

Powerful dual or quad Cortex-A53 processor with Neural Processing Unit.

- ▶ Real-time control, machine learning, AI, advanced multimedia, industrial automation.
- ▶ NPU with up to 2.3 TOPS enables matrix calculations e.g. for pattern, speech, object recognition
- ▶ Advanced image and video processing via video encoding and decoding
- ▶ Compatible with other modules from the DHCOM family (SODIMM-200 socket)
- ▶ No heat sink necessary thanks to 5-Cent Cooling Solution
- ▶ Guaranteed long-term availability of 10+ years

Technical Data

| | |
|--------------------------|---|
| Board type | Pluggable SOM |
| 5-Cent Cooling available | ✓ |
| CPU details | 4x ARM Cortex-A53 up to 1.6 GHz 1x ARM Cortex-M7 up to 800 MHz |
| CPU vendor | NXP |
| CPU type | Cortex-A53 Cortex-M7 |

| | |
|------------------------|---|
| Co-processor available | ✓ |
| Number of cores | 5 |
| GPU available | ✓ |
| GPU type | 2D / 3D graphics accelerator |
| PMIC | PCA9450CHN |
| Features | Neuronal Processing Unit (NPU) with 2.3 TOPS to accelerate machine learning inferences, two camera inputs and HDR ISP, enhanced multimedia capabilities (encode and decode H.265 and H.264 at 1080p 60fps) |
| Security | Widevine and PlayReady DRM content protection, public Key Cryptography with RSA and ECC algorithms, TrustZone, Resource Domain Controller with 4 domains and 8 regions, Secure Boot / High Assurance Boot (HAS) |
| LPDDR4 DRAM 1 | 1 / 2 / 4 / 8 (on request) GB |
| E2Prom | 256 Byte |
| microSD available | ✓ |
| External RTC available | ✓ |
| Bluetooth available | ✓ |
| Bluetooth version | Bluetooth® v5.0 (BR/EDR/BLE) with chip antenna or U.FL connector |
| WiFi available | ✓ |
| WiFi version | WiFi IEEE 802.11 a/b/g/n/ac with dual band (2.4 and 5 GHz) |
| BSP | Linux (Debian, Yocto) |
| Debug interface | JTAG interface on module |

| | |
|------------------------|----------------------|
| Power supply | 3.3 or 5.0 VDC |
| Typ. power consumption | 2.0 to 4.0 W |
| Operating temperature | -40 to +85 °C |
| Storage temperature | -40 to +85 °C |
| Dimensions | 67.6 x 36.7 x 8.1 mm |

SODIMM-200 socket

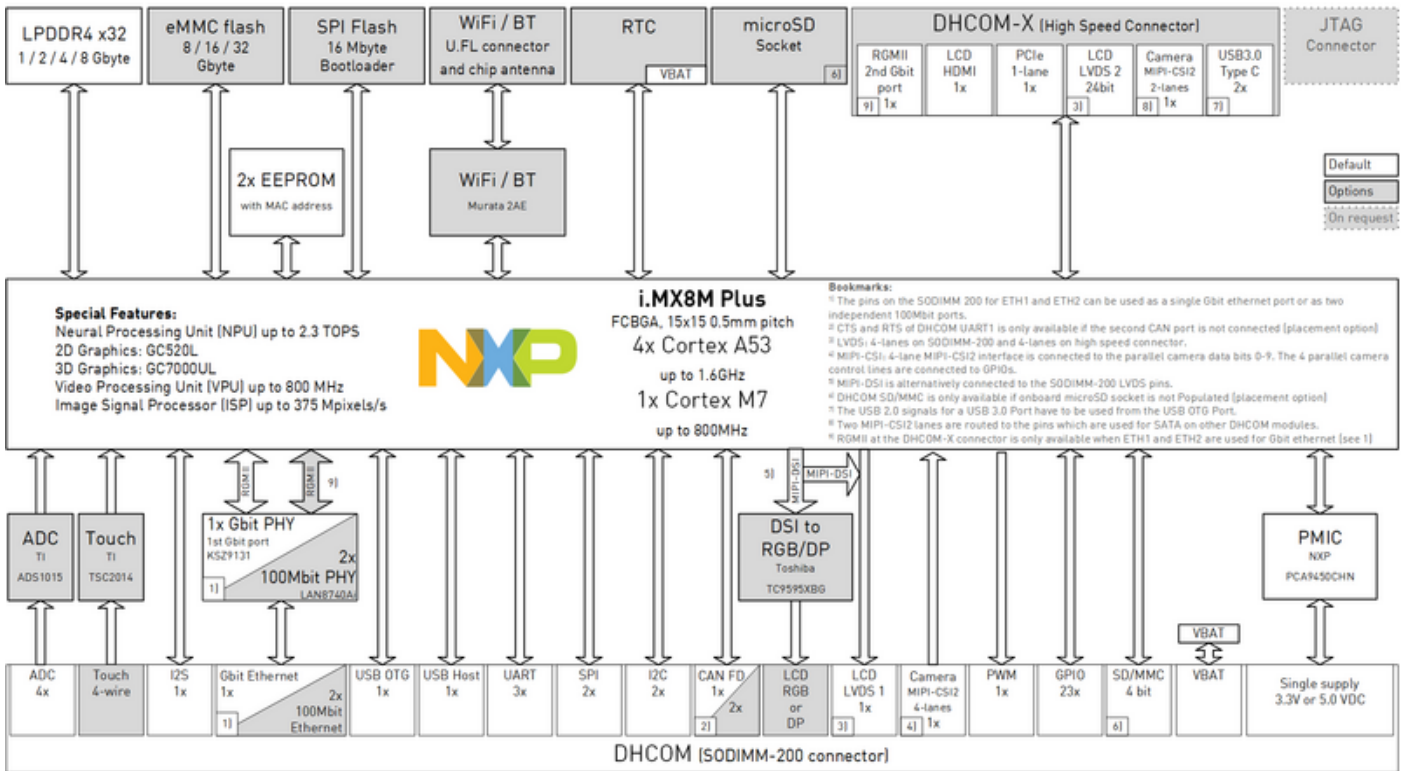
| | |
|-------------------------|---|
| Dual Ethernet available | ✓ |
| Ethernet 1 | Gbit Ethernet or 100 Mbit Ethernet with support for Time Sensitive Networking (TSN) |
| Ethernet 2 | 100 Mbit Ethernet |
| MMC/SD | 4 Bit mode |
| CAN 1 | V2.0B and CAN FD |
| CAN 2 | V2.0B and CAN FD |
| UART 1 | Rx / Tx / Rts / Cts, up to 4.0 Mbit/s |
| UART 2 | Rx / Tx / Rts / Cts, up to 4.0 Mbit/s |
| UART 3 | Rx / Tx, up to 4.0 Mbit/s |
| SPI 1 | 52 Mbit/s |
| SPI 2 | 52 Mbit/s |
| I2C 1 | 320 kbit/s |
| I2C 2 | 320 kbit/s |
| USB host 1 | High-speed |
| USB host 2 | - |

| | |
|-----------------|---|
| USB OTG | High-speed |
| MIPI®-CSI 2 | 4-lanes up to 1.5 Gbit/s and HDR ISP |
| Display RGB | 24 Bit |
| DisplayPort | Max. 1920x1200 px, 24 bit, 60 fps |
| Display LVDS 1 | 4-lane LVDS |
| Touch | 4-wire |
| I2S | 1 |
| Number of GPIOs | 12 |
| PWM output | 1 PWM out, 16 Bit |
| Analog inputs | 4x 12 Bit ADC with internal voltage reference |

High-speed socket

| | |
|----------------------|--|
| RGMI (Gbit Ethernet) | IEEE 1588, ENET AVB, Energy efficient ethernet (EEE) |
| PCIe | 1-lane PCI Express Gen 3 |
| MIPI CSI-2 | 2-lanes up to 1.5 Gbit/s and HDR ISP |
| Display LVDS 2 | 4-lane LVDS |
| HDMI | HDMI 2.0 up to 1080 px @ 60 fps DHCP 2.2 and 1.4 |
| USB 3.0 | Support for USB type C |

Block Diagrams



Configurations

| Item Number | Model (other configurations on request) | Product description |
|-------------|---|--|
| HI00104 | DHCM-iMX8ML8-C160-R409-F1638-SPI16-GE-CAN2-SD-RTC-WBTA-ADC-T-RGB-CSI2-HS-I-01D2 | DHCOM i.MX8M Plus Quad with VPU, NPU, ISP, HiFi4, 1.6 GHz, 4096 MByte DRAM, 16384 MByte eMMC flash, 16 MByte SPI boot flash, 1x Gbit ethernet + RGMII on Highspeed socket, second CAN port, microSD socket, RTC, WiFi and BT module with chip antenna, 4x ADC inputs, resistive touch, RGB interface, MIPI-CSI2 interface connected to parallel camera SODIMM200 connections, Highspeed interface connector, -25 to +85 °C, DHCOM revision, SODIMM200 socket |
| HI00105 | DHCM-iMX8ML8-C160-R204-F1638-SPI16-E-SD-RTC-T-RGB-CSI2-I-01D2 | DHCOM i.MX8M Plus Quad with VPU, NPU, ISP, HiFi4, 1.6 GHz, 2048 MByte DRAM, 16384 MByte eMMC flash, 16 MByte SPI boot flash, 1x100 Mbit ethernet + RGMII on Highspeed socket, microSD socket, RTC, resistive touch, RGB interface, MIPI-CSI2 interface connected to parallel camera SODIMM200 connections, -25 to +85 °C, DHCOM revision, SODIMM200 socket |

| Item Number | Model (other configurations on request) | Product description |
|-------------|--|--|
| HI00106 | DHCM-iMX8ML8-C160-R204-F1638-SPI16-E2-CAN2-RTC-CSI2-I-01D2 | DHCOM i.MX8M Plus Quad with VPU, NPU, ISP, HiFi4, 1.6 GHz, 2048 MByte DRAM, 16384 MByte eMMC flash, 16 MByte SPI boot flash, 1x Gbit ethernet + RGMII on Highspeed socket, second CAN port, RTC, MIPI-CSI2 interface connected to parallel camera SODIMM200 connections, -25 to +85 °C, DHCOM revision, SODIMM200 socket |

* Other configurations on request

What is the model number for ordering?

DHCM-CPU-Cxxx-Rxxx[-Fxxxx][-SPI16][-E/E2/GE][-CAN2][-SD][-RTC][-WBT/WBTA][-ADC][-T][-DSI][-RGB/DP][-CSI2][-HS]-X-01D2

| | |
|------------------------|---|
| CPU | iMX8ML8: i.MX8M Plus Quad (4x Cortex®-A53, 1x Cortex®-M7) with VPU, NPU, ISP and HiFi4 iMX8ML6: i.MX8M Plus Quad (4x Cortex®-A53, 1x Cortex®-M7) with VPU and ISP iMX8ML4: i.MX8M Plus QuadLite (4x Cortex®-A53, 1x Cortex®-M7) iMX8ML3: i.MX8M Plus Dual (2x Cortex®-A53, 1x Cortex®-M7) with VPU, NPU, ISP and HiFi4 |
| Cxxx | 1,6 GHz: C160, 1,8 GHz: C180 |
| Rxxx | 1024 Mbyte: R102, 2048 Mbyte: R204, 4096 Mbyte: R409 |
| X | Commercial temperature range (0 °C - 70 °C): C, Industrial temperature range (-25 °C - 85 °C): I Note: Industrial temp. range for eMMC version is -25 °C - 85 °C. Please contact us for -40 °C - 85 °C version |
| 01D2 | DHCOM Revision, SODIMM200 socket |
| Options | |
| [-Fxxxx] | 8192 Mbyte eMMC: F0819, 16384 Mbyte eMMC: F1638, 32768 Mbyte eMMC: F3276 |
| [-SPI16] | 16 Mbyte SPI boot flash |
| [-E] or [-E2] or [-GE] | 1x 100 Mbit Ethernet + RGMII on high speed socket: E 2x 100 Mbit Ethernet: E2 1x Gbit Ethernet + RGMII on high speed socket: GE |
| [-CAN2] | Second CAN port available |
| [-SD] | microSD socket: SD |
| [-RTC] | Low power temperature compensated real time clock (instead of CPU internal RTC) |
| [-WBT] or [-WBTA] | WiFi and Bluetooth® via Murata 2AE module with U,FL connector: WBT WiFi and Bluetooth® via Murata 2AE module with Chip antenna: WBTA |
| [-ADC] | 4x A/D converter inputs |
| [-T] | Resistive touch controller |
| [-DSI] | MIPI-DSI interface connected to LVDS SODIMM-200 connections (Note: LVDS is then not available at SODIMM-200) |
| [-RGB] or [-DP] | RGB interface at SODIMM-200: RGB DisplayPort™ interface at SODIMM-200: DP Note: In both cases, option -DSI is then not possible. |
| [-CSI2] | MIPI-CSI2 interface connected to parallel camera SODIMM-200 connections |
| [-HS] | High speed interface connector |