

# 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), I <sup>2</sup> C (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 I <sup>2</sup> C, 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

#### Video

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

#### 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)

## Specifications

### Power

Standard Input	ATX = 12V±5% / 5Vsb ±5% or AT = 12V±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

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

### Mechanical and Environmental

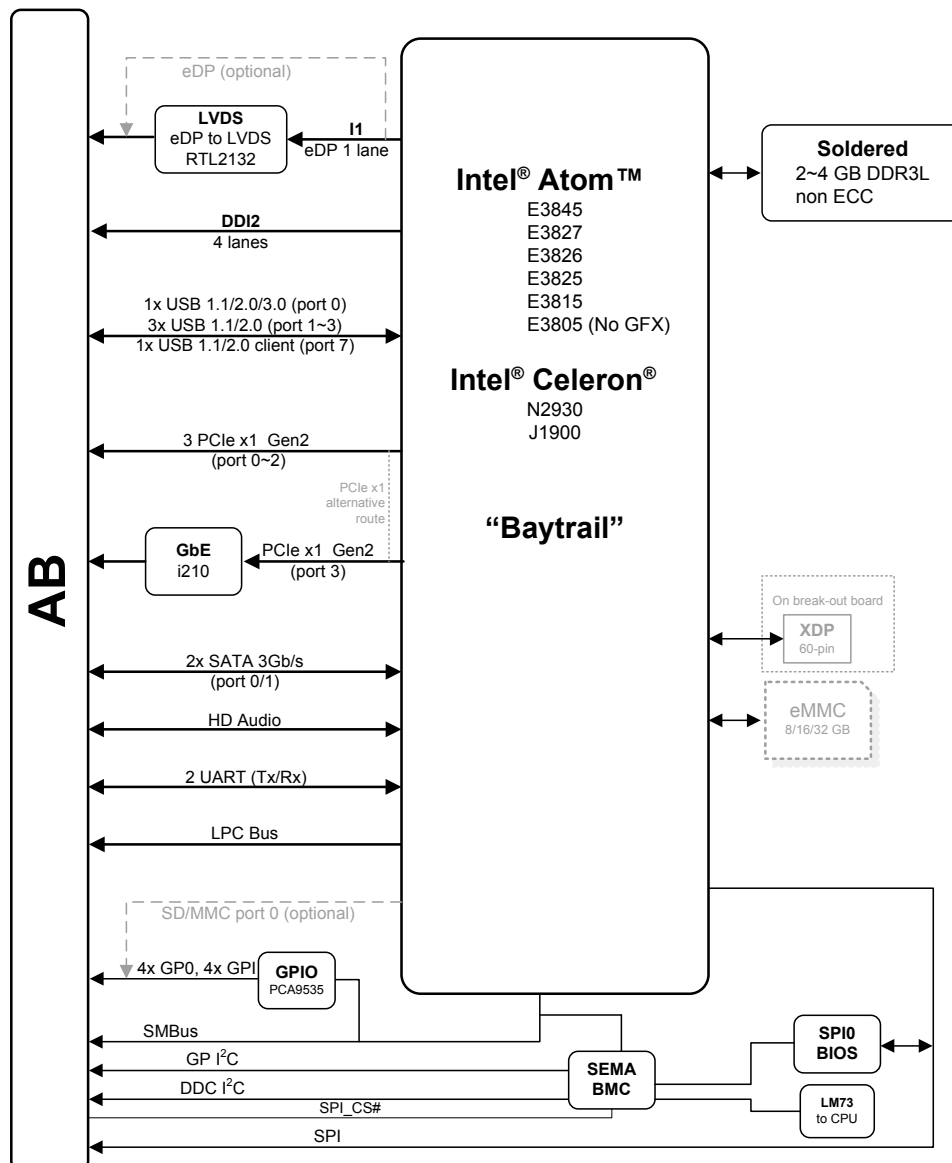
Form Factor	PICMG COM.0: Rev 2.1 Type 10
Dimension	Mini size: 84 mm x 55 mm
Operating Temperature	Standard: 0°C to +60°C Extreme Rugged: -40 to +85°C (build option, Atom™ E38xx series only)

### 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

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

### Modules

Model Number	Description/Configuration
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® Basic Size Type 6 Module with Intel® Core™ i7-3612QE 2.1GHz 35W Quad Core CPU , two DDR3 ECC SODIMMs supported
nanoX-BT-E3815-2G	COM Express® Mini Size Type 10 with Intel® Atom™ E3815 at 1.33 GHz and 2GB non ECC DDR3L
nanoX-BT-E3805-2G	COM Express® Mini Size Type 10 with Intel® Atom™ E3815 at 1.46 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

Model Number	Description/Configuration
<b>Heat Spreaders</b>	
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
<b>Passive Heatsinks</b>	
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

Model Number	Description/Configuration
COM Express Type 10 Starter Kit Plus	COM Express formfactor starter kit with miniBase-10R carrier board, power supply, and accessory kit