UM1564
User manual

STM32373C-EVAL evaluation board

Introduction

The STM32373C-EVAL evaluation board is designed as a complete demonstration and development platform for STMicroelectronics' ARM cortex-M4 core-based STM32F373VCT6 microcontroller. It features two I2Cs, three SPIs, three USARTs, one CAN, one CEC controller, one 12-bit ADC, three 16-bit sigma delta ADCs, three 12-bit DACs, internal 32-KByte SRAM and 256-KByte Flash, touch sensing, USB FS, and JTAG debugging support. This evaluation board can be used as a reference design for user application development but it is not considered as the final application.

The full range of hardware features on the board can help the user evaluate all peripherals (USB FS, USART, audio DAC, microphone ADC, color LCD, IrDA, LDR (light-dependent resistor), MicroSD card, HDMI CEC, ECG (electrocardiogram), pressure sensor, CAN, IR (infrared) transmitter and receiver, EEPROM, touch slider, temperature sensor, etc.) and develop their own applications. Extension headers make it possible to easily connect a daughterboard or wrapping board for a specific application.

An ST-LINK/V2 is integrated on the board as an embedded in-circuit debugger and programmer for the STM32 MCU.

Figure 1. STM32373C-EVAL evaluation board

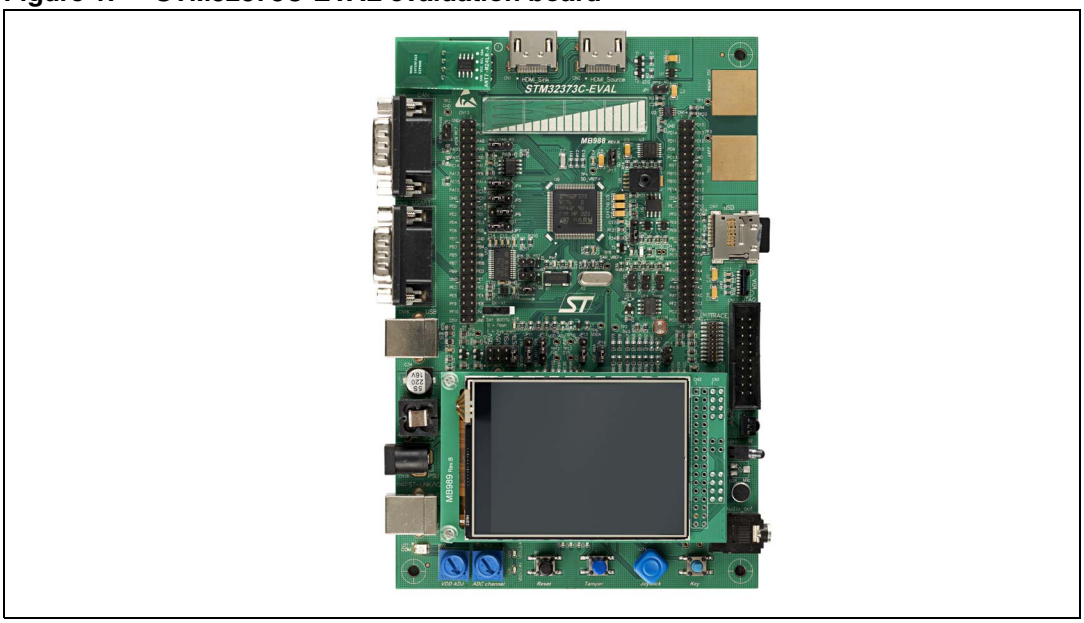


Table 1. Applicable tools

Type	Part number
Evaluation tools	STM32373C-EVAL

Contents

List of tables

List of figures

1 Overview

1.1 Features

- Four 5-V power supply options:
  - Power jack
  - ST-LINK/V2 USB connector
  - User USB connector
  - Daughterboard
- I2S audio DAC and stereo audio jack
- 2-Gbyte or more SPI interface MicroSD card
- I2C compatible serial interface temperature sensor, EEPROM, and RF EEPROM (dual interface EEPROM)
- RS-232 communication
- IrDA transceiver
- JTAG/SWD and ETM trace debug support, ST-LINK/V2 embedded
- 240x320 TFT color LCD connected to SPI interface
- Joystick with 4-directional control and selector
- Reset, wakeup or tamper and key button
- 4 color user LEDs and 2 LEDs as MCU power range indicators
- ECG, pressure sensor, and PT100 temperature sensor connected to 16-bit sigma delta ADC of the STM32F373VCT6
- Extension connectors for daughterboard or wrapping board
- Microcontroller voltage choice: 3.3 V or adjustable from 2.0 V to 3.6 V
- USB FS connector
- Touch slider
- RTC with backup battery
- CAN2.0A/B compliant connection
- Light-dependent resistor (LDR)
- Two HDMI connectors with DDC (display data channel) and CEC
- IR transmitter and receiver
- Two ADC and DAC input and output signal connectors and one sigma delta ADC input signal connector
- Potentiometer

1.2 Demonstration software

Demonstration software is preloaded on the board's Flash memory for easy demonstration of the device peripherals in standalone mode. For more information and to download the latest version available, please refer to the STM32373C-EVAL demonstration software available on *www.st.com*.

1.3 Order code

To order the STM32F373VCT6 evaluation board, use the order code STM32373C-EVAL.

1.4 Delivery recommendations

Some verification of the board is needed before using it for the first time to make sure that nothing was damaged during shipment and that no components are unplugged or lost.

When the board is extracted from its plastic bag, please check that no component remains in the bag.

The main components to verify are:

1. The 8-MHz crystal (X2) which may have been removed by a shock from its socket.
2. The MicroSD card which may have been ejected from the connector CN7 (right side of the board).
3. The dual-interface EEPROM board (ANT7-M24LR-A) which may have been unplugged from the connector CN3 (top left corner of the board).

For all information concerning the version of the MCU used on the board, its specification and possible related limitations, please visit *www.st.com* to download the relevant data sheet and erratasheet.

Caution: There is an explosion risk if the battery is replaced by an incorrect one. *Make sure to dispose of used batteries according to the instructions*.

2 Hardware layout and configuration

The STM32373C-EVAL evaluation board is designed around the STM32F373VCT6 (100-pin LQFP package). The hardware block diagram, *Figure 2*, illustrates the connection between the STM32F373VCT6 and the peripherals (color LCD, touch slider, USB FS connector, temperature sensor, USART, IrDA, audio, EEPROM, RF EEPROM, MicroSD card, and embedded ST-LINK). *Figure 3* illustrates how to locate these features on the actual evaluation board. Features described in *Section 2.1* to *Section 2.24* below are shown in *Figure 3*.

Figure 2. Hardware block diagram

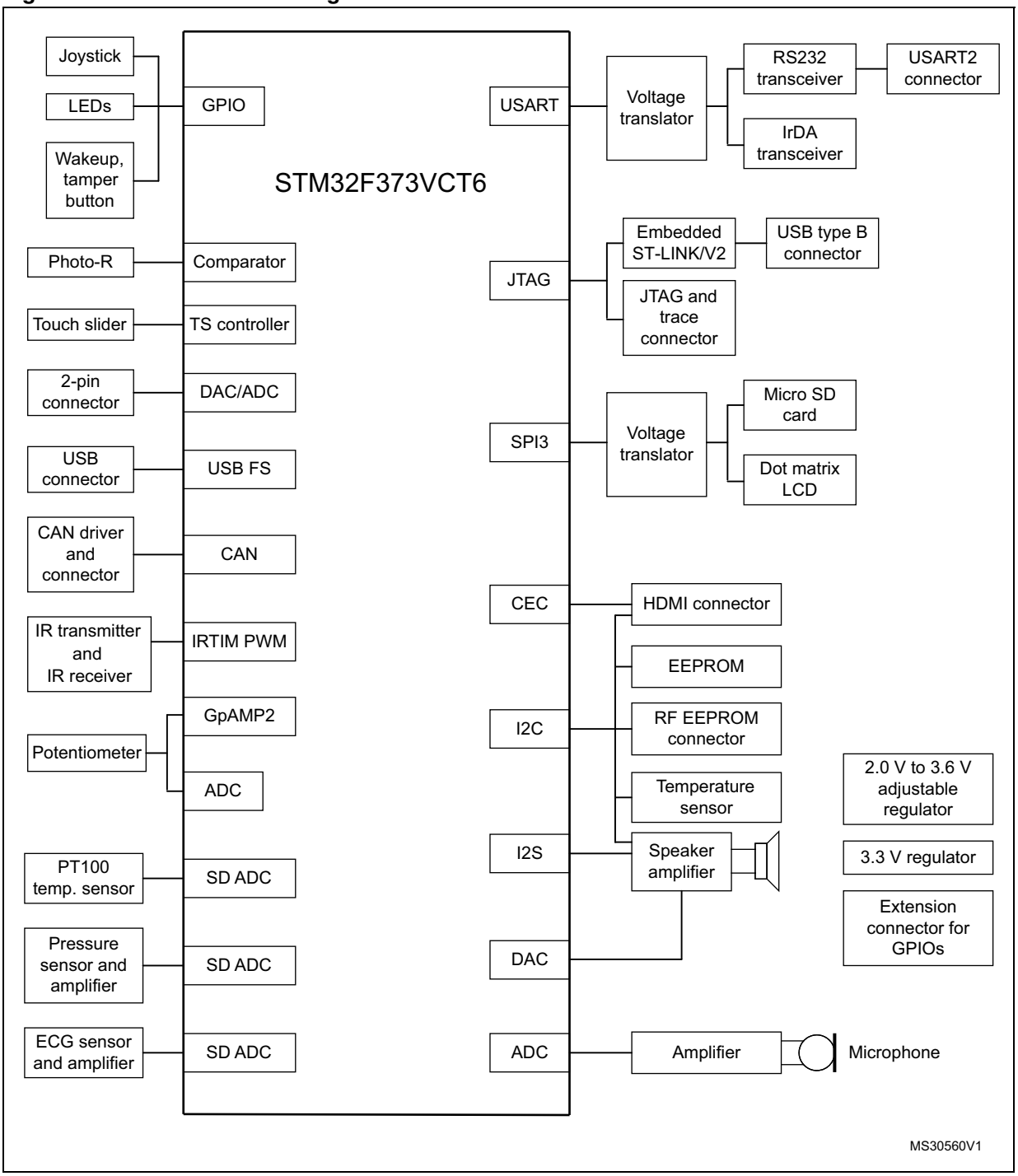
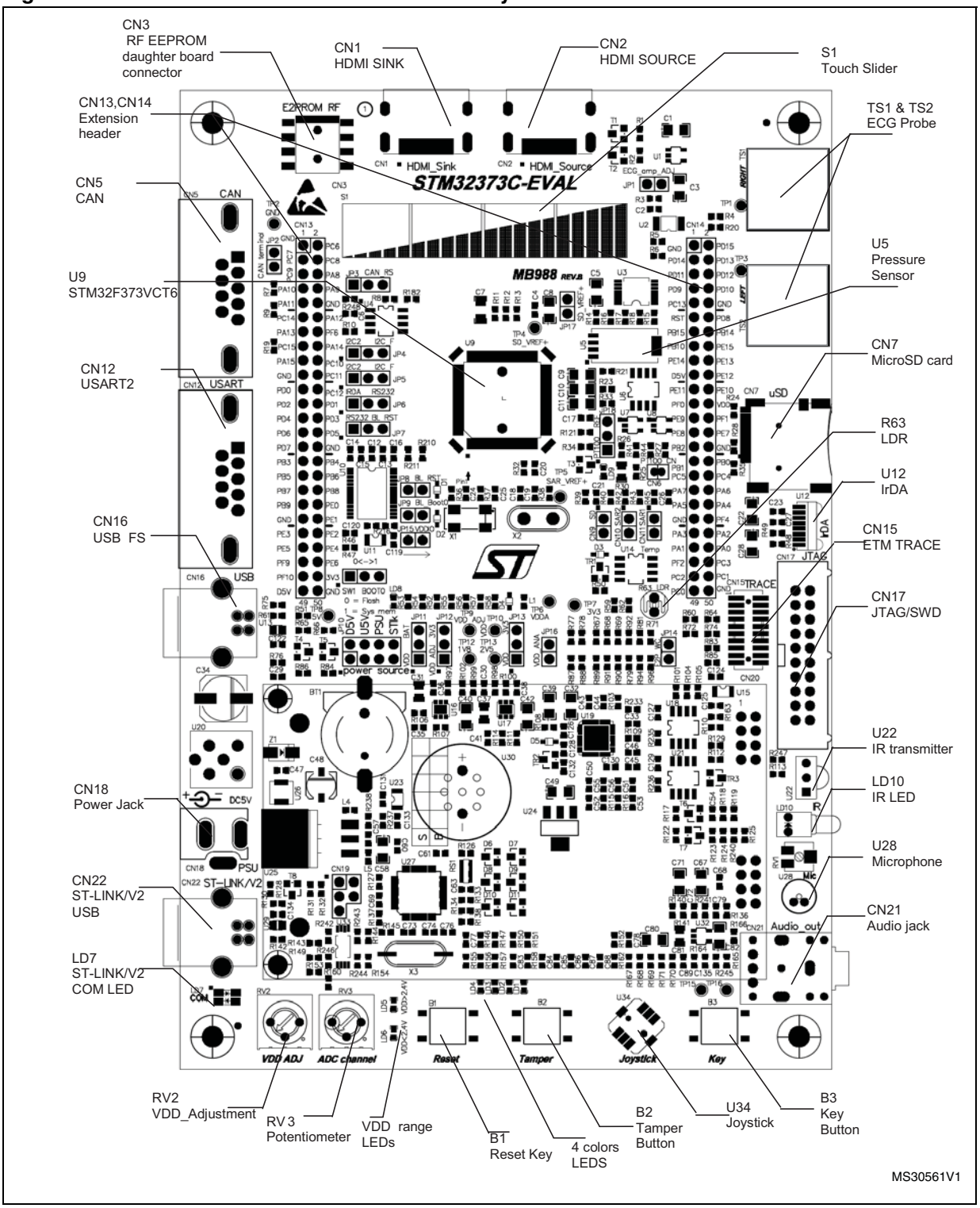


Figure 3. STM32373C-EVAL evaluation board layout



2.1 Development and debug support

Version 2 of the ST-LINK (ST-LINK/V2) is embedded on the board. This tool allows onboard program loading and debugging of the STM32F373VCT6 using the JTAG or SWD interface. Third-party debug tools are also supported using the JTAG/SWD connector (CN17) or the ETM trace connector (CN15).

A specific driver needs to be installed on your PC for communication with the embedded ST-LINK/V2. The install shield, called ST-LINK_V2_USBdriver.exe, is available from the ST website. To download and install this driver, please refer to the software and development tools page of the STM32F family on *www.st.com*.

Third-party toolchains, Atollic TrueSTUDIO, KEIL ARM-MDK, IAR EWARM, and Tasking VX-Toolset support ST-LINK/V2 according to *Table 2*.

Table 2. Third-party toolchain support

Toolchain	Version
Atollic TrueSTUDIO	2.1
Keil MDK-ARM	4.20
IAR EWARM	6.20
Altium TASKING VX-Toolset	4.0.1

Connect the embedded ST-LINK/V2 to the PC via a standard USB cable from connector CN22. The bi-color LED LD7 (COM in *Figure 3*) indicates the status of the communication as follows:

- Slow blinking red/off: at power-on before USB initialization
- Fast blinking red/off: after the first correct communication between the PC and STLink/V2 (enumeration).
- Red LED on: when initialization between the PC and ST-LINK/V2 is successfully finished.
- Green LED on: after successful target communication initialization
- Blinking red/green: during communication with target
- Red on: communication finished and OK
- Orange on: communication failure

Note: It is possible to power the board via CN22 (embedded ST-LINK/V2 USB connector) even if an external tool is connected to CN15 (ETM trace connector) or CN17 (external JTAG and SWD connector).

Remove R29, R73, and R89 when using the ETM 4-bit function. In this situation, the touch slider and joystick do not work.

2.2 Power supply

STM32373C-EVAL evaluation board is designed to be powered by a 5 V DC power supply and is protected by PolyZen U26 from damage caused by overvoltage and overcurrent fault conditions. It is possible to configure the evaluation board to use any of following four power supply sources:

- 5-V DC power adapter connected to CN18, the power jack on the board (see Power Supply Unit (PSU) in *Figure 3*). The external power supply is not provided with the board.
- 5-V DC power with 500 mA limitation from CN22, the type-B USB connector of ST-LINK/V2 (see STlk 5-V power source in *Figure 3*).
- 5-V DC power with 500 mA limitation from CN16, the type-B USB connector (see U5V 5-V power source in *Figure 3*).
- 5-V DC power from CN13 and CN14, the extension connector for the daughterboard (see D5V for daughterboard in *Figure 3*).

The power supply is configured by setting the related jumpers JP10, JP11, JP12, and JP13 as described in *Table 3* below.

Table 3. Power-related jumpers

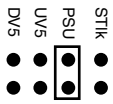
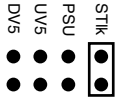
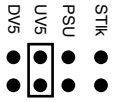
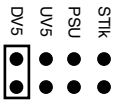
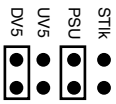
Jumper	Description	Jumper setting
JP10 (selects one of the four possible power supply resources)	For power supply from the **power supply jack (**CN18) to the STM32373C-EVAL only, JP10 is set as shown to the right:	
	For power supply from the **USB connector of ST-LINK/V2** (CN22) to STM32373C-EVAL only, JP10 is set as shown to the right:	
	For power supply from the **USB connector** (CN16) to STM32373C-EVAL only, JP10 is set as shown to the right:	
	For power supply from the **daughterboard connectors** (CN13 and CN14) to STM32373C-EVAL only, JP10 is set as shown to the right:	
	For power supply from the **power supply jack** (CN18) to both STM32373C -EVAL and daughterboard connected on CN13 & CN14, JP10 is set as shown to the right: *Note: the daughterboard must not have its own power supply connected.*	

Table 3. Power-related jumpers (continued)

Jumper	Description	Jumper setting
JP11	Vbat is connected to a battery when JP11 is set as shown to the right:	
	Vbat is connected to the VDD power when JP11 is set as shown to the right: This is the default setting.	
JP12	VDD is connected to a fixed 3.3-V DC power supply when JP12 is set as shown to the right: This is the default setting.	
	VDD is connected to an adjustable DC power supply from 2.0 V to 3.6 V when JP12 is set as shown to the right:	
JP13	VDDA power is connected to VDD when JP13 is set as shown to the right: This is the default setting.	
	VDDA power is connected to a fixed 3.3-V DC power supply when JP13 is set as shown to the right:	

Note: VDD is adjustable from 2.0 V to 3.6 V. However, to take component tolerance into account and to guarantee that VDD does not exceed the chip range specification, VDD is ideally designed to be adjusted from 2.1 V to 3.5 V on the board.

JP17 is connected with the VDDA power supply and the SD_VREF+ pin of the microcontroller. The default setting is closed. When the SD_VREF+ pin needs an extended reference level, please open JP17 and connect the extended reference to pin 1 (the top pin of JP17).

LED LD8 is lit (red) when the STM32373C-EVAL evaluation board is powered by a 5-V DC power supply. LED LD6 is lit (red) when the microcontroller is powered by VDD < 2.4 V (low voltage). LED LD5 is lit (green) when the microcontroller is powered by VDD > 2.4 V

2.3 Power modes

A total of three power modes are supported on the board and can be configured by setting the related jumpers JP12 and JP13 as described below in *Table 4*. The power modes are as follows:

- Power mode 1: VDD and VDDA are connected together and powered by a fixed 3.3-V DC power supply.
- Power mode 2: VDD and VDDA are connected together and powered by an adjustable voltage that ranges from 2.0 V to 3.6 V.
- Power mode 3: VDD is powered by an adjustable voltage that ranges from 2.0 V to 3.6 V while VDDA is powered by a fixed 3.3-V DC power supply.

Table 4. Power mode related jumpers

Power mode	Power mode configuration		Microcontroller IDD measurement(1)
	JP12	JP13	
Power mode 1			OK
			Not allowed
Power mode 2			OK
Power mode 3			Not allowed

1. To measure the IDD of the microcontroller, use a current meter mounted on **JP15** (which must be open). **JP16** must also be open to disconnect VDDA from any analog power (VDD_ANA) connected to the analog circuit.

Table 5 shows the low voltage limitations that might apply depending on the characteristics of some peripheral components. Components might work incorrectly when the power level is lower than the limitation.

Table 5. Low voltage limitations

Peripheral	Component	IO name	Low voltage limitation
USB	CN16	USB	3 V
MicroSD card	CN7	SPI3	2.7 V
CAN	CN5	CAN	3 V

Note: The recommended AC220 V to DC5 V power adapter is PSU-5V2A. It is not included with the board but can be ordered from ST as a separate item. You can also use another equivalent 5 V power adapter (polarity compatible with CN18) to power the STM32373C-EVAL board via the CN18 power jack on the board. To order the recommended power supply, use order code PSU-5V2A.

2.4 Clock sources

Two clock sources are available on the STM32373C-EVAL evaluation board for use with the STM32F373VCT6 microcontroller and embedded real-time clock (RTC). They are:

- 8-MHz crystal (X2) with socket clock source for the STM32F373VCT6 microcontroller. It can be removed from the socket when an internal RC clock is used (see *Table 6*).
- 32-KHz crystal (X1) for use with an embedded RTC (see *Table 7*).

Table 6. 8-MHz crystal (X2-related solder bridge)

Solder bridge	Description
SB23	When SB23 is open, PF0 is connected to the 8-MHz crystal oscillator. This is the default setting.
	When SB23 is closed, PF0 is connected to the extension connector CN14. In this case, C18 and the X2 pin must be removed to avoid disturbance due to the 8-Mhz quartz.
SB24	When SB24 is open, PF1 is connected to the 8-MHz crystal oscillator. This is the default setting.
	When SB24 is closed, PF1 is connected to the extension connector CN14. In this case R38 must be removed to avoid disturbance due to the 8-Mhz quartz.

Table 7. 32-KHz crystal (X1-related solder bridge)

Solder bridge	Description
SB25	When SB25 is open, PC14 is connected to the 32-KHz crystal oscillator. This is the default setting.
	When SB25 is closed, PC14 is connected to the extension connector CN13. In this case, R36 must be removed to avoid disturbance due to the 32-Khz quartz.
SB26	When SB26 is open, PC15 is connected to 32-KHz crystal. This is the default setting.
	When SB26 is closed, PC15 is connected to the extension connector CN13. In this case, R37 must be removed to avoid disturbance due to the 32-Khz quartz.

2.5 Reset source

The reset signal of the STM32373C-EVAL evaluation board is “low active” and the reset sources (see *Figure 3*) include:

- Reset button B1
- Debugging tools from JTAG/SWD connector CN17 and ETM trace connector CN15
- daughterboard from CN14
- Embedded ST-LINK/V2
- RS-232 connector CN12 for ISP (in-situ programming)

Note: See Section 2.9: RS-232 and IrDA to change jumper JP7 when performing a reset. This is handled by pin 8 of the RS-232 connector CN12 (clear to send (CTS) signal).

2.6 Boot option

The STM32373C-EVAL evaluation board is able to boot from:

- Embedded user Flash
- System memory with boot loader for ISP
- Embedded SRAM for debugging

The boot option is configured by setting switch SW1 (BOOT0) and the User Option Bytes bit12 (BOOT1) in the small information block (SIF). BOOT0 can also be configured via the RS-232 connector CN12.

Table 8. Boot-related switches

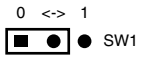
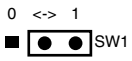
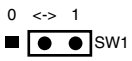
Boot source	Bit12 in User Option Bytes	Switch configuration
STM32373C-EVAL boot from **User Flash** when SW1 and bit12 in the User Option Bytes are set as shown to the right. This is the default setting.	X	
STM32373C-EVAL boot from **Embedded SRAM** when SW1 and bit12 in the User Option Bytes are set as shown to the right.	0	
STM32373C-EVAL boot from **System Memory** when SW1 and bit12 in the User Option Bytes are set as shown to the right.	1	

Table 9. Boot0-related jumper

Jumper	Description
JP9	When JP9 is closed, the Bootloader_BOOT0 is managed by pin 6 of connector CN12 (RS-232 DSR signal). This configuration is used for boot loader application only. This is the default setting: it is not fitted.

2.7 Audio

The STM32373C-EVAL evaluation board supports stereo audio playback by an audio DAC CS43L22 connected to the I2S port and one channel of the STM32F373VCT6 DAC. The microphone is connected to the ADC input of STM32F373VCT6 through a microphone amplifier.

I2C communication depends on the settings of jumpers JP4 and JP5:

Table 10. Audio-related jumpers

Jumper	Description	Jumper setting
JP4	PA9 is connected to the I2C2_SCL_5V signal on the audio DAC, temperature sensor, RF EEPROM, and HDMI source connector when JP4 is set as shown to the right: This is the default setting.	
	PA9 is connected to the I2C2_F_SCL signal on the EEPROM when JP4 is set as shown to the right:	
JP5	PA10 is connected to the I2C2_SDA_5V signal on the audio DAC, temperature sensor, RF EEPROM, and HDMI source connector when JP5 is set as shown to the right: This is the default setting.	
	PA10 is connected to the I2C2_F_SDA signal on the EEPROM when JP5 is set as shown to the right:	

Note: The I2C address of CS43L22 is 0b1001010.

The audio reset is connected with PD11 which is powered by the VDDA domain. When the voltage of VDDA is not the same as the voltage of VDD (see Power mode 3 in Section 2.3), the signal voltages are translated by divider resistance, R79 and R103, to avoid harming the Audio Codec Chip U19.

2.8 USB

STM32373C-EVAL evaluation board supports USB2.0 compliant, full-speed communication via a USB type B connector (CN16). The evaluation board can be powered by this USB connection at 5 V DC with 500 mA current limitation.

USB disconnection simulation can be implemented by controlling an external 1.5 KΩ pull-up resistor on the USB+ line. The pull-up function can be enabled by PC5.

The USB operates correctly when VDD > 3 V.

2.9 RS-232 and IrDA

RS-232 (with hardware flow control clear to send (CTS) and request to send (RTS)) and IrDA communication are supported by:

- D-type 9-pin RS-232 connector (CN12)
- IrDA transceiver (U12)

They are connected to USART2 of the STM32F373VCT6 on the STM32373C-EVAL evaluation board. The Bootloader_RESET signal (which is shared with the CTS signal) and the Bootloader_BOOT0 signal which is shared with the demand signal repository (DSR) signal) are added on the RS-232 connector, CN12, for ISP support.

Table 11. RS-232- and IrDA-related jumpers

Jumper	Description	Jumper setting
JP6	USART2_RX is connected to the RS-232 transceiver and RS-232 communication is enabled when JP6 is set as shown to the right: This is the default setting.	
	USART2_RX is connected to the IrDA transceiver and IrDA communication is enabled when JP6 is set as shown to the right:	
JP7	USART2_CTS is connected to the RS-232 transceiver when JP7 is set as shown to the right: This is the default setting.	
	Bootloader_RESET is connected to the RS-232 transceiver when JP7 is set as shown to the right:	

2.10 Touch sensing slider

STM32373C-EVAL evaluation board supports a touch sensing slider based on either resistor-capacitor (RC) charging or charge transfer technology. The charge transfer technology is enabled by default assembly.

Table 12. Touch sensing slider-related solder bridges

Solder bridge	Description
SB8	When SB8 is open, PD15 is connected to the sampling capacitor. This is the default setting.
	When SB8 is closed, PD15 is connected to the extension connector CN14. In this case, C7 must be removed to avoid disturbance due to the capacitor.
SB9	When SB9 is open, PD14 is connected to the touch slider. This is the default setting.
	When SB9 is closed, PD14 is connected to the extension connector CN14. In this case, R11 must be removed to avoid disturbance due to the touch slider
SB10	When SB10 is open, PD13 is connected to the touch slider. This is the default setting.
	When SB10 is closed, PD13 is connected to the extension connector CN14. In this case, R12 must be removed to avoid disturbance due to the touch slider
SB11	When SB11 is open, PD12 is connected to the touch slider. This is the default setting.
	When SB11 is closed, PD12 is connected to the extension connector CN14. In this case, R13 must be removed to avoid disturbance due to the touch slider
R93	When R93 is un-mounted, PE4 is connected to the touch slider. This is the default setting.
	When R93 is mounted, PE4 is connected to the extension connector CN13. In this case, R31 must be removed to avoid disturbance due to the shield.
R95	When R95 is un-mounted, PE5 is connected to the slider. This is the default setting.
	When R95 is mounted, PE5 is connected to the extension connector CN13. In this case, R82 must be removed to avoid disturbance due to the capacitor.

Note: The touch slider is only fully functional when the STM32373C-EVAL is powered on Power mode 1 (both VDD and VDDA are connected to a fixed 3.3 V power supply). When the STM32373C-EVAL is powered on Power mode 2, it may be necessary to adjust the capacitor value of C123 and the firmware so they are adapted to a voltage range of 2.0 V to 3.6 V of VDD. The touch slider is not functional when the STM32373C-EVAL is powered on Power mode 3 because some IOs are also powered by the VDDA domain.

2.11 MicroSD card

The 2-Gbyte (or more) MicroSD card connected to the SPI3 port (which is shared with the color LCD) of the STM32F373VCT6 is available on the evaluation board. It can be enabled by the chip select signal (PE2). This signal should be set as an open-drain output pin in the STM32F373VCT6. MicroSD card detection is managed by the standard IO port PE3.

The MicroSD card operates correctly when VDD > 2.7 V.

2.12 RF EEPROM

The RF EEPROM daughterboard, ANT7-M24LR-A, is mounted on CN3 of the STM32F373VCT6 via the I2C2 bus (which is shared with the temperature sensor U14, audio codec U19, and DDC on the HDMI_Source connector CN2). The RF EEPROM can be accessed by the microcontroller via the I2C2 bus or by radio frequency (RF) using a 13.56 MHz reader (for example, CR95HF).

The I2C address of the RF EEPROM daughterboard is 0b1010000.

I2C2 communication depends on the settings of jumper JP4 and JP5 as shown in *Table 10: Audio-related jumpers*.

2.13 EEPROM

To fit Fast mode requirements, a 1-Mbit EEPROM, M24M01-HR, is directly connected to the I2C2 bus of the STM32F373VCT6 by setting jumper JP4 and JP5 as shown in *Table 10: Audio-related jumpers*.

Table 13. EEPROM-related jumpers

Jumper	Description
JP14	When JP14 is closed, the EEPROM is in Write protection mode. This is the default setting: it is not fitted.
JP4, JP5	Refer to *Table 10: Audio-related jumpers*.

2.14 CAN

The STM32373C-EVAL evaluation board supports one channel of CAN2.0A/B complaint CAN bus communication based on a 3.3-V CAN transceiver. High-speed mode, Standby mode, and Slope control mode are available and can be selected by setting JP3.

Table 14. CAN-related jumpers

Jumper	Description and jumper setting	
JP3	The CAN transceiver operates in Standby mode when JP3 is set as shown to the right:	
	The CAN transceiver operates in High-speed mode when JP3 is set as shown to the right: This is the default setting.	
	The CAN transceiver operates in Slope control mode when JP3 is open.	
JP2	When JP2 is fitted, the CAN terminal resistor is enabled. Default setting: not fitted.	

CAN operates correctly when VDD > 3 V.

2.15 HDMI CEC

Two HDMI connectors, CN1 and CN2, are available on the STM32373C-EVAL evaluation board.

- Connector CN1 is a HDMI sink connector with:
  - DDC connected to I2C1 of the STM32F373VCT6
  - HPD controlled by IO PE0 through transistor T1
  - CEC connected to PB8 through transistor T2
- Connector CN2 is an HDMI source connector with:
  - DDC connected to I2C2 (and shared with the temperature sensor, RF EEPROM, and audio codec) of the STM32F373VCT6 by setting jumper JP4 and JP5 as shown in *Table 10: Audio-related jumpers*.
  - HPD controlled by IO PD7
  - CEC connected to PB8 through transistor T2
  - HDMI 5-V powered by power switch U1

The signals TDMS D+[0:2], TDMS_CLK+, TDMS D-[0:2], and TDMS_CLK- are connected together on these two HDMI connectors.

CEC injector mode can be enabled (for debugging purposes only) as follows:

- Remove resistors R120, R172, R173, R174, R175, R213, and R221.
- Close solder bridges SB1, SB2, SB3, and SB4.

Note: The I/O PE0 must be set in open-drain output mode by firmware when working as an HPD signal control on the HDMI sink connector CN1.

2.16 IR transmitter and IR receiver

The IR receiver, TSOP34836, is connected to PB5 of the STM32F373VCT6 and the IR transmitter is driven by PB9 through transistors T6 and T7 on the evaluation board.

The IR transmitter may be driven directly by PB9 when SB28 is closed and R240 is removed.

2.17 Electrocardiogram demonstration

The electrocardiogram (ECG) demonstration is implemented on the STM32373C-EVAL evaluation board. There are two ECG electrodes, TS1 and TS2, on the board for fingers from the right and left hands of the human body. The first stage of the ECG amplifier circuit is an instrument amplifier INA333 (U2). The gain is set to 5. The gain of the second amplifier stage (U3A) is set to 10 or 40. The total gain of the circuit outside the microcontroller is set to 50 or 200. The output of the amplifier is connected to the sigma delta ADC in the STM32F373VCT6 through PE12.

Jumper JP1 can change the second stage amplifier gain (see ***Table 15***).

Table 15. Jumpers of the ECG amplifier

Jumper	Description
JP1	When JP1 is closed, the second amplifier gain is changed from 10 to 40. Default setting: fitted.

A low-pass filter is available on the evaluation board but, by default, it is not used. This filter is made of a second order Sallen-Key Low-pass Filter (U3C) having unitary gain and 9 Hz cut-off frequency. It can be used in noisy environments to improve 50 Hz or 60 Hz noise rejection.

This filter is enabled by removing R14 and soldering 0 Ωon the R183 footprint.

Caution is needed for ECG detection and heartbeat measurement. The recommendations are:

1. Humid air and fingers
2. Large area in contact with the electrodes
3. Relaxed body with no movement
4. Digital (and or) analog filtering to improve 50 Hz or 60 Hz noise rejection
5. Third electrode usage connected to GND
6. Evaluation board preferably powered by USB
7. Body must be electrically isolated from earth

2.18 PT100 temperature sensor

There is a current source circuit on the STM32373C-EVAL evaluation board to provide a fixed 1 mA current (when VDD = 3.3 V) to the platinum probe PT100 (R30). The R30 voltage level is directly applied to the sigma delta ADC of the STM32F373VCT6, through PE7, to measure the temperature value on PT100.

For temperatures lower than 100 °C, the resistor value is given by *Equation 1*.

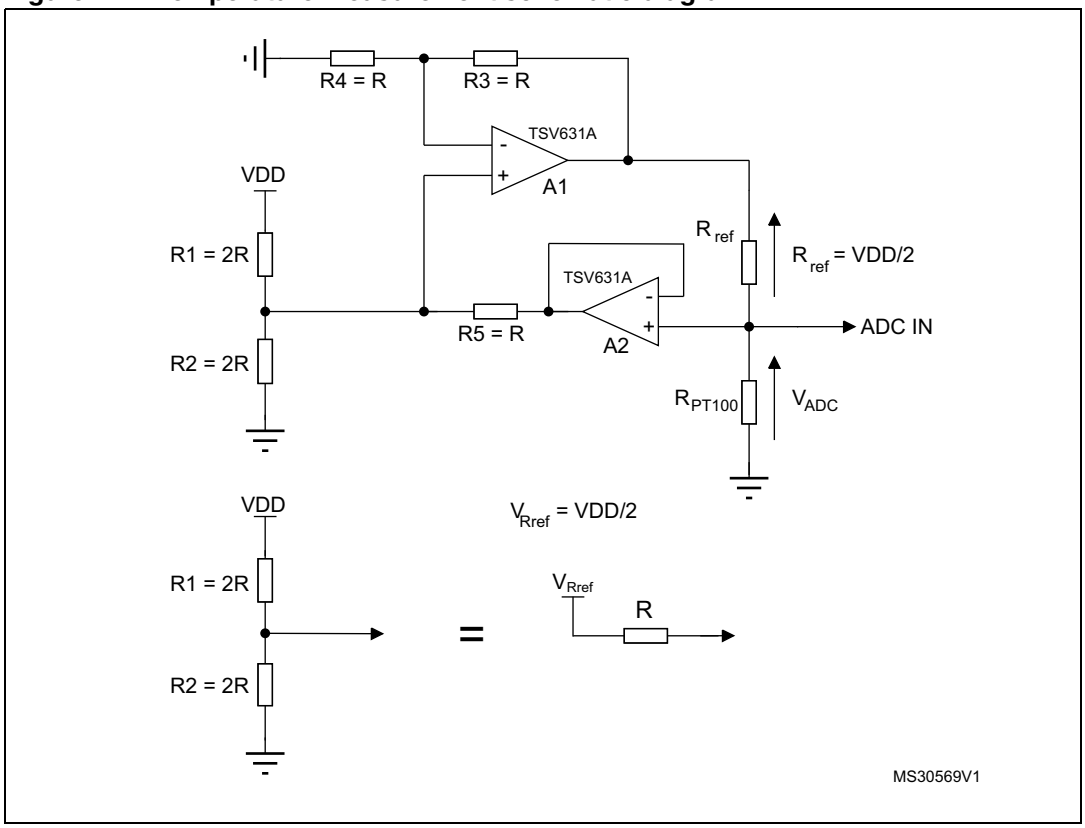
Equation 1

$$R_{PT100} = 100 + 0.385 \times T$$

T is the temperature in degrees Celsius.

The principle of the PT100 temperature sensor measurement is given in *Figure 4*.

Figure 4. Temperature measurement schematic diagram



The operational amplifier, A1, and the resistors R1 to R5 form a differential amplifier with a differential gain (G_{A1}).

Due to the resistor values chosen, G_{A1} is equal to 1. This is known because the resistor bridge, R1 and R2, connected to VDD is equivalent to the VDD/2 generator where R1/2 = R internal resistor.

The voltage on Rref is given in *Equation 2* to *Equation 5*.

Equation 2

$$V_{OUTA1} = V_{REF} + V_{OUTA2} \text{ (since } G_{A1} = 1)$$

Equation 3

$$V_{OUTA2} = V_{PT100}$$

Equation 4

$$V_{REF} = V_{OUTA1} - V_{PT100}$$

Equation 5

$$V_{Rref} = V_{ref} = VDD / 2$$

The voltage on the ADC input is given in *Equation 6*.

Equation 6

$$V_{ADC} = V_{PT100} = V_{Rref} \times R_{PT100} / R_{ref} = R_{PT100} \times VDD / (2 \times R_{ref})$$

The measured PT100 value given by the ADC is shown in *Equation 7*.

Equation 7

$$R_{PT100} = [V_{ref\_ADC} \times N / (2^{16} - 1)] \times 2 \times R_{ref} / (VDD)$$

Where:

- N is the value returned by the ADC corresponding to the voltage measured.
- V_{ref_ADC} is the ADC reference voltage (SD_VREF+ in *Figure 26*).

If V_{ref_ADC} = VDD, the R_{PT100} value becomes as shown in *Equation 8*.

Equation 8

$$R_{PT100} = [N / (2^{16} - 1)] \times 2 \times R_{ref}$$

Conclusion

When the JP17 jumper is closed and the external reference voltage selected (V_{ref_ADC}) equals VDD, the temperature measurement becomes VDD independent.

Table 16 shows the voltage range corresponding to different temperatures for the ADC IN of the STM32F373VCT6 where gain = 16.

Table 16. Temperature sensor voltage range

VDD = 3.3 V	Temperature (°C)	Resistance (Ω)	Voltage (mV)	Vin ADC (V)
Rref = 1.8 KΩ	0	100	100	1.6
	20	107.7	107.7	1.7
	50	119.2	119.2	1.9

Note: A 100 Ω 0.1% resistor, R121, is used to calibrate PT100 by setting JP18.

Table 17. PT100-related jumper

Jumper	Description and jumper setting	
JP18	The 100-ohm 0.1% resistor is connected for calibration when JP18 is set as shown to the right:	
	PT100 resistor is connected to measure temperature when JP18 is set as shown to the right: This is the default setting.	

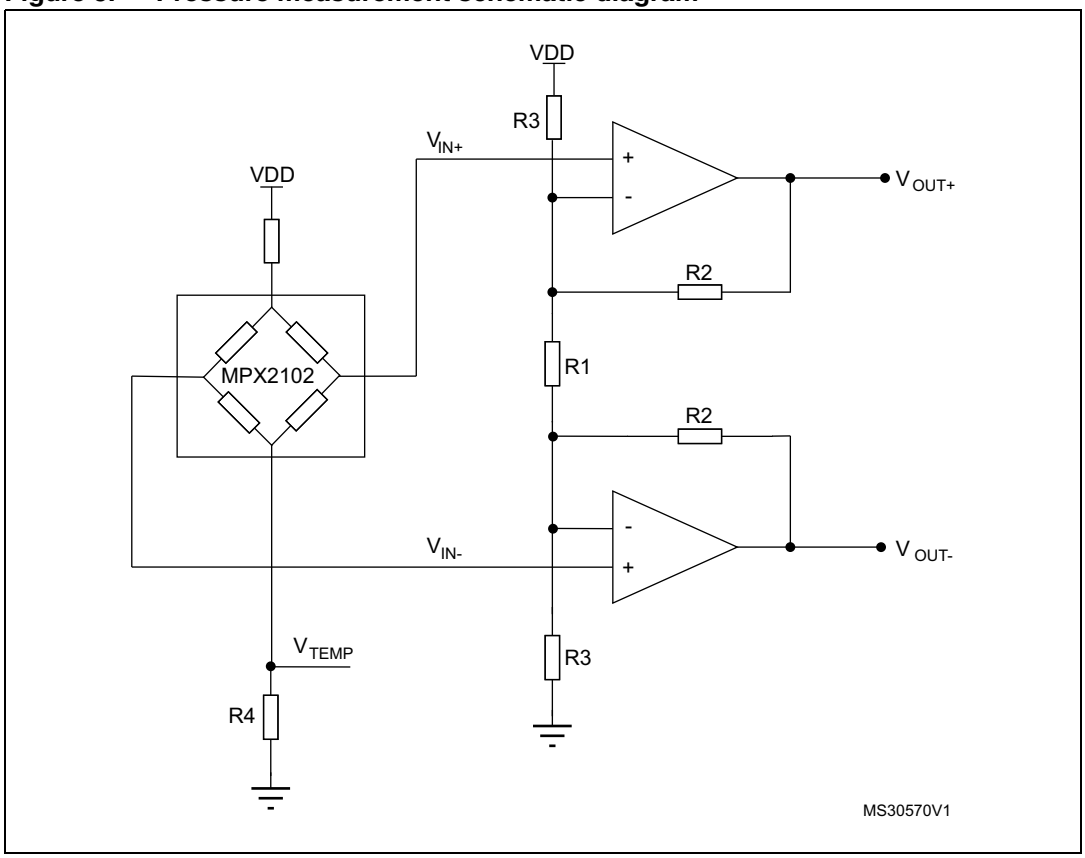
Note: The temperature result measured from PT100 is slightly higher than ambient temperature due to board heat.

2.19 Pressure sensor

An absolute pressure sensor with 1000 HP, full scale MPX2102, and an analog front end is implemented on the STM32373C-EVAL board. The output differential pair is connected to the sigma delta ADC in the STM32F373VCT6 via PE8 (P) and PE9 (N).

The principle of the pressure measurement is given in *Figure 5*.

Figure 5. Pressure measurement schematic diagram



The differential voltage, at output, of the amplifier is given in *Equation 9*.

Equation 9

$$V_{OUT+} - V_{OUT-} = (V_{IN+} - V_{IN-}) \times (G + R2/R3) - VDD \times R2/R3$$

where:

- G represents the operational amplifier differential gain when R3 is infinite.
- G = 2 * R2/R1 + 1

The operational amplifier differential input voltage provided by the pressure sensor is given in *Equation 10*.

Equation 10

$$V_{IN+} - V_{IN-} = P_m \times K \times VDD$$

Where:

- P_m = the pressure measured
- K = sensitivity of the sensor (40 mV for VDD = 10 V and 1000 HPa)

The ADC output is related to the differential voltage by *Equation 11*.

Equation 11

$$V_{ADC} = V_{ref\_ADC} \times N / (2^{16} - 1) = [P_m \times K \times VDD \times (G + R2/R3) - VDD \times R2/R3] \times G_{ADC}$$

where:

- N is the value returned by the ADC corresponding to the pressure measured
- V_{ref_ADC} is the ADC reference voltage (SD_VREF+ in *Figure 26*)
- G_{ADC} is the ADC digital gain

So, if V_{ref_ADC} = VDD *Equation 11* becomes *Equation 12*.

Equation 12

$$N / (2^{16} - 1) = [P_m \times K \times (G + R2/R3) - R2/R3] \times G_{ADC}$$

Conclusion

1. When the ADC external reference voltage is selected and JP17 jumper is closed, V_{ref_ADC} = VDD so the pressure measurement becomes VDD independent.
2. The R2/R3 term in *Equation 11* and *Equation 12* allows the offset voltage corresponding to atmospheric pressure to be partially reduced. Consequently, the digital gain can be increased to improve sensitivity.

Note: V_{TEMP} may be used to compensate the temperature sensor drift by measuring the sensor current change with temperature.

2.20 Analog input

Three 2-pin connectors, CN9, CN10 and CN11, are connected to STM32F373VCT6 as external analog inputs or DAC outputs.

CN9 connected to Sigma Delta ADC through PE11: a low-pass filter can be implemented for the 2-pin connector by replacing R212 and C118 for ADC input with the right values of the resistor and capacitor as required by end user's application.

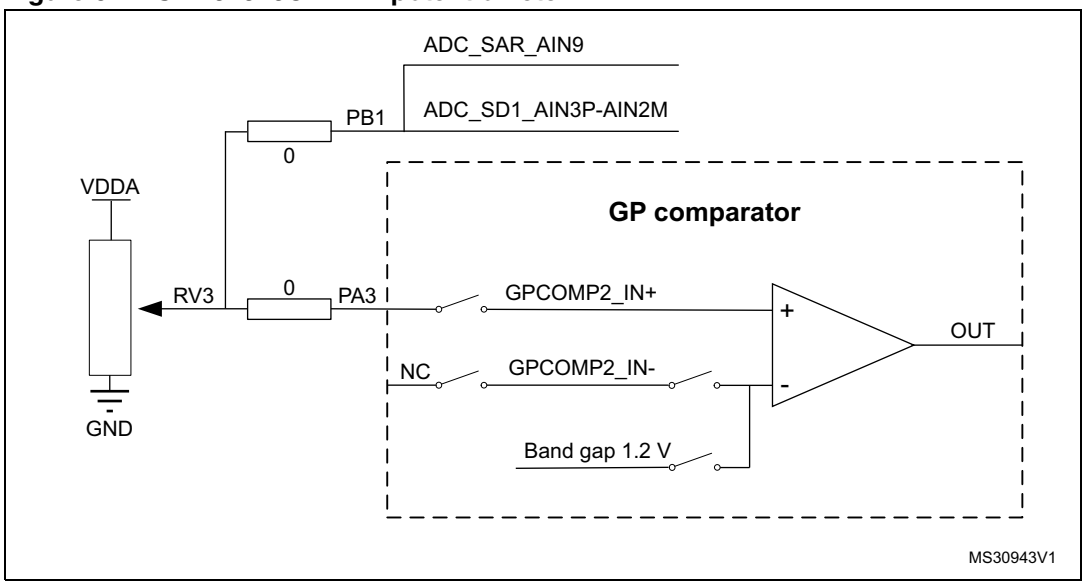
CN10 connected to ADC SAR input and DAC output through PA5: a low-pass filter can be implemented for the 2-pin connector by replacing R42 and C21 for ADC input or replacing R40 and C21 for DAC output with the right values of the resistor and capacitor as required by end user's application.

CN11 connected to ADC SAR input and DAC output through PA4: a low-pass filter can be implemented for the 2-pin connector by replacing R45 and C26 for ADC input or replacing R43 and C26 for DAC output with the right values of the resistor and capacitor as required by end user's application.

2.21 Potentiometer

A 10K ohm potentiometer RV3 is connected to comparator 2 through PA3 and ADC through PB1 (default connection), as shown in *Figure 6*.

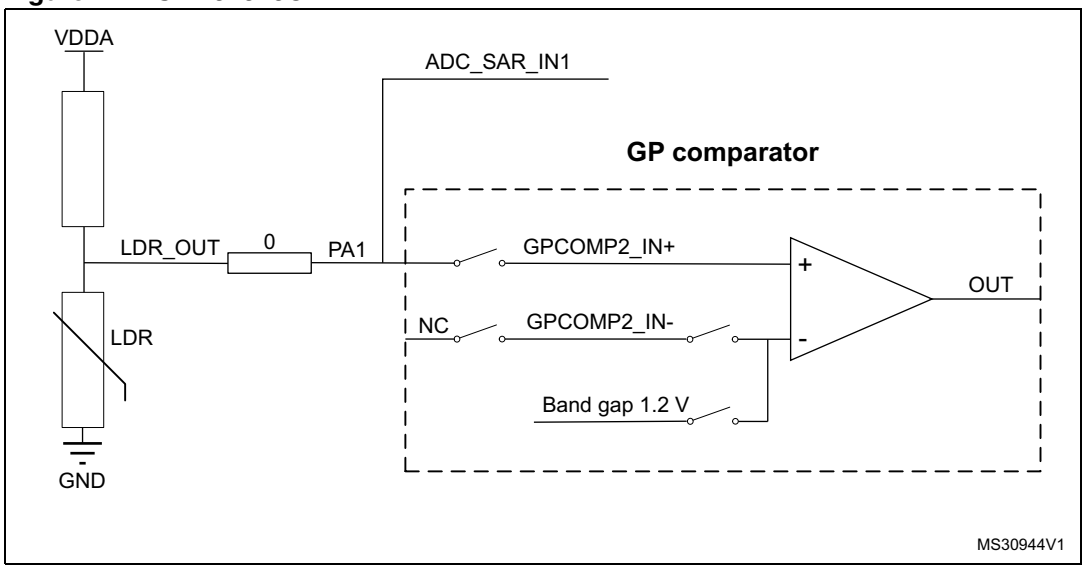
Figure 6. STM32373C-EVAL potentiometer



2.22 LDR

A light dependent resistor (LDR) is connected to ADC or comparator 1 through PA1, as shown in *Figure 7*.

Figure 7. STM32373C-EVAL LDR



2.23 Temperature sensor

Temperature sensor STLM75M2E is connected to the I2C2 bus of STM32F373VCT6 when jumpers JP4 and JP5 are set as shown in *Table 10*. It shares the same I2C2 bus with RF EEPROM, Audio codec and DDC on the HDMI_Source connector.

I2C address of temperature sensor is 0b100100(A0). A0 can be 0 or 1 depending on the setting of SB27.

Table 18. Temperature sensor related solder bridge

Solder bridge	Description
SB27	I2C address A0 is 0 when SB27 is open (default setting).
	I2C address A0 is 1 when SB27 is closed

Note: The temperature result measured from STLM75M2E is slightly higher than ambient temperature due to board heat.

2.24 Display and input devices

The 240x320 TFT color LCD connected to port SPI3 of STM32F373VCT6 (shared with the MicroSD card) and four general-purpose color LEDs (LD1, LD2, LD3, LD4) are available as display devices. LED LD9 is connected with PA7 to show the status of comparator 2 when debugging. The 4-direction joystick (U34) with selection wakeup button (B2) and key button (B3) are available as input devices.

The LCD can be enabled by chip select signal PD2 and this signal should be set as open-drain output pin in STM32F373VCT6. All joystick signals should be set as pull-down input pin in STM32F373VCT6.

Table 19. LCD modules

TFT LCD CN20		
Pin on CN20	**Description**	**Pin connection**
1	CS	PD2
2	SCL	PC10
3	SDI	PC12
4	RS	-
5	WR	-
6	RD	-
7	SDO	PC11
8	RESET	RESET#
9	VDD	3.3V
10	VCI	3.3V
11	GND	GND
12	GND	GND
13	BL_VDD	3.3V
14	BL_Control	3.3V
15	BL_GND	GND
16	BL_GND	GND

3 Connectors

3.1 HDMI sink connector CN1

Figure 8. HDMI sink connector CN1 (front view)

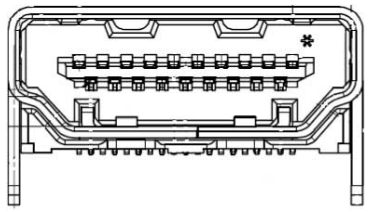


Table 20. HDMI sink connector CN1

Pin number	Description	Pin number	Description
1, 3, 4, 6, 7, 9, 10, 12	TMDS differential signal pair connected to CN2	15	I2C1_SCL (PB6)
2, 5, 8, 11, 17	GND	16	I2C1_SDA (PB7)
13	CEC (PB8 through NMOS)	18	HDMI_5V_Sink
14	NC	19	HPD (PE0 through transistor)

3.2 HDMI source connector CN2

Figure 9. HDMI source connector CN2 (front view)

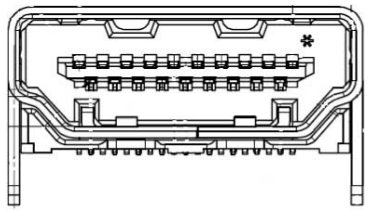


Table 21. HDMI source connector CN2

Pin number	Description	Pin number	Description
1, 3, 4, 6, 7, 9, 10, 12	TMDS differential signal pair connected to CN1	15	I2C2_SCL (PA9)
2, 5, 8, 11, 17	GND	16	I2C2_SDA (PA10)
13	CEC (PB8 through NMOS)	18	HDMI_5V_Source from power switch U1
14	NC	19	HPD (PD7)

3.3 RF EEPROM daughterboard connector CN3

Figure 10. RF EEPROM daughterboard connector CN3 (front view)

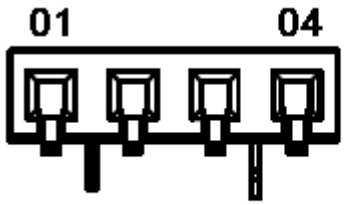
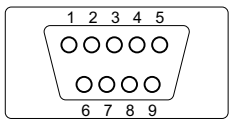


Table 22. RF EEPROM daughterboard connector CN3

Pin number	Description	Pin number	Description
1	SDA (PA10)	3	+5 V
2	SCL (PA9)	4	GND

3.4 CAN D-type 9-pin male connector CN5

Figure 11. CAN D-type 9-pin male connector CN5



Front view

MS19140V2

Table 23. CAN D-type 9-pin male connector CN5

Pin number	Description	Pin number	Description
1, 4, 8, 9	NC	7	CANH
2	CANL	3, 5, 6	GND

3.5 MicroSD connector CN7

Figure 12. MicroSD connector CN7

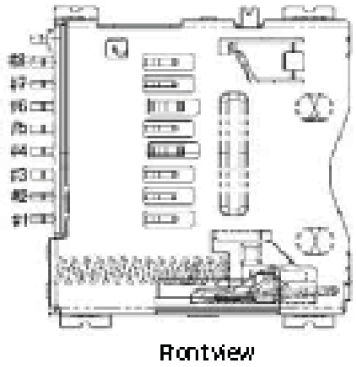


Table 24. MicroSD connector CN7

Pin number	Description	Pin number	Description
1	NC	6	Vss/GND
2	MicroSDcard_CS (PE2)	7	MicroSDcard_DOUT (PC11)
3	MicroSDcard_DIN (PC12)	8	NC
4	+3V3	9	GND
5	MicroSDcard_CLK (PC10)	10	MicroSDcard_detect (PE3)

3.6 Sigma Delta ADC connector CN9

Figure 13. Sigma Delta ADC connector CN9 (top view)

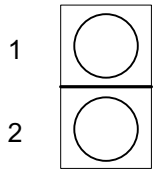


Table 25. Sigma Delta ADC connector CN9

Pin number	Description	Pin number	Description
1	AGND	2	Sigma Delta ADC input PE11

3.7 SAR ADC DAC connector CN10

Figure 14. SAR ADC DAC connector CN10 (top view)

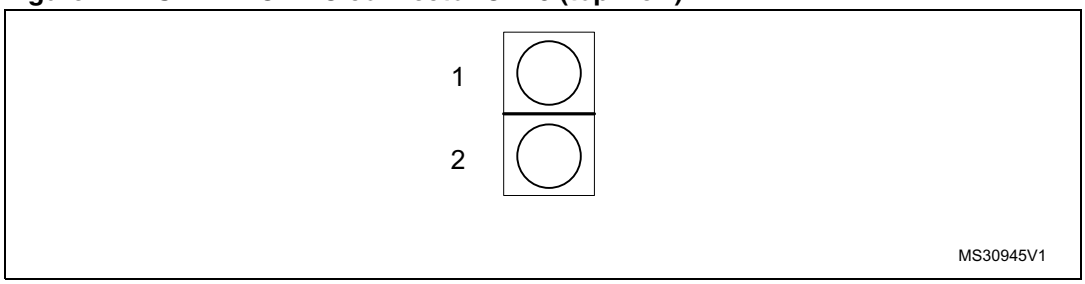


Table 26. SAR ADC DAC connector CN10

Pin number	Description	Pin number	Description
1	AGND	2	ADC-DAC input & output PA5

3.8 SAR ADC DAC connector CN11

Figure 15. SAR ADC DAC connector CN11 (top view)

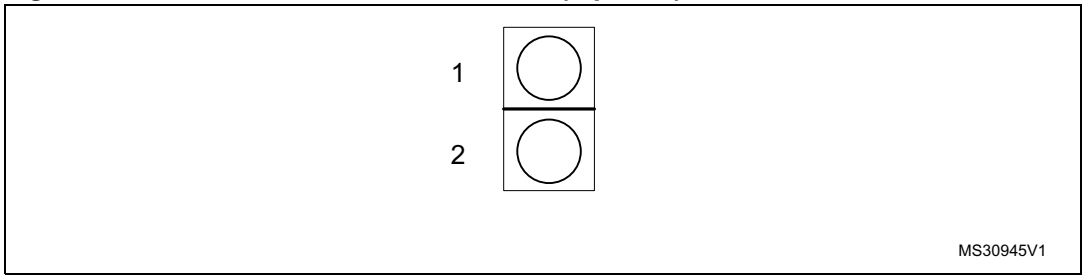
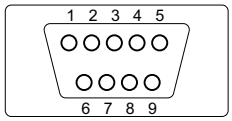


Table 27. SAR ADC DAC connector CN11

Pin number	Description	Pin number	Description
1	GND	2	ADC-DAC input & output PA4

3.9 RS-232 connector CN12

Figure 16. RS-232 connector CN12 (front view)



MS19140V2

Table 28. RS-232 connector CN12 with HW flow control and ISP support

Pin number	Description	Pin number	Description
1	NC	6	Bootloader_BOOT0
2	RS232_RX (PD6)	7	RS232_RTS(PD4)
3	RS232_TX (PD5)	8	RS232_CTS(PD3)/Bootloader_RESET
4	NC	9	NC
5	GND		

3.10 Daughterboard extension connectors CN13 and CN14

Two 50-pins male header connectors CN13 and CN14 can be used to connect with daughterboard or standard wrapping board to STM32373C-EVAL evaluation board. All GPI/Os are available on them. The space between these two connectors and position of power, GND and RESET pins are defined as a standard which allows to develop common daughterboards for several evaluations boards.

The standard width between CN13 pin1 and CN14 pin1 is 2700 mils (68.58 mm). The standard was implemented on the majority of evaluation boards. Each pin on CN13 and CN14 can be used by a daughterboard after disconnecting it from the corresponding function block on STM32373C-EVAL evaluation board. Please refer to *Table 29* and *Table 30* for more details.

Table 29. Daughterboard extension connector CN13

Pin	Description	Alternative function	How to disconnect from function block on STM32373C-EVAL board
1	GND	-	-
3	PC7	I2S_CK	-
5	PC9	I2S_DIN	-
7	PA10	I2C2_SDA	Keep JP5 on open.
9	PA11	USB_DM	Remove R61.
11	PC14	OSC32_IN	Remove R36, close SB25.
13	PA13	SWDAT/JTMS	Disconnect CN15, CN17.
15	PC15	OSC32_OUT	Remove R37, close SB26.
17	PA15	JTDI	Disconnect CN15, CN17.
19	GND	-	-
21	PD0	CAN_RX	Remove R10.
23	PD2	LCD_CS	Remove R163.
25	PD4	USART2_RTS	Remove R46.
27	PD6	USART2_RX/ IRDA	Remove R199.
29	PD7	HDMI_HPD_SOURCE	Remove R135.
31	PB3	JTDO/TRACESWO	Disconnect CN15, CN17.
33	PB5	IR_IN	Remove R113.
35	PB7	I2C1_SDA	Remove R148.
37	PB9	IR-Out_LED	Remove R249.
39	GND	-	-
41	PE3	TRACED0 / uSDcard_Detect	Remove R60, R64.
43	PE5	TRACED2 / SHIELD_CT	Remove R83, mount R95.
45	PF9	JOYSTICK_RIGHT	Remove R91.
47	PF10	JOYSTICK_UP	Remove R69.
49	D5V	-	-

Table 29. Daughterboard extension connector CN13 (continued)

Pin	Description	Alternative function	How to disconnect from function block on STM32373C-EVAL board
2	PC6	I2S_WS	-
4	PC8	I2S_MCK	-
6	PA8	I2C2_SMB	Remove R215.
8	PA9	I2C2_SCL	Keep JP4 on open.
10	GND	-	-
12	PA12	USB_DP	Remove R75.
14	PF6	-	-
16	PA14	SWCLK/JTCK	Disconnect CN15, CN17.
18	PC10	SPI3_SCK	-
20	PC11	SPI3_MISO	Remove R24.
22	PC12	SPI3_MOSI	-
24	PD1	CAN_TX	Remove R248.
26	PD3	USART2_CTS	Remove R210.
28	PD5	USART2_TX/ IRDA	Remove R47.
30	GND	-	-
32	PB4	JNTRST	Disconnect CN15, CN17.
34	PB6	I2C1_SCL	Remove R139.
36	PB8	CEC	Remove R159.
38	PE0	HDMI_HPD_SINK	Remove R176.
40	PE1	-	-
42	PE2	TRACECLK / SPI3_CS_uSDcard	Remove R35, disconnect CN15.
44	PE4	TRACED1 /SHIELD	Remove R72, mount R93.
46	PE6	TRACED3 / WKUP_JOYSTICK_SEL	Remove R85, R89.
48	+3V3	-	-
50	GND	-	-

Table 30. Daughterboard extension connector CN14

Pin	Description	Alternative function	How to disconnect from function block on STM32373C-EVAL board
1	GND	-	
3	PD14	SLIDER_3	Remove R11, close SB9.
5	PD11	AUDIO_RST	Remove R79.
7	PD9	-	-
9	PC13	-	-
11	RESET#	-	-
13	PB15	-	-
15	PB10	-	-
17	PE14	PRESSURE_TEMPERATURE	Remove R196.
19	D5V	-	-
21	PE11	ADC_SD	Remove R39.
23	PF0	OSC_IN	Remove X2, C18, close SB23.
25	PE9	PRESSURE_N	Remove R21, C9, close SB17.
27	PE8	PRESSURE_P	Remove R23, C10, close SB16.
29	PB2	1.8V POR_RFU	Remove R98.
31	PB1	ADC_POT_IN	Remove R52, C62.
33	PC5	USB_DISCONNECT	Remove R51.
35	PA7	COMP2_OUT_LED	Remove R22.
37	PA5	ADC_DAC_SAR2	Remove R40.
39	GND	-	-
41	PA3	COM_IN+	Remove R54.
43	PA1	LDR_OUT	Remove R62.
45	PF2	JOYSTICK_DOWN	Remove R67.
47	PC2	LED3	Remove R77.
49	PC0	LED1	Remove R88.
2	PD15	SLIDER_CT	Remove C7, close SB8.
4	PD13	SLIDER_2	Remove R12, close SB10.
6	PD12	SLIDER_1	Remove R13, close SB11.
8	PD10	-	-
10	GND	-	-
12	PD8	-	-
14	PB14	-	-
16	PE15	-	-
18	PE13	-	-

Table 30. Daughterboard extension connector CN14 (continued)

Pin	Description	Alternative function	How to disconnect from function block on STM32373C-EVAL board
20	PE12	ECG	Remove R14, close SB13.
22	PE10	-	-
24	VDD	-	-
26	PF1	OSC_OUT	Remove R38, close SB24.
28	PE7	RTD_IN	Remove C11, C17, R34, close SB18.
30	GND	-	-
32	PB0	MIC_IN	Remove R136.
34	PC4	-	-
36	PA6	DAC2_OUT1_AUDIO / ECG_DAC	Remove R92, R201.
38	PA4	ADC_DAC_SAR1	Remove R43.
40	PF4	JOYSTICK_LEFT	Remove R68.
42	PA2	KEY_BUTTON	Remove R90.
44	PA0	WKUP_BUTTON / IDD	Remove R150.
46	PC3	LED4	Remove R87.
48	PC1	LED2	Remove R78.
50	GND	-	-

3.11 ETM Trace debugging connector CN15

Figure 17. ETM Trace debugging connector CN15 (top view)

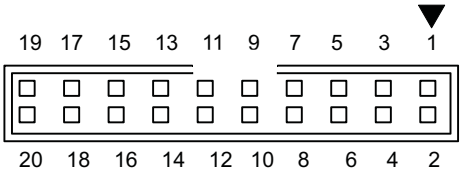


Table 31. ETM Trace debugging connector CN15

Pin number	Description	Pin number	Description
1	VDD power	2	TMS/PA13
3	GND	4	TCK/PA14
5	GND	6	TDO/PB3
7	KEY	8	TDI/PA15
9	GND	10	RESET#
11	GND	12	TraceCLK/PE2
13	GND	14	TraceD0/PE3 or SWO/PB3
15	GND	16	TraceD1/PE4 or nTRST/PB4
17	GND	18	TraceD2/PE5
19	GND	20	TraceD3/PE6

3.12 User USB type B connector CN16

Figure 18. User USB type B connector CN16 (front view)

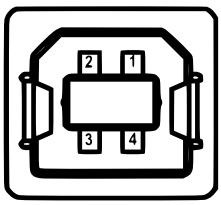


Table 32. User USB type B connector CN16

Pin number	Description	Pin number	Description
1	VBUS (power)	4	GND
2	DM	5, 6	Shield
3	DP		

3.13 JTAG/SWD debugging connector CN17

Figure 19. JTAG/SWD debugging connector CN17 (top view)

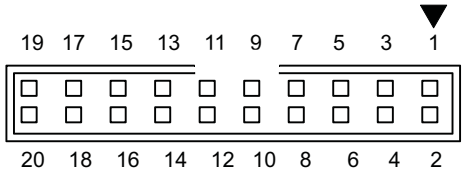


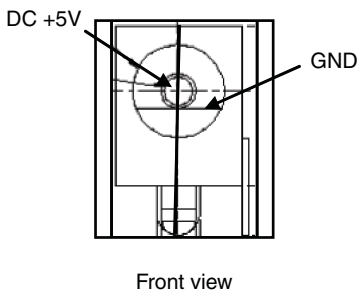
Table 33. JTAG/SWD debugging connector CN17

Pin number	Description	Pin number	Description
1	VDD power	2	VDD power
3	PB4	4	GND
5	PA15	6	GND
7	PA13	8	GND
9	PA14	10	GND
11	RTCK	12	GND
13	PB3	14	GND
15	RESET#	16	GND
17	DBGRQ	18	GND
19	DBGACK	20	GND

3.14 Power connector CN18

The STM32373C-EVAL evaluation board can be powered by a DC 5V power supply via the external power supply jack connector (CN18) shown in *Figure 20*. The central pin of CN18 must be positive.

Figure 20. Power supply connector CN18 (front view)



3.15 ST-LINK/V2 programming connector CN19

Connector CN19 is used only for embedded ST-LINK/V2 programming during board manufacture. It is not populated by default and not for end user.

3.16 TFT LCD connector CN20

A TFT color LCD board is mounted on CN20. Please refer to *Section 2.24: Display and input devices* for more details.

3.17 Audio jack CN21

A 3.5 mm stereo audio jack CN21 connected to audio DAC is available on STM32373C-EVAL board.

3.18 ST-LINK/V2 USB type B connector CN22

USB connector CN22 is used to connect the embedded ST-LINK/V2 to the PC for board-debugging purposes.

Figure 21. USB type B connector CN22 (front view)

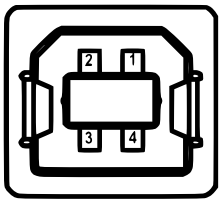


Table 34. USB type B connector CN22

Pin number	Description	Pin number	Description
1	VBUS (power)	4	GND
2	DM	5, 6	Shield
3	DP		

4 Schematics

The following schematics are listed:

Figure 22. Schematic diagram of STM32373C-EVAL

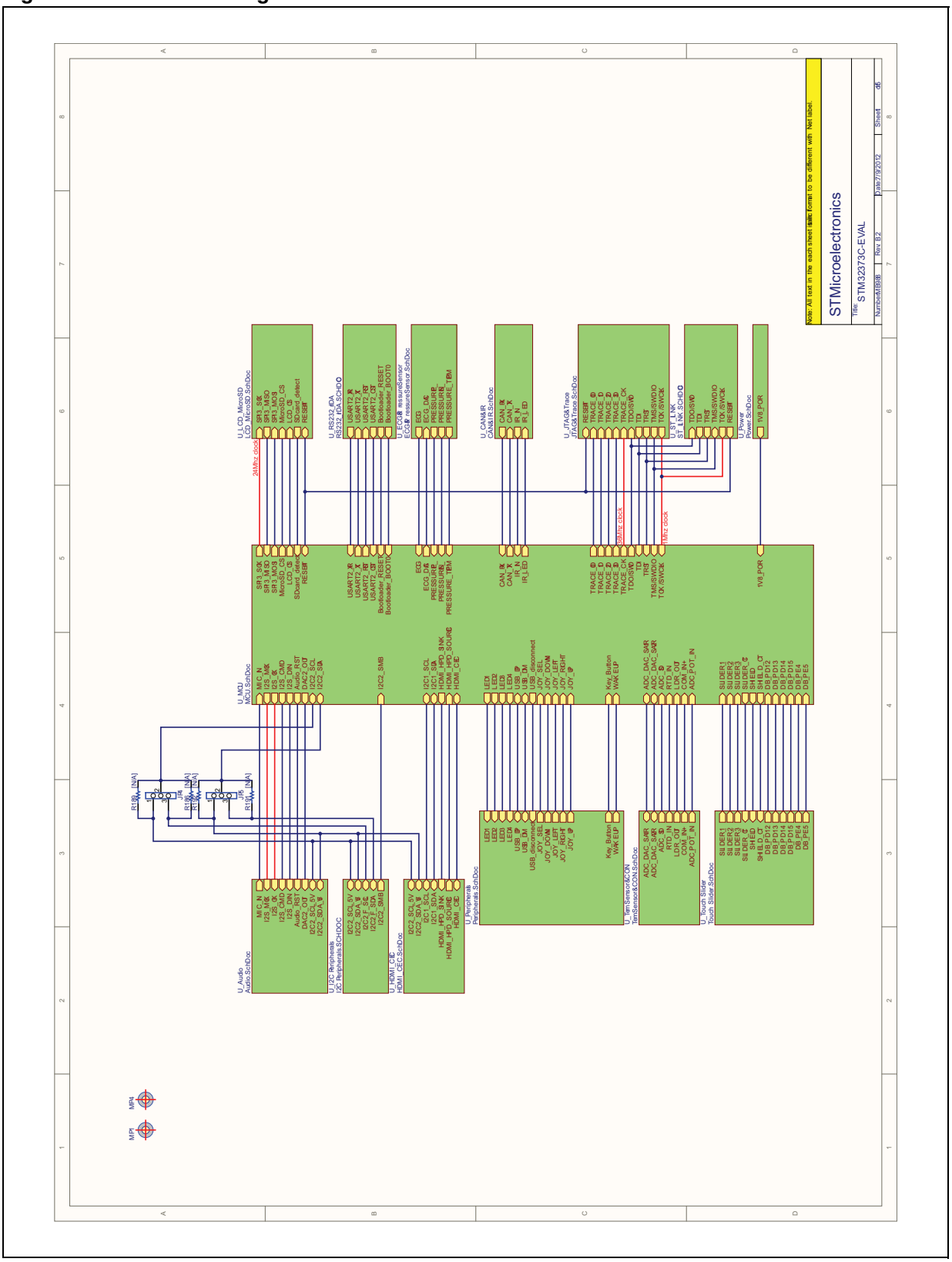


Figure 23. STM32373C-EVAL MCU

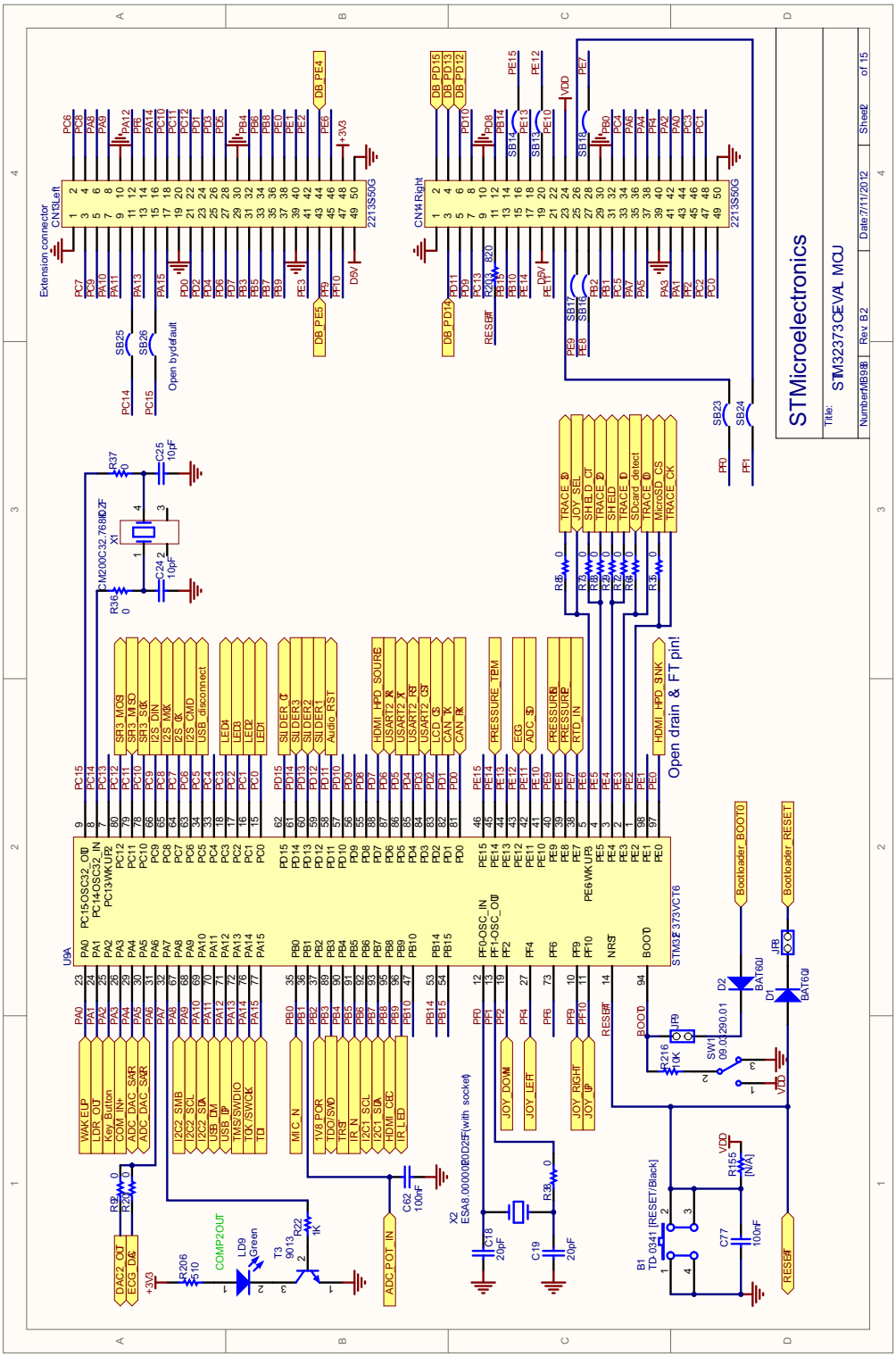


Figure 24. STM32373C-EVAL audio

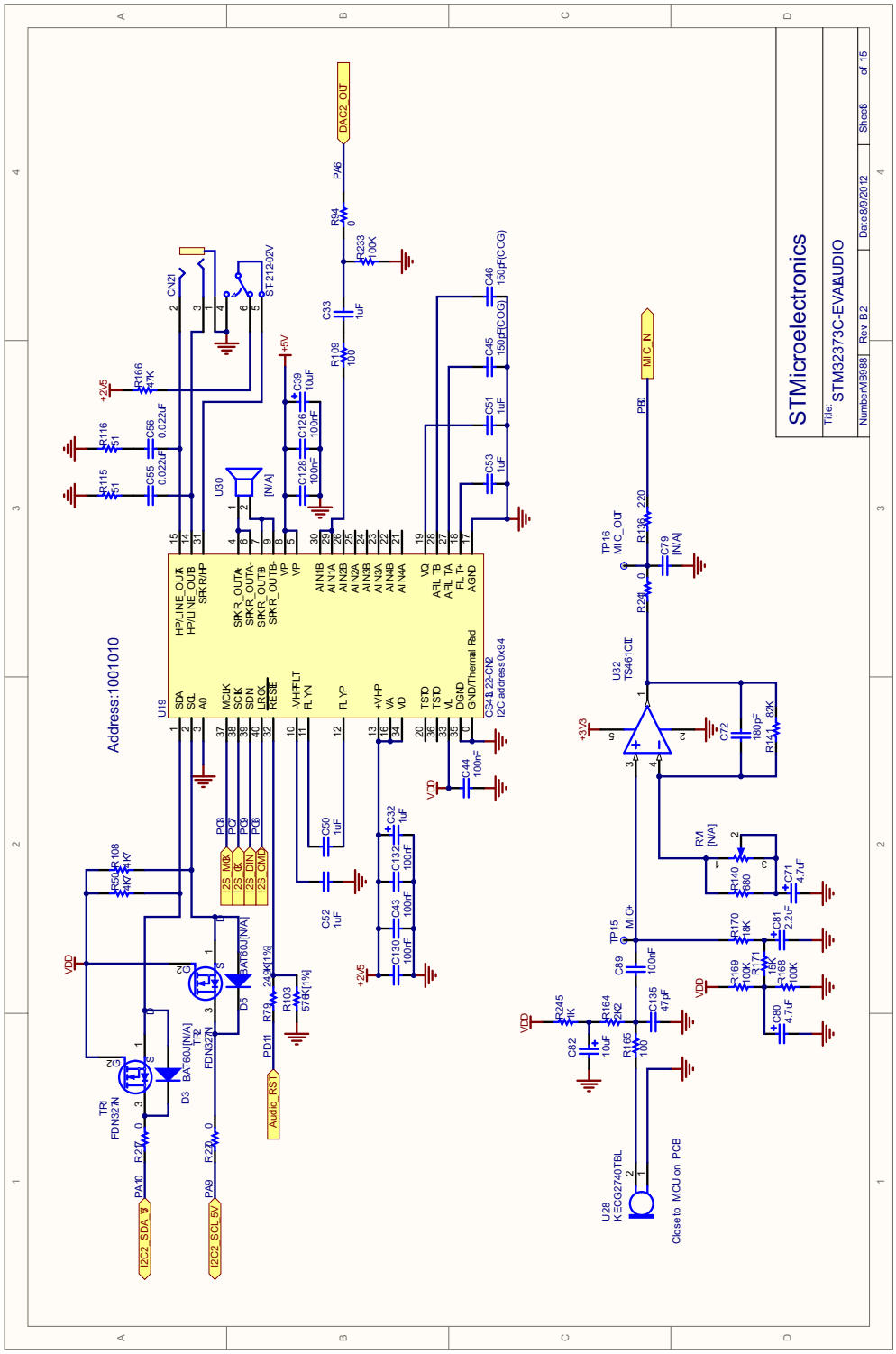


Figure 25. STM32373C-EVAL peripherals

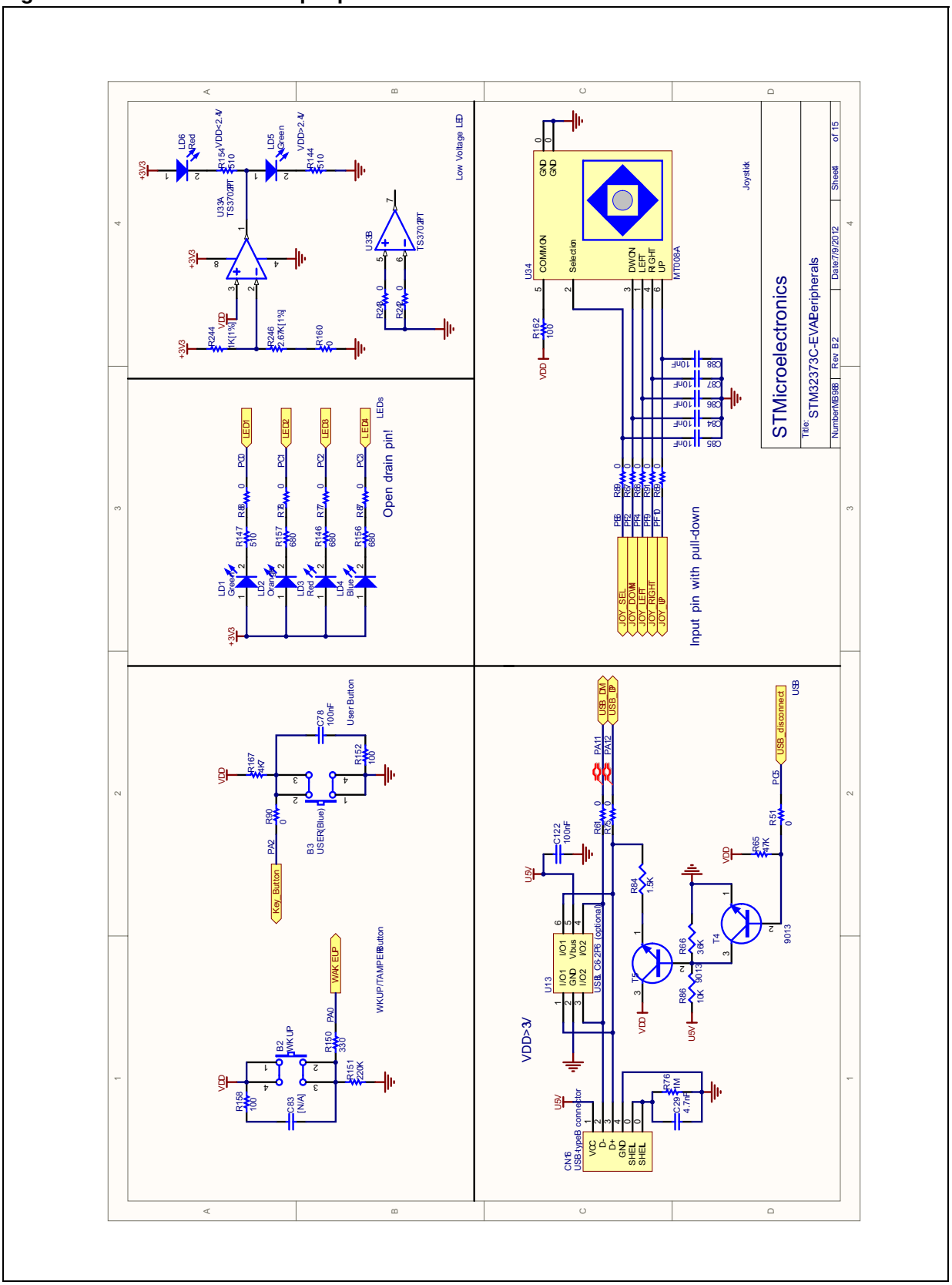


Figure 26. STM32373C-EVAL power

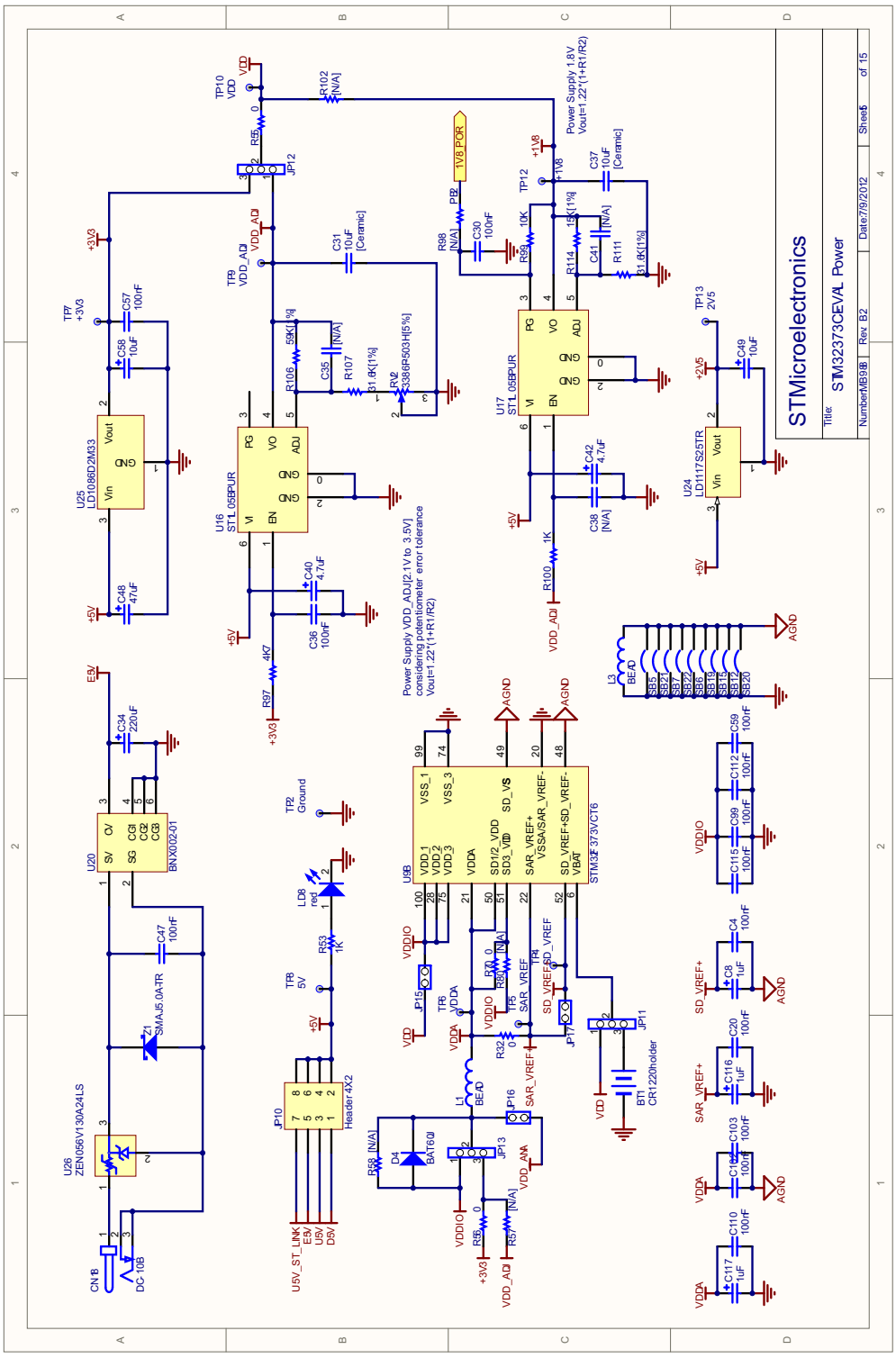


Figure 27. STM32373C-EVAL ST-LINK (JTAG only)

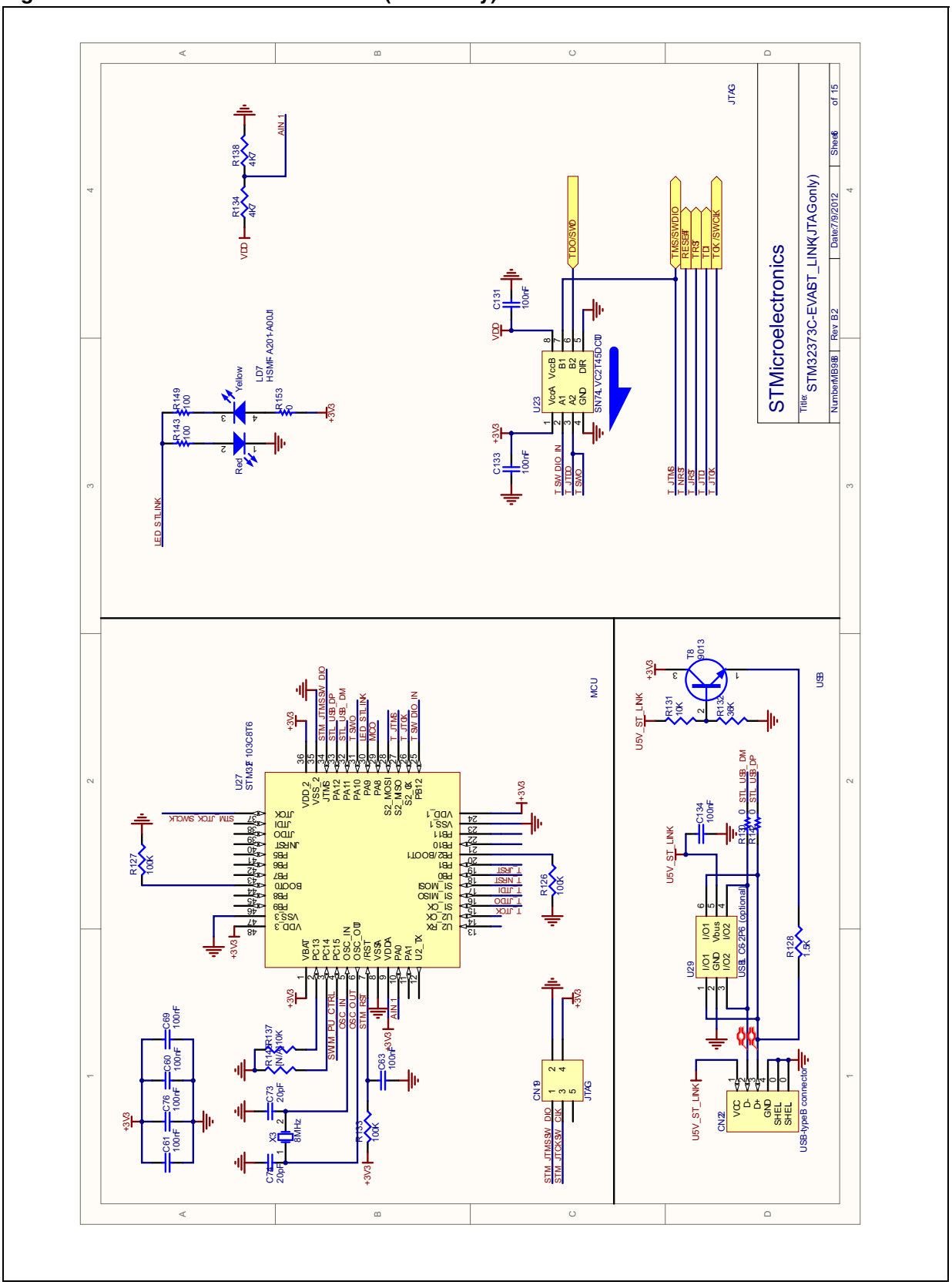


Figure 28. STM32373C-EVAL JTAG and Trace

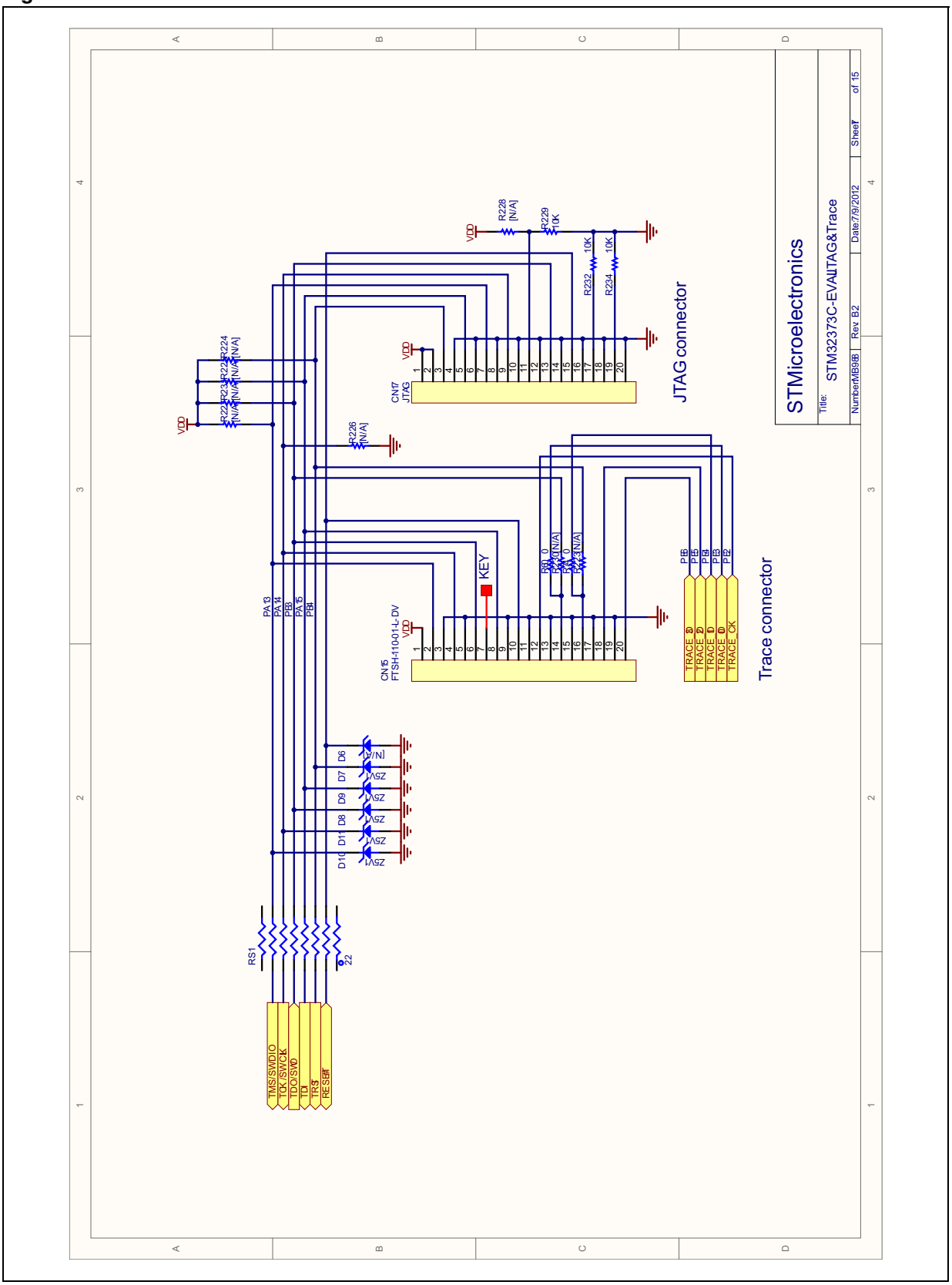


Figure 29. STM32373C-EVAL RS-232 and IrDA

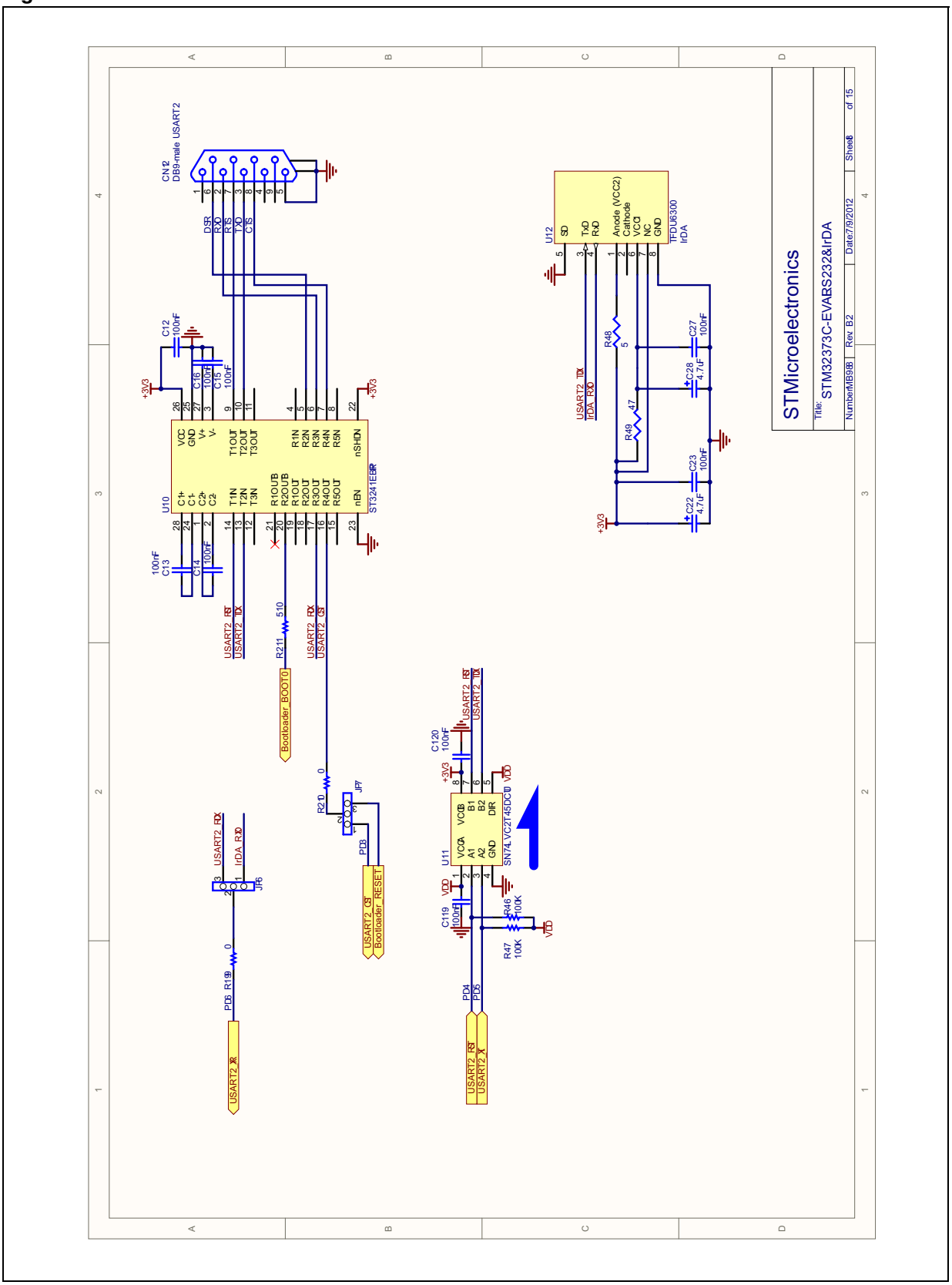


Figure 30. STM32373C-EVAL HDMI_CEC

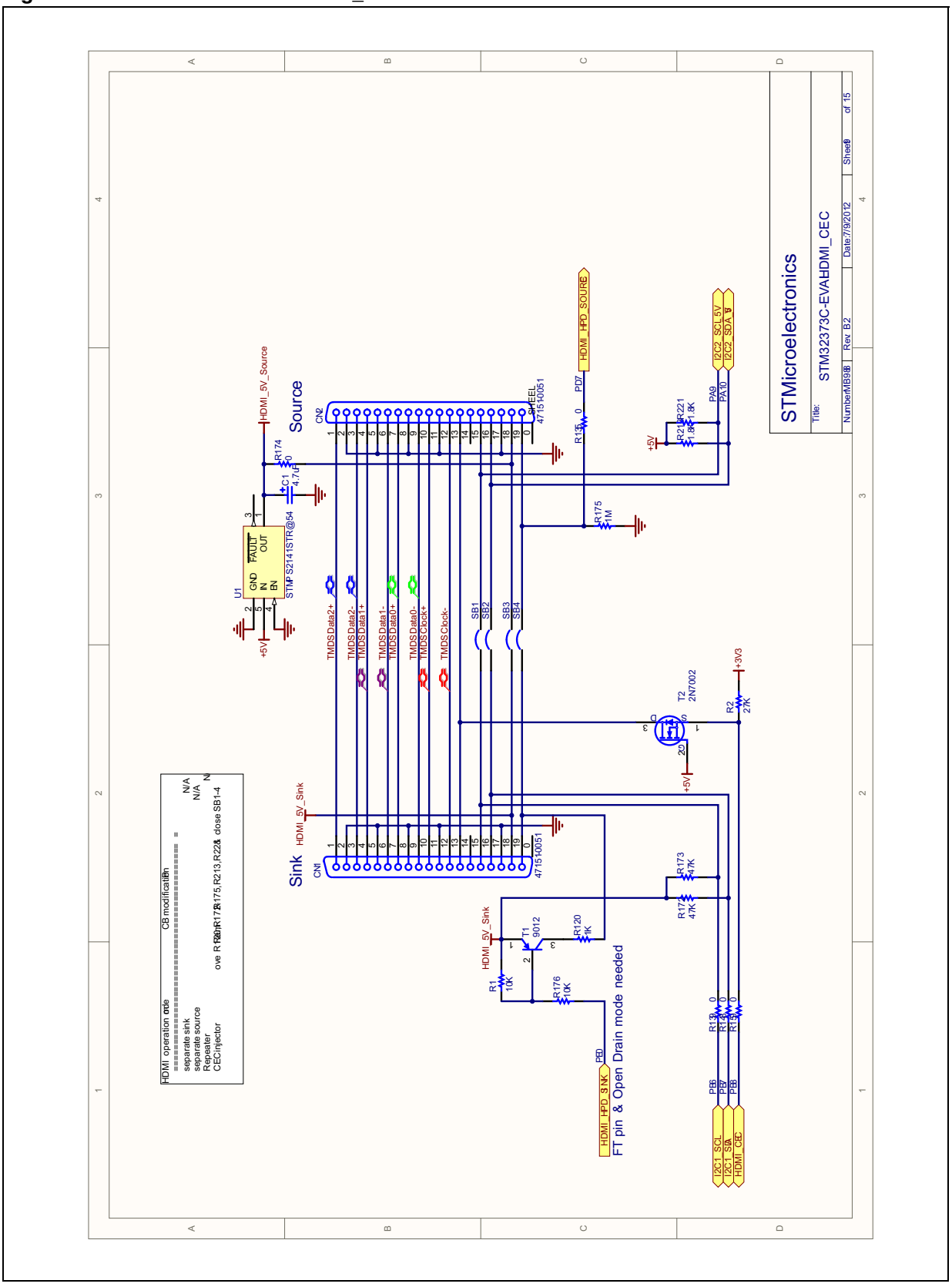


Figure 31. STM32373C-EVAL LCD and SD card

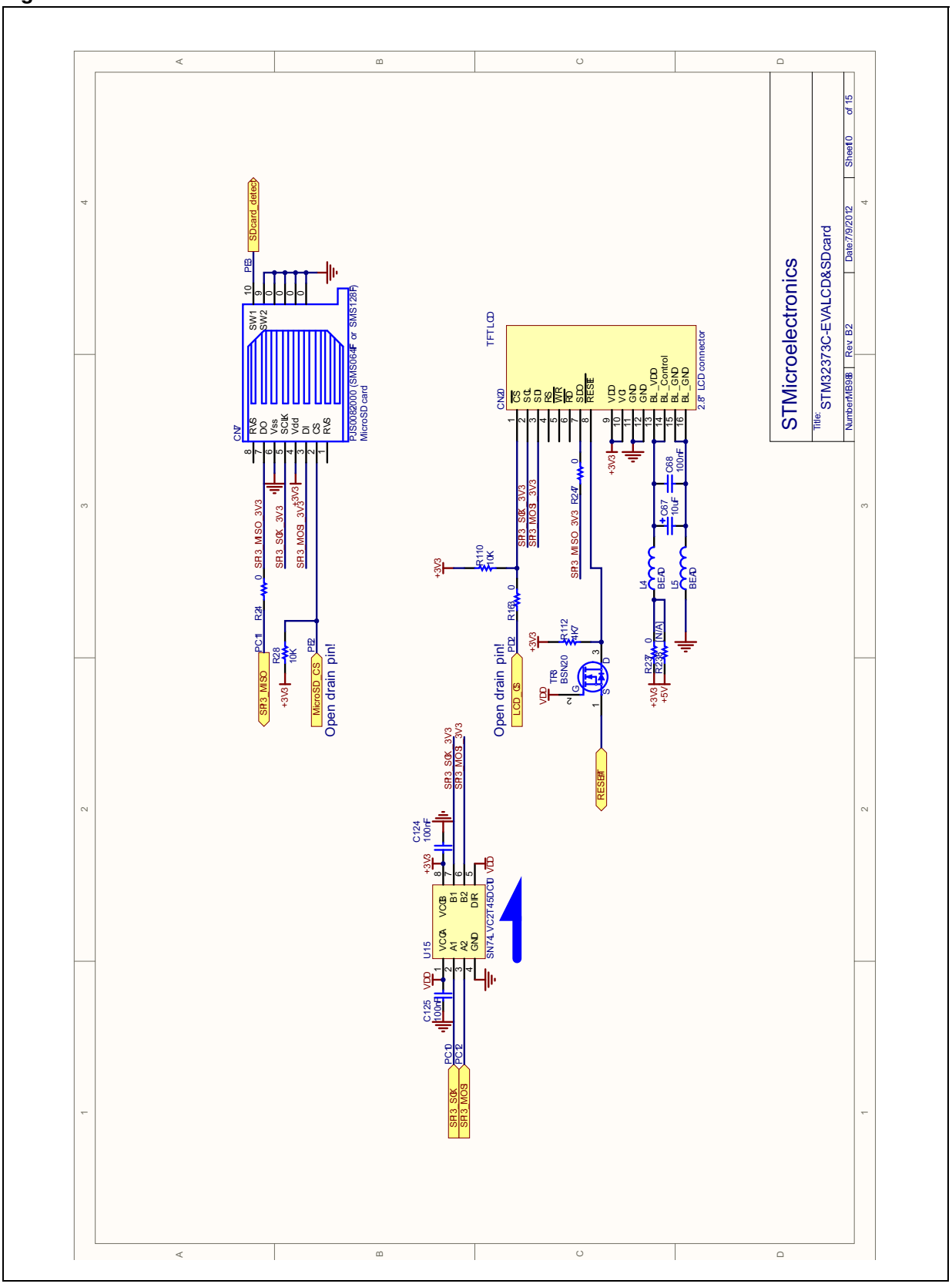


Figure 32. STM32373C-EVAL CAN and IR

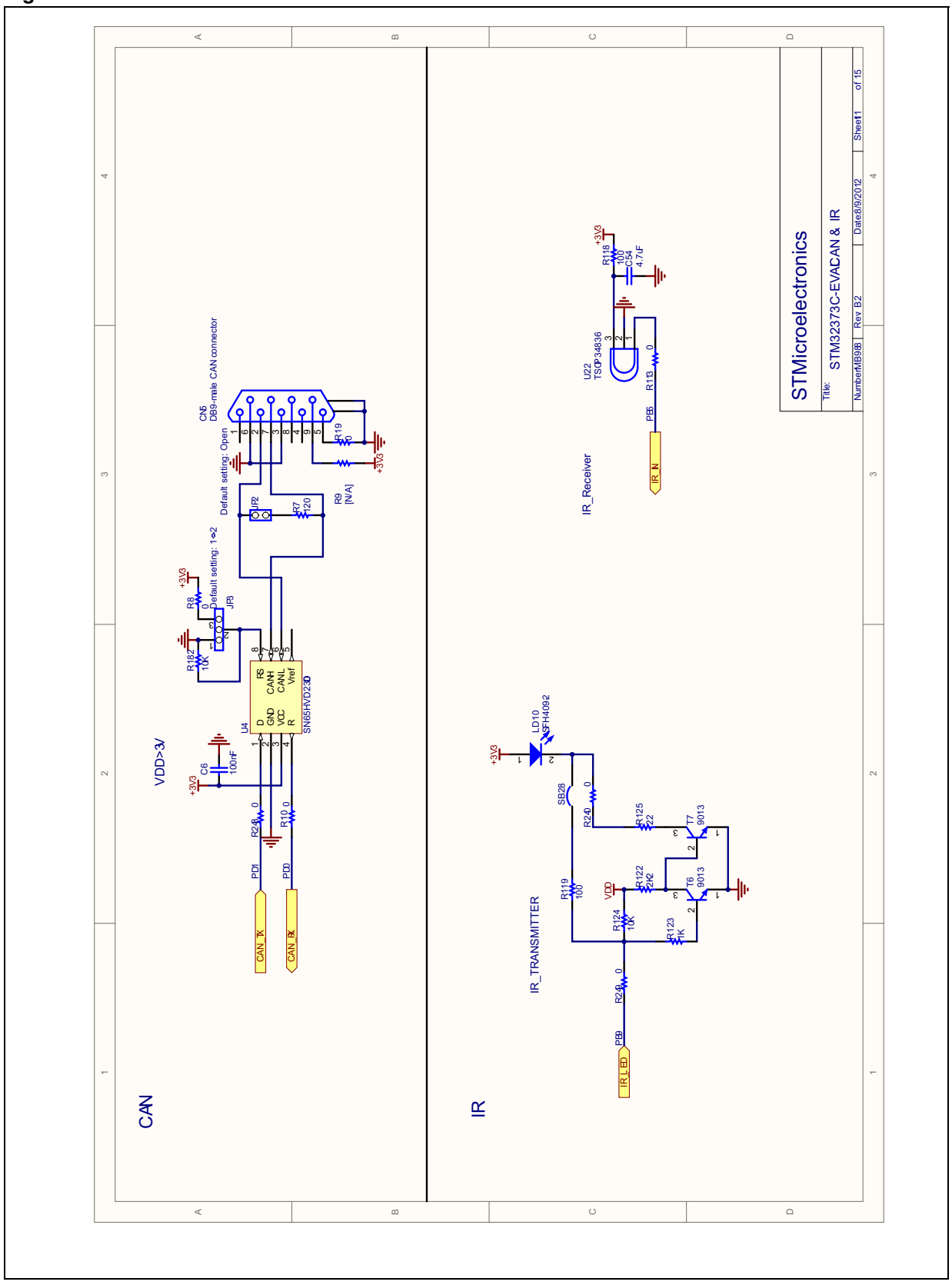


Figure 33. STM32373C-EVAL Touch slider

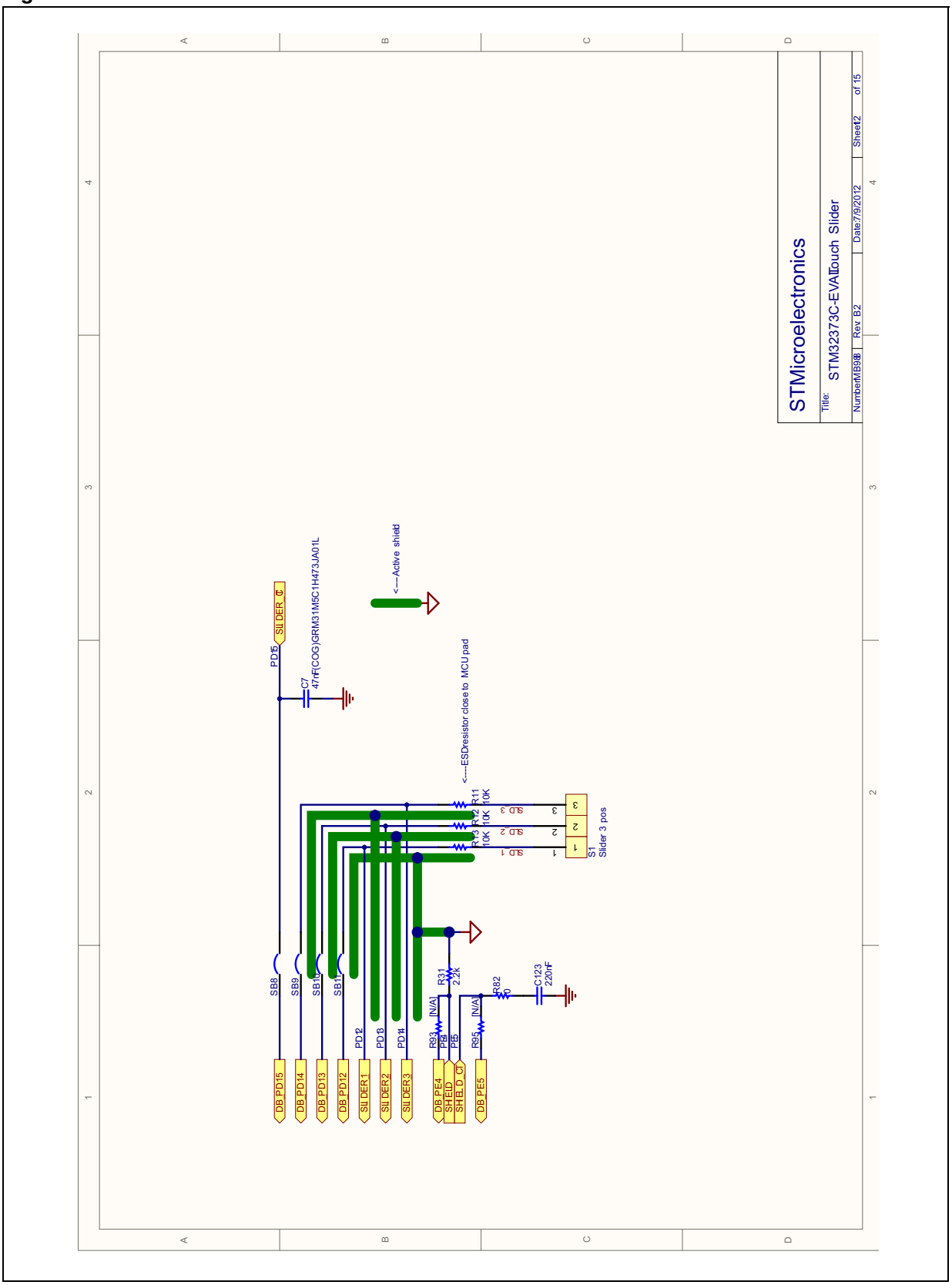


Figure 34. STM32373C-EVAL I2C peripherals

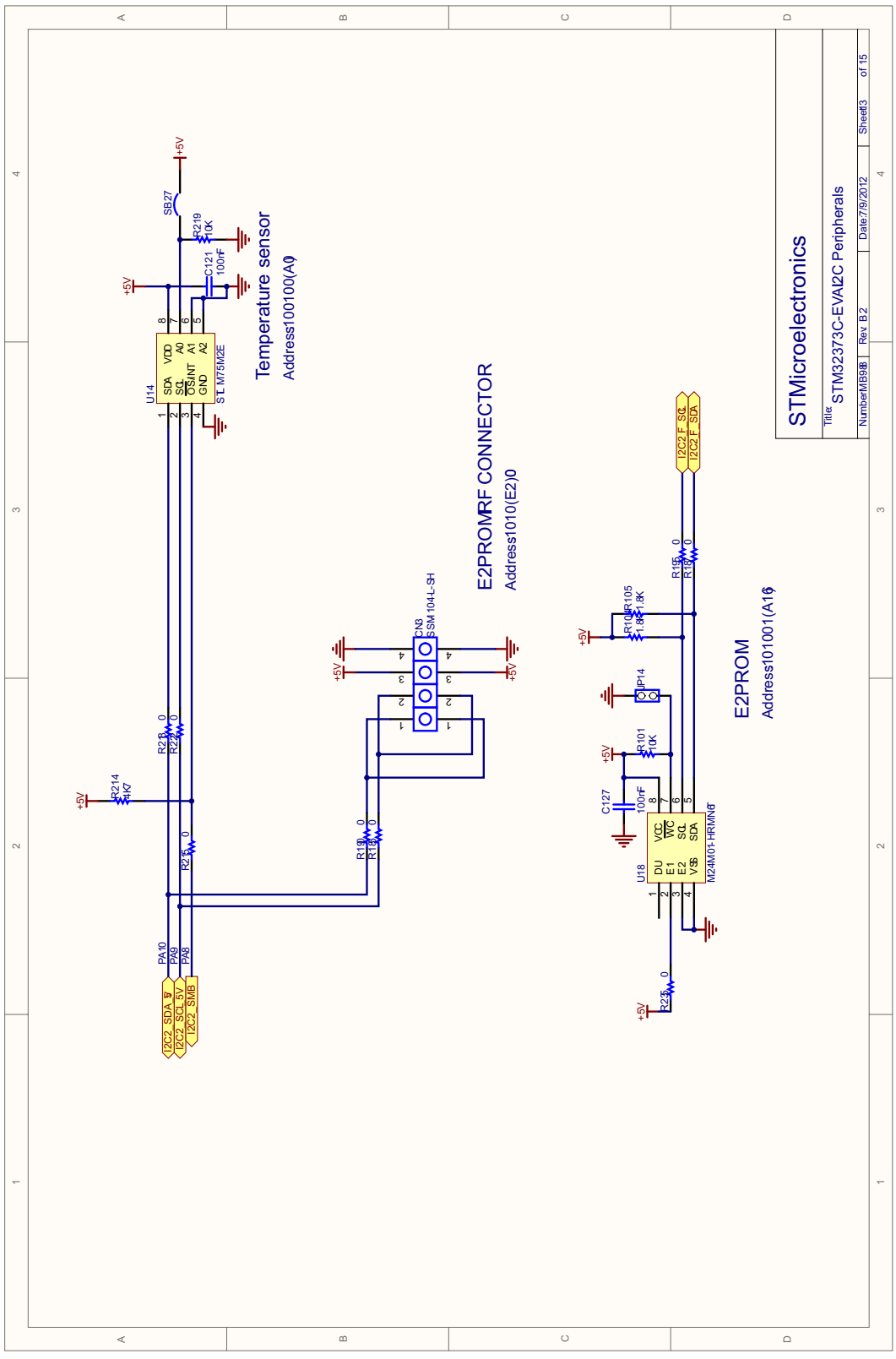


Figure 35. STM32373C-EVAL PT100 temperature sensor and connectors

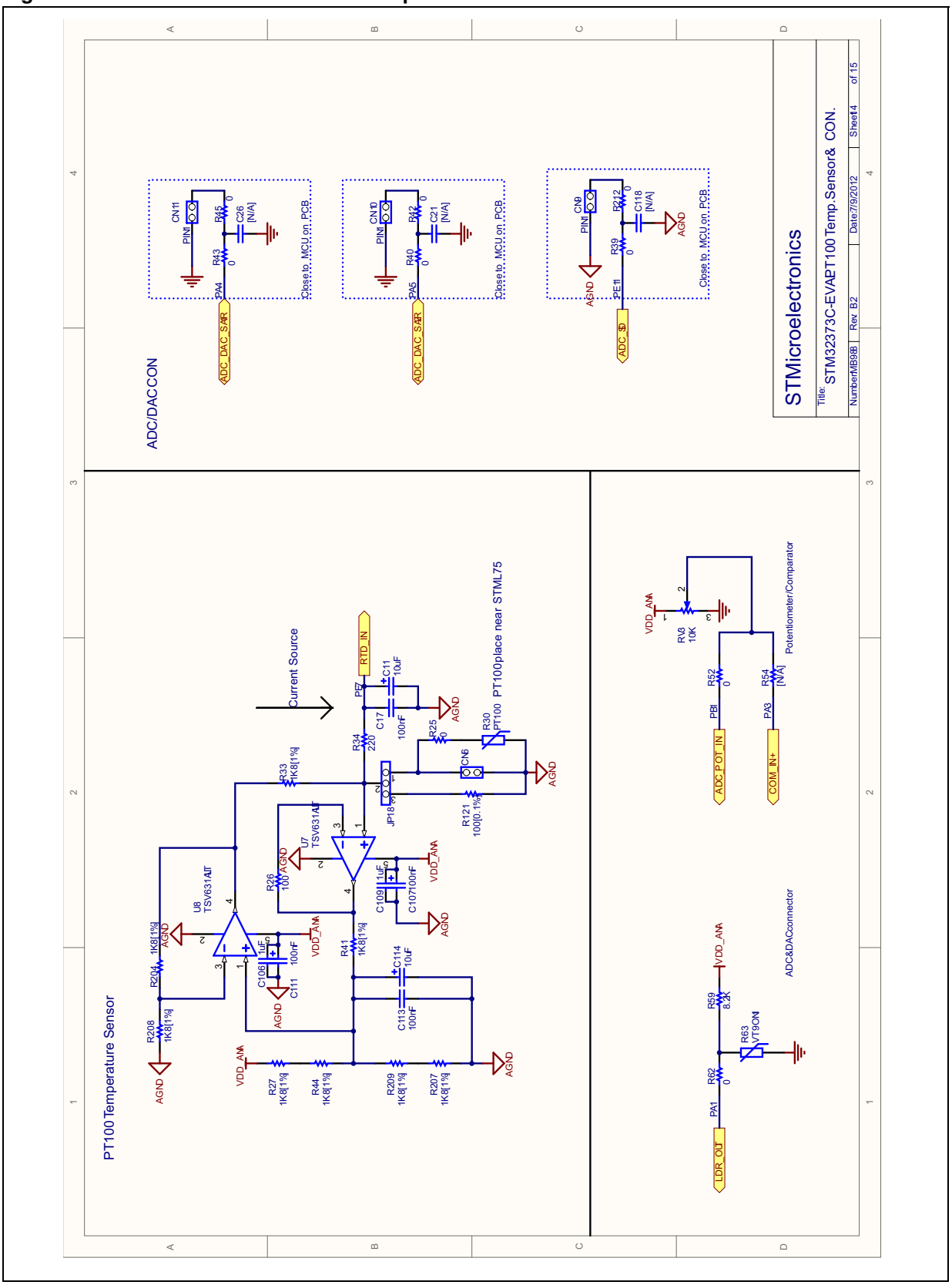


Figure 36. STM32373C-EVAL ECG and pressure sensor

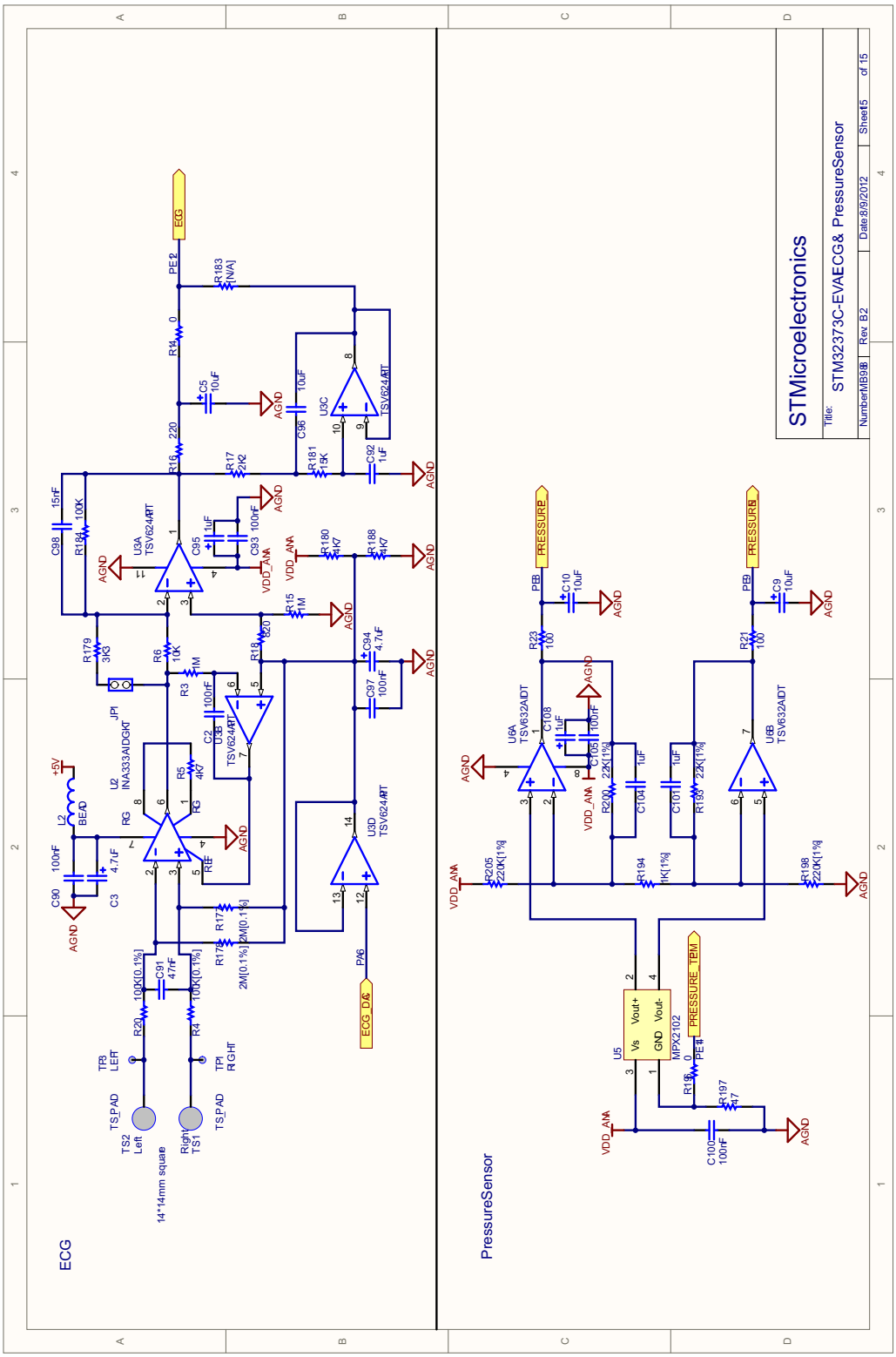
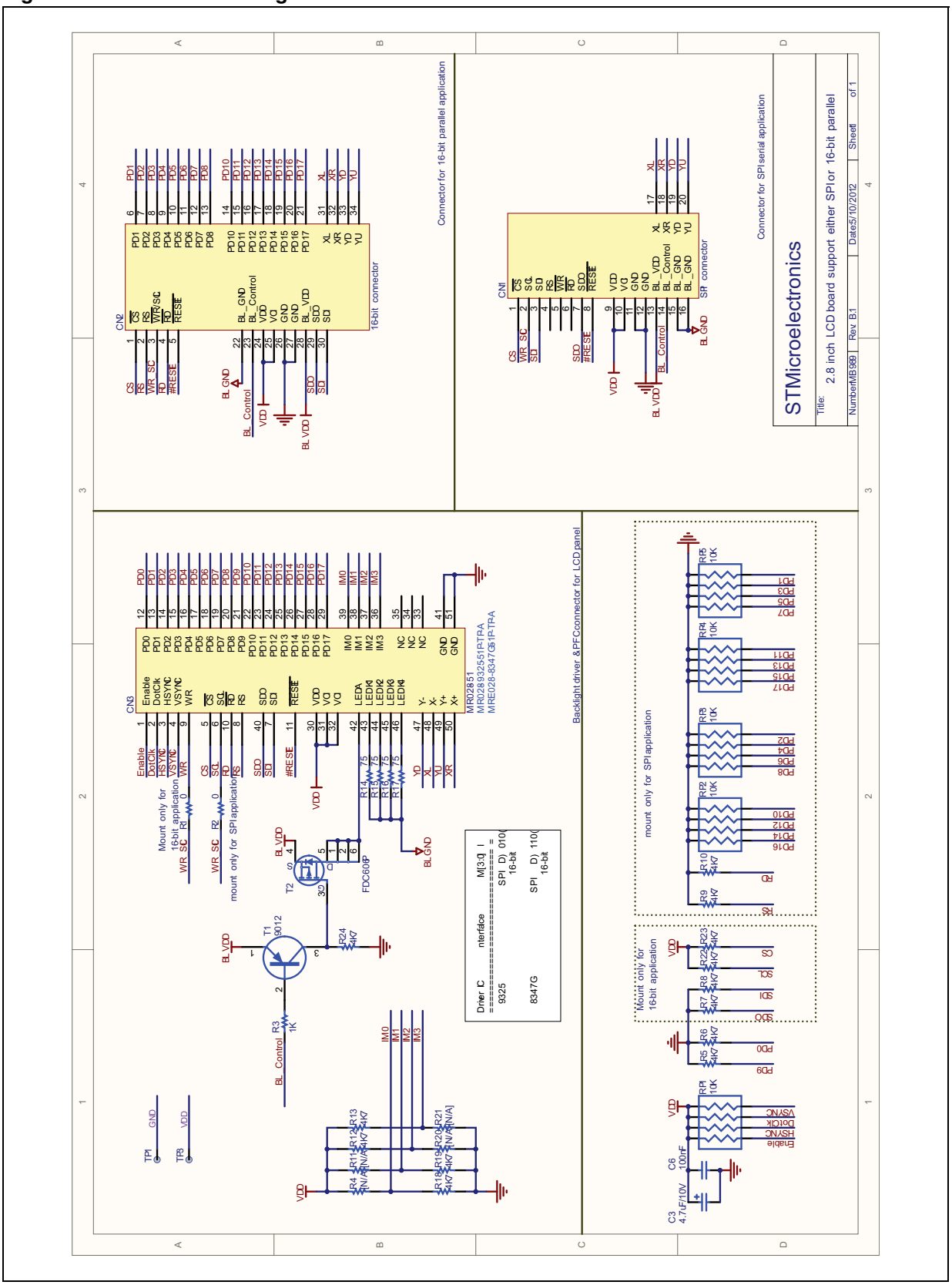


Figure 37. MB989 LCD daughter



Appendix A STM32373C-EVAL pinout

Table 35. STM32373C-EVAL pinout

Pin no.	Pin name	Description
1	PE2	TRACECLK / SPI3_CS_uSDcard
2	PE3	TRACED0 / uSDcard_Detect
3	PE4	TRACED1 /SHIELD
4	PE5	TRACED2 / SHIELD_CT
5	PE6-WKUP3	TRACED3 / WKUP_JOYSTICK_SEL
6	VBAT	VBAT
7	PC13-TAMPER-WKUP2	-
8	PC14-OSC32_IN	OSC32_IN
9	PC15-OSC32_OUT	OSC32_OUT
10	PF9	JOYSTICK_RIGHT
11	PF10	JOYSTICK_UP
12	PF0 - OSC_IN	OSC_IN
13	PF1 - OSC_OUT	OSC_OUT
14	NRST	NRST
15	PC0	LED1
16	PC1	LED2
17	PC2	LED3
18	PC3	LED4
19	PF2	JOYSTICK_DOWN
20	VSSA / SAR_VSS / SAR_VREF-	
21	VDDA / SAR_VDD	
22	SAR_VREF+	
23	PA0 - WKUP1	WKUP_BUTTON / IDD
24	PA1	LDR_OUT
25	PA2	KEY_BUTTON
26	PA3	COM_IN+
27	PF4	JOYSTICK_LEFT
28	VDD_2	

Table 35. STM32373C-EVAL pinout (continued)

Pin no.	Pin name	Description
29	PA4	ADC_DAC_SAR1
30	PA5	ADC_DAC_SAR2
31	PA6	DAC2_OUT1_AUDIO / ECG_DAC
32	PA7	COMP2_OUT_LED
33	PC4	-
34	PC5	USB_DISCONNECT
35	PB0	MIC_IN
36	PB1	ADC_POT_IN
37	PB2	1.8V POR_RFU
38	PE7	RTD_IN
39	PE8	PRESSURE_P
40	PE9	PRESSURE_N
41	PE10	-
42	PE11	ADC_SD
43	PE12	ECG
44	PE13	-
45	PE14	PRESSURE_TEMPERATURE
46	PE15	-
47	PB10	-
48	SD_VREF-	
49	SDADC1_SDADC2_SDADC3_VSS	
50	SDADC1_SDADC2_VDD	
51	SDADC3_VDD	
52	SD_VREF+	
53	PB14	-
54	PB15	-
55	PD8	-
56	PD9	-
57	PD10	-
58	PD11	AUDIO_RST
59	PD12	SLIDER_1
60	PD13	SLIDER_2

Table 35. STM32373C-EVAL pinout (continued)

Pin no.	Pin name	Description
61	PD14	SLIDER_3
62	PD15	SLIDER_CT
63	PC6	I2S_WS
64	PC7	I2S_CK
65	PC8	I2S_MCK
66	PC9	I2S_DIN
67	PA8	I2C2_SMB
68	PA9	I2C2_SCL
69	PA10	I2C2_SDA
70	PA11	USB_DM
71	PA12	USB_DP
72	PA13	SWDAT/JTMS
73	PF6	-
74	VSS_3	
75	VDD_3	
76	PA14	SWCLK/JTCK
77	PA15	JTDI
78	PC10	SPI3_SCK
79	PC11	SPI3_MISO
80	PC12	SPI3_MOSI
81	PD0	CAN_RX
82	PD1	CAN_TX
83	PD2	LCD_CS
84	PD3	USART2_CTS
85	PD4	USART2_RTS
86	PD5	USART2_TX/ IRDA
87	PD6	USART2_RX/ IRDA
88	PD7	HDMI_HPD_SOURCE
89	PB3	JTDO/TRACESWO
90	PB4	JNTRST
91	PB5	IR_IN
92	PB6	I2C1_SCL
93	PB7	I2C1_SDA
94	BOOT0	BOOT0

Table 35. STM32373C-EVAL pinout (continued)

Pin no.	Pin name	Description
95	PB8	CEC
96	PB9	IR-Out_LED
97	PE0	HDMI_HPD_SINK
98	PE1	-
99	VSS_1	
100	VDD_1	

Appendix B Mechanical dimensions

Figure 38. STM32373C mechanical dimensions

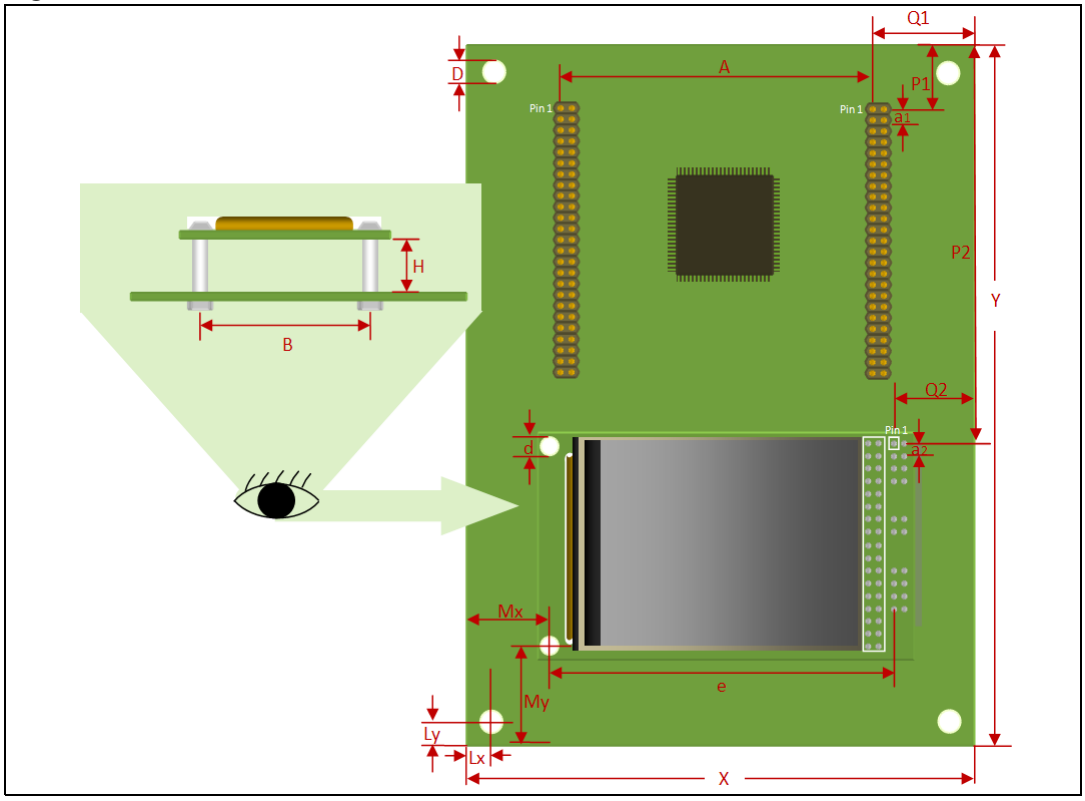


Table 36. STM32373C mechanical dimensions

Symbol	Size (mm)	Symbol	Size (mm)	Symbol	Size (mm)
A	68.58	e	81.28	P1	27.305
a1	2.54	H	11	P2	110.49
a2	2.54	Lx	5.715	Q1	24.13
B	47	Ly	5.715	Q2	15.875
D	3.5	Mx	17.145	X	114.3
d	3.2	My	18.415	Y	172.72

5 Revision history

Table 37. Document revision history

Date	Revision	Changes
11-Sep-2012	1	Initial release.