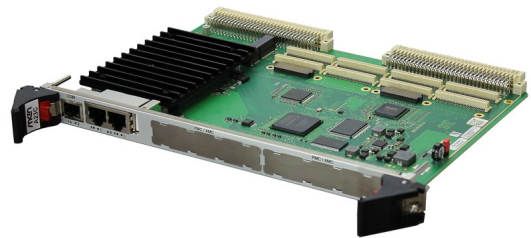


A23C

TI Sitara ARM Cortex-A15 CPU 6U VMEbus

- » TI Sitara dual-core ARM Cortex-A15 AM5728, 1.5 GHz
- » 64-bit VMEbus master and slave interfaces
- » Up to 2 GB DDR3 SDRAM
- » microSD card and mSATA card slot
- » 1 USB, 2 Gb Ethernet, 1 COM
- » 2 PMC/XMC slots
- » U-Boot Universal Boot Loader
- » -40°C to +85°C screened



Low-Power ARM-Based VMEbus CPU

The single-board computer A23C features a versatile high-performance, small footprint and low-power ARM processor, which allows application partitioning thanks to its 32-bit A15 CPU with integrated M4, GPU and DSP co-processors. The A23C supports a reduction of system size, a reliable long-term operation without forced air cooling, and manifold computing functions with just one computer board.

Versatile Front I/O and Mass Storage

With one USB port, two Gigabit Ethernet ports and one RS232 COM at the front, the board offers the crucial basics of a multi-purpose industrial computer. As these interfaces are already provided by the ARM CPU, the remaining board space can be flexibly used for two PMC/XMC modules. Being equipped with DDR3 SDRAM, Flash and FRAM, the need for flexible mass storage extensions is covered by slots for microSD card and mSATA.

Additional Interfaces via PMC/XMC

In addition, the A23C can be equipped with up to two XMC or PMC mezzanine cards on shared sites, providing both front I/O (XMC/PMC) and rear I/O (PMC) for functions such as graphics, mass storage, or further Ethernet. The two PMC slots support modules up to 64-bit/133-MHz PCI-X, while the XMC slots are controlled by one PCI Express x1 link.

The modular extension with I/O mezzanines on a single-board computer allows to configure tailored systems from open standard components, reducing thus integration time and cost.

Designed for Harsh Environments

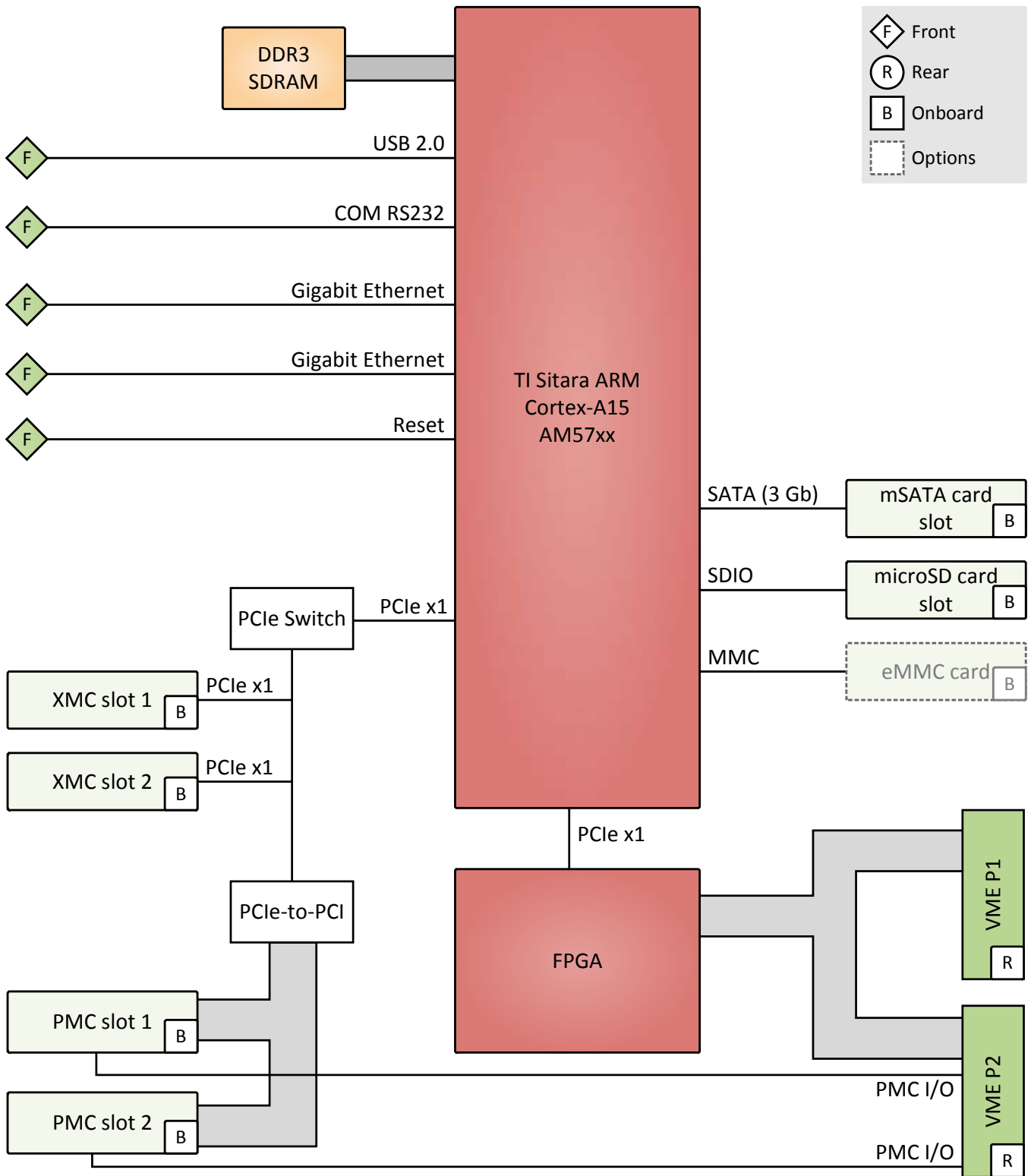
The A23C supports operation in a -40°C to +85°C temperature range. The board withstands shock and vibration as all components on the board are soldered, which is a prerequisite for reliable operation and a longer product life-time.

Software Support

The CPU board is supported by the Universal Boot Loader (U-Boot), which can be used for bootstrapping operating systems, for hardware testing, or for debugging applications without running any operating system. TI Sitara processors guarantee long-term availability and compatibility with the latest versions of Linux or QNX.

Demanding Markets

The A23C is a computer board well suited for critical embedded applications, especially in the industrial automation and power & energy markets, for example as the central safety platform for power plants. With a guaranteed standard life-time of ten years from product start, the A23C facilitates life-cycle management by making the overall system available at least for this period of time.



Diagram

CPU

- The following CPU types are available:
 - TI Sitara ARM Cortex-A15, AM5728, 1.5 GHz, dual core, no ECC, with graphics
 - TI Sitara ARM Cortex-A15, AM5726, 1.5 GHz, dual core, no ECC, no graphics (on request)

Memory

- System Memory
 - Soldered DDR3, no ECC
 - 1 GB or 2 GB
- Boot Flash
 - 4 MB, or
 - 8 MB, or
 - 16 MB
- 128 KB non-volatile FRAM

Mass Storage

- The following mass storage devices can be assembled:
 - microSD card
 - mSATA disk
 - eMMC device, soldered; different sizes available

Front Interfaces

- USB
 - One Type A connector, host, USB 2.0
- Ethernet
 - Two RJ45 connectors, 1000BASE-T
 - Four link and activity LEDs (two per channel)
- UART
 - One physical interface RS232 on RJ45 connector
- PMC/XMC front I/O if populated
- Status LEDs
- Reset button

Onboard Interfaces

- The board supports either two XMC slots or two PMC slots.
- XMC
 - Two slots
 - Compliant with XMC standard VITA 42.3-2006
 - One x1 PCI Express link for both slots
 - 5 V / 3.3 V V(I/O)
- PMC
 - Two slots
 - Compliant with PMC standard IEEE 1386.1
 - PCI/PCI-X 32/64-bit, 33/66/133 MHz, 3.3 V V(I/O)

Rear Interfaces

- PMC
 - Signals from PMC modules 0 and 1
 - PMC I/O module (PIM) support through J4 for both slots

Supervision and Control

- Watchdog
- Temperature measurement
- Voltage monitoring
- Real-time clock
 - with supercapacitor, or
 - with battery backup (optional)

Backplane Standard

- Compliant with VME64 Specification
- Slot-1 function with auto-detection
- Hot insertion and removal without damage
- Master
 - D08(E0):D16:D32:D64:A16:A24:A32:ADO:BLT:RMW
- Slave
 - D08(E0):D16:D32:D64:A16:A24:A32:BLT:RMW
- 1 MB shared fast SRAM
- DMA
- Mailbox functionality
- Interrupter D08(O):I(7-1):ROAK
- Interrupt handler D08(O):IH(7-1)
- Single level 3 fair requester
- Single level 3 arbiter
- Bus timer
- Location Monitor

Electrical Specifications

- Supply voltage
 - +5 V (-3%/+5%)
 - +3.3 V (-3%/+5%)
 - ±12 V (-5%/+5%), only provided for mezzanines that need 12 V
- Power consumption
 - 9 W max. (without XMC/PMC modules)

Mechanical Specifications

- Dimensions
 - 6U, 4 HP
- Weight
 - 370 g (01A023C00)

Environmental Specifications

- Temperature range (operation)
 - -40°C to +85°C (qualified components), compliant with EN 50155, class TX
 - Airflow: min. 1.0 m/s
- Temperature range (storage): -40°C to +85°C
- Cooling concept
 - Air-cooled
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3000 m
- Conformal coating: optional

Reliability

- MTBF: tbd h @ 40°C according to IEC/TR 62380 (RDF 2000)

Safety

- Electrical Safety
 - EN 50153:2014
 - EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013
 - EN 62368-1:2014
- Flammability (PCBs)
 - UL 94 V-0

EMC

- EN 50121-3-2:2015
- EN 55022:2010
- EN 55024:2010

BIOS

- U-Boot Universal Boot Loader

Software Support

- Linux Yocto
- QNX 6.6
- VxWorks (on request)
- For more information on supported operating system versions and drivers see Software.

Germany

MEN Mikro Elektronik GmbH

Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0

sales@men.de
www.men.de

USA

MEN Micro Inc.

860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone 215-542-9575

sales@menmicro.com
www.menmicro.com

France

MEN Mikro Elektronik SAS

18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33-450-955-312

sales@men-france.fr
www.men-france.fr

China

MEN Mikro Elektronik (Shanghai) Co., Ltd.

Room 808-809, Jiaxing Mansion, No. 877 Dongfang Road
200122 Shanghai
Phone +86-21-5058-0961

sales@men-china.cn
www.men-china.cn

Up-to-date information, documentation and ordering information:

www.men.de/products/a23c/

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