

# nanoX-BT

## Extreme Rugged COM Express® Mini Size Type 10 Module with Intel® Atom™ E3800 series or Celeron® Processor SoC

### Features

- Single, dual, quad-core Intel® Atom™ or Celeron® Processor SoC
- Up to 4GB soldered Dual Channel DDR3L at 1333MHz
- One DDI channel, one LVDS (build option, eDP)
- Three PCIe x1
- GbE, two SATA 3Gb/s, four USB and one USB client
- Supports Smart Embedded Management Agent (SEMA®) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option)



### Specifications

#### • Core System

##### CPU

Single, dual, quad-core Intel® Atom™ or quad-core Celeron®  
 Atom™ E3845 1.91 GHz 542/792 Gfx (Turbo) 10W (4C/1333)  
 Atom™ E3827 1.75 GHz 542/792 Gfx (Turbo) 8W (2C/1333)  
 Atom™ E3826 1.46 GHz 533/667 Gfx (Turbo) 7W (2C/1066)  
 Atom™ E3825 1.33 GHz 533 Gfx (No Turbo) 6W (2C/1066)  
 Atom™ E3815 1.46 GHz 400 Gfx (No Turbo) 5W (1C/1066) Atom™ E3805 1.33 GHz (No GFX) 3W (2C/1066)  
 Celeron® N2930 1.83/2.16 (Burst) GHz, 313/854 (Turbo) 7.5W (4C/1333)  
 Celeron® J1900 2.0/2.42 (Burst) GHz, 688/854 (Turbo) 10W (4C/1333)  
 Supports: Single, dual or quad Out-of-Order Execution (OOE) processor cores, Intel® VT-x, Intel® SSE4.1 and SSE4.2, Intel® 64 architecture, IA 32-bit, PCLMULQDQ Instruction DRNG, Intel® Thermal Monitor (TM1 & TM2)  
 Note: Availability of features may vary between processor SKUs.

##### Memory

Single channel non-ECC 1333/1066 MHz soldered DDR3L memory up to 4GB (2GB or 4GB)

##### Embedded BIOS

AMI EFI with CMOS backup in 8MB SPI BIOS

##### Cache

Primary 32 KB, 8-way L1 instruction cache and 24 KB, 6-way L1 write-back data cache  
 2MB for E3845, N2930 and J1900  
 1MB for E3827, E3826, E3825 and E3805  
 512K for E3815

##### Expansion Busses

3 PCI Express x1 Gen2 (AB): lanes 0/1/2;  
 optional PCIe x4 (lose GbE)  
 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, Watchdog Timer

#### Debug Headers

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

#### GPU Feature Support

7th generation Intel® graphics core architecture with four execution units supporting two independent displays  
 3D graphics hardware acceleration  
 Supports for DirectX11, OCL 1.1, OGL ES Halt/2.0/1.1, OGL 3.2  
 Video decode hardware acceleration including support for H.264, MPEG2, MVC, VC-1, WMV9 and VP8 formats  
 Video encode hardware acceleration including support for H.264, MPEG2 and MVC formats

#### Digital Display Interface

One DDI channel supporting DisplayPort/HDMI/DVI

#### LVDS/eDP

Single channel 18/24-bit LVDS  
 (BOM option support for 24-bit EDID panel)  
 eDP support (build option)

#### • Audio

##### Chipset

Intel® HD Audio integrated in SOC

##### Audio Codec

Located on carrier miniBASE-10R

#### • Ethernet

Intel® MAC/PHY: Intel® i210LM (MAC/PHY) Ethernet controller  
 Interface: 10/100/1000 GbE connection

## Specifications

### • I/O Interfaces

USB: 1x USB 3.0 (USB 0) 3x USB 2.0 (USB 1,2,3) and 1x USB 2.0 client (USB 7)  
SATA: Two SATA 3 Gb/s ports  
Serial: 2 UART ports COM 0/1 (COM 0 support console redirection)  
eMMC: Optional soldered on module bootable eMMC flash storage  
8G to 32 GB  
SD: Optional, SD support multiplexed over GPIO pins  
eMMC and SD functions may vary between OS  
GPIO: 4 GPO and 4 GPI

### • Super I/O

On carrier if needed (standard support for W83627DHG-P)

### • Power

Standard Input: ATX =  $12V \pm 5\%$  /  $5Vsb \pm 5\%$  or AT =  $12V \pm 5\%$   
Wide Input: ATX = 5-14V /  $5Vsb$  (standard temp. only)  
AT = 5-14V (standard temp. only)  
Management: ACPI 4.0 compliant, Smart Battery support  
Power States: C0, C1, C1E, C4, C6  
S0, S3, S4, S5 (Wake on USB S3/S4, WOL S3/S4/S5)  
ECO mode: Supports deep S5 (ECO mode) for power saving

### • Operating Systems

#### Standard Support

Windows 7/8 32/64-bit, Linux 32/64-bit

#### Extended Support (BSP)

WES7/8, Linux, VxWorks 32/64-bit, WEC7 32-bit

### • Mechanical and Environmental

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

#### Operating Temperature

Standard: 0°C to +60°C  
Extreme Rugged: -40 to +85°C (build option, Atom™ E38xx series only)

#### Humidity

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

#### Shock and Vibration

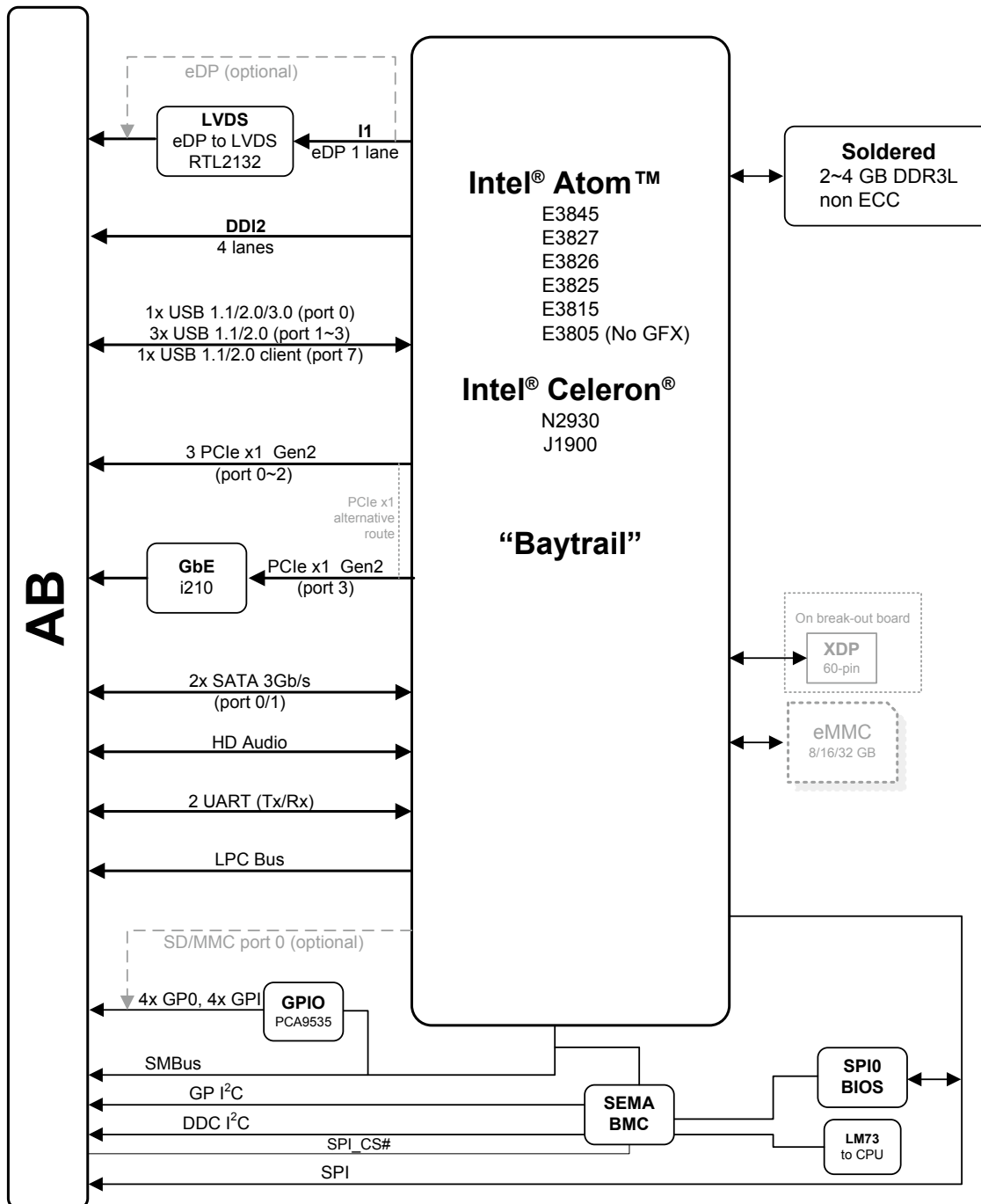
IEC 60068-2-64 and IEC-60068-2-27  
MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

#### HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

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 part numbers for SKUs with "build options" will need to be created and may cause production lead times.

## Functional Diagram



## Ordering Information

- **nanoX-BT-E3845-2G**  
COM Express® Mini Size Type 10 with Intel® Atom™ E3845 at 1.91 GHz and 2GB non ECC DDR3L
- **nanoX-BT-E3827-2G**  
COM Express® Mini Size Type 10 with Intel® Atom™ E3827 at 1.75 GHz and 2GB non ECC DDR3L
- **nanoX-BT-E3826-2G**  
COM Express® Mini Size Type 10 with Intel® Atom™ E3826 at 1.46 GHz and 2GB non ECC DDR3L
- **nanoX-BT-E3825-2G**  
COM Express® Mini Size Type 10 with Intel® Atom™ E3825 at 1.33 GHz and 2GB non ECC DDR3L
- **nanoX-BT-E3815-2G**  
COM Express® Mini Size Type 10 with Intel® Atom™ E3815 at 1.46 GHz and 2GB non ECC DDR3L
- **nanoX-BT-E3805-2G**  
COM Express Mini Size Type 10 with Intel® Atom™ E3805 at 1.33 GHz and 2GB non ECC DDR3L
- **nanoX-BT-N2930-2G**  
COM Express Mini Size Type 10 with Intel® Celeron® N2930 at 1.83 GHz and 2GB non ECC DDR3L
- **nanoX-BT-J1900-2G**  
COM Express® Mini Size Type 10 with Intel® Celeron® J1900 at 2.00 GHz and 2GB non ECC DDR3L

## Accessories

### Heat Spreaders

- **HTS-nXBT-B**  
Heatspreader for nanoX-BT with threaded standoffs for bottom mounting
- **HTS-nXBT-BT**  
Heatspreader for nanoX-BT with through hole standoffs for top mounting

### Passive Heatsinks

- **THS-nXBT-B**  
Low profile heatsink for nanoX-BT with threaded standoffs for bottom mounting
- **THS-nXBT-BT**  
Low profile heatsink for nanoX-BT with through hole standoffs for top mounting
- **THSM-nXBT-B**  
High profile heatsink for nanoX-BT with threaded standoffs for bottom mounting

## Starter Kit

- **COM Express Type 10 Starter Kit Plus**  
COM Express formfactor starter kit with miniBase-10R carrier board, power supply, and accessory kit