Singing Very High Speed Integrated Circuit Hardware Description Language Board (S76D)

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August 2, 2012

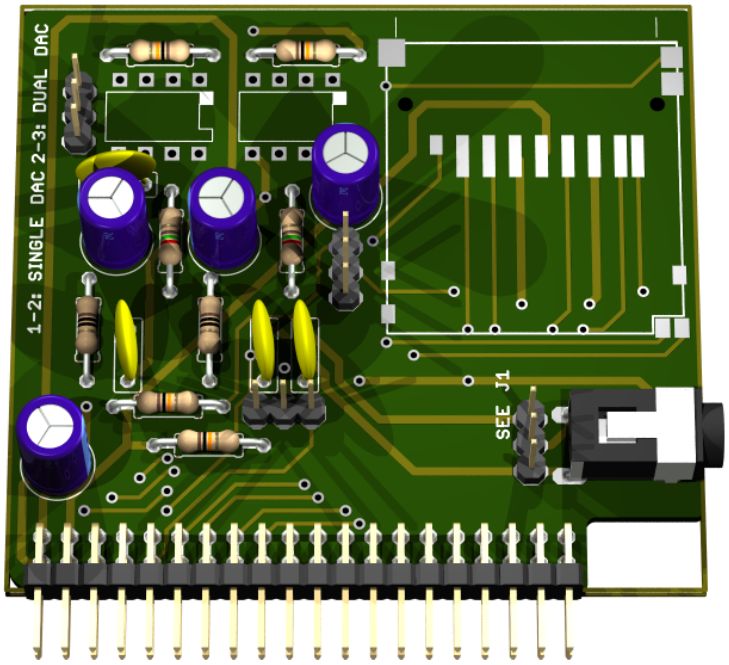

Figure 1: 3D rendered image of the custom extension board used for this music player

Abstract

This is time for all good men to come to the aid of their party! ...

Contents

Pin. No.	Name	Description	Note for our implementation
1	DAT3	MMC: Chip select	Chip IO Pin, mmc_cs, D7
2	CMD	Command	Chip IO Pin, mmc_mosi, D8, (MOSI – master out, slave in)
3	GND	Ground	Board ground
4	VDD	Voltage	Supply Voltage (+3.3 V)
5	CLK	Clock	Chip IO Pin, mmc_clock, D10
6	GND	Ground	Board ground
7	DAT0	Data	Chip IO, mmc_miso, B4
8	DAT1	Data	Pull up (Voltage via resistor)
9	DAT2	Data	Pull up (Voltage via resistor)

1 Introduction

2 Multimedia Card

2.1 Interface description

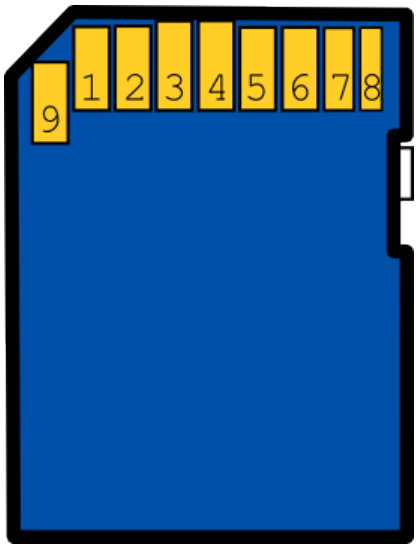

Figure 2: MMC Interface

2.2 SPI Interface

The start byte (SB) consists of 8 times HI (1). Before that, the card only sends 0s. The response token (RT) consists of 8 bits. Each bit indicates a certain error or a successful command. In case the command finished successfully, the card returns `0000 0001`

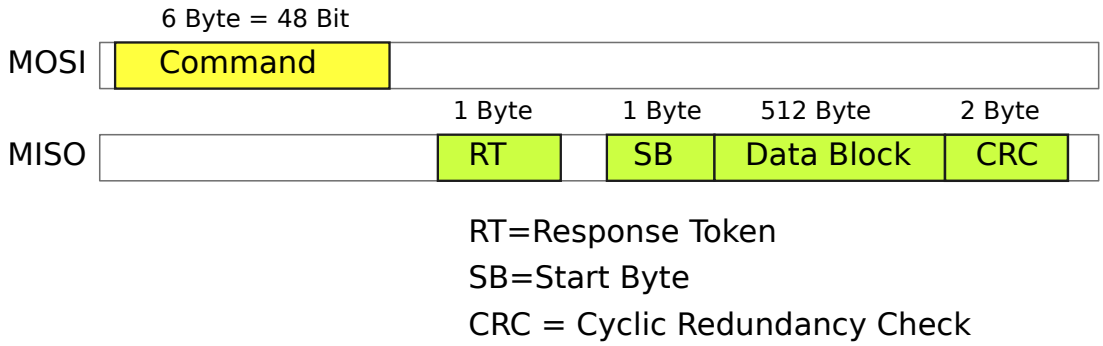

Figure 3: Sending a command to the MMC

2.2.1 Initializing the card

2.2.2 Reading data

2.3 Implementation of Communication

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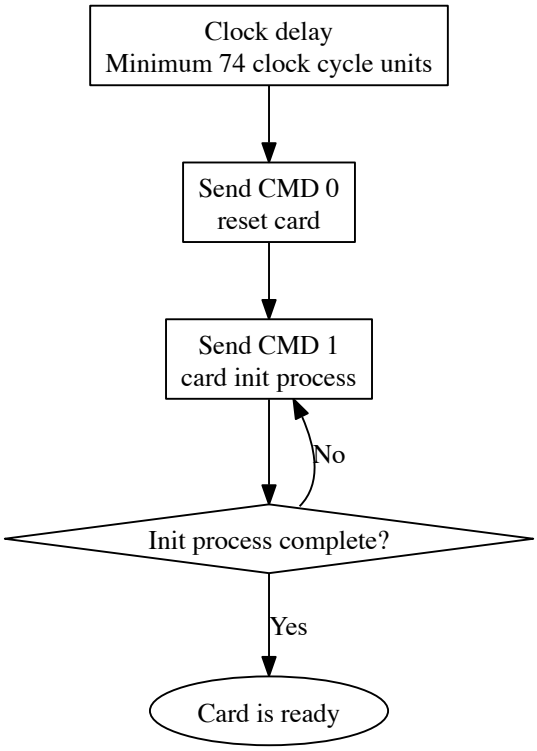

Figure 4: Flow for initializing

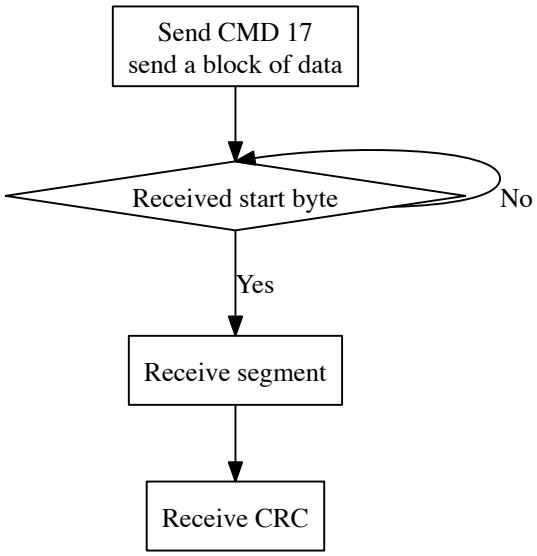

Figure 5: Flow for reading

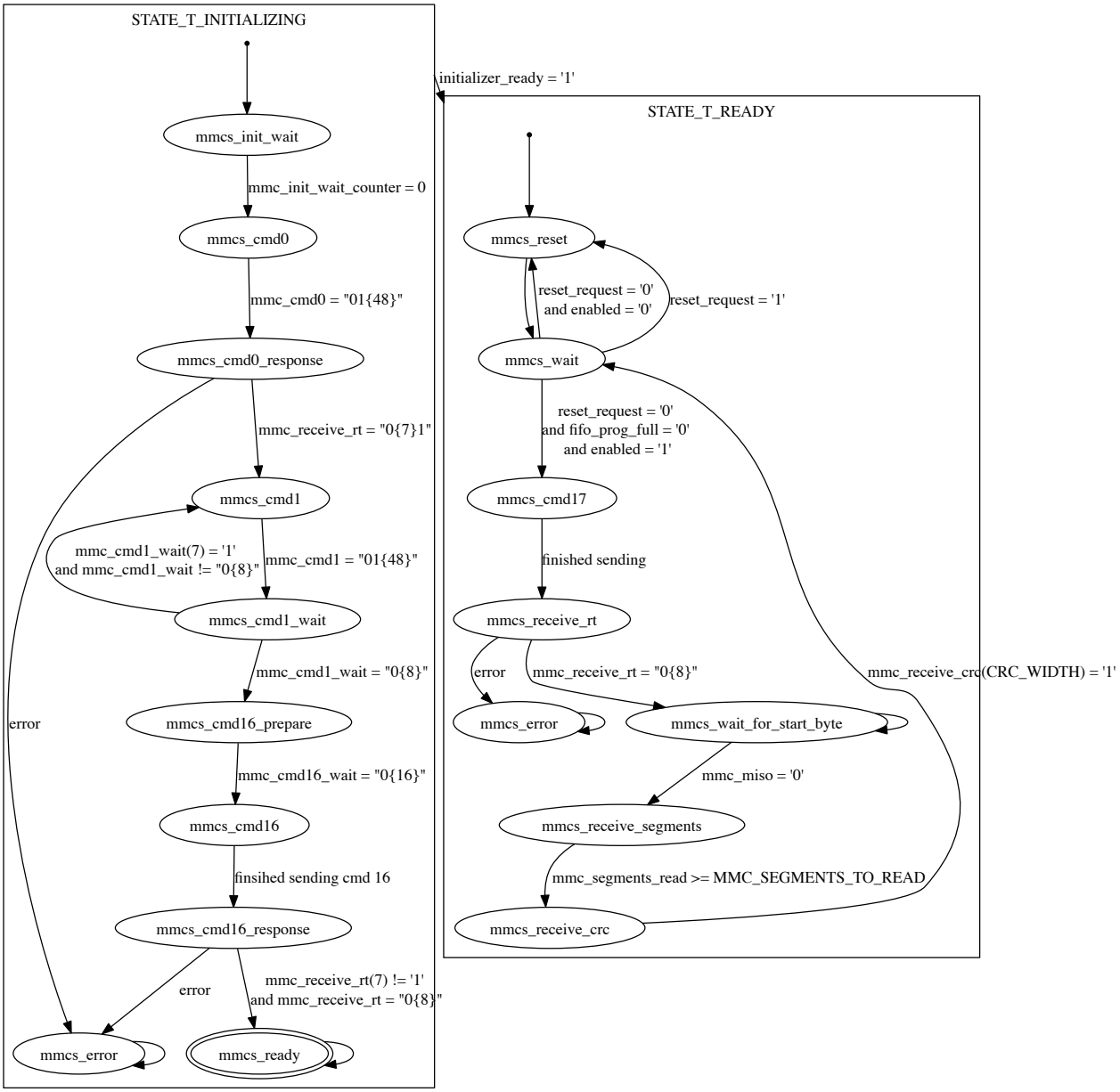

Figure 6: Controller VHDL FSM