MAX3420E EVKIT-1

Introduction

The MAX3420E EVKIT-1 contains a MAX3420E SPI-to-USB Peripheral chip and USB interface circuitry to allow quick evaluation of the part. A standard 20-pin connector gives access to the MAX3420E SPI interface and IO pins. This board may be wired to any system with an SPI interface, including microprocessors, ASICS and DSPS. A limited amount of power (3.3V at 100mA) is derived from the USB connector and made available at the interface connector. Figure 1 shows a block diagram of the board.
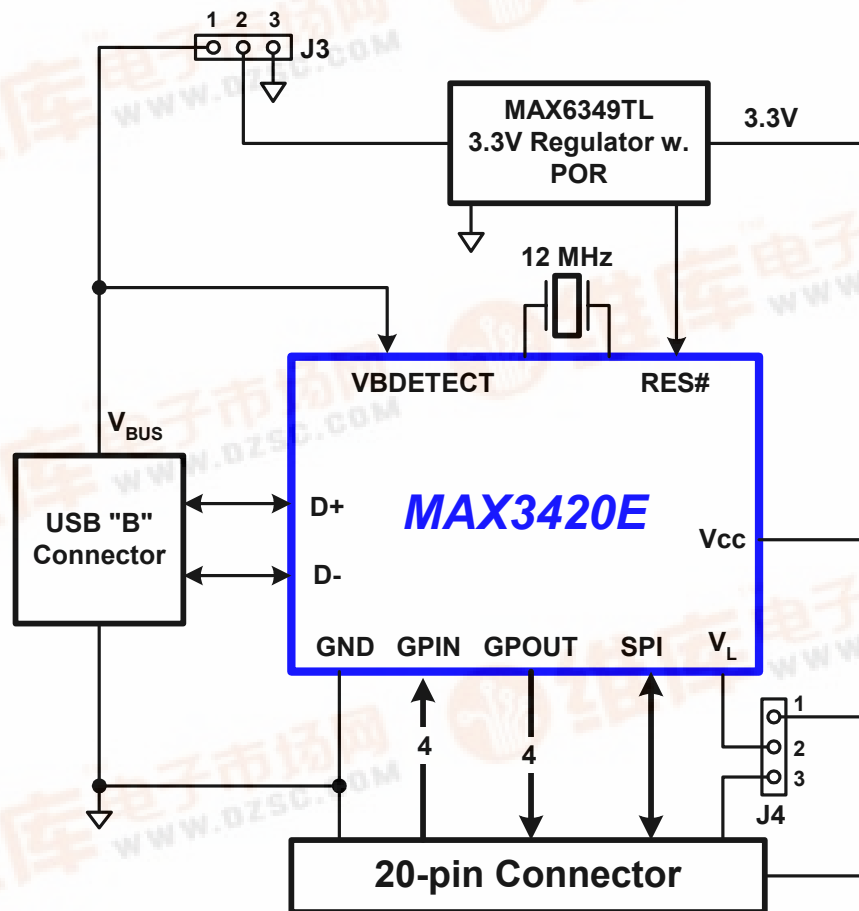

Figure 1. MAX3420E Demo Board Block Diagram

Power Options

Referring to Figure 1, the board has two power options, selected by J3 and J4.

J3: USB Bus Power vs. Self Power

J3 normally has a jumper plug between pins 1 and 2, powering the board from the USB V_{BUS} wire. To make the board self powered (drawing no power from V_{BUS}), remove the jumper plug, connect a 5V supply to J3-2, and connect the supply ground to J3-3.

The output of the 3.3V regulator is supplied to pin 20 of the interface connector. If the 3.3V pin is used to power a target system, the external system should not draw more than 100 milliamps from this pin.

J4: VL from target or Vcc

The MAX3420E features a V_L pin that allows the SPI and IO interface to run at a different system voltage than Vcc of 3.3V. J4 controls the connection to the V_L pin. In its normal setting a jumper block connects J4 pins 1 and 2, supplying V_L with Vcc=3.3V. If your target system uses a lower interface voltage it should supply the interface voltage to pin 10 of the interface connector J2, and the jumper plug should be moved to J4 pins 2-3. The MAX3420E uses V_L to power its digital logic as well as serving as the logic threshold for the interface, so the V_L supplied to the interface connector by the target system should be able to supply 10 milliamps.

20 Pin Connector J2

Pin	Function	Direction	Notes
		(relative to board)	
1	INT	IN	MAX3420E Interrupt Input
2	GPX	OUT	MAX3420E Multiplexed Output
3	MOSI	IN	MAX3420E Master Out Slave In (SPI)
4	MISO	OUT	MAX3420E Master In Slave Out (SPI)
5	SS#	IN	MAX3420E Slave Select In (SPI)
6	SCLK	IN	MAX3420E Serial Clock In (SPI)
7	RES#	OUT	Power On Reset Out
8	GPO3	OUT	MAX3420E General Purpose Output
9	GPO2	OUT	MAX3420E General Purpose Output
10	VL	IN	MAX3420E Interrupt Input
11	GND	---	
12	GND	---	
13	GPO1	OUT	MAX3420E General Purpose Output
14	GPO0	OUT	MAX3420E General Purpose Output
15	GPI3	IN	MAX3420E General Purpose Input (internally pulled up)
16	GPI2	IN	MAX3420E General Purpose Input (internally pulled up)
17	GPI1	IN	MAX3420E General Purpose Input (internally pulled up)
18	GPI0	IN	MAX3420E General Purpose Input (internally pulled up)
19	GND	---	
20	3.3V	OUT	100 mA max draw

Important Note about the SS# pin

Revision 2 of the MAX3420E is sensitive to undershoot on the SS# pin. The EVKIT board has a capacitor (C6) from SS# to ground to filter out undershoot. The value of C6 is chosen for a relatively short connection to the target system—for example a wire of about 3-6 inches in length, with a very good ground connection between the target system and EVKIT board.
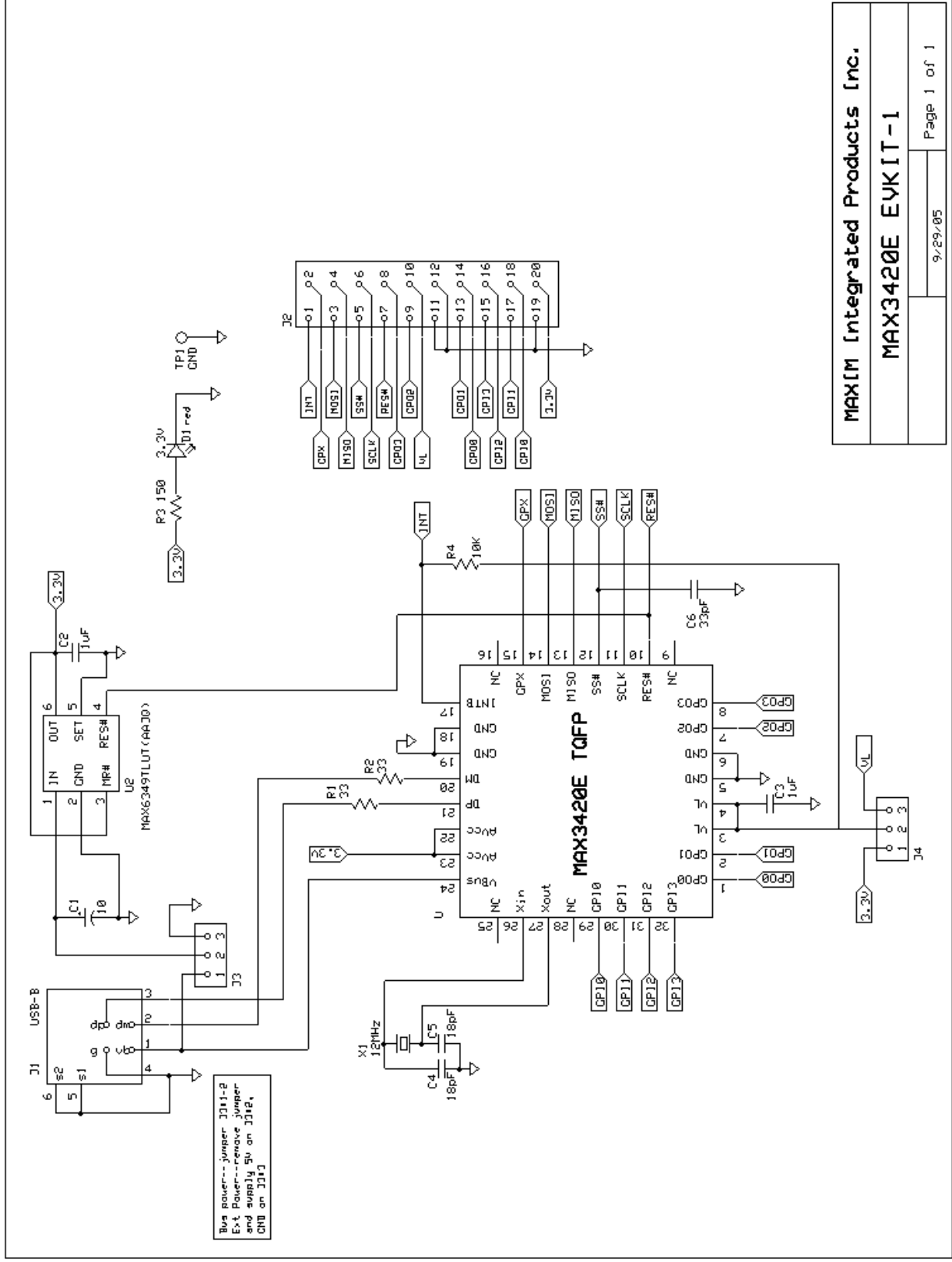
If you find that reading MAX3420E registers gives erratic values, there are two remedies:

1. Increase the value of C6.
2. Tie GPIN-0 to ground.

If the second method is used, the SS# capacitor is not required, although leaving it in the circuit does no harm.

Revision 3 of the MAX3420E fixes the SS# undershoot problem. Boards that use the capacitor can leave the capacitor in place with no ill effects.
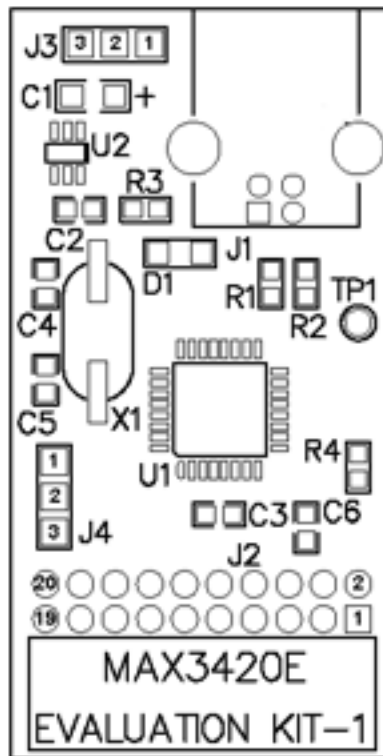
Appendix A: Board Schematic

MAXIM Integrated Products Inc.

MAX3420E EVKIT-1

9/29/05

Page 1 of 1

Appendix B: Board Layout

Power:
- To power the board from USB, install a jumper at J3 1-2.
- To power the board from an external supply, remove the J3 jumper and supply 5V on J3-2, and GND on J3-3.

Interface Voltage:
- If the external system provides a 3.3V interface, install J4 1-2. This connects the MAX3420E V_L pin to 3.3V.
- If the external system interface is 1.7V-3.6V, install J4-2-3. This connects the interface reference voltage on J2-10 to the MAX3420E V_L pin.

Appendix C: BOM

C1   10 uF, 16V
C2   1uF ceramic
C3   1uF ceramic
C4   18pF ceramic
C5   18pF ceramic
C6   33pF ceramic
D1   LED, Red
J1   USB-B connector (Digi-Key 787780-1-ND)
J2   20 pin, dual row, right angle female connector, 0.1" pin spacing
          (Samtec SSW-110-02-S-D-RA)
J3   3 pin header, 0.1" spacing
J4   3 pin header, 0.1" spacing
R1   33 Ohm, 1% resistor
R2   33 Ohm, 1% resistor
R3   150 Ohm, 5% resistor
TP1   Test Point
U1   MAX3420EECJ (TQFP-32 package)
U2   MAX6349TL (3.3V regulator)
X1   12MHz Parallel Resonant Crystal, HC49 case, 18 pF load capacitor
          (Digi-Key 300-6027-ND)
--   Two shorting jumpers, 0.1" spacing.