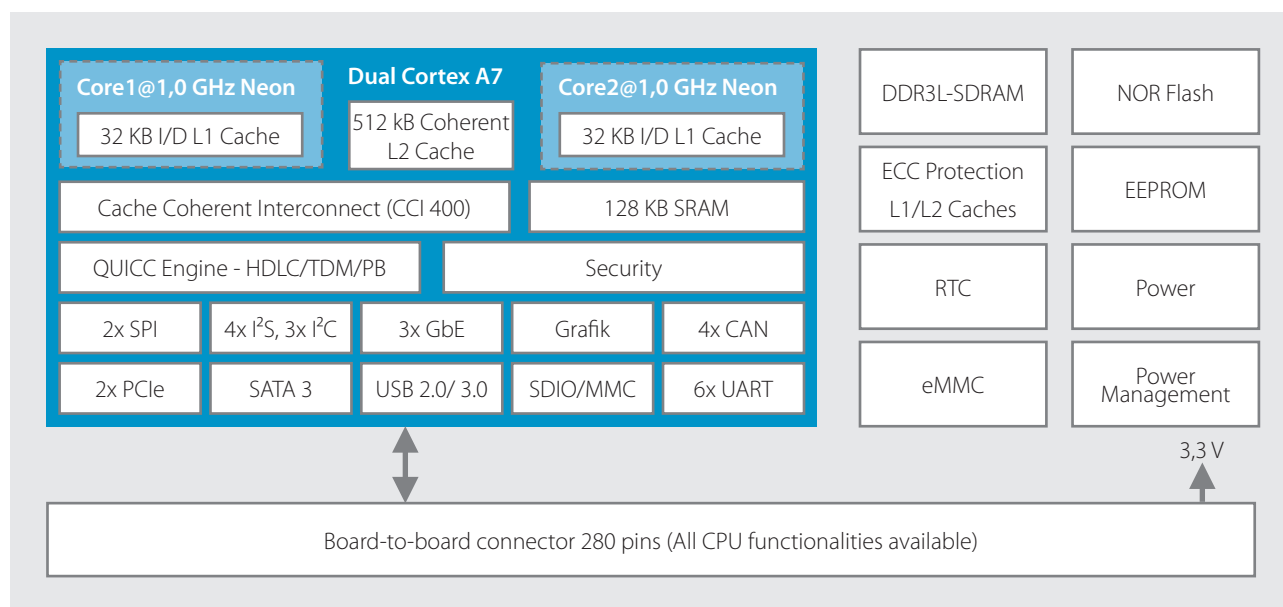# TQMLS102xA

For the networks of tomorrow

The Minimodule TQMLS102xA, based on the processor LS102xA from NXP, combines the ARM® core Architecture with the QorIQ® high speed communication technology. The integrated graphics controller supports applications with display and touch.

For various applications such as networking, industrial automation and controls with requirements for fast and secure data processing, there are three CPU variants available.

The Dual-Core ARM® Cortex™ A7 core provides a cache Coherent Interconnect bus system and a clock rate up to 2 x 1,0 GHz.

Thus the Embedded module TQMLS102xA- provides a balanced ratio between high performance and power dissipation.

The highlights:

- Graphic
- QorIQ QUICC Engine
- High speed communication via 3x Gigabit Ethernet, 2x PCIe and one USB 3.0 interface
- Low power consumption (typ. 3 W)
- ECC protection
- Cache Coherent Interconnect bus system
- IEEE 1588 hardware support
- Security functions

Block diagram TQMLS102xA

Core1@1,0 GHz Neon	Dual Cortex A7	Core2@1,0 GHz Neon				DDR3L-SDRAM	NOR Flash
32 KB I/D L1 Cache	512 kB Coherent L2 Cache	32 KB I/D L1 Cache				ECC Protection L1/L2 Caches	EEPROM
Cache Coherent Interconnect (CCI 400)		128 KB SRAM					
QUICC Engine - HDLC/TDM/PB		Security				RTC	Power
2x SPI	4x I²S, 3x I²C	3x GbE	Grafik	4x CAN			
2x PCIe	SATA 3	USB 2.0/ 3.0	SDIO/MMC	6x UART		eMMC	Power Management

3,3 V

Board-to-board connector 280 pins (All CPU functionalities available)

Technical specification

Microprocessor
QorIQ LS1020A, LS1021A, LS1022A

System interfaces
Up to 3x Ethernet 10/100/1000 Mbit (IEEE 1588)
Up to 4x FlexCAN
Up to 1x USB 2.0 high speed OTG interface
Up to 1x USB 3.0 high speed HOST interface
Up to 6x UART

Periphery interfaces
Up to 1x SDIO/MMC
Up to 3x I²C
Up to 2x SPI
Up to 4x I²S
Up to 1x SATA 3.0
Up to 2x PCIe
SPDIF

Graphic
LCD interface (only LS1021A)

Memory
DDR3L-SDRAM: Up to 2 GB
Quad SPI NOR: Up to 512 MB
eMMC: Up to 16 GB
EEPROM: 0 / 64 kbit
ECC protection (only LS1020A, LS1021A)

Other
Real Time Clock (RTC)
Temperature sensor
CPU JTAG interface
Extended power management (optional)
Voltage monitoring (optional)

Power supply
3,3 V

Ambient conditions
Extended temperature range: -40°C…+85°C

Dimensions
55 mm x 44 mm

Plug-in system
Board-to-board plug-in system 280 Pins

Operating systems
Linux

Operating systems on request
VxWorks, QNX, PikeOS

Ordering information (preliminary)

TQMLS1020A-AA
TQMLS1020A, Dual Cortex 7 / 1 GHz, 64 MB NOR flash, 1 GB DDR3L, 64 kbit EEPROM, -40°C …+85°C

TQMLS1021A-AA
TQMLS1021A, Dual Cortex 7 / 1 GHz, 64 MB NOR flash, 1 GB DDR3L, 64 kbit EEPROM, -40°C …+85°C

TQMLS1022A-AA
TQMLS1022A, Dual Cortex 7 / 600 MHz, 64 MB NOR flash, 512 MB DDR3L, 64 kbit EEPROM, -40°C …+85°C

STKLS102xA-AA (Prototypes Q1/15)
STKLS102xA (Eval Kit) with TQMLS102xA-AA, Dual Cortex A7/ 1 GHz (600 MHz), 1 GB DDR3L, 256 MB NOR flash, 64 kbit EEPROM, 1x RS232, 1x RS485, 2 x CAN 2.0B separated, 3x USB 3.0 HOST, 1x USB 2.0 OTG, 2x ETH 10/100/1000, LCD Port, 1xHDMI, LVDS, 2x PCIe, RTC, Temperature sensor, Reset button, SD interface, Power Supply, 4GB SD card, Cable

Starterkit STKLS102xA set

The core of the STKLS102xA set is the TQMLS102xA module with a Dual Cortex™ A7 CPU from NXP. The components contained in the starter kit constitute a modular system enabling you to develop your own product ideas. Development of graphic interfaces can be started immediately using the prepared combination of closed display unit and starter kit that are matched to each other. To develop your own hardware you can use the certified and qualified circuit components of the starter kit in your own designs.
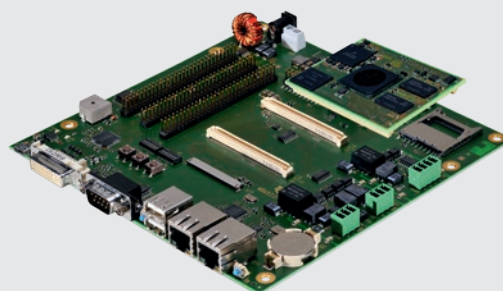
TQ-Systems GmbH
Mühlstr. 2 I Gut Delling | 82229 Seefeld | Germany
Phone: +49 8153 9308-0 | Fax: +49 8153 4223
info@tq-group.com | www.tq-group.com
>> Quicklink: www.tq-group.com/en/TQMLS102x

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