NXP Semiconductors
User's Guide

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MIMXRT1050 EVK Extension Feature Enablement Guide

Contents

1. Introduction

This document is an MIMXRT1050 EVK Extension Feature Enablement Guide which is used for some examples with SDK. The document outlines the rework steps for all examples that need hardware rework. The examples which need to hardware rework are as following:

- FlexIO
- FlexSPI
- LPSPI
- PWM
- Wifi_QCA
- SPDIF
- CSI

The examples used on this document are based on i.MXRT1050 SDK. The hardware development environment is MIMXRT1050 EVK Board.

2. FlexIO

There are several examples in FlexIO. Only the I^{2}S and SPI need to rework.

2.1. I^{2}S edma_transfer

J12 headphone connected. Remove R98, R99, R100, R101. Connect FLEXIO pins to the pad close to U13 as *Table 1*.

Table 1. I^{2}S edma_transfer connection

SW5		U13	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
RX_DATA	SW5-1	RX_DATA	U13-16
TX_DATA	SW5-2	TX_DATA	U13-14
SYNC	SW5-3	SYNC	U13-13
BCLK	SW5-4	BCLK	U13-12

2.2. I^{2}S interrupt_transfer

J12 headphone connected. Remove R98, R99, R100, R101. Connect FLEXIO pins to the pad close to U13 as *Table 2*.

Table 2. I^{2}S interrupt_transfer connetcion

SW5		U13	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
RX_DATA	SW5-1	RX_DATA	U13-16
TX_DATA	SW5-2	TX_DATA	U13-14
SYNC	SW5-3	SYNC	U13-13
BCLK	SW5-4	BCLK	U13-12

2.3. SPI edma_lpspi_transfer

Both master and slave are needed to remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 3*.

Table 3. SPI edma_lpsi_transfer connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-4	SIN	SW5-3
SIN	J24-5	SOUT	SW5-2
SCK	J24-6	SCK	SW5-1
PCS0	J24-3	PCS0	SW5-4

2.4. SPI int_lpspi_transfer

Both master and slave are needed to remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 4*.

Table 4. SPI int_lpsi_transfer connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-4	SIN	SW5-3
SIN	J24-5	SOUT	SW5-2
SCK	J24-6	SCK	SW5-1
PCS0	J24-3	PCS0	SW5-4

3. FlexSPI

The board enables hyper flash (U19) by default. To enable QSPI flash (U33), some hardware rework is needed: Mount R153, R154, R155, R156, R157, R158 and DNP U19.

4. LPSPI

4.1. cmsis_driver_examples edma_b2b_transfer

In this example, we need two boards. one board used as LPSPI master and another board used as LPSPI slave. Both master and slave are needed to remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 5*.

Table 5. cmsis_driver_examples edma_b2b_transfer connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-9	SIN	J24-2
SIN	J24-2	SOUT	J24-9
SCK	J24-10	SCK	J24-10
PCS0	J24-1	PCS0	J24-1
GND	J24-7	GND	J24-7

4.2. cmsis_driver_examples int_b2b_transfer

In this example, we need two boards, one board used as LPSPI master and another board used as LPSPI slave. Both master and slave are needed to remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 6*.

Table 6. cmsis_driver_examples int_b2b_transfer connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-9	SIN	J24-2
SIN	J24-2	SOUT	J24-9
SCK	J24-10	SCK	J24-10

Table 6. cmsis_driver_examples int_b2b_transfer connection

MASTER		SLAVE	
PCS0	J24-1	PCS0	J24-1
GND	J24-7	GND	J24-7

4.3. lpspi interrupt

Remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 7*.

Table 7. lpspi interrupt connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-4	SIN	J24-2
SIN	J24-5	SOUT	J24-9
SCK	J24-6	SCK	J24-10
PCS0	J24-3	PCS0	J24-1

4.4. lpspi interrupt_b2b

In this example, we need two boards, one board used as LPSPI master and another board used as LPSPI slave. Both master and slave are needed to remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 8*.

Table 8. lpspi interrupt_b2b connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-9	SIN	J24-2
SIN	J24-2	SOUT	J24-9
SCK	J24-10	SCK	J24-10
PCS0	J24-1	PCS0	J24-1
GND	J24-7	GND	J24-7

4.5. freertos freertos_lpspi

Remove the resistor R334 and weld 0 Ω resistor to R278, R279, R280, R281. To make the example work, connections needed to be as *Table 9*.

Table 9. freertos freertos_lpspi connection

MASTER		SLAVE	
Pin Name	**Board Location**	**Pin Name**	**Board Location**
SOUT	J24-4	SIN	J24-2
SIN	J24-5	SOUT	J24-9
SCK	J24-6	SCK	J24-10
PCS0	J24-3	PCS0	J24-1

5. PWM

Weld resister 0 Ω at R279, R280, R281. The PWM signal can be probed with an oscilloscope:

- AT J24-3
- AT J24-4
- AT J24-6
- AT TP27

6. WiFi_QCA

Plug GT202 Adaptor board to FRDM stackable headers (J1, J2, J3, J4).

Remove the resistor R334, dis-connect J15, and weld 0 Ω resistor to R278, R279, R280, R281.

7. SPDIF

7.1. edma_transfer

The SPDIF_IN signal should be connected to J15-1 and the SPDIF_OUT signal should be connected to R214 as *Figure 1*:

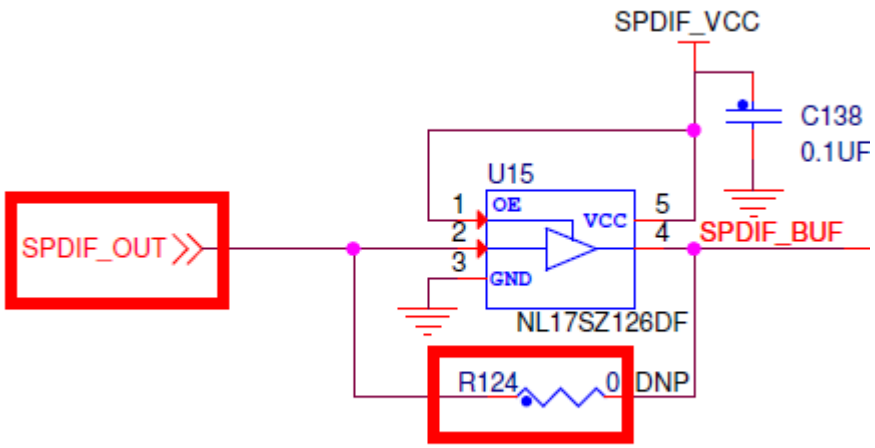

Figure 1. SPDIF_OUT signal conncetion diagram

7.2. interrupt_transfer

The SPDIF_IN signal should be connected to J15-1 and the SPDIF_OUT signal should be connected to R214 as *Figure 2*:

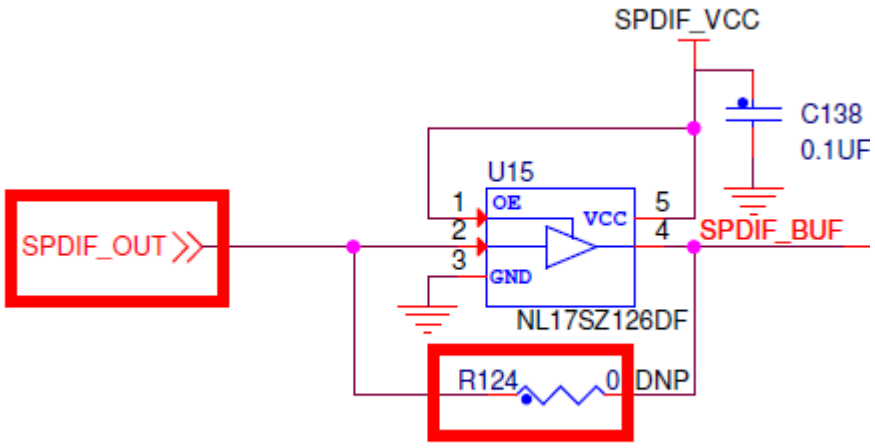

Figure 2. SPDIF_OUT signal conncetion diagram

8. CSI

For CSI feature, only EVK A, A1, A2, A3 and A4 need to rework.

Weld 0 Ω resistor to R217, R218 and R220 – R229.

9. Revision History

Table 10. Revision history

Revision number	Date	Substantive changes
0	11/2017	Initial release

Appendix A.Diagrams

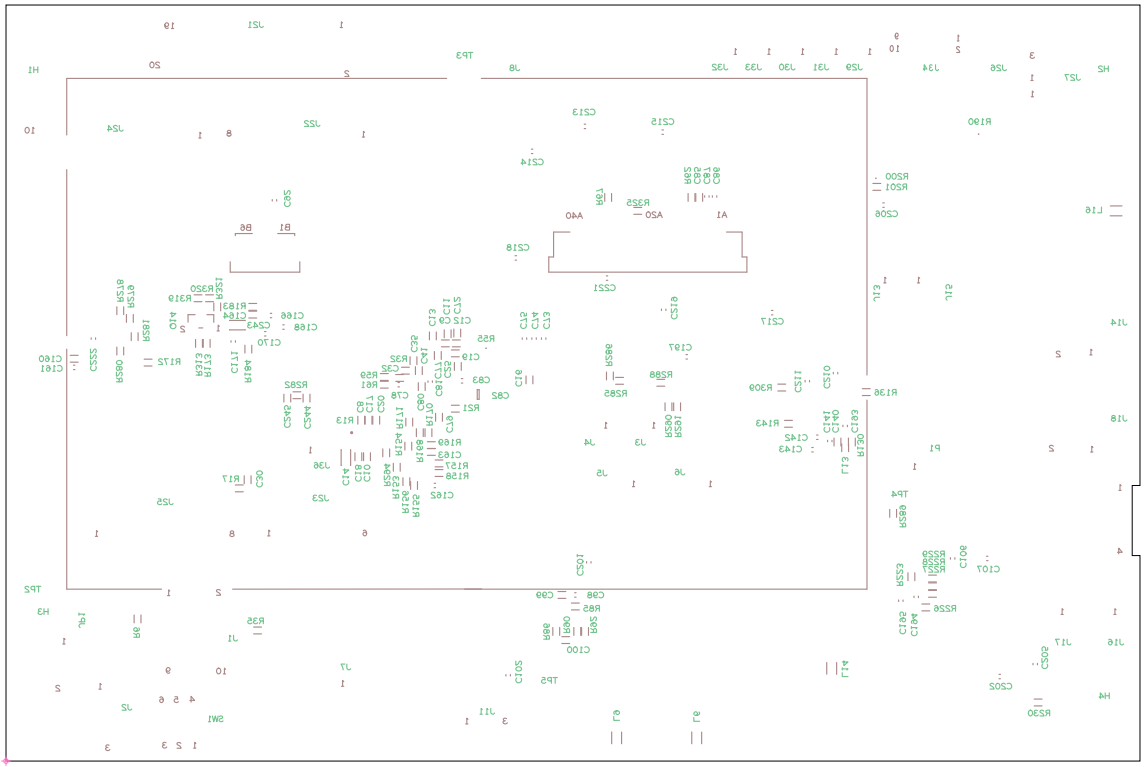

Figure 3 ART FILM - SSS

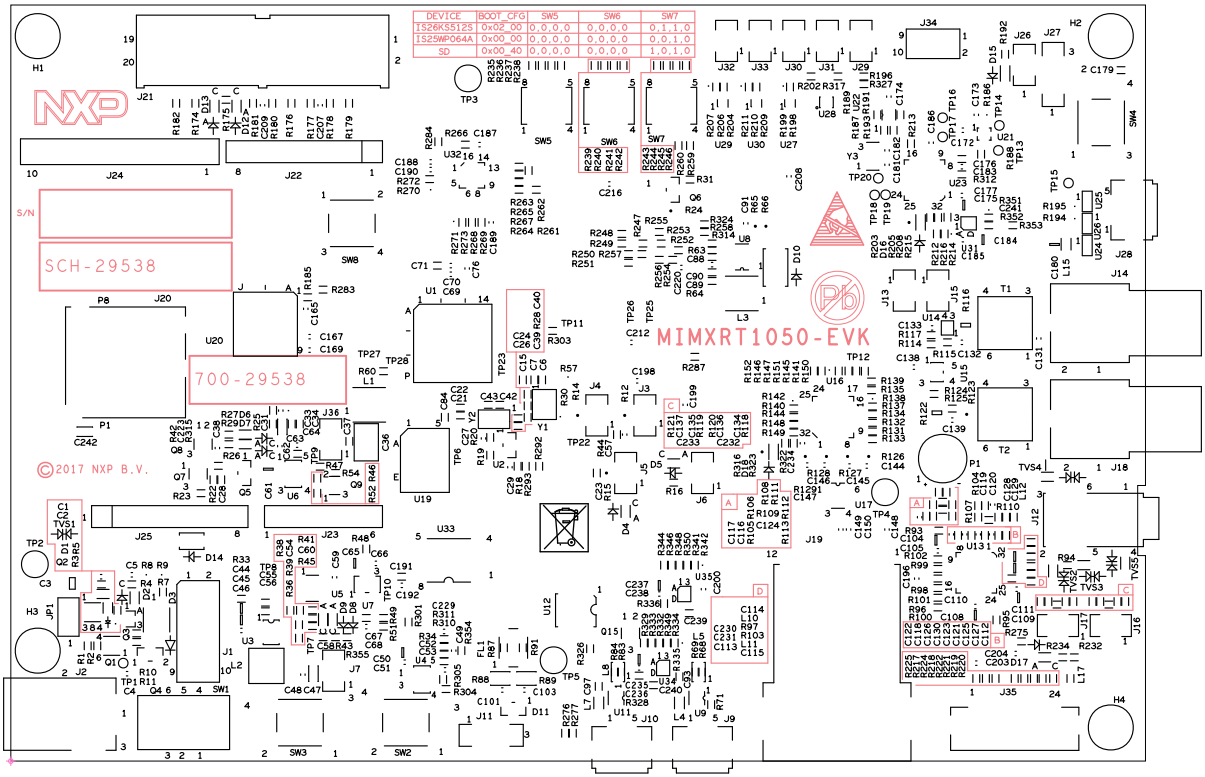

Figure 4. ART FILM - PSS

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