

# 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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# DS8007 EMV Evaluation Kit

## 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 $\Omega$ resistor	Yageo RC0603JR-07100KL
R2, R4, R5, R6, R13, R14	6	10k $\Omega$ resistors	Yageo RC0603JR-0710KL
R3	1	10k $\Omega$ resistor	Yageo RC0603JR-0710RL
R7	1	0–10k $\Omega$ resistor	Panasonic EVN-5CSX50B14
R8, R9, R12	3	1k $\Omega$ 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](http://www.maxim-ic.com/DS8007))
- DS5002FP Data Sheet ([www.maxim-ic.com/DS5002FP](http://www.maxim-ic.com/DS5002FP))
- Secure Microcontroller User's Guide ([www.maxim-ic.com/secureUG](http://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](http://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

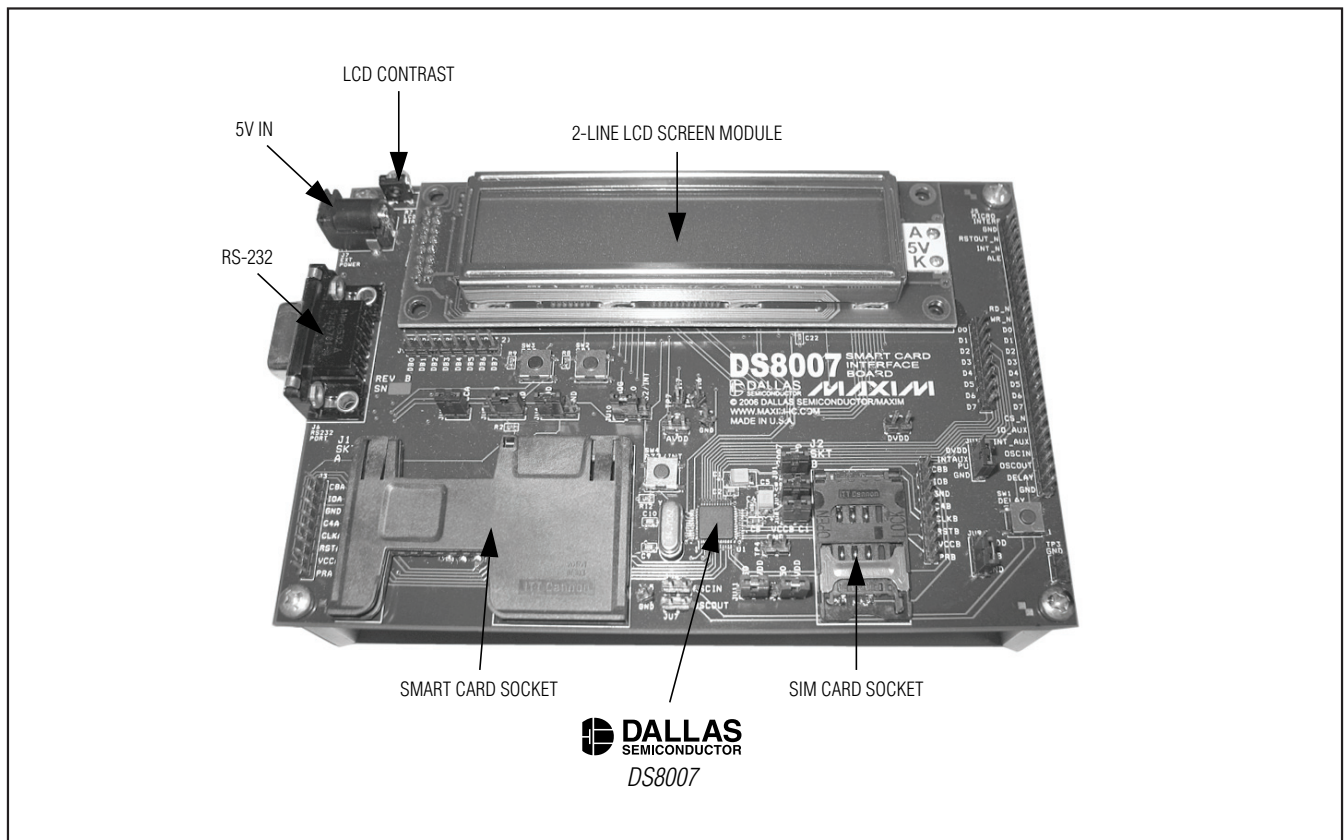


Figure 1. DS8007 Evaluation Kit

# DS8007 EMV Evaluation Kit

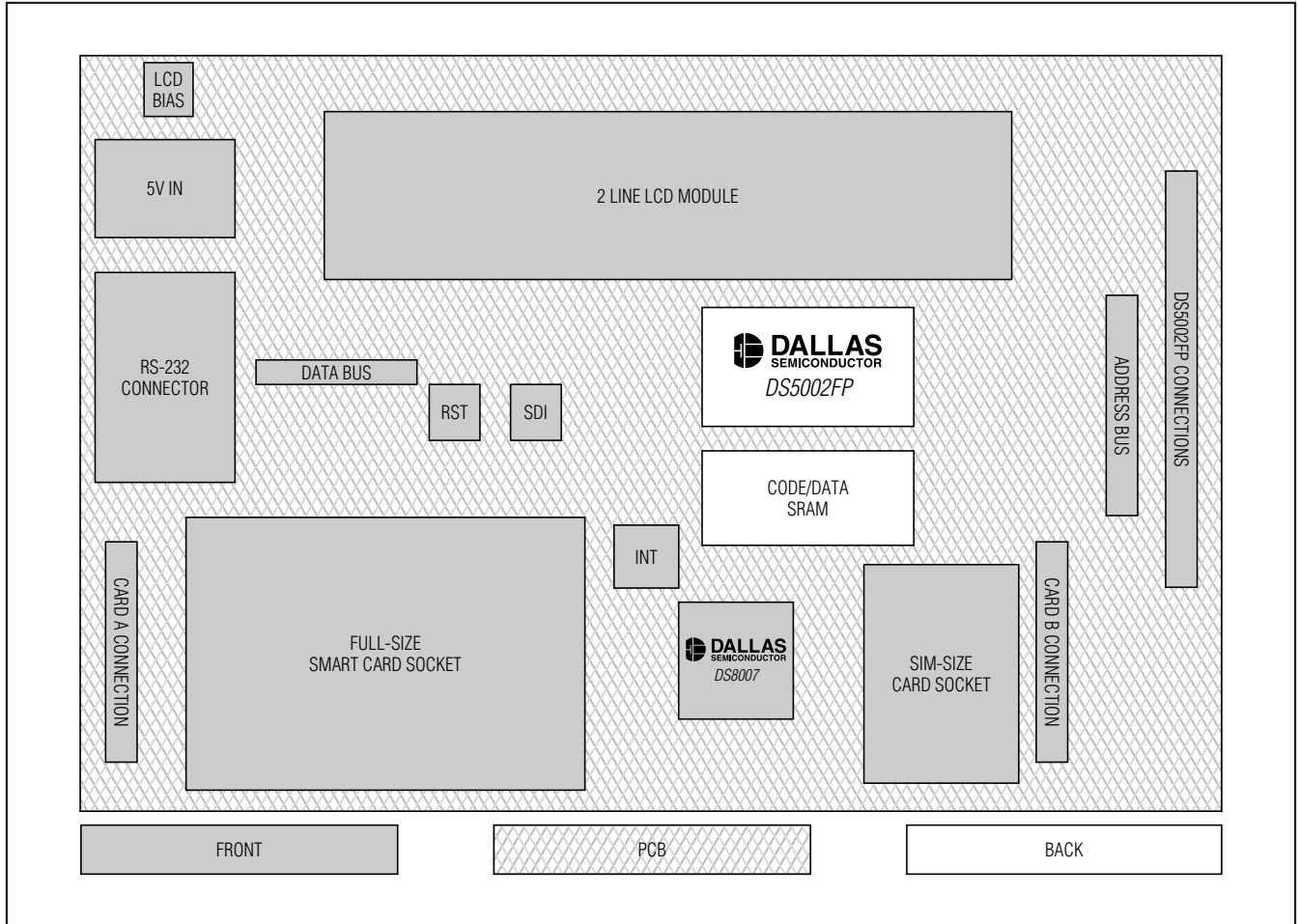


Figure 2. DS8007 Evaluation Kit Functional Layout

# DS8007 EMV Evaluation Kit

Evaluates: DS8007

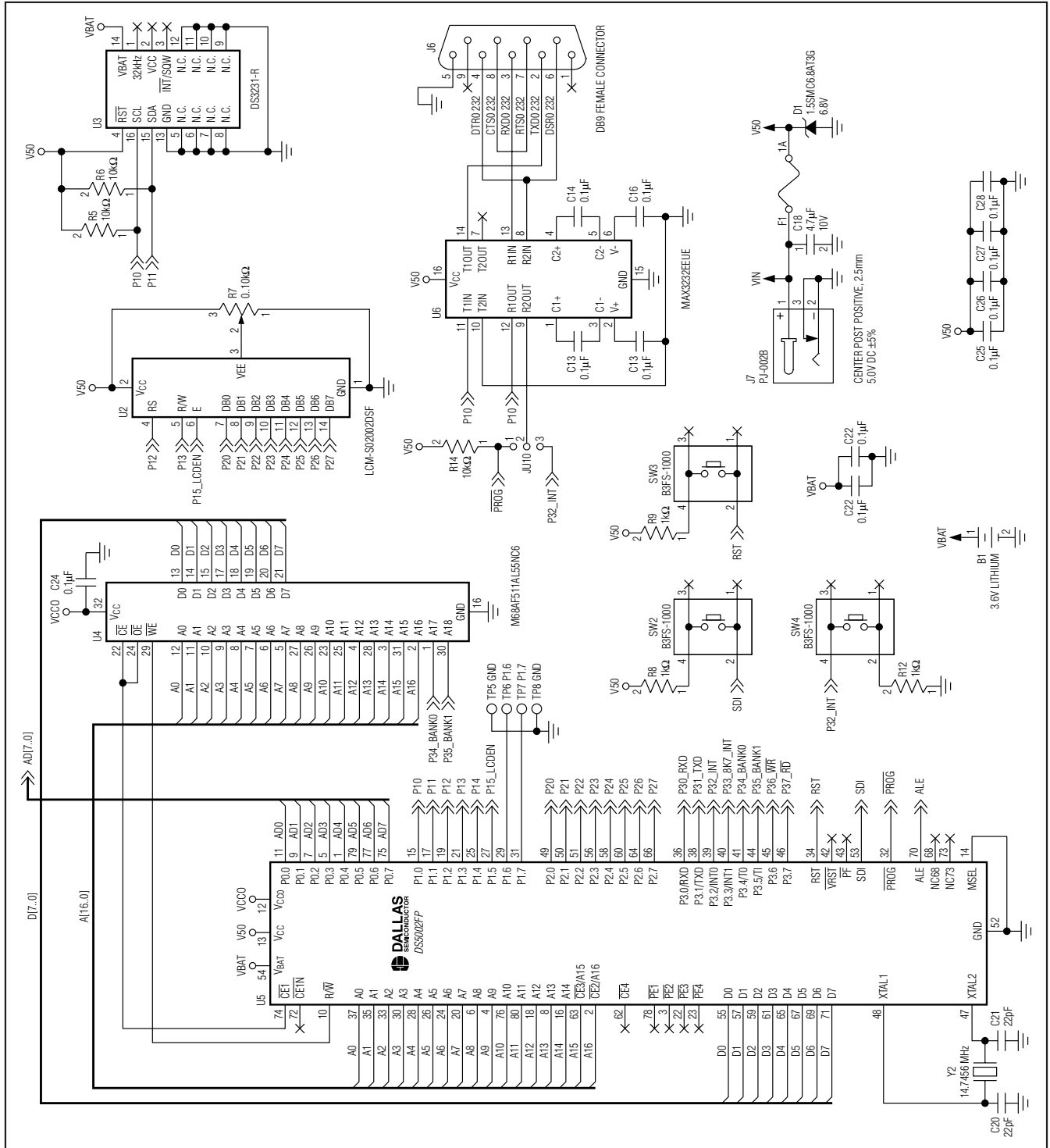


Figure 3. DS8007 Evaluation Kit Schematics (DS5002FP Connections) (Sheet 1)

## DS8007 EMV Evaluation Kit

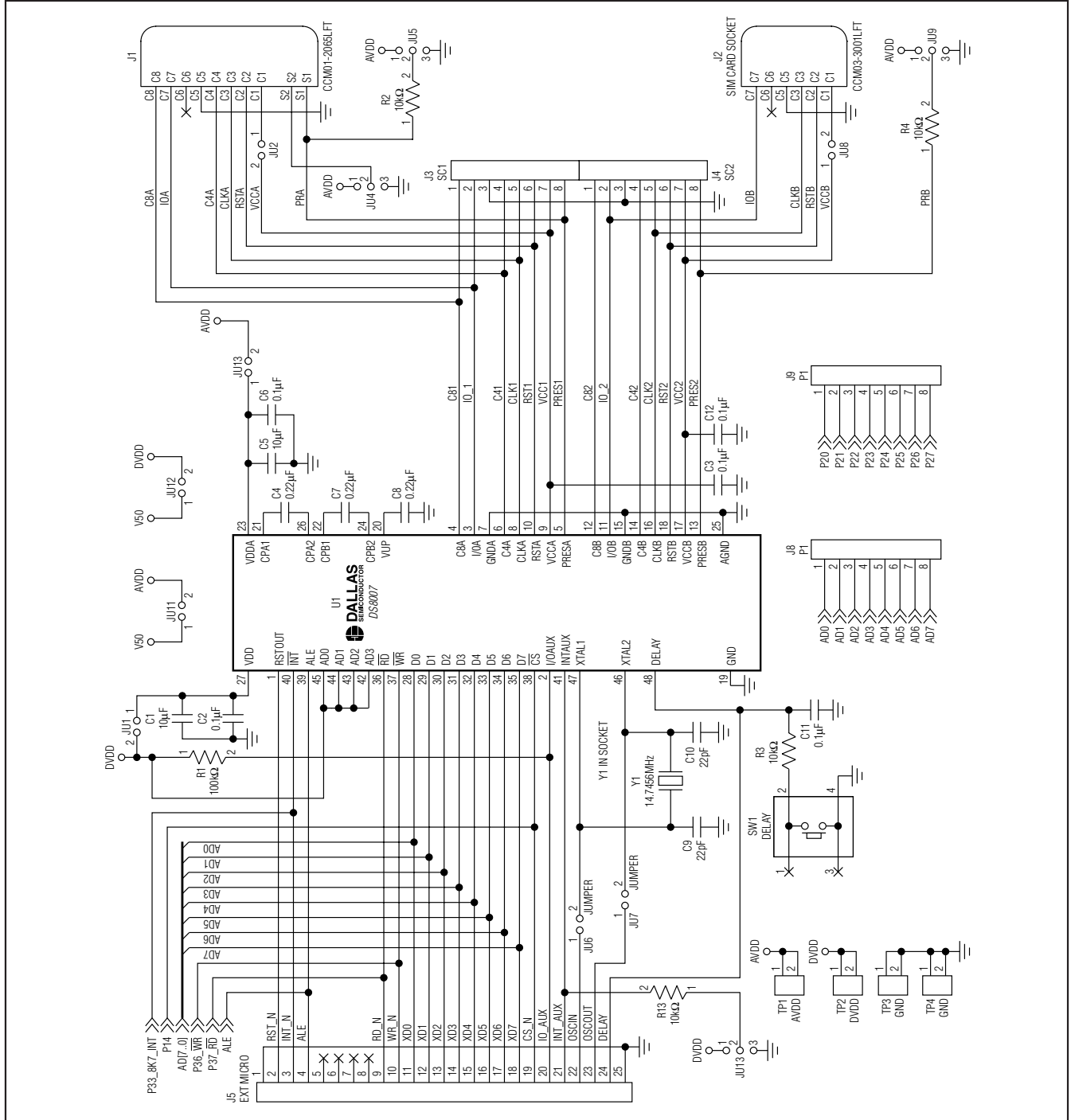


Figure 4. DS8007 Evaluation Kit Schematics (Smart Card Connections) (Sheet 2)

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