1 Features

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- STM32MP157 Arm[®]-based dual Cortex[®]-A7 32 bits + Cortex[®]-M4 32 bits MPU in LFBGA448 package
- ST PMIC STPMIC1
- 2 × 4-Gbit DDR3L, 16 bits, 533 MHz
- 2 × 512-Mbit Quad-SPI Flash
- 32-Gbit eMMC v5.0
- 8-Gbit SLC NAND, 8 bits, 8-bit ECC, 4-KB PS
- 1-Gbit/s Ethernet (RGMII) compliant with IEEE-802.3ab
- USB Host 4-port hub
- USB OTG HS
- CAN FD
- 5.5" TFT 720×1280 pixels with LED backlight, MIPI DSI[™] interface, and capacitive touch panel
- SAI audio codec
- 5-megapixel, 8-bit camera
- 4 × ST-MEMS digital microphones
- Smartcard
- microSD[™] card
- 2 user LEDs
- 2 user and reset push-buttons, 1 wake-up button
- 4-direction joystick with selection button
- 5 V / 4 A power supply
- Board connectors:
 - Ethernet RJ45
 - 4 × USB Host Type-A
 - USB OTG Micro-AB
 - SPDIF RCA input and output
 - CAN FD
 - Stereo headset jack including analog microphone input
 - Audio jack for external speakers
 - Motor control
 - External I²C
 - LTDC
 - Trace, JTAG, RS-232
 - GPIO expansion connector (Raspberry Pi[®] shields capability)
 - MEMS-microphone daughterboard expansion connector
- On-board ST-LINK/V2-1 debugger/programmer with USB re-enumeration capability: Virtual COM port and debug port
- STM32CubeMP1 and full mainline open-source Linux[®] STM32 MPU OpenSTLinux distribution (such as STM32MP1Starter) software and examples
- Support of a wide choice of Integrated Development Environments (IDEs) including IAR[™], Keil[®], GCCbased IDEs

STM32 Arm Cortex MPUs are based on the Arm[®] Cortex[®]-A and Cortex[®]-M processors.

Note:

Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

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2 Ordering information

To order an STM32MP157 Eval board, refer to Table 1. List of available products. Additional information is available from the datasheet and reference manual of the target STM32.

Table 1. List of available products

Order code	Board reference	Target STM32	Differentiating feature
STM32MP157A-EV1	MB1262: mother board	STM32MP157AAA3	Basic security.
STM32MP157C-EV1	 MB1263: MPU subsystem daughterboard MB1230: DSI display board MB1379: camera board 	STM32MP157CAA3	Secure Boot and cryptography.

2.1 **Product marking**

Evaluation tools marked as "ES" or "E" are not yet qualified and therefore not ready to be used as reference design or in production. Any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering sample tools as reference design or in production.

"E" or "ES" marking examples of location:

- On the targeted STM32 that is soldered on the board (for illustration of STM32 marking, refer to the STM32 datasheet "Package information" paragraph at the *www.st.com* website).
- Next to the evaluation tool ordering part number that is stuck or silk-screen printed on the board.

2.2 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

STM32MP1XXY-EVZ	Description	Example: STM32MP157C-EV1	
STM32MP1	MPU series in STM32MP1 32-bit MPUs	STM32MP1 Series	
XX	MPU product line in the series	STM32MP157 line	
Y	Security option:A: basic securityC: Secure Boot and cryptography	Secure Boot and cryptography	
EVZ	Eval board configurationEV1: with PMIC	PMIC	

The order code is mentioned on a sticker placed on the top side of the board.

3	Development environment			
3.1	System requirements			
	 Windows[®] OS (7, 8 and 10), Linux[®] 64-bit, or macOS[®] USB Type-A to Micro-B cable 			
Note:	$macOS^{\circledast}$ is a trademark of Apple Inc. registered in the U.S. and other countries.			
3.2	Development toolchains			
	 Keil[®] MDK-ARM (see note) IAR[™] EWARM (see note) GCC-based IDEs GCC 			
Note:	On Windows [®] only.			

3.3 Demonstration software

The STM32 MPU OpenSTLinux distribution and STM32CubeMP1 base demonstration software is preloaded in the microSD^M for easy demonstration of the device peripherals in standalone mode. The latest versions of the demonstration source code and associated documentation can be downloaded from *www.st.com*.



4 Conventions

Table 3 provides the conventions used for the ON and OFF settings in the present document.

Convention	Definition	
Jumper JPx ON Jumper fitted		
Jumper JPx OFF	Jumper not fitted	
Jumper JPx [1-2]	Jumper should be fitted between Pin 1 and Pin 2	
Solder bridge SBx ON	SBx connections closed by 0 Ω resistor	
Solder bridge SBx OFF	SBx connections left open	
Resistor Rx ON Resistor soldered		
Resistor Rx OFF Resistor not soldered		

Table 3. ON/OFF convention

5 Delivery recommendations

Before the first use, make sure that, no damage occurred to the board during shipment and no socketed components are loosen in their sockets or fallen into the plastic bag.

In particular, pay attention to the following components:

- 1. MB1263 daughterboard connected to the MB1262 mother board
- 2. microSD card in its MB1263/CN9 receptacle
- 3. LCD MB1230 daughterboard in MB1262/CN19 DSI connector, and screw, spacer and nut are in place

4. Camera module MB1379 board in MB1262/CN7 connector, and screw, spacer and nut are in place For product information related with STM32MP157xAA3 microcontroller, visit *www.st.com* website.

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6 Hardware layout and configuration

The STM32MP157x-EV1 Evaluation board is designed around the STM32MP157xAA3 target microcontroller in LFBGA 448-pin package. Figure 3 illustrates the STM32MP157x-EV1 hardware block diagram. Figure 4 shows the location of main components on the Evaluation board.



Figure 3. STM32MP157x-EV1 hardware block diagram

MSv62134V2



Figure 4. STM32MP157x-EV1 board overview

Note:

Numbers in yellow refer to positions explained in Table 4, Table 5, and Table 6.

Table 4. STM32MP157x-EV1 overview

Position	Description
1	MB1262 mother board
2	MB1263 daughterboard
3	MB1230 DSI (MIPI [®] standard) 720p display
4	MB1379 daughterboard camera
5	microSD [™] card

Table 5. MB1263 daughterboard overview

Position	Description	Position	Description
50 (B1)	Reset button	59 (CN1)	MB1263 power 5 V-3 A
51 (LD2)	User LED (red)	60 (SW1)	Boot mode selection
52 (B2)	User button (PA13)	61 (U3)	PMIC (STPMIC1A)
53 (LD3)	User LED (green)	62 (LD6)	ST-Link LED (bicolor)
54 (B3)	User button (PA14)	63 (CN4)	USB micro-B (ST-Link V2-1)
55 (LD5)	User LED (blue)	64 (U4)	STM32MP157xAA3 LFBGA448
56 (LD4)	User LED (orange)	65 (U5)	eMMC
57 (B4)	Wakeup button	66 (U6/U7)	2 x DDR3L 16 bits
58 (LD1)	Power LED (green)	67 (µSD)	microSD 3.0 card (back side slot)

Table 6. MB1262 mother board overview

Position	Description	Position	Description
10 (CN3)	Ethernet	11 (CN8)	Microphone MEMS daughterboard connector
12 (CN4)	Speaker audio output	13 (CN5)	Headset audio output
14 (U8)	Audio codec (Wolfson WM8994)	15 (CN1)	SPDIF RX
16 (CN2)	SPDIF TX	17 (U5)	Smartcard (back side slot)
18 (LD1)	Ethernet LED (green)	19 (CN6)	Ethernet daughterboard connector
20 (U10)	Trace connector	21 (CN11)	LTDC LCD TFT Display Controller (STM32 specific) connector
22 (CN12)	RS232 (UART4)	23 (CN13)	External E2P connector
24 (CN16)	USB micro-AB (USB OTG)	25 (LD2)	USB OTG LED (green)
26 (LD3)	USB Type-A port LED (red)	27 (CN17)	MFX header 4 pins
28 (CN14)	JTAG connector	29 (CN15)	CAN FD
30 (CN18)	2 USB Type-A port (host)	31 (CN20)	2 USB Type-A port (host)
32 (B2)	Reset button	33 (B1)	Joystick
34 (CN22)	Motor control connector	35 (CN21)	GPIO expansion connector
4 (CN7)	Camera sensor connector	-	-



6.1 Power supply management

6.1.1 5 V power supply

STM32MP157x-EV1 Evaluation board is designed to be powered from the 5 V DC power supply provided in the package.

MB1263/LD1 Green LED turns on when this power supply is connected to the power jack MB1263/CN1.



Figure 5. 5 V power supply connector: MB1263/CN1

6.1.2 Platform power tree

All supply lines required for the operation of the components on STM32MP157x-EV1 are derived from the 5 V power source. Indeed this 5 V power source is the input supply of the STPMIC1 that distributes then all the supplies to the sub-systems as described in the power tree Figure 6.



Figure 6. STM32MP157x-EV1platform power tree

6.1.3 STPMIC1

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For general information concerning the STPMIC1, please refer to STPMIC1 datasheet at the www.st.com website.

6.2 Clocks

Two clocks are available on STM32MP157x-EV1 for STM32MP157xAA3 target microcontroller.

6.2.1 LSE clock

External 32.768 kHz crystal

6.2.2 HSE clock

External 24 MHz crystal

6.3 Reset sources

The reset signal of the STM32MP157x-EV1 platform is active low.

Sources of the platform reset are:

- Two reset buttons MB1263/B1 and MB1262/B2 (BLACK buttons)
- STM32MP157xAA3: internal voltage monitor, SW request or Watchdog
- STPMIC1
- JTAG/SWD connector MB1262/CN14
- ETM Trace Mictor-38 connector MB1262/U10
- Embedded ST-LINK/V2-1

The STM32MP157xAA3 also drives a sub system reset, SUB_NRST signal on PD10 IO, to the peripherals: USB Host Hub, MFX, Ethernet, and RGB_LTDC connector.

6.4 User buttons and LEDs

The Table 7 describes the HW configuration for the user buttons and LEDs

Table 7. HW configuration for the user buttons and LEDs

Ю	LED color and label	Button label
PD8	PD8 is connected to the ORANGE LD4. Active High	-
PD9	PD9 is connected to the BLUE LD5. Active High	-
PA13	PA13 is connected to RED LD2. Active Low	User PA13
PA14	MFX_IO13 is connected to ORANGE LED LD7. Active Low	User PA14

6.5

Physical input devices: buttons

The STM32MP157x-EV1 board provides a number of input devices for physical human control. These are:

- Two Reset buttons (MB1263/B1 and MB1262/B2)
- Four-way joystick controller with select key (MB1262/B1)
- Wake-up button (MB1263/B4)

Table 8. Physical user devices: buttons

Devices	Purpose/IO
Wakeup button (MB1263/B4)	Awakes the platform from low-power modes. Connected to STPMIC1A PONKEY, which generates a wake-up signal on STM32MP1 PA0
Reset buttons (MB1263/B1 or MB1262/B2)	NRST signal
JOY_CENTER: Joystick select key (MB1262/B1 pin2)	MFX_IO0
JOY_DOWN: Joystick down direction (MB1262/B1 pin3)	MFX_IO1

Devices	Purpose/IO
JOY_LEFT: Joystick left direction (MB1262/B1 pin1)	MFX_IO2
JOY_RIGHT: Joystick right direction (MB1262/B1 pin6)	MFX_IO3
JOY_UP: Joystick up direction (MB1262/B1 pin4)	MFX_IO4

6.6 Boot options

The STM32MP157x-EV1 board may boot from different sources as described in Table 9.

Table 9. HW configuration for the BOOT mode MB1263/SW1

Boot Mode	BOOT2	BOOT1	BOOT0
Serial-NOR	0	0	1
uSD card	1	0	1
eMMC	0	1	0
NAND	0	1	1
	0	0	0
UART and USB	1	1	0
Reserved	1	0	0

The boot related switches (MB1263/SW1) must be configured as illustrated by one of the following pictures:



Figure 7. STM32MP157x-EV1 boot related switch configuration

6.7 Embedded ST-LINK/V2-1

The STLINK-V2.1 programming and debugging tool is integrated in the STM32MP157x-EV1 Evaluation board. The embedded STLINK-V2.1 supports JTAG, SWD and VCP for the target STM32 MPU devices.

 $\overline{\mathbf{A}}$

For information about debugging and programming features refer to STLINK-V2.1 in-circuit debugger/ programmer, User manual (UM1075) available on *www.st.com*, which describes in details all the STLINK-V2.1 features.

Figure 8 shows the STLINK USB µB connector pinout MB1263/CN4.

Figure 8. STLINK USB µB connector pinout MB1263/CN4



MSv46073V1

Table 10 describes STLINK USB µB connector pinout MB1263/CN4.

Table 10. STLIN	K USB µB	connector	pinout	MB1263/CN4
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Pin	Board function	STLINK STM32 pin
1	VBUS Power	-
2	DM	PA11
3	DP	PA12
4	ID	GND
5	GND	GND

As current consumption of the EVAL exceeds permissible current on USB, it is not possible to power the boards through the STLINK-V2.1 USB. To use the STLINK-V2.1 for programming and debugging, it is mandatory to power the board first using the 5V power supply, then connect the STLINK-V2.1 USB cable to the PC. Proceeding this way the USB enumeration succeed thanks to the external power source.

The user must respect the following power sequence procedure:

- 1. Check that MB1263/JP1 is OFF, MB1263/JP4 [2-3] and JP5 [2-3] are ON to connect UART4 as STLINK VCP.
- 2. Connect the 5 V power source, MB1263/LD1 LED turns green, MB1263/LD6 flashes red.
- Connect the PC to USB connector MB1263/CN4, MB1263/LD6 is red and becomes green once the connection with the STLINK is established.

6.7.1 Drivers

Before connecting STM32MP157x-EV1 to a Windows (XP, 7, 8 10) PC via USB, a driver for ST-LINK/V2-1 must be installed. It may be downloaded from *www.st.com*.

In case the STM32MP157x-EV1 Evaluation board is connected to the PC before installing the driver, the Windows device manager may report some USB devices found on STM32MP157x-EV1as "Unknown". To recover from this situation, after installing the dedicated driver downloaded from *www.st.com*, the association of "Unknown" USB devices found on STM32MP157x-EV1 to this dedicated driver must be updated in the device manager manually. It is recommended to proceed using USB Composite Device line, as shown in Figure 9.





Figure 9. USB composite device

6.7.2 ST-LINK/V2-1 firmware upgrade

For its own operation, ST-LINK/V2-1 employs a dedicated MCU with Flash memory. Its firmware determines ST-LINK/V2-1 functionality and performance. The firmware may evolve during the life span of STM32MP157x-EV1 to include new functionality, fix bugs or support new target microcontroller families. It is therefore recommended to keep ST-LINK/V2-1 firmware up to date. The latest version is available from *www.st.com*.

6.8 ETM TRACE Mictor-38 connector

The Mictor-38 connector MB1262/U10 may output trace signals used for debug, as well as JTAG signals. Table 11 describes the HW configuration for the TRACE function.

ю	Bridge	Setting ⁽¹⁾	Comment
		ON	PI14 may be used for the trace function TRACE CLK
PI14	SB38	OFF	PI14 is not connected to Trace
		OFF	PI14 may be used for LTDC CLK
		ON	PI12 may be used for the trace function TRACE_D0
PI12	SB43	OFF	PI12 is not connected to Trace
		OFF	PI12 may be used for LTDC HSYNC
		ON	PI13 may be used for the trace function TRACE_D1
PI13	SB42	055	PI13 is not connected to Trace
		OFF	PI13 may be used for LTDC VSYNC
		ON	PJ5 may be used for the trace function TRACE_D2
PJ5	SB36	OFF	PJ5 is not connected to Trace
		OFF	PJ5 may be used forLTDC_R6
		ON	PJ6 be used for the trace function TRACE_D3
PJ6	SB41	OFF	PJ6 is not connected to Trace
			PJ6 may be used for LTDC_R7
		ON	PK1 may be used for the trace function TRACE_D4
PK1	SB40		PK1 is not connected to Trace
			PK1 may be used for LTDC_G6

Table 11. HW configuration for the TRACE connector MB1262/U10



ю	Bridge	Setting ⁽¹⁾	Comment	
		ON	PK2 may be used for the trace function TRACE_D5	
PK2 S	SB39		PK2 is not connected to Trace	
		OFF	PK2 may be used for LTDC_G7	
		ON	PK5 may be used for the trace function TRACE_D6	
PK5	SB49	OFF	PK5 is not connected to Trace	
		OFF	PK5 may be used for LTDC_B6	
		ON	PK6 may be used for the trace function TRACE_D7	
PK6	SB35	OFF	PK6 is not connected to Trace	
			PK6 may be used for LTDC_B7	
		ON	PJ0 may be used for the trace function TRACE_D8	
PJ0	SB34	OFF	PJ0 is not connected to Trace	
		011	PJ0 may be used for LTDC_R1	
		ON	PJ1 may be used for the trace function TRACE_D9	
PJ1	SB37	OFF	PJ1 is not connected to Trace	
			PJ1 may be used for LTDC_R2	
		ON	PJ2 may be used for the trace function TRACE_D10	
PJ2	SB48	OFF	PJ2 is not connected to Trace	
			PJ2 may be used for LTDC_R3	
		ON	PJ3 may be used for the trace function TRACE_D11	
PJ3	SB47	OFF	PJ3 is not connected to Trace	
				PJ3 may be used for LTDC_R4
		ON	PJ4 may be used for the trace function TRACE_D12	
PJ4	SB46	OFF	PJ4 is not connected to Trace	
			PJ4 may be used for LTDC_R5	
		ON	PJ7 may be used for the trace function TRACE_D13	
PJ7	SB45	OFF	PJ7 is not connected to Trace	
			PJ7 may be used for LTDC_G0	
		ON	PJ8 may be used for the trace function TRACE_D14	
PJ8 \$	SB44	44	PJ8 is not connected to Trace	
		OIT	PJ8 may be used for LTDC_G1	
		ON	PJ9 may be used for the trace function TRACE_D15	
PJ9	SB50	B50	PJ9 is not connected to Trace	
			PJ9 may be used for LTDC_G2	

1. Default configuration is shown in **bold**

Figure 10 shows the TRACE Mictor-38 connector



Table 12 describes the MICTOR-38 connector pinout for TRACE and JTAG signals.

Board function	Pin	Pin	Board function
NC	1	2	NC
NC	3	4	NC
GND	5	6	TRACE_CLK
Pulldown	7	8	Pulldown
NRST	9	10	Pulldown
TDO/SWO	11	12	VDD
Pulldown	13	14	VDD
TCK/SWCLK	15	16	TRACE_D7
TMS/SWDIO	17	18	TRACE_D6
TDI	19	20	TRACE_D5
NJTRST	21	22	TRACE_D4
TRACE_D15	23	24	TRACE_D3
TRACE_D14	25	26	TRACE_D2
TRACE_D13	27	28	TRACE_D1
TRACE_D12	29	30	GND
TRACE_D11	31	32	GND
TRACE_D10	33	34	VDD
TRACE_D9	35	36	GND
TRACE_D8	37	38	TRACE_D0

Table 12. TRACE MICTOR-38 connector pinout: MB1262/U10

6.9 JTAG connector

A JTAG/Serial Wire Debug 20 pins IDC connector (ARM JTAG 20, IDC 2.54mm) MB1262/CN14 outputs the JTAG signals. The JTAG function is a dedicated interface of STM32MP157XAA3. Table 13 describe the JTAG connector pinout.

Table 13. MB1262/CN14 JTAG connector pinout

Board function	Pin	Pin	Board function
Power	1	2	Power
NJTRST	3	4	GND
JTDI	5	6	GND
JTMS/SWDIO	7	8	GND
JTCK/SWCLK	9	10	GND
Pull down	11	12	GND
JTDO/SWO	13	14	GND
NRST	15	16	GND
Pull down	17	18	GND
Pull down	19	20	GND

6.10 DDR3L

Two 16-bit DDR3L NT5CC256M16ER-EK of 4 Gbytes are implemented in flyby topology in MB1263/U6 and U7 positions. They are connected to the dedicated DDR interface of STM32MP157xAA3. For detailed information concerning the DDR HW design implementation, please refer to the application note AN5122 available on the *www.st.com* website.

6.11 eMMC

The STM32MP157xAA3 SDMMC2 in 8-bit wide bus mode drives a THGBMNG5D1LBAIL 32 Gbits eMMC in MB1263/U5 position.

6.11.1 eMMC IO interface

Table 14 HW configuration for the eMMC interface.

Table 14. HW configuration for the Quad-SPI interface

10	Configuration ⁽¹⁾
PB14	SDMMC2_D0 connected to MB1263/U5 DAT0
PB15	SDMMC2_D1 connected to MB1263/U5 DAT1
PB3	SDMMC2_D2 connected to MB1263/U5 DAT2
PB4	SDMMC2_D3 connected to MB1263/U5 DAT3
PA8	SDMMC2_D4 connected to MB1263/U5 DAT4
PA9	SDMMC2_D5 connected to MB1263/U5 DAT5
PE5	SDMMC2_D6 connected to MB1263/U5 DAT6
PD3	SDMMC2_D7 connected to MB1263/U5 DAT7
PE3	SDMMC2_CK connected to MB1263/U5 CLK
PG6	SDMMC2_CMD connected to MB1263/U5 CMD

1. Minimum set of signals required by the boot ROM during eMMC boot in **bold**

6.12 NAND Flash

The STM32MP157xAA3 FMC interface is connected to an 8 Gbits SLC NAND, 8-bit, 8-bit ECC, and 4 KBytes PS MT29F8G08ABACAH4 in MB1262/U11 position.

6.12.1 NAND IO interface

Table 15 features the HW configuration for the NAND interface.

Table 15. HW configuration for the Quad-SPI interface

IO	Configuration ⁽¹⁾
PD6	NAND_NWAIT connected to MB1262/U11 R/B#
PD11	NAND_CLE connected to MB1262/U11 CLE
PD12	NAND_ALE connected to MB1262/U11 ALE
PG9	NAND_NCE connected to MB1262/U11 CE#
PD5	NAND_NWE connected to MB1262/U11 WE#
PD4	NAND_NOE connected to MB1262/U11 RE#
PD14	NAND_D0 connected to MB1262/U11 IO0
PD15	NAND_D1 connected to MB1262/U11 IO1
PD0	NAND_D2 connected to MB1262/U11 IO2
PD1	NAND_D3 connected to MB1262/U11 IO3
PE7	NAND_D4 connected to MB1262/U11 IO4
PE8	NAND_D5 connected to MB1262/U11 IO5
PE9	NAND_D6 connected to MB1262/U11 IO6
PE10	NAND_D7 connected to MB1262/U11 IO7

1. Minimum set of signals required by the boot ROM during NAND boot in **bold**

6.13 Quad-SPI NOR Flash

The STM32MP157xAA3 Quad-SPI interface is in dual-Serial mode to interface with two NOR Flash memories in parallel. Two MX25L51245G-XD, 3V3/512-Mbit each, are fitted on the STM32MP157x-EV1 MB1262, in MB1262/U14 and MB1262/U15 positions.

6.13.1 Quad-SPI IO interface

Table 16 describes the HW configuration for the Quad-SPI interface

Table 16. HW configuration for the Quad-SPI interface

ю	Configuration ⁽¹⁾
PF8	QSPI_BK1_IO0 connected to MB1262/U14 SIO0
PF9	QSPI_BK1_IO1 connected to MB1262/U14 SIO1
PF7	QSPI_BK1_IO2 connected to MB1262/U14 SIO2
PF6	QSPI_BK1_IO3 connected to MB1262/U14 SIO3
PB6	QSPI_BK1_NCS connected to MB1262/U14 CS#
PH2	QSPI_BK2_IO0 connected to MB1262/U15 SIO0
PH3	QSPI_BK2_IO1 connected to MB1262/U15 SIO1
PG10	QSPI_BK2_IO2 connected to MB1262/U15 SIO2
PG7	QSPI_BK2_IO3 connected to MB1262/U15 SIO3
PC0	QSPI_BK2_NCS connected to MB1262/U15 CS#
PF10	QSPI_CLK connected to MB1262/U14 SCLK and MB1262/U15 SCLK

1. Minimum set of signals required by the boot ROM during dual-serial NOR boot in **bold**

6.14 microSD card

The MB1263/CN9 slot for microSD card is routed to STM32MP157xAA3 SDMMC1 port. This SD card interface is compliance with SD Memory Card Specification Version 3.01, UHS-I, all operation modes up to SDR104 and DDR50. The SD card interface is compatible with 1.8 V or 2.9 V signal levels.

6.14.1 SD card interface

The SD card interface, SDMMC1, is 4-bit wide with level shifter support, in order to connect to an SD 3.0compliant bidirectional dual voltage level translator, interfacing with the memory card inserted in the SDCARD connector.

Table 17 describes the IO for the SDMMC1 interface.

10	Signal ⁽¹⁾
PC12	SDMMC1_CK
PE4	SDMMC1_CKIN
PD2	SDMMC1_CMD
PB9	SDMMC1_CDIR
PC8	SDMMC1_D0
PC9	SDMMC1_D1
PC10	SDMMC1_D2
PC11	SDMMC1_D3
PF2	SDMMC1_D0DIR
PC7	SDMMC1_D123DIR
PF14	uSD_LDO_SEL

Table 17. IO configuration for the SDIO interface

1. Minimum set of signals required by the boot ROM during SD card boot in **bold**

Figure 11 shows the SDCARD connector pinout MB1263/CN9.

Figure 11. SDCARD connector pinout MB1263/CN9



Table 18 describes the SDCARD connector pinout MB1263/CN9.

Table 18. SDCARD connector pinout MB1263/CN9

Pin	Board function
1	DATA2_SD
2	DATA3_SD
3	CMD_SD
4	VDD_SD
5	CLK_SD
6	GND
7	DATA0_SD
8	DATA1_SD
9	GND
10	SDCARD_DETECT active LOW

6.15 Audio

A codec WM8994ECS/R connected to an SAI of STM32MP157xAA3 supports TDM feature of the SAI port. TDM feature offers to STM32MP157xAA3 the capability to stream stereo audio channels. There are four digital microphones on STM32MP157x-EV1 board. STM32MP157x-EV1 also offers the possibility to connect a MEMS extension module.

6.15.1 Audio codec interface

playback and record.

The audio codec has two supplies 3V3 and 1V8 provided by STPMIC1.

The audio codec interfaces to the MPU are SAI2 and I2C2. Audio interrupt is connected to the IO-expander MFX. SAI2A as Tx and SAI2B as Rx are connected to two different analog interfaces of the codec, to independently

SAI2 is connected by default to the audio codec, and may be shared via solder bridge configuration with the expansion GPIO connector (refer to paragraph 6.28).

I2C2 is shared with all the peripherals: Audio codec, DSI LCD, RGB LTDC, Camera, and USB Hub. The audio codec I²C address is 0x36

ю	Board function
PI5	SAI2_SCKA
PI7	SAI2_FSA
PI6	SAI2_SDA
PF11	SAI2_SDB
PE12	SAI2_SCK_B
PE13	SAI2_FS_B
PE0	SAI2_MCLKA
PE14	SAI2_MCLKB
PH5	I2C2_SDA
PH4	I2C2_SCL
MFX_IO5	AUDIO_INT

Table 19. IO configuration for the Audio Codec interface

6.15.2 Digital microphones

MB1262/U1, U2, U3 and U4 are four MP34DT01TR MEMS digital omnidirectional microphones providing PDM (pulse density modulation) outputs. The implementation allows the beam forming.

Those 4 digital microphones support two stereo inputs connected either to the audio Codec or, by default, connected on two DFSDM odd channels of STM32MP157xAA3: DFSDM_DATA1 and DFSDM_DATA3 synchronized on DFSDM_CKOUT.

The STM32MP157xAA3 DFSDM interface is shared between the 4 embedded digital microphones and the extension module on connector MB1262/CN8.

Table 20 describes the HW configuration for the digital microphones.

Jumpers	нพ	Setting	Configuration ⁽¹⁾
MB1262/JP1	U1/U3 stereo output selection	JP1[1-2]	Connected to codec DMICDAT2
		JP1[2-3]	Connected to STM32MP157xAA3 DFSDM_DATA3
MB1262/JP2 U2/U4 stered output selection	U2/U4 stereo	JP2[1-2]	Connected to codec DMICDAT1
	selection	JP2[2-3]	Connected to STM32MP157xAA3 DFSDM_DATA1
MB1262/JP3	U1/U2/U3/U4 CLK selection	JP3[1-2]	Connected to STM32MP157xAA3 DFSDM_CKOUT
		JP3[2-3]	Connected to codec DMICCLK
MB1262/JP4	U1/U2/U3/U4 VDD selection	JP4[1-2]	3V3
		JP1[2-3]	Codec MICBIAS1

Table 20. HW configuration for the digital microphones

1. Default configuration in **bold**

6.15.3 Analog microphone and audio jack headphone

A headset including an analog microphone and a stereo headphone may be connected to the black 3.5 mm headset jack MB1262/CN5.

Figure 12. Audio jack connector MB1262/CN5



Table 21. Audio jack connector pinout MB1262/CN5

Pin	Board function
2	MIC_IN
3	GND
4	OUT_RIGHT
5	N/A
6	OUT_LEFT
7	N/A

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6.15.4 Audio speaker out

The codec stereo speaker output is connected to a green 3.5 mm Speaker_out jack MB1262/CN4.

Figure 13. Audio jack connector MB1262/CN4



Table 22. Audio jack connector pinout MB1262/CN4

Pin	Board function
2	GND
3	GND
4	OUT_RIGHT
5	N/A
6	OUT_LEFT
7	N/A

6.15.5 SPDIF input and output

An RCA (white) connector MB1262/CN1 followed by an amplifier/filter stage is connected to the STM32MP157xAA3 SPDIF RX_IN.

The STM32MP157xAA3 SAI4_SDA port provides SPDIF_TX data to a RCA (yellow) connector MB1262/CN2.