

DS8007 EMV Evaluation Kit

General Description

The DS8007 evaluation kit (EV kit) is a proven platform to conveniently evaluate the capabilities of the DS8007 smart card interface chip. It includes a DS5002FP secure microcontroller to control the smart card interface. Two card sockets are included (one full size, one SIM size) to communicate with any 1.8V, 3V, or 5V IC card. An LCD screen can provide detailed feedback on program operation and aids in debugging applications.

The DS8007 EV kit has been tested by an EMV™ certification laboratory for Type 1 approval testing. All Level 1 tests have passed using this platform. Formal EMV certification is pending approval by EMVCo LLC.

Evaluation Kit Contents

- ◆ DS8007 EV Kit Board with Processor, Smart Card Sockets, and LCD Screen Installed
- ◆ DS8007 Evaluation Kit CD-ROM, Including EMV Certified Library
- ◆ Keil 8051 Evaluation Compiler
- ◆ Serial Cable

Features

- ◆ Easily Develop Smart Card Applications Using EMV Certified Library and 8051 Microcontroller
- ◆ 2-Line LCD Screen for User Interface
- ◆ Two Card Sockets for Interfacing with Standard Chip Cards
- ◆ Card and Microcontroller Interface Pins Brought Out to Headers for I/O Expansion or Debugging
- ◆ Pushbuttons for Reset, Interrupt, and Self-Destruct Functions
- ◆ Level-Shifted RS-232 Interface
- ◆ Included Board Schematics Provide a Convenient Reference Design

Ordering Information

| PART | DESCRIPTION |
|------------|---------------------|
| DS8007-KIT | DS8007 EV Kit Board |

Component List

| DESIGNATION | QTY | DESCRIPTION | SUPPLIER |
|--------------------------------|-----|----------------------|--------------------------------|
| B1 | 1 | 3.6V lithium battery | Tadiran TL-2150/P |
| C1, C5 | 2 | 10µF capacitors | Kemet T491B106K010AT |
| C2, C3, C6, | 16 | 0.1µF capacitors | Panasonic ECJ-1VF1C104Z |
| C4, C7, C8 | 3 | 0.22µF capacitors | Rohm MCH183FN224ZK |
| C9, C10, C20, C21 | 4 | 22pF capacitors | Kemet C0603C220J5GACTU |
| C18 | 1 | 4.7µF capacitor | Murata GRM219R61A475KE19D |
| D1 | 1 | 1.5SMC6.8AT3G | ON Semiconductor 1.5SMC6.8AT3G |
| F1 | 1 | 1A | 0459001.UR |
| JU1, JU2, JU3, JU8, JU11, JU12 | 6 | 2-pin jumpers NO | 3M 929647-09-02-I |
| JU4, JU5, JU9, JU10, JU13 | 5 | 3-pin jumpers NO (T) | 3M 929647-09-03-I |
| JU6, JU7 | 2 | Jumpers | 3M 929647-09-02-I |
| J1 | 1 | CCM01-2065LFT | ITT CCM01-2065LFT |
| J2 | 1 | CCM03-3001LFT | ITT CCM03-3001LFT |
| J3 | 1 | SC1 | 3M 929647-09-08-I |

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Component List (continued)

| DESIGNATION | QTY | DESCRIPTION | SUPPLIER |
|--------------------------|-----|-------------------------|----------------------------------|
| J4 | 1 | SC2 | 3M 929647-09-08-I |
| J5 | 1 | EXT MICRO | 3M 929647-09-25-I |
| J6 | 1 | DB-9 female connector | Norcomp 182-009-213R531 |
| J7 | 1 | PJ-002B | CUI Inc. PJ-002B |
| J8, J9 | 2 | P1 | 3M 929647-09-08-I |
| R1 | 1 | 100k Ω resistor | Yageo RC0603JR-07100KL |
| R2, R4, R5, R6, R13, R14 | 6 | 10k Ω resistors | Yageo RC0603JR-0710KL |
| R3 | 1 | 10k Ω resistor | Yageo RC0603JR-0710RL |
| R7 | 1 | 0–10k Ω resistor | Panasonic EVN-5CSX50B14 |
| R8, R9, R12 | 3 | 1k Ω resistor | Yageo RC0603JR-071KL |
| SW1 | 1 | Delay switch | Omron B3FS-1000P |
| SW2, SW3, SW4 | 3 | B3FS-1000P | Omron B3FS-1000P |
| TP1 | 1 | AVDD | 3M 929647-09-02-I |
| TP2 | 1 | DVDD | 3M 929647-09-02-I |
| TP3, TP4 | 2 | GND | 3M 929647-09-02-I |
| TP5–TP8 | 4 | Test points | 3M 929647-09-01-I |
| U1 | 1 | DS8007 | Dallas Semiconductor DS8007 |
| U2 | 1 | LCM-S02002DSF | Lumex LCM-S02002DSF |
| U3 | 1 | DS3231-R | Dallas Semiconductor DS3231S# |
| U4 | 1 | M68AF511AL55NC6 | M68AF511AL55NC6 |
| U5 | 1 | DS5002FP | Dallas Semiconductor DS5002FP+16 |
| U6 | 1 | MAX3232EEUE | Maxim MAX3232EEUE+ |
| Y1, Y2 | 2 | 14.7456MHz | Citizen HC49US14.7456MABJ-UB |

Detailed Description

This EV kit must be used in conjunction with the following documents.

- DS8007 Data Sheet (www.maxim-ic.com/DS8007)
- DS5002FP Data Sheet (www.maxim-ic.com/DS5002FP)
- Secure Microcontroller User's Guide (www.maxim-ic.com/secureUG)

The EV kit should also be used with Application Note 4036: *Getting Started with the DS8007 Evaluation Kit* (www.maxim-ic.com/AN4036). This application note describes how to bring up and build simple applications for the DS8007 EV kit board.

The DS8007 EV kit is fully defined in the schematics found in this document. However, a short description of the major components and connectors of the board follows.

Power Supply

The DS8007 EV kit must be powered using a DC wall supply (included). It should supply 5V (regulated to $\pm 5\%$), 300mA to the board. Connect a 2.5mm (center post positive) power supply to connector J7. There is no power regulator on the board—both the DS8007 and DS5002FP run from a 5V supply.

LCD Module

A Lumex 2-line, 20-character LCD screen is included in the DS8007 EV kit, part number LCM-S02002DSF. It is interfaced to the port IO of the DS5002FP. The example software associated with Application Note 4036 contains software for writing characters to the LCD screen.

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Smart Card Sockets

The DS8007 EV kit has two smart card sockets: one for a full-sized smart card and one for a smaller SIM-sized card. Two sockets are included to help prototype financial or government terminals, where typically there is a user card that is inserted for each user (the full-sized card socket) and a government or bank card (SIM-sized) that stays inside the terminal to personalize it and provide local authentication of services or transactions.

Programming the DS8007 EV Kit

Refer to Application Note 4036 for details on loading a program into the DS8007 EV kit. MTK (or another serial loader program) is required to load a hex file into the external SRAM for code execution by the DS5002FP microcontroller.

Evaluates: DS8007

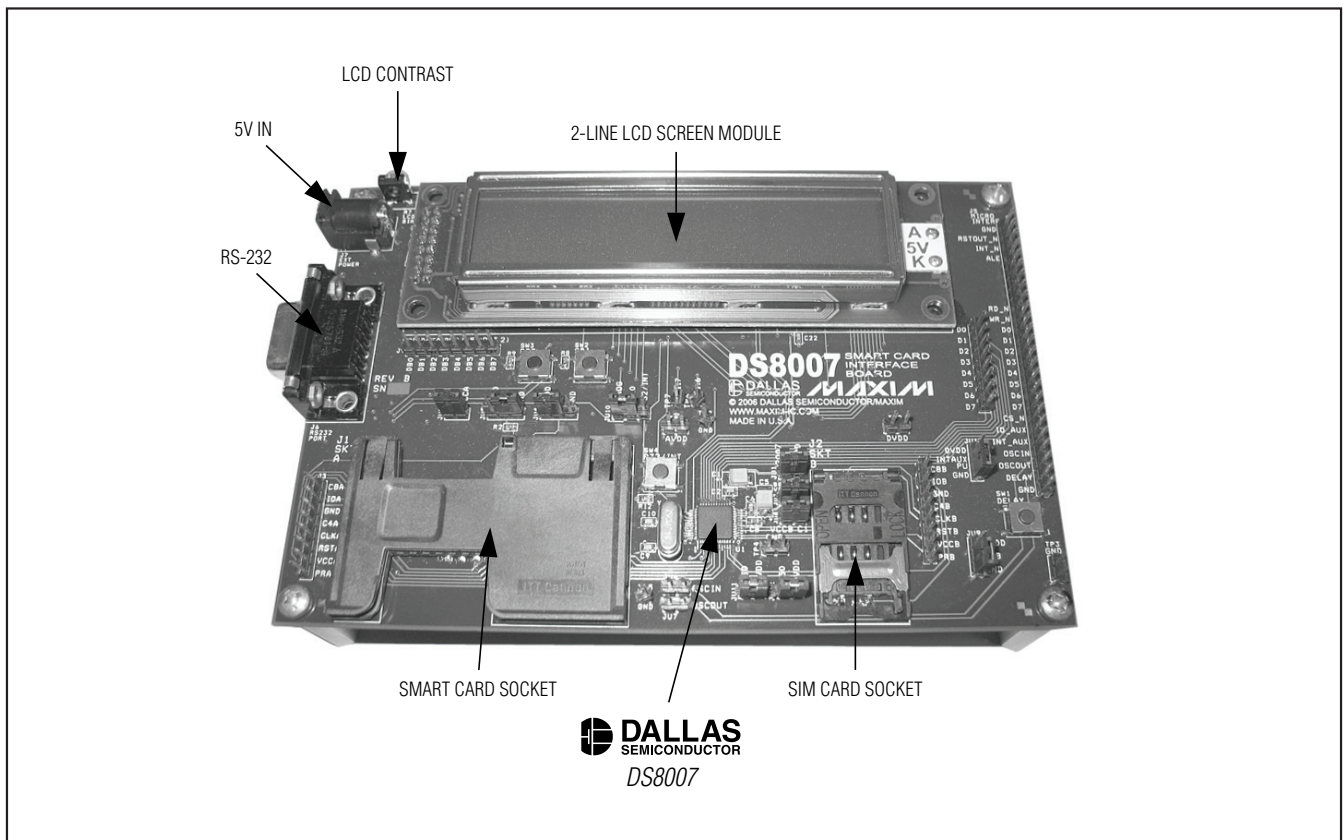


Figure 1. DS8007 Evaluation Kit

DS8007 EMV Evaluation Kit

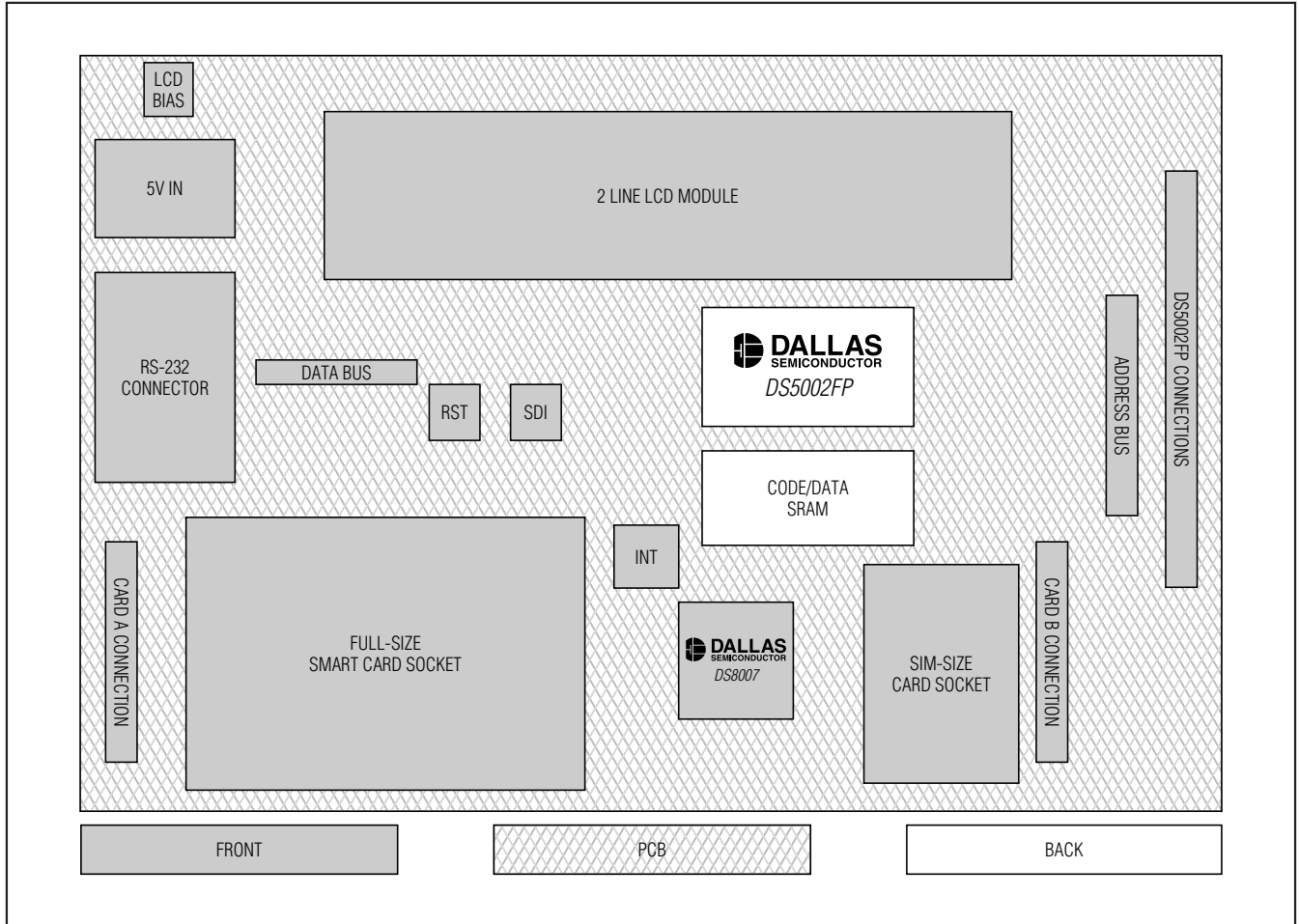


Figure 2. DS8007 Evaluation Kit Functional Layout

DS8007 EMV Evaluation Kit

Evaluates: DS8007

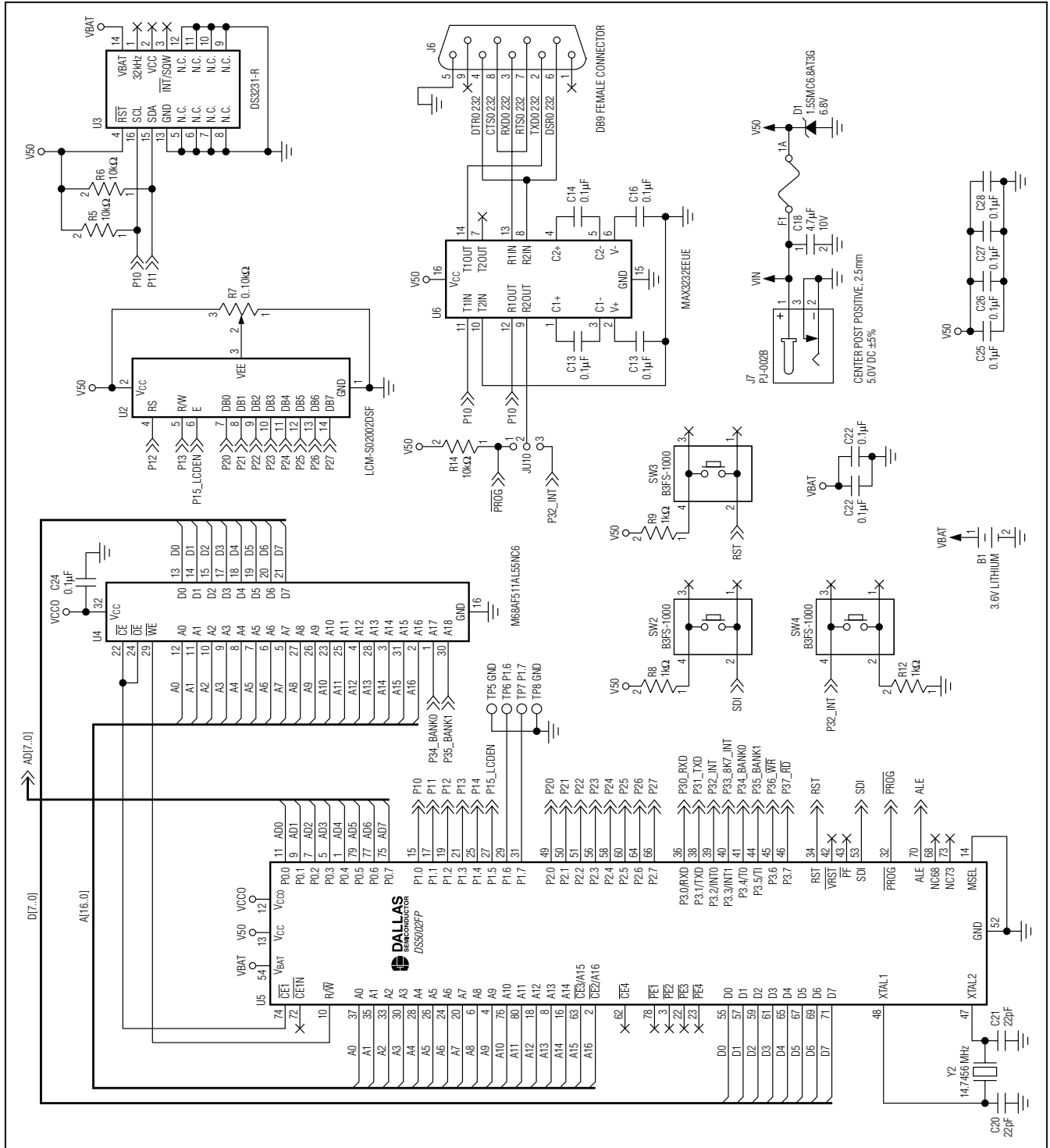


Figure 3. DS8007 Evaluation Kit Schematics (DS5002FP Connections) (Sheet 1)

DS8007 EMV Evaluation Kit

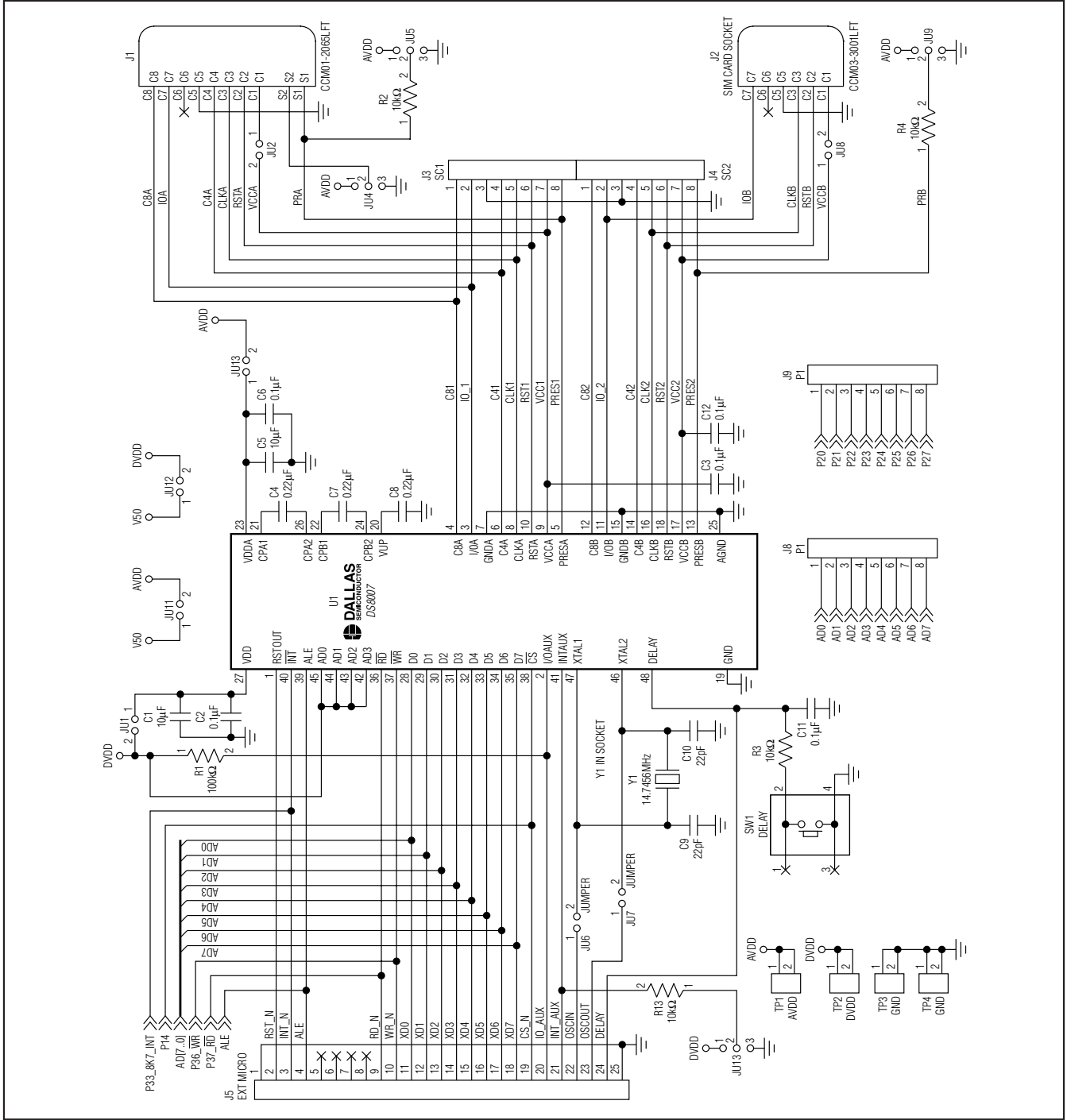


Figure 4. DS8007 Evaluation Kit Schematics (Smart Card Connections) (Sheet 2)

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