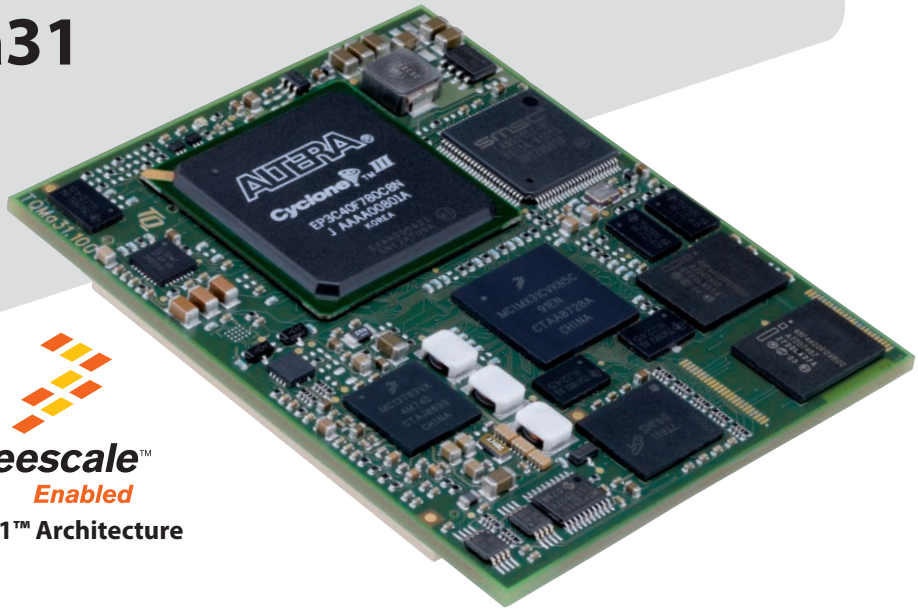
TQMa31



freescale™ Enabled

ARM11™ Architecture

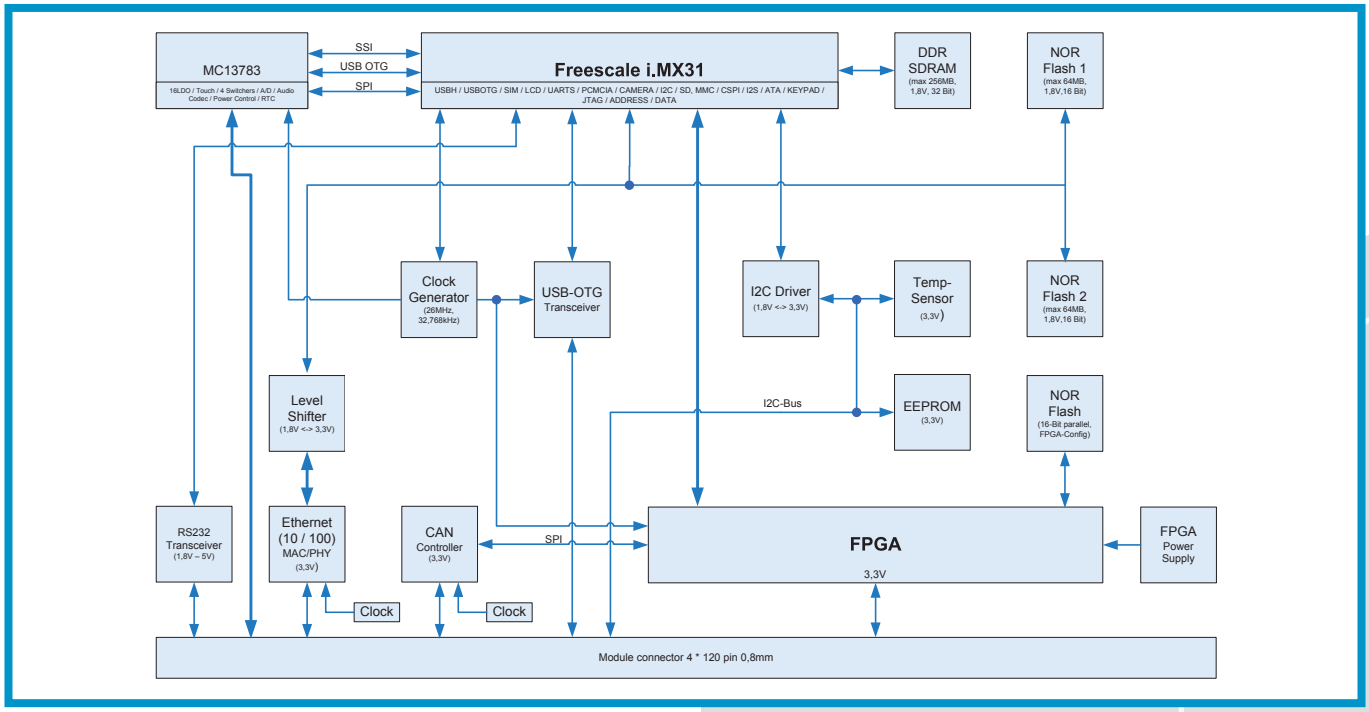
The TQMa31 supports the following key features

- FPGA on the module
  (Ability to implement additional, flexible and cost-effective interfaces)
- UART (RS232 / TTL)
- CAN
- 3D graphics up to WVGA
- I2S-compliant audio codec
- Extended temperature range
- NOR flash up to 128 MB
- DDR-SDRAM up to 256 MB
- USB 2.0 high-speed host interface
- USB full-speed on-the-go device interface
- OS: WinCE 5.0, Linux (kernel 2.6)
- Dimensions: 75 mm x 60 mm
- Simple 3.3 V power supply
- Simple and cost-effective development of baseboard
- Support through baseboard reference design

Based on the i.MX31 processor from Freescale, the TQMa31 mini-module offers a balance between computing power and graphics performance (up to WVGA, with 3D accelerator up to VGA). The ARM11 core at up to 532 MHz provides the foundation. The MPEG4 encoder integrated in hardware substantially simplifies connection to video sources by providing simultaneous compression. Since module functions are compatible with each other, the module provides simple and cost-effective baseboard development.

All functional pins of the processor are led through to the module connectors.

Block diagram TQMa31



TQMa31

System components

- CPU: MCIMX31
- Power-Manager MC13783
- DDR-SDRAM up to 256 MB
- NOR flash up to 2 x 64 MB
- FPGA (Altera Cyclone III)
- FPGA configuration flash
- FPGA power supply (1.2 V, 1.8V, 2.5 V)
- I2C repeater
- EEPROM 0 / 8 kBit ... 64 kBit
- Temperature sensor to monitor system temperature
- RTC
- Transceiver for serial interface
- COP/JTAG interface on module connector for CPU and FPGA
- Board-to-board connector system (4 * 120 pin)
- 1 CAN controller
- USB 2.0 Host controller (High Speed)
- USB-OTG transceiver (Full Speed)
- 1 LAN controller (MAC/PHY - 10/100 Mbit)
- Reset-LED

Key functionalities

ARM1136 CPU: I-Cache, D-Cache, L2-Cache | Jazzelle Java acceleration | VFP – Vector Floating Point Co-processor | CPU speed: Up to 532 MHz

EMI – External Memory Interface: SDRAM 16/32 Bit, 133 MHz; DDR 16/32 Bit, 266 MHz | NOR flash, SRAM

Multimedia: MPEG-4 HW encoder | Graphics accelerator | IPU-Image processing unit | CMOS/CCD sensor interface | Resize, colour space conversion | Display controller

Interfaces: USB OTG full speed, host HS, host FS | PCMCIA (CF-Card) | Audio MUX | Keypad | Configurable SPI 2, SSI/I2S 2, UART 5, MMC.SDIO

FPGA

FPGA implemented on the module provides convenient interfacing of industrial components with the TTL level. This can also be utilized for flexible expansion of applications. Possible applications:

- 2. Ethernet
- Fast GPIOs
- 2. CAN
- Connection to a high-resolution A/D converter with signal preprocessing

STKa31

The core of the STKa31 Set is the TQMa31 with the MCIMX31 CPU from Freescale. 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. Using the JTAG interface mounted on the starter kit, you can program and test the FPGA so as to be able to quickly launch new projects. When developing your own hardware, you can incorporate the tested and qualified circuit components of the starter kit in the development of your own designs.

Interface overview of the STKa31

- Up to 2x Ethernet 10/100 Mbit/s
- 2 x USB
- 2 x serial RS232 or RS485 (optional)
- Up to 2 x CAN
- 1 x SD card
- 1 x CF card
- Audio (microphone, speaker)
- 12 x GPIO
- FPGA-JTAG and FPGA test interface
- CPU-JTAG
- 18 bit LCD interface and backlightcontrol
- Reset button
- Buffer battery
- Power supply 15-30 V

Included components

- TQMa31 module
- 7“ display unit with 800 x 480 resolution and resistive touch, including connecting cables
- Power supply
- 9-pin null modem cable
- Documentation

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Data sheet: TQMa31 REV. 101
Document-No.: TQMa31.DB.101