VisionSOM-STM32MP1 Datasheet and Pinout

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General description

The VisionSOM-STM32MP1 family is a SODIMM-sized SoM based on the STMicroelectronics STM32MP1 application processor which features an advanced implementation of a single or dual ARM Cortex-A7 cores (at speed up to 650MHz) and ARM Cortex-M4 core (at speed up to 209MHz) as well as a 3D Graphics Processing Unit (GPU) Open GL 2.0 ES compatible.

The VisionSOM-STM32MP1 is a general-purpose highly integrated SoM (System on Module) featuring high computation power and 802.11b/g/n Wi-Fi and Bluetooth v5.1 connectivity. The option of integrated, fully certified Wi-Fi and Bluetooth module simplifies the carrier board design and is ideally suited for wireless application. The VisionSOM-STM32MP1 provides a variety memory configuration including flexible range of DDR3L, eMMC and SD memory card that meets our customers requirements.

The SoM supports connections to a variety of interfaces: two high-speed USB on-the-go with PHY, dual Ethernet, audio, display with touch panel and serial interfaces. In addition, the system supports industrial grade embedded applications.

SoMLabs also provides a complete hardware and software development board for the SoM in the form of a carrier board and

optional TFT display and touch panel.

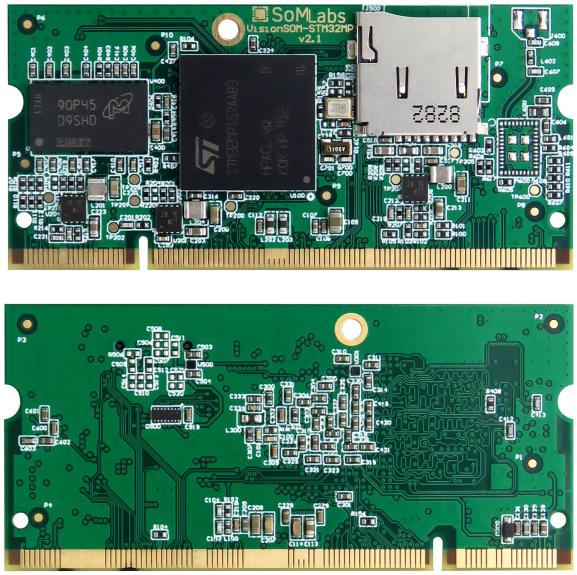
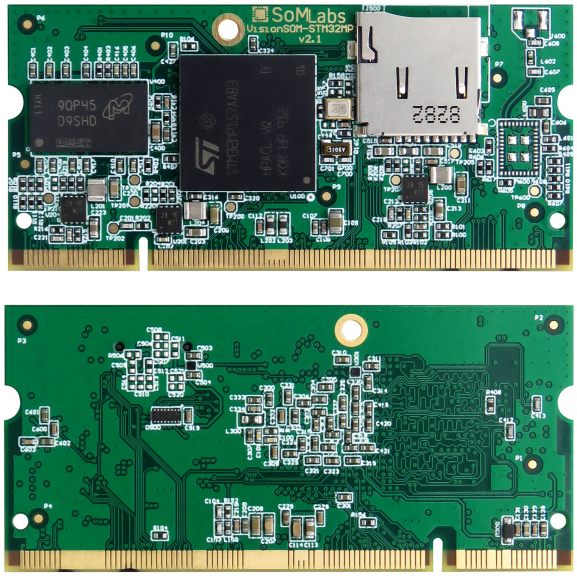
Applications

- Industrial embedded Linux computer
- Home Appliances
- Home Automation – Smart Home
- Human-machine Interfaces (HMI)
- Point-of-sales (POS) terminals
- Cash Register
- 2D barcode scanners and printers
- Smart grid infrastructure
- IoT gateways
- Residential gateways
- Machine vision equipment
- Robotics
- Fitness/outdoor equipment

Features

- Powered by STMicroelectronics STM32MP1 application processor
- Single or dual ARM Cortex-A7 cores at speed up to 800MHz
- ARM Cortex-M4 core at speed up to 209MHz
- Up to 512MB SDRAM DDR3L
- Up to 32GB eMMC memory or uSD memory card
- Optional Murata 802.11b/g/n Wi-Fi and Bluetooth v5.1+EDR module
- Power-efficient and cost-optimized solution
- Ideal for industrial IoT and embedded applications
- Integrated security features

Pictures of SOM versions

Version	Photo
eMMC	
micro-SD	

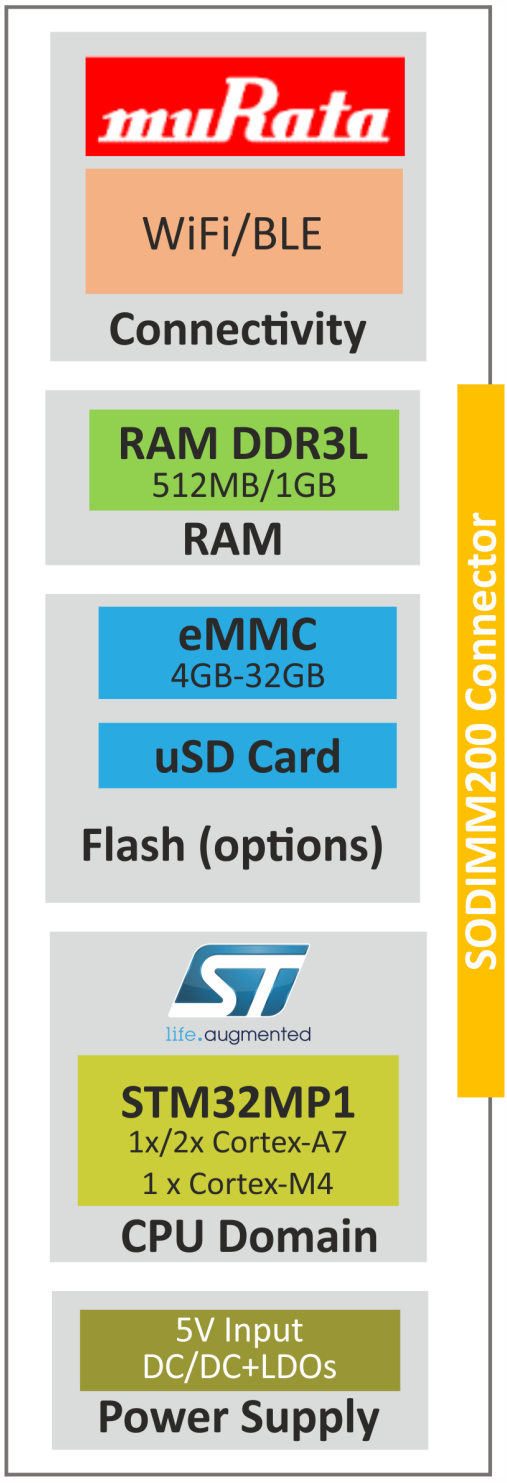
WiFi/BT module is available for all memory variants configurations.

Ordering info

SLS18CpuType_Clock_RamSize_FlashSize_SF_TEMP_V

SLS	Product type SLS - System on Module
1	SOM Name 1 - VisionSOM SODIMM200
8	CPU Family 8 - STM32MP1
CpuType	CPU Type MP151A - STM32MP151A MP157A - STM32MP157A
Clock	CPU Clock Speed 650C - 650MHz
RamSize	DDR3 RAM Size 256R - 256MB 512R - 512MB
FlashSize	Flash Size Type and Density uSD - MicroSD connector 04GE - 4GB eMMC 08GE - 8GB eMMC 16GE - 16GB eMMC 32GE - 32GB eMMC
SF	Special Features 0SF - No Special Features 1WB - Built-in 802.11b/g/n Wi-Fi and Bluetooth v5.1 Module (Murata 1DX)
TEMP	Operating Temperature C - Consumer: 0 to +70 C E - Extended: -25 to +70 C I - Industrial: -40 to +85 C
V	SOM Version A - Version 2.1

Block Diagram



Operating ranges

Parameter	Value	Unit	Comment
Power Supply	5.0	V	Connected to +5VIN SODIMM pin
Input GPIO voltage	3.3	V	-
Environment temperature[1]	-40...+85	°C	Industrial range w/o WiFi module
	-30...+70		Industrial range with WiFi module
	0...+70		Consumer range

Note:
1. Maximum MPU junction temperature is +125°C.

Electrical parameters

SOM signal name	Parameter	Value			Units
		Min.	Typ.	Max.	
+5VIN	Supply Voltage	4.0	5.0	5.5	V
-	Total Supply Current[1]	TBD	TBD	TBD	A
VGPIO	GPIO Input Voltage	0	3.3	3.9[2]	V
+3.3VOUT	SOM Internal LDO Output Current	-	-	0.5	A
USB-OTGx-VBUS	USB Supply	4.40	-	5.25	V
VDD-COIN-3V	SNVS Backup Battery Supply	1.4	-	3.6	V
-	ADC Inputs Voltage	0	-	3.3	V

Notes:
1. Excluding external load connected to +3.3VOUT lines.
2. Applying the maximum voltage 3.6V results in shorten lifetime. Recommended value is smaller than 3.45V.

SoM pinout

Important notes
1. Detail pin configurations description you can find, edit and arrange in dedicated IOC files (with free "STM32CubeMX" configurational tool): VisionSOM-STM32MP157.
2. "LCD-DATAx (GND)" pins have been retained for compatibility with the modules VisionSOM-6ULL and VisionSOM-RT and are internally connected to GND.

SODIMM PIN	GPIO name	Default function	Notes
1		GND	
2		GND	
3		PWR-LP	
4		STM32-NRST	MPU reset in + on-board SD card power rail off
5		PWR-ON	
6		VDD-3V3	MPU VDD power rail (for BOOT lines voltage reference only)
7		BOOT1	
8		VDD-COIN-3V	External 3V battery input (optionally)
9		BOOT0	
10		BOOT2	
11		USB-OTG1-VBUS	Analog USB interface line
15		GND	
17		GND	
19		USB-OTG1-DP	Analog USB interface line
20		GND	
21		USB-OTG1-DN	Analog USB interface line
22		GND	
23		GND	
25		USB-OTG2-DP	Analog USB interface line
26		GND	
27		USB-OTG2-DN	Analog USB interface line
28		GND	
29		GND	
35		GND	
38		GND	
40		GND	
41		GND	
43		JTAG-TDI	JTAG interface
45	PG10	GPIO-PG10	
46		JTAG-TMS	JTAG interface
47	PC3	GPIO-PC3-ADC1-13	
48		JTAG-nRST	JTAG interface
49	PD13	GPIO-PD13	
50		GND	
51		GND	
52		JTAG-TDO	JTAG interface
53	PC1	ENET1-MDC	

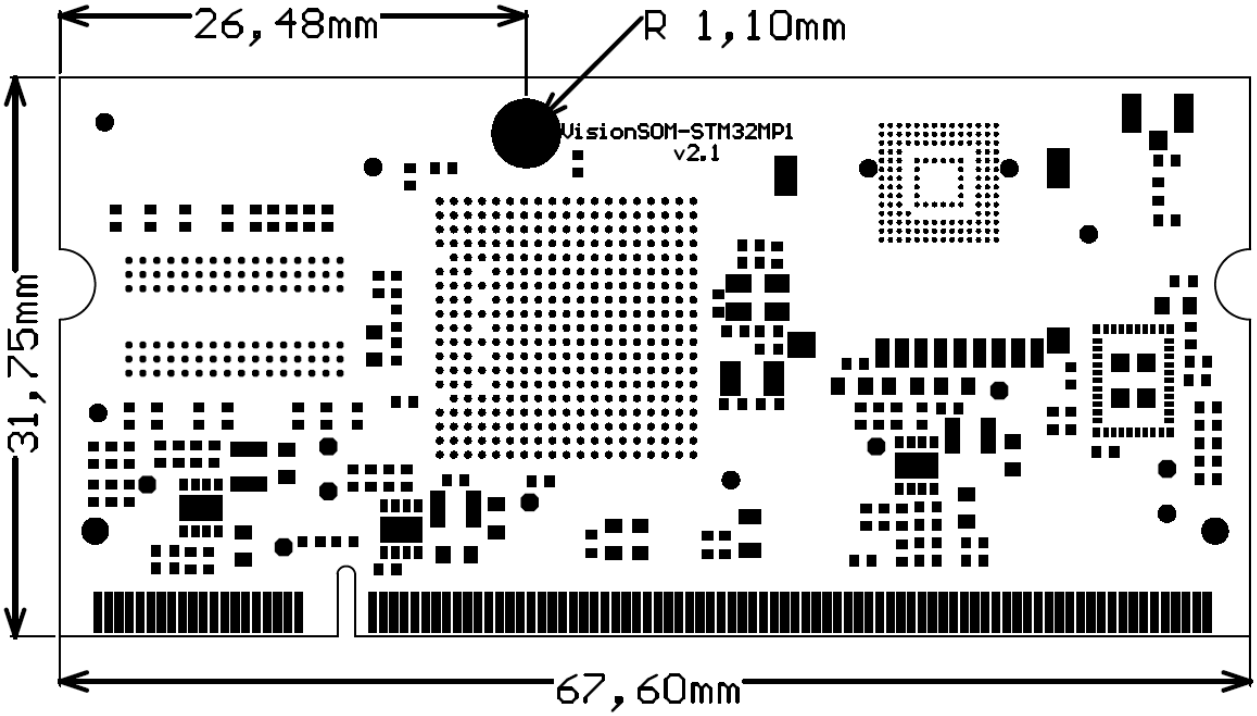
54		JTAG-TCK	JTAG interface
55	PC0	GPIO-PC0-ADC1-10	
56	PB7	GPIO-PB7	By default I2C4_SDA
57	PE1	UART8-TXD	
58	PB1	GPIO-PB1-ADC1-5	
59		GND	
60		GND	
61	PA2	ENET1-MDIO	
62	PA0	GPIO-PA0-ADC1-16	
63	PE0	UART8-RXD	
64	PF10	GPIO-PF10	
65	PD8	USART3-TXD	
66	PD14	UART8-CTS	
67	PD9	USART3-RXD	
68	PG9	USART6-RXD	
69	PA10	USART1-RXD	
70		GND	
71		GND	
72	PD11	USART3-CTS	
73	PB6	USART1-TXD	
74	PG7	UART8-RTS	
75	PG11	UART4-TXD	
76	PA11	USART1-CTS	
77	PB2	UART4-RXD	
78	PD12	USART3-RTS	
79	PG14	USART6-TXD	
80	PA12	USART1-RTS	
81		GND	
82		GND	
84		GND	
85		VOUT-3V3	3,3V out
87		VOUT-3V3	3,3V out
88		VOUT-3V3	3,3V out
89		VOUT-3V3	3,3V out
90		VOUT-3V3	3,3V out
91		VOUT-3V3	3,3V out
92		VOUT-3V3	3,3V out
93		VOUT-3V3	3,3V out
96		VDD-5V	5V input
97	PC4	ENET1-RXD0	
98		VDD-5V	5V input
99	PC5	ENET1-RXD1	
100		VDD-5V	5V input
101	PA7	ENET1-CRS-DV	
102		VDD-5V	5V input
103		GND	

104		VDD-5V	5V input
106		VDD-5V	5V input
107		GND	
108		VDD-5V	5V input
109	PG12	GPIO-PG12	
110		VDD-5V	5V input
111	PD15	GPIO-PD15	
112		VDD-5V	5V input
113	PA13	GPIO-PA13	
114	PB11	ENET1-TXD-EN	
115		GND	
116		GND	
117	PA14	GPIO-PA14	
118	PB5	ENET1-CLK	RC LPF built-in series (10R)
119	PC2	GPIO-PC2	
120		GND	
121	PE2	GPIO-PE2	By default I2C4_SCL
122	PG13	ENET1-TXD0	
124	PB13	ENET1-TXD1	
125		GND	
127		GND	
128		GND	
129	PA9	LCD-R5	
130		GND	
131	PA8	LCD-R6	
132		GND	
133		LCD-DATA17 (GND)	Internally connected to GND
134	PE15	LCD-R7	
135		GND	
136		GND	
137	PC10	LCD-R2	
138	PB0	LCD-R3	
139	PF11	LCD-G5	
140	PA5	LCD-R4	
141	PC7	LCD-G6	
142	PG8	LCD-G7	
143		LCD-DATA8 (GND)	Internally connected to GND
144		LCD-DATA16 (GND)	Internally connected to GND
145		LCD-DATA9 (GND)	Internally connected to GND
146		GND	
147		GND	
148	PE11	LCD-G3	
149	PA3	LCD-B5	
150	PB10	LCD-G4	
151	PB8	LCD-B6	
152	PA6	LCD-G2	

153		LCD-DATA0 (GND)	Internally connected to GND
154	PD10	LCD-B3	
155		LCD-DATA1 (GND)	Internally connected to GND
156		GND	
157	PA1	GPIO-PA1	
158	PE12	LCD-B4	
159		GND	
160	PC6	LCD-HSYNC	
161	PE14	LCD-CLK	
162	PA4	LCD-VSYNC	
163	PE13	LCD-DE	
164	PD6	LCD-B2	
165		GND	
166	PB9	LCD-B7	
167	PB14	SD2-DATA0	
168		GND	
169	PB4	SD2-DATA3	
170		GND	
171	PB15	SD2-DATA1	
172		GND	
173	PG6	SD2-CMD	
174		GND	
175	PB3	SD2-DATA2	
176		GND	
177		GND	
178		GND	
179	PE3	SD2-CLK	
180		GND	
181		GND	
182		GND	
184		GND	
185		GND	
186		DSI-D0N	Dedicated MIPI-DSI line
188		DSI-D0P	Dedicated MIPI-DSI line
189		GND	
192		DSI-D1N	Dedicated MIPI-DSI line
193		DSI-CK-N	Dedicated MIPI-DSI line
194		DSI-D1P	Dedicated MIPI-DSI line
195		DSI-CK-P	Dedicated MIPI-DSI line
199		GND	
200		GND	
-	PA15	SD1-DATA5	Internal Flash/SD
-	PB12	WLAN-HWAKE	
-	PC8	SD1-DATA0	Internal Flash/SD
-	PC9	SD1-DATA1	Internal Flash/SD
-	PC11	SD1-DATA3	Internal Flash/SD

-	PC12	SD1-CLK	Internal Flash/SD
-	PC13	32kHz-OUT	1DX WiFi module line
-	PC14	OSCI	
-	PC15	OSCO	
-	PD0	SD3-CMD	1DX WiFi module line
-	PD1	SD3-DATA0	1DX WiFi module line
-	PD4	SD3-DATA1	1DX WiFi module line
-	PD5	SD3-DATA2	1DX WiFi module line
-	PD7	SD3-DATA3	1DX WiFi module line
-	PE4	SD1-DATA4	Internal Flash/SD
-	PE5	SD1-DATA6	Internal Flash/SD
-	PE6	SD1-DATA2	Internal Flash/SD
-	PE9	BT-ENABLE	1DX Bluetooth module line
-	PE10	UART7-CTS	1DX Bluetooth module line
-	PF6	BT-HWAKE	1DX Bluetooth module line
-	PF7	BT-WAKE	1DX Bluetooth module line
-	PF8	UART7-RTS	1DX Bluetooth module line
-	PF9	WLAN-ENABLE	1DX WiFi module line
-	PG15	SD3-CLK	1DX WiFi module line
	PD2	SD1-CMD	Internal Flash/SD
	PD3	SD1-DATA7	Internal Flash/SD
	PE7	UART7-RXD	1DX Bluetooth module line
	PE8	UART7-TXD	1DX Bluetooth module line

Dimensions



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