the two modules 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, wireless infrastructure, industrial automation, aerospace, and military/defense markets. And importantly, the sought-after longevity of supply of NXP Power Architecture processors enables customers to handle long lifecycle programs and maximize the return on their investment.

COMX-T2081 / COMX-T1042 Block Diagram



Hardware Specifications

PROCESSOR

- NXP QorIQ T2081, dual threaded quad cores (SEC) running at 1.5 GHz
- NXP QorIQ T1042, quad cores (Non-SEC) running at 1.4 GHz

FORM FACTOR

- Basic size 95 mm x 125 mm

BOOTLOADER

- U-boot

MEMORY

- COMX-T2081: Soldered down dual-bank 8GB DDR3L-1866 ECC
- COMX-T1042: Soldered down dual-bank 4GB DDR3L-1600 ECC

ON-BOARD STORAGE

- Two (2) redundant 128MB NOR flash
- 128GB eMMC
- 8GB NAND flash
- 512KB EEPROM

ON-BOARD I/O

- JTAG/COP debug

SERDES I/O TO THE CARRIER

Eight (8) configurable SERDES lanes available for maximum flexibility in customer platform design. Lane protocols are configurable. The user can select any of the combinations supported by the T2081 and T1042. Available interfaces include:

- COMX-T2081 module:
  - Up to six (6) 1GbE SGMII
  - Up to two (2) 2.5GbE SGMII
  - Up to two (2) 10GbE XFI/KR
  - Up to four (4) PCI Express 2.0 (X1)
  - Up to one (1) PCI Express 2.0 (X2)
  - Up to two (2) PCI Express 2.0 (X4)
  - Up to one (1) PCI Express 3.0 (X1 or X4)
- COMX-T1042 module
  - Up to five (5) 1GbE SGMII
  - Up to two (2) 2.5GbE SGMII
  - Up to four (4) PCI Express 2.0 (X1)
  - Up to one (1) PCI Express 2.0 (X2)
  - Up to two (2) PCI Express 2.0 (X4)
  - Up to two (2) serial ATA (SATA 2.0)

OTHER I/O AT THE CONNECTOR

- COMX-T2081 module:
  - Up to two (2) 10/100/1000Base-T
  - Up to two (2) MDC/MDIO
  - Four (4) UART ports
  - One (1) SDHC interface
  - Eight (8) GPIO ports
  - Two (2) I²C bus
  - Two (2) USB 2.0 ports
  - IEEE 1588 control
  - Tamper detection
  - Real-time clock
  - Watchdog timer
  - SPI Bus with four (4) chip selects
  - One (1) Integrated Flash Controller (IFC) bus
- COMX-T1042 module:
  - Up to two (2) 10/100/1000Base-T
  - Up to two (2) MDC/MDIO
  - One (1) TDM Interfaces
  - Four (4) UART ports
  - One (1) SDHC interface
  - Eight (8) GPIO ports
  - Two (2) I²C bus
  - Two (2) USB 2.0 ports
  - IEEE 1588 control
  - Tamper detection
  - Real-time clock
  - Watchdog timer
  - SPI Bus with four (4) chip selects
  - Video: One (1) LVDS (flat panel), one (1) DVI
  - One (1) Integrated Flash Controller (IFC) bus

ACCESSORIES

- Heatsink, fansink, heat spreading plate, development carrier

COMPLIANCE AND CERTIFICATION INFORMATION

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

Firmware and Operating System Support

OS SUPPORT

- Linux 4.1 kernel and NXP QorIQ SDK 2.0
- Wind River VxWorks 6.8 and 7.0 AMP and SMP (Optional and based on customer demand)
- Green Hills INTEGRITY (Optional and based on customer demand)

Environmental	
Ruggedization Level	*ENP2*
Cooling Method	Forced Air
Operating Temperature	-40 °C to +71 °C
Storage Temperature	-50 °C to +100 °C
Vibration Sine (10min/axis)	5G, 15 to 2000Hz
Vibration Random (1hr/axis)	.04g²/Hz, 15 to 2000Hz (8GRMS)*
Shock	30g/11mS
Humidity	to 95%/100% RH**
Conformal Coating	Option (Acrylic or Urethane)
Altitude	1,500 to 30,000 ft

*Flat 15-1000Hz, -6db/octave 1000Hz – 2000Hz [MIL-STD 810F Figure 514.5C-17]

**Up to 95% RH, non-condensing for non-conformal coated variants; up to 100% RH with certain conformal coatings

Ordering Information	
Product	*Description*
COMX-T2081-01	COM Express module based on NXP T2081 at 1.5 GHz, 8GB soldered down DDR3L ECC, Basic size, ENP2 ruggedization level
COMX-T1042-01	COM Express module based on NXP T1042 at 1.4 GHz, 4GB soldered down DDR3L ECC, Basic size, ENP2 ruggedization level
COMX-CAR-P1	Carrier board for NXP® QorIQ® processors based COM Express modules
COMX-TXXXX-HSP	Heat spreading plate for COMX-T2081 and COMX-T1042 modules
COMX-TXXXX-HTSNK	Heatsink for COMX-T2081 and COMX-T1042 modules
COMX-TXXXX-FANSNK	Fansink for COMX-T2081 and COMX-T1042 modules

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.

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