NXP Semiconductors
User's Guide

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MAPS-KS22F256 V1.0.0 Suite

1. Introduction

This document describes the MAPS-KS22F256 suite of the hardware development platform architecture, core functional module, interface definition, and basic instructions.

Contents

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2. Overview

2.1. MAPS development suite

The MAPS 4-color board series provides a rich general interface and a good scalability. It applies to the chip evaluation stage, the product development stage, the functional demo stage, and other stages. The whole system consists of four parts—the MCU board, the general peripheral board, the special peripheral board, and the socket board.

MAPS = MCU + Application + Peripheral + Socket

Figure 1. MAPS 4-color board platform definition

2.1.1. MCU main board

The MCU main board includes the main MCU, the circuit, and the device for the MCU debugging and testing. The MCU main board provides also some special features such as the power supply circuit, the general JTAG/AWD debug interface, the state LED, the reset button, the special CAN transceiver, and the ISO7816 card slot.

2.1.2. Peripheral board

The peripheral board provides many general peripherals and functions such as the common UART, I^2C, SPI, the I^2S general bus peripheral, and the ADC, DCA, and other emulated peripherals. To adapt to the evaluation development of various MCUs and reducing the overall investment costs, these general functions correspond to the devices that are placed intensively on the peripheral board and can be connected to the MCU board by two 32-pin connectors. There is an embedded debugger on the peripheral board that you may connect to the PC using a USB cable and start to evaluate and develop.

2.1.3. Special application peripheral board

The special application peripheral board is designed for the evaluation and development of special applications. It is connected to the MCU board by a set of connection signals and the connector that is designed for special applications such as motor control, wireless charging, data security, and the connection of relevant products.

2.1.4. Socket board

The socket board provides a bridge for two types of boards. The NXP Freedom socket board connects all kinds of NXP Freedom boards to the general peripheral board easily and uses the various functions that the general peripheral board provides. The socket board can be expanded by various NXP Freedom development boards. The Arduino socket board enables you to connect a large number of Arduino development modules to the MCU board to create a suitable development system.

2.2. KS22 development suite based on MAPS

The MAPS development suite provides a hardware platform for a quick evaluation, lower cost, and good scalability to the KS22 users. It reuses the existing peripheral board (MAPS-Dock) and the socket board (MAPS-Arduino, MAPS-Bridge) to expand its functions.

3. MAPS-KS22F256 Introduction

The MAPS-KS22F256 MCU board uses the MKS22FN256VLL12 as the core. The basic configuration of this chip features the 120-MHz ARM® Cortex®-M4 core, 256 KB flash, 64 KB RAM, 100-pin LQFP package, support for a lower-power-consumption I^2C, the FlexIO that can be configured to emulate various protocols flexibly, and the powerful FlexCAN. The board is powered by a 5-V micro USB or by the general peripheral board (MAPS-Dock).

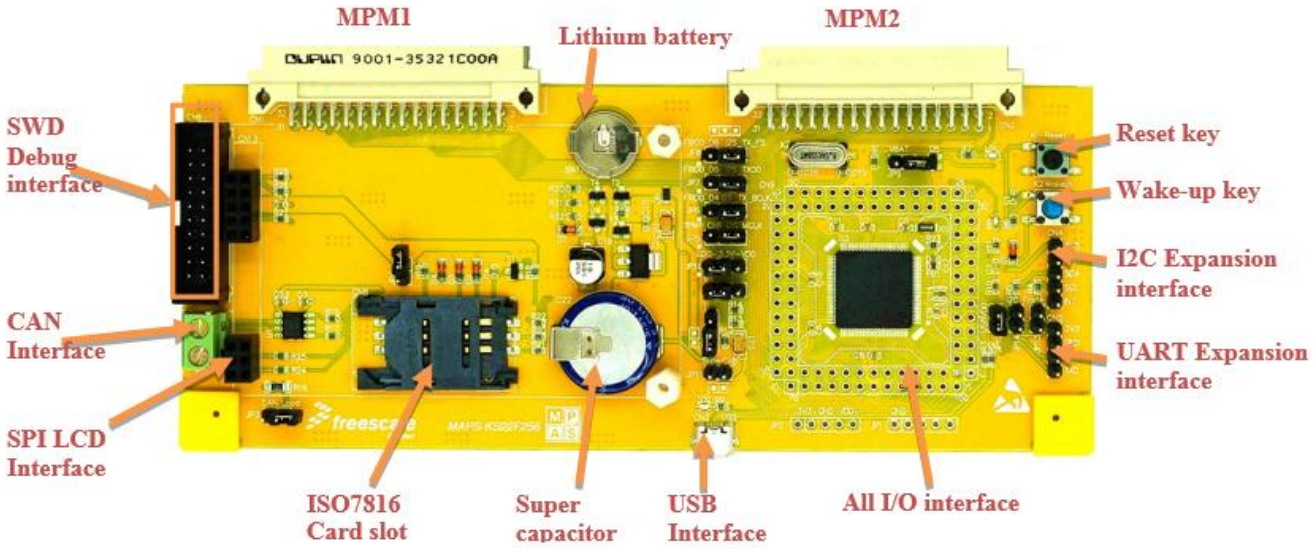

Figure 2. MAPS-KS22F256 front view

3.1. Main function module

The main function module features:

- The on-board 100-pin LQFP-packaged MKS22FN256VLL12 MCU.
- The independent power domain that can measure the power consumption of the VDD/VDDA/VBAT by a jumper.
- One USB micro-B interface, used as the power supply and for the USB connectivity.
- One CAN transceiver.
- The 2.8-inch color LCD screen interface (SPI bus).
- The ISO7816 smart card slot.
- The button cells for the VBAT power supply.
- The 20-pin 2.54-mm standard debug interface supporting the SWD protocol.
- The 4-pin UART expansion interface.
- The 5-pin I^2C expansion interface.
- Two LEDs displaying the power and reset states.
- The reset button.
- The fan-out of all CPU pins.
- The MPM-Bridge MPM interface (2 × 32 DIN 42612) connectable with the MAPS-Dock, MAPS-Arduino, and MAPS-Bridge.
- The FlexIO pin leading to the MPM and the emulated UART (corresponding to the UART2 of the Dock board) and the I^2S (connected to the WM8960 of the Dock board).

3.2. Design structure diagram

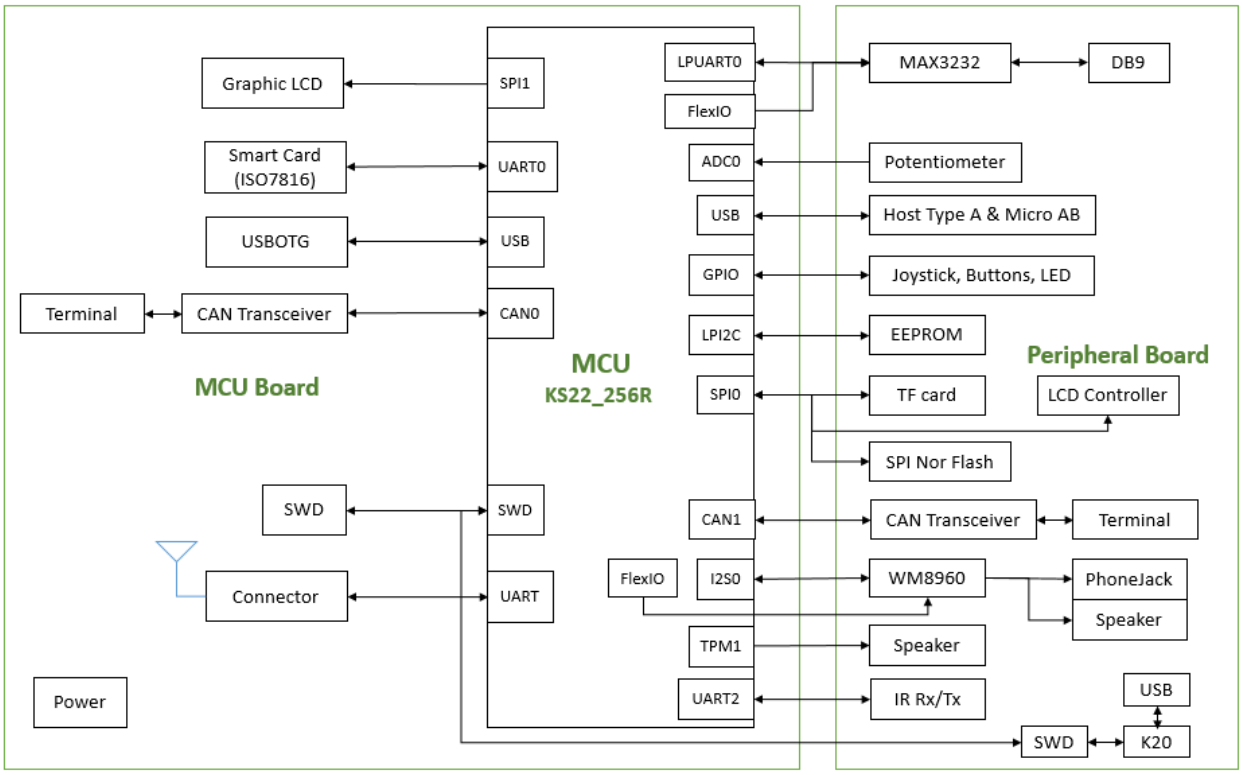

Figure 3. MAPS-KS22F256 structure diagram

3.3. Power topology

The MAPS platform consists of the 5-V and 3.3-V main power domains which emulate the power and the peripheral power. The topology structure is shown in this figure:

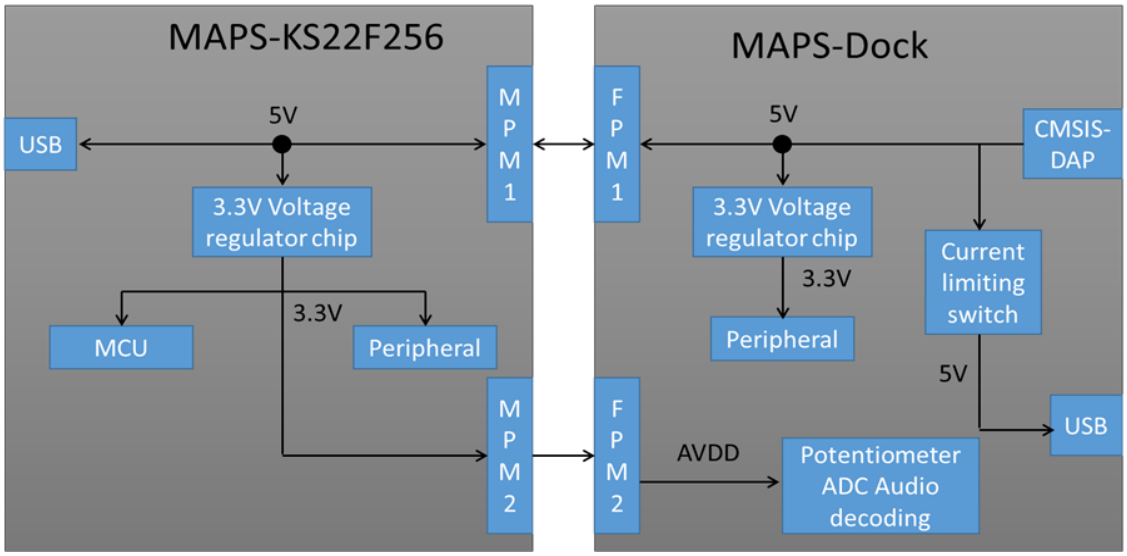

Figure 4. System power topology

3.4. Jumper definition

The jumper definition is shown in this table:

Table 1. MAPS-KS22F256 jumper options

Options	Jumper	Configuration	Description
Super capacitor	JP11	OFF	Disconnects the super capacitor.
		ON	Enables the super capacitor and the power supply to the VDD when the main power is down.
Board 3.3-V power supply	JP10	1-2	The board 3.3 V is powered by the LDO.
		2-3	The board 3.3 V is powered by the VDD.
VBAT power supply	JP9	ON	The VBAT is powered by the lithium battery.
		OFF	The VBAT is powered by the VDD.
USB VDD power supply	JP12	ON	The USB VDD is powered by the MCU_VDD.
		OFF	Disconnects the USB VDD power supply.
MCU VDD power supply	M1 (1-2)	ON	The MCU VDD is powered by the VDD.
		OFF	Connects 1 to 2. Measure the power consumption of the MCU VDD using an ammeter.
I^2C SCL pull-up	JP13	OFF	Disconnects the 200-KΩ pull-up resistor from the SCL signal line.
		ON	Connects the 200-KΩ pull-up resistor to the SCL signal line.
I^2C SDA pull-up	JP14	OFF	Disconnects the 200-KΩ pull-up resistor from the SDA signal line.
		ON	Connects the 200-KΩ pull-up resistor to the SDA signal line.
ISO7816 IO (UART0_Tx) pull-up	JP4	ON	Connects the pull-up resistor when the UART0_TX pin is to be the ISO 7816 I/O.
		OFF	Disconnects the pull-up resistor when the UART0_Tx pin is to be the UART.
I^2S MCLK selection (I^2S or TPM)	JP5	2-3	Uses the I^2S0 MCLK signal as the I^2S main clock.
		1-2	Uses the TPM1 channel output to emulate the I^2S main clock.
I^2S Tx BCLK selection (I^2S or FlexIO)	JP6	2-3	Uses the I^2S0 TX_BCLK signal as the I^2S transmit bit clock.
		1-2	Uses the FXIO0 to emulate the I^2S transmit bit clock.
I^2S TXD0 selection (I^2S or FlexIO)	JP7	2-3	Uses the I^2S0 TXD0 as the I^2S data transmit signal.
		1-2	Uses the FXIO0 to emulate the I^2S data transmit signal.
I^2S Tx FS selection (I^2S or FlexIO)	JP8	2-3	Uses the I^2S0 TX_FS signal as the I^2S transmit frame synchronization signal.
		1-2	Uses the FXIO0 to emulate the I^2S transmit frame synchronization signal.

3.5. Definition of interlinked interface with MAPS-Dock board

The MAPS-KS22F256 board connects to the MAPS-Dock via two 32-pin DIN connectors and consists of a complete application demo system. Together, this interface is called the PM interface. The side with the MCU board contains the needle connectors (MPM). The other side with the general peripheral board contains the hole connectors (FPM). These two-side signals have the same definition, as shown in the following table.

Table 2. MPM1/FPM1 signal definition (CN1 of MAPS-KS22F256, CN1 of MAPS-Dock)

Number	Signal	MCU pin	Description	Module
1	SD_DAT1[1]	—	The SD card data signal.	SD
2	SD_DAT0[2]	PTD3	The SD card data signal.	SD
3	SD_CLK[2]	PTC5	The SD card clock signal.	SD
4	SD_DAT3[2]	PTC3	The SD card data signal.	SD
5	SD_CMD[2]	PTD2	The SD card control signal.	SD
6	SD_DAT2[1]	—	The SD card data signal.	SD
7	KEY0	PTC12	Key.	GPIO
8	KEY1	PTC13	Key.	GPIO
9	KEY2	PTC14	Key.	GPIO
10	KEY3	PTC15	Key.	GPIO
11	UART_TXD2	PTC16(FLEXIO0_D4)	The FlexIO emulates the UART data-transmit signal.	FlexIO
12	UART_RXD2	PTC17(FLEXIO0_D5)	The FlexIO emulates the UART data-receive signal.	FlexIO
13	UART_TXD1	PTE4	The UART1 data-transmit signal.	UART
14	UART_RXD1	PTE5	The UART1 data-receive signal.	UART
15	I2C_SDA	PTB1	The I^2C data signal.	I^2C
16	I2C_SCL	PTB0	The I^2C clock signal.	I^2C
17	CAN_RX1	PTE25	The CAN receive signal.	CAN
18	CAN_TX1	PTE24	The CAN transmit signal.	CAN
19	I2S_RX_FS	PTA16	The I^2S receive frame-synchronization signal.	I^2S
20	DAC_OUT	DAC0_OUT	The DAC output signal.	DAC
21	I2S_TX_BCLK	PTA5/PTB20	The I^2S bit synchronization clock signal.	I^2S
22	I2S_MCLK	PTA17/PTA1	The I^2S main clock signal.	I^2S
23	I2S_TXD0	PTA12/PTB21	The I^2S transmit data signal.	I^2S
24	I2S_TX_FS	PTA13/PTB22	The I^2S transmit frame synchronization signal.	I^2S
25	nRST	RESET_B	The global reset signal.	System control
26	I2S_RXD0	PTA15	The I^2S data-transmit signal.	I^2S
27	SWCLK	PTA0	The SWD clock signal.	Debug
28	SWDIO	PTA3	The SWD data signal.	Debug
29	GND	—	The digital GND.	Power
30	GND	—	The digital GND.	Power
31	VCC	—	The 5-V power.	Power
32	VCC	—	The 5-V power.	Power

1. This signal does not have a definition on the MAPS-KS22F256 MCU board. There is no SD on the MAPS-KS22F256VLL12 board. There may be a definition on another MCU board.
2. The MKS22FN256 accesses the SD card through the SPI bus. MKS22FN256VLL12.

Table 3. MPM2/FPM2 signal definition (CN2 on MAPS-KS22F256 board, CN2 on MAPS-Dock board)

Number	Signal	MCU pin	Description	Module
1	KEY_RIGHT	PTB10	The navigation key.	Button/joystick
2	KEY_UP	PTB9	The navigation key.	Button/joystick
3	KEY_LEFT	PTB11	The navigation key.	Button/joystick
4	KEY_DOWN	PTB3	The navigation key.	Button/joystick
5	IR_OUT	PTD3	The infrared output signal.	IR
6	KEY_SELECT	PTA4	The navigation key.	Button/joystick
7	TS0[1]	—	The touch sensor signal.	Touch pad
8	TS1[1]	—	The touch sensor signal.	Touch pad
9	TS2[1]	—	The touch sensor signal.	Touch pad
10	TS3[1]	—	The touch sensor signal.	Touch pad
11	3V3	—	Emulates the power for the DOCK.	Power
12	AGND	VSSA	Emulates the GND.	Power
13	ADC_IN1	ADC0_DM0	Emulates the input signal.	ADC
14	ADC_IN0	ADC0_DP0	Emulates the input signal.	ADC
15	USB_DP	USB0_DP	The USB DP signal.	USB
16	USB_DM	USB0_DM	The USB DM signal.	USB
17	USB_ID	PTE6	The USB ID signal.	USB
18	IR_IN	PTD2	The infrared emission signal.	IR
19	LED3	PTB11	The LED signal.	LED
20	LED2	PTB10	The LED signal.	LED
21	LED1	PTB9	The LED signal.	LED
22	LED0	PTB3	The LED signal.	LED
23	USB_PWR	PTE3	The 5-V USB power.	USB
24	DBG_TXD	PTE0	The debug serial data-transmit signal.	UART
25	LCD_CS	PTC2	The SPI screen CS signal	LCD
26	LCD_CD	PTC1	The SPI screen-command/address-selection signal.	LCD
27	SPI_SCLK	PTC5	The SPI clock signal.	LCD/SPI flash
28	SPI_MOSI	PTD2	The SPI data signal, MOSI.	LCD/SPI flash
29	FLASH_CS	PTC4	The SPI flash CS signal.	SPI flash
30	SPI_MISO	PTD3	The SPI data signal, MISO.	LCD/SPI flash
31	DBG_RXD	PTE1	The debug serial data-transmit signal.	UART
32	SD_DET	PTC0	The SD card-insertion test signal.	SD

1. The signal does not have a definition on the MAPS-KS22F256 MCU board. There is no TSI module on the MKS22FN256.

3.6. Expansion interface definition

Table 4. CN4—I²C expansion interface

Number	Signal	MCU pin	Description
1	3V3	—	The 3.3-V power.
2	GND	—	The digital GND.
3	I2C_SDA	PTB1	The I²C data signal.
4	I2C_SCL	PTB0	The I²C clock signal.
5	I2C_INT	PTE2	The interrupt input signal.

Table 5. CN5—UART expansion interface

Number	Signal	MCU pin	Description
1	3V3	—	The 3.3-V power.
2	GND	—	The digital GND.
3	UART_RXD1	PTE5	The UART receive signal.
4	UART_TXD1	PTE4	The UART transmit signal.

3.6.1. CN9—MCU I/O interface

The CN9 is the I/O fan-out interface. As shown in the following figure, the CN9's 1~100 pins correspond to the MCU's 1~100 pins one by one.

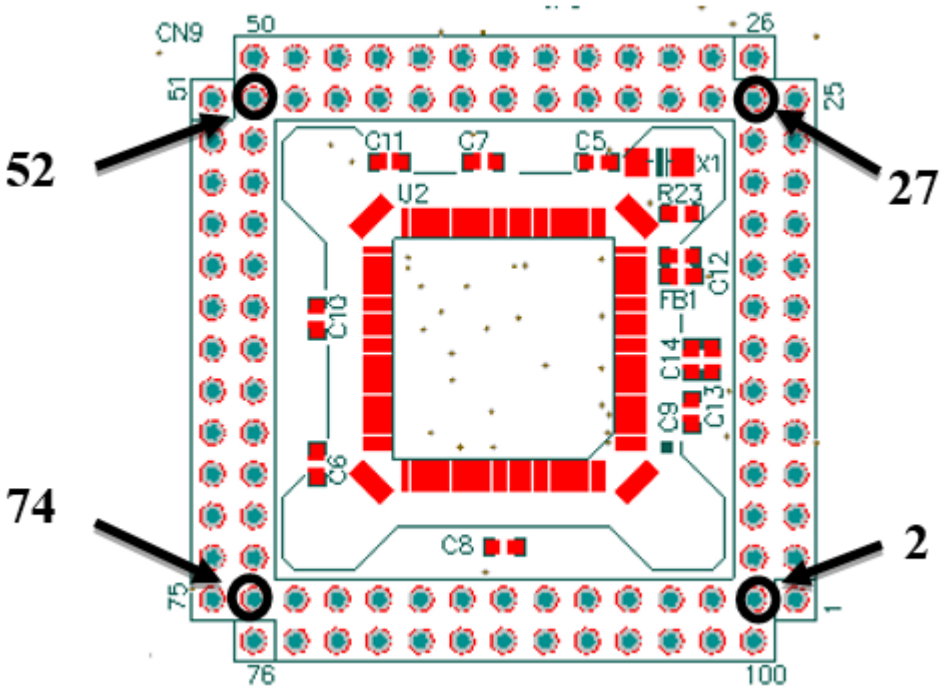

Figure 5. MAPS-KS22F256 I/O fan-out distribution

3.7. MAPS-KS22F256 silk screen

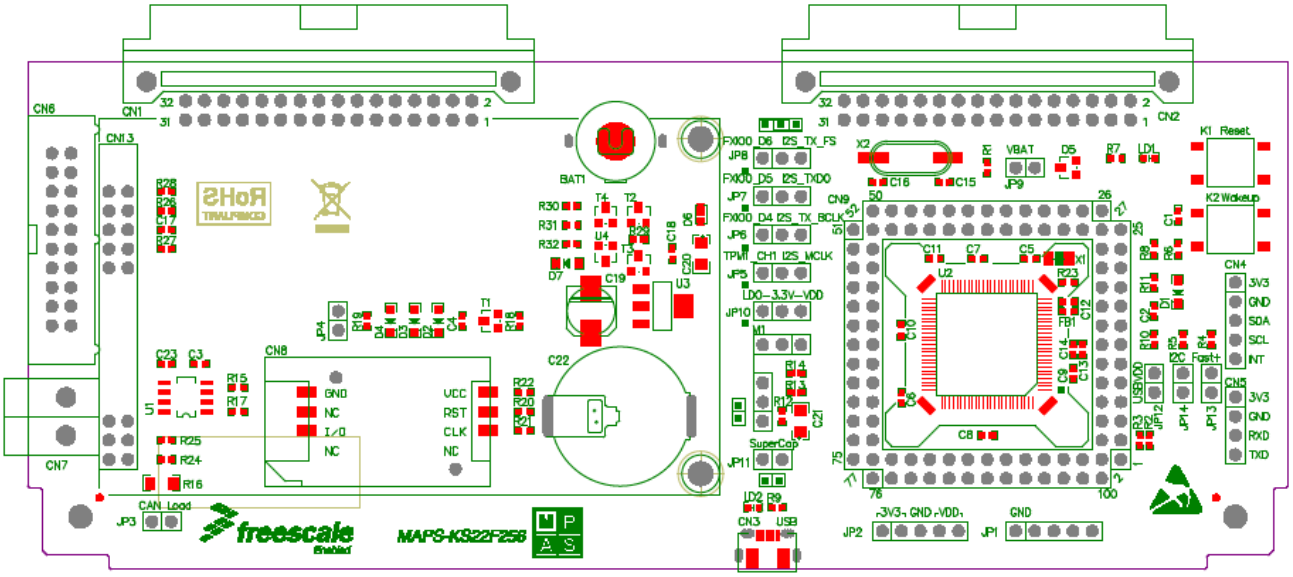

Figure 6. MAPS-KS22F256 silk screen

4. MAPS-Dock introduction

The MAPS-Dock board is the MAPS platform's general peripheral board. It is connected to the MCU board via the PM interface and has the audio, SD, USB, SPI flash, EEPROM, LCD, CAN, PWM, IR, RS232, RS485, and many other functional modules. It can be powered by the 5-V USB debugger interface, or by the interlinked MCU board via the PM interface.

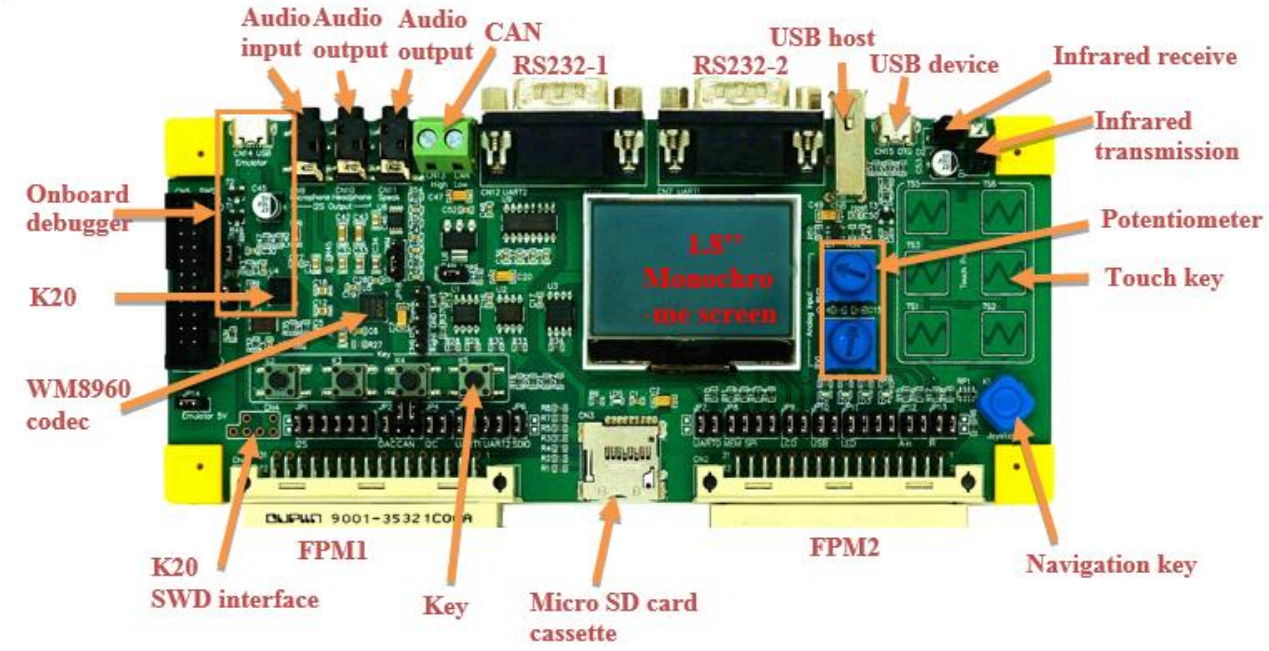

Figure 7. MAPS-Dock front view

4.1. MAPS-Dock main function module

- One Micro-SD card slot.
- One 8-Mbit SPI nor flash.
- One 2-Kbit EEPROM.
- The USB full-speed interface.
- The infrared transceiver interface.
- The I^2S audio decoder supporting one way to the stereo headphone output, two ways to the speaker output, and one way to the microphone input.
- The on-board USB debugger supporting the CMSIS-DAP protocol and the function that converts the USB to the UART.
- Two UART interfaces.
- One CAN interface.
- One DAC/PWM audio output interface.
- The two-way single-ended or one-way differential ADC input.
- One 128 × 64 single-color LCD screen and SPI interface.
- Four physical keys.
- Four LEDs.
- One five-direction key.
- Six touch keys.

4.2. MAPS-Dock jumper definition

Table 6. MAPS-Dock jumper definition

Number	Jumper	Connection	Description
JP1	1-2	**ON**	Connects the **FPM1** I2S_RX0 signal to the U5 WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM1** I2S_TX_FS signal to the U5 WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	5-6	**ON**	Connects the **FPM1** I2S_TX0 signal to the U5 WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	7-8	**ON**	Connects the **FPM1** I2S_BCLK signal to the U5 WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	9-10	**ON**	Connects the **FPM1** I2S_MCLK signal to the U5 WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	11-12	**ON**	Connects the **FPM1** I2S_RX_FS signal to the WM8960.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP2	1-2	**ON**	Connects the **FPM1** DAC/PWM signal to the U8.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.

Table 6. MAPS-Dock jumper definition

Number	Jumper	Connection	Description
JP3	1-2	**ON**	Connects the **FPM1** CAN_RX signal to the U1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM1** CAN_TX signal to the U1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP4	1-2	**ON**	Connects the **FPM1** I2C_SDA signal to the U2 and U5.
		OFF	Disconnect when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM1** I2C_SCL signal to the U2 and U5.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP5	1-2	**ON**	Connects the **FPM1** UART1 TX signal to the U9.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM1** UART1 RX signal to the U9.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	5-6	**ON**	Connects the **FPM1** UART2 TX signal to the U9.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	7-8	**ON**	Connects the **FPM1** UART2 RX signal to the U9.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP6	1-2	**ON**	Connects the **FPM1** SD_DET signal to the CN3 SD card slot.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP7	1-2	**ON**	Connects the **FPM2** UART0 TX signal to the U2 to convert the USB to the UART.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** UART0 RX signal to the U2 to convert the USB to the UART.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP8	1-2	**ON**	Connects the **FPM2** MEM_CS signal to the U3.
		OFF	Disconnect when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** MISO signal to the U3 and LCD1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	5-6	**ON**	Connects the **FPM2** MOSI signal to the U3 and LCD1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	7-8	**ON**	Connects the **FPM2** SCLK signal to the U3 and LCD1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP9	1-2	**ON**	Connects the **FPM2** LCD_CS signal to the LCD1.
		OFF	Disconnect when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** LCD_CD signal to the LCD1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.

Table 6. MAPS-Dock jumper definition

Number	Jumper	Connection	Description
JP10	1-2	**ON**	Connects the **FPM2** USB_PWR signal to the U7 to be the USB power control.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** USB_ID signal to the CN15 to be the USB testing signal.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP11	1-2	**ON**	Connects the **FPM2** LED1 signal to the LD1.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** LED signal to the LD2.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	5-6	**ON**	Connects the **FPM2** LED3 signal to the LD3.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	7-8	**ON**	Connects the **FPM2** LED4 signal to the LD4.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP12	1-2	**ON**	Connects the **FPM2** AIN1 signal to the RV1 to be the ADC input.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** AIN0 signal to the RV2 to be the ADC input.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP13	1-2	**ON**	Connects the **FPM2** IR_IN signal to the D2 to be the infrared receiver.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
	3-4	**ON**	Connects the **FPM2** IR_OUT signal to the T3 to be the infrared emitter.
		OFF	Disconnects when the MCU board uses the corresponding signal to perform other applications.
JP14	1-2	ON	Connects the VCC (5 V) to the CN5 debugger interface for the whole board to be powered by the debugger.
		OFF	The VCC is powered on-board.
JP15	1-2	**ON**	Connects the **FPM1** SWCLK to the K20 and uses the K20 as the debugger.
		OFF	Uses the externally-connected debugger.
JP16	1-2	**ON**	The CAN differential signal port is connected to the 120-Ω resistor.
		OFF	The CAN differential signal is disconnected.
JP17	1-2	**ON**	Connects the **FPM1** SWDIO to the K20 and uses the K20 as the debugger.
		OFF	Uses the externally-connected debugger.
JP18	1-2-3	**1-2**	The **FPM1** DAC/PWM signal is the DAC output (jumper).
		2-3	The **FPM1** DAC/PWM signal is the PWM output (jumper).

4.3. Expansion interface definition

Table 7. CN4—K20 SWD interface

Signal definition	Number		Signal definition
VDD: Dock board 5-V power	1	—	—
NC	3	4	CLK: K20 SWD_CLK signal
DIO: K20 SWD_DIO signal	5	—	—
GND: digital GND	7	8	E_RST: K20 system reset signal

Table 8. CN6—speaker output interface

Number	Signal	Description
1	SPK_LP	Speaker output left channel + pole
2	SPK_LN	Speaker output left channel - pole
3	GND	Audio GND
4	SPK_RP	Speaker output right channel + pole
5	SPK_RN	Speaker output right channel - pole

4.4. USB connectors

The MAPS-Dock board includes three USB connectors. The specific applications of the USB connectors are shown in this table:

Table 9. USB connectors

Number	Type	Specific use
CN14	Micro B	Acts as the USB Device, the K20 debugger signal, and provides the power for the whole board at the same time.
CN8	Type A	Acts as the USB Host, the MCU board USB signal, reuses the CN15 signal (alternatively), and provides the 5-V power for the outside.
CN15	Micro B	Acts as the USB Device, the MCU board USB signal, reuses the CN8 signal (alternatively), and can’t provide the power for the whole board.

4.5. MAPS-Dock silk screen

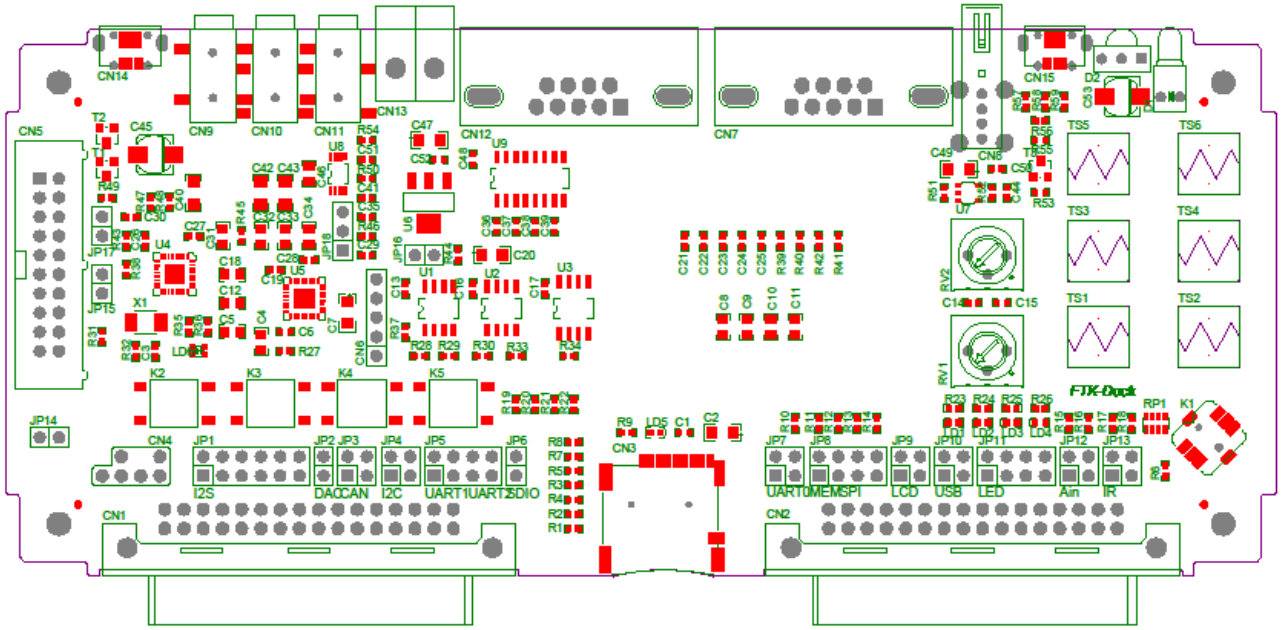

Figure 8. MAPS-Dock silk screen

5. MAPS Socket Expansion Board Introduction

There are two 32-pin FPM interfaces on the MAPS-Arduino board which are used to connect to the MCU board—CN1 is FPM1 and CN2 is FPM2. The CN3 Arduino interface on the board can connect to the general Arduino peripheral module.

There are two 32-pin FPM interfaces on the MAPS-FRDM board which are used to connect to the general peripheral board—CN1 is MPM1 and CN2 is MPM2. The CN3 Arduino interface on the board can connect to the FRDM MCU main board.

There are two separate 32-pin MPM interfaces and two 32-pin FPM interfaces on the MAPS-Bridge board which are used to bridge the MCU board and the general peripheral board and to connect to the general Arduino peripheral module at the same time. CN1 is MPM1, CN2 is MPM2, CN3 is FPM1, CN4 is FPM2, and CN5 is the Arduino interface.

CAUTION

If you use the MAPS-Bridge socket board and you want to use any of the Arduino peripheral modules, pull out the signal's jumper cap on the Arduino peripheral module. On the side of the general peripheral board modules, pull out the jumper cap according to the signal that the Arduino peripheral module uses on the side of the general peripheral board. Avoid the signal conflict.

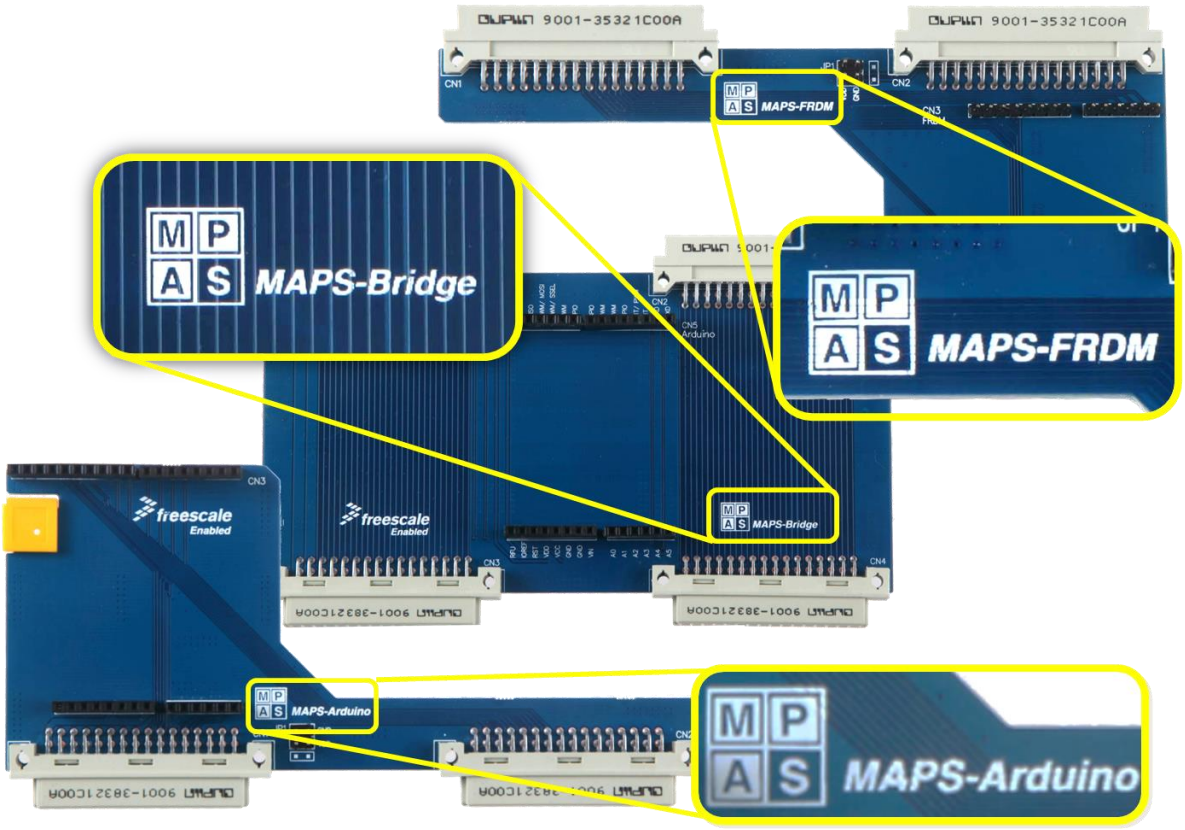

Figure 9. MAPS-Arduino/FRDM/bridge front view

5.1. Jumper definition

Table 10. Jumper definition

Number	Jumper	Connection	Description
JP1	1-2	**ON**	Connect to emulate the GND with the digital GND.
		OFF	Connect externally to emulate the GND.
	3-4	**ON**	Connect to emulate the VDD power with the digital VDD power.
		OFF	Connect externally to emulate the VDD power.

5.2. Arduino interface definition

Table 11. Arduino interface definition

Number	Signal definition
1	NC: no signal
2	VDD: 3.3-V power
3	RESET: reset signal
4	VDD: 3.3-V power
5	VCC: 5-V power
6	GND: digital GND
7	GND: digital GND
8	VIN: 5~12-V power
9	A0: emulate input 0

Table 11. Arduino interface definition

Number	Signal definition
10	A1: emulate input 1
11	A2: emulate input 2
12	A3: emulate input 3
13	A4: emulate input 4
14	A5: emulate input 5
15	D15/I2C_SCL: GPIO15 or I^2C clock signal
16	D14/I2C_SDA: GPIO14 or I^2C data signal
17	AREF: emulate reference voltage
18	AGND: emulate GND
19	D13/SPI_CLK: GPIO13 or SPI clock signal
20	D12/SPI_MISO: GPIO12 or SPI data signal, MISO
21	D11/SPI_MOSI: GPIO11 or SPI data clock, MOSI
22	D10/SPI_CS: GPIO11 or SPI data signal, MOSI
23	D9: GPIO9
24	D8: GPIO8
25	D7: GPIO7
26	D6: GPIO6
27	D5: GPIO5
28	D4: GPIO4
29	D3/SCL: GPIO3 or I^2C clock signal
30	D2/SDA: GPIO2 or I^2C data signal
31	D1/UART_TX: GPIO1 or UART transmit signal
32	D0/UART_RX: GPIO0 or UART receive signal

6. Revision History

Table 12. Revision history

Revision number	Date	Substantive changes
0	09/2016	Initial release.

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