DESCRIPTION

DC1223A is an interface board that facilitates communication between a User Interface Program on the Computer side with Linear Tech SMBus/I2C Demonstration Boards. The board gets its Power from the USB cable and isolates the Computer Ground from the SMBus/I2C Demonstration Board. DC1223A can be used in 3 ways:

i) With a General User Interface (GUI) provided by Linear Technology Applications Department, the GUI can send out discrete commands to communicate with any SMBus/I2C device (see Figure 1). It supports nine different SMBus command protocols: Quick Command, Send Byte, Receive Byte, Write Byte, Read Byte, Write Word, and Read Word, Block Write, Block Read.

ii) With specific Linear Tech Demonstration Boards. Linear Tech typically provides an Application Specific User Interface Program for each Board designed to operate with the DC1223A. This Program is downloaded with Linear Tech's QuickEval software (available free on our website), e.g. see the Application Specific User Interface for DC1259A in Figure 2.

iii) With Linear Tech Demonstration Boards that previously used the DC410 Serial Port-to-SMBus Interface Board, e.g. DC285 (LTC1695), DC182 (LT1786F), DC286 (LTC1960), DC486 (LTC1760), DC496 (LTC4008), and DC512 (LTC4100). These Demo Boards also have Application Specific User Interface Programs but they are not part of the QuickEval software. You will need to request these programs from your local Sales/Field Application Engineer. Note: This is a not a standard mode of operation and you should consult Linear Tech Applications for how to operate it with the boards that previously interfaced to the DC410 (see DC1223A Software Notes.doc).

Design files for this circuit board are available. Call the LTC factory.

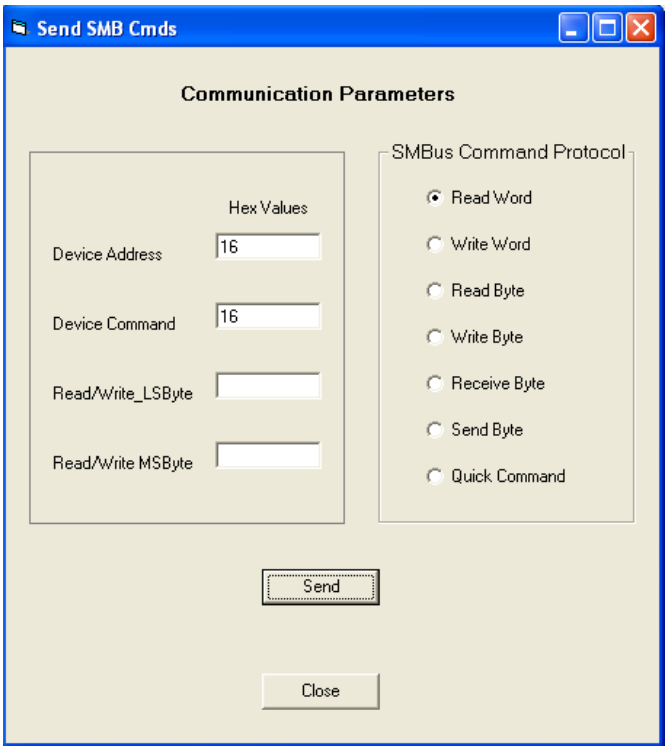


Figure 1. DC1223A General User Interface

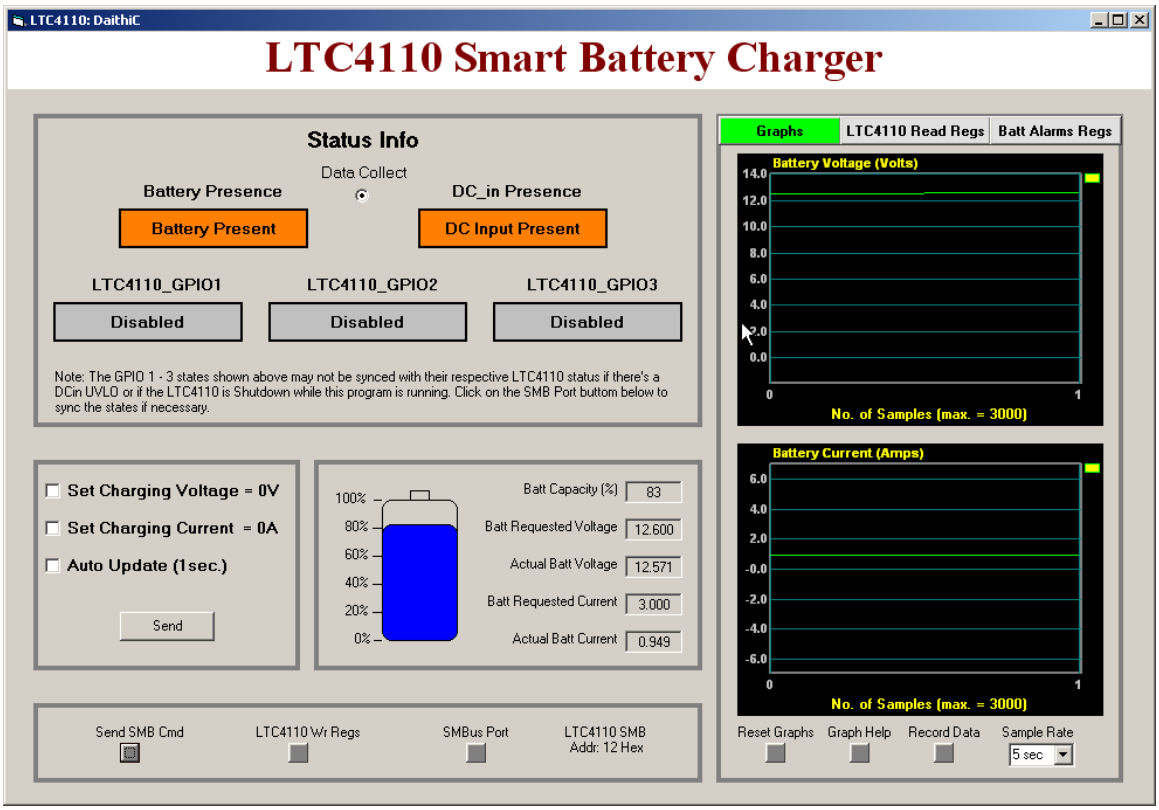


Figure 2. DC1259A Application Specific User Interface Program

QUICK START PROCEDURE

1. Download the QuickEval software from http://www.linear.com/designtools/software/ . Follow the installation instructions carefully.

2. When prompted to plug in the Demo Board first connect the USB cable to the DC1223A and then connect the Demonstration Board Under Evaluation (DBUE), if there is one, to the DC1223A. Power up the DBUE as recommended in its Quick Start Guide.

3. Check to see if there are already pull up resistors on the DBUE. If yes, put jumpers JP1 and JP2 on DC1223A to Open. See Figure 3 for the typical Hardware Setup. The “Found New Hardware Wizard” window may pop up. If it does then choose the “Recommended” Installation. Note: The DC1223A doesn’t need any external power other than the power it receives from the USB cable.

4. The associated software for the DBUE should pop up.

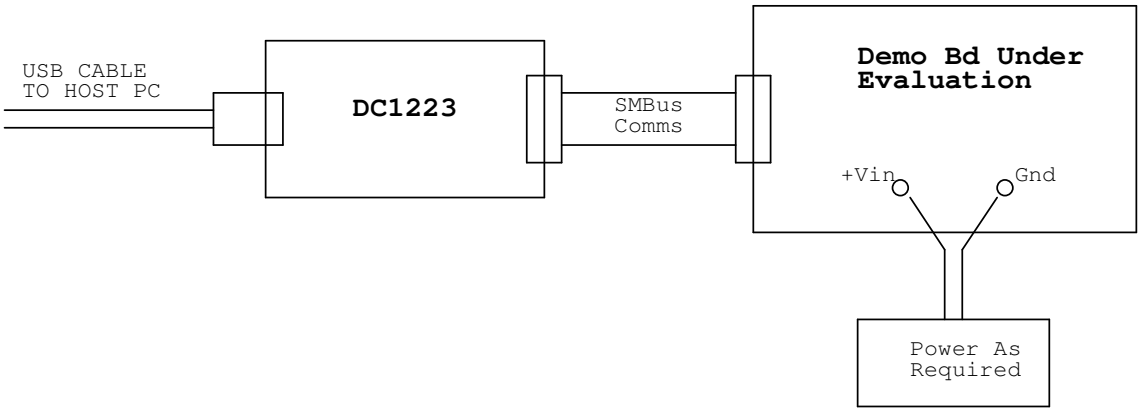


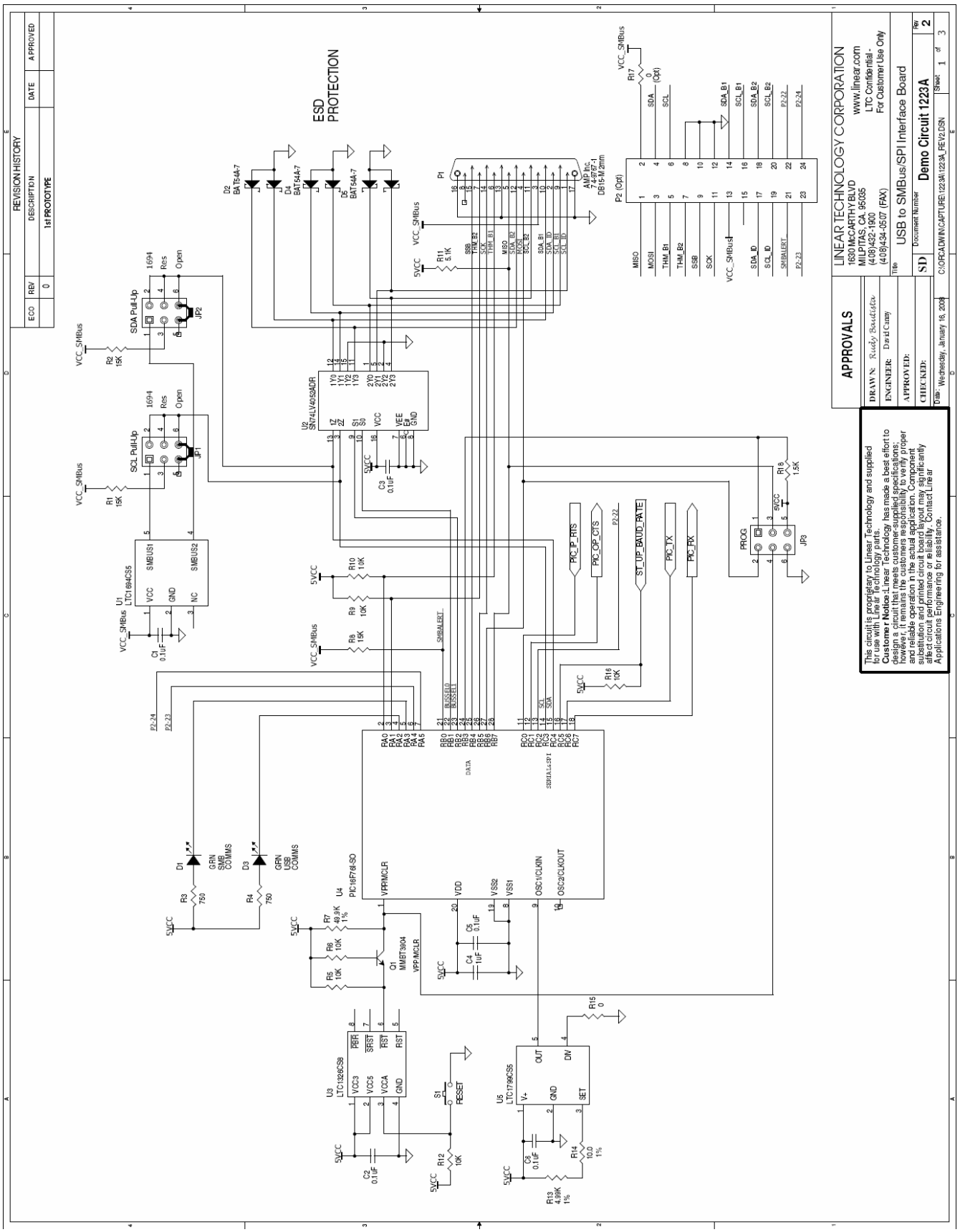
Figure 3. Typical Hardware Setup

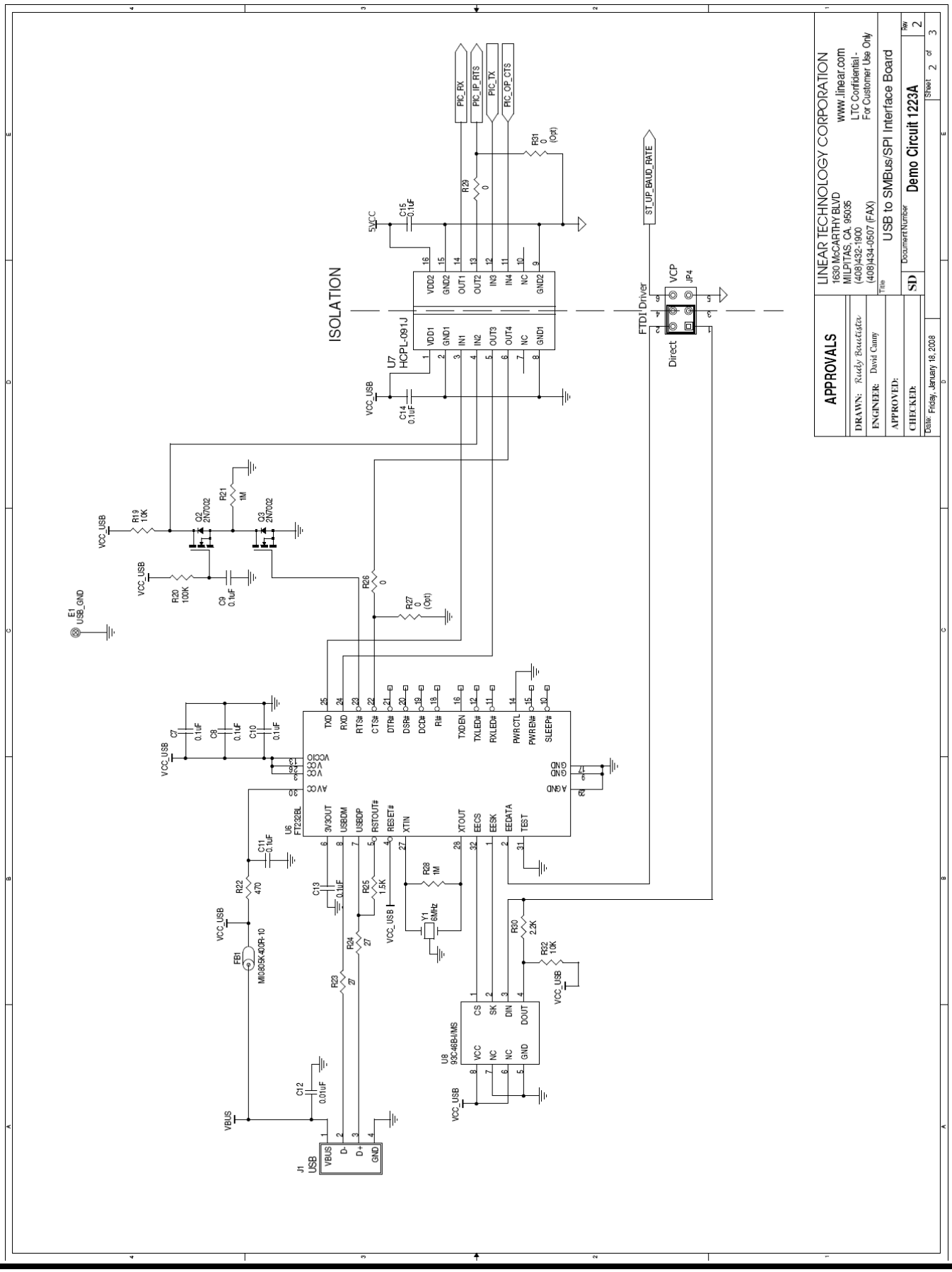
Table 1. Bill of Material for the DC1223A

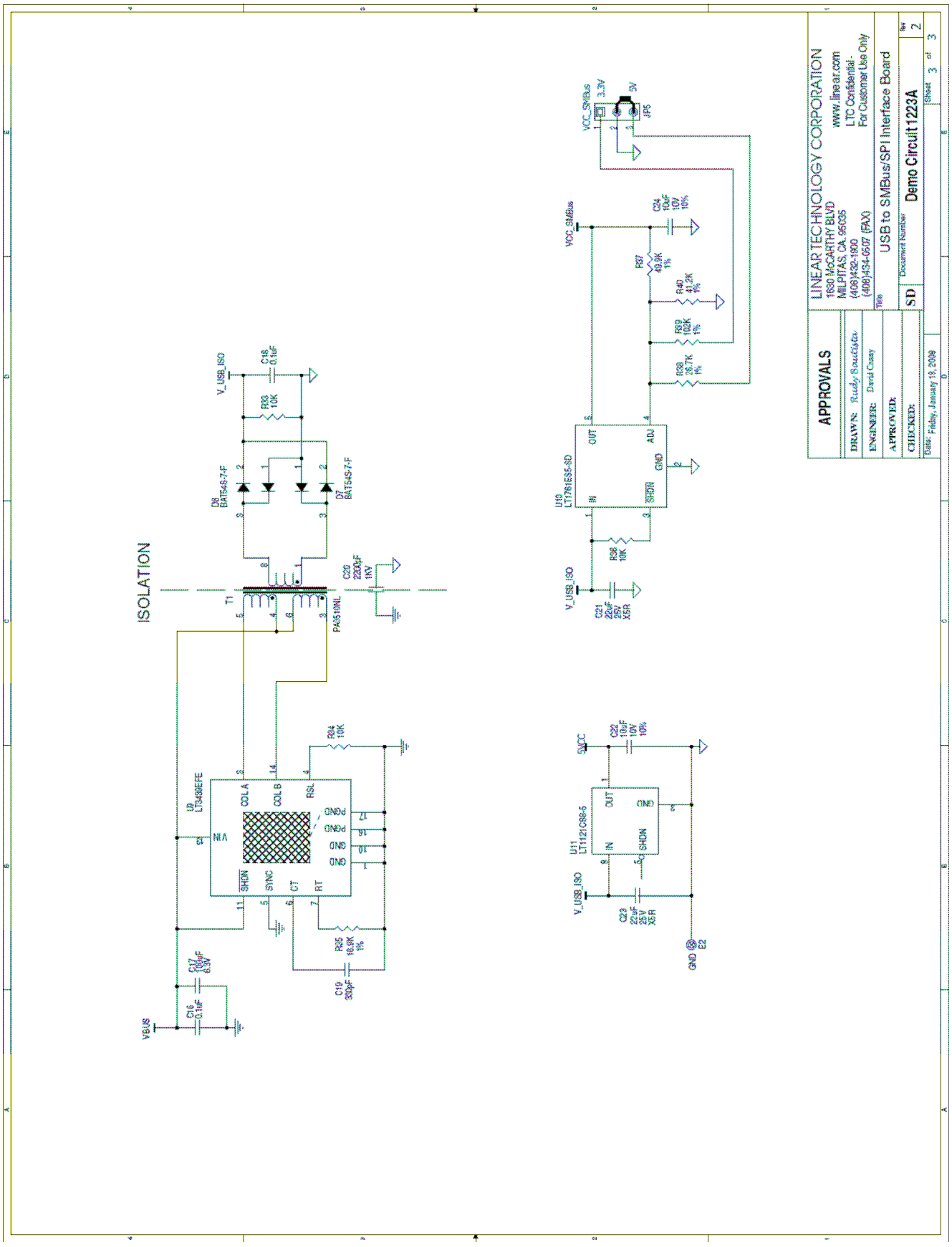
Item	*Qty*	*Reference*	*Part Description*	*Manufacturer / Part #*
1	15	C1-C3,C5-C11,C13-C16,C18	Cap., X7R 0.1uF 16V 10%	AVX 0603YC104KAT2A
2	1	C4	Cap., X5R 1uF 16V 10%	Taiyo Yuden EMK107BJ105KA-T
3	1	C12	Cap., X7R 0.01uF 25V 10%	AVX 06033C103KAT2A
4	1	C17	Cap., X5R 100uF 6.3V 20%	Taiyo Yuden JMK325BJ107MM-T
5	1	C19	Cap., NPO 330pF 25V 5%	AVX 06033A331JAT2A
6	1	C20	Cap., X7R 2200pF 1KV 20%	AVX 1206AC222MAT2A
7	2	C21, C23	Cap., X5R 22uF 25V 20%	AVX 12103D226MAT2A
8	2	C22, C24	Cap., X5R 10uF 10V 10%	Taiyo Yuden LMK212BJ106KG-T
9	2	D1,D3	LED, GRN	Panasonic LN1351CTR
10	3	D2,D4,D5	Schottky (Comm-Anode) Diode	Diode Inc. BAT54A-7-F
11	2	D6,D7	Schottky Diode, Dual SOT23	Diodes Inc. BAT54S-7-F
12	2	E1,E2	Turret, Testpoint	Mill Max 2308-2-00-80-00-00-07-0
13	1	FB1	Ferrite Bead, PbF	Steward MI0805K400R-10
14	3	JP1-JP3	Headers, Dbl. Row 2x3 2mm Ctrs.	SAMTEC, TMM-103-02-L-D
15	1	JP4	Headers Sq. Post, Dbl. Row 2x3 0.1" Ctrs.	SAMTEC, TSW-103-07-L-D
16	1	JP5	Headers, 1x3 2mm Ctrs.	Samtec TMM-103-02-L-S
17	1	J1	USB Conn, Type B Receptacle	Mill-Max 897-43-004-90-000000 PbF
18	1	P1	Conn,, DB15-M 2mm	AMP Inc. 574-9767-1 PbF
19	0	P2 (Opt)	Headers, Dbl. Row 0.1Ctrs.	
20	1	Q1	XSTR. NPN 40V 350MW SMD SOT23	Diodes Inc. MMBT3904-7-F
21	2	Q2,Q3	MOSFET, N-CH. 60V 115MA SOT23	Diodes Inc. 2N7002-7-F
22	3	R1,R2,R8	Res., Chip, 15K, 0.1W, 5%, 0603	YAGEO, RC0603JR-0715KL
23	2	R3,R4	Res., Chip, 750, 0.1W, 5%, 0603	YAGEO, RC0603JR-07750RL
24	11	R5,R6,R9,R10,R12,	Res., Chip, 10K, 0.1W, 5%, 0603	Panasonic ERJ3GEYJ103V
		R16,R19,R32-R34,R36		
25	2	R7,R37	Res., Chip, 49.9K, 1/16W, 1%, 0603	YAGEO, RC0603FR-0749K9L
26	1	R11	Res., Chip, 5.1K, 0.1W, 5%, 0603	Panasonic ERJ-3GEYJ512V

27	1	R13	Res., Chip, 8.25K, 1/16W, 1%, 0603	YAGEO, RC0603FR-078K25L
28	1	R14	Res., Chip, 80.6, 1/16W, 1%, 0603	YAGEO, RC0603FR-0780R6L
29	3	R15,R26,R29	Res/Jumper, Chip, 0, 1 AMP, 0603	YAGEO, RC0603FR-070RL
30	0	R17 (Opt)	Res/Jumper, Chip, 0, 1 AMP, 1206	YAGEO, RC1206FR-070RL
31	2	R18,R25	Res., Chip, 1.5K, 0.1W, 5%, 0603	YAGEO, RC0603JR-071K5L
32	1	R20	Res., Chip, 100K, 0.1W, 5%, 0603	VISHAY, CRCW0603100KJNEA
33	2	R21,R28	Res., Chip, 1M, 0.1W, 5%, 0603	YAGEO, RC0603JR-071ML
34	1	R22	Res., Chip, 470, 0.1W, 5%, 0603	YAGEO, RC0603JR-07470RL
35	2	R23,R24	Res., Chip, 27, 0.1W, 5%, 0603	YAGEO, RC0603JR-0727RL
36	0	R27,R31 (Opt)	Res/Jumper, Chip, 0, 1 Amp	YAGEO, RC0603FR-070RL
37	1	R30	Res., Chip, 2.2K, 0.1W, 5%, 0603	YAGEO, RC0603JR-072K2L
38	1	R35	Res., Chip, 16.9K, 0.1W, 1%, 0603	VISHAY, CRCW060316K9FKEA
39	1	R38	Res., Chip, 26.7K, 0.1W, 1%, 0603	YAGEO, RC0603FR-0726K7L
40	1	R39	Res., Chip, 102K, 0.1W, 1%, 0603	YAGEO, RC0603FR-07102KL
41	1	R40	Res., Chip, 41.2K, 0.1W, 1%, 0603	YAGEO, RC0603FR-0741K2L
42	1	S1	SWITCH, EVQPJS05K	Panasonic EVQPJS05K
43	1	T1	Transformer, 2.5:1:1	Pulse PA0510NLT
44	1	U1	I.C., SMBus Accelerator	Linear Tech. Corp. LTC1694CS5
45	1	U2	I.C., Analog Multiplexer	Texas Inst. SN74LV4052ADRE4
46	1	U3 lot#422706.1, d/c0651	I.C., 3-Supply Monitor	Linear Tech. Corp. LTC1326CS8
47	1	U4	I.C., MicroController,(#FW410V3) PROGRAM	MICROCHIP, PIC16F76-I/SO
48	1	U5	I.C., Low Pwr. Resistor Set Osc.	Linear Tech. Corp. LTC1799CS5
49	1	U6	I.C., Serial Data Transfer	Future Tech.Devices Int'l FT232BL(PbF)
50	1	U7	I.C., Isolator Narrow Body	AVAGO Tech. HCPL-091J-000E (PbF)
51	1	U8 lot#427266.4, d/c0703	I.C., EEPROM	MicroChip 93C46B-I/MS
52	1	U9 lot#410137.1, d/c0636	I.C., DC/DC XFMR Driver	Linear Tech. Corp. LT3439EFE
53	1	U10, lot#398534.2, d/c0622	I.C., LDO REGULATOR	Linear Tech. Corp. LT1761ES5-SD
54	1	U11	I.C., Low Dropout W/Shutdown	Linear Tech. Corp. LT1121CS8-5
55	3	XJP1 - XJP2, XJP5	Shunt, 2mm Ctrs.	Samtec 2SN-BK-G
56	1	XJP4	Shunt, 2 x 2 0.1" Ctrs.	Samtec MNT-102-BK-G

57	1	Y1	Cer. Resonator, 6MHz	muRata CSTCR6M00G15L**-R0
58	4	MTG 4 CORNERS	STAND-OFF, NYLON, 0.25" TALL	KEYSTONE, 8831 (SNAP ON)
59	1		CABLE A-B MALE DBL SHIELD 2M	ASSMANN ELECTRONICS AK672
60	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 1223A Rev2
61	1		STENCIL: ST-1223A-Rev0	STENCIL 1223A


REVISION HISTORY
ECO REV DESCRIPTION DATE APPROVED
0 1st PROTOTYPE
ESD PROTECTION
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ENGINEER: David Canny
APPROVED:
CHECKED:
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USB to SMBus/SPI Interface Board
Demo Circuit 1223A
Rev 2
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PIC_RX
PIC_IP_RTS
PIC_TX
PIC_OP_CTS
VCC_USB
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USB_GND
FB1
MI0805K400R-10
Y1
6MHz
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APPROVALS
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ENGINEER: David Canny
APPROVED:
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Title
USB to SMBus/SPI Interface Board
SIZE
SD
Document Number
Demo Circuit 1223A
Rev
2
Date: Friday, January 18, 2008
Sheet 2 of 3


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Friday, January 19, 2007