DHCOS STM32MP2

DHelectronics
Your Digital Heroes.

Based on STM32MP2

▸ DHCOS soldering module combines flexibility and pin-compatibility

▸ Support for STM32MP23 und STM32MP25

▸ Highlights: LPDDR4 RAM, SPI boot flash, eMMC flash, GBit Ethernet, WiFi/BT

▸ Dual Cortex-A35 @1.5 GHz and Cortex-M33 @400 MHz

▸ Multimedia support with 3D GPU, display, video, camera

▸ STPMIC25 supports low power modes

▸ Mainline Linux support (also for Vivante GPU)

▸ Space-saving with only 30 x 40 mm

▸ Guaranteed long-term availability of 10+ years

Technical Data

Board type	Solderable SOM
5-Cent Cooling available	✖
CPU details	2x ARM Cortex-A35 up to 1.5 GHz 1x ARM Cortex-M33 up to 400 MHz
CPU vendor	ST

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Datasheet
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CPU type	Cortex-A35, Cortex-M33
Co-processor available	✔
Number of cores	4, 2
GPU available	✔
GPU type	3D GPU: VeriSilicon® - Up to 150 Mtriangle/s, 900 Mpixel/s with OpenGL® ES 3.1 - Vulkan 1.3 and OpenCL™ 3.0, OpenVX™ 1.3 support
PMIC	STPMIC25APQR
Features	Neuronal Processing Unit (NPU) VeriSilicon® with up to 900 MHz and 1.35 TOPS | Video decode / encode H264 up to 1080p60
Security	"Secure boot | TrustZone® peripherals | active tamper | environmental monitors | display secure layers | hardware accelerators | Complete resource isolation framework | "On-the-fly" DDR encryption/decryption (AES-128)"
LPDDR4 DRAM	1 / 2 / 4 GB
DRAM details	LPDDR4-2400 32-bit
eMMC flash	4 / 8 / 16 GB
eMMC details	8-bit eMMC with HS200 support
SPI NOR flash	4 MB
E2Prom	4 kB
microSD available	✘
External RTC available	✔
Bluetooth available	✔
Bluetooth version	Bluetooth® v5.4 BR/EDR/LE

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WiFi available	✔
WiFi version	Tri band 2.4 GHz, 5 GHz and 6 GHz for IEEE802.11a/b/g/n/ac/ax
BSP	Linux (Yocto)
Debug interface	JTAG interface on module
Power supply	5.0 VDC
Typ. power consumption	1.5 to 3.5 W
Operating temperature	-40 to +85 °C
Storage temperature	-40 to +85 °C
Dimensions	40.0 x 30.0 x 3.2 mm

Available interfaces for DHCOS M-Size LGA (370 pins)

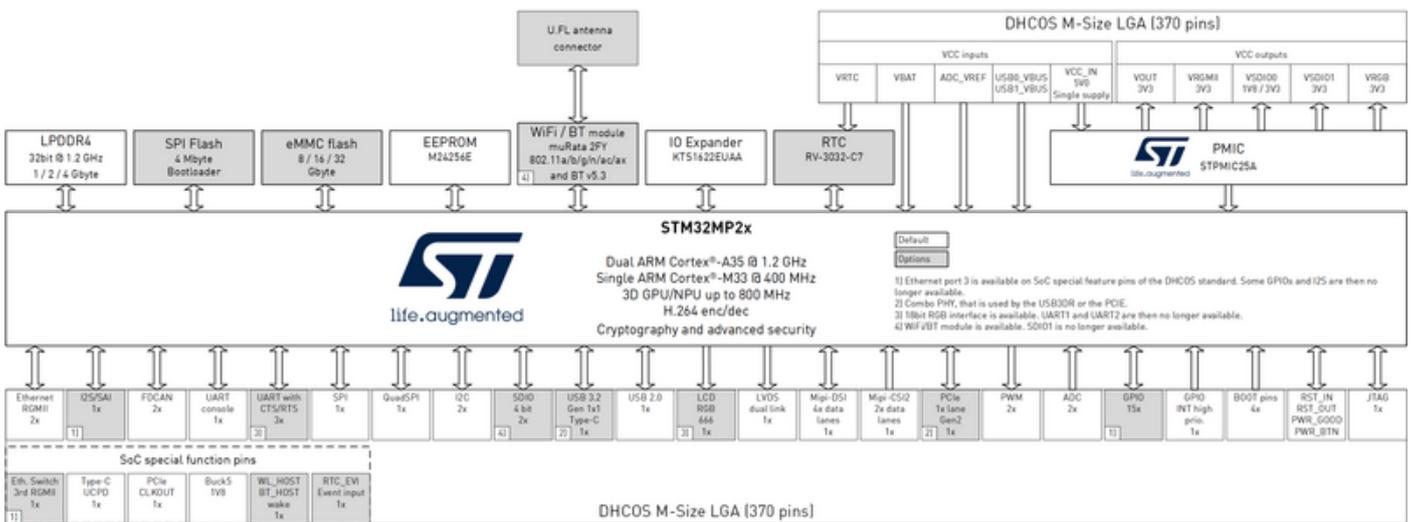|	
Dual Ethernet available	✔
Ethernet 0 - 1	2x Gbit Ethernet, TSN, IEEE 1588v2 hardware, MII/RMII/RGMII
SDIO 0	1x 4 bit mode, SDIO 4.0 / SD 3.01 / eMMC 5.1, 1V8 voltage transition for UHS-1 modes of SD card supported
SDIO 1	1x 4 bit mode, SDIO 4.0 / SD 3.01 / eMMC 5.1
CAN 0 - 1	2x FDCAN / TTCAN
UART 0	1x Rx / Tx for Linux and bootloader console connection
UART 1 - 3	3x Rx / Tx / Rts / Cts, up to 10.0 Mbit/s
SPI	1x 50 Mbit/s
QuadSPI	1x Single, dual and quad communication
I2C 0 - 1	2x Up to 1 Mbit/s

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USB 0	1x USB 3.0 with 5Gbps | Operation mode USB 3.2 Gen 1x1 | Interfaces: USB-A, USB-C and microUSB
USB 1	1x USB 2.0 Host
MIPI-CSI2	1x 2-lanes up to 2.5 Gbit/s | 5 Mpixels @30 fps
Display RGB	1x 18-bit RGB666 | up to FHD (1920 × 1080) @60 fps
MIPI-DSI	1x 4-lanes up to 2.5 Gbit/s | Up to QXGA (2048 × 1536) @60 fps
LVDS	1x Dual Link, 2x 4-lane LVDS | Up to 1.1 Gbit/s per lane | Up to QXGA (2048 × 1536) @60 fps
PCIe	1x 1-lane PCI Express Gen2 up to 5 Gbit/s
PWM	2x PWM out, 16 Bit
Analog	2x 12 Bit ADC with internal or external voltage reference
I2S	1x
Number of GPIOs	15x
Boot mode	4x, UART/USB, Serial NOR, eMMC, SD-Card, Development boot
Supervisor signals	Reset_in, Reset_out, Power_good, Power_button, Interrupt_highest_priority
Power inputs	4x VCC_IN, VRTC, VBAT, ADC_VREF
Power outputs	5x VRGMII, VOUT, VSDIO0, VSDIO1, VRGB

SoC special features

USB CC	1x USB Type-C® Power Delivery control with two CC lines PHY
RTC EVI	1x Real Time Clock event input
WiFi / BT host wake	2x WiFi and Bluetooth Host wake inputs

Ethernet 2	1x Optionally Gbit Ethernet switch providing third external PHY interface

Block Diagrams

Configurations

Item Number	Model (other configurations on request)	Product description
HS00043	DHCS-STM32MP255C-C120-R409-EE-F1638-SPI04-RTC-WBT-USB3-I-01LG	DHCOS STM32MP255C, 1.2 GHz, 4096 MByte LPDDR4 RAM, 256 kbit EEPROM, 16384 MByte eMMC flash, 4 MByte SPI boot flash, temp. compensated RTC (instead of CPU internal RTC), WiFi/BT via Murata 2FY, USB3, Industrial temp. -25 to +85 °C, DHCOS revision, LGA connection
HS00044	DHCS-STM32MP255C-C120-R204-EE-F0819-SPI04-RTC-WBT-USB3-I-01LG	DHCOS STM32MP255C, 1.2 GHz, 2048 MByte LPDDR4 RAM, 256 kbit EEPROM, 8192 MByte eMMC flash, 4 MByte SPI boot flash, temp. compensated RTC (instead of CPU internal RTC), WiFi/BT via Murata 2FY, USB3, Industrial temp. -25 to +85 °C, DHCOS revision, LGA connection

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Item Number	Model (other configurations on request)	Product description
HS00045	DHCS-STM32MP255C-C120-R204-EE-F0819-SPI04-RTC-USB3-I-01LG	DHCOS STM32MP255C, 1.2 GHz, 2048 MByte LPDDR4 RAM, 256 kbit EEPROM, 8192 MByte eMMC flash, 4 MByte SPI boot flash, temp. compensated RTC (instead of CPU internal RTC), USB3, ndustrial temp. -25 to +85 °C, DHCOS revision, LGA connection
HS00046	DHCS-STM32MP255C-C120-R102-EE-F0819-SPI04-USB3-I-01LG	DHCOS STM32MP255C, 1.2 GHz, 1024 MByte LPDDR4 RAM, 256 kbit EEPROM, 8192 MByte eMMC flash, 4 MByte SPI boot flash, USB3, Industrial temp. -25 to +85 °C, DHCOS revision, LGA connection9-SPI4-USB3-I-01LG

* Other configurations on request

What is the model number for ordering?

DHCS-STM32MP2xxx-C120-Rxxx-EE[-F[P]xxxx][-SPIxx][-RTC][-WBT][-RGB][-PCIe/USB3][-ETH3]-I-01LG

CPU		STM32MP257C: 2xCortex-A35 @ 1.2 GHz, Cortex-M33 @ 400MHz, 3xEthernet (2+1 switch), 3xFD-CAN, LVDS/DSI, H.264, 3D GPU, AI / NN, Secure Boot, Cryptography, DRAM enc/dec, PKA
		STM32MP255C: 2xCortex-A35 @ 1.2 GHz, Cortex-M33 @ 400MHz, 2xEthernet, 3xFD-CAN, LVDS/DSI, H.264, 3D GPU, AI / NN, Secure Boot, Cryptography, DRAM enc/dec, PKA
		STM32MP253C: 2xCortex-A35 @ 1.2 GHz, Cortex-M33 @ 400MHz, 2xEthernet, 3xFD-CAN, Secure Boot, Cryptography, DRAM enc/dec, PKA
		Note: Please contact us for A-Type devices without Secure Boot and Cryptography support
Cxxx		1.2 GHz: C120
		Note: Please contact us for 1.5 GHz F-Type devices: C150
Rxxx		1024 Mbyte: R102, 2048 Mbyte: R204, 4096 Mbyte: R409
EE		256 kbit EEPROM
X		Industrial temperature range (-25 °C - 85 °C): I
		Note:
		- Industrial temperature range for eMMC and LPDDR4 version is -25 °C - 85 °C. Please contact us for -40 °C - 85 °C version
		- Please contact us commercial temperature range (0 °C - 70 °C): C
01LG		DHCOS Revision, LGA connection
Options		
[-Fxxxx]		4096 Mbyte eMMC: F0409, 8192 Mbyte eMMC: F0819, 16384 Mbyte eMMC: F1638
		Note:
		- Please contact us for eMMC with pSLC support: FPxxxx
		- Other sizes on request
[-SPI4]		4 Mbyte SPI boot flash
		Note: Other sizes on request
[-RTC]		Low power temperature compensated real time clock (instead of CPU internal RTC)
[-WBT]		WiFi and Bluetooth® via Murata 2FY module with U.FL connector: WBT
		Note: SDIO1 is no longer available.
[-RGB]		18bit RGB interface is available.
		Note: UART2 and UART3 are then no longer available.
[-PCIe] or [-USB3]		Either USB3 or PCIe is available on the DHCOS connection
[-ETH3]		Ethernet port 3 is available on SoC special feature pins of the DHCOS standard. Some GPIOs and I2S are then no longer available.

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