nanoX-AL

COM Express Mini Size Type 10 Module with Next Gen Intel® Atom™, Pentium® and Celeron® SoC

Features

Priliminary

- Next Generation Intel® Atom™, Pentium® and Celeron® SoC (VT-x/VT-d support)
- Up to 8GB Dual Channel soldered non-ECC DDR3L at 1867/1600MHz
- Newest Intel® Gen9 Low Power graphics, up to 4k resolution and H.265 codec
- Four PCIe x1 Gen2 (configurable to x2, x4), GbE
- Two SATA 6 Gb/s, two USB 3.0 and six USB 2.0, eMMC 5.0 (build option)
- Supports Smart Embedded Management Agent (SEMA) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option for selected SKUs)

Specifications

● Core System

CPU

Next Generation Intel® Atom™, Pentium® and Celeron® SoC - 14nm process

Atom™ (4C/1866), 9-12W
Atom™ (2C/1866), 6W
Pentium® (4C/1866), 10W
Celeron® (2C/1600), 6W

Supports: Intel® VT, Intel® VT-d, Intel® TXT, Intel® SSE4.2, Intel® 64 Architecture, IA 32-bit, Intel® AES-NI, dual or quad Out-of-Order Execution (OOE) processor cores, PCLMULQDQ Instruction DRNG
Note: Availability of features may vary between processor SKUs.

Memory

Up to 8 GB Single or Dual channel DDR3L at 1867/1600 MHz non-ECC

Embedded BIOS

AMI EFI with CMOS backup in 16MB SPI BIOS

Cache

2MB for all SKUs

Expansion Busses

4 PCI Express x1 Gen2: Lanes 0/1/2/3 (configurable to x2, x4)
LPC bus, SMBus (system) , I²C (user)

SEMA® Board Controller

Supports : Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, flat panel control, general purpose I2C, failsafe BIOS (dual BIOS), watchdog timer and fan control

Debug Headers

40-pin multipurpose flat cable connector for use with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, power testpoints, debug LEDs
60-pin XDP header for ICE debug of CPU/chipset on break out board

● Video

GPU Feature Support

Intel® Generation 9 LP Graphics Core Architecture, supporting 2 independent and simultaneous display combinations of DisplayPort, HDMI, LVDS or eDP outputs
Hardware encode/transcode (including HEVC)
DirectX 12, DirectX 11.3, DirectX 10, DirectX 9.3 support
OpenGL 4.3 and ES 3.0 support
OpenCL 2.0 support

Digital Display Interface

DDI0 supportts DisplayPort/HDMI/DVI

LVDS

Single channel 18/24-bit LVDS from eDP-to-LVDS IC

eDP

4 lane support (build option, in place of LVDS)

● Audio

Chipset

Intel® HD Audio integrated in SoC

Audio Codec

On carrier miniBASE-10R

● Ethernet

Intel® MAC/PHY: Intel® Ethernet i210
Interface: 10/100/1000 GbE connection
Note: Intel® Ethernet i211 is supported by project basis

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product. Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

Specifications

● I/O Interfaces

USB: 2x USB 1.1/2.0/3.0 (USB 0,1) and 6x USB 1.1/2.0 (USB 2,3,4,5,6,7)
SATA: Two ports SATA 6Gb/s (SATA0,1)
Serial: 2 UART ports (console redirection is TBD)
eMMC: eMMC 5.0 (8/16/32GB, build option)
GPIO/SD: 4 GPO and 4 GPI
SD signal is a build option supported by project basis

● Super I/O

Supported on carrier if needed (standard support for W83627DHG-P)

● TPM (build option)

Chipset: TBD
Type: TPM 2.0 (TBD)

● Power

Standard Input: ATX: 12V±5%, 5Vsb ±5%; AT: 12V±5%
Wide Input: ATX: 4.75-20 V, 5Vsb ±5%; AT: 4.75-20V (Standard Temp. only)
Management: ACPI 5.0 compliant, Smart Battery support
Power States: C1-C6, S0, S3, S4, S5 and S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5)
ECO mode: Supports deep S5 mode for power saving

● Mechanical and Environmental

Form Factor: PICMG COM.0 Rev 2.1, Type 10
Dimension: Compact size: 84 mm x 55 mm

Operating Temperature

Standard: 0°C to 60°C
Extreme Rugged: -45°C to +85°C (build option)

Humidity

5-90% RH operating, non-condensing
5-95% RH storage (and operating with conformal coating)

Shock and Vibration

IEC 60068-2-64 and IEC-60068-2-27
MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

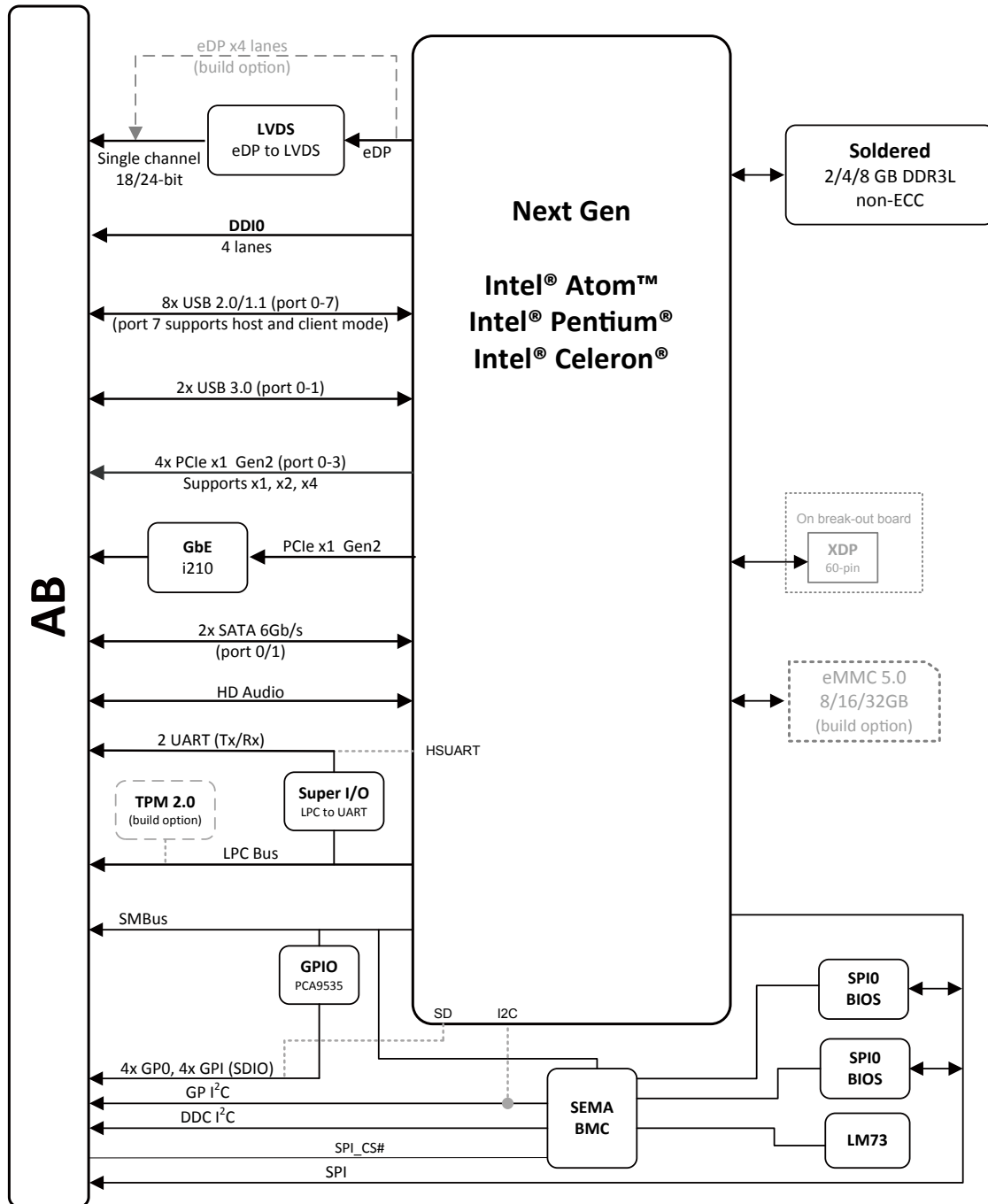### ● Operating Systems

Standard Support

Windows 10 64-bit, Linux 64-bit

Extended Support (BSP)

Linux 64-bit, VxWorks 64-bit (TBD)

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Functional Diagram

Ordering Information