

## Leistungstarker Dual oder Quad Cortex-A53 Prozessor mit Neural Processing Unit.

- ▶ Echtzeitsteuerung, Maschinelles Lernen, KI, Advanced Multimedia, industrielle Automatisierung
- ▶ NPU mit bis zu 2,3 TOPS ermöglicht Matrixberechnungen z.B. für Muster-, Sprach-, Objekterkennung
- ▶ Fortschrittliche Bild- und Videoverarbeitung mittels Videoenkodierung und -dekodierung
- ▶ Kompatibel zu anderen Modulen aus der DHCOM Familie (SODIMM-200 Sockel)
- ▶ Kein Kühlkörper notwendig dank 5-Cent Cooling Solution
- ▶ Garantierte Langzeitverfügbarkeit von 10+ Jahren

## Technische Daten

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	2, 4
GPU available	✓
GPU type	2D / 3D GC7000UL graphics accelerator with OpenGL ES, OpenCL and Vulkan support up to 166M triangle/s and 1Gpixel/s Etnaviv Open Source GPU driver support
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	✓
WiFi available	✓
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

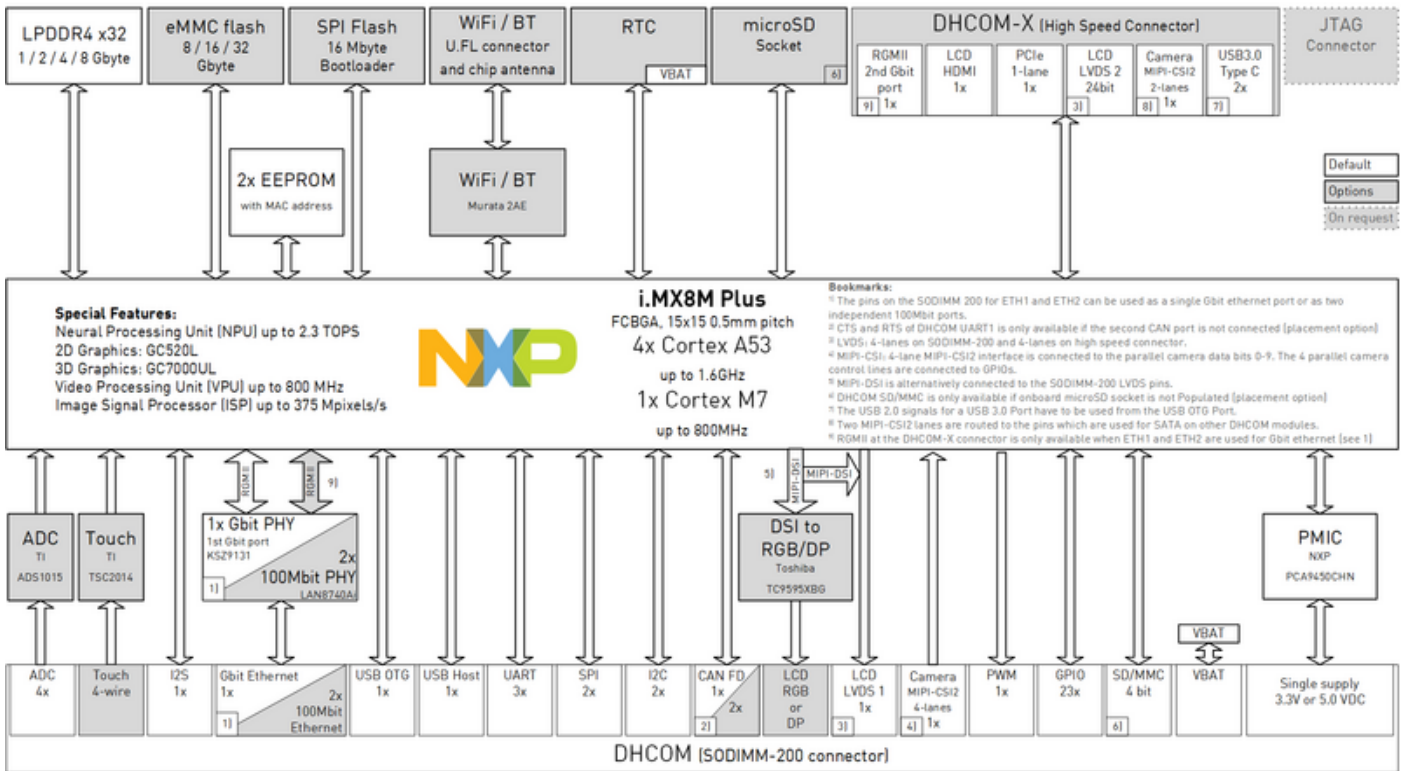
Dual Ethernet available	✓
Ethernet 1	Gbit Ethernet or 100 Mbit Ethernet with support for Time Sensitive Networking (TSN)
Ethernet 2	100 Mbit Ethernet
MMC/SD	4 Bit mode
CAN 1	V2.0B and CAN FD
CAN 2	V2.0B and CAN FD
UART 1	Rx / Tx / Rts / Cts, up to 4.0 Mbit/s
UART 2	Rx / Tx / Rts / Cts, up to 4.0 Mbit/s
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
MIPI-DSI	4-lanes up to 1.5 Gbit/s
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	2x SuperSpeed Port

## Blockdiagramme



## Konfigurationen

Artikelnummer	Modell	Produktbeschreibung
HI00118	DHCM-iMX8ML8-C160-R409-F1638-SPI16-GE-CAN2-SD-RTC-WBTA-ADC-T-RGB-CS12-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-CS12 interface connected to parallel camera SODIMM200 connections, Highspeed interface connector, -25 to +85 °C, DHCOM revision, SODIMM200 socket
HI00119	DHCM-iMX8ML8-C160-R204-F1638-SPI16-E-SD-RTC-T-RGB-CS12-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-CS12 interface connected to parallel camera SODIMM200 connections, -25 to +85 °C, DHCOM revision, SODIMM200 socket

Artikelnummer	Modell	Produktbeschreibung
HI00120	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, 2x 100Mbit Ethernet, second CAN port, RTC, MIPI-CSI2 interface connected to parallel camera SODIMM200 connections, -25 to +85 °C, DHCOM revision, SODIMM200 socket

\* Andere Konfigurationen auf Anfrage

## Wie setzt sich die Modellnummer für die Bestellung zusammen?

**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 (on request)
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