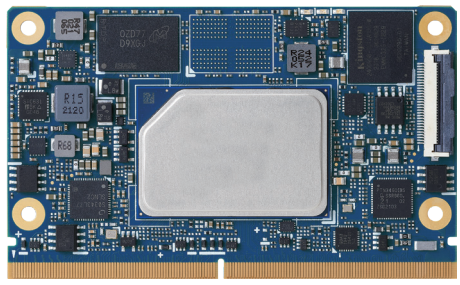
LEC-EL

SMARC 2.1 Short Size Module with intel Atom® series

Features

- Dual or quad-core Intel Atom® Series
- SMARC revision 2.1.1 compliant
- Up to 16GB LPDDR4 at 4266 MT/s
- Dual channel LVDS 918/24-bit)
- DP++, DP++ / HDMI
- 1x SATA Gen 3 / onboard eMMC up to 256 GB
- 10 year product availability
- Dual CAN bus
- USB2/ USB 3 interfaces
- Dual 2.5 gigabit ethernet ports



Specifications

Core System

CPU

Intel Atom® X6425E,4 cores, 1.8GHz, 12W TDP
Intel Atom® X6413,4 cores, 1.5GHz, 9W TDP
Intel Atom® X6211E,2 cores, 1.2GHz, 6W TDP
Intel Atom® X6200FE,2 cores, 1.0GHz, 4.5W TDP (FUSA)
Intel Atom® X6414RE, 4 cores, 1.5GHz, 9W TDP
Intel Atom® X6425RE, 4 cores, 1.9GHz, 12W TDP

Memory

2, 4, 8, 16 GB LPDDR4L-4266 (In Band ECC)

Cache

1.5 MB system L2 cache 4MB LLC

Security

Intel® Boot Guard
Intel® OS Guard
Intel® Platform Trust Technology (Intel® PTT)
Intel® AES-New Instruction, Intel® SHA Extensions
Intel® Secure Key
Digital Rights Management HDCP 2.3-Playready 4 SMx
Crypto Support
Intel® Virtualization Technology (Intel® VT)
Intel® Dynamic Application Loader (Intel® DAL)
Optional ATECC608 Crypto chip
Optional TPM 2.0 module

Video

GPU Core

Gen 11LP 4Kp60 @ 3 displays simultaneous

GPU Feature Support

11th generation Intel® graphics core architecture with up to 32 execution units (selected SKUs) , supports three independent displays 2D and 3D graphics hardware
acceleration

Support for DirectX 12, OpenGL 4.2, OpenCL 1.2 Video decode HW acceleration for H.265/HEVC, H.264, MPEG2, MVC, VC-1, WMV9, JPEG/ MJPEG, VP8, VP9Video encode HW acceleration for H.265/HEVC, H.264, MPEG2, MV

HDMI

HDMI 2.0b 4K@60 Hz

LVDS

Dual Channel LVDS 18/24 bit

System Storage

SDIO

1x SDIO (4-bit) compatible with SD/SDIO standard, up to version 3.0

eMMC

16, 32, 64 or 128 GB (build option)
Compatible with eMMC specification 4.41, 4.51, 5.0 and 5.1

SATA

1x SATA Gen3

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Specifications

SEMA® Board Controller

Supports: Voltage/Current monitoring, Power Sequencing, Logistics and Forensic Information, Flat Panel Control, I²C Bus Control, GPIO Control, User Flash, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control

Debug Header

30-pin multipurpose flat cable connector for use with optional DB-30 debug module
Provides JTAG, BMC access; UART, power testpoints; diagnostic LEDs, Power, Reset, Boot configuration

Audio

Audio Codec

HDA Audio codec (located on carrier)

Dual Ethernet

Primary LAN

10/100/1000/ 2.5 Gbit Ethernet

Secondary LAN

10/100/1000/ 2.5 Gbit Ethernet

Extension Busses

USB

2x USB 3.0, 4x USB 2.0

UART

Four UART interfaces, SER1 and SER3(CTS/RTS)/SER0 SER2(TX/RX/CTS/RTS)

CAN

2x CAN2.0B only or mixed CAN2.0B and CAN FD mode, data bit rate up to 8 Mbps

SPI

2x SPI

I²S

2x I2S interfaces with audio resolution from 16-bits to 32-bits and sample rate up to 192KHz (see Audio Codec support)

I²C

Four I2C interfaces
- Support for 7-bit and 10-bit address mode
- Software programmable clock frequency of 100 kbit/s in Standard-mode, 400 kbit/s in the Fast-mode or 1 Mbit/s in Fast-mode Plus”

GPIO

14x GPIO with interrupt, one GPIO with PWM

PCIe

4x PCIe x1 Gen3

Power

Input

5Vdc +/- 5%

Mechanical and Environmental

Form Factor

SGET SMARC Specifications 2.1

Dimension

SMARC short size module 82 mm x 50 mm

Operating Temperature

Standard: 0°C to +60°C
Rugged: -40°C to +85°C (optional)

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-202 F, 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

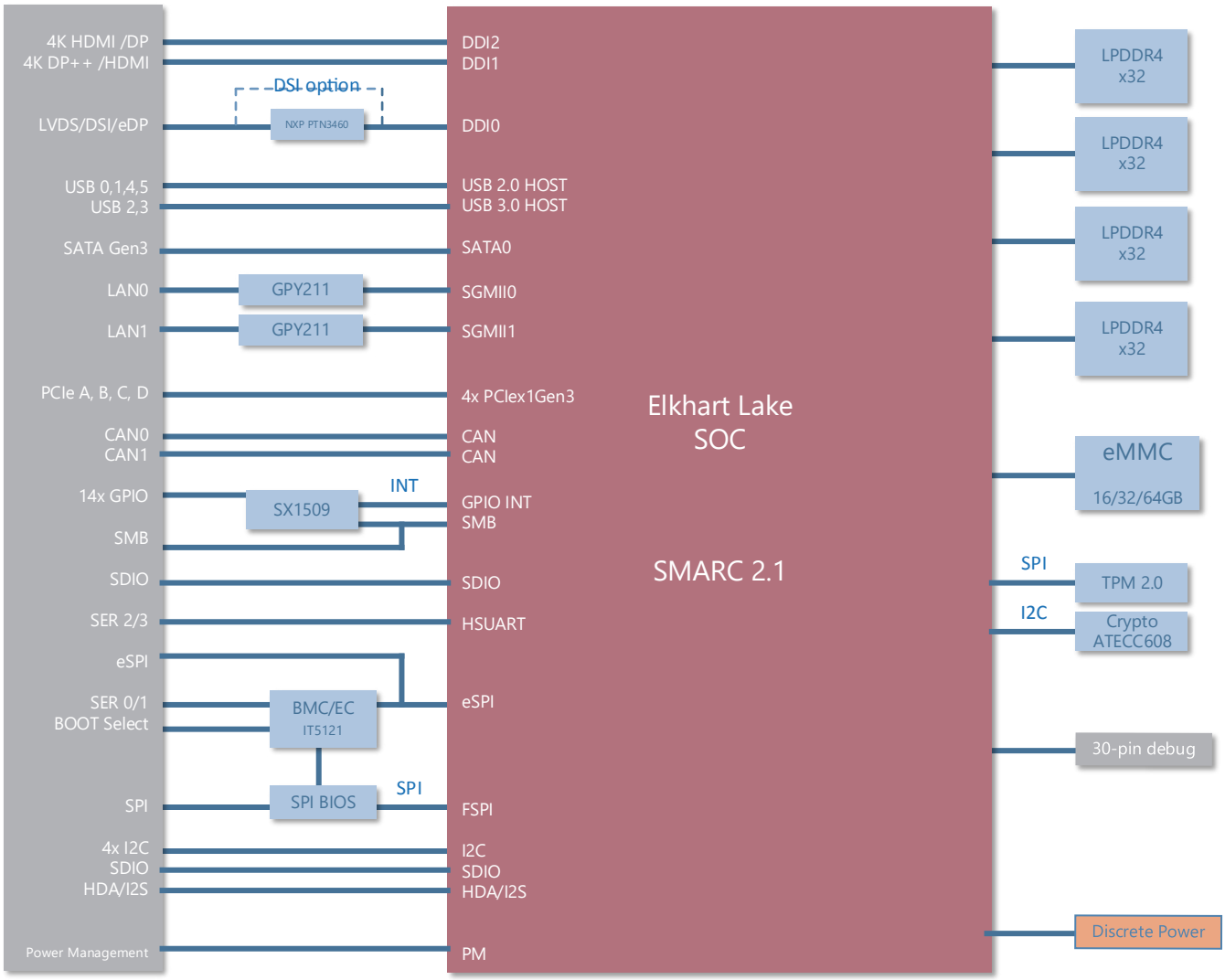
Windows 10 IoT Enterprise 64-bit, Windows 10 64-bit, Yocto Linux 64-bit, Ubuntu (TBC)

Extended Support (BSP)

Yocto project based Linux 64-bit, VxWorks 64-bit (TBC)

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Functional Diagram



LEC-EL

Ordering Information

- **LEC-EL-6211E-2G-32G-CT**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6211E, 2 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6211E-2G-32G-ER**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6211E, 2 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6211E-4G-32G-CT**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6211E, 4 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6211E-4G-32G-ER**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6211E, 4 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6413E-2G-32G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6413E, 2 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6413E-2G-32G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6413E, 2 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6413E-4G-32G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6413E, 4 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6413E-4G-32G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6413E, 4 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6425E-4G-64G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425E, 4 GB LPDDR4, 64 GB eMMC, 0°C to 60°C
- **LEC-EL-6425E-4G-64G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425E, 4 GB LPDDR4, 64 GB eMMC, - 40°C to 85°C
- **LEC-EL-6425E-8G-64G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425E, 8 GB LPDDR4, 64 GB eMMC, 0°C to 60°C
- **LEC-EL-6425E-8G-64G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425E, 8 GB LPDDR4, 64 GB eMMC, - 40°C to 85°C
- **LEC-EL-6200FE-2G-32G-CT**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6200FE, 2 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6200FE-2G-32G-ER**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6200FE, 2 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6200FE-4G-64G-CT**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6200FE, 4 GB LPDDR4, 64 GB eMMC, 0°C to 60°C
- **LEC-EL-6200FE-4G-64G-ER**
  SMARC 2.1 Short Size Module with dual Core Intel Elkhart Lake x6200FE, 4 GB LPDDR4, 64 GB eMMC, - 40°C to 85°C
- **LEC-EL-6414RE-2G-32G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6414RE, 2 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6414RE-2G-32G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6414RE, 2 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6414RE-4G-32G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6414RE, 4 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **LEC-EL-6414RE-4G-32G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6414RE, 4 GB LPDDR4, 32 GB eMMC, - 40°C to 85°C
- **LEC-EL-6425RE-4G-64G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425RE, 4 GB LPDDR4, 64 GB eMMC, 0°C to 60°C
- **LEC-EL-6425RE-4G-64G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425RE, 4 GB LPDDR4, 64 GB eMMC, - 40°C to 85°C
- **LEC-EL-6425RE-8G-64G-CT**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425RE, 8 GB LPDDR4, 64 GB eMMC, 0°C to 60°C
- **LEC-EL-6425RE-8G-64G-ER**
  SMARC 2.1 Short Size Module with quad Core Intel Elkhart Lake x6425RE, 8 GB LPDDR4, 64 GB eMMC, - 40°C to 85°C

*For processor SKUs not listed, please contact your ADLINK representative for availability.

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