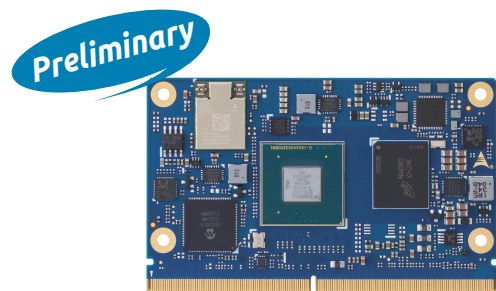


# LEC-IMX95

SMARC 2.1 Short Size Module  
with NXP® i.MX95 Series



## Features

- i.MX95 series with 2/4/6-core Arm Cortex-A55
- 1x Arm Cortex-M7 core + 1x Arm Cortex-M33 core
- In-SoC eIQ® Neutron NPU, up to 2.0 TOPS
- SMARC Revision 2.1 compliant
- LVDS, DSI, HDMI graphics output (BOM option)
- Rugged operating temperature option: -40°C to 85°C
- Dual CAN bus
- 2x GbE ports, 1x 10GbE port (optional)
- USB2 / USB3.2 Gen1 interfaces
- I2C audio codec interface
- 15 year product availability

## Specifications

Processor & System	SoC	NXP i.MX 95 series with 2/4/6-core Arm Cortex-A55 1x Arm Cortex-M7 on flex domain 1x Arm-M33 on low-power real-time domain TrustZone technology supporting Arm v8 Cryptography Extensions Neural Processing Unit, 2 TOPS
	Memory	2,4,8 GB LPDDR5
	L2 Cache	Per core: 32KB I-Cache, 32KB D-Cache, 64KB L2 Cache Unified: 512KB L3 Cache
	Security	Cryptography Services <ul style="list-style-type: none"> <li>• Multiple key storage and user support</li> <li>• Key Type: AES-128/192/256, ECC 256/384</li> <li>• Key Import/Creation/Derivation/Update/Deletion</li> <li>• SCA-hardened Asymmetric Public Key Cryptography:               <ul style="list-style-type: none"> <li>◦ RSA up to 4096; Elliptic Curve up to P-512 w/NIST curves; Brainpool P-512, P-384</li> </ul> </li> <li>• SCA-hardened Symmetric Cryptography:               <ul style="list-style-type: none"> <li>◦ AES-128/192/256 Modes: GCM, ECB, CBC, CTR, CCM, XCBC-MAC, KTS (256)</li> </ul> </li> </ul>
Video	GPU Core	Arm® Mali™ G310
	GPU Feature Support	Arm Mali-G310 GPU <ul style="list-style-type: none"> <li>• 3D GPU supporting 50 GFLOPs, OpenGL ES 3.2, Vulkan 1.2, OpenCL 3.0</li> </ul>
	VPU Feature Support	4Kp30 H.265 and H.264 encode and decode 1x JPEG Encoder, 1x JPEG Decoder
	HDMI	HDMI 2.0a (BOM option)
	MIPI DSI	1x MIPI DSI 4 lanes
	LVDS	Dual-channel LVDS port 18/24 bit
	Camera	MIPI CSI RX interface <ul style="list-style-type: none"> <li>• Compatible with MIPI Alliance Interface specification v1.0</li> <li>• Up to 4 data lanes, 1.0Gbps maximum data rate per lane</li> <li>• Supports MIPI-HS, MIPI-LP mode</li> </ul>

## Specifications

System Storage	SDIO	1x SDIO (4-bit) compatible with SD/SDIO standard, up to version 3.0
	eMMC	32, 64, 128 or 256 GB (build option) Compatible with eMMC specification 4.41, 4.51, 5.0, and 5.1
SEMA® Board Controller	Voltage/Current monitoring, Power Sequencing, Logistics and Forensic Information, I <sup>2</sup> C Bus Control, GPIO Control, Watchdog Timer	
Debug Header	30-pin multipurpose flat cable connector for use with optional DB-30 debug module Provides JTAG, UART, power testpoints; diagnostic LEDs, Power, Reset, Boot configuration	
Audio	Audio Codec	I <sup>2</sup> S or SWD audio codec located on carrier
Dual Ethernet	1st & 2nd LAN	MAC 10/100/1000 Ethernet port with Time Sensitive Networking
	Tertiary LAN (optional)	10 Gbps Ethernet port with Time Sensitive Networking
Wireless	Wi-Fi	IEEE 802.11 2X2 MIMO ac/a/b/g/n Wireless LAN (BOM option)
	Bluetooth	Bluetooth 5.0 compliant with Bluetooth 2.1+Enhanced Data Rate (EDR)
Extension Busses	USB	2x USB 3.0, 3x USB 2.0, 1x USB 2.0 OTG
	UART	4x UART interfaces SER1,2 (CTS/RTS) / SER0,3 (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
	I <sup>2</sup> S	1x I2S interfaces with audio resolution from 16-bits to 32-bits and sample rate up to 192KHz (see Audio Codec support)
	I <sup>2</sup> C	4x 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	2x 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	Yocto Linux BSP, Android
	Extended Support (BSP)	VxWorks

## Ordering Information

Part name	Description/Configuration
LEC-IMX95-4G-32G-CT	SMARC 2.1 Short Size Module with Hexa core NXP i.MX 95, 4GB LPDDR5, 32GB eMMC, 0°C to 60°C
LEC-IMX95-4G-32G-ER	SMARC 2.1 Short Size Module with Hexa core NXP i. MX 95, 4GB LPDDR5, 32GB eMMC, -40°C to 85°C

## Block diagram

