

LEC-iMX8M

SMARC Short Size Module with NXP i.MX 8M Dual, QuadLite and Quad Processors

Features

- NXP i.MX 8M ARM Cortex-A53 Dual, QuadLite, Quad processor
- 2x independent displays, HDMI/eDP and LVDS/MIPI DSI
- 4K H.265/264 decode and VP9 video codec (not supported by QuadLite)
- Up to 2x PCIe, up to 2x GbE, 2x USB 3.0, uSDHC & eMMC 5.0
- Up to 4GB DDR3L non-ECC memory
- Extreme Rugged operating temperature: -40°C to +85°C

Preliminary



Specifications

• Core System

CPU

NXP i.MX 8M ARM Cortex A53-Dual, QuadLite, Quad processors
 i.MX 8M Dual, 2 cores, 1.3GHz, 1 MB L2 cache, GC7000Lite GPU, 4Kp60, H.265 and VP9
 i.MX 8M QuadLite, 4 cores, 1.3GHz, 1 MB L2 cache, GC7000Lite GPU
 i.MX 8M Quad, 4 cores, 1.3GHz, 1 MB L2 cache, GC7000Lite GPU, 4Kp60, H.265 and VP9

Memory

Onboard DDR3L-1600 system memory from 1GB to 4GB

L2 Cache

1MB

Board Controller

Supports: Voltage/Current monitoring, Power Sequencing, Flat Panel Control, I²C Bus Control, GPIO Control, User Flash, Watchdog Timer

Debug Headers

30-pin multipurpose flat cable connector for use with DB-30 debug module providing POST code LED, BMC access, power testpoints, debug LEDs

• Video

GPU Feature Support

Vivante GC7000Lite 3D Graphics Processing Unit
 Multicore 3D Graphics Acceleration, 4 shaders, 32GFLOPS
 OpenGL ES 1.0, 2.0, 3.0, 3.1, OpenCL 1.2 and Vulkan support
 Note: Availability of the features may vary between processor SKUs.

- Up to 4K resolution H.264, H.265 and VP9 codecs with HDR
- Up to 4K resolution on the HDMI 2.0a output
- 1080P resolution on the MIPI-DSI (4-lanes) interface

• Video Interface

LVDS

1x single/dual channel 18/24-bit LVDS from MIPI DSI-to-LVDS bridge

MIPI DSI

1x MIPI DSI, 4 lanes (optional)

HDMI

1x HDMI 2.0a (Incl. DDC)

DP++

1x 4 lane (optional)

• Audio

Audio Codec

Located on carrier LEC-Base 2.0

Interface

2x I²S

• Ethernet

MAC/PHY

iMX 8M GbE to RGMII PHY
 Intel® Ethernet Controller I210/I211 from PCIe to 2nd GbE (optional)

Interface

Up to 2x 10/100/1000 Ethernet

• Multi I/O and Storage

USB

2x USB 3.0, 2x USB 2.0, 1x USB OTG

SDIO

1x SDIO (4-bit)

PCIe

Up to 2x PCIe (one used for optional GbE)

I²C

4x I²C

SPI

Up to 2x eCSPI (one shared with SPI to CAN controller)

UART

3x UART (1x Tx/Rx/CTS/RTS, 2x Tx/Rx)

CAN

1x CAN (optional)

GPIO

12x GPIO

Camera

1x MIPI CSI, 2-lanes

eMMC

eMMC 5.0, up to 64GB

Specifications

- **Mechanical and Environmental**

Form Factor

SMARC Specifications v2.0

Dimension

SMARC short size module, 82 mm x 50 mm

Operating Temperature

Standard: 0°C to +60°C

Extreme Rugged: -40°C to +85°C

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

Linux Yocto BSP (Kernel 4.9)

Extended Support (BSP)

Android (by request)

Ordering Information

- **LEC-iMX8M-Q-4G-32G-ER**

SMARC Short Size Module with NXP i.MX 8M Quad, 4 GB DDR3L, 32 GB eMMC, -40°C to 85°C

- **LEC-iMX8M-QL-2G-16G-ER**

SMARC Short Size Module with NXP i.MX 8M QuadLite, 2 GB DDR3L, 16 GB eMMC, -40°C to 85°C

- **LEC-iMX8M-D-1G-8G-ER**

SMARC Short Size Module with NXP i.MX 8M Dual, 1 GB DDR3L, 8 GB eMMC, -40°C to 85°C

Accessories

Heat Spreaders

- **LEC-iMX8M HS1**

Heat spreader for LEC-iMX8M

- **LEC-iMX8M HS2**

Heatsink for LEC-iMX8M

Starter Kit

- **SMARC Starter kit 2.0**

Starter kit for SMARC 2.0

Functional Diagram

