

DS8005 Evaluation Kit

Evaluates: DS8005

General Description

The DS8005 evaluation kit (EV kit) conveniently evaluates the capabilities of the DS8005 dual smart card interface chip. The EV kit includes a MAXQ622 16-bit RISC microcontroller to control the smart card interface. One full-size socket, as well as one SIM card socket, is included to communicate with a 1.8V, 3V, or 5V IC card. An LCD screen and/or serial port can provide detailed feedback on program operations and aids in debugging applications. In addition, the MAXQ622 has a built-in USB serial interface engine (SIE) to allow USB card reader applications.

EV Kit Contents

- DS8005 EV kit board features a MAXQ622 low-power microcontroller, SIM and SAM smart card sockets, DB9 female serial connector, serial cable, USB Mini-B connector, power supply, and LCD screen.
- JTAG interface board (in-application debugging).
- DS8005 EV kit CD includes evaluation kit sample code, schematics, and data sheets.

[Ordering Information](#) appears at end of data sheet.

DESIGNATION	QTY	DESCRIPTION
C1, C2, C6–C11, C13, C22, C24, C27, C28, C30	14	100nF, 16V ceramic X7R capacitors (0603) ECJ-1VB1C104K
C3, C4, C5, C12, C16–C18	7	1µF, 10V ceramic X7R capacitors (0603) LMK107B7105KA-T
C14, C15	2	43pF ±5%, 50V C0G capacitors (0603) GRM1885C1H430JA01D
C19, C20, C25, C26	4	18pF ±5%, 50V C0G capacitors (0603) GRM1885C1H180JA01D
C21, C29	2	220nF, 16V ceramic X7R capacitors (0603) C1608X7R1C224K
C23	1	10µF ±10%, 10V ceramic X7R capacitor (1206)
CN1	1	USB receptacle (Mini-B)
D1	1	TVS Schottky diode

Features

- ◆ **Quickly Develop Smart Card Applications Using Maxim’s Example Code and Easily Port to Any MAXQ RISC Microcontroller**
- ◆ **2-Line LCD Screen for Graphical User Interface**
- ◆ **USB Interface for Prototyping USB Card Reader Applications**
- ◆ **Two Card Sockets (One Full-Size Socket and One SIM Socket) for Prototyping Smart Card Applications**
- ◆ **Single 5V Power-Supply Input with an On-Board 3.3V Regulator**
- ◆ **Card Interface Pins Brought Out to Headers for Customer Card Socket**
- ◆ **Pushbuttons for Reset, Interrupt, and Application Control**
- ◆ **Level-Shifted RS-232 Interface**
- ◆ **Schematics and BOM Provides a Proven Solution for New Designs**
- ◆ **Proven PCB Layout**
- ◆ **Fully Assembled and Tested**

Component List

DESIGNATION	QTY	DESCRIPTION
D2	1	Blue LED HSMR-C150
D3	1	Orange LED HSMD-C150
D4	1	Red LED HSMS-C150
D5	1	Green LED HSMG-C150
F1	1	2A, 125V surface-mount fuse Picofuse 0459002.UR
FB1	1	SMD chip ferrite bead, 2000Ω Steward HZ1206C202R-00
J1	1	2.5mm power jack with tapered PC pins CUI Inc. PJ-102B
J2	1	DB-9 female header 1734348-1
J3	1	10-pin (2 x 5), 0.1in. spaced JTAG headers PEC05DAAN

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Component List (continued)

DESIGNATION	QTY	DESCRIPTION
J4, J8	2	6-pin 1 x 6), 0.1in spaced headers PEC06SAAN
J5	1	20-pin (2 x 10), 0.1in spaced headers PEC10DAAN
JU1, JU4–JU7	5	2-pin jumpers PEC02SAAN
JU2, JU3	2	3-pin jumpers PEC03SAAN
R1	1	330 Ω resistor ERJ-6GEYJ331V
R2	1	4.7 Ω resistor CRCW25124R70JNEG
R3, R4, R5	3	270 Ω resistors ERJ-6GEYJ271V
R6	1	10k Ω potentiometer ST4ETB103
R7	1	1k Ω resistor CRCW08051K00FKEA
R8, R9	2	10k Ω resistors CRCW080510K0FKEA
SW1–SW5	5	Momentary tact switches TL3301AF160QG/TR
TP1–TP4	4	Test points 5012

DESIGNATION	QTY	DESCRIPTION
U1	1	1A, 3.3V LDO linear regulator Maxim MAX8869EUE33+
U2	1	RS-232 transceiver Maxim MAX3381ECUP+
U3	1	LCD module 20 x 2 character with LED LCM-S02002DSF
U4	1	16-bit RISC microcontroller with USB SIE Maxim MAXQ622
U5	1	Dual high-speed differential ESD-protection IC Maxim MAX3207EAUT+
U6	1	Dual SIM card interface (SO version) Maxim DS8005
XC1	1	Smart card EMV wiping contact C702 10M008 2724 A
XC2	1	SM Card without alignment pins C707 10M006 0492
XY1	1	Crystal socket strip (strip of 64) 801-43-064-10-002000
Y1	1	12MHz crystal, 18pF SMD ECS-120-18-5G3XDS-TR

Table 1. Jumper Settings

JUMPER	SETTING	DESCRIPTION
JU1	Open	JTAG dongle is not able to supply power to the board; an external power source (i.e., power jack) is needed to program the MAXQ622.
	Closed	JTAG dongle supplies power to the board and no external power source (i.e., power jack) is needed.
JU2	Closed (V50)	Connects the 5V supplies directly to the VBUS pin on the MAXQ622.
	Closed (VBUS)	Connects VBUS to the VBUS pin on the MAXQ622. This should be used only if the board relies on the USB for power.
JU3	Closed (V33)	3.3V is supplied to the smart card interface supply.
	Closed (V50)	5V is supplied to the smart card interface supply.
JU4	Open	No power is supplied to the U6 device.
	Closed	3.3V is supplied to the U6 device.
JU5	Open	Breaks the smart card interface power-supply connection (JH3 setting)
	Closed	Closes the smart card interface power-supply connection (JH3 setting)

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Table 1. Jumper Settings (continued)

JUMPER	SETTING	DESCRIPTION
JU6	Open	The interface A card presence indicator (SIM/SAM card) is pulled up to 3.3V. This pin is active-high.
	Closed	The interface A card presence indicator (SIM/SAM card) is connected to ground. This pin is active-high.
JU7	Open	The MAXQ622 is not able to supply a clock signal to the U6 device; an external clock is needed in socket XY1.
	Closed	Either the MAXQ622 or external clock can supply a clock signal to the DS8005. If the MAXQ622 is used, pin 6 of port 0 (TBB0) needs to be used to provide the clock signal. Otherwise, an external clock is needed in socket XY1.

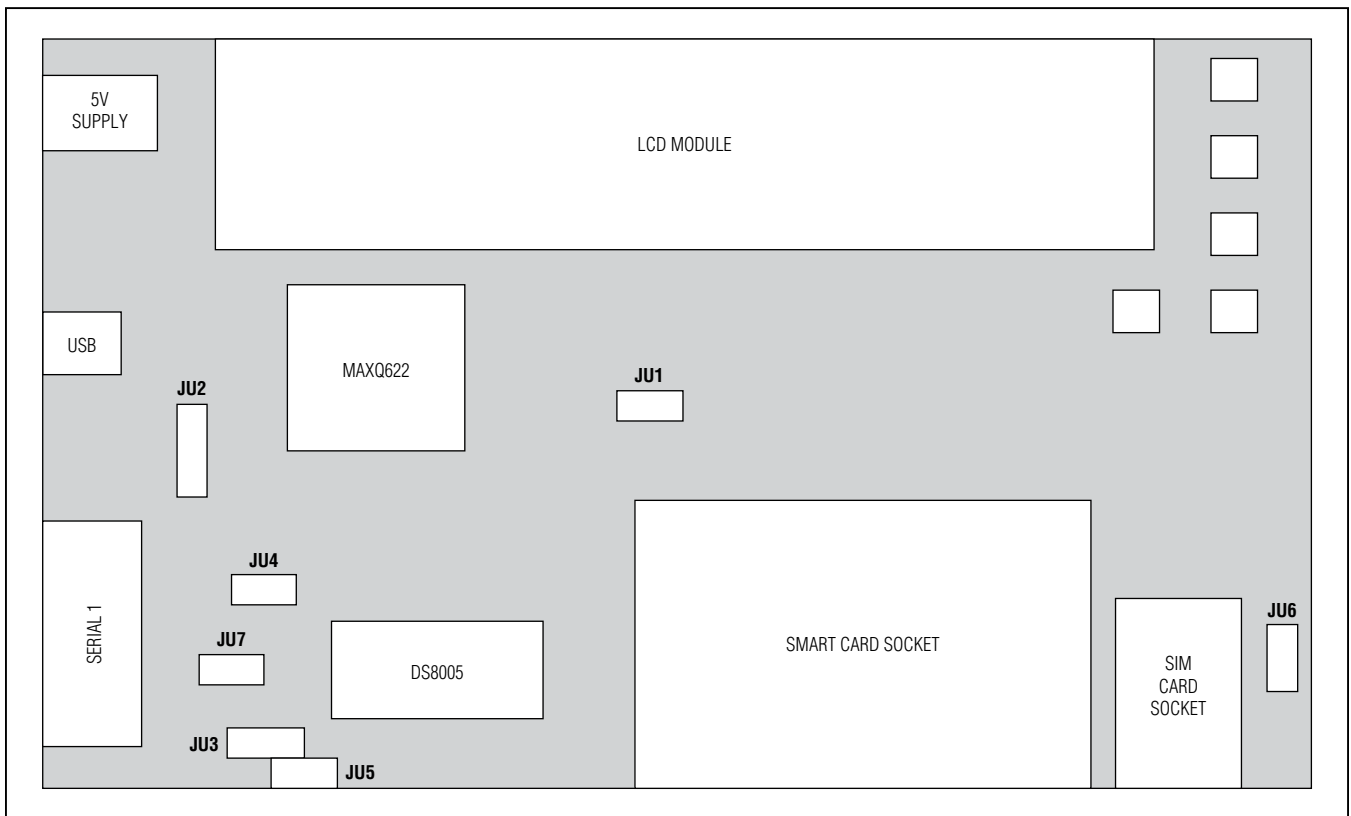


Figure 1. DS8005 EV Kit with Jumpers Labeled

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Detailed Description

This EV kit board should be used with the following documents:

- DS8005 data sheet
- MAXQ622 data sheet
- MAXQ Family user's guide
- MAXQ612/MAXQ622 user's guide

The EV kit should also be used with App Note 5388: *Getting Started with the DS8005 Evaluation Kit*, as it describes how to bring up and build simple applications for the EV kit board.

The EV kit board is fully defined in the schematics. However, a short description of the major components and connectors of the boards follow.

LCD Module

A Lumex 2-line, 20-character LCD screen is included in the EV kit board, part number LCM-S02002DSF. It is interfaced to the MAXQ622's GPIO. The example code contains software for initializing and writing characters to the LCD screen.

Smart Card and SIM Card Socket

The EV kit includes one SAM socket and one SIM card socket. The sockets allow developers to quickly prototype applications that require one or two smart card interfaces.

USB Interface

The EV kit provides USB connectivity using the built-in SIE on the MAXQ622, which contains everything necessary to implement a full-speed USB peripheral compliant to the USB 2.0 specification without any additional hardware. This provides an ideal solution for applications such as a PC-based USB card reader.

Serial Port

The EV kit provides a level-shifted RS-232 interface for additional output and debugging purposes. The example code utilizes the UART on the MAXQ622 to display the output to the serial port.

Programming the DS8005 EV Kit

Refer to App Note 5388: *Getting Started with the DS8005 Evaluation Kit* document for details on loading a program onto the EV kit board.

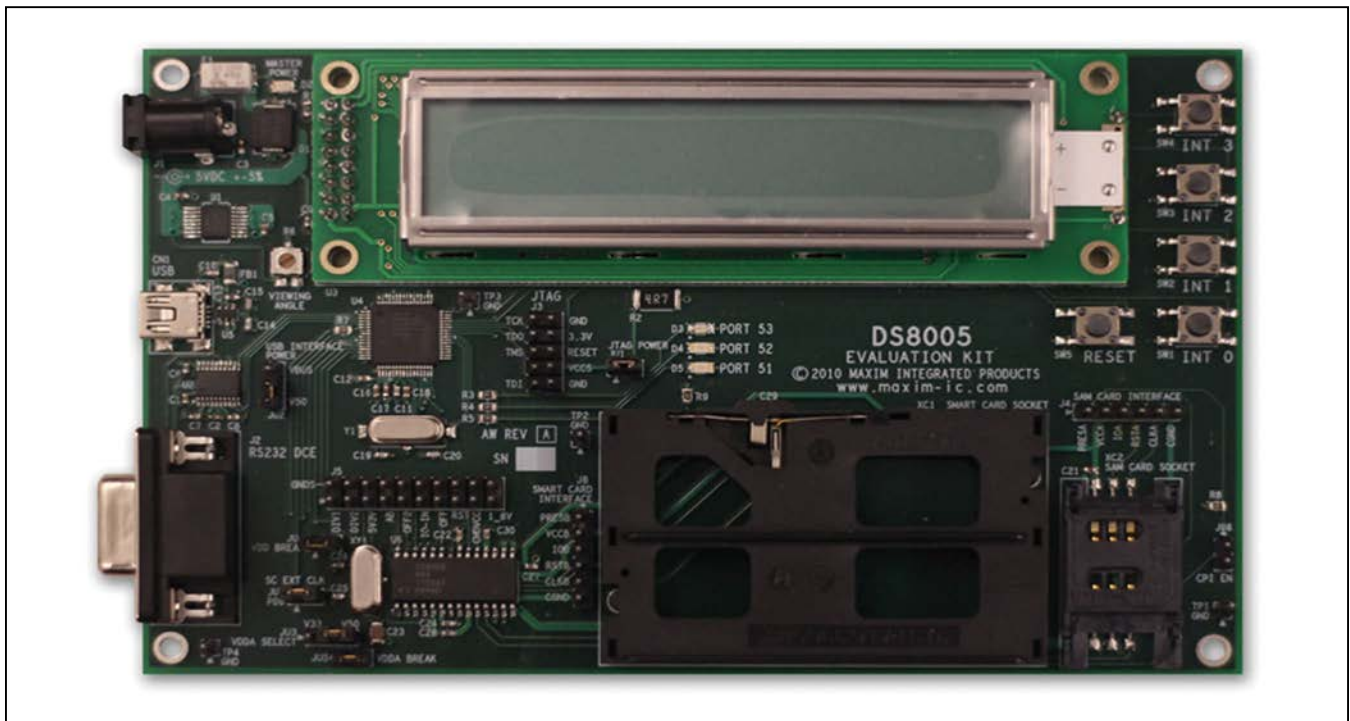


Figure 2. DS8005 EV Kit Board

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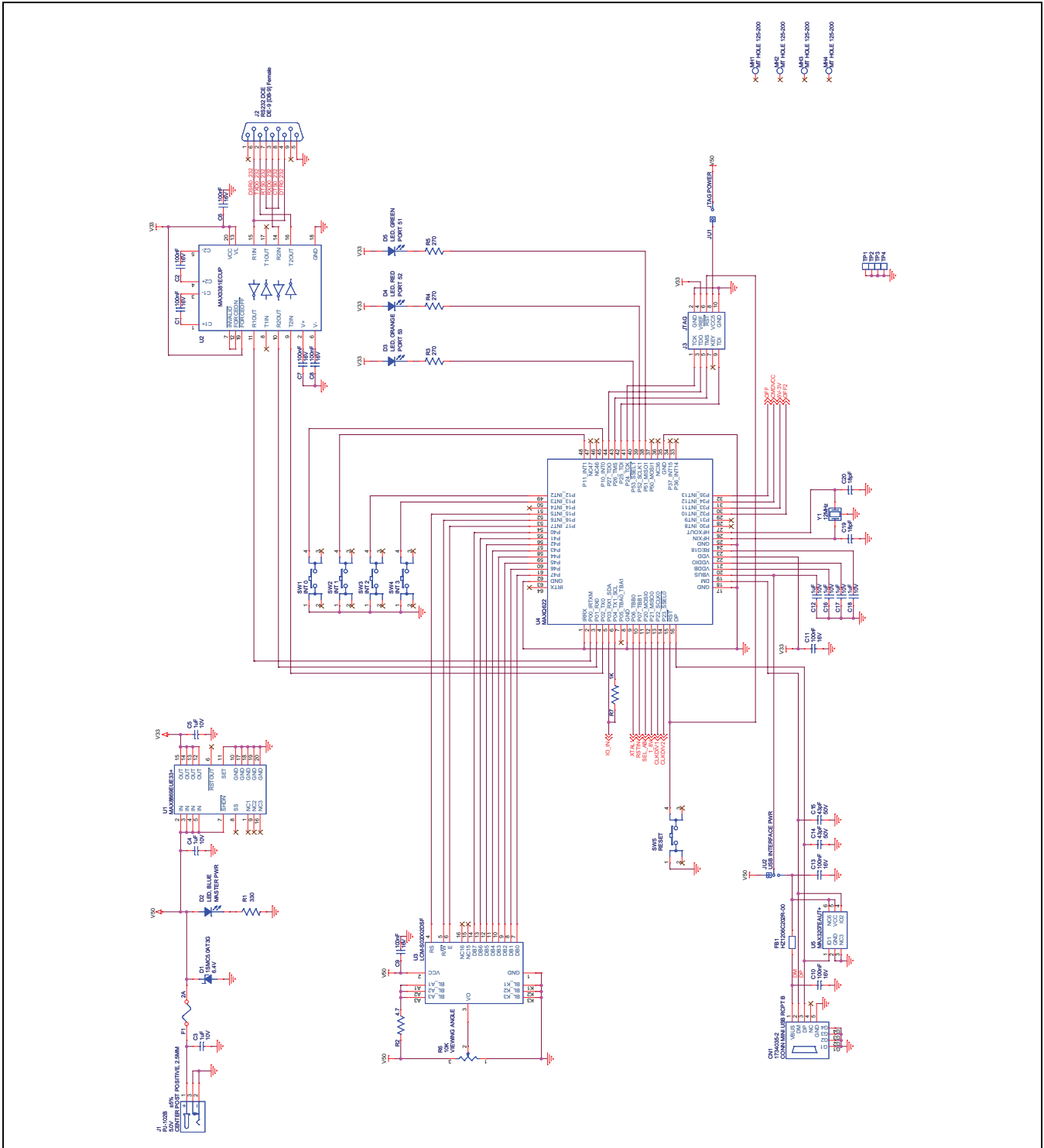


Figure 3a. DS8005 EV Kit Schematic (Sheet 1 of 2)

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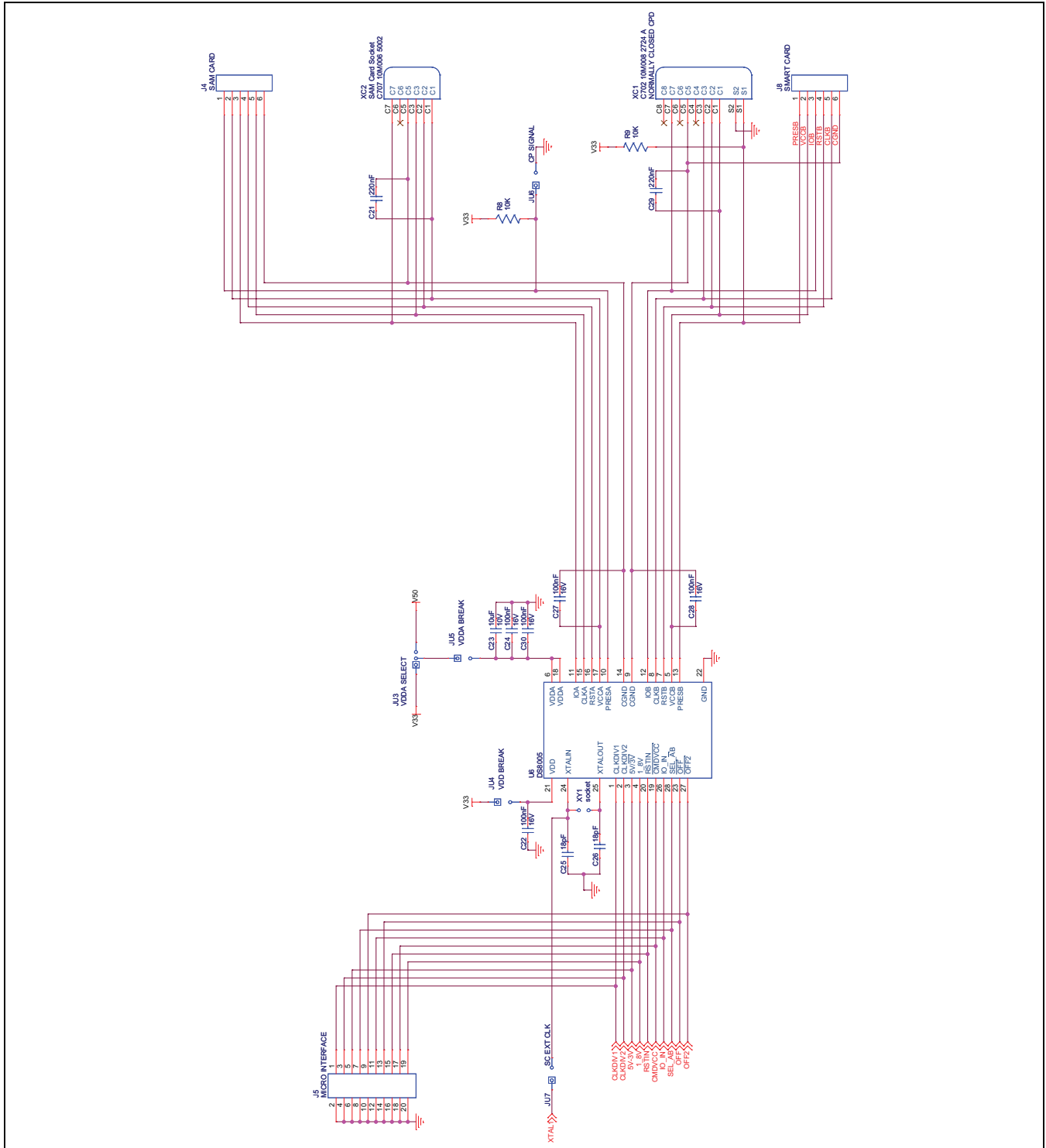


Figure 3b. DS8005 EV Kit Schematic (Sheet 2 of 2)

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Ordering Information

PART	TYPE
DS8005-KIT	EV Kit

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Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	6/12	Initial release	—



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