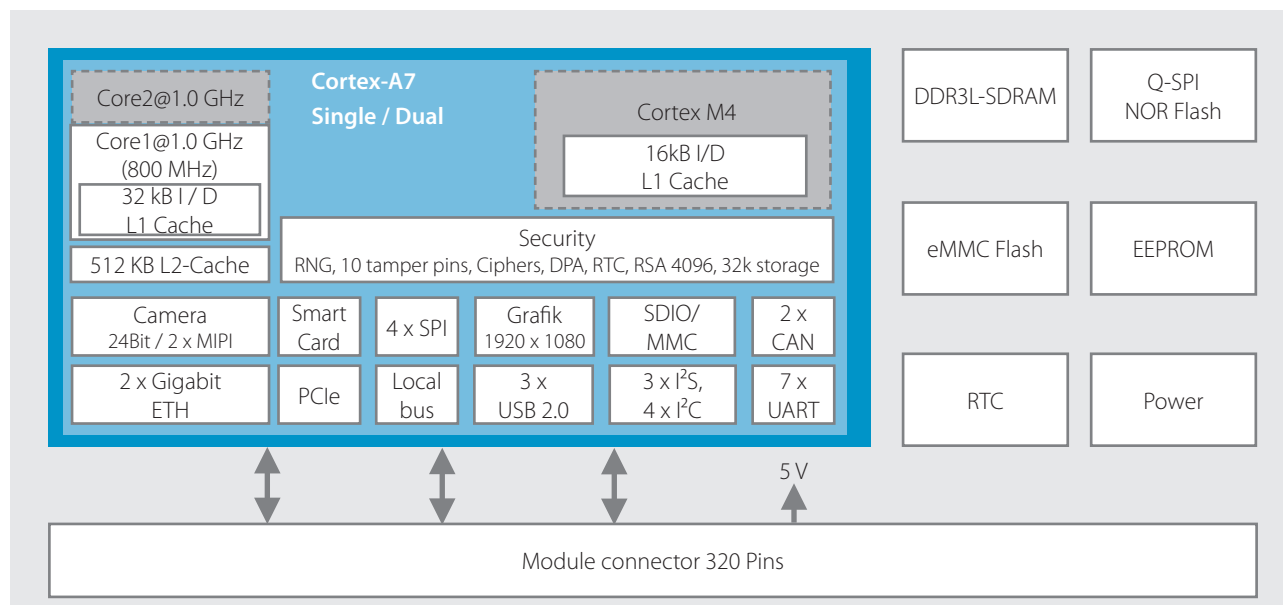# TQMa7x

Energy efficient for future designs

The Minimodule TQMa7x, based on the i.MX7 from NXP, combines an ARM Dual Cortex-A7 core technology with a variety of interfaces. The integrated graphics controller supports applications with display and touch screen requirements. For various applications such as networking, industrial automation and controls with requirements for fast and secure data processing, there are two CPU variants available. With a Single- / Dual-Core ARM Cortex™-A7 core and a clock rate up to 2 x 1,0 GHz the TQMa7x provides a balanced ratio between high performance and power dissipation.

The highlights:

- Graphic with full HD support
- Extended temperature range
- High-Speed communication via 2x Gigabit Ethernet and 1x PCIe interface
- Low power consumption (typ. 2 W)
- Integrated Cortex M4
- IEEE 1588 hardware support
- Security functions

Block Diagram TQMa7x

Cortex-A7 Single / Dual						DDR3L-SDRAM	Q-SPI NOR Flash
Core2@1.0 GHz			Cortex M4				
Core1@1.0 GHz (800 MHz)			16kB I/D L1 Cache			eMMC Flash	EEPROM
32 kB I / D L1 Cache							
512 KB L2-Cache	Security RNG, 10 tamper pins, Ciphers, DPA, RTC, RSA 4096, 32k storage						
Camera 24Bit / 2 x MIPI	Smart Card	4 x SPI	Grafik 1920 x 1080	SDIO/ MMC	2 x CAN	RTC	Power
2 x Gigabit ETH	PCIe	Local bus	3 x USB 2.0	3 x I²S, 4 x I²C	7 x UART		

5 V

Module connector 320 Pins

Technical specification

Microprocessor
i.Mx7S, i.Mx7D

System interfaces
Up to 2x Ethernet 10/100/1000 Mbit
Up to 2x CAN
Up to 2x USB 2.0 high speed OTG interface
Up to 1x USB 2.0 high speed HOST interface
Up to 7x UART

Periphery interfaces
Up to 3x SDIO/MMC
Up to 4x I²C
Up to 4x SPI
Up to 3x I²S
Up to 1x Smart Card
Up to 1x PCIe

Graphic
LCD Interface (24 Bit RGB)
Up to 2 Camera Sensor Interface (24Bit /MIPI)

Memory
DDR3L-SDRAM: Up to 1 GB
Quad SPI NOR: Up to 256 MB (TBD)
Up to 32 GB eMMC flash
EEPROM: 0 / 64 kbit

Other
Integrated Cortex M4
Real Time Clock (RTC)
Temperature sensor
CPU JTAG Interface

Power supply
5 V (TBD)

Ambient conditions
Standard temperature range: -20°C…+85°C

Dimensions
54 mm x 44 mm (TBD)

Plug-in system
Board-to-board plug-in system 320 pins (TBD)

Operating systems
Linux

Operating systems on request
VxWorks, QNX, WIN EC 2013

Ordering information (preliminary)

TQMa7S-AA (Prototypes Q2/16)
TQMa7S, i.MX7S (Single Cortex-A7) / 800 MHz, 4 GB eMMC
Flash
1GB DDR3L, 64 kB EEPROM, -20°C …+85°C

TQMa7D-AA (Prototypes Q2/16)
TQMa7D, i.MX7D (Dual Cortex-A7) / 1,0 GHz, 4 GB eMMC Flash
1GB DDR3L, 64 kB EEPROM, -20°C …+85°C

STKa7x-AA (Prototypes Q2/16)
STKa7x (Eval Kit) with TQMa7x-AA, Dual Cortex-A7 / 1,0 GHz, 1
GB DDR3L, 4 GB eMMC Flash,
64 kB EEPROM, 1x RS232, 1x RS485, 2 x CAN 2.0B separated
3x USB 2.0 HOST, 1x USB 2.0 OTG, 2x ETH 10/100/1000,
LCD Port, 1xHDMI, LVDS, 1x Mini PCIe, RTC,
Temperature sensor, Reset-Button, SD interface,
Power supply, 4 GB SD card, Cables

Starter kit STKa7x set

The core of the STKa7x set is the TQMa7x module with a Dual
Cortex-A7 CPU. 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.

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