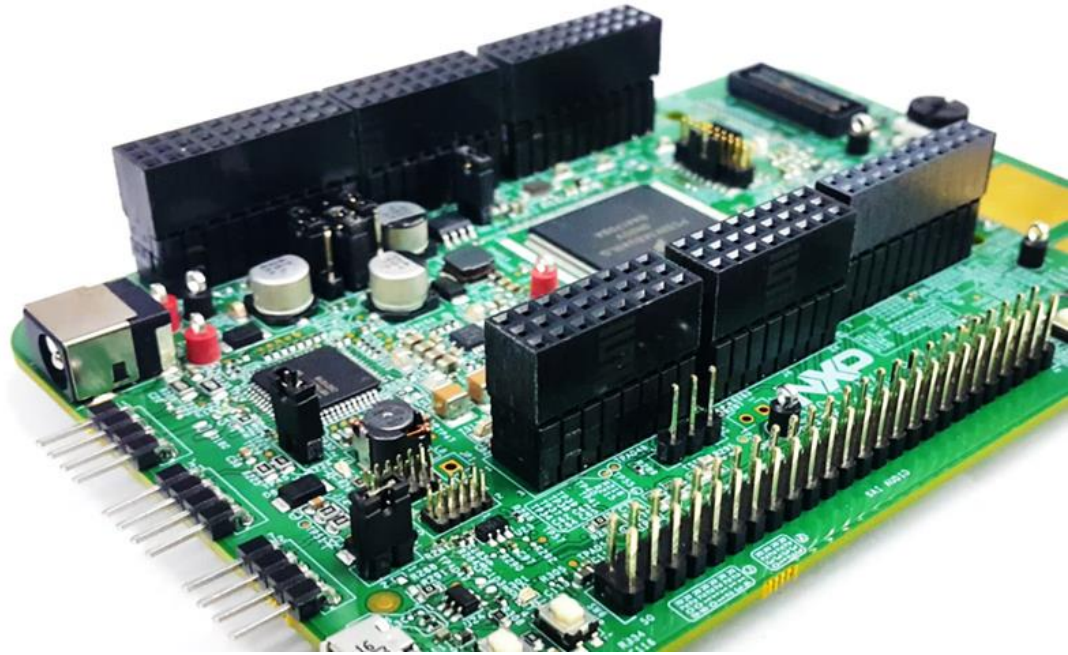
S32K148 CUSTOMER EVB

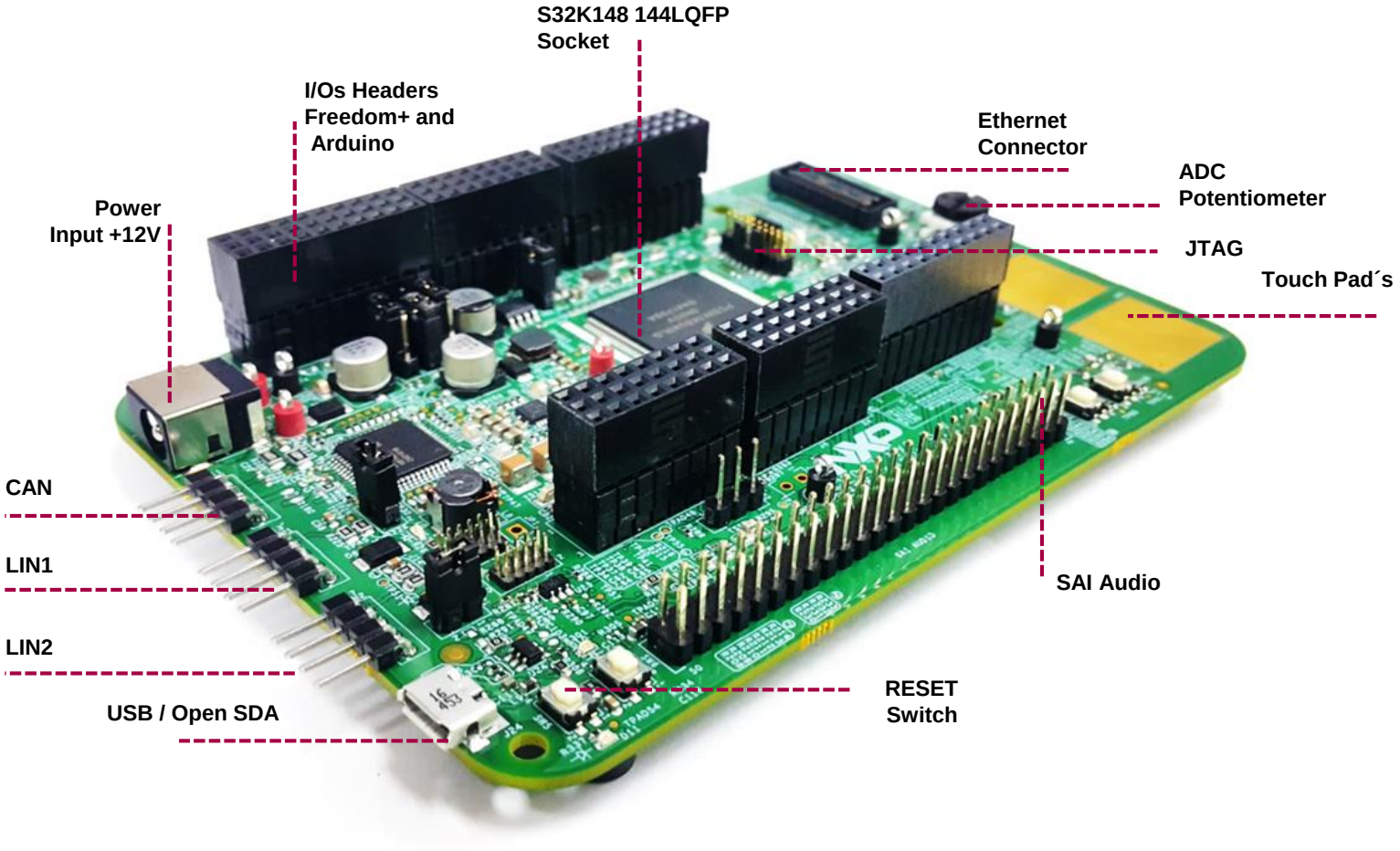


HW USER MANUAL
FOR **S32K148EVB-Q144**

JUNE.02.2017

SECURE CONNECTIONS
FOR A SMARTER WORLD

S32K148 Customer EVB– Main Features

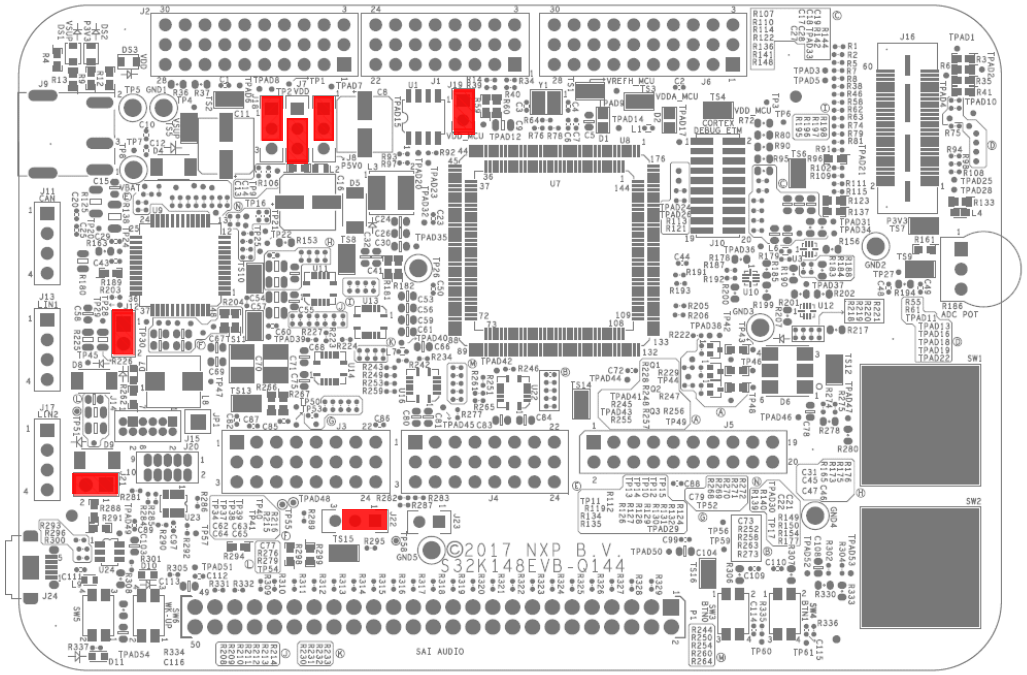


The **S32K148EVB** is a development platform for S32K Microcontrollers.

Features include easy access to all MCU I/O´s, a standard-based form factor compatible with the Arduino™ pin layout, providing a broad range of expansion board options, and an USB serial port interface for connection to the IDE, the board has option to be powered via USB or an external power supply.

Default Jumper Configuration

REFERENCE	POSITION	DESCRIPTION
J18	1-2	**VBAT(+12V)** is routed to the input of the 3V3 switching power supply
J12	1-2	LIN Master option enabled for LIN1
J21	1-2	LIN Master option enabled for LIN2
J7	2-3	**P5V0 is routed to VDD** domain
J8	1-2	**P5V0_V1SBC** (+5V) is routed to **P5V0** domain
J22	1-2	**RESET** switch is routed to MCU RESET Line
J19	1-2	**VDD** is routed to **VDD_MCU** domain



S32K148EVB – CAN and LIN connectors

J11

1. CANH
2 .CANL
3. VBAT [by 0 RESISTOR - DNP]
4. GND

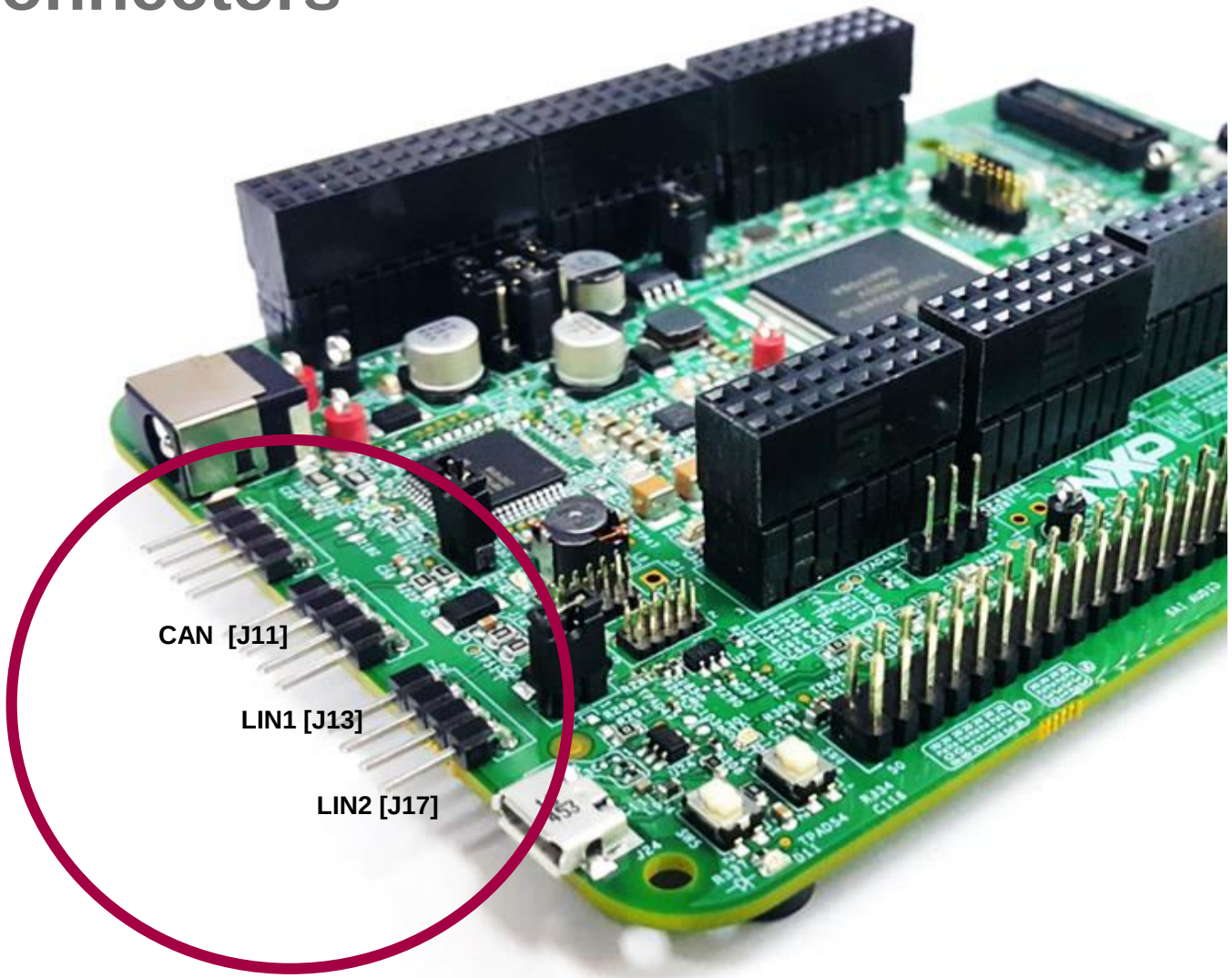
J13

1. LIN1
2 .VBAT
3. NC
4. GND

J17

1. LIN2
2 .VBAT
3. NC
4. GND

Front view



S32K148EVB – USB/OpenSDA

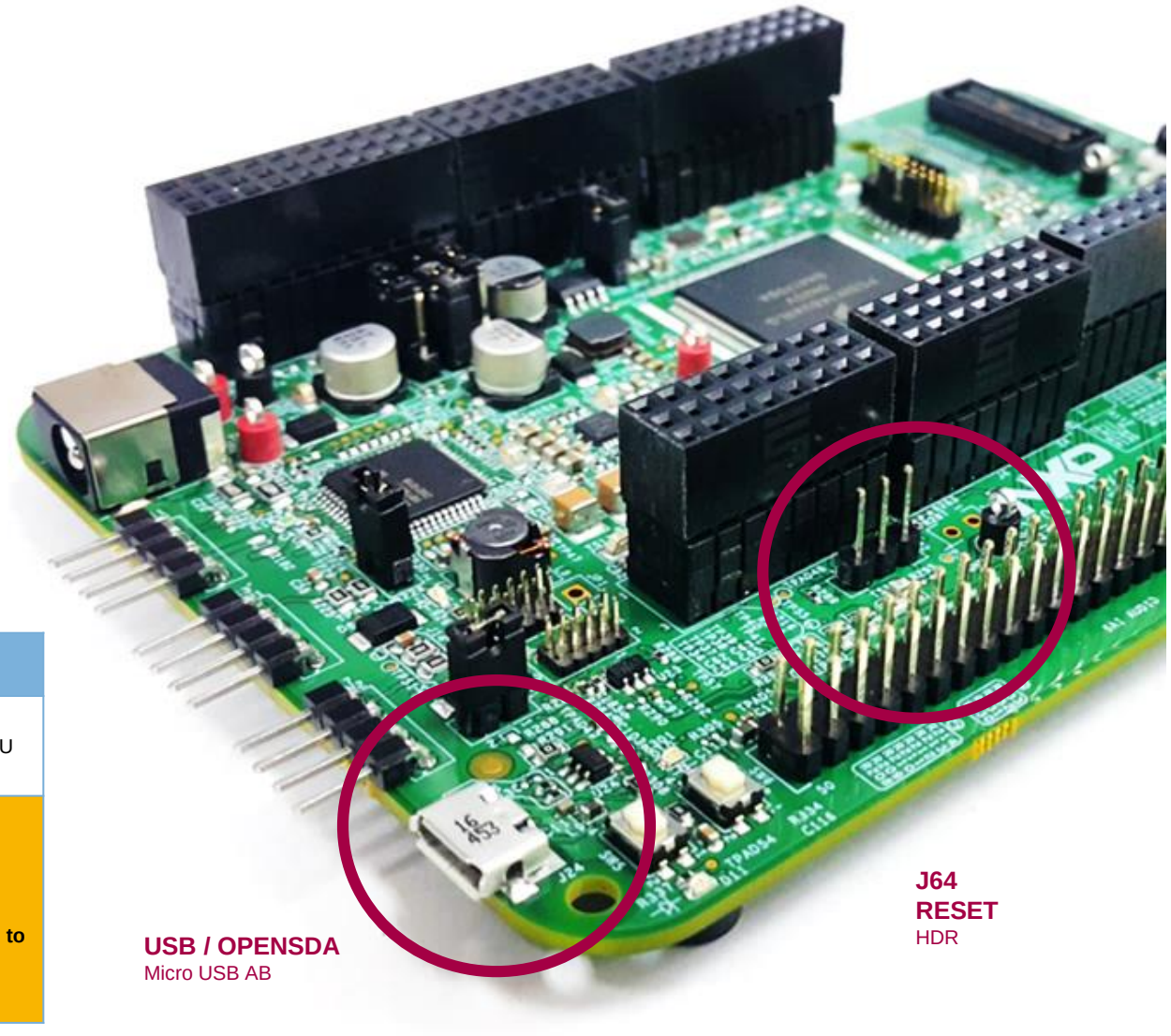
OpenSDA is a serial and debug adapter that is built into several NXP® evaluation boards. It provides a bridge between your computer (or other USB host) and the embedded target processor, which can be used for debugging, flash programming, and serial communication, all over a simple USB cable.

The OpenSDA hardware consists of a circuit featuring a Kinetis® K2x microcontroller with an integrated USB controller. On the software side, it implements a mass storage device bootloader which offers a quick and easy way to load OpenSDA applications such as flash programmers, run-control debug interfaces, serial to USB converters, and more.

REFERENCE	POSITION		DESCRIPTION
J64	1-2		**RESET** switch is routed RST MCU

ONLY for RevA

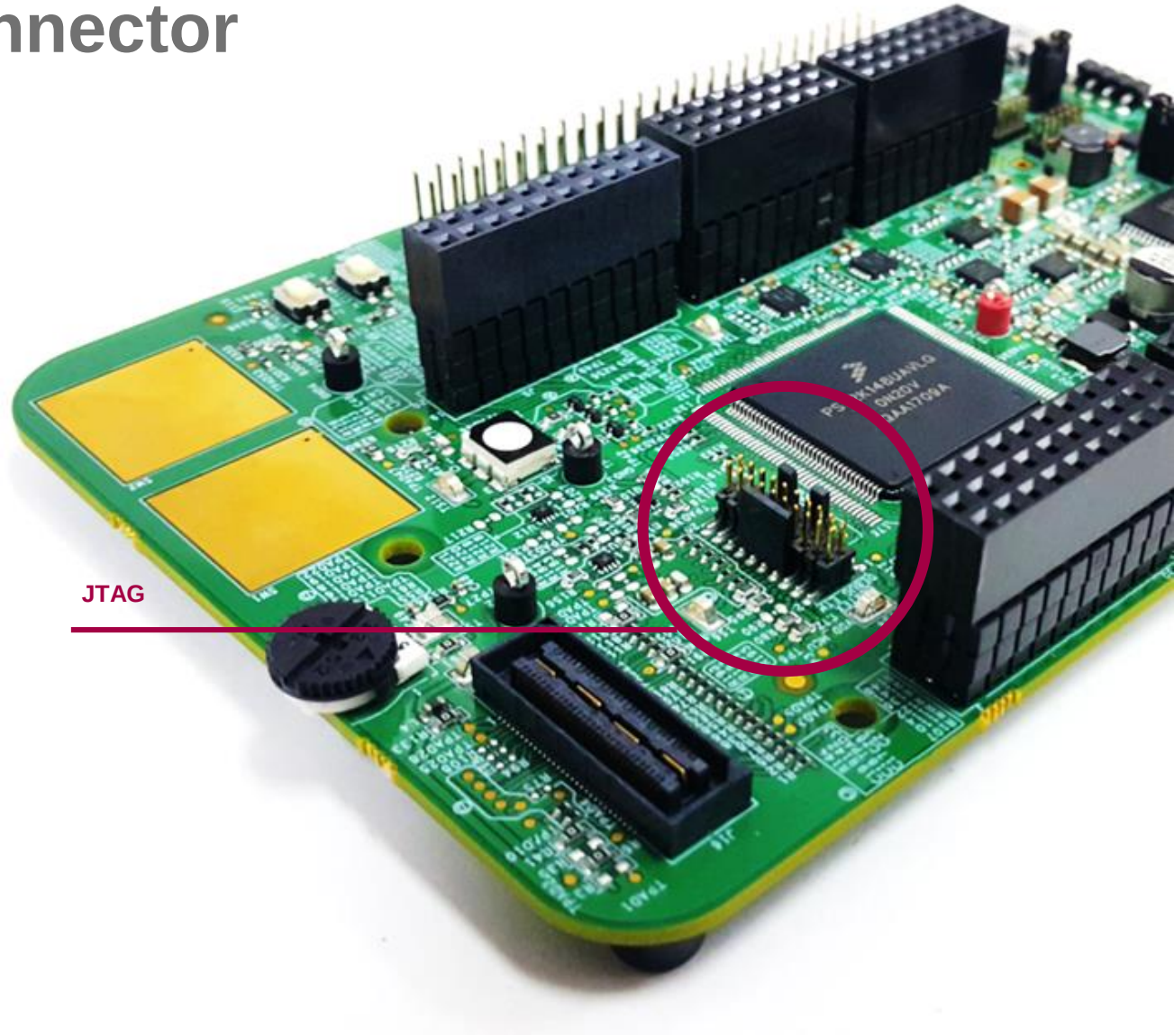
- **R537 must be removed when the S32K148 EVB is powered only via USB/OPEN SDA**
- **In order to enable SPI communication with the SBC UJA1132. R177 and R154 must be removed and to swpie [PTA29/FTM5_CH4/LPUART2_TX/LPSPI1_SIN_LS] and [PTA27/FTM5_CH2/LPSPI1_SOUT/LPUART0_TX_LS] by external wires.**



S32K148EVB – JTAG Debug Connector

The following table shows the pinout of the debug connector used on the **S32K148EVB-Q144/Q176**

JTG_PWR	1		2	JTAG_TMS
GND	3		4	JTAG_TCLK
GND	5		6	JTAG_TDO
NC	7		8	JTAG_TDI
NC	9		10	JTAG_RESET
JTG_PWR	11		12	TRACE_CLK
JTG_PWR	13		14	TRACE_D0
GND	15		16	TRACE_D1
GND	17		18	TRACE_D2
GND	19		20	TRACE_D3



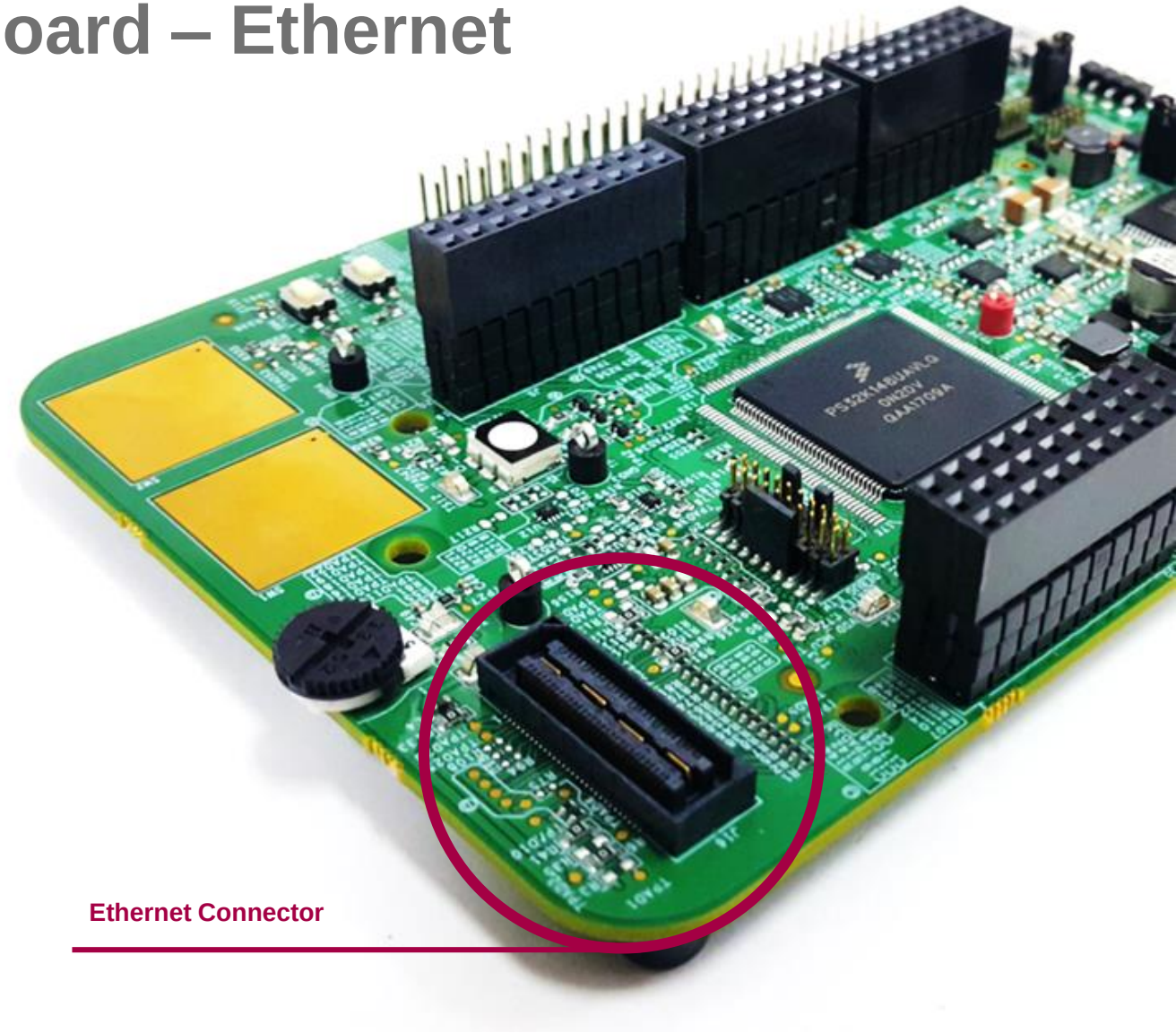
S32K148 Customer Validation Board – Ethernet

The S32K148 supports both MII and RMII Ethernet interfaces. The S32K14xCVD-Q144 incorporates an ENET board-to-board connector in order to install the optional ENET cards.

Ethernet, SPI2, I2C0 GPIOs and RESET signals from the S32K148 MCU are routed to ENET Connector. 3.3V, 5V and 12V (VSUP – Protected Battery Voltage, disabled with 0-Ohms resistor) are available as power supply references

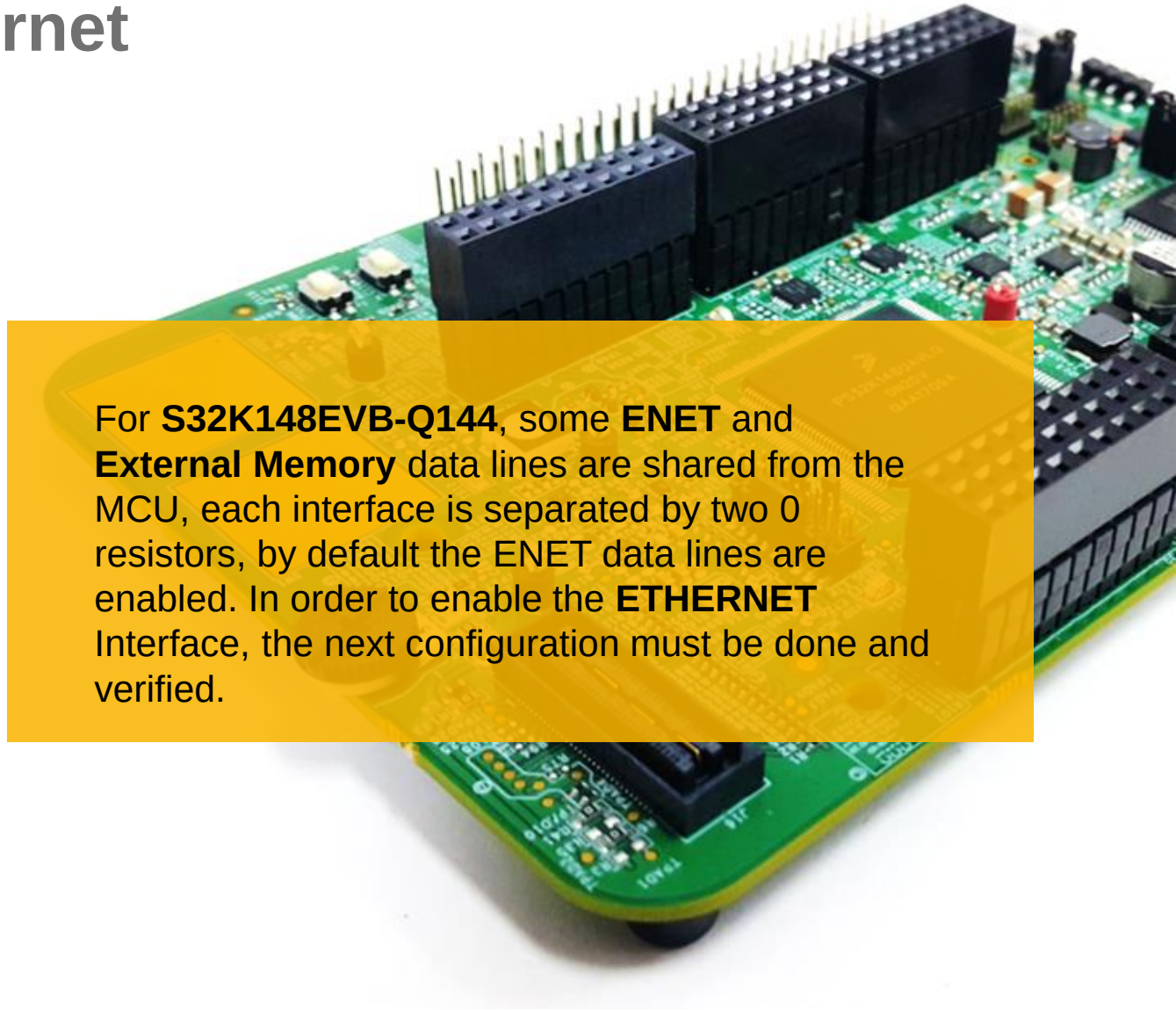
ONLY for RevA

- **R123 and R96 must be removed**
- **R137 and R514 must be placed**



S32K148 Customer EVB – Ethernet

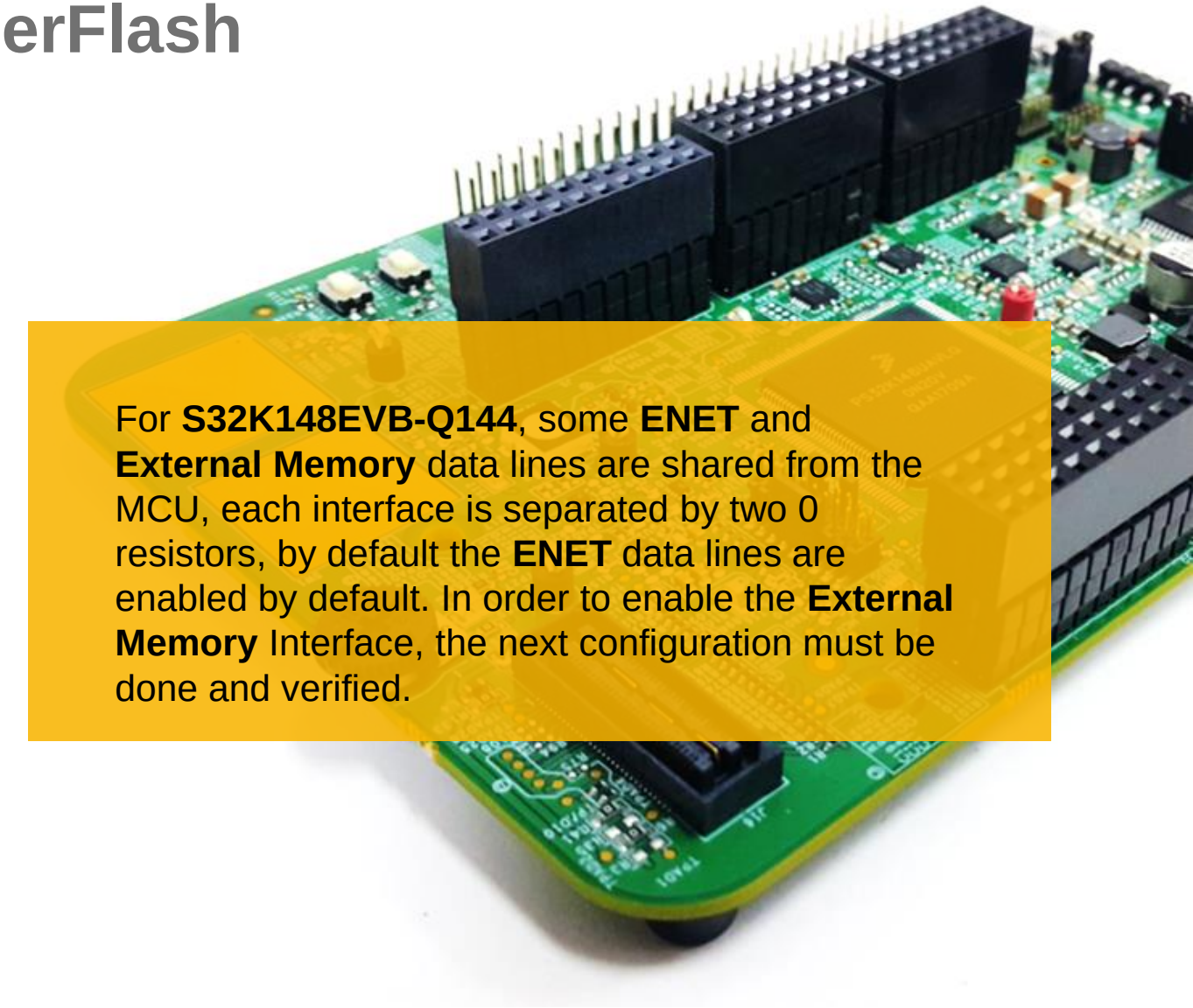
CIRCUIT	PART REFERENCE	SIGNAL NAME	DESCRIPTION
ENET	R198	PTD9/MII_RXD2	Populate 0 Ohms/0402 Resistors
	R197	PTD8/MII_RXD3	
	R196	PTC17/MII_RMII_RX_DV	
	R195	PTC16/MII_RMII_RX_ER	
	R268	PTB4/MII_RMII_MDIO	
	R269	PTD6/MII_TXD2	
	R270	PTD5/MII_TXD3	
	R272	PTD7/MII_RMII_TXD1	
	R277	PTC0/MII_RMII_RXD1	
	R264	PTC1/MII_RMII_RXD0	
	R260	PTC2/MII_RMII_TXD0	
	R250	PTD10/MII_RX_CLK	
	R208	PTD12/MII_RMII_TX_EN	
	R210	PTD11/MII_RMII_TX_CLK	
	R212	PTC3/MII_TX_ER	
External Memory	R271	PTD7/QSPI_A_IO1	Depopulate 0 Ohms/0402 Resistors
	R254	PTC2/QSPI_A_IO3	
	R209	PTD12/QSPI_A_IO2	
	R211	PTD11/QSPI_A_IO0	
	R213	PTC3/QSPI_A_CS	
	R244	PTD10/QSPI_A_SCK	



For **S32K148EVB-Q144**, some **ENET** and **External Memory** data lines are shared from the MCU, each interface is separated by two 0 resistors, by default the ENET data lines are enabled. In order to enable the **ETHERNET** Interface, the next configuration must be done and verified.

S32K148 Customer EVB – HyperFlash

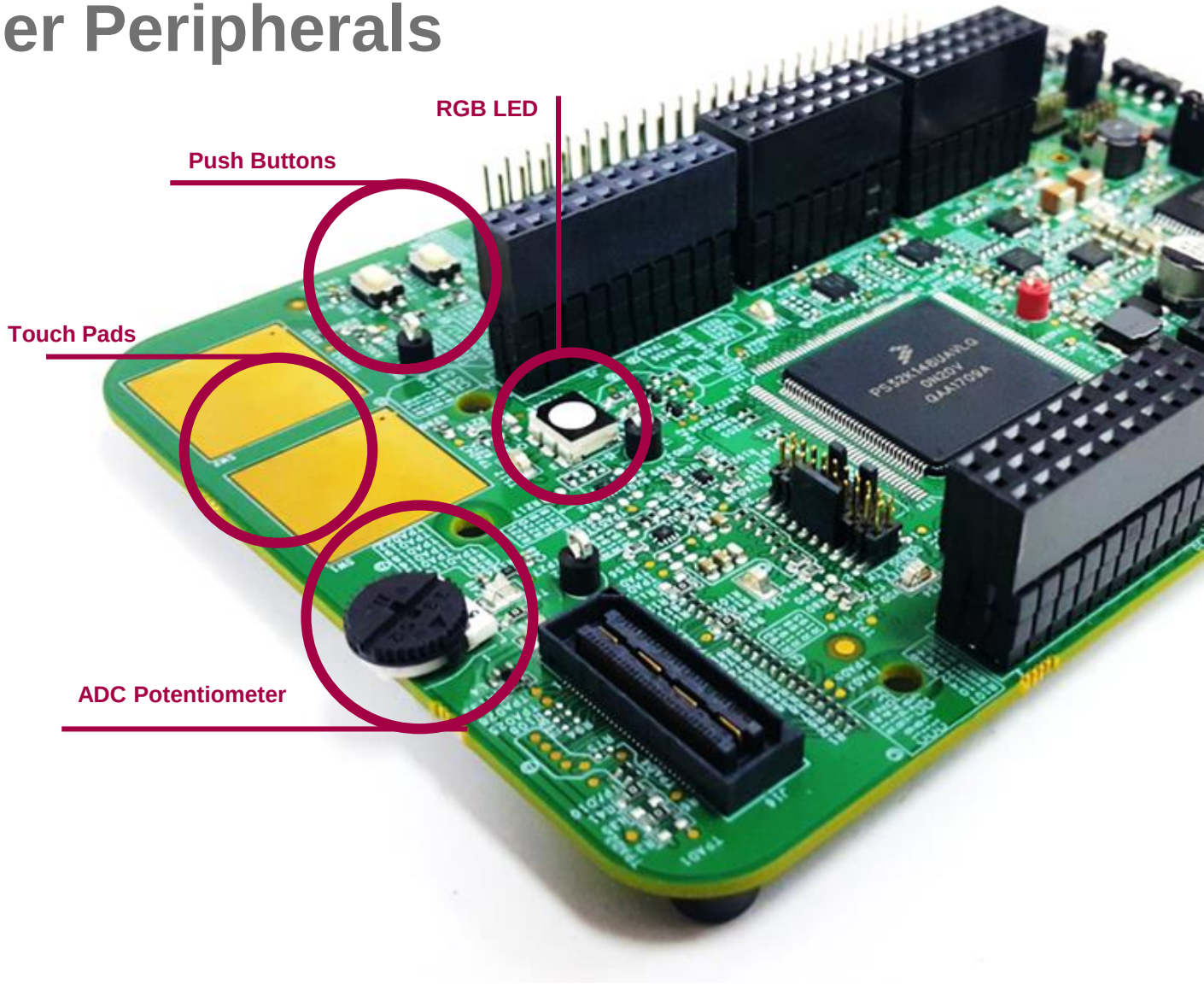
CIRCUIT	PART REFERENCE	SIGNAL NAME	DESCRIPTION
ENET	R198	PTD9/MII_RXD2	Deopulate 0 Ohms/0402 Resistors
	R197	PTD8/MII_RXD3	
	R196	PTC17/MII_RMII_RX_DV	
	R195	PTC16/MII_RMII_RX_ER	
	R268	PTB4/MII_RMII_MDIO	
	R269	PTD6/MII_TXD2	
	R270	PTD5/MII_TXD3	
	R272	PTD7/MII_RMII_TXD1	
	R277	PTC0/MII_RMII_RXD1	
	R264	PTC1/MII_RMII_RXD0	
	R260	PTC2/MII_RMII_TXD0	
	R250	PTD10/MII_RX_CLK	
	R208	PTD12/MII_RMII_TX_EN	
	R210	PTD11/MII_RMII_TX_CLK	
	R212	PTC3/MII_TX_ER	
External Memory	R271	PTD7/QSPI_A_IO1	Populate 0 Ohms/0402 Resistors
	R254	PTC2/QSPI_A_IO3	
	R209	PTD12/QSPI_A_IO2	
	R211	PTD11/QSPI_A_IO0	
	R213	PTC3/QSPI_A_CS	
	R244	PTD10/QSPI_A_SCK	



For **S32K148EVB-Q144**, some **ENET** and **External Memory** data lines are shared from the MCU, each interface is separated by two 0 resistors, by default the **ENET** data lines are enabled by default. In order to enable the **External Memory** Interface, the next configuration must be done and verified.

S32K148 Customer EVB – User Peripherals

CIRCUIT	PART REFERENCE	SIGNAL NAME	DESCRIPTION
TOUCH	SW1	TOUCH_ADC0_B	PTA1
		TOUCH_ADC1_B	PTA15
	SW2	TOUCH_ADC0_A	PTA0
		TOUCH_ADC1_A	PTA16
RGB LED	Blue	PTE21	User LED
	Green	PTE22	User LED
	Red	PTE23	User LED
ADC Potentiometer	R186	PTC28	Rotary Potentiometer (0-VDDA)
Push Button	SW3	PTC12/BTN0	User SW. Active HIGH
	SW4	PTC13/BTN1	User SW. Active HIGH



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