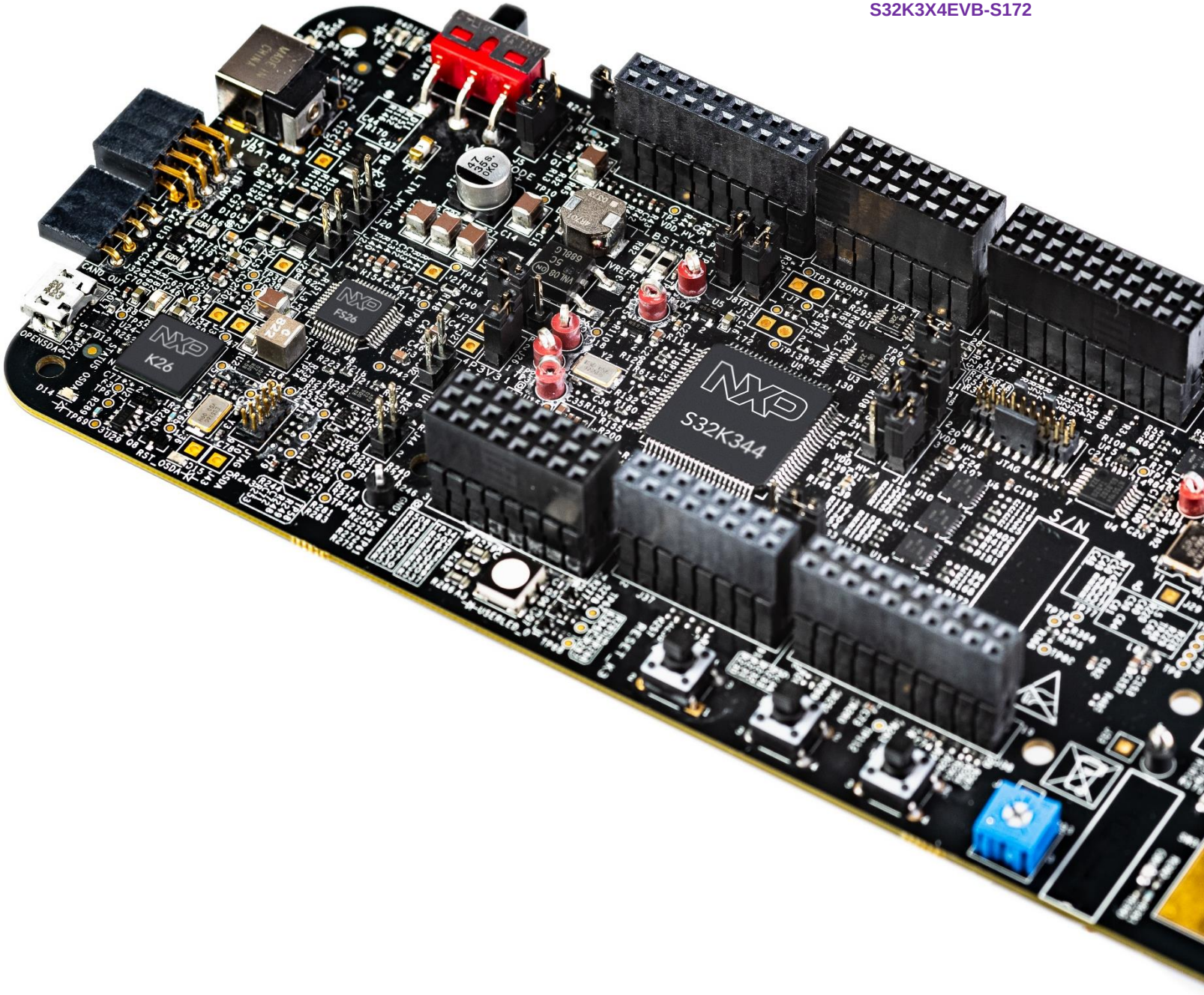
S32K3X4EVB-Q172

Customer Evaluation Board for S32K3x4 MCUs
Hardware User Manual

S32K3X4EVB-Q172
S32K3X4EVB-S172



1 Table of contents

2 Definitions, Acronyms, and Abbreviations

The following list defines the abbreviations used in this document.

CD	Compact Disk
CMOS	Complementary Metal Oxide Semiconductor
CPLD	Custom Programmed Logic Devices
CPU	Central Processing Unit
CSI	Camera Sensor Imaging
CSPI	Serial Peripheral Interface
DDR	Double Data Rate
DIP	Dual In-line Package
EEPROM	Electrically Erasable Programmable Read Only Memory
EPROM	Erasable Programmable Read Only Memory
GPIO	General Purpose Input/output
GPO	General Purpose Output
I2C	Inter-Integrated Circuit
ICE	In-Circuit Emulator
I/O	Input/output
JTAG	Joint Test Access Group
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MB	Megabyte
MCU	Microcontroller Unit
MMC	Multi-Media Card
MCP	Multi-chip product
MS	Memory Stick
NVRAM	Non-volatile Random-Access Memory
PC	Personal Computer
PCB	Printed Circuit Board
PHY	Physical interface
POR	Power on Reset
PSRAM	Pseudo Random Access Memory
PWR	Power
PWM	Pulse Width Modulation
QVGA	Graphics Adapter
RAM	Random Access Memory
SD	SanDisk (Smart Media)
SDRAM	Synchronous Dynamic Random-Access Memory
SI	System International (international system of units and measures)
SIMM	Single In-Line Memory Module
SPST	Single Pole Single Throw
TFT	Thin Film Transistor
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus.
HW	Hardware.
POP	Populate – Component placed
DNP	Do not populate – Component removed

3 S32K3X4EVB-Q172 | -S172 - Block Diagram

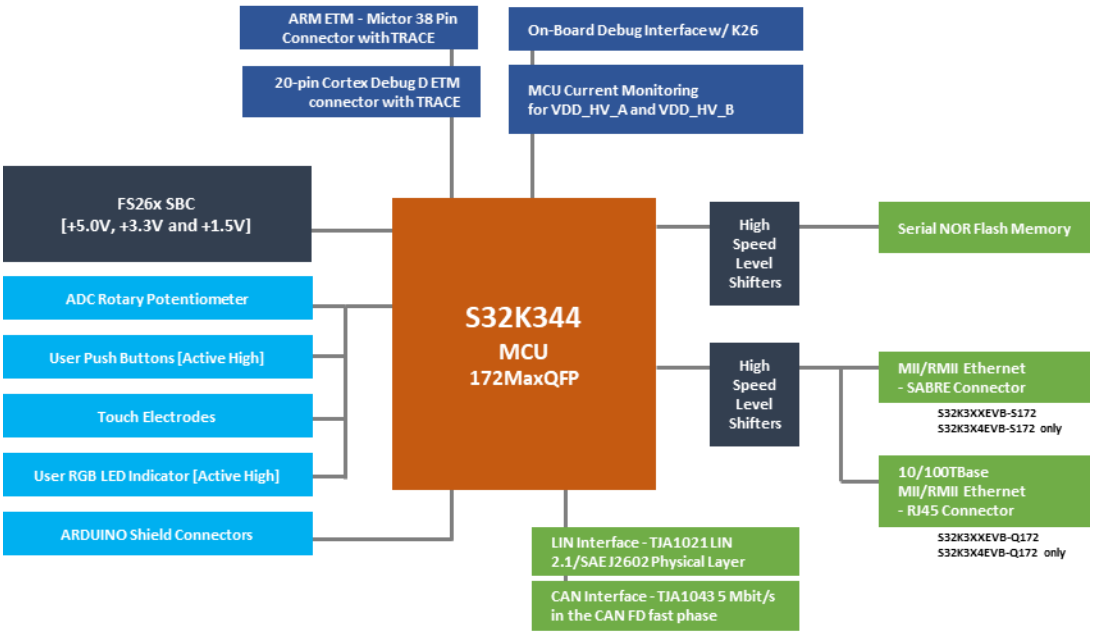


Figure 1. S32K3X4EVB-Q172 | -S172 – Block diagram

4 S32K3X4EVB-Q172 | -S172 - Features

IMPORTANT

- Verify and download the last version of this document in http://www.nxp.com
- Before the S32K344 Customer Evaluation board is used or power is applied, please fully read this user manual. An incorrect configuration in the board may cause a damage irreparable on the component, MCU or EVB. Power must be removed from the EVB prior to:
  - Removing or placing some component or measurement
  - Re-configuring the board jumpers

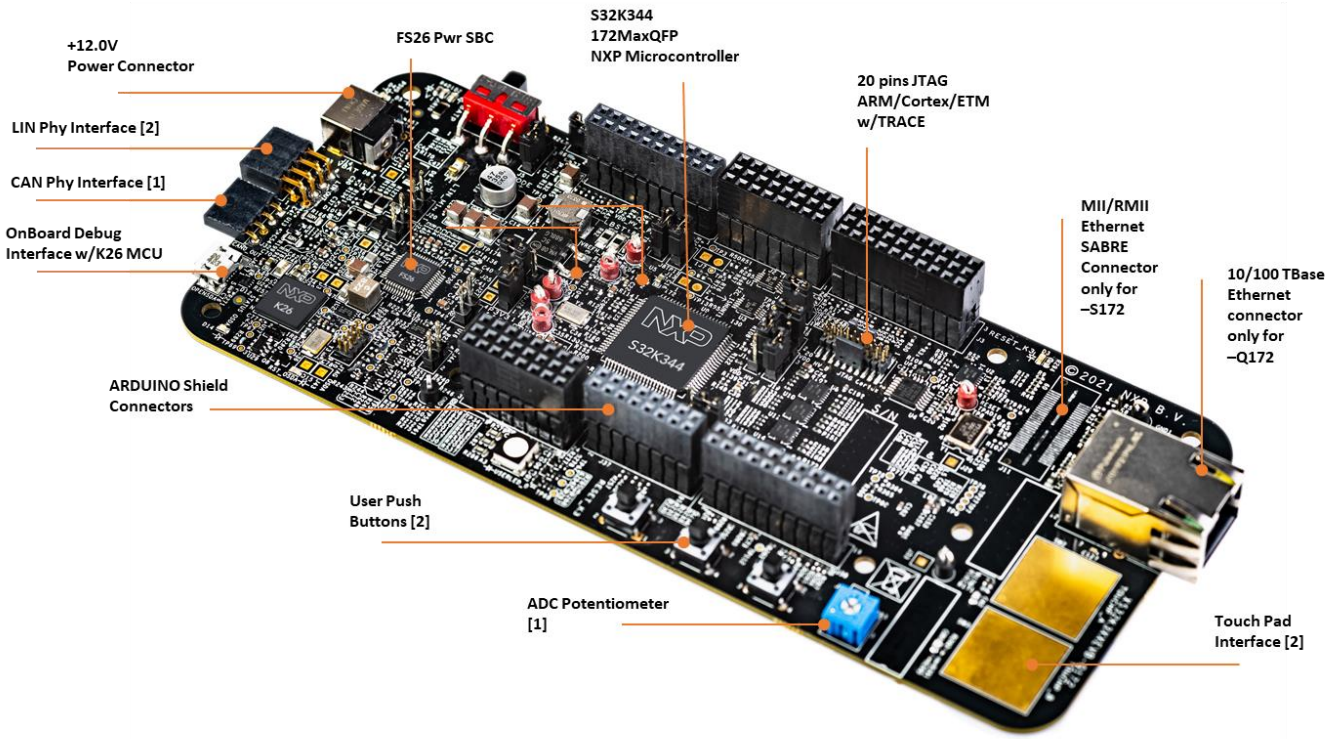


Figure 2. S32K3X4EVB-Q172 – Features

5 S32K3X4EVB-Q172 | -S172 - Default Configuration

Table 1. S32K3X4EVB-x172 - Default Configuration

Interface	S32K3X4 EVB-Q172	S32K3X4 EVB-S172	Reference / Signal	Default Configuration	Description/Comment
S32K344 V1.01 MCU	●	●	U9	V1.01	P32K344EHT1VPBST
MCU Power Supply	●	●	VDD_HV_A_MCU	+5.0V	The VDDA_HV_A domain is connected to +5.0V– Switching Power Supply
	●	●	VDD_HV_B_MCU	+3.3V	The VDDA_HV_B domain is connected to +3.3V– Switching Power Supply
	●	●	VDD_REFH_MCU	[VDD_HV_A]	The VDD_REFH domain is connected to VDD_HV_A_MCU

Interface	S32K3X4 EVB-Q172	S32K3X4 EVB-S172	Reference / Signal	Default Configuration	Description/Comment
	●	●	V15_MCU	External NPN Transistor	The V15_MCU domain is routed to the VCORE from the FS26
Ethernet		●	Ethernet MII/RMII SABRE Connector	MII/RMII Enabled	All Ethernet MII/RMII signals are routed to ENET SABRE connector, only for the S32K3X4EVB-S172,.
	●		10/100 TBase Ethernet Phy	MII/RMII Enabled	All Ethernet MII/RMII signals are routed to 10/100 T-Base Physical layer with RJ45 connector, only for the S32K3X4EVB-Q172.
QSPI-A Memory	●	●		Enabled	The MCU signals to the QSPI-A Memory Interface are enabled
OnBoard Debugg	●	●		PTA15	PTA15/LPUART6_RX is routed to OpenSDA for serial interface
				PTA16	PTA16/LPUART6_TX is routed to OpenSDA for serial interface
TRACE	●	●	J12	Disabled	The TRACE Signals are disabled as DEFAULT in the 20pin cortex Debug D ETM Connector
CAN Interface	●	●	TJA1023/CAN0	PTA6	PTA26 is routed to the CAN0_RX signal
				PTA7	PTA27 is routed to the CAN0_TX
				PTC23	PTC23 is routed to the CAN0_ERRN
				PTC21	PTCCAN0_EN
				PTC20	CAN0_STB
LIN Interface	●	●	LIN1	PTB9	LPUART9_RX is routed to LIN Phy0
				PTB10	LPUART9_TX is routed to LIN Phy0
			LIN2	PTB28	LPUART5_RX is routed to LIN Phy1
				PTB27	LPUART5_TX is routed to LIN Phy1
User Push Buttons	●	●	SW4	Disabled	Active Low,
			SW5	PTB19	Active Low, before PTA1
User LEDs	●	●	D13	PTA29	Red
				PTA30	Green
				PTA31	Blue
ADC Potentiometers	●	●	ADCPOT0	PTA11	ADCPOT0 [R293] is routed to PTA11 - ADC1_S10
ARDUINO	●	●	-	-	

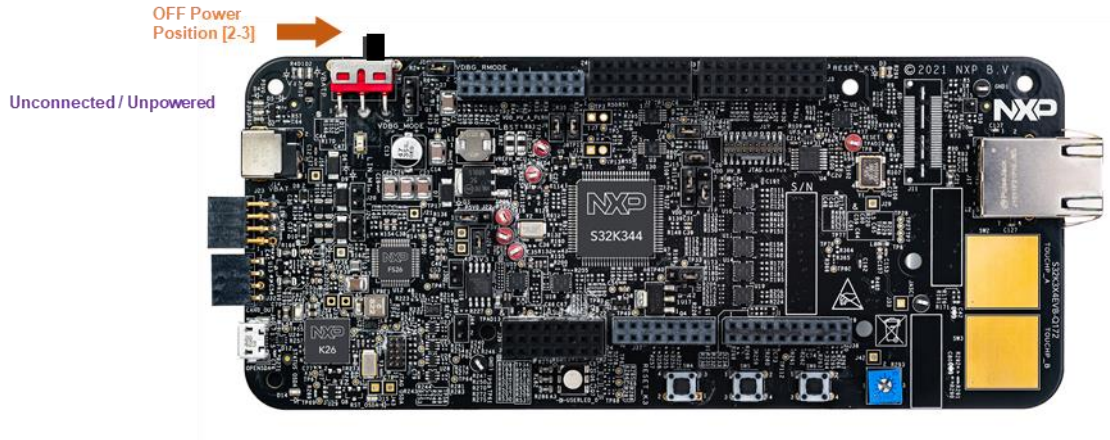
6 S32K3X4EVB-Q172 | -S172 - Startup

Follow these steps to connect and power on the board

1. Carefully unpack the S32K3X4EVB-Q172 and observe ESD preventive measures while handling the K3 development board.
2. Connect necessary cables between host PC and EVB board prior to applying power to the EVB.
3. The power-ON sequence for the EVB must be as follows:

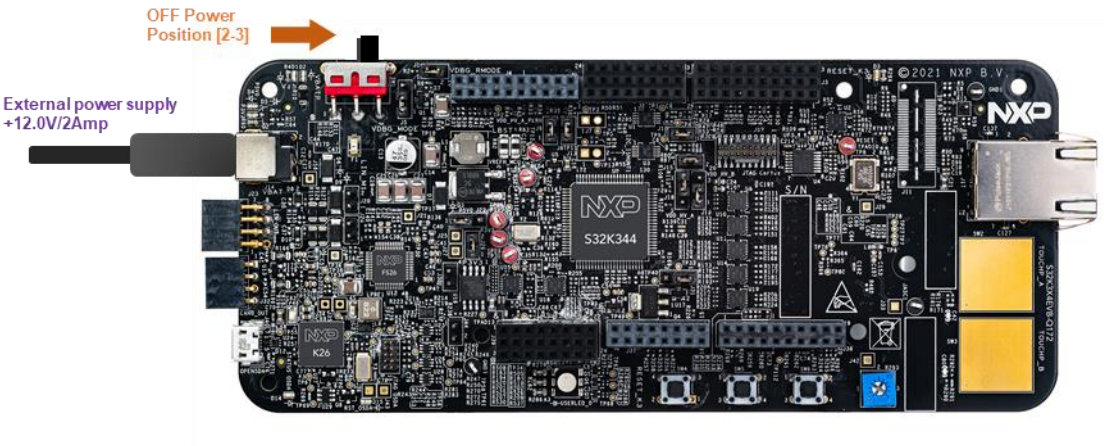
a)

- The power switch -SW1 must be in OFF position before to the EVB be connected to an external power supply.



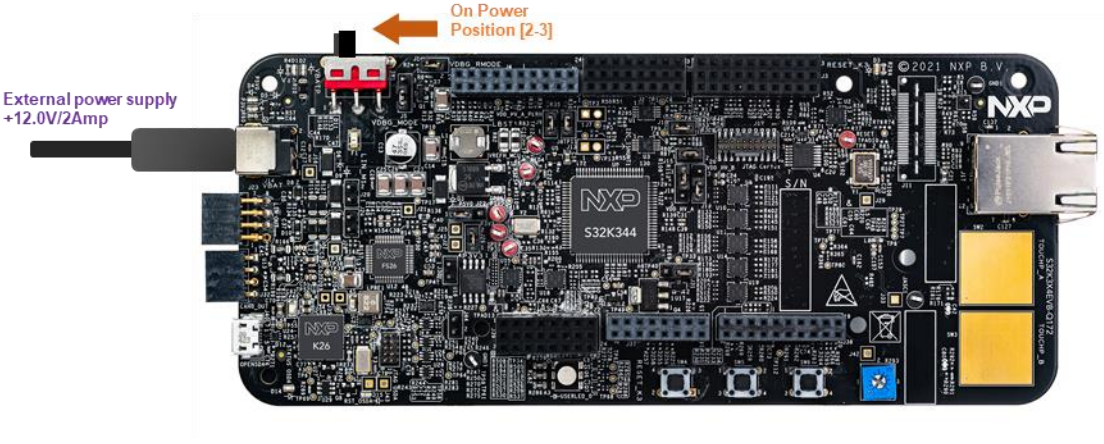
b)

- Once the power switch -SW1 is in OFF position, then the EVB can be connected to an external power supply.



c)

- Now the power switch -SW11 can be changed to ON- position.



4. When power is applied to the EVB, three orange LED's adjacent to the voltage regulators show the presence of the supply voltages as follows:
   - LED D2 Indicates that the 12.0V is connected to the EVB correctly.
   - LED D4 Indicates that the 5.0V linear regulator is enabled and working correctly.
   - LED D5 Indicates that the +3.3Vlinear regulator is enabled and working correctly.

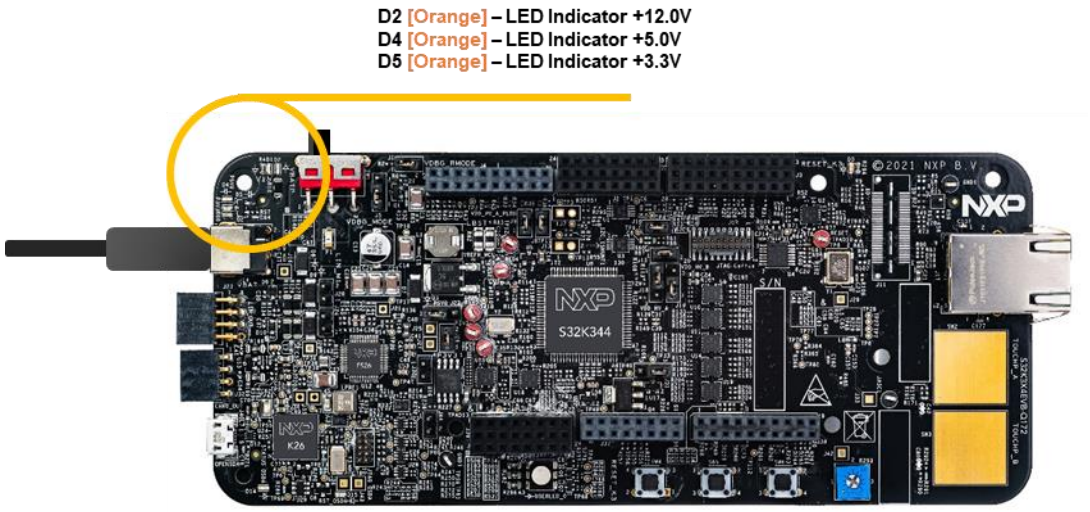


Figure 3. S32K3X4EVB-Q172 | -S172 – Power supply Input and LED power indicators

If no LED's are illuminated when power is applied to the EVB and the regulators are correctly enabled using the appropriate jumpers, it is possible that either power supply is not connected properly, or the voltage level is lower that the specified [+12.0V to ≥2Amps].
Note that the fuse will not protect against one of the EVB regulators being shorted. If this happens, damage is likely to occur to the EVB and / or components.

5. The board is ready to use now.

7 S32K3X4EVB-Q172 | -S172 - Power supply

The EVB requires an external power supply voltage of between to +12V/≥2A. This allows the EVB to be easily used in a vehicle if required. The 12v input is on the EVB is used to supply a FS26/SBC – U1, the power management IC controller provides +5.0V, +3.3V and +1.5V, for the different power configurations of VDD_HV_A, VDD_HV_B, V15 and other interfaces

7.1 S32K3X4EVB-Q172 | -S172 - Main Power Supply

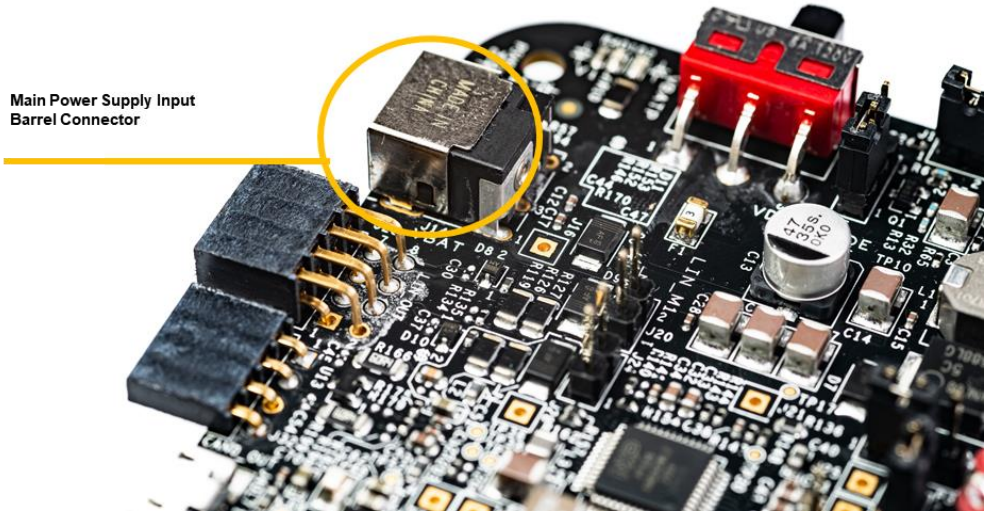
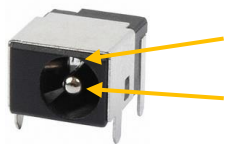


Figure 4. S32K3X4EVB-Q172 | -S172 – Main power supply input

Table 2. Main power supply connector

Connector	Description
 Ground V+ (+12Volts).	**2.1mm Barrel Connector – J14** This connector should be used to connect the supplied wall-plug mains adapter. Note – if a replacement or alternative adapter is used, care must be taken to ensure the 2.1mm plug uses the correct polarization as shown

7.1.1 S32K3X4EVB-Q172 | -S172 – FS26/Modes Operation

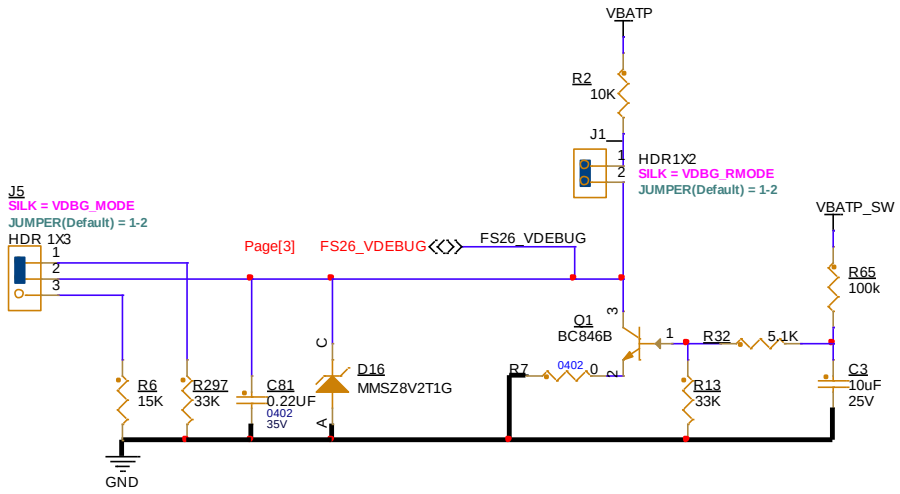
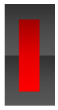
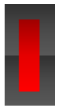
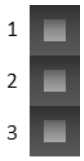


Figure 5. S32K3X4EVB-Q172 | -S172 – FS26/Modes Operation

Table 3. S32K3X4EVB-Q172 | -S172 – FS26/Modes Operation

Reference	Jumper Position			Description	Comments
Flash Mode [Default configuration]	J1	1-2		The R1961 resistor to VBATP (VBAT protected +12.0V) is routed as pull-up to the VDEBUG Pin. This is a common pull-up resistor for the 2 voltage divider configurations, with R1971 or R1963.	
	J5	1-2		The R1963 is selected for the divider voltage, +8.0V is applied on VDEBUG pin to set the FS26-SBC on MCU Flash Mode. In this mode device power up sequence starts with debug mode enabled and can be used during customer production process to flash MCU without need of WD refresh. After ~80ms once the SW1 is in ON-position the VDEBUG pin will be switching to a low voltage (GND) due to the RC delay circuitry and Q18	
Debug Mode	J1	1-2		The R1961 resistor to VBATP (VBAT protected +12.0V) is routed as pull-up to the VDEBUG Pin. This is a common pull-up resistor for the 2 voltage divider configurations, with R1971 or R1963.	
	J5	2-3		The R1963 is selected for the divider voltage, +5.0V is applied on VDEBUG pin to set the FS26-SBC on Debug Mode, voltage must be removed from debug pin in order to start power up sequence. In this mode Watchdog refresh is not needed. After ~80ms once the SW1 is in ON-position the VDEBUG pin will be switching to a low voltage (GND) due to the RC delay circuitry and Q18.	

Reference	Jumper Position			Description	Comments
Normal Mode	J1	OPEN		In this mode the FS26 can enter Normal mode by configuring the init_fs window and sending properly serviced watchdog refresh by SPI. Please review the FS26 documentation.	
	J5	OPEN			
All change of jumpers must be done once the EVB is unpowered from J3 and J5 as MANDATORY					

7.2 S32K3X4EVB-Q172 | -S172 – +5.0 Volts Power Supply

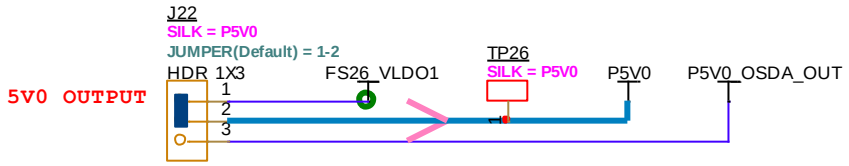


Figure 6. S32K3X4EVB-Q172 | -S172 – General jumper for the P5V0 (+5.0V) reference

Table 4. S32K3X4EVB-Q172 – +5.0 Volts Power Supply

Reference	Jumper Position		Description	Comments
J22	1-2		The +5.0V output of the FS26x SBC [FS26_VLDO1] is routed to the main P5V0 domain (+5.0V for all board).	Default closed
	OPEN		P5V0 domain (+5.0V for all board) is isolated/disconnected from the FS26x	

7.3 S32K3X4EVB-Q172 | -S172 – +3.3 Volts Power Supply

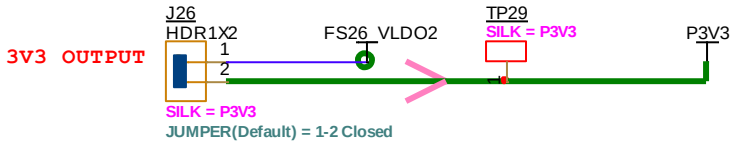


Figure 7. S32K3X4EVB-Q172 | -S172 – General jumper for the P3V3 (+3.3V) reference

Table 5. S32K3X4EVB-Q172 – +.3.3 Volts Power Supply

Reference	Jumper Position		Description	Comments
J26		1-2	The +3.3V Switching power supply is routed to the main P3V3 domain (+3.3V for all board).	Default closed
		OPEN	The +3.3V output of the FS26x SBC is isolated to the main P3V3 domain (+3.3V for all board).	

7.4 S32K3X4EVB-Q172 | -S172 – VDD_HV_A

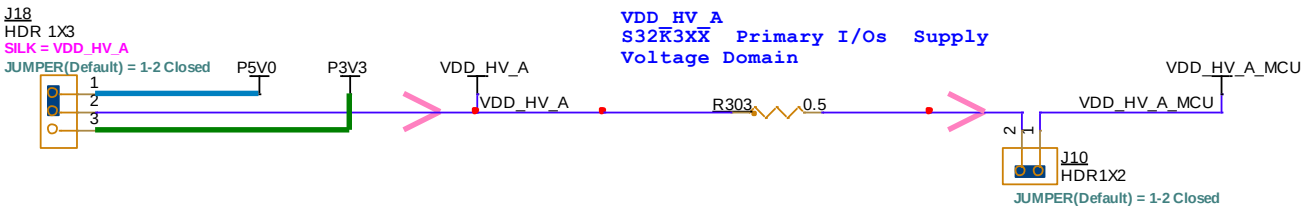
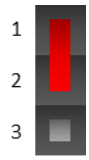
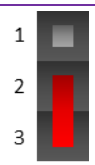


Figure 8. S32K3X4EVB-Q172 | -S172 – VDD_HV_A power supply

Table 6. S32K3X4EVB-Q172 – VDD_HV_A

Reference	Jumper Position		Description	Comments
J18		1-2	P5V0 (+5.0V from the FS26) is selected for the VDD_HV_A_MCU reference	Default closed
		2-3	P3V3 (+3.3V from the FS26) is selected for the VDD_HV_A_MCU reference	
		OPEN	VDD_HV_A domain is isolated and unpowered	
J10		1-2	VDD_HV_A is routed to VDD_HV_A_MCU reference. This jumper can be used to current measurements in the VDD_HV_A domain	Default closed
		OPEN	Without this jumper the VDD_HV_A domain will not be powered. The S32K344 MCU will be turned-OFF	

7.4.1 S32K3X4EVB-Q172 | -S172 – VDD_HV_B

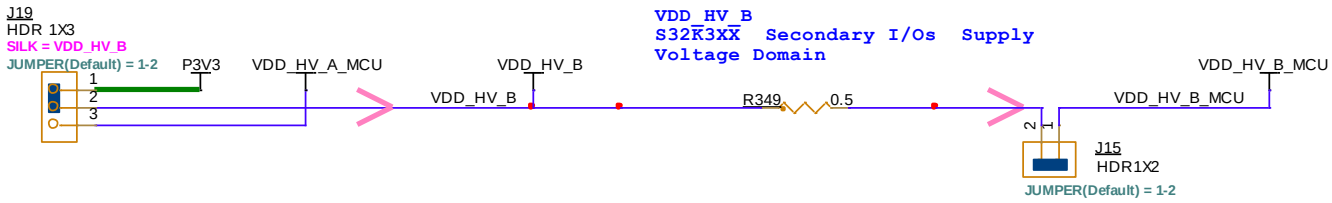
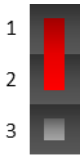
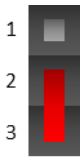
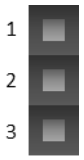
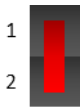


Figure 9. S32K3X4EVB-Q172 | -S172 – Main power supply

Table 7. S32K3X4EVB-Q172 – VDD_HV_B

Reference	Jumper Position		Description	Comments
J19		1-2	P3V3 (+3.3V from the FS26) is selected for the VDD_HV_B_MCU reference	Default closed
		3-4	VDD_HV_A_MCU is routed to VDD_HV_B_MCU reference	
		5-6	VDD_HV_B domain is isolated and unpowered	
J15		1-2	VDD_HV_B is routed to VDD_HV_B_MCU reference. This jumper can be used to current measurements in the VDD_HV_ domain	Default closed
		OPEN	Without this jumper the VDD_HV_B domain will not be powered. The S32K344 MCU will be turned-OFF	

7.4.2 S32K3X4EVB-Q172 | -S172 – VREFH

The VREFH reference of the S32K344 MCU is directly routed to the VDD_HV_A_MCU domain.

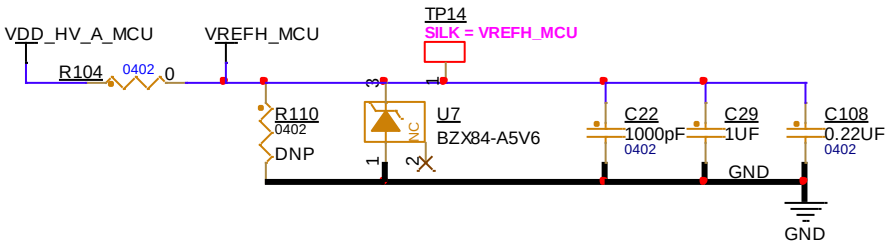


Figure 10. S32K3X4EVB-Q172 | -S172 – VREFH power supply

7.4.3 S32K3X4EVB-Q172 | -S172 – V15

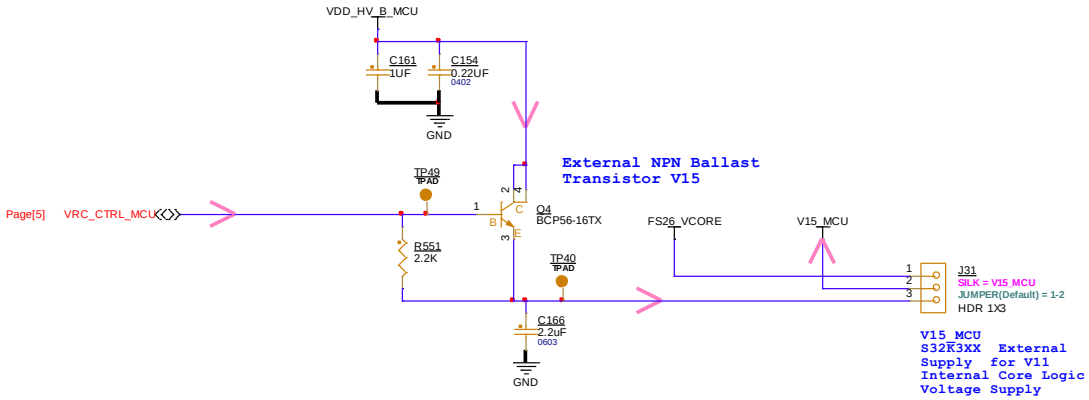


Figure 11. S32K3X4EVB-Q172 | -S172 – V15 power supply

Table 8. S32K3X4EVB-Q172 – V15 Domain

Reference	Jumper Position		Description	Comments
J31		1-2	The FS26_VCORE domain [+1.5V] is directly routed the V15_MCU domain.	
		2-3	The NPN external Ballast transistor is selected to supply the V15_MCU domain.	
		OPEN	The V15_MCU domain is disconnected and isolated from the local external supplies.	Default closed

8 S32K3X4EVB-Q172 | -S172 - Programming and Debug Interface

8.1 RESET Switch and LED indicator

The RESET switch [SW2] provides for manual application of the RESET input signal. The S32K3 MCU will drive the RESET signal to reset the EVB board peripherals. The RESET LED indicator [D22] will be ON for the duration of the RESET signal. This operation indicates the S32K344 MCU is in the Reset state.

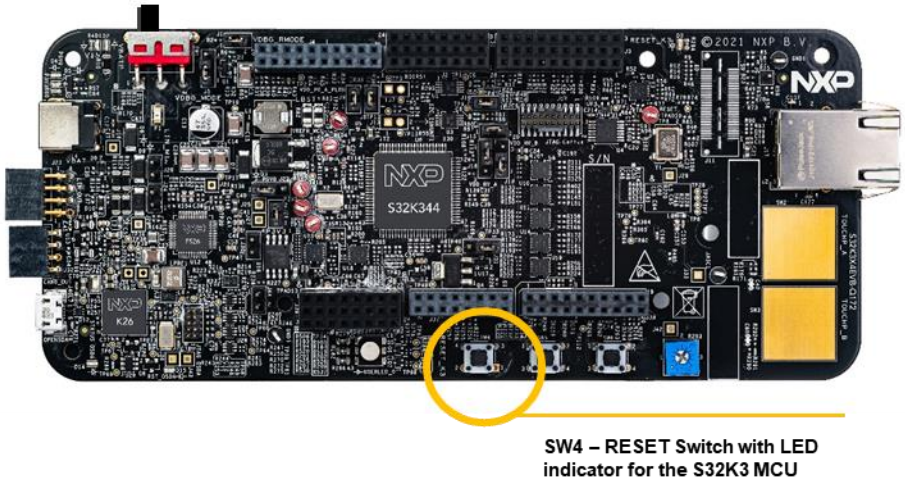


Figure 12. S32K3X4EVB-Q172 | -S172 – RESET Switch

8.2 On-board Debugger

The EVB incorporates an On-Board Debugger embedded well as JTAG connectors. It bridges serial and debug communications between a USB host and an embedded target processor.

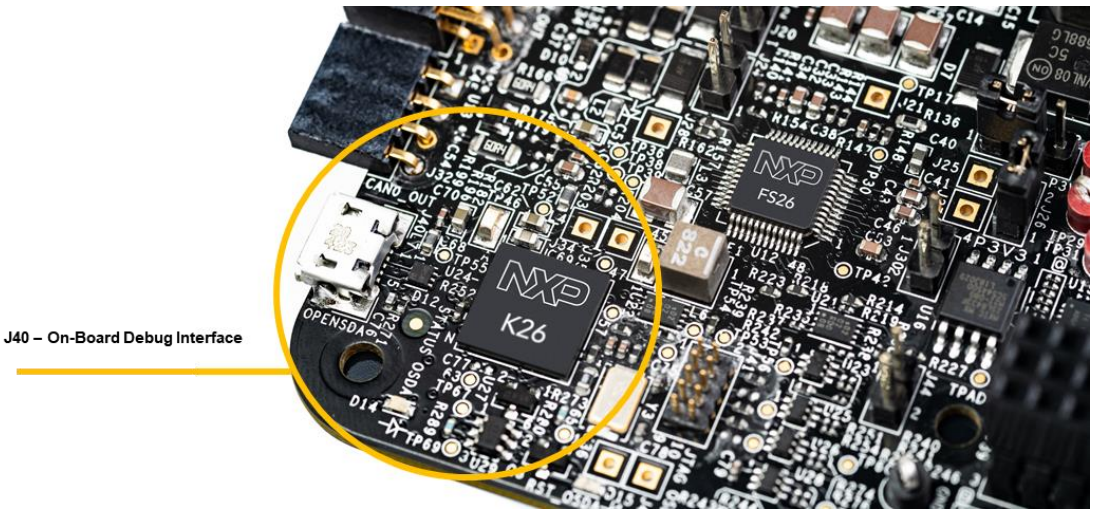


Figure 13. S32K3X4EVB-Q172 | -S172 – On-board S32K3 Debugger

Table 9. Programming and Debug Connectors

<table>
<tr><th colspan="2">Connector</th><th>Reference/ Component</th><th>Description</th></tr>
<tr><td>20-Pin Cortex Debug + ETM Connector</td><td>  </td><td>J50</td><td>This small 20-pin (0.05") connector provides access to SWD, SWV, JTAG, and ETM (4-bit) signals available on a Cortex-M3/M4/M7 device.
A 20-pin header (Samtec FTSH-110-01) is specified with dimensions:
0.50" x 0.188" (12.70 mm x 4.78 mm).

NOTE - JTAG – TRACE Signals
Due that the MCU ports used for the trace signals also are shared with other interfaces. It is important to isolate these signals/interfaces for the J4-Cortex Debug D ETM connector.
<table>
<tr><th>SIGNAL Name</th><th>MCU Port Name</th><th>Signal Resistor</th><th>COMMENT</th></tr>
<tr><td>TRACE_CLK</td><td>PTC2</td><td>R</td><td>Disabled as DEFAULT</td></tr>
<tr><td>TRACE_D0</td><td>PTD7</td><td>R452</td><td>Disabled as DEFAULT</td></tr>
<tr><td>TRACE_D1</td><td>PTD12</td><td>R190</td><td>Disabled as DEFAULT</td></tr>
<tr><td>TRACE_D2</td><td>PTD11</td><td>R435</td><td>Disabled as DEFAULT</td></tr>
<tr><td>TRACE_D3</td><td>PTD10</td><td>R511</td><td>Disabled as DEFAULT</td></tr>
</table>
</td></tr>
<tr><td colspan="4">All TRACE signals are DISABLED as default configuration. In order to enable the TRACE interface, the MCU signals routed to the QSPIA interface must be disabled and isolated.</td></tr>
</table>

9 S32K3X4EVB-Q172 | -S172 - LIN Interface

The EVB incorporates two LIN interfaces connected the S32K344 MCU. Using an NXP LIN transceivers the TJA1021T/20/C, supporting both master and slave mode (jumper selectable). The output from the LIN transceivers is connected to J23.

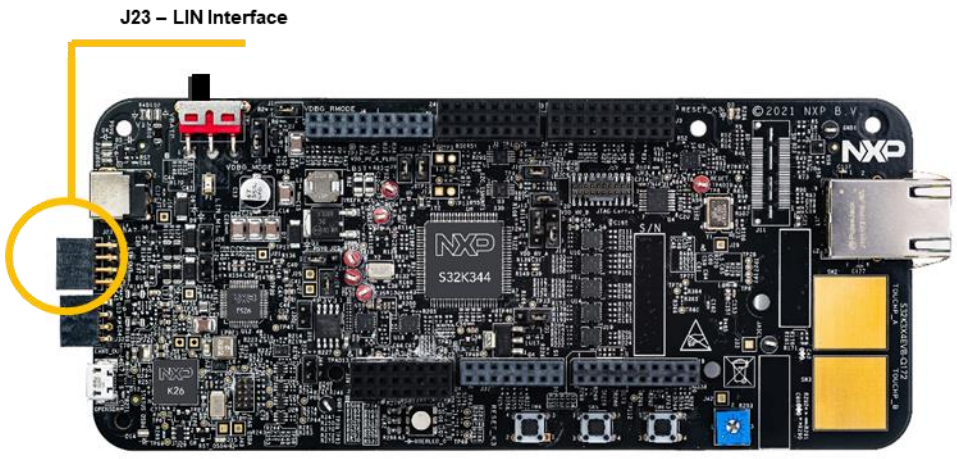
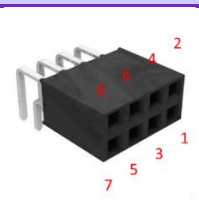


Figure 14. S32K3X4EVB-Q172 | -S172 – LIN Interface

The pinout of these headers is shown below and is also detailed on the PCB silkscreen.

Table 10. LIN Connector

Connector	Reference	Pin Number	Signal/Connection
	J23	1	GND
		2	GND
		3	NC
		4	NC
		5	VBAT
		6	VBAT
		7	LIN2_OUT
		8	LIN1_OUT

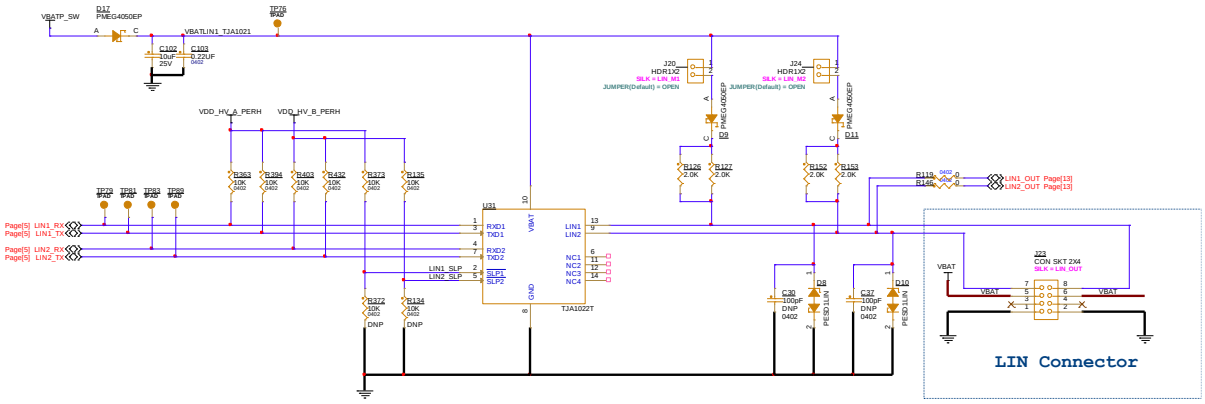


Figure 15. S32K3X4EVB-Q172 | -S172 – LIN Physical Layer1 TJA1021HG: Quad LIN 2.2A/SAE J2602 transceiver

Table 11. LIN Interface – MCU Connections

LIN Interface	Signal Name	MCU Port	Comment/Description
TJA1021 /LIN1	LIN1_RX	PTB9	LPUART9_RX is routed to LIN Phy1
	LIN1_TX	PTB10	LPUART9 is routed to LIN Phy1
	LIN2_RX	PTB28	LPUART5_RX is routed to LIN Phy1
	LIN2_TX	PTB7	LPUART5_TX is routed to LIN Phy1

10 S32K3X4EVB-Q172 | -S172 - CAN Interface

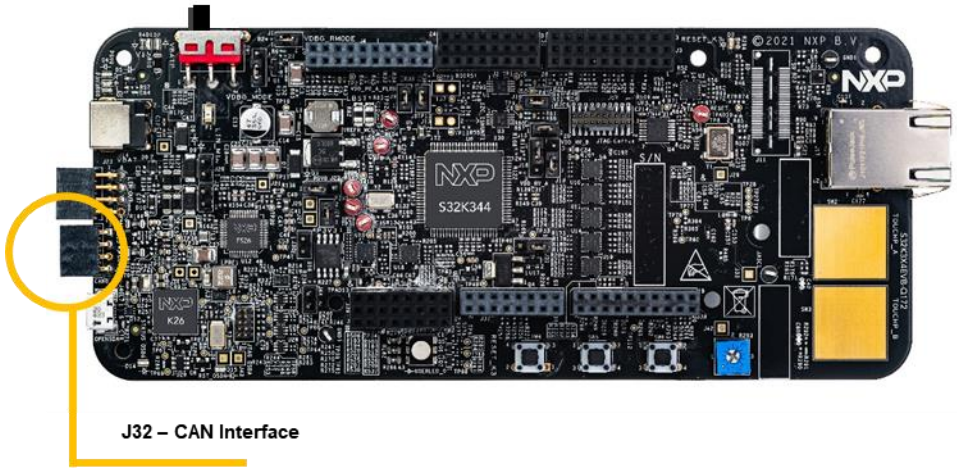


Figure 16. S32K3X4EVB-Q172 | -S172 – CAN Interface

Table 12. CAN Interface - Connectors

Connector	Reference	Circuit/ Interface	Pin Number	Signal/Connection
	J32	CAN0	1	CANH0
			2	CANL0
			3	GND
			4	NC

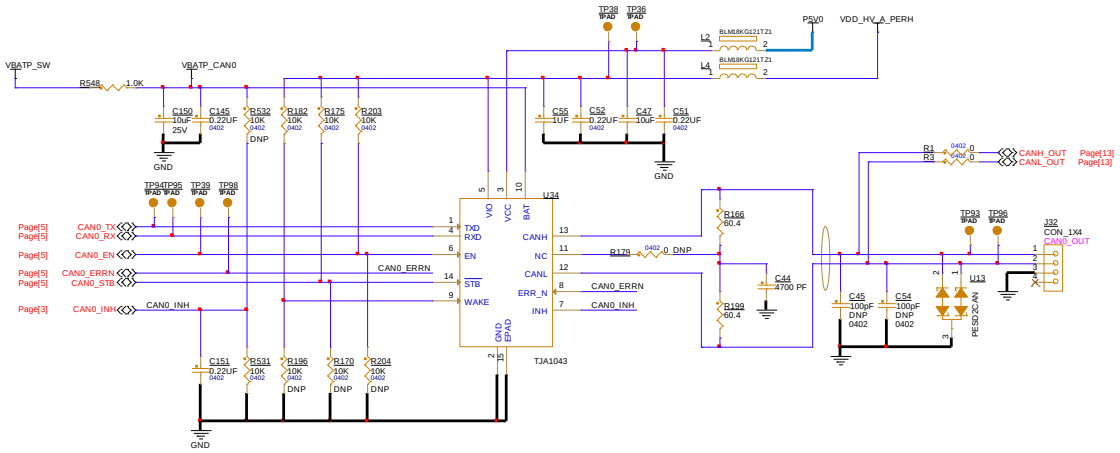


Figure 17. S32K3X4EVB-Q172 | -S172 – CAN Physical Layer0 - TJA1043 Secure HS-CAN Transceiver

Table 13. CAN Interface – MCU Connections

CAN Interface	Signal Name	MCU Port	Comment/Description
TJA1153 /CAN0	CAN0_RX	PTA6	[CAN0_RX Module] is routed to CAN Phy0
	CAN0_TX	PTA7	[CAN0_TX Module] is routed to CAN Phy0
	CAN0_ERRN	PTC23	PTC23 is routed to CAN Phy0 as CAN0_ERRN
	CAN0_EN	PTC21	PTC21 is routed to CAN Phy0 as CAN0_EN
	CAN0_STB	PTC20	PTC20 is routed to CAN Phy0 as CAN0_STB

11 S32K3X4EVB-Q172 | -S172 - Ethernet Interface

EVB Part Name	Ethernet MII/RMII SABRE Connector	10/100 T-Base RJ45 Connector	Comment/Description	
S32K3X4EVB-Q172		•	Ethernet Transceiver	
			DP83848CVV/NOPB	Option 1
			TXB0104RGYRG4	Option 2
S32K3X4EVB-S172	•			

11.1 S32K3X4EVB-S172 – Ethernet MII/RMII Interface

The S32K3X4EVB-S172 version incorporates a complete Ethernet interface providing a MII and/or RMII connectivity and LPSPI, I2Cx, GPIOs [3] as digital signals and +3.3V and +12.0V (+5.0V as optional) to the ethernet SABRE connector.

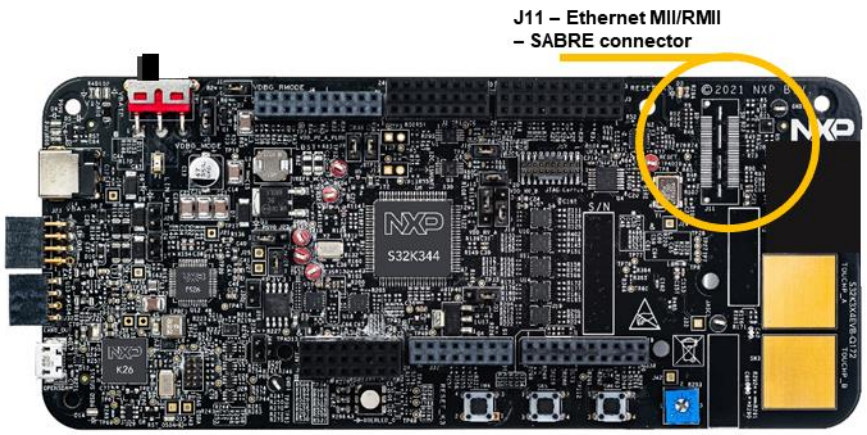


Figure 18. S32K3X4EVB-S172 – Ethernet MII/RMII SABRE connector

Ethernet Connector - The *EVB* has a High-Speed Connector that is compatible with some external boards:

- ADTJA1101-RMII

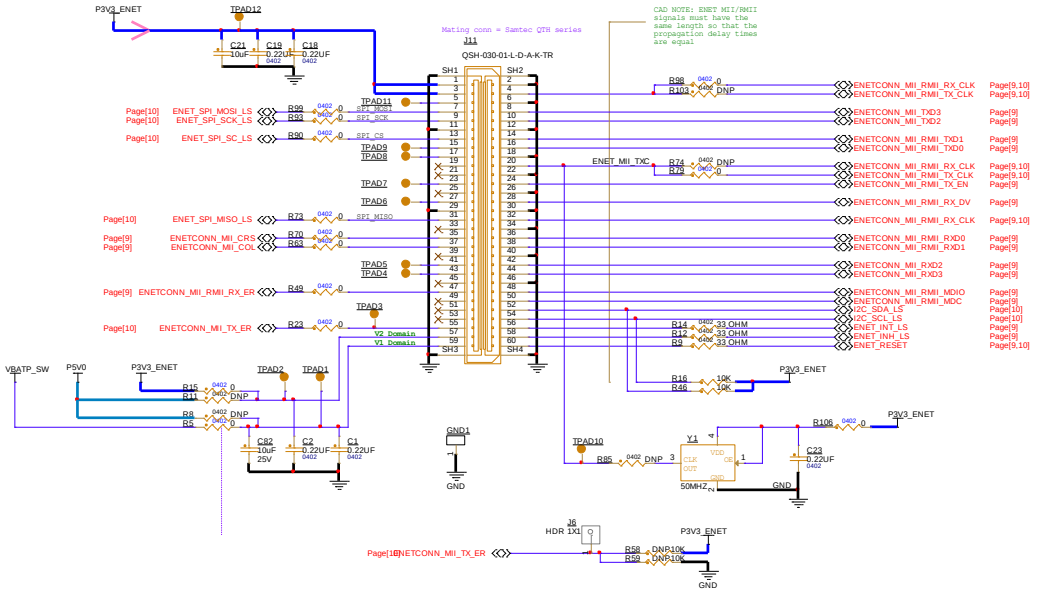


Figure 19. S32K3X4EVB-S172 – Ethernet RMII/MII SABRE Connector

11.1.1 Ethernet MII/RMII SABRE Connector – Pinout

Table 14. Ethernet MII/RMII Configuration

MODULE /FUNCTION	SIGNAL	MCU PORT	DESCRIPTION /COMMENT
MII/RMII	ENET_MII_RMII_RXD0	PTD9	All ports routed to the Ethernet MII/RMII signal are not connected to other interface in the EVB
	ENET_MII_RMII_RXD1	PTD8	
	ENET_MII_RXD2	PTC15	
	ENET_MII_RXD3	PTC14	
	ENET_MII_RMII_RX_CLK	PTC1	
	ENET_MII_RMII_RX_ER	PTC16	
	ENET_MII_RMII_RX_DV	PTC17	
	ENET_MII_RMII_TXD0	PTB5	
	ENET_MII_RMII_TXD1	PTB4	
	ENET_MII_TXD2	PTD6	
	ENET_MII_TXD3	PTD5	
	ENET_MII_RMII_TX_CLK	PTC0	
	ENET_MII_RMII_TX_EN	PTE9	
	ENET_MII_RMII_MDC	PTD17	
	ENET_MII_RMII_MDIO	PTD16	
	ENET_MII_COL	PTB23	
	ENET_MII_CRS	PTB22	
GPIOs	ENET_INH_LS	PTA26	
	ENET_INT_LS	PTA27	
	ENET_RESET	PTE5	As optional GPIO for a RESET on the ethernet connector is the PTE21, for this option, R439/0-Ohms must be placed.
LPSPIx	ENET_SPI_MISO_LS	PTC9	
	ENET_SPI_MOSI_LS	PTB1	
	ENET_SPI_SC_LS	PTC8	
	ENET_SPI_SCK_LS	PTB8	
I2C	I2C_SDA_LS	PTC6	
	I2C_SCL_LS	PTC7	
PWR	VBATP	+12V	P5V0 [+5.0V] can be routed to the Ethernet connector as optional power supply reference instead the VBATP reference. For this option, R380/0-Ohms must be placed and R381 must be removed.
	P3V3_ENET	+3.3V	P5V0 [+5.0V] can be routed to the Ethernet connector as optional power supply reference instead the P3V3_ENET reference. For this option, R380/0-Ohms must be placed and R381 must be removed.

Table 15. Ethernet Interface - Jumpers

	Reference	Position	Description/Comment
Ethernet Interface	**J32**	1-2	P3V3 domain is used to supply the Ethernet Interface
		OPEN	The Ethernet Interface is disabled
	J61	1-2	VDD_HV_B_PERH is routed to VDD_HV_B_ENET
		OPEN	The level Shifters for the Ethernet Interface are disabled

11.2 S32K3X4EVB-Q172 – 10/100 T-Base Ethernet Phy

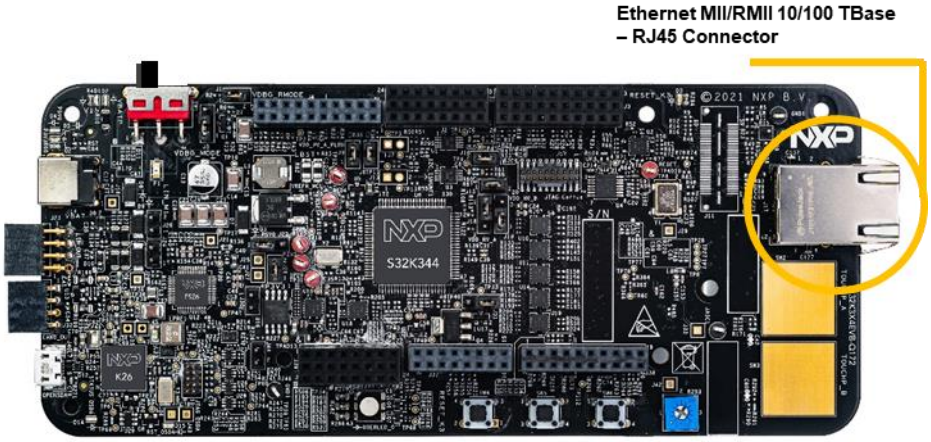


Figure 20. S32K3X4EVB-S172 – 10/100 T-Base Ethernet Phy

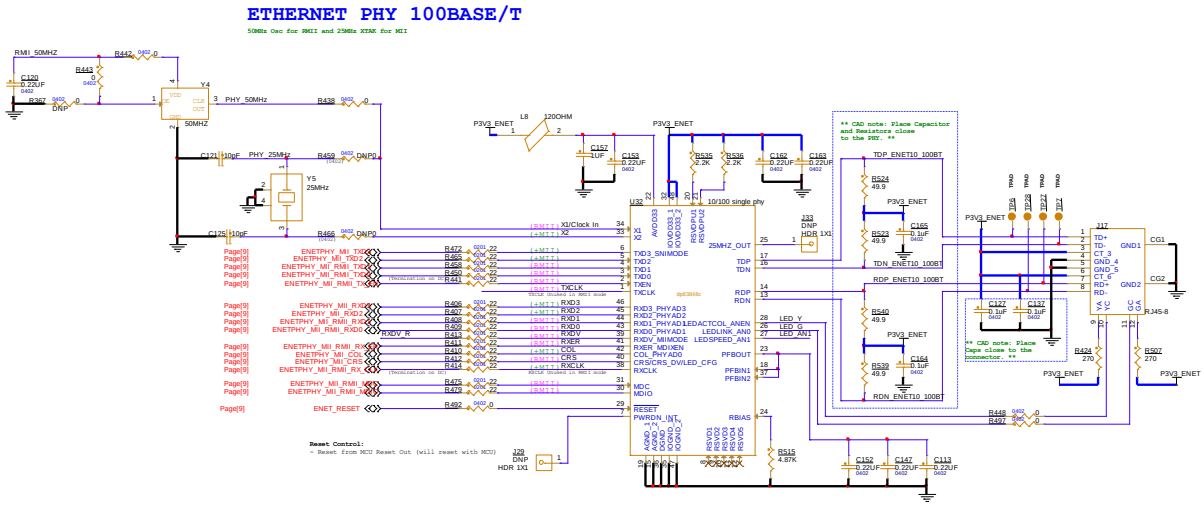


Figure 21. S32K3X4EVB-Q172 – 10/100 T-Base Ethernet Phy

12 S32K3X4EVB-Q172 | -S172 - QSPI-A Interface

The S32K3 EVB incorporates a MX25L6433F is 64Mb bits Serial NOR Flash memory, which is connected to the QSPIA Module of the S32K344 MCU.

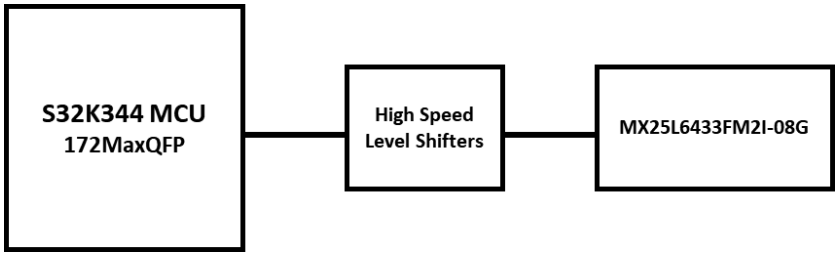


Figure 22. S32K3X4EVB-Q172 – QSPIA Memory Interface

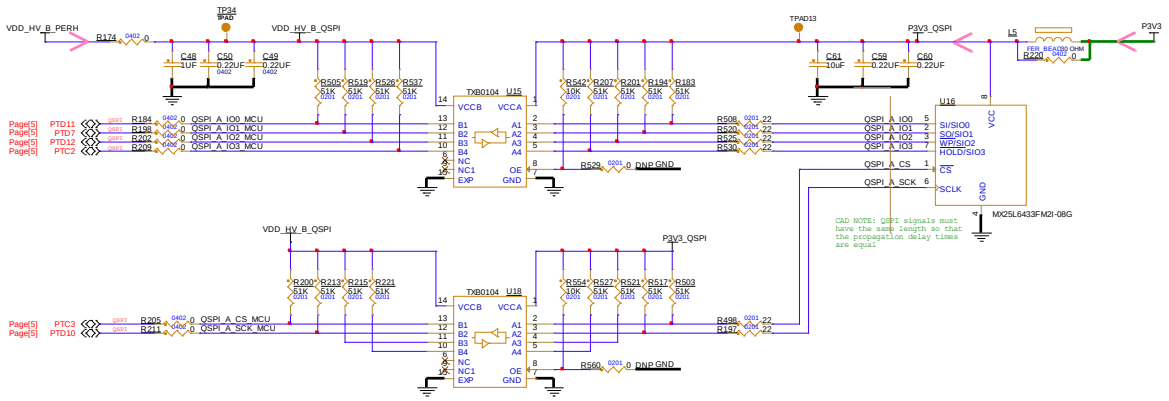


Figure 23. S32K3X4EVB-Q172 – QSPIA Memory Interface

The table below details the signals configuration for the QSPI-A.

Module /Function	Signal	MCU PORT	DESCRIPTION /COMMENT
QSPIA	QSPI_A_IO0_MCU	PTD11	All MCU ports routed to the QSPIA Memory Interface are not connected to other interface in the EVB. TRACE signals are disabled as DEFAULT
	QSPI_A_IO1_MCU	PTD7	
	QSPI_A_IO2_MCU	PTD12	
	QSPI_A_IO3_MCU	PTC2	
	QSPI_A_SCK_MCU	PTD10	

Module /Function	Signal	MCU PORT	DESCRIPTION /COMMENT
	QSPI_A_CS_MCU	PTC3	

13 S32K3X4EVB-Q172 | -S172 - User Peripherals

13.1 User RGB LED Indicator

There is 1 active high user RGB LEDs are connected by NPN transistors to the MCU ports. The USERLEDs are connected as follows:

Table 16. User LED Indicators

Reference	Signal Name	MCU Port Default	Color	Comment
D13	RGBLED0_RED	PTA29	Red	Active High
	RGBLED0_GREEN	PTA30	Green	Active High
	RGBLED0_BLUE	PTA31	Blue	Active High

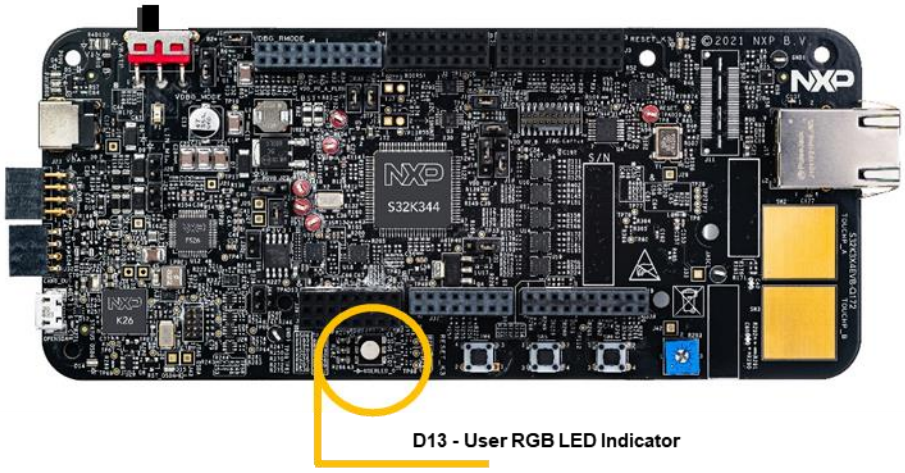


Figure 24. S32K3X4EVB-S172 – User RGB LED Indicator

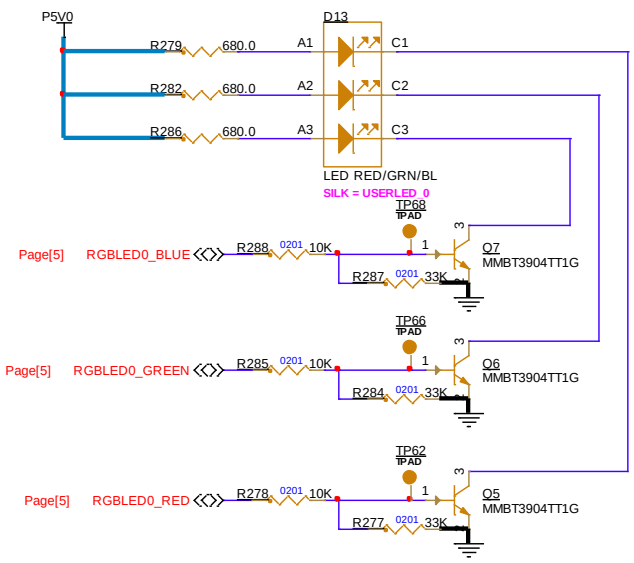


Figure 25. S32K3X4EVB-Q172 – User LED indicators

13.2 User Pushbuttons

There are 2 push-buttons active to high (pulled low, driven to VDD_HV_A and VDD_HV_B), the push button switches (SW6 and SW5) connected to MCU ports. The switches are connected as follows:

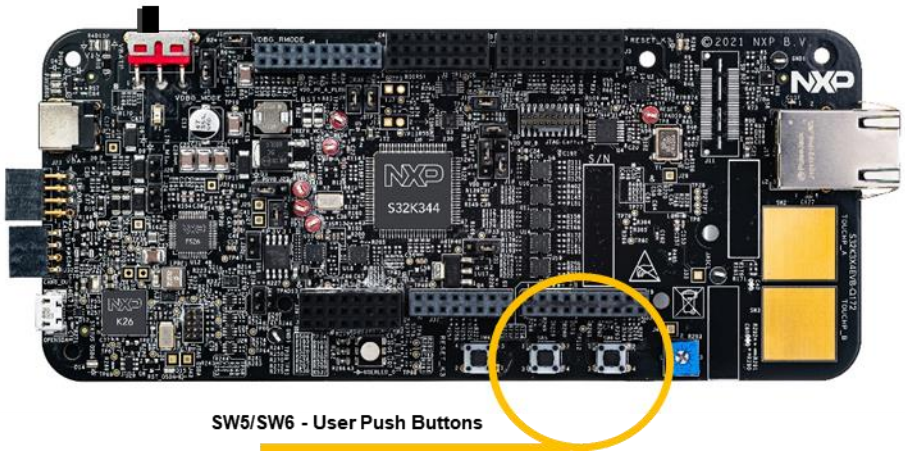


Figure 26. S32K3X4EVB-Q172 – User Pushbuttons

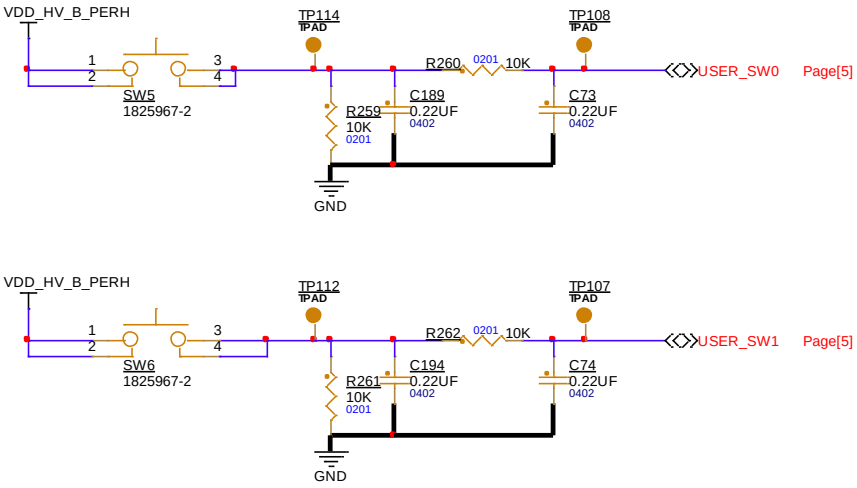


Figure 27. S32K3X4EVB-Q172 – User Pushbuttons

Table 17. User Pushbuttons

Reference	Function	MCU Port	Comments
SW5	USER_SW0	PTB26	Disabled
SW6	USER_SW1	PTB19	Enabled as DEFAULT
		PTF31	Disabled
		PTC18	Disabled

1. There are zero-ohm resistors on the direct connections between each **USER_SWx** and the MCU pins. These can be removed if required to isolate or change the User Switch from the default MCU pin.

13.3 ADC Rotary Potentiometers

The EVB incorporates a couple of ADC Rotary Potentiometer [which routes a voltage between 0v to VD_HV_A] directly connected to ADC Precise Input Chanel of the S32K344 Microcontroller.

Table 18. ADC Potentiometers

Reference	Function	MCU Port	Comments
R393	ADC_POT0	PTA11	Enabled as DEFAULT
		PTA9	Disabled

NOTE

1. There are zero-ohm resistors on the direct connections between each USERSW and the MCU pins. These can be removed if required to isolate or change the User Switch from the default MCU pin.

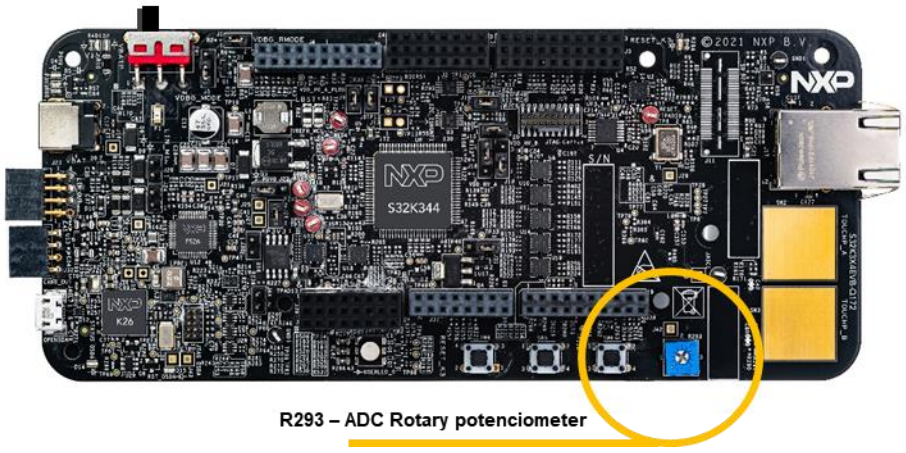


Figure 28. S32K3X4EVB-Q172 – ADC Rotary Potentiometers

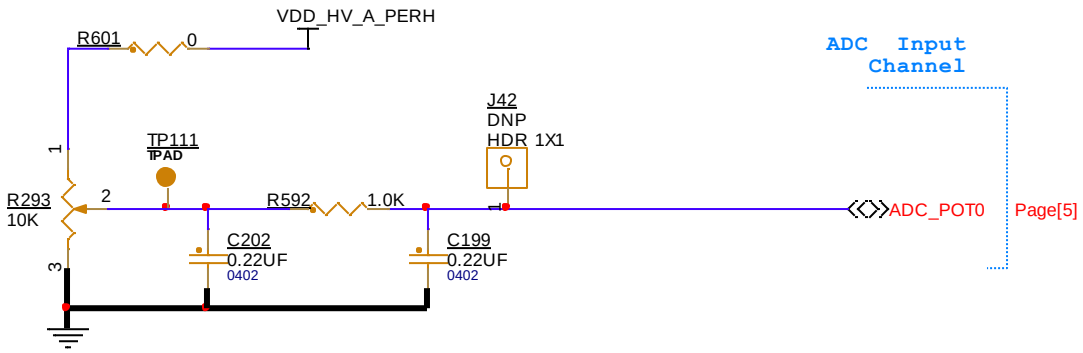


Figure 29. S32K3X4EVB-Q172 – ADC Rotary Potentiometers

14 S32K3X4EVB-Q172 | -S172 - Default Jumpers

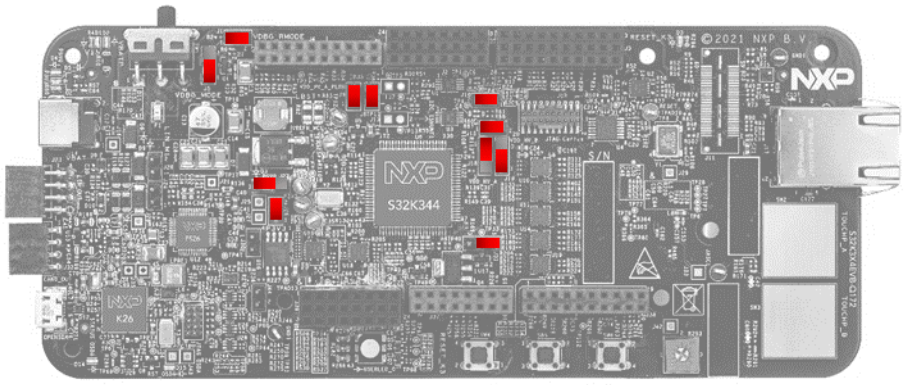


Figure 30. S32K3X4EVB-Q172 | -S172 – Default jumpers' configuration

Table 19. Default Jumper Configuration

Interface	Reference	Position	Description / Comments
FS26x SBC Power Supply	**J22**	1-2	FS26_VLDO1 [+5.0V] is routed to P5V0 domain
	J26	1-2	FS26_VLDO2 [+3.3V] is routed to P3V3 domain
	J1	1-2	Flash Mode – configuration in the FS26
	J5	1-2	
S32K344 MCU Power Supply	**J18**	1-2	P5V0 (+5.0V from the FS26) is selected for the VDD_HV_A_MCU reference.
	J10	1-2	VDD_HV_A is routed to VDD_HV_A_MCU reference. A jumper on this position disables the shunt resistors R57 and R58 are disabled for current measurement proposals.
	J19	3-4	P3V3 (+3.3V from the FS26) is selected for the VDD_HV_B_MCU reference.
	J15	1-2	VDD_HV_B is routed to VDD_HV_B_MCU reference. A jumper on this position disables the shunt resistors R74 and R75 are disabled for current measurement proposals.
	J9	1-2	VDD_HV_B is routed to VDD_HV_B_PERH
	J8	1-2	VDD_HV_A is routed to VDD_HV_A_PERH
	J31	5-6	The VCORE reference from the FS26 is selected to supply the V15_MCU domain.

15 S32K3X4EVB-Q172 | -S172 - Revision history

Table 20. Revision history

Document Revision	Date	Schematic / Board Number	Schematic / Board Revision	Changes	Author
A	10/2021	51972	A	Internal version	Jesús Sánchez

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