


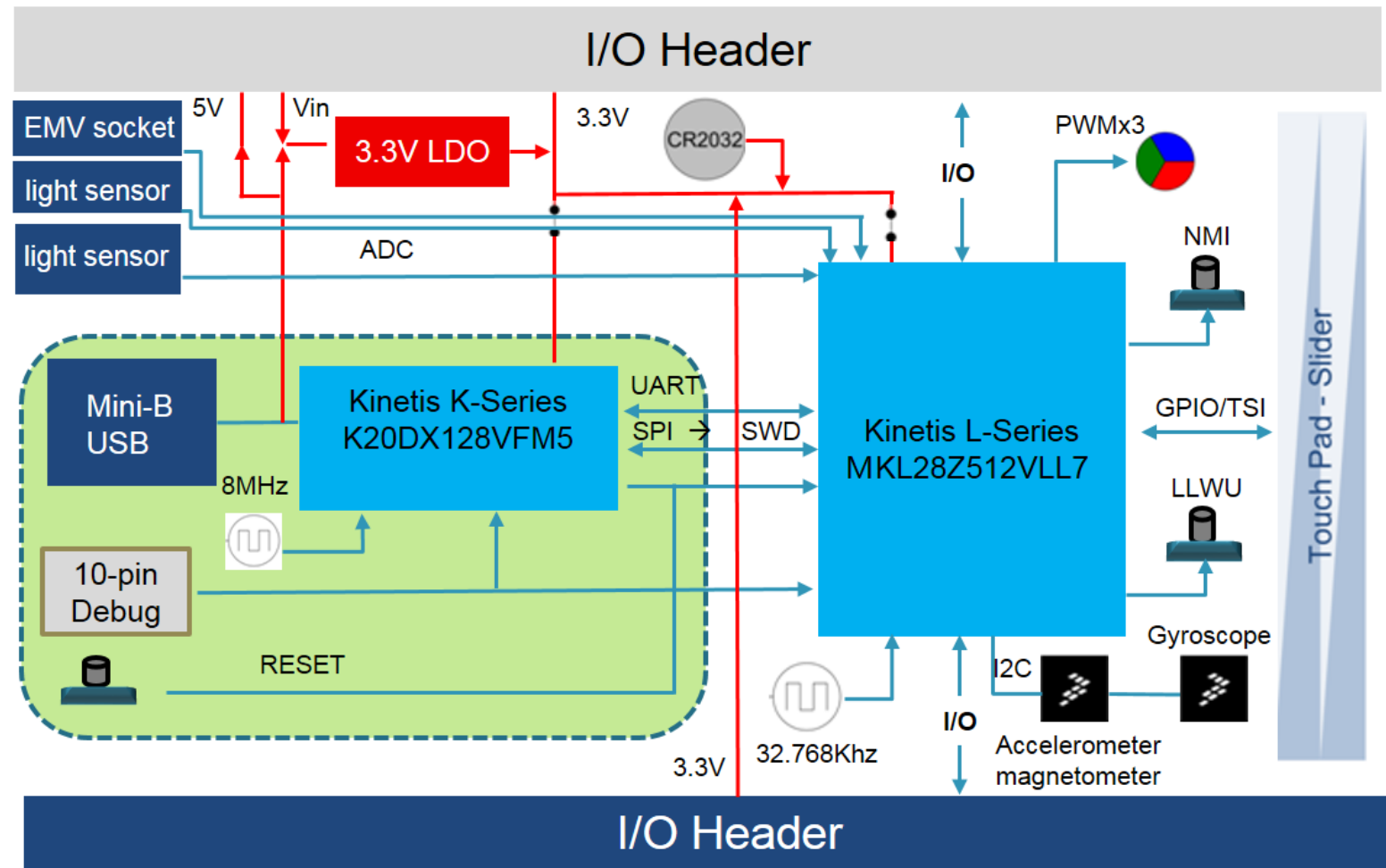
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5	I/O Headers and Power Supply

Revisions			
Rev	Description	Date	Approved
X1	Initial draft	Mar 23, 2015	
X2	1. DNP NMI cap, add pull up res. 2. Add 2 0ohm res to optionally cut openSDA signals	April 23, 2015	
B	1. Replace LED resistor of 220 Ohm by 10K Ohm. 2. Add 4.7K pull up resistor for EMVSIM_IO. 3. Change Pull up for reset pin from P3V3 to P3V3_KL28Z. 4. Add 0 Ohm resistor R104, R105 to seperate P3V3_KL28Z	June 19, 2015	
B1	1. Update 74LVC125A package to be TSSOP 2. Set battery circuit to be DNP	Jan 28, 2016	
B2	1. Update all part to sync with AGILE.	Mar 31, 2017	

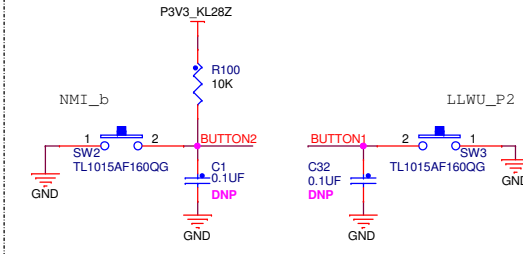
FRDM-KL28Z

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ICAP Classification:		FCP:	FIUC: PUBL: X
Designer:	Drawing Title: FRDM-KL28Z		
Drawn by:	Page Title: TITLE PAGE		
Approved:	Size: C	Document Number: SCH-28401 PDF: SPF-28401	Rev: B2
Date: Thursday, March 31, 2016	Sheet 1 of 5		

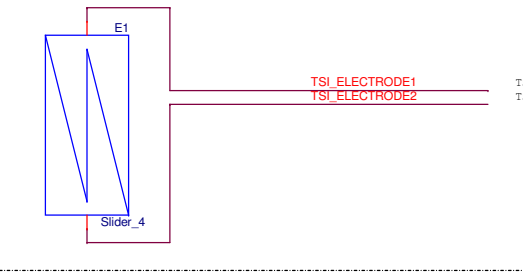


Indicates optional items that will not be populated by default

Push Buttons

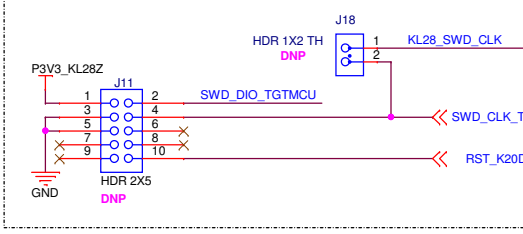


Touch Interface

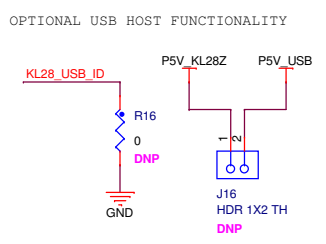
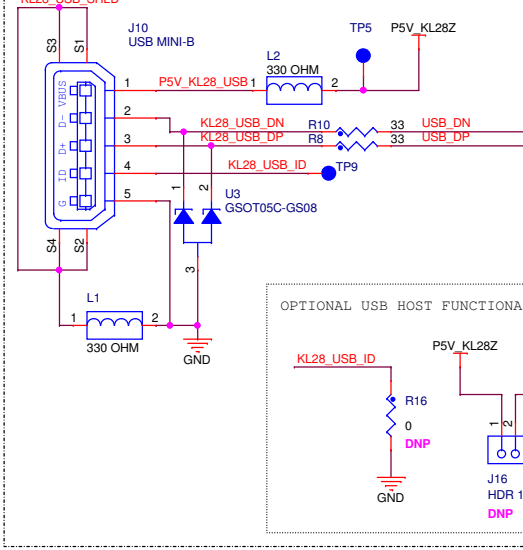


SWD CONNECTOR

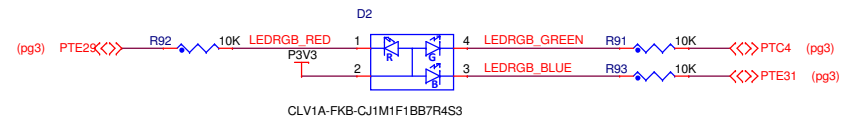
SHORTING HEADER ON BOTTOM LAYER
Jumper is shorted by a cut-trace on bottom layer. Cutting the trace will effectively isolate the on-board MCU from the OpenSDA debug interface.



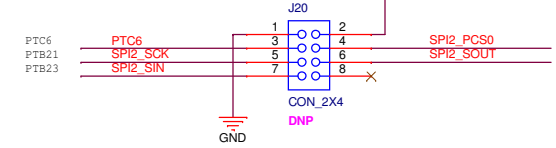
USB



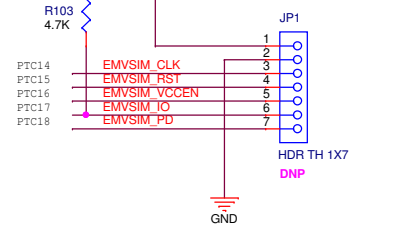
RGB LED



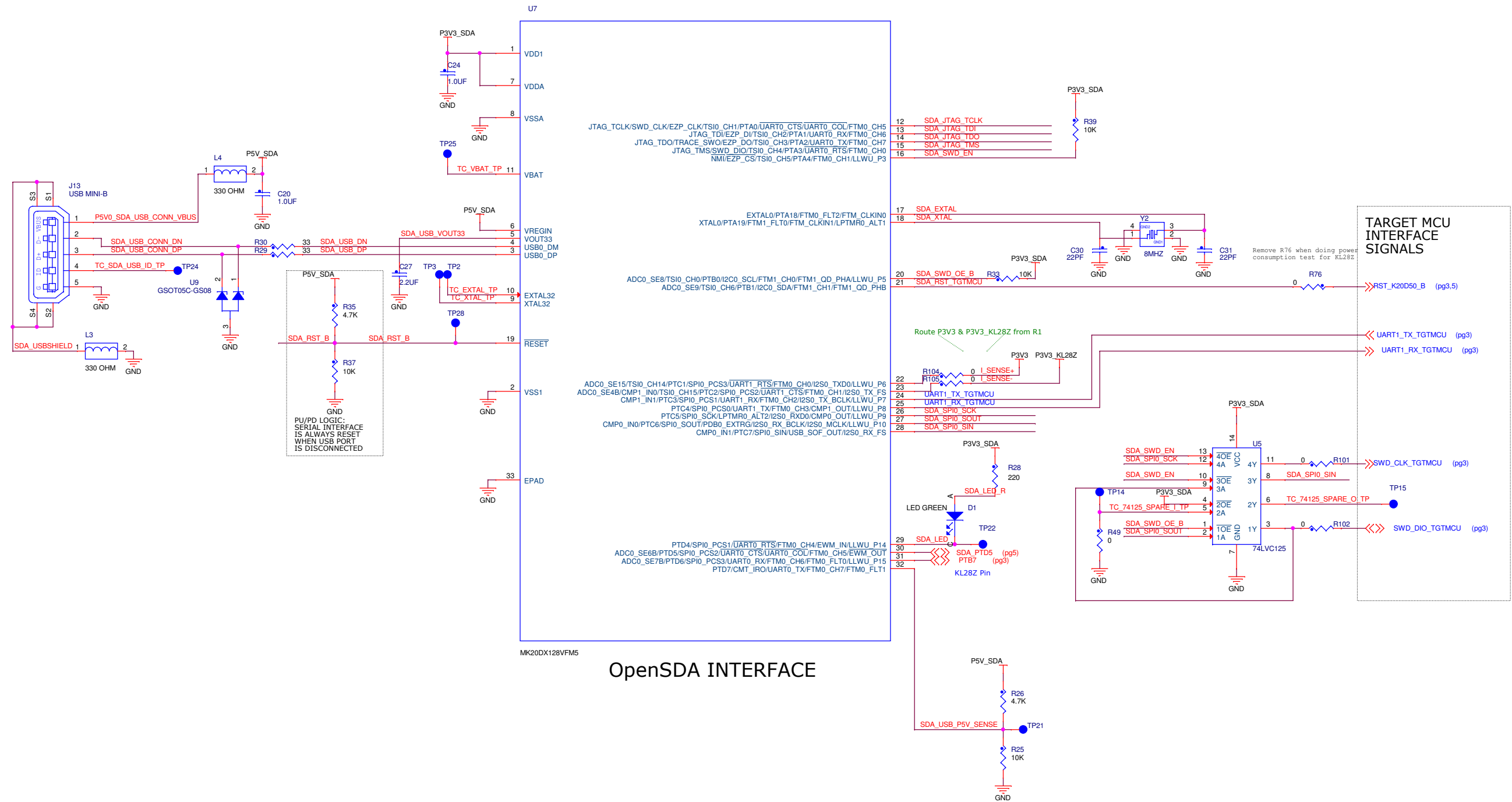
SPI2 HEADER



EMVSIM HEADER

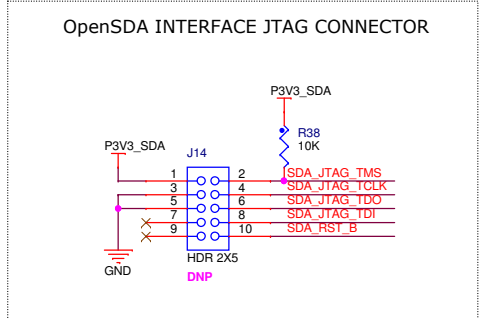
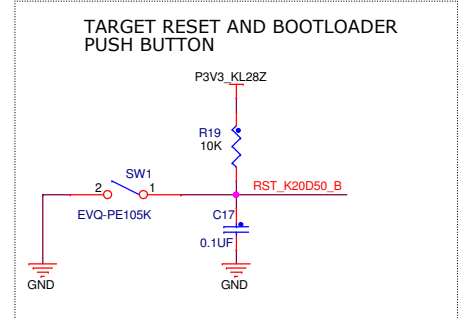


KL28 SWD_CLK	34	PTA0/SWD_CLK/TSI0_CH1/UART0_CTS/TPM0_CH5/I2C0_SDAOUT
TSI ELECTRODE1	35	PTA1/TSI0_CH2/UART0_RX/TPM2_CH0
TSI ELECTRODE2	36	PTA2/TSI0_CH3/UART0_TX/TPM2_CH1
BUTTON2	38	PTA3/SWD_DIO/TSI0_CH4/I2C1_SCL/TPM0_CH0/UART0_RTS
	39	PTA4/LLWU_P3/TSI0_CH5/I2C1_SDA/TPM0_CH1/NMI0
	40	PTA5/USB_CLKIN/TPM0_CH2/I2C2_REQ/I2S0_TX_BCLK
	41	PTA6/TPM0_CH3
	42	PTA7/SPM0_PCS3/TPM0_CH4/I2C2_SDAOUT
	43	PTA12/TPM1_CH0/I2C2_SCL/I2S0_TXD0/BBS0_P6
	44	PTA13/LLWU_P4/TPM1_CH1/I2C2_SDA/I2S0_TX_FS/BBS0_P7
	45	PTA14/SPI0_PCS0/UART0_TX/I2C2_SCL/I2S0_RX_BCLK/I2S0_TXD0
	46	PTA15/SPI0_SCK/UART0_RX/I2S0_RXD0
	47	PTA16/SPI0_SOUT/UART0_CTS/I2S0_RX_FS/I2S0_RXD0
	50	PTA17/ADC0_SE22/SPI0_SIN/UART0_RTS/I2S0_MCLK
	51	PTA18/EXTALO/UART1_RX/TPM_CLKIN0
	52	PTA19/XTALO/UART1_TX/TPM_CLKIN1/LPTMR0_ALT1/LPTMR1_ALT1
		PTA20/RESET/I2C0_SCLOUT
		PTB0/LLWU_P5/ADC0_SE8/TSI0_CH0/I2C0_SCL/TPM1_CH0/FXIO0_D8/BBS0_P8
		PTB1/ADC0_SE9/TSI0_CH6/I2C0_SDA/TPM1_CH1/FXIO0_D9/BBS0_P9
		PTB2/ADC0_SE12/TSI0_CH7/I2C0_SCL/TPM2_CH0/UART0_RTS/FXIO0_D10/BBS0_P10
		PTB3/ADC0_SE13/TSI0_CH8/I2C0_SDA/TPM2_CH1/SPM1_PCS3/UART0_CTS/FXIO0_D11/BBS0_P11
		PTB7/SPI1_PCS1
		PTB8/SPI1_PCS0/EXTRG_IN/FXIO0_D12
		PTB9/SPI1_SCK/FXIO0_D13
		PTB10/SPI1_PCS0/FXIO0_D14
		PTB11/SPI1_SCK/FXIO0_D15
		PTB16/TSI0_CH9/SPI1_SOUT/UART0_RX/TPM_CLKIN0/SPI2_PCS3/FXIO0_D16/BBS0_P12
		PTB17/TSI0_CH10/SPI1_SIN/UART0_TX/TPM_CLKIN1/SPI2_PCS2/FXIO0_D17/BBS0_P13
		PTB18/TSI0_CH11/TPM2_CH0/I2S0_TX_BCLK/I2C1_REQ/FXIO0_D18/BBS0_P14
		PTB19/TSI0_CH12/TPM2_CH1/I2S0_TX_FS/SPI2_PCS1/FXIO0_D19/BBS0_P15
		PTB20/SPI2_PCS0/CMP0_OUT
		PTB21/SPI2_SCK/CMP1_OUT
		PTB22/SPI2_SOUT
		PTB23/SPI2_SIN
		PTC0/ADC0_SE14/TSI0_CH13/SPI2_PCS1/EXTRG_IN/audioUSB_SOF_OUT/CMP0_OUT/I2S0_TXD0/BBS0_P16
		PTC1/LLWU_P6/RTC_CLKIN/ADC0_SE15/TSI0_CH14/I2C1_SCL/UART1_RTS/TPM0_CH0/I2S0_TXD0/BBS0_P17
		PTC2/ADC0_SE11/CMP1_IN0/TSI0_CH15/I2C1_SDA/UART1_CTS/TPM0_CH1/I2S0_TX_FS/BBS0_P18
		PTC3/LLWU_P7/CMP1_IN1/SPI0_PCS1/UART1_RX/TPM0_CH2/CLKOUT/I2S0_TX_BCLK/BBS0_P19
		PTC4/LLWU_P8/SPI0_PCS0/UART1_TX/TPM0_CH3/I2S0_MCLK/CMP1_OUT/BBS0_P20
		PTC5/LLWU_P9/SPI0_SCK/LPTMR0_ALT2/LPTMR1_ALT2/I2S0_RXD0/CMP0_OUT/BBS0_P21
		PTC6/LLWU_P10/CMP0_IN0/SPI0_SOUT/EXTRG_IN/I2S0_RX_BCLK/I2S0_MCLK/BBS0_P22
		PTC7/CMP0_IN1/SPI0_SIN/audioUSB_SOF_OUT/I2S0_RX_FS/FXIO0_D20/BBS0_P23
		PTC8/CMP0_IN2/I2C0_SCL/TPM0_CH4/I2S0_MCLK/FXIO0_D21/BBS0_P24
		PTC9/CMP0_IN3/I2C0_SDA/TPM0_CH5/I2S0_RX_BCLK/FXIO0_D22/BBS0_P25
		PTC10/I2C1_SCL/I2S0_RX_FS/FXIO0_D23/BBS0_P26
		PTC11/LLWU_P11/I2C1_SDA/I2S0_RXD0/BBS0_P27
		PTC12/I2C1_SCL/OUT/TPM_CLKIN0
		PTC13/I2C1_SDA/OUT/TPM_CLKIN1
		PTC14/EMVSIM0_CLK
		PTC15/EMVSIM0_RST
		PTC16/EMVSIM0_VCCEN
		PTC17/EMVSIM0_IO/SPI0_PCS3
		PTC18/EMVSIM0_PD/SPI0_PCS2
		PTD0/LLWU_P12/SPI0_PCS0/UART2_RTS/TPM0_CH0/FXIO0_D0/BBS0_P28
		PTD1/ADC0_SE5b/SPI0_SCK/UART2_CTS/TPM0_CH1/FXIO0_D1/BBS0_P29
		PTD2/LLWU_P13/SPI0_SOUT/UART2_RX/TPM0_CH2/FXIO0_D2/BBS0_P30
		PTD3/SPI0_SIN/UART2_TX/TPM0_CH3/FXIO0_D3/BBS0_P31
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		PTD6/LLWU_P15/ADC0_SE7b/SPI1_SOUT/UART0_RX/FXIO0_D6
		PTD7/SPI1_SIN/UART0_TX/FXIO0_D7
		PTD8/CLKOUT32K/ADC0_SE16/SPI1_SIN/UART1_TX/RTC_CLKOUT/CMP0_OUT/I2C1_SDA/BBS0_P0
		PTE1/LLWU_P0/ADC0_SE17/SPI1_SOUT/UART1_RX/I2C1_SCL/BBS0_P1
		PTE2/LLWU_P1/ADC0_SE18/SPI1_SCK/UART1_CTS/I2C1_SDAOUT
		PTE3/ADC0_SE19/SPI1_SIN/UART1_RTS/I2C1_SCLOUT
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		PTE5/SPI1_PCS1
		PTE6/LLWU_P16/SPI1_PCS2/I2S0_MCLK/AUDIOUSB_SOF_OUT
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		PTE21/ADC0_DM0/ADC0_SE4a/SPI2_SOUT/TPM1_CH1/UART0_RX/FXIO0_D5/BBS0_P3
		PTE22/ADC0_DP3/ADC0_SE3/SPI2_SIN/TPM2_CH0/UART2_TX/FXIO0_D6/BBS0_P4
		PTE23/ADC0_DM3/ADC0_SE7a/SPI2_PCS0/TPM2_CH1/UART2_RX/FXIO0_D7/BBS0_P5
		PTE24/ADC0_SE20/EMVSIM0_IO/TPM0_CH0/I2C0_SCL
		PTE25/LLWU_P21/ADC0_SE21/EMVSIM0_PD/TPM0_CH1/I2C0_SDA
		PTE26/CLKOUT32K/TPM0_CH5/I2C0_SCL/OUT/RTC_CLKOUT/USB_CLKIN
		PTE29/CMP1_IN5/CMP0_IN5/ADC0_SE4b/EMVSIM0_CLK/TPM0_CH2/TPM_CLKIN0
		PTE30/DAC0_OUT/CMP1_IN3/ADC0_SE23/CMP0_IN4/EMVSIM0_RST/TPM0_CH3/TPM_CLKIN1
		PTE31/EMVSIM0_VCCEN/TPM0_CH4/I2C0_REQ
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OpenSDA INTERFACE

TARGET MCU INTERFACE SIGNALS



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ICAP Classification: FCP: FILJO: PUBI: X
 Drawing Title: **FRDM-KL28Z**
 Page Title: **OpenSDA interface**

Size C	Document Number SCH-28401 PDF: SPF-28401	Rev B2
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