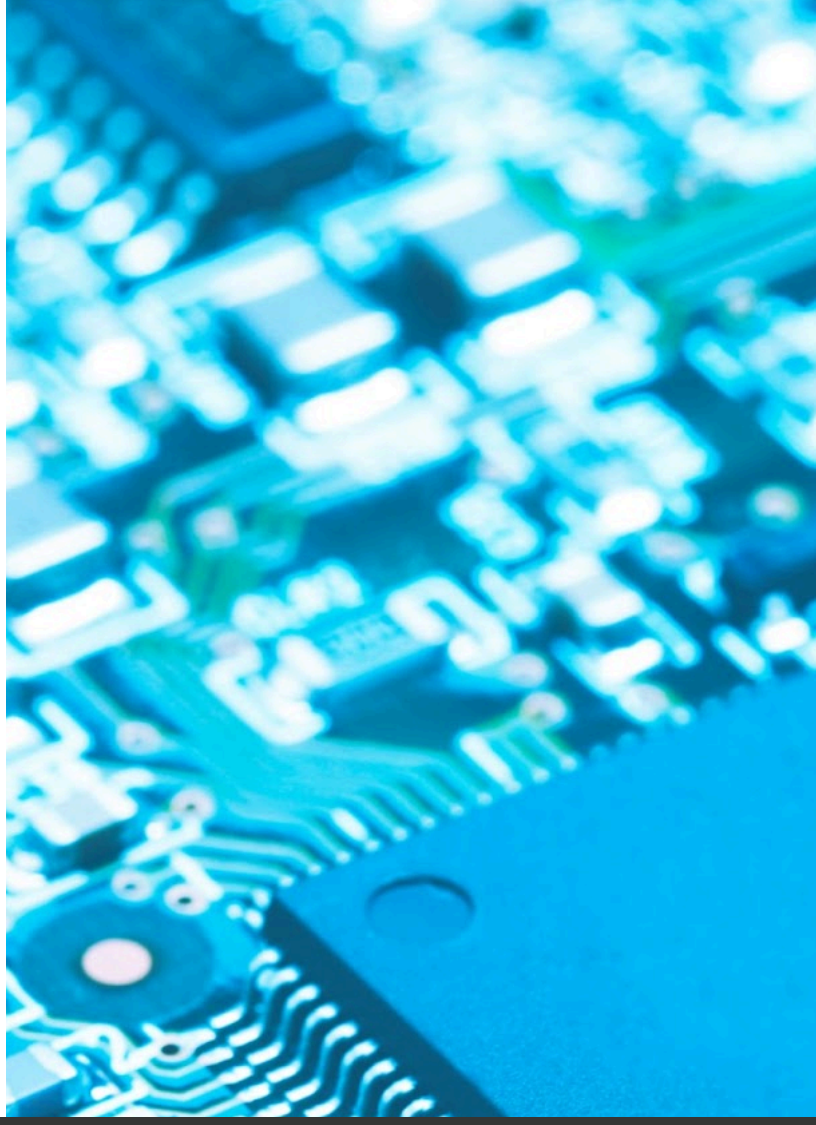
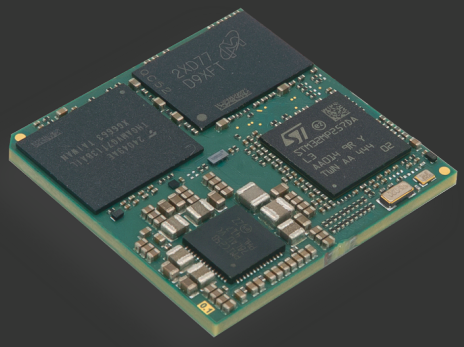
bytesatwork

DataSheet

Rev. 0.1 08.04.2025





industrial computing module

byteENGINE STM32MP2

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Symbols and Typographic Conventions

These symbols represent important details or aspects for working with bytesatwork-products.

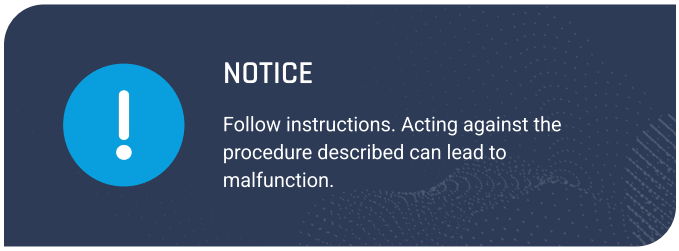

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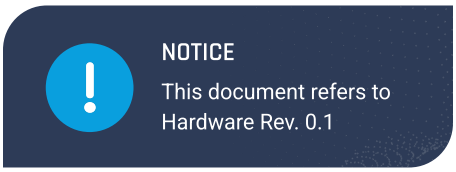
Table of Contents

1. Revision History

Hardware Revision	Marking on PCB	Release Date	Info
0.1	0.1	January 2025	Prototypes



2. Overview

2.1. General Information

The **byteENGINE STM32MP2** is an industrial oriented computing module for secure Industry 4.0 and advanced edge computing applications that require high-end multimedia capabilities. It allows you a short time-to-market, reducing development costs and substantial design risks.

The System on Module (SOM) uses the STM32MP2 devices which are based on the high-performance dual ARM® Cortex®-A35 64-bit core operating at up to 1.5GHz.

The STM32MP2 devices also embed a Cortex®-M33 running at 400 Mhz and offer an embedded Verisilicon 3D graphic processing unit running up to 900 MHz, with performances up to 150 MTriangle/s, 900 Mpixel/s. Artificial Intelligence is supported with a VeriSilicon NPU running up to 900Mhz, supporting TensorFlowLite - ONNX and Linux NN.

2.2. Technical Data

Feature		Details
CPU	**Architecture**	ARM® Cortex®-A35
	CPU	STM32MP2 See LINK for further information: Block Diagram of STM32MP2 See ST Homepage for further information: STM32MP2
	Cache	> 32 kB L1 Instruction Cache > 32 kB L1 Data Cache > 512 kB L2 Cache
	Frequency (max)	1.5GHz
	Floating Point	Floating Point Unit (FPU) with support of the ARM® single-precision data-processing instructions, and data types.
	Co-Processors	Cortex®-M33 CPU operating up to 400 MHz > 16 kB Data Cache, 16 kB Instruction Cache, Cortex®-M0+ CPU operating up to 200 Mhz
	Security	Secure boot, TrustZone® peripherals, active tamper, environmental monitors, display secure layers, hardware accelerators Complete resource isolation framework
NPU	**Neural Processing Unit**	VeriSilicon, running up to 900 Mhz Support for TensorFlowLite - ONNX -Linux NN
Memory External	**DRAM**	Up to 2GB LPDDR4
	Flash	Up to 128GB eMMC
Ethernet	**Speed**	2x 10/100/1000 Mbps & IEEE 802.3-2008. With TSN
Serial	**SPI**	8
	I2C	8
	UART	5
	USART	4
	OctalSPI	2
	CAN-FD	Up 3
	I3C	4
USB	**USB 2.0**	1
	USB 3.0	1 (shared with PCIe)

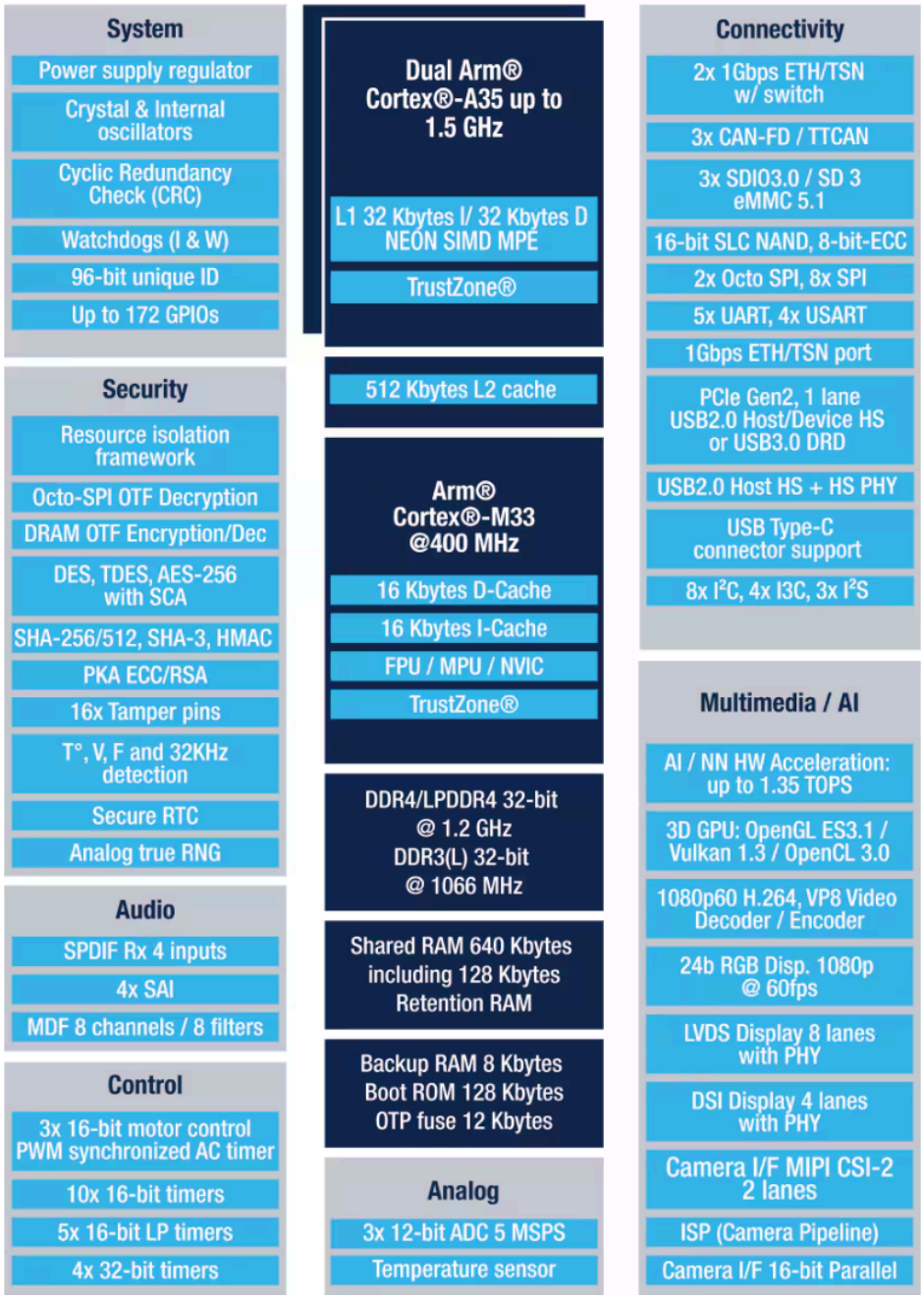
Multimedia	**LCD-TFT controller**	Up to FHD (1920 × 1080) @60 fps 3 layers including a secure layer YUV support, 90° output rotation
	MIPI CSI-2 Interface	2 Camera interfaces (5 Mpixels @30 fps) & (1 Mpixels @15 fps)
	SAI	4
	SPDIF	1
	PCIE	1 (shared with USB 3.0)
ADC	**Analog Digital Converter**	3 × ADCs with 12-bit max. resolution
Miscellaneaus	**Watchdog**	7
	Secure JTAG	Yes
	GPIO	Up to 172
	PWM / Timer	4× 32-bit timers
	Boot Mode	Secure Boot
	Temperature Probe	1
Mechanical Information	**Input Voltage**	5,0V
	Power Consumption	2 W
	Dimensions	30 x 30 mm
	Operation Temperature	Industrial temperature range: -40 to +85° C Consumer temperature range: 0 to 85° C
	Connector	OSM-S
Operation System	**Linux**	https://github.com/bytesatwork/meta-bytesatwork

2.3. Block Diagram of STM32MP2

The **STM32MP2** family focuses on vision systems, advanced multimedia and industrial automation with high reliability. The STM32MP2 is a powerful dual Arm® Cortex®-A35 processor with speed up to 1.5 GHz integrated with a Cortex®-M33 MPU that greatly accelerates machine learning inference. The vision engine is composed of two camera Inputs.

Key features of STM32MP2

- Single or Dual ARM® Cortex®-A35 up to 1.5 GHz
- ARM® Cortex®-M33 up to 400 MHz
- VeriSilicon GPU and NPU, running up to 900 Mhz
- Advanced Security for Industry 4.0



2.4. Additional Information

The STM32MP25x family offers a wide range of options. To facilitate the decision guidance, the selection guide has been extended:

Feature	STM32MP251	STM32MP253	STM32MP255	STM32MP257
ARM® Cortex®-A35	Single	Dual	Dual	Dual
Cortex-M33	Yes	Yes	Yes	Yes
AI NPU	No	No	Yes	Yes
CAN	No	Yes	Yes	Yes
Ethernet	Single	Dual	Dual	Dual
GPU	No	No	Yes	Yes
Display	LCD parallel	LCD parallel	LCD parallel, LVDS, MIPI, DSI	LCD parallel, LVDS, MIPI, DSI

STM32MP25x-	Speed	Crypto and Secure Boot
A	1.2 GHz	No
C	1.2 GHz	Yes
D	1.5 GHz	No
F	1.5 GHz	Yes

For further information regarding the STM32MP2 CPU, please visit the homepage of ST:
STM32MP2-Series

2.5. Decision guidance byteENGINE STM32MP2

The following four steps help identifying the suitable byteENGINE for the specific customer application.

> Step 1: Select the needed CPU

> **Choose Options as described in Additional Information**

> Step 2: Select the needed flash memory capacity

> **Choose eMMC 8 / 16 / 32 / 64 / 128 GB**

> Step 3: Select the needed RAM capacity

> **Choose 512 / 1024 / 1536 / 2048 MB**

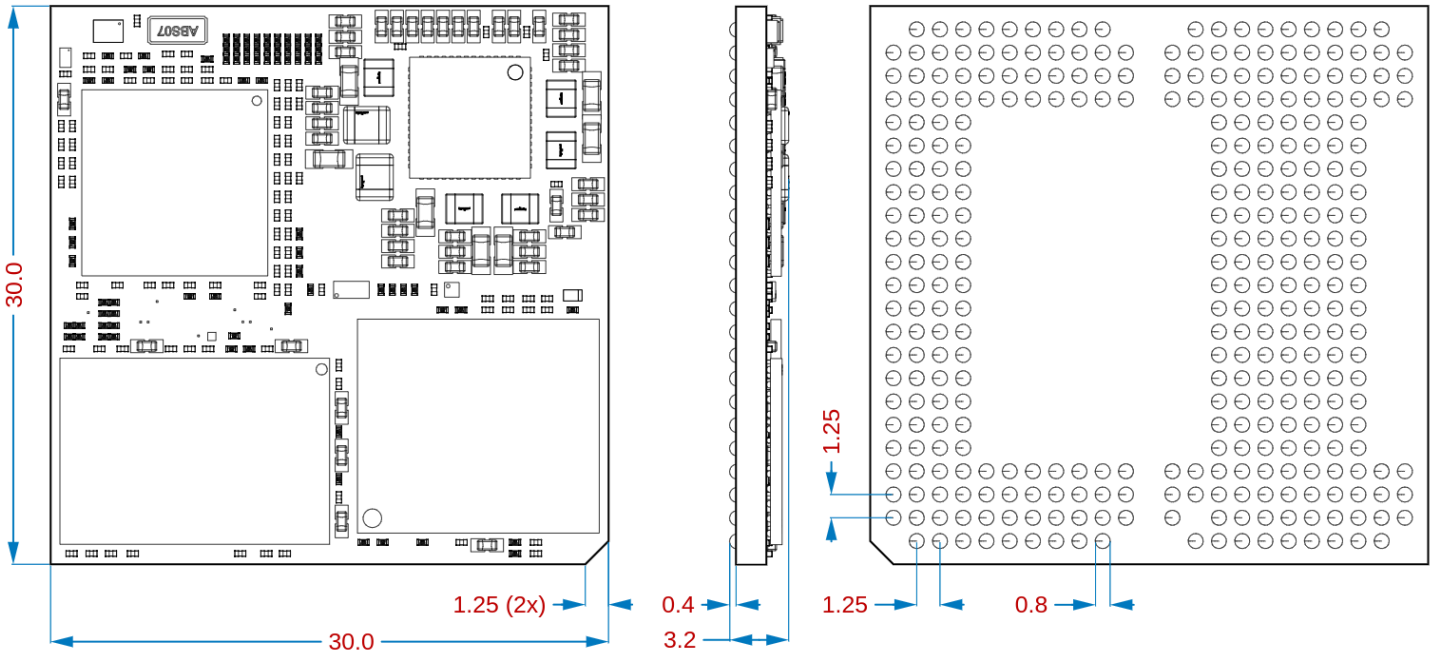
> Step 4: Select the needed temperature range

> **Choose consumer or industrial**

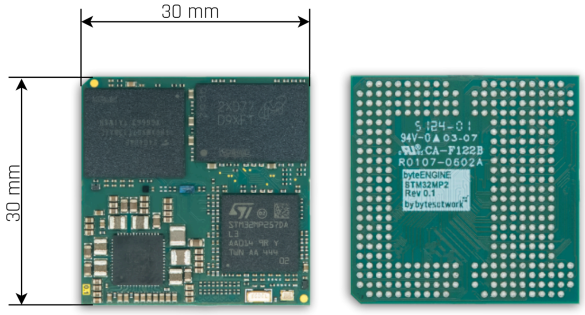
2.6. Dimensions of byteENGINE STM32MP2

The following illustration shows all important dimensions for mounting and installation of the industrial computing module byteENGINE STM32MP2.

> All dimensions are indicated in millimetres (mm).

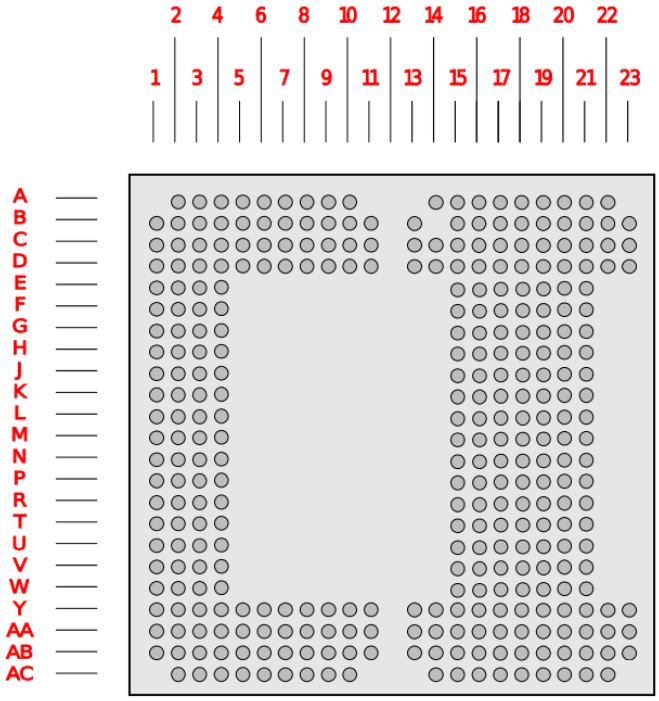


> Module design in scale 1:1:



2.7. byteENGINE STM32MP2 OSM-S interface

The byteENGINE **STM32MP2** is soldered to the carrier board with 332 contacts. The following picture shows the location of the solder balls on the bottom side of the SOM byteENGINE STM32MP2.



https://sget.org

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2.8. STM32 Cube IDE

STM32CubeIDE is an all-in-one multi-OS development tool, which is part of the STM32Cube software ecosystem.

STM32CubeIDE is an advanced C/C++ development platform with peripheral configuration, code generation, code compilation, and debug features for STM32 microcontrollers and microprocessors. It is based on the Eclipse®/CDT™ framework and GCC toolchain for the development, and GDB for the debugging. It allows the integration of the hundreds of existing plugins that complete the features of the Eclipse® IDE.

STM32CubeIDE integrates STM32 configuration and project creation functionalities from STM32CubeMX to offer all-in-one tool experience and save installation and development time. After the selection of an empty STM32 MCU or MPU, or preconfigured microcontroller or microprocessor from the selection of a board or the selection of an example, the project is created and initialization code generated. At any time during the development, the user can return to the initialization and configuration of the peripherals or middleware and regenerate the initialization code with no impact on the user code.

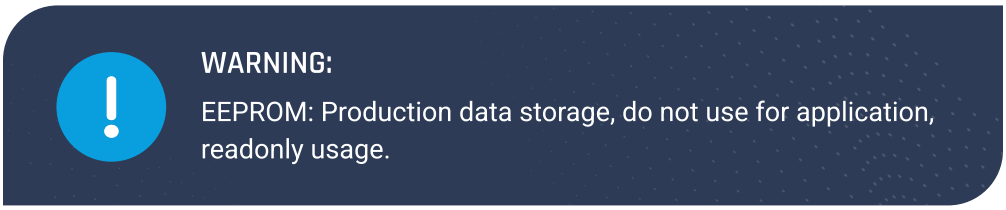
STM32CubeIDE includes build and stack analyzers that provide the user with useful information about project status and memory requirements.
STM32CubeIDE also includes standard and advanced debugging features including views of CPU core registers, memories, and peripheral registers, as well as live variable watch, Serial Wire Viewer interface, or fault analyzer.

STM32 Cube IDE

3. Pinout functions

3.1. Restrictions

These peripherals are internally connected and should not be utilized in the customer design if the components are populated and in use.



Restricted peripherals

I2C4	EEPROM Addr. 0x50PMIC Addr 0x33
SDMMC2	eMMC

CPU Ball	Pin Name	Function	Used for
G14	PE14	SDMMC2.CLK	eMMC
D14	PE15	SDMMC2.CMD	eMMC
A16	PE13	SDMMC2.DATA0	eMMC
B16	PE11	SDMMC2.DATA1	eMMC
B15	PE8	SDMMC2.DATA2	eMMC
C16	PE12	SDMMC2.DATA3	eMMC
D15	PE10	SDMMC2.DATA4	eMMC
F15	PE9	SDMMC2.DATA5	eMMC
F14	PE6	SDMMC2.DATA6	eMMC
C15	PE7	SDMMC2.DATA7	eMMC

3.2. PIN List

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
A2	CSI_A_DATA1_N	D2														
A3	CSI_A_DATA1_P	D1														
A4	GND	-														
A5	CSI_A_DATA2_N	NC														
A6	CSI_A_DATA2_P	NC														
A7	GND	-														
A8	USB_C_SSTX_P	NC														
A9	USB_C_SSTX_N	NC														
A10	GND	-														
A14	UART_A_RX	F5	DEBUG_TRACED8	HDP_HDP0	UART5_RX	TIM8_CH4N	LTDC_G4	DCMIPP_D4/DCMI_D4/PSSI_D4								
A15	CH1_RX_N	NC														
A16	CH1_LINK	NC														
A17	CH1_TX_N	NC														
A18	CH0_SYNC_TRIG	NC														
A19	CH0_RX_N	NC														
A20	CH0_LINK	NC														
A21	CH0_TX_N	NC														
A22	UART_C_RX	C11	DEBUG_TRACECLK	HDP_HDP0	SPI7_RDY	SAI1_D2	SAI4_FS_A	UART7_RX	TIM15_CH2	OCTOSPIM_P1_CLK	DCMIPP_PIXCLK/DCMI_PIXCLK/PSSI_PDCK					
B1	CSI_A_DATA0_P	E2														
B2	GND	-														
B3	CSI_A_CLOCK_N	C2														
B4	CSI_A_CLOCK_P	C1														
B5	GND	-														
B6	CSI_A_DATA3_N	NC														
B7	CSI_A_DATA3_P	NC														
B8	GND	-														
B9	GND	-														
B10	USB_C_SSRX_P	NC														
B11	USB_C_SSRX_N	NC														
B13	UART_A_TX	G2	DEBUG_TRACED7	UART5_TX	TIM5_CH4	LTDC_G3	DCMIPP_D3/DCMI_D3/PSSI_D3									
B15	CH1_RX_P	NC														
B16	CH1_ACT	NC														
B17	CH1_TX_P	NC														

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
B18	CH1_SYNC_TRIG	NC														
B19	CH0_RX_P	NC														
B20	CH0_ACT	NC														
B21	CH0_TX_P	NC														
B22	Vendor Defined	NC														
B23	UART_C_TX	D8	SAI1_MCLK_A	I2S2_CK/SPI2_SCK	SAI1_D1	SAI4_MCLK_A	UART7_TX	TIM15_CH1N	TIM1_BKIN2	OCTOSPIM_P1_NCS1	DCMIPP_D15/PSSI_D15					
C1	CSI_A_DATA0_N	E1														
C2	CAM_MCK	N3	RCC_MCO_1	LPTIM3_ETR	SPI8_SCK	ADF1_CCK0	LPUART1_DE/LPUART1_RTS	LPTIM5_IN1	LPTIM4_CH2							
C3	CAM_A_SCL / CSI_A_TX_P	L14	LPTIM2_CH1	SPI7_RDY	SPDIFRX_IN3	SAI1_SCK_B	I3C3_SDA	TIM16_CH1	I2C5_SDA	I2C3_SDA	ETH3_RGMII_GTX_CLK					
C4	CAM_A_SDA / SCI_A_TX_N	K9	LPTIM2_CH2	SPI7_NSS	SAI1_FS_B	USART1_CK	USART2_RX	I2C5_SCL	LTDC_B2	DCMIPP_D4/DCMI_D4/PSSI_D4						
C5	VCC_6_TEST	-														
C6	ETH_B_MDC	N7	SPI5_MISO	SAI3_FS_B	LPTIM4_IN1	TIM8_BKIN	ETH2_PPS_OUT	ETH2_MDC	FMC_A21	LTDC_R7	DCMIPP_VSYNC/DCMI_VSYNC/PSSI_RDY					
C7	ETH_B_MDIO	T7	SPDIFRX_IN1	MDF1_SDI1	TIM8_CH1N	I2C4_SDA	ETH2_MDIO	ETH1_MII_COL	FMC_A25	ETH1_PPS_OUT	LTDC_DE					
C8	USB_C_OC#	G12	UART7_TX	TIM17_BKIN	TIM5_CH2	LTDC_R0	USB3DR_OVRCUR	USBH_HS_OVRCUR	ETH1_PTP_AUX_TS	ETH3_PPS_OUT						OSM PinAC21, OSM Pin AC15
C9	USB_C_VBUS	L2	RCC_MCO_2	SPI8_RDY	MDF1_CKI5	LPUART1_TX	LPTIM4_ETR	I2C8_SDA	LPTIM3_CH2	I3C4_SDA						OSM Pin AB16
C10	USB_C_EN	M5	DEBUG_DBTRGI	DEBUG_DBTRGO	LPTIM3_ETR	SPI8_NSS	MDF1_SDI5	ADF1_SDI0	LPUART1_CTS	LPTIM4_IN1	I2C8_SDA	LPTIM4_CH2	I3C4_SDA			OSM Pin AC16
C11	GND	-														
C13	UART_A_RTS	E5	DEBUG_TRACED6	HDP_HDP6	SPI5_RDY	SPI1_RDY	USART6_CK	UART5_DE/UART5_RTS	UART9_TX	TIM5_CH3	LTDC_G2	DCMIPP_D2/DCMI_D2/PSSI_D2				
C14	UART_A_CTS	K7	SPI5_MOSI	I2S1_SDO/SPI1_MOSI	UART5_CTS	UART9_RX	TIM5_CH2	LTDC_DE	DCMIPP_D1/DCMI_D1/PSSI_D1							
C15	CH1_RXC	NC														
C16	Vendor Defined	NC														
C17	CH1_TXC	NC														
C18	TEST_GENERIC	NC														
C19	CH0_RXC	NC														
C20	SDIO_A_IOPWR	-														
C21	CH0_TXC	NC														
C22	UART_D_RX	T4	RCC_MCO_1	SPDIFRX_IN0	SPI6_RDY	SAI2_SCK_A	MDF1_SDI6	UART8_RX	TIM2_CH4	ETH2_MII_TXD3						
C23	UART_D_TX	F12	I2S2_MCK	UART8_TX	UART9_DE/UART9_RTS	TIM4_CH3	SDMMC3_D3	FMC_D15/FMC_DA15								
D1	GND	-														

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
D2	ETH_B_(R)(G)MII_CRS	NC														
D3	GPIO_C_0	M12	I2S1_SDI/SPI1_MISO	SPDIFRX_IN3	UART4_RX	UART7_CTS	TIM5_CH1	I2C3_SMBA	I2C5_SMBA	ETH3_RGMII_RXD3						
D4	GPIO_C_1	W8	SPI6_NSS	SAI3_MCLK_A	USART6_RX	TIM15_CH1N	ETH1_RGMII_CLK125	ETH1_MII_RX_ER								
D5	GND	-														
D6	Vendor Defined	T3														
D7	Vendor Defined	R3														
D8	GND	-														
D9	USB_C_ID	NC														
D10	USB_C_D_P	NC														
D11	USB_C_D_N	NC														
D13	UART_B_TX	L1	SPI8_MOSI	MDF1_CCK1	ADF1_CCK1	LPUART1_TX	LPTIM5_IN1	LPTIM3_CH2								
D14	UART_B_RX	L3	LPTIM3_IN1	SPI8_MISO	MDF1_SDI5	ADF1_SDI0	LPUART1_RX	LPTIM4_CH1	I2C8_SMBA	LPTIM5_ETR						
D15	UART_B_RTS	M3	LPTIM3_CH1	SPI8_SCK	ADF1_CCK0	LPUART1_DE/LPUART1_RTS	LPTIM4_ETR	I2C8_SCL	I3C4_SCL							
D16	UART_B_CTS	K3	DEBUG_DBTRGI	DEBUG_DBTRGO	SPI8_NSS	TIM8_CH3	ADF1_SDI0	LPUART1_CTS	LPTIM5_OUT	LPTIM4_CH2						
D17	GPIO_A_0	M14	SPI4_SCK	SAI2_FS_B	MDF1_SDI6	USART2_CK	TIM13_CH1	TIM2_ETR	LTDC_G4	FMC_NE1	DCMIPP_D12/DCMI_D12/PSSI_D12	ETH3_RGMII_TXD0/ETH3_RMII_TXD0				
D18	GND	-														
D19	GPIO_B_0	R4	LPTIM1_IN1	I2S3_MCK	I3C3_SCL	SAI2_SD_A	UART5_CTS	USART3_CTS/USART3_NSS	TIM5_CH4	I2C3_SCL	ETH2_MII_RX_ER	ETH2_MII_RXD3	FMC_NBL0	LTDC_VSYNC	DCMIPP_D11/DCMI_D11/PSSI_D11	
D20	SDIO_A_WP	N9	I2S3_CK/SPI3_SCK	FDCAN2_RX	TIM12_CH2	I2C2_SDA	ETH1_MDC	ETH2_MII_CRS	I3C2_SDA							
D21	SDIO_A_PWR_EN	N12	LPTIM2_IN1	SPI7_MISO	MDF1_SDI7	USART1_RX	I3C1_SDA	I2C1_SDA	LTDC_B0	DCMIPP_D3/DCMI_D3/PSSI_D3	ETH3_RGMII_RX_CTL/ETH3_RMII_CRS_DV					
D22	UART_CON_RX	E4	DEBUG_TRACED13	HDP_HDP5	LPTIM1_CH2	MDF1_SDI5	USART1_RX	TIM8_ETR	LTDC_B2	DCMIPP_D10/DCMI_D10/PSSI_D10						
D23	UART_CON_TX	H5	DEBUG_TRACED12	HDP_HDP4	SPI7_RDY	MDF1_CKI5	USART1_TX	TIM8_BKIN2	LTDC_B1	DCMIPP_D9/DCMI_D9/PSSI_D9						
E1	ETH_B_(R)(G)MII_COL	NC														
E2	GND	-														
E3	GPIO_C_2	H1	DEBUG_TRACED14	HDP_HDP6	LPTIM1_IN1	SAI4_MCLK_B	USART1_CK	TIM8_BKIN	LTDC_B3	DCMIPP_D11/DCMI_D11/PSSI_D11						
E4	GPIO_C_3	H9	LPTIM1_IN2	SAI4_SD_B	USART1_CTS/USART1_NSS	TIM8_CH2	LTDC_B6	DCMIPP_D14/PSSI_D14								

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
E15	GND	-														
E16	ETH_A_(R)(G)MII_CRS	NC														
E17	GPIO_A_1	P9	SPI3_RDY	I2C4_SMBA	TIM12_CH1	I2C2_SCL	ETH1_MDIO	ETH2_MII_COL	FMC_NE4	I3C2_SCL						
E18	DISP_BL_PWM / PWM_0	B10	DEBUG_TRACED7	I2S1_CK/SPI1_SCK	SAI1_MCLK_A	UART4_TX	MDF1_CKI0	I2C4_SCL	TIM1_CH1	OCTOSPIM_P1_IO7	SDMMC1_D4	SDMMC1_CKIN	DCMIPP_D7/DCMI_D7/PSSI_D7			
E19	GPIO_B_1	M7	RTC_REFIN	I2S3_MCK	I3C3_SDA	SAI2_FS_A	USART3_CK	TIM5_CH3	I2C3_SDA	ETH2_MII_TX_CLK	ETH2_RGMII_CLK125	FMC_CLK	LTDC_HSYNC			
E20	SDIO_A_CMD	A14	LPTIM2_ETR	I2S1_SDI/SPI1_MISO	I2S3_SDO/SPI3_MOSI	SAI1_SCK_B	TIM10_CH1	SDMMC1_CMD								
E21	GND	-														
F1	ETH_B_(S)(R)(G)MII_TXD1	U6	LPTIM1_ETR	SPI6_NSS	SAI3_SCK_B	USART6_CTS/USART6_NSS	TIM8_CH2	ETH2_MII_TXD1/ETH2_RGMII_TXD1/ETH2_RMII_TXD1	ETH1_MII_TXD3	LTDC_B3	DCMIPP_D2/DCMI_D2/PSSI_D2					
F2	ETH_B_(S)(R)(G)MII_TXD3	W6	I2S3_SDO/SPI3_MOSI	LPTIM4_ETR	TIM8_CH4	USBH_HS_VBUSEN	ETH2_MII_TXD3/ETH2_RGMII_TXD3	USB3DR_VBUSEN	FMC_A23	LTDC_G3	DCMIPP_D6/DCMI_D6/PSSI_D6					
F3	GPIO_C_4	G1	LPTIM1_CH1	SAI4_FS_B	TIM8_CH3	LTDC_B7	DCMIPP_D15/PSSI_D15									
F4	GPIO_C_5	N4														
F15	ETH_A_(R)(G)MII_COL	NC														
F16	GND	-														
F17	GPIO_A_2	W10	UART8_RX	SAI2_SCK_B	MDF1_CCK0	TIM3_CH4	TIM8_BKIN2	ETH1_CLK	ETH2_PPS_OUT	FMC_A20	LTDC_R6	DCMIPP_HSYNC/DCMI_HSYNC/PSSI_DE				
F18	PWM_1	D5	USART3_RX	TIM2_CH1	TIM3_CH2	LTDC_HSYNC										
F19	GPIO_B_2	H12	LPTIM1_ETR	SPI5_MOSI	UART8_TX	SAI2_FS_B	TIM3_CH3	TIM8_ETR	ETH2_CLK	ETH2_PHY_INTN	FMC_A19	LTDC_R5	DCMIPP_PIXCLK/DCMI_PIXCLK/PSSI_PDCK			
F20	GND	-														
F21	SDIO_A_CLK	A15	DEBUG_TRACECLK	SPI1_RDY	I2S3_CK/SPI3_SCK	SAI1_MCLK_B	USART3_TX	TIM11_CH1	SDMMC1_CK							
G1	ETH_B_(S)(R)(G)MII_TXD0	W5	SPI6_MOSI	SAI3_SD_B	TIM8_CH2N	ETH2_MII_TXD0/ETH2_RGMII_TXD0/ETH2_RMII_TXD0	ETH1_MII_TXD2	LTDC_B4	DCMIPP_D1/DCMI_D1/PSSI_D1							
G2	ETH_B_(S)(R)(G)MII_TXD2	V6	RCC_MCO_1	I2S3_SDI/SPI3_MISO	SAI2_SCK_A	TIM13_CH1	TIM8_CH4N	USBH_HS_OVRCUR	ETH2_MII_TXD2/ETH2_RGMII_TXD2	USB3DR_OVRCUR	FMC_A22	LTDC_G2	DCMIPP_D7/DCMI_D7/PSSI_D7			
G3	GPIO_C_6	L5	LPTIM3_IN1	SPI8_MOSI	TIM8_CH1	LPUART1_TX	LPTIM5_OUT	I2C8_SDA	LPTIM3_CH2	I3C4_SDA						
G4	GPIO_C_7	M4	LPTIM3_CH1	SPI8_MISO	TIM8_CH2	LPUART1_RX	LPTIM5_ETR	I2C8_SCL	I2C8_SMBA	I3C4_SCL						

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
G15	ETH_A_(S)(R)(G)MII_TXD1	V10	I2S3_SDO/SPI3_MOSI	USART2_TX	I2C7_SCL	ETH1_MII_TXD1/ETH1_RGMII_TXD1/ETH1_RMII_TXD1										
G16	ETH_A_(S)(R)(G)MII_TXD3	T11	SPI6_MISO	SAI3_FS_A	TIM15_CH2	ETH2_MDIO	ETH1_MII_TXD3/ETH1_RGMII_TXD3									
G17	GPIO_A_3	W7	RTC_OUT2	SPI6_NSS	SAI3_SCK_A	USART6_RX	TIM4_CH4	ETH1_MDC	ETH2_CLK	ETH2_PPS_OUT	ETH1_PPS_OUT	LTDC_B7				
G18	PWM_2	D4	RCC_MCO_1	USART3_TX	TIM2_ETR	TIM3_CH1	LTDC_VSYNC									
G19	GPIO_B_3	F7	DEBUG_TRACED9	HDP_HDP1	SPI7_MOSI	FDCAN1_TX	TIM8_CH4	LTDC_G5	DCMIPP_D5/DCMI_D5/PSSI_D5							
G20	SDIO_A_D0	B14	DEBUG_TRACED0	LPTIM2_IN1	I2S1_SDO/SPI1_MOSI	I2S3_SDI/SPI3_MISO	SAI1_SD_B	USART3_CTS/USART3_NSS	FDCAN1_TX	SDMMC1_D0						
G21	SDIO_A_D1	C14	DEBUG_TRACED1	LPTIM2_IN2	I2S1_WS/SPI1_NSS	I2S3_WS/SPI3_NSS	SAI1_FS_B	USART3_DE/USART3_RTS	FDCAN1_RX	SDMMC1_D1						
H1	ETH_B_(R)(G)MII_TX_CLK	V7	SPDIFRX_IN1	SPI6_SCK	SAI3_SD_A	TIM2_ETR	ETH2_RGMII_GTX_CLK	ETH2_MII_TX_CLK	LTDC_R1							
H2	GND	-														
H3	RGB_CS#	NC														
H4	GND	-														
H15	ETH_A_(S)(R)(G)MII_TXD0	T10	I2S3_SDI/SPI3_MISO	USART2_RX	I2C7_SDA	ETH1_MII_TXD0/ETH1_RGMII_TXD0/ETH1_RMII_TXD0										
H16	ETH_A_(S)(R)(G)MII_TXD2	U10	I2S1_CK/SPI1_SCK	SPI6_MOSI	SAI3_SCK_A	TIM15_CH1	ETH2_MDC	ETH1_MII_TXD2/ETH1_RGMII_TXD2								
H17	GPIO_A_4	P7	SPI6_SCK	SAI3_MCLK_A	USART6_TX	TIM4_CH3	ETH1_MDIO	ETH1_CLK	ETH2_PHY_INTN	ETH1_PHY_INTN	LTDC_B6					
H18	PWM_3	R8	SPI6_MOSI	SAI3_FS_A	TIM4_CH1	I2C4_SCL	I2C6_SCL	ETH1_PHY_INTN								
H19	GPIO_B_4	H7	DEBUG_TRACED10	HDP_HDP2	SPI7_MISO	FDCAN1_RX	TIM8_CH1N	LTDC_G6	DCMIPP_D6/DCMI_D6/PSSI_D6							
H20	SDIO_A_D2	B13	DEBUG_TRACED2	LPTIM2_CH1	I2S1_CK/SPI1_SCK	SPI3_RDY	USART3_CK	SDMMC1_D2								
H21	SDIO_A_D3	C13	DEBUG_TRACED3	LPTIM2_CH2	I2S1_MCK	I2S3_MCK	USART3_RX	SDMMC1_D3								
J1	ETH_B_(S)(R)(G)MII_RXD0	T5	LPTIM1_IN1	I3C3_SDA	MDF1_SDI2	TIM8_CH3N	I2C3_SDA	ETH2_MII_RXD0/ETH2_RGMII_RXD0/ETH2_RMII_RXD0	ETH1_MII_RXD2	LTDC_G5	DCMIPP_D4/DCMI_D4/PSSI_D4					
J2	ETH_B_(R)(G)MII_TX_EN(_ER)	V3	SPI6_MISO	SAI3_FS_B	ETH2_MII_TX_EN/ETH2_RG	ETH1_RGMII_CLK125	LTDC_R0									

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
					MII_TX_CTL/ETH2_RMII_TX_EN											
J3	RGB_RESET#	NC														
J4	RGB_DE	NC														
J15	ETH_A_(R)(G)MII_TX_CLK	V9	LPTIM1_CH1	SPI6_SCK	SAI3_MCLK_B	USART6_TX	DCMIPP_D0/DCMI_D0/PSSI_D0	ETH2_MII_RX_CLK/ETH2_RMII_REF_CLK	ETH1_MII_TX_CLK	ETH1_RGMII_GTX_CLK	LTDC_G7					
J16	GND	-														
J17	GPIO_A_5	U7	RTC_REFIN	SAI3_SCK_B	USART3_RX	TIM12_CH2	ETH1_CLK	ETH2_RGMII_CLK125	ETH2_MII_RX_ER	ETH2_MII_RX_DV/ETH2_RMII_CRS_DV	LTDC_G0					
J18	PWM_4	J15	LPTIM1_IN2	SPI5_SCK	UART8_DE/UART8_RTS	SAI2_SD_B	UART5_RX	TIM3_CH2	TIM5_CH1	ETH1_PPS_OUT	FMC_A18	LTDC_R4	DCMIPP_D8/DCMI_D8/PSSI_D8			
J19	GPIO_B_5	K14	I2S1_WS/SPI1_NSS	UART7_RX	TIM17_CH1N	TIM5_CH3	I2C7_SCL	ETH3_RGMII_TXD3								
J20	GND	-														
J21	SDIO_A_CD#	D11	DEBUG_TRACED6	HDP_HDP7	SAI1_SCK_A	UART4_RX	MDF1_SDI0	I2C4_SDA	TIM1_CH2	TIM14_CH1	OCTOSPIM_P1_IO6	SDMMC1_D5	SDMMC1_CDIR	DCMIPP_D8/DCMI_D8/PSSI_D8		
K1	ETH_B_(S)(R)(G)MII_RXD1	V4	LPTIM1_CH2	I3C3_SCL	MDF1_CKI2	TIM8_CH3	I2C3_SCL	ETH2_MII_RXD1/ETH2_RGMII_RXD1/ETH2_RMII_RXD1	ETH1_MII_RXD3	LTDC_G1	DCMIPP_D5/DCMI_D5/PSSI_D5					
K2	ETH_B_(R)(G)MII_RX_ER	NC														
K3	RGB_HSYNC	NC														
K4	RGB_DISP	NC														
K15	ETH_A_(S)(R)(G)MII_RXD0	U8	SPI8_MISO	LPTIM2_IN2	SAI4_SCK_B	MDF1_CKI4	USART2_CK	ETH1_MII_RXD0/ETH1_RGMII_RXD0/ETH1_RMII_RXD0								
K16	ETH_A_(R)(G)MII_TX_EN(_ER)	W9	SPI8_RDY	I2S3_MCK	LPTIM2_ETR	MDF1_CKI3	USART2_CTS/USART2_NSS	I2C7_SMBA	ETH1_MII_TX_EN/ETH1_RGMII_TX_CTL/ETH1_RMII_TX_EN							
K17	GPIO_A_6	L9	RCC_MCO_2	SPI3_RDY	SAI2_MCLK_A	MDF1_CKI6	UART8_TX	TIM2_CH3	ETH2_MII_TXD2							
K18	PWM_5	J5	LPTIM1_ETR	SAI4_SCK_B	USART1_DE/USART1_RTS	TIM8_CH1	LTDC_B5	DCMIPP_D13/DCMI_D13/PSSI_D13								
K19	GPIO_B_6	L15	LPTIM2_IN2	SAI1_MCLK_B	I3C3_SCL	TIM16_CH1N	I2C5_SCL	I2C3_SCL	I2C1_SMBA	ETH3_RGMII_TXD2						
K20	SDIO_B_CLK	G15	SPI7_SCK	SAI1_SD_B	UART8_RX	SDMMC3_CK	FMC_D5/FMC_DA5	FMC_D0/FMC_DA0								

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
K21	SDIO_B_CMD	H14	SPI7_MISO	I2S2_SDI/SPI2_MISO	SPDIFRX_IN2	UART8_DE/UART8_RTS	TIM4_ETR	SDMMC3_CMD	FMC_D6/FMC_DA6	FMC_D1/FMC_DA1						
L1	ETH_B_(R)(G)MII_RX_DV(_ER)	U4	LPTIM1_IN2	I2S3_WS/SPI3_NSS	SPI6_RDY	USART6_DE/USART6_RTS	FDCAN2_TX	ETH2_MII_RX_DV/ETH2_RGMII_RX_CTL/ETH2_RMII_CRS_DV	ETH1_MII_RX_ER	LTDC_G6	DCMIPP_D3/DCMI_D3/PSSI_D3					
L2	GND	-														
L3	RGB_VSYNC	NC														
L4	GND	-														
L15	ETH_A_(S)(R)(G)MII_RXD1	T9	SPI8_MOSI	LPTIM2_IN1	SAI4_MCLK_B	MDF1_SDI3	USART2_DE/USART2_RTS	ETH1_MII_RXD1/ETH1_RGMII_RXD1/ETH1_RMII_RXD1								
L16	ETH_A_(R)(G)MII_RX_ER	NC														
L17	GPIO_A_7	G7	DEBUG_TRACED1	HDP_HDP1	USART6_RX	MDF1_SDI7	USART3_DE/USART3_RTS	FDCAN3_RX	TIM3_CH4	LTDC_R3						
L18	GND	-														
L19	GPIO_B_7	L12	I2S1_SDO/SPI1_MOSI	UART4_TX	UART7_DE/UART7_RTS	TIM17_CH1	TIM5_CH4	I2C7_SDA	ETH3_RGMII_RXD2							
L20	SDIO_B_D0	H15	I2S2_CK/SPI2_SCK	MDF1_CKI7	UART9_RX	TIM4_CH2	SDMMC3_D0	FMC_D7/FMC_DA7	FMC_D2/FMC_DA2							
L21	SDIO_B_D1	G9	I2S2_WS/SPI2_NSS	MDF1_SDI7	UART9_TX	TIM4_CH4	SDMMC3_D1	FMC_D11/FMC_DA11	FMC_NWE							
M1	ETH_B_(R)(G)MII_RXD2	T6	SAI3_SD_B	SAI2_SD_A	MDF1_SDI5	UART8_DE/UART8_RTS	TIM2_CH2	ETH2_MII_RXD2/ETH2_RGMII_RXD2	ETH2_MDIO							
M2	ETH_B_SDP	NC														
M3	RGB_B5	NC														
M4	RGB_(PIXEL)CLK	NC														
M15	ETH_A_(R)(G)MII_RX_DV(_ER)	R9	SPI8_SCK	LPTIM2_CH1	SAI4_SD_B	MDF1_SDI4	ETH1_MII_RX_DV/ETH1_RGMII_RX_CTL/ETH1_RMII_CRS_DV									
M16	GND	-														
M17	ETH_IOPWR	-														
M18	ADC_0	R5														
M19	VCC_2_TEST2	-														
M20	GND	-														
M21	SDIO_B_D2	E14	UART8_CTS	TIM13_CH1	DSIHOST_TE	SDMMC3_D2	FMC_NWAIT	DCMIPP_D12/DCMI_D12/PSSI_D12								
N1	ETH_B_(R)(G)MII_RXD3	V5	LPTIM1_CH1	SPI5_NSS	SAI2_MCLK_A	UART5_DE/UART5_RTS	USART3_DE/USART3_RTS	TIM3_CH1	TIM5_ETR	ETH2_MII_RXD3/ETH2_RGMII_RXD3	FMC_NBL1	LTDC_R2	DCMIPP_D10/DCMI_D10/PSSI_D10			

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
N2	RESERVED	NC														
N3	RGB_B3	NC														
N4	RGB_B4	NC														
N15	ETH_A_(R)(G)MII_RXD2	V8	I2S3_WS/SPI3_NSS	SPI6_MISO	TIM10_CH1	ETH1_MII_RXD2/ETH1_RGMII_RXD2										
N16	ETH_A_SDP	NC														
N17	JTAG_TCK(SWCLK)	W4														
N18	ADC_1	P5														
N19	JTAG_TMS(SWDIO)	W2														
N20	SDIO_B_D3	A13	I2S1_MCK	FDCAN1_RX	TIM11_CH1	I2C7_SDA	FMC_D4/FMC_DA4	SDMMC3_D3	DCMIPP_D1/DCMI_D1/PSSI_D1							
N21	SDIO_B_D4	NC														
P1	ETH_B_(R)(G)MII_RX_CLK	U5	RTC_OUT2	SAI3_MCLK_B	USART6_CK	TIM12_CH1	I2C3_SMBA	ETH2_MII_RX_CLK/ETH2_RGMII_RX_CLK/ETH2_RMII_REF_CLK	LTDC_B0							
P2	GND	-														
P3	RGB_B2 / LVDS_D3_N	J2														
P4	GND	-														
P15	ETH_A_(R)(G)MII_RXD3	U9	I2S3_CK/SPI3_SCK	SPI6_MOSI	TIM15_BKIN	TIM11_CH1	ETH1_MII_RXD3/ETH1_RGMII_RXD3									
P16	Vendor Defined	NC														
P17	JTAG_TDI	W3														
P18	GND	-														
P19	JTAG_RTCK	NC														
P20	SDIO_B_D5	NC														
P21	SDIO_B_D6	NC														
R1	GND	-														
R2	PCIe_SM_ALERT#	K15	AUDIOCLK	SPI6_RDY	PCIE_CLKREQN	MDF1_CCK0	USART1_CTS/USART1_NSS	TIM4_ETR	I2C2_SMBA	I2C6_SMBA	LTDC_B5	I2C3_SMBA	I2C4_SMBA	DCMIPP_D6/DCMI_D6/PSSI_D6	ETH3_RGMII_TXD1/ETH3_RMII_TXD1	
R3	RGB_B1	NC														
R4	RGB_B0 / LVDS_D3_P	J3														
R15	ETH_A_(R)(G)MII_RX_CLK	T8	SPI8_NSS	LPTIM2_CH2	SAI4_FS_B	MDF1_CCK1	ETH1_MII_RX_CLK/ETH1_RGMII_RX_CLK/ETH1_RMII_REF_CLK									
R16	GND	-														
R17	JTAG_TDO(SWO)	V1														
R18	BOOT_SEL1#	P3														ONLY FOR FIRST <1ms

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
R19	JTAG_nTRST	V2														
R20	GND	-														
R21	SDIO_B_D7	NC														
T1	PCIe_SMCLK	K2	DEBUG_TRACED4	HDP_HDP4	SPI5_SCK	I2S1_CK/SPI1_SCK	TIM2_CH4	I2C6_SCL	LTDC_R6	DCMIPP_HSYNC/DCMI_HSYNC/PSSI_DE						
T2	PCIe_WAKE#	L4	DEBUG_DBTRGI	DEBUG_DBTRGO	RCC_MCO_2	SPI8_RDY	MDF1_CCK1	ADF1_CCK1	LPUART1_RX	LPTIM4_CH1	I2C8_SCL	I3C4_SCL				
T3	RGB_G4	NC														
T4	RGB_G5 / LVDS_D2_N	G3														
T15	ETH_MDIO	M15	SPI4_MISO	SAI2_SD_B	USART2_RX	LPTIM5_IN1	TIM2_CH2	ETH1_MDIO	LTDC_R6	DCMIPP_D15/PSSI_D15	ETH3_RGMII_RXD1/ETH3_RMII_RXD1					
T16	ETH_MDC	K12	SPI4_NSS	SAI2_SCK_B	USART2_CTS/USART2_NSS	LPTIM5_ETR	TIM2_CH3	ETH1_MDC	LTDC_G7	DCMIPP_D14/PSSI_D14	ETH3_RGMII_RXD0/ETH3_RMII_RXD0					
T17	FORCE_RECOVERY#	NC														PULLUP 10k
T18	I2S_B_LRCLK	H2	DEBUG_TRACED0	HDP_HDP0	AUDIOCLK	USART6_TX	I2S2_WS/SPI2_NSS	MDF1_CKI7	USART3_CTS/USART3_NSS	FDCAN3_TX	TIM3_CH3	LTDC_R2				
T19	I2S_B_BITCLK	G5	DEBUG_TRACED2	HDP_HDP2	SPI2_RDY	USART6_CTS/USART6_NSS	I2S2_CK/SPI2_SCK	USART3_CK	TIM2_CH2	TIM3_ETR	I2C6_SMBA	LTDC_R4				
T20	SDIO_B_IOPWR	-														
T21	SDIO_B_CD#	B7	I2S3_MCK	USART1_CTS/USART1_NSS	FDCAN1_RX	TIM20_BKIN2	TIM12_CH2	OCTOSPIM_P2_NCLK	OCTOSPIM_P2_NCS2	FMC_D14/FMC_DA14	OCTOSPIM_P1_NCS2					
U1	PCIe_SMDAT	K1	DEBUG_TRACED3	HDP_HDP3	USART6_DE/USART6_RTS	TIM2_CH3	I2C6_SDA	LTDC_R5	DCMIPP_PIXCLK/DCMI_PIXCLK/PSSI_PDCK							
U2	GND	-														
U3	RGB_G3 / LVDS_D2_P	G4														
U4	GND	-														
U15	SPI_A_SDI_(IO1)	D9	I2S3_WS/SPI3_NSS	TIM16_CH1N	TIM20_CH3N	OCTOSPIM_P2_IO1	FMC_NCE4									
U16	SPI_A_SCK	E12	I2S3_SDI/SPI3_MISO	USART1_RX	TIM17_CH1N	OCTOSPIM_P2_CLK	FMC_D15/FMC_DA15									
U17	RESET_IN#	N2														OSM Pin V2, eMMC Pin K5, PMIC Pin 31
U18	VCC_OUT_IO	-														
U19	BOOT_SEL0#	T2														ONLY FOR FIRST <1ms
U20	SDIO_B_WP	D7	I2S3_CK/SPI3_SCK	UART4_TX	SAI4_MCLK_B	TIM20_ETR	TIM12_CH1	OCTOSPIM_P2_IO7	FMC_D10/FMC_DA10	SDMMC3_CDIR						

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
U21	SDIO_B_PWR_EN	R12	LPTIM2_ETR	SPI7_MOSI	MDF1_CKI7	USART1_TX	I3C1_SCL	I2C7_SMBA	I2C1_SCL	LTDC_B1	DCMIPP_D2/DCMI_D2/PSSI_D2	ETH3_RGMII_TX_CTL/ETH3_RMII_TX_EN				
V1	GND	-														
V2	PCIe_A_PERST#	N2														PMIC-Pin31, eMMC PinK5, OSM Pin U17
V3	RGB_G1 / LVDS_D1_N	F3														
V4	RGB_G2	NC														
V15	SPI_A_SDO_(IO0)	B8	I2S2_CK/SPI2_SCK	USART1_CK	TIM16_CH1	TIM20_CH4N	OCTOSPIM_P2_IO0									
V16	GND	-														
V17	CARRIER_PWR_EN	NC														PULLDOWN_10k
V18	I2S_MCLK	E11	DEBUG_TRACED4	SPI4_RDY	I2S1_MCK	SAI1_FS_A	UART4_CTS	MDF1_SDI1	TIM1_CH4	TIM4_ETR	OCTOSPIM_P1_IO4	SDMMC1_D7	SDMMC1_D123DIR	DCMIPP_D10/DCMI_D10/PSSI_D10		
V19	I2S_B_DATA_IN	C8	I2S2_SDI/SPI2_MISO	UART4_RX	SAI4_SCK_B	TIM20_CH1N	OCTOSPIM_P2_IO6	FMC_D9/FMC_DA9	SDMMC3_D0DIR							
V20	GND	-														
V21	I2S_A_DATA_IN	L7	DEBUG_TRACECLK	SPI5_MISO	I2S1_SDI/SPI1_MISO	UART9_DE/UART9_RTS	TIM5_CH1	LTDC_CLK	DCMIPP_D0/DCMI_D0/PSSI_D0							
W1	PCIe_REFCLK_P	U14														
W2	PCIe_CLKREQ#	A7	I2S3_SDO/SPI3_MOSI	PCIE_CLKREQN	USART1_TX	TIM17_CH1	TIM20_CH4	OCTOSPIM_P2_NCS1	FMC_D12/FMC_DA12							
W3	GND	-														
W4	RGB_G0 / LVDS_D1_P	F4														
W15	SPI_A_/HOLD_(IO3)	A9	I2S2_WS/SPI2_NSS	MDF1_SDI3	TIM20_CH3	OCTOSPIM_P2_IO3	FMC_NCE3									
W16	SPI_A_/WP_(IO2)	E9	I2S2_SDO/SPI2_MOSI	MDF1_CKI3	TIM17_BKIN	TIM16_BKIN	TIM20_CH2N	OCTOSPIM_P2_IO2								
W17	RTC_PWR	NC														
W18	I2S_A_LRCLK	E7	DEBUG_TRACED5	HDP_HDP5	SPI5_NSS	I2S1_WS/SPI1_NSS	UART9_CTS	TIM5_ETR	LTDC_R7	DCMIPP_VSYNC/DCMI_VSYNC/PSSI_RDY						
W19	I2S_B_DATA_OUT	K6	SPI7_MOSI	I2S2_SDO/SPI2_MOSI	FDCAN2_TX	UART9_CTS	TIM16_BKIN	FMC_NWAIT	DSIHOST_TE	LTDC_B0						
W20	I2S_A_BITCLK	B11	SAI1_SCK_A	I2S1_CK/SPI1_SCK	SPDIFRX_IN0	FDCAN2_RX	MDF1_CCK0	TIM4_CH1	FMC_D12/FMC_DA12	DSIHOST_TE						
W21	I2S_A_DATA_OUT	C10	DEBUG_TRACED5	HDP_HDP6	I2S1_SDO/SPI1_MOSI	SAI1_SD_A	UART4_DE/UART4_RTS	MDF1_CKI1	TIM1_CH3	OCTOSPIM_P1_IO5	SDMMC1_D6	SDMMC1_D0DIR	DCMIPP_D9/DCMI_D9/PSSI_D9			
Y1	PCIe_REFCLK_N	V14														
Y2	GND	-														
Y3	VCC_5_TEST	-														

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
Y4	RGB_R5 / LVDS_D0_N	F1														
Y5	RGB_R4	NC														
Y6	RGB_R2	NC														
Y7	RGB_R0 / LVDS_CLK_P	H4														
Y8	VCC_IN_5V	-														
Y9	VCC_IN_5V	-														
Y10	VCC_IN_5V	-														
Y11	VCC_IN_5V	-														
Y13	CARRIER_STBY#	NC														
Y14	RESET_OUT#	NC														
Y15	SPI_A_CS0#	A8	SPI3_RDY	USART1_DE/USART1_RTS	FDCAN1_TX	TIM20_BKIN	TIM10_CH1	OCTOSPIM_P2_DQS	OCTOSPIM_P2_NCS2	FMC_D13/FMC_DA13						
Y16	VCC_3_TEST	-														
Y17	VCC_IN_5V	-														
Y18	GND	-														
Y19	VCC_IN_3V3	NC														
Y20	VCC_4_TEST	-														
Y21	SPI_B_SCK	D12	DEBUG_TRACED3	SPI4_SCK	SPI1_RDY	SAI1_MCLK_B	MDF1_CKI2	TIM1_CH1N	TIM4_CH4	OCTOSPIM_P1_IO3	DCMIPP_D11/DCMI_D11/PSSI_D11					
Y22	SPI_B_SDI	C12	DEBUG_TRACED0	SPI4_MISO	HDP_HDP3	SAI1_D3	SAI1_SD_B	TIM1_CH4N	TIM4_CH1	OCTOSPIM_P1_IO0	DCMIPP_D14/PSSI_D14					
Y23	SPI_B_SDO	A12	DEBUG_TRACED2	SPI4_MOSI	HDP_HDP5	SAI1_SCK_B	MDF1_SDI2	TIM1_CH2N	TIM4_CH3	OCTOSPIM_P1_IO2	DCMIPP_D12/DCMI_D12/PSSI_D12					
AA1	GND	-														
AA2	RESERVED	NC														
AA3	DSI_TE	A11	SPI1_RDY	DSIHOST_TE	I2C5_SDA	FDCAN1_TX	TIM1_BKIN2	TIM5_ETR	I2C7_SCL	FMC_D3/FMC_DA3	SDMMC3_CKIN	DCMIPP_D0/DCMI_D0/PSSI_D0				
AA4	GND	-														
AA5	RGB_R3 / LVDS_D0_P	F2														
AA6	RGB_R1 / LVDS_CLK_N	H3														
AA7	GND	-														
AA8	GND	-														
AA9	PWR_BTN#	NC														PMIC Pin1
AA10	GND	-														
AA11	GND	-														
AA13	RESERVED	NC														
AA14	GND	-														

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
AA15	I2C_A_SCL	J7	DEBUG_TRACED11	HDP_HDP3	SPI7_SCK	MDF1_CKI6	TIM8_CH2N	I2C1_SCL	I3C1_SCL	LTDC_G7	DCMIPP_D7/DCMI_D7/PSSI_D7					
AA16	I2C_A_SDA	J9	DEBUG_TRACED15	HDP_HDP7	SPI7_NSS	MDF1_SDI6	TIM8_CH3N	I2C1_SDA	I3C1_SDA	LTDC_B4	DCMIPP_D8/DCMI_D8/PSSI_D8					
AA17	GND	-														
AA18	V_BAT	R6														OSM PinAB18
AA19	GND	-														
AA20	I2C_B_SCL	B9	I2S2_MCK	UART4_DE/UART4_RTS	SAI4_SD_B	MDF1_CKI4	TIM20_CH1	I2C2_SCL	OCTOSPIM_P2_IO5	FMC_D8/FMC_DA8	I3C2_SCL	SDMMC3_D123DIR				
AA21	I2C_B_SDA	C9	SPI2_RDY	UART4_CTS	SAI4_FS_B	MDF1_SDI4	TIM14_CH1	TIM20_CH2	I2C2_SDA	OCTOSPIM_P2_IO4	I3C2_SDA					
AA22	GND	-														
AA23	SPI_B_CS0#	B12	DEBUG_TRACED1	SPI4_NSS	HDP_HDP4	SAI1_D4	SAI1_FS_B	TIM1_CH3N	TIM4_CH2	OCTOSPIM_P1_IO1	DCMIPP_D13/DCMI_D13/PSSI_D13					
AB1	PCIe_A_HSI0_P	U16														
AB2	PCIe_A_HSI0_N	V16														
AB3	GND	-														
AB4	DSI_DATA3_P	A2														
AB5	DSI_DATA3_N	B2														
AB6	GND	-														
AB7	DSI_CLOCK_P	B4														
AB8	DSI_CLOCK_N	A4														
AB9	GND	-														
AB11	DSI_DATA0_N	A5														
AB13	USB_A_D_N	V12														
AB14	USB_A_ID	NC														
AB15	GND	-														
AB16	USB_A_VBUS	L2	RCC_MCO_2	SPI8_RDY	MDF1_CKI5	LPUART1_TX	LPTIM4_ETR	I2C8_SDA	LPTIM3_CH2	I3C4_SDA						OSM Pin C9
AB17	CAN_A_RX	J12	SPI4_MOSI	SAI2_MCLK_B	SAI2_SD_B	USART2_DE/USART2_RTS	FDCAN2_RX	TIM2_CH4	LTDC_G0	FMC_A0	DCMIPP_D13/DCMI_D13/PSSI_D13	ETH3_RGMII_RX_CLK/ETH3_RMII_REF_CLK				
AB18	V_BAT	R6														OSM Pin AA18
AB19	CAN_B_RX	F9	HDP_HDP1	I2S1_SDI/SPI1_MISO	SAI1_CK2	SAI4_SD_A	UART7_DE/UART7_RTS	TIM15_CH1	TIM1_BKIN	FDCAN3_RX	OCTOSPIM_P1_NCLK	OCTOSPIM_P1_NCS2	OCTOSPIM_P2_NCS2	DCMIPP_HSYNC/DCMI_HSYNC/PSSI_DE		
AB20	USB_B_VBUS	NC														
AB21	GND	-														
AB22	USB_B_ID	NC														
AB23	USB_B_D_N	V11														
AC2	PCIe_A_HSO0_P	U15														
AC3	PCIe_A_HSO0_N	V15														
AC4	GND	-														
AC5	DSI_DATA2_P	A3														

OSM Pin	OSM Pin Name	MPU Pin	Pin -Function / Mode-Mux													
			1	2	3	4	5	6	7	8	9	10	11	12	13	Details
AC6	DSI_DATA2_N	B3														
AC7	GND	-														
AC8	DSI_DATA1_P	B6														
AC9	DSI_DATA1_N	A6														
AC10	GND	-														
AC14	USB_A_D_P	W12														
AC15	USB_A_OC#	G12	UART7_TX	TIM17_BKIN	TIM5_CH2	LTDC_R0	USB3DR_OVRCUR	USBH_HS_OVRCUR	ETH1_PTP_AUX_TS	ETH3_PPS_OUT						OSM PinAC21, OSM Pin C8
AC16	USB_A_EN	M5	DEBUG_DBTRGI	DEBUG_DBTRGO	LPTIM3_ETR	SPI8_NSS	MDF1_SDI5	ADF1_SDI0	LPUART1_CTS	LPTIM4_IN1	I2C8_SDA	LPTIM4_CH2	I3C4_SDA			OSM Pin C10
AC17	CAN_A_TX	P12	USART2_TX	FDCAN2_TX	TIM2_CH1	LTDC_R1	ETH1_PTP_AUX_TS	ETH3_PPS_OUT								
AC18	DEBUG_EN	NC														
AC19	CAN_B_TX	A10	HDP_HDP2	I2S1_WS/SPI1_NSS	SAI1_CK1	SAI4_SCK_A	UART7_CTS	TIM15_BKIN	TIM1_ETR	FDCAN3_TX	OCTOSPIM_P1_DQS	OCTOSPIM_P1_NCS2	DCMIPP_VSYNC/DCMI_VSYNC/PSSI_RDY			
AC20	USB_B_EN	M9	SAI2_FS_A	UART8_CTS	TIM2_CH1	UART7_RX	LTDC_G1	USB3DR_VBUSEN	USBH_HS_VBUSEN	ETH2_PTP_AUX_TS						
AC21	USB_B_OC#	G12	UART7_TX	TIM17_BKIN	TIM5_CH2	LTDC_R0	USB3DR_OVRCUR	USBH_HS_OVRCUR	ETH1_PTP_AUX_TS	ETH3_PPS_OUT						OSM PinAC15, OSM Pin C8
AC22	USB_B_D_P	W11														

3.3. Power Supply

> The byteENGINE can be powered with 3.3V to 5.5V.
> The recommended power supply is 5V.

STPMIC25BPQR Power Manage IC (PMIC)

3.4. Boot modes byteENGINE STM32MP2

The OSM Standard implements two BOOT Pins: BOOT_SEL0# and BOOT_SEL1#
The STM32MP2 has four Bootpins: BOOT_MODE2 and BOOT_MODE3 are connected to Vendor Defined pins. While BOOT_MODE0 and BOOT_MODE1 are automatically disconnected on the byteENGINE after power on reset, the logic for BOOT_MODE2 and BOOT_MODE3 must be handled on the baseboard separately. The boot sequence can be redefined with OTP writing

Bootmode Pin	STM32MP2 PAD	OSM PAD	Note
BOOT_MODE0	T2	U19	Automatically disconnected after Boot
BOOT_MODE1	P3	R18	Automatically disconnected after Boot
BOOT_MODE2	T3	D6	Vendor defined Pads
BOOT_MODE3	R3	D7	Vendor defined Pads

CPU	BOOT_MODE [3:0]	BOOT Source
Cortex A35 + M33	0000	UART and USB
	0001	SD-Card
	0010	eMMC
	0011	Development boot
	0100	Serial NOR
	0101	Serial NAND

	0110	SLC NAND
Cortex M33	0111	SD-Card
	1000	e-MMC
	1001	-
	1010	-
Cortex M33	1011	Serial NOR
Cortex A35 + M33	1100	Development boot
	1101	-
	1110	-
Cortex A35 + M33	1111	UART and USB

4. Ordering info

The Order Code allows customers to easily recognize the detailed specification of the ordered SOM. Please refer to chapter Decision guidance byteENGINE STM32MP2 for further information.

byteENGINE-[TYPE]-[SPEED]-[RAM]-[FLASH]-[temp-range]-[revision]]

[TYPE]	**CPU type**	Comprehensive, see Additional Information
[SPEED]	**Clock speed**	1.2 GHz / 1.5 GHz
[RAM]	**RAM size**	512 / 1024 / 1536 / 2048
[FLASH]	**eMMC flash size**	8 / 16 / 32 / 64 / 128 GB
[temp-range]	**Temperature range**	[C] Consumer 0° to +85° C [I] Industrial -40°C to +85 °C
[revision]	**Revision**	0.1

5. References byteENGINE STM32MP2

NOTICE

Files can only be downloaded with login credentials. Please request your download credentials via support@bytesatwork.ch or contact your sales representative.

Links

- Schematic of OSM-S interface:
  Schematic of OSM-S interface
- Altium Schematic of OSM-S interface:
  Altium Schematic of OSM-S interface
- Altium Library:
  Altium Library
- STEP Model:
  STEP Model
- Detailed Pinout of byteENGINE STM32MP2:
  Detailed Pinout of byteENGINE STM32MP2
- ST STM32MP2 Series
  STM32MP2 Series
- bytesatwork on github:
  https://github.com/bytesatwork
- byteWIKI:
  https://bytewiki.readthedocs.io/

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