4kOpen Board HW Application note

How to add 1V8 data and control signal on SD card

Introduction

The HW of 4K UltraHD H.265 / HEVC community board based on STiH418 for the 4kOpen platform contain a SD card slot connecteur. Based on B2264B refrence design, the SD card data and control signals at 3V3.

The purpose of this document is to describe the HW update to support swichable 3V3 and 1V8 data and control signal on SD card

Scope

This document is targeted at the following audiences in the context of 4kOpen project:

- Developers of HW platform similar to 4kOpen with STiH418
- Developers of SW for 4kOpen platform

Reference documentation

Below is a list of documents that should be consulted alongside the present document.

Table 1 Reference

#	Document name	Document description
[1]	STiH418 data sheet	Data Sheet of the SOC

Acronyms and Abbreviations

B2264	4kOpen reference board
HDK	Hardware Development Kit
HW	Hardware
N/A	Not Applicable
NC	Not Connected
SOC	System On Chip (STiH418)
SW	Software

Contents

1 SC CARD interfcae on 4Kopen B2264B

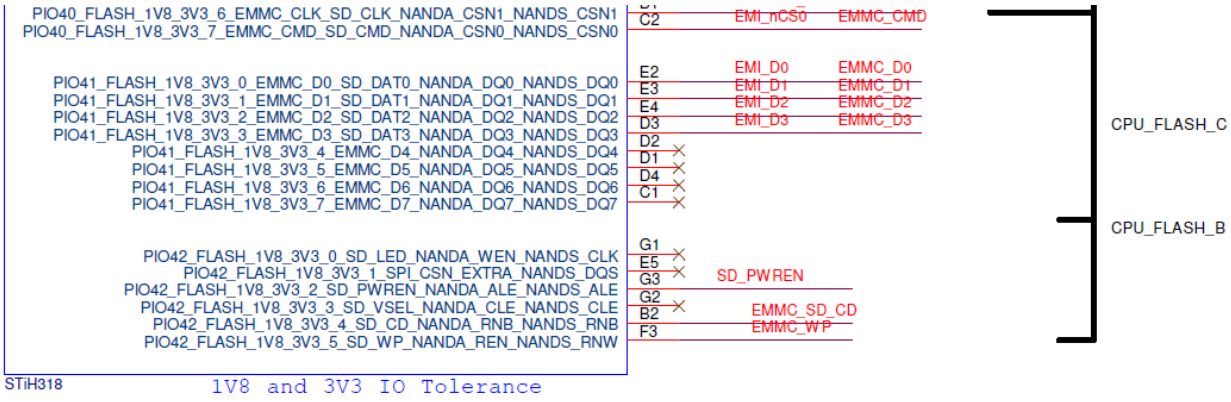
The SD card on 4Kopen B2264B board is controlled from the SOC with signals summarized on Table 2.

Table 2: SD card signals on 4Kopen B2264B board

PIO	Signal	Description	SoC power domain	Voltage
PIO40_6	SDCLK	Clock to SD Card	CPU_FLASH_C	3V3
PIO40_7	SDCMD	Command to SD Card		
PIO41_0	SDD0	SD Card data0		
PIO41_1	SDD1	SD Card data1		
PIO41_2	SDD2	SD Card data2		
PIO41_3	SDD3	SD Card data3		
PIO42_2	SD_PWREN	3V3 Power enable not	CPU_FLASH_B	
PIO42_4	SDCARD_DETECT	SD card detection		
PIO42_5	SD_WP	Write protection , fiex to ground		

The Figure 1 to Figure 3 shows the schematics of the SD card schematics on 4Kopen B2264B board

Figure 1: SD card Schematics of B2264B



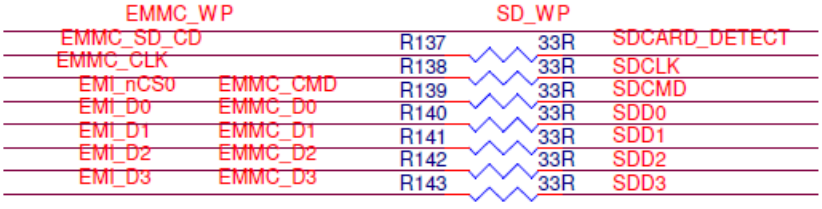


Figure 2: SD card power enable on B2264B

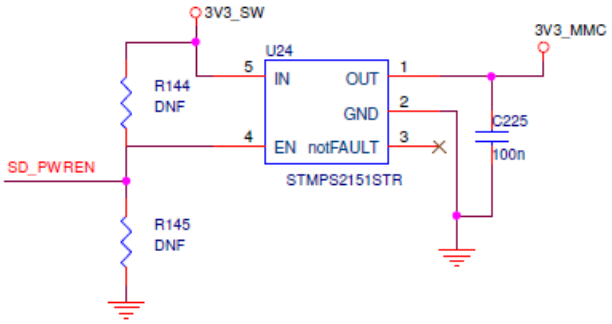
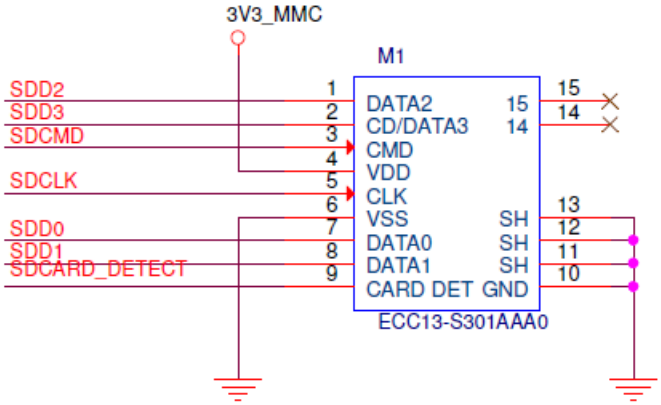


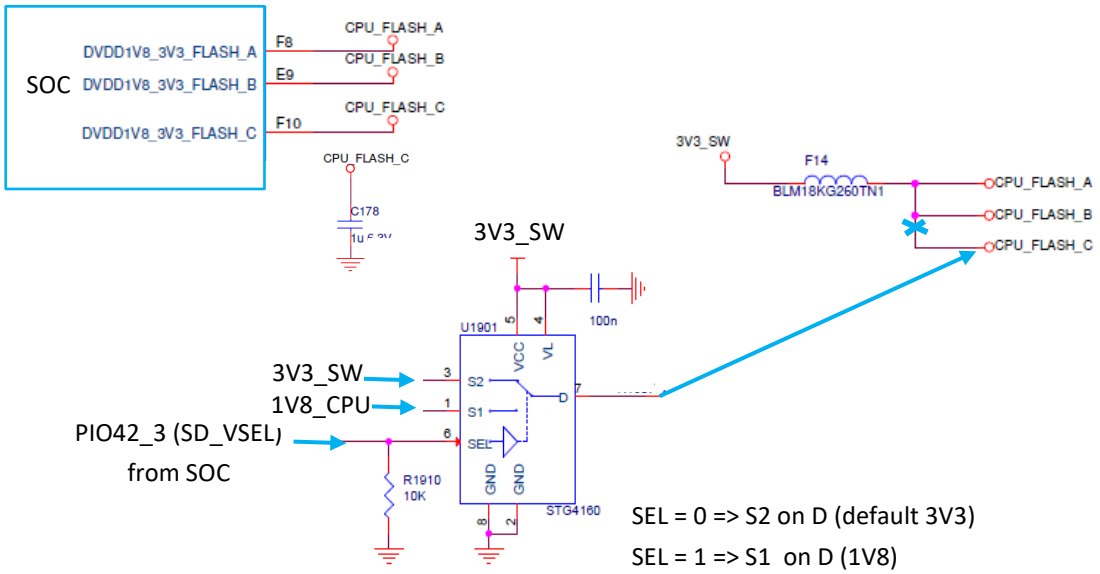
Figure 3: SD card connector on B2264B



2 HW modification to add 1V8 data control capability on SC CARD

The modification on schematics to add the capability of switching the data and control signals of the SD card between 3V3 anto 1V8 is depicted on Figure 4 .

Figure 4: Schematics change form B2264B to add 3V3 /1V8 SD card data control capability



The Table 3 provides the changes on signals and voltage;

Table 3: SD card signals on 4Kopen after updateB2264B board

PIO	Signal	Description	SoC power domain	Voltage
PIO40_6	SDCLK	Clock to SD Card	CPU_FLASH_C	3V3 if PIO42_3=0 1V8 if PIO42_3=1
PIO40_7	SDCMD	Command to SD Card		
PIO41_0	SDD0	SD Card data0		
PIO41_1	SDD1	SD Card data1		
PIO41_2	SDD2	SD Card data2		
PIO41_3	SDD3	SD Card data3		
PIO42_2	SD_PWREN	3V3 Power enable not	CPU_FLASH_B	3V3
PIO42_3	SD_VSEL	1V8 V selection		
PIO42_4	SDCARD_DETECT	SD card detection		
PIO42_5	SD_WP	Write protection , fiex to ground		

3 Revision history

Table 4: Document revision history

Date	Revision	Changes
2 march 2018	Draft 1.0	Initial version